Florida Department of Transportation

Final
Noise Study Report

US 301 (SR 39)

From South of CR 54 (Eiland Boulevard)
to US 98 Bypass (SR 533)
Pasco County, Florida

Work Program Item No: 408075-1
Federal Aid Project No: 3112-020-P

Prepared For:

Florida Department of Transportation
District Seven
11201 North Malcolm McKinley Drive
Tampa, Florida 33612

March 2010

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Prepared For:

Florida Department of Transportation

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) conducted a Project Development and Environment (PD&E) Study to evaluate improvements to US 301 (SR 39) in eastern Pasco County. The project limits are from south of CR 54 (Eiland Boulevard) to the US 98 Bypass (SR 533). The length of the study is 7.6 miles. The objective of the PD&E Study was to provide documented environmental and engineering analyses, which would help the FDOT and the Federal Highway Administration (FHWA) reach a decision on the type, conceptual design and location of the necessary improvements within the US 301 PD&E Study limits to accommodate future transportation needs in a safe and efficient manner. This Noise Study Report (NSR) was prepared as part of the PD&E Study. The objectives of this noise study were to identify noise sensitive sites adjacent to the roadway, to evaluate future traffic noise level changes associated with the proposed roadway improvements, and to evaluate the need for, and effectiveness of, noise abatement measures.

Originally, the PD&E Study evaluated the proposed widening of US 301 to a six-lane divided roadway from south of CR 54 to the US 98 Bypass for two Build Alternatives representing three separate typical sections: Build Alternative 1 - High Speed Urban typical section for Segments A through D; and Build Alternative 2 - Low Speed Urban typical section for Segments A and D and Rural typical section for Segments B and C. A summary of the impacts that could occur if either Build Alternative were to be implemented for each of the study segments was presented at the Alternatives Public Workshop held on June 3, 2009.

The purpose of the Alternatives Public Workshop was to solicit public input regarding the proposed Build Alternatives and the No-Build Alternative for the proposed project. On July 16, 2009 the FDOT determined a recommended Build Alternative would be presented at the Study's Public Hearing in addition to the No Build Alternative. The recommended Build Alternative determination was based on the results of the Build Alternative's impact evaluation, public feedback received during the public involvement process, and consistency with current transportation plans.

As a result of this determination, the Recommended Build Alternative presented at the Public Hearing on November 4, 2009 consisted of widening US 301 to a six-lane roadway facility in Segment A only (from south of CR 54 to north of Kossik Road) and maintaining the existing four-lanes on US 301 in Segments B-D (from north of Kossik Road to the US 98 Bypass). The recommended typical section for the six-lane widening was a low-speed urban typical section. The section of US 301 between Kossik Road and Wire

Road will be used to transition the proposed six-lanes into the existing four-lane roadway. To minimize traffic congestion and improve safety north of Kossik Road, Transportation System Management (TSM) improvements were also recommended. The TSM improvements could include, but not be limited to, median modifications on US 301 from north of Kossik Road to US 98 Bypass and turn lane improvements at four signalized intersections: Centennial Road, CR 52A (Clinton Avenue), Morningside Drive, and US 98 Bypass.

The Recommended Build Alternative developed for the US 301 PD&E Study is required to be consistent with the Pasco County Metropolitan Planning Organization's (MPO) Cost Affordable Roadway Long Range Transportation Plan (LRTP). The Recommended Build Alternative presented at the Study's Public Hearing on November 4, 2009 was consistent with the Pasco MPO 2025 Cost Affordable LRTP. Subsequent to the Public Hearing, the Pasco County MPO adopted their 2035 LRTP on December 10, 2009. The adopted 2035 Cost Affordable Roadway Plan contains an additional roadway segment on US 301 between US 98 (SR 700) and CR 52A where six-lanes are proposed in addition to the six-lane roadway section on US 301 from south of CR 54 to Kossik Road.

Therefore, the Recommended Build Alternative consists of widening US 301 to a six-lane roadway facility in Segment A (from south of CR 54 to north of Kossik Road) and a portion of Segment C from south of US 98 to CR 52A. The section of US 301 between Kossik Road and Wire Road will be used to transition the proposed six-lanes in Segment A into the existing four-lane roadway. Within the portion of Segment C from south of US 98 to CR 52A, the section of US 301 from north of Musselman Road to US 98 will be used to transition the proposed six-lanes in Segment C into the existing four-lane roadway. Elsewhere within the study limits, the existing four-lanes on US 301 in Segments B-D (from north of Kossik Road to US 98 Bypass) will remain as is. The recommended typical section for the six-lane widening is a low-speed urban typical section within Segment A, and a rural typical section within the portion of Segment C from US 98 to CR 52A. To minimize traffic congestion and improve safety north of Kossik Road, TSM improvements will be provided at three signalized intersections: Centennial Road, Morningside Drive, and US 98 Bypass. The previously recommended TSM improvements at CR 52A would be constructed as part of the widening in the portion of Segment C. A summary of the evaluation of noise impacts related to the revised Recommended Build Alternative is provided below.

Noise Sensitive Sites within Segment A and a portion of Segment C

A total of 97 noise sensitive sites were evaluated (single-family residences) within Segment A. There are no noise sensitive sites in the portion of Segment C from south of US 98 to CR 52A.

Traffic Noise Levels within Segment A

When compared to existing levels in Segment A, traffic noise levels with the proposed improvements to US 301 are predicted to increase from 2.7 to 3.6 decibels (dB) on the "A"-weighted scale (dBA). Therefore, based on the results of the analysis, traffic noise would not substantially exceed existing levels with the proposed improvements. However, the results also indicate that traffic noise would approach or exceed the NAC at 41 of the evaluated residences. Nine of the residences are located in Pinecrest Mobile Home Park (MHP), four are located in Parkview Acres, four are located in Wood Dale, 20 of the residences are located in Spanish Trails Village, and four are located in Brightside MHP.

Noise Abatement Measures within Segment A

The noise abatement measures considered for the 41 affected residences in Segment A were traffic management, alternative roadway alignment, property acquisition, and noise barriers. Based on the results of the analysis, noise barriers are considered a potentially feasible and reasonable measure to reduce predicted future traffic noise levels at least the minimum required 5 dBA for 12 of the 13 affected residences within Pinecrest MHP and Parkview Acres and 16 of the affected residences in Spanish Trails Village. There do not appear to be any measures that would be both feasible and reasonable to reduce predicted future traffic noise levels at the remaining affected residences within the project limits.

The FDOT will perform an update to this Noise Study Report during the final design phase for the project. The Noise Study Report Update will be undertaken to confirm that the potential noise barrier locations would remain a reasonable and feasible method of reducing the predicted increase in traffic noise levels for the Pinecrest MHP, Parkview Acres, and Spanish Trials due to the proposed widening of US 301. The FDOT will construct the noise barriers as part of the US 301 project contingent on the following:

- The property owners of the Pinecrest MHP, Parkview Acres, and Spanish Trails Village indicate a positive desire for a barrier (including type, height, length, and location).
- All safety and engineering aspects of the barriers, as they relate to the roadway user and to the adjacent property owners, have been reviewed and approved.

Construction Noise

Construction of the US 301 improvements would result in a temporary noise increase within the project area. The noise would be generated primarily from the heavy equipment used to haul materials and construct the improvements.

Noise Contours

To reduce the potential for additional noise-sensitive sites to be located within an area incompatible with traffic noise, noise contours were developed to illustrate the distance from the improved roadway edge at which a traffic noise level of 66 dBA would be expected to occur . A level of 66 dB approaches the FHWA's NAC for Activity Category B land uses which includes residences. The results of the analysis indicate that the noise contour would extend 130 feet from the edge of the near travel lane with the proposed improvements in Segment A (south of CR 54 to north of Kossik Road). For the southern portion of Segment C (south of US 98 to CR 52A), the noise contour would extend 190 feet from the edge of the near travel lane with the proposed improvements. Notably, local officials should not approve construction of any noise-sensitive site (e.g., residences, parks, churches, etc.) within this area.

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Note: Electronic versions of the Traffic Noise Model (TNM) input/output are available for review at the District Seven office of the Florida Department of Transportation.

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SECTION 1
INTRODUCTION

The Florida Department of Transportation (FDOT) conducted a Project Development and Environment (PD&E) Study to evaluate improvements to US 301 (SR 39) in eastern Pasco County. The project location is illustrated on **Figure 1-1**. The limits of the study corridor are from south of CR 54 (Eiland Boulevard) to the US 98 Bypass (SR 533), a project length of 7.6 miles.

The objective of the PD&E Study was to provide documented environmental and engineering analyses, which would assist the FDOT and the Federal Highway Administration (FHWA) in reaching a decision on the type, conceptual design and location of the necessary improvements within the US 301 PD&E study limits to accommodate future transportation needs in a safe and efficient manner. This Noise Study Report (NSR) was prepared as part of the PD&E Study.

The objectives of this NSR were to:

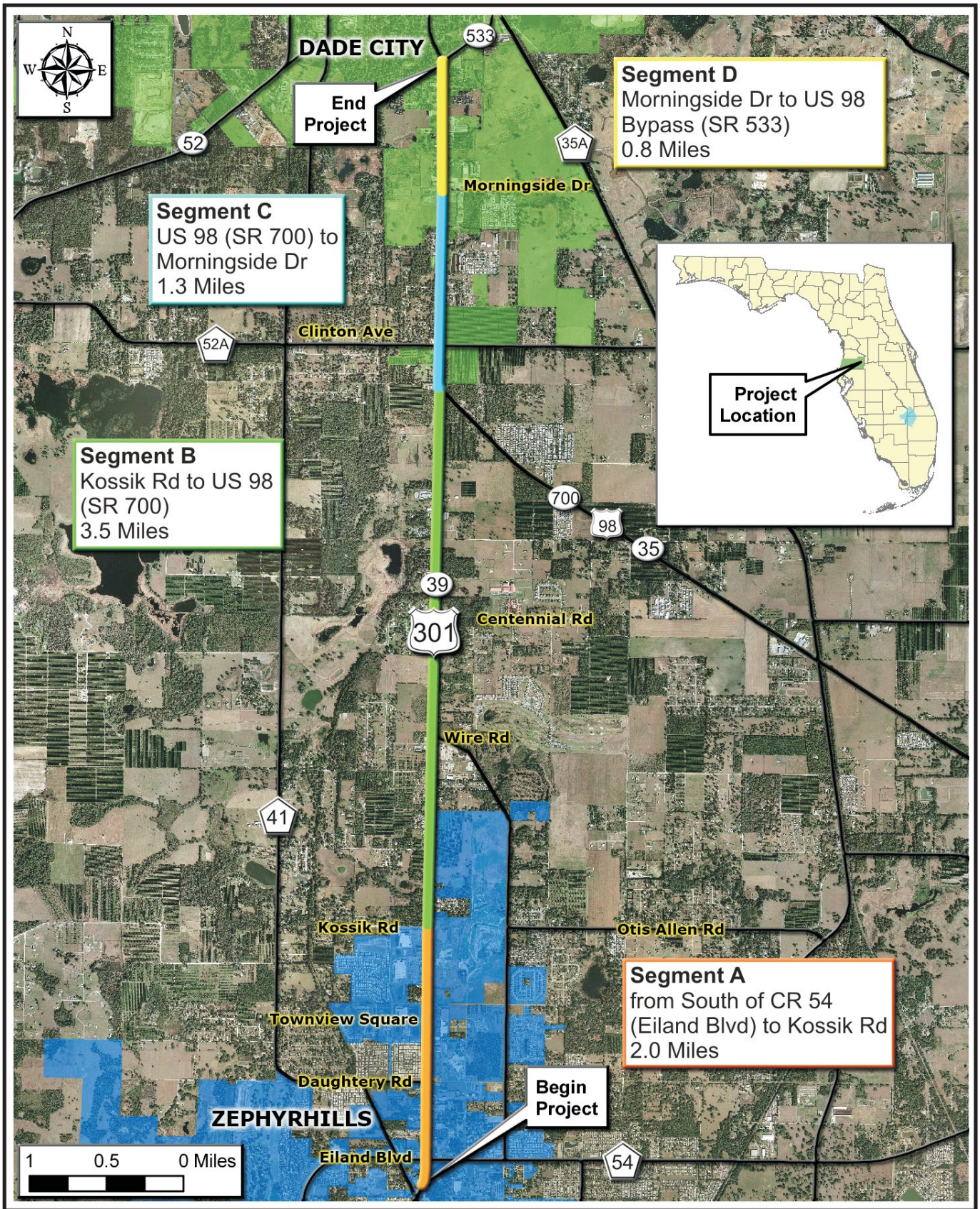
- Identify noise sensitive sites within the US 301 PD&E Study limits adjacent to Segment A and the southern portion of Segment C from south of US 98 (SR 700) to CR 52A (Clinton Avenue),
- evaluate future traffic noise level changes at the noise sensitive sites due to the proposed improvements to the roadway, and
- evaluate the need for and effectiveness of noise abatement measures.

In addition, a noise contour was developed to identify potential future impacts. Noise contours indicate the distance from the roadway that traffic noise levels are predicted to approach, meet, or exceed the FHWA's Noise Abatement Criteria (NAC). **Table 1-1** presents the FHWA's NAC. As shown, the NAC vary based on the activities that occur at/on a property.

Table 1-1
Federal Highway Administration's Noise Abatement Criteria

Activity Category	Description	Noise Abatement Criteria (L_{Aeq1h})
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)
B	Picnic area, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.	67 (Exterior)
C	Developed lands, properties or activities not included in Categories A or B above.	72 (Exterior)
D	Undeveloped lands.	N/A
E	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.	52 (Interior)

Source: Code of Federal Regulations, Title 23, Part 772
L_{Aeq1h} - values that contain the same amount of acoustic energy as a time-varying A-weighted sound level over a period of one hour.



US 301 (SR 39) PD&E Study from South of CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**LOCATION MAP**	**FIGURE 1-1**

SECTION 2
PROPOSED IMPROVEMENTS

2.1 PROJECT DESCRIPTION

US 301 is a four-lane divided north-south arterial that connects the cities of Zephyrhills and Dade City. The US 301 roadway provides an important connection to the regional and statewide transportation network linking the Tampa Bay region to the remainder of the state and nation. US 301 is identified as a regional roadway by the West Central Florida Metropolitan Planning Organization's (MPO's) Chairs Coordinating Committee (CCC) and is included in the Regional Roadway Network.

US 301 is designated as an emergency evacuation route and currently operates as an existing truck route. The 2035 Cost Affordable Roadway Plan of the Pasco County MPO Long Range Transportation Plan (LRTP) identifies the need to widen US 301 to six lanes from south of CR 54 to Kossik Road and from US 98 to CR 52A. This PD&E study evaluated the physical, social, cultural, environmental and economic impacts of providing alternative improvements to US 301 that included, but were not limited to, a No-Build Alternative, Build alternatives that considered the widening of US 301 to six lanes from south of CR 54 to US 98 Bypass, Transportation System Management (TSM) improvements and median modifications to improve safety and mobility throughout the limits of the PD&E study.

2.2 PURPOSE AND NEED

Motorists in Pasco County are faced with increased traffic congestion and delays as demand from the County's growth continues to place pressure on the existing transportation system. To assess the effects of continued growth along US 301, the FDOT initiated a PD&E Study that evaluates the impacts of providing alternative roadway capacity improvements to the facility. The purpose of this PD&E Study is to develop a plan to accommodate future growth in an organized manner and to maintain mobility along a regionally significant transportation corridor. The need for improvements along US 301 within the study limits was developed based on the evaluation of the following criteria:

- Existing and future quality of traffic operations along US 301 assuming the existing roadway conditions.
- traffic safety conditions for the time period between the years 2003 and 2007,
- consistency with local government plans, and

- projected future socioeconomic growth of Pasco County.

2.3 PROJECT SEGMENTATION

The project was divided in segments to effectively assess and compare the impacts of each alternative within the different geographical areas of the study corridor. After considering the existing right-of-way (ROW) along US 301, existing traffic volumes and land use patterns, and the locations of cross streets, the project was divided into four study segments. These segments are illustrated on **Figure 1-1** and can be described as follows:

- Segment A: South of CR 54 to Kossik Road, a distance of 2.0 miles,
- Segment B: Kossik Road to US 98, a distance of 3.5 miles,
- Segment C: US 98 to Morningside Drive, a distance of 1.3 miles, and
- Segment D: Morningside Drive to US 98 Bypass, a distance of 0.8 miles.

2.4 BUILD ALTERNATIVE SELECTION

An Alternatives Public Workshop was held on June 3, 2009. The purpose of the workshop was to solicit public input regarding the proposed alternatives for the project. On July 16, 2009 the FDOT determined that the recommended alternative, a Build Alternative, would be presented at the Study's Public Hearing (in addition to the No Build Alternative). The recommended alternative selection was based on the results of the project's impact evaluation, public feedback received during the public involvement process, and a need to be consistent with area transportation plans.

The Recommended Build Alternative presented at the Public Hearing on November 3, 2009 consisted of the six-lane widening of US 301 in Segment A only (south of CR 54 to north of Kossik Road). The analysis indicated that the projected traffic volumes do not support the need to widen US 301 to six lanes in Segments B and C. In Segment D, the six-lane widening is not planned to be implemented for the following reasons: 1) Segment D is a relatively short segment (0.8 miles) with acute ROW constraints (only 100 feet of ROW) thus making the required ROW acquisition costs high; 2) the proposed six-lane widening is currently not identified in the 2035 Cost Affordable Roadway Plan of the Pasco County LRTP, 3) and there are capacity constrained routes at the northern terminus of the Study limits that are not planned for improvement in any current transportation plans. Therefore, these routes would be unable to accommodate the additional lanes.

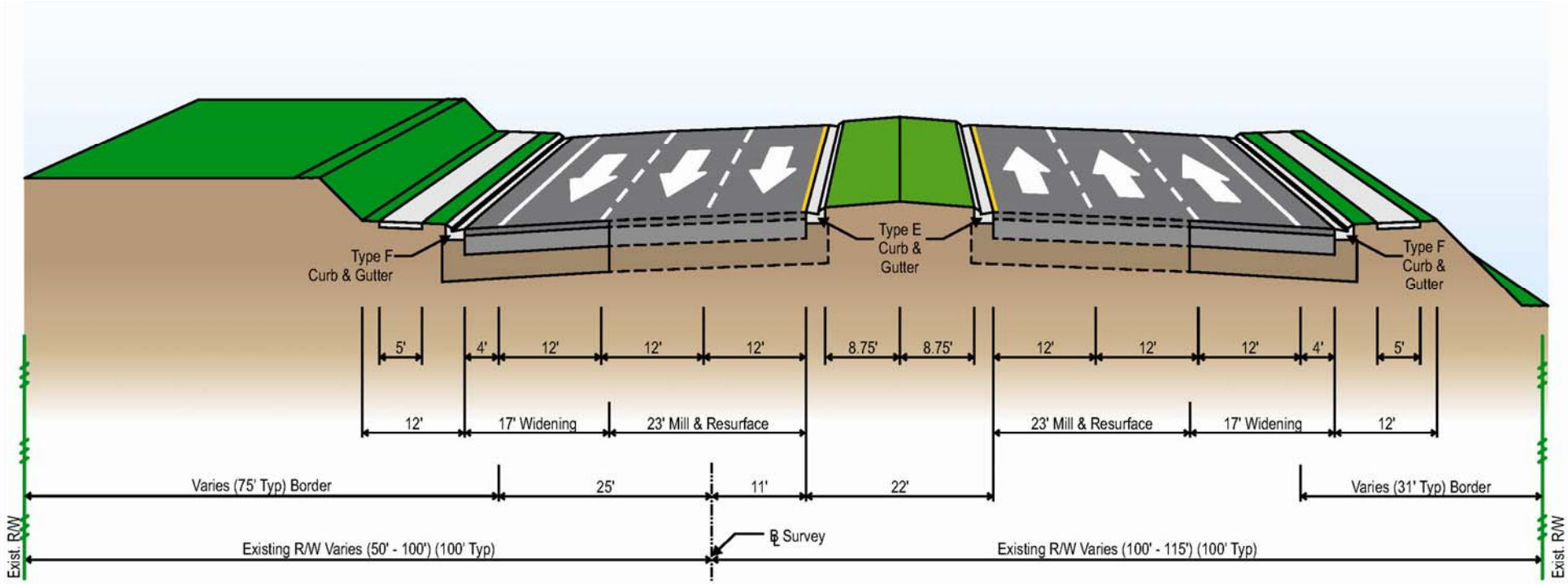
The typical section that was recommended for Segment A of the project corridor is described as a low speed urban typical section. This typical section was selected as the recommended Build Alternative because it would minimize the overall ROW acquisition cost associated with implementing the project. The recommended typical section for Segment A is illustrated on **Figure 2-1**.

As stated above, the Recommended Build Alternative would widen US 301 to a six-lane roadway in Segment A (from south of CR 54 to north of Kossik Road) only and maintain the existing four-lanes on US 301 in Segments B through D (from north of Kossik Road to US 98 Bypass). Notably, the section of US 301 between Kossik Road and Wire Road will be used to transition the recommended six-lanes into the existing four-lane roadway. Further, to minimize traffic congestion and improve safety north of Kossik Road, TSM improvements were also recommended. The TSM improvements are to include, but not be limited to, median modifications on US 301 from north of Kossik Road to US 98 Bypass and turn lane improvements at four signalized intersections: Centennial Road, CR 52A, Morningside Drive and US 98 Bypass.

The Recommended Build Alternative developed for the US 301 PD&E Study is required to be consistent with the Pasco County Metropolitan Planning Organization's (MPO) Cost Affordable Roadway Long Range Transportation Plan (LRTP). The Recommended Build Alternative presented at the Study's Public Hearing on November 4, 2009 was consistent with the Pasco MPO 2025 Cost Affordable LRTP. Subsequent to the Public Hearing, the Pasco County MPO adopted their 2035 LRTP on December 10, 2009. The adopted 2035 Cost Affordable Roadway Plan contains an additional roadway segment on US 301 between US 98 and CR 52A where six-lanes are proposed in addition to the six-lane roadway section on US 301 from south of CR 54 to Kossik Road.

Therefore, the Recommended Build Alternative consists of widening US 301 to a six-lane roadway facility in Segment A (from south of CR 54 to north of Kossik Road) and a portion of Segment C from south of US 98 to CR 52A. The section of US 301 between Kossik Road and Wire Road will be used to transition the proposed six-lanes in Segment A into the existing four-lane roadway. Within the portion of Segment C from south of US 98 to CR 52A, the section of US 301 from north of Musselman Road to US 98 will be used to transition the proposed six-lanes in Segment C into the existing four-lane roadway. Elsewhere within the study limits, the existing four-lanes on US 301 in Segments B-D (from north of Kossik Road to US 98 Bypass) will remain as is. The recommended typical section for the six-lane widening is a low-speed urban typical section within Segment A (shown in **Figure 2-1**), and a rural typical section within the portion of Segment C between US 98 to and CR 52A (shown in

Figure 2-2). To minimize traffic congestion and improve safety north of Kossik Road, TSM improvements will be provided at three signalized intersections: Centennial Road, Morningside Drive, and US 98 Bypass. The previously recommended TSM improvements at CR 52A would be constructed as part of the widening in the portion of Segment C. A summary of the evaluation of noise impacts related to the revised Recommended Build Alternative is provided in the following sections.

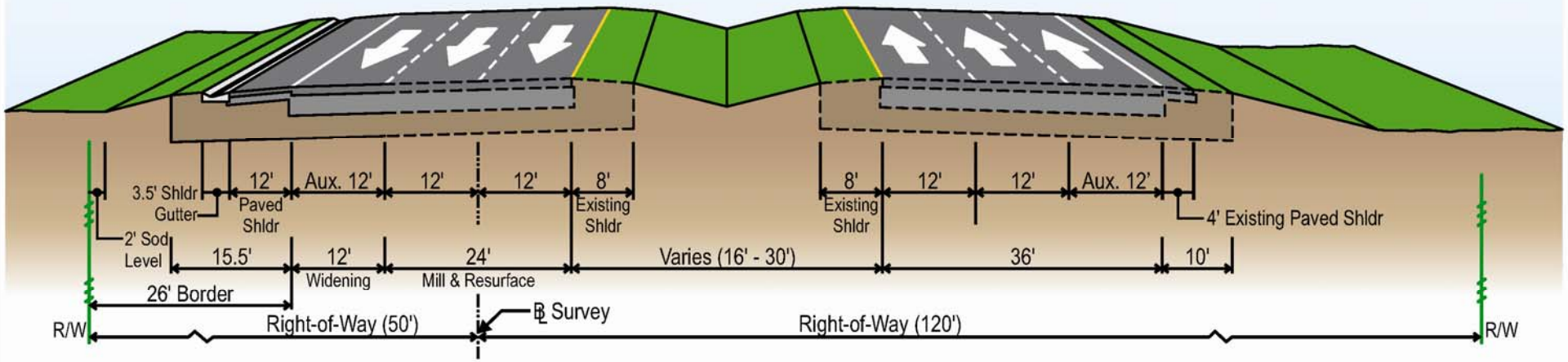


Design Speed = 45 mph

US 301 (SR 39)
PD&E Study
from South of CR 54
(Eiland Boulevard)
to US 98 Bypass (SR 533)

ROADWAY TYPICAL SECTION
FROM SOUTH OF CR 54 (EILAND BOULEVARD) TO
NORTH OF KOSSIK ROAD
SEGMENT A - RECOMMENDED ALTERNATIVE

FIGURE 2-1



Design Speed = 55 mph

US 301 (SR 39) PD&E Study from South of CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**RECOMMENDED ROADWAY TYPICAL SECTION FROM US 98 (SR 700) TO CR 52A (CLINTON AVENUE)**	**FIGURE 2-2**

SECTION 3
TRAFFIC NOISE ANALYSIS

3.1 METHODOLOGY

The traffic noise analysis was performed following FDOT procedures (PD&E Manual, Chapter 17-Noise, April 18, 2007). These procedures provide the means for projects to comply with Part 772 of Title 23 of the Code of Federal Regulations (23 CFR 772)--Procedures for Abatement of Highway Traffic Noise and Construction Noise.

The traffic noise levels in this NSR were predicted using the FHWA's computer model for the prediction and analysis of highway traffic noise using the Traffic Noise Model (TNM - Version 2.5). The TNM propagates sound energy, in 1/3 octave bands, between highways and nearby receivers taking the intervening ground's acoustical characteristic and topography, and intervening structures (i.e., buildings) into consideration.

The noise levels discussed in this NSR are also expressed in decibels (dB) on the A-weighted scale (dBA). The A-weighted scale is widely used in environmental studies because this scale closely resembles the non-linearity of human hearing and correlates well with human perceptions of noise. All sound and traffic noise levels are reported as one hour equivalent levels (L_{Aeq1h}), values which theoretically contain the same amount of acoustic energy as an actual time-varying A-weighted sound level over a period of one hour.

The existing and forecast future traffic data used in the TNM to predict noise levels within the project limits are presented in **Table 3-1** (and Appendix A of this report). Because traffic noise levels are low when traffic volumes are low (level-of-service (LOS) "A" or "B") or when traffic is so congested that movement is slow (LOS "D", "E", or "F"), the maximum hourly noise level occurs between these two conditions—when the traffic service volume is at the maximum LOS "C" volume (to be conservative, the analysis assumes motor vehicles are traveling at the posted speed regardless of the forecast LOS). The motor vehicle volumes (assumed number of automobiles, trucks, buses, and motorcycles) used in the PD&E traffic noise analysis for the US 301 project represent LOS "C" operating conditions because the forecast demand volumes for the roadway are greater than the roadway's design LOS C volumes (existing, No-Build, and Build).

Table 3-1
Noise Analysis Traffic Data

Segment	Scenario	No. of Lanes	K Factor (%)	D Factor (%)	LOS C Traffic Data						Posted Speed (mph)
					Direction	Cars	MT	HT	Buses	MC	
South of CR 54 to Kossik Rd	Existing	4	9.4	56	Peak	1238	19	20	0	7	45
					Off-Peak	973	15	15	0	6	
	No-Build	4	9.4	56	Peak	1238	19	20	0	7	
					Off-Peak	973	15	15	0	6	
	Build	6	9.4	56	Peak	1929	29	30	0	12	
					Off-Peak	1515	23	24	0	9	

K Factor = peak hour factor D Factor = directional factor MT = medium trucks HT = heavy trucks MC = Motorcycle
Source: HDR, Inc.

3.2 NOISE SENSITIVE SITES

Noise-sensitive sites are defined as properties where frequent human use occurs and where a lowered noise level would be of benefit. When predicted traffic noise levels approach, meet or exceed the NAC or, when predicted noise levels increase substantially when compared to existing levels, the FHWA requires that noise abatement measures be considered. The FDOT defines “approach” to be within 1 dBA of FHWA’s NAC and considers an increase to be substantial if predicted future traffic noise levels with proposed roadway improvements increase traffic noise 15 dBA or more when compared to existing levels. Notably, increases of 15 dBA are not typically predicted to occur for roadway projects that involve widening an existing roadway.

Within the project corridor there are 97 noise sensitive sites that have the potential to be impacted by traffic noise with the proposed improvements to US 301. The locations of these sites are illustrated on graphics provided in **Appendix A** of this NSR. Notably, all of the evaluated sites are located in Segment A between the area south of CR 54 to north of Kossik Road. There are no noise sensitive sites within the section of Segment C that would also be improved. The sites with Segment A are all single-family residences located within close proximity to US 301. Twenty-seven of the residences are located in Pinecrest Mobile Home Park (MHP), 12 are located in Parkview Acres, eight are located in Wood Dale, 44 are located in Spanish Trails Village, and six are located in Brightside MHP.

All of the residences were evaluated as Activity Category “B” (see **Table 1-1**). As such, the residences were determined to be affected by traffic noise levels if predicted exterior traffic noise levels were 66 dBA or more (within one dBA of the FHWA NAC for an Activity Category “B” land use), or if traffic noise levels were predicted to increase 15 dBA or more from existing levels. .

3.3 MEASURED NOISE LEVELS

To provide an indication of the accuracy of the TNM to be used in predicting traffic noise levels for this project, the computer model was validated using measured sound levels. The measured levels were obtained using a calibrated Larson Davis sound level meter. During each measurement period, traffic volumes, vehicle mix, vehicle speeds, background sounds, and meteorological conditions were recorded. Following procedures in the FDOT PD&E Manual, if the TNM-predicted and field measured levels are within 3 dBA of one another, the TNM can be considered to have an acceptable level of accuracy for existing conditions.

As shown in **Table 3-2**, the measured versus modeled values are within the acceptable range. Additional details related to the field measurements are provided in the Appendix B.

Table 3-2
TNM Validation Results[a]

Location	Test Period	Noise Level (dBA)			Validates?
		Measured	Modeled	Difference	
Spanish Trails Village	1	62.1	62.7	0.6	Yes
	2	63.5	62.7	0.8	Yes
	3	62.9	62.3	0.6	Yes

[a] Sound level measurements were performed at two locations within the project corridor prior to the Build Alternative evaluated in this NSR being selected as the Recommended Alternative. The second location was north of Kossik Road. Because the Recommended Alternative would not involve improvements north of Kossik Road that would change future traffic noise levels, the sound level data is not reported in this table.

3.4 OUTDOOR SOUND PROPAGATION

There are numerous factors that affect the propagation of sound in the outdoors from a source (roadway) to a receiver (listener). These factors include meteorological conditions, the amount and type of vegetation between the source and the receiver, the existence of intervening structures, the elevation of the source and/or the receiver, the surrounding topography and the type of ground surface between the source and the receiver. The attenuation (reduction) of sound levels due to intervening structures occurs when a receiver's view (line-of-sight) is obstructed or partially obstructed by dense objects (i.e., rows of buildings, residences, and barriers). The attenuation provided by a row of buildings depends on the number of buildings, the length and height of the buildings, and the amount of space between the buildings.

Because there are no topographical features between US 301 and the evaluated noise sensitive sites that would affect predicted traffic noise levels (e.g., ponds, heavily forested areas, walls. etc.), no such features were considered in the analysis.

3.5 RESULTS OF THE ANALYSIS

Table 3-3 presents the predicted existing traffic noise levels and the future traffic noise levels with and without the proposed improvements to US 301. As shown, with the existing roadway and no-build condition, exterior traffic noise levels are predicted to range from 56.7 to 65.2 dBA. Because the motor vehicle data used in the traffic noise analysis was the same for the existing condition and for future conditions with the No-Build Alternative, future (year 2035) traffic noise levels with the No-Build Alternative are the same as the levels predicted for the existing condition.

With the proposed improvements, exterior traffic noise levels are predicted to range from 60.0 to 67.9 dBA—increases from existing levels ranging from 2.7 dBA to 3.6 dBA. Therefore, based on the results of the analysis, traffic noise would not substantially exceed existing levels with the proposed improvements (i.e., increase 15 dBA or more). However, traffic noise levels are predicted to approach or exceed the NAC at 41 of the evaluated residences. Nine of the residences are located in Pinecrest MHP, four are located in Parkview Acres, four are located in Wood Dale, 20 of the residences are located in Spanish Trails Village, and four are located in Brightside MHP.

Table 3-3
Predicted Traffic Noise Level

Location	ID	No. of Dwelling Units	Existing/ No-Build	Build	Increase from Existing	Approaches, Meets, or Exceeds NAC?
Pinecrest MHP	1	1	62.3	65.1	2.8	
	2	1	62.2	65.0	2.8	
	3	1	62.5	65.3	2.8	
	4	1	63.3	66.1	2.8	Yes
	5	1	64.3	67.1	2.8	Yes
	6	1	63.6	66.3	2.7	Yes
	7	1	63.6	66.3	2.7	Yes
	8	1	64.5	67.2	2.7	Yes
	9	1	64.4	67.1	2.7	Yes
	10	1	63.8	66.6	2.8	Yes
	11	1	63.6	66.3	2.7	Yes
	12	1	63.2	65.9	2.7	
	13	1	63.0	65.7	2.7	
	14	1	63.6	66.4	2.8	Yes
	15	1	58.1	61.1	3.0	
	16	1	58.2	61.3	3.1	
	17	1	58.7	61.5	2.8	
	18	1	59.0	61.9	2.9	
	19	1	58.9	61.9	3.0	
	20	1	58.9	62.0	3.1	
	21	1	59.4	62.4	3.0	

Table 3-3 (Cont.)
Predicted Traffic Noise Level

Location	ID	No. of Dwelling Units	Existing/ No-Build	Build	Increase from Existing	Approaches, Meets, or Exceeds NAC?
	22	1	59.0	62.1	3.1	
	23	1	58.9	62.1	3.2	
	24	1	58.7	61.9	3.2	
	25	1	58.6	61.9	3.3	
	26	1	58.6	61.9	3.3	
	27	1	58.4	61.7	3.3	
Parkview Acres	1	1	64.8	67.5	2.7	Yes
	2	1	65.2	67.9	2.7	Yes
	3	1	64.0	66.8	2.8	Yes
	4	1	64.8	67.5	2.7	Yes
	5	1	62.0	64.8	2.8	
	6	1	61.4	64.2	2.8	
	7	1	60.6	63.7	3.1	
	8	1	60.1	63.3	3.2	
	9	1	59.6	62.7	3.1	
	10	1	58.6	61.7	3.1	
	11	1	57.5	60.6	3.1	
	12	1	56.7	60.0	3.3	
Wood Dale	1	1	64.2	67.1	2.9	Yes
	2	1	63.9	66.8	2.9	Yes
	3	1	63.9	66.9	3.0	Yes
	4	1	63.9	66.8	2.9	Yes
	5	1	61.9	65.0	3.1	
	6	1	59.6	63.0	3.4	
	7	1	59.1	62.6	3.5	
	8	1	58.1	61.7	3.6	
Spanish Trails Village	1	1	64.7	67.7	3.0	Yes
	2	1	64.1	67.0	2.9	Yes
	3	1	64.2	67.2	3.0	Yes
	4	1	64.2	67.2	3.0	Yes
	5	1	64.3	67.2	2.9	Yes
	6	1	64.2	67.2	3.0	Yes
	7	1	63.8	66.8	3.0	Yes
	8	1	64.2	67.1	2.9	Yes
	9	1	63.5	66.5	3.0	Yes
	10	1	64.0	66.9	2.9	Yes
	11	1	63.8	66.6	2.8	Yes
	12	1	64.0	66.8	2.8	Yes
	13	1	63.9	66.8	2.9	Yes
	14	1	64.4	67.4	3.0	Yes
	15	1	64.0	66.9	2.9	Yes
	16	1	63.6	66.5	2.9	Yes

Table 3-3 (Cont.)
Predicted Traffic Noise Level

Location	ID	No. of Dwelling Units	Existing/ No-Build	Build	Increase from Existing	Approaches, Meets, or Exceeds NAC?
	17	1	63.7	66.7	3.0	Yes
	18	1	63.7	66.7	3.0	Yes
	19	1	64.2	67.2	3.0	Yes
	20	1	64.3	67.3	3.0	Yes
	21	1	59.9	63.1	3.2	
	22	1	58.6	61.8	3.2	
	23	1	59.2	62.5	3.3	
	24	1	59.7	63.1	3.4	
	25	1	59.8	63.2	3.4	
	26	1	59.3	62.6	3.3	
	27	1	59.7	63.1	3.4	
	28	1	59.8	63.2	3.4	
	29	1	59.9	63.3	3.4	
	30	1	59.4	62.7	3.3	
	31	1	59.9	63.3	3.4	
	32	1	59.9	63.2	3.3	
	33	1	59.4	62.8	3.4	
	34	1	59.8	63.1	3.3	
	35	1	59.7	63.0	3.3	
	36	1	60.1	63.4	3.3	
	37	1	59.5	62.7	3.2	
	38	1	59.5	62.8	3.3	
	39	1	59.6	63.0	3.4	
	40	1	59.6	63.0	3.4	
	41	1	59.0	62.2	3.2	
	42	1	59.4	62.7	3.3	
	43	1	59.1	62.5	3.4	
	44	1	60.7	63.9	3.2	
Brightside MHP	1	1	64.6	67.5	2.9	Yes
	2	1	63.6	66.3	2.7	Yes
	3	1	63.8	66.5	2.7	Yes
	4	1	64.4	67.3	2.9	Yes
	5	1	62.2	65.1	2.9	
	6	1	59.7	62.9	3.2	

SECTION 4
NOISE ABATEMENT MEASURES

As previously stated, noise abatement measures are considered when predicted traffic noise levels approach or exceed the NAC. The measures considered for US 301 were traffic management, alternative roadway alignment, property acquisition, and noise barriers. The following discusses the feasibility (acoustics and engineering considerations) and reasonableness (number of noise-sensitive sites benefited, absolute noise levels, cost, etc.) of the measures.

4.1 TRAFFIC MANAGEMENT

Traffic management measures that limit motor vehicle speeds and reduce volumes can be effective noise mitigation measures. However, these measures also negate a project's ability to accommodate forecast traffic volumes. As such, reducing the speed limit and restricting certain vehicles from the roadway would negate the project's ability to handle forecast traffic volumes.

4.2 ALTERNATIVE ROADWAY ALIGNMENT

The residences affected by traffic noise with the proposed improvements are located in close proximity to US 301. As such, significant shifts, that would greatly increase the cost of the improvements to US 301, would be required to affect a substantial change in the level of predicted noise.

4.3 PROPERTY ACQUISITION

Property acquisition is not considered to be a reasonable method of abating traffic noise.

4.4 NOISE BARRIERS

Noise barriers reduce sound levels by blocking the path of the sound between the source (roadway) and the receiver (listener). In order to effectively reduce traffic noise, a noise barrier must be relatively long, continuous (without intermittent openings), and of sufficient height to break the line-of-sight between the source and the receiver. Following procedures outlined in FDOT's PD&E Manual, the minimum requirements for a noise barrier to be considered feasible and economically reasonable are:

- The barrier must provide at least a five dBA reduction in traffic noise with a design goal of 10 dBA or more desired and

- the barrier should cost no more than $42,000 per benefited noise sensitive site. For a receiver to be considered benefited, the barrier must provide at least a five dBA reduction in noise. The current estimated cost to construct a noise barrier (materials and labor) is $30.00 per square foot ($ft^2$).

Additional factors to be considered when evaluating noise barriers as a potential noise abatement measure include the feasibility of constructing a barrier at the desired location, driver/pedestrian sight distance (safety), ingress and egress requirements to and from affected properties, right-of-way requirements including access rights/easements for construction and/or maintenance, drainage, land use stability (are the noise sensitive sites likely to remain for an indefinite period of time), antiquity (the amount of development that occurred before the date of public knowledge for a project), the desires of the affected property owners to have a barrier adjacent to their property, and aesthetics.

The TNM accounts for the shielding effect of a noise barrier, the diffraction of sound over a noise barrier, and the effects of the ground between a barrier and a receiver (i.e., sound absorption). The net effect of the barrier shielding is referred to as "insertion loss". Insertion loss is the difference in the sound level before and after installation of a barrier.

The following presents the results of a noise barrier analysis. The analysis was performed to determine if noise barriers would provide at least the minimum required insertion loss at a cost at or below the cost reasonable guideline. Barriers were evaluated for each of the sites predicted to be affected by traffic noise with the proposed improvements.

4.4.1 Pinecrest MHP and Parkview Acres

Pinecrest MHP and Parkview Acres are contiguous neighborhoods located north of Geiger Road and west of US 301 (see Sheets 1 and 2 in Appendix A of this NSR). Because the neighborhoods are contiguous, the noise barrier analysis was conducted for each neighborhood individually and in combination. **Table 4-1** presents the results of the noise barrier analysis for the nine affected residences located within the Pinecrest MHP. As shown, at heights of 18 to 22 feet, a barrier would reduce predicted traffic noise levels by at least five dBA at eight of the nine affected residences. At these heights, the cost per benefited noise sensitive site (ranging from $14,918 to $16,733 per benefited site) would be less than the FDOT's cost reasonable guideline ($42,000 per benefited site). Notably, the minimum required five dBA reduction in traffic noise levels could not be achieved at one of the nine affected sites regardless of barrier height.

Because a barrier is predicted to provide most of the affected residences with a reduction in traffic noise of at least five dBA, and the cost of the barrier would be below the cost reasonable guideline, the barrier was evaluated further. The results of the evaluation are provided in **Table 4-2**. As shown, it appears that a noise barrier could be located outside of the clear zone for US 301. The location of the proposed barrier is depicted on the graphics in Appendix A of this NSR.

Table 4-3 presents the results of the noise barrier analysis for the 4 affected residences located within the Parkview Acres neighborhood. A noise barrier at this location was analyzed in two segments to accommodate an entrance to the neighborhood that is located at Easy Avenue. As shown, at heights of 10 to 22 feet, a barrier would reduce predicted traffic noise levels by at least five dBA at two of the four affected residences. However, regardless of height, the cost per benefited receiver is greater than the cost reasonable guideline (the lowest cost per benefited site is an estimated $98,400). As such, although feasible, a noise barrier is not considered to be a reasonable noise abatement measure. The location of the evaluated is depicted on the graphics in Appendix A of this NSR.

Table 4-4 presents the results of the noise barrier analysis for the 13 affected residences located within both Pinecrest MHP and Parkview Acres. A noise barrier at this location was also analyzed in two segments to accommodate the Easy Avenue entrance to Parkview Acres. As shown, at heights of 16 to 22 feet, a barrier would reduce predicted traffic noise levels by at least five dBA at 12 of the 13 affected residences. At these heights, the cost per benefited noise sensitive site (ranging from $14,119 to $18,912 per benefited site) would be less than the FDOT's cost reasonable guideline ($42,000 per benefited site). Notably, the minimum required five dBA reduction in traffic noise levels could not be achieved at one of the 13 affected sites at any barrier height due to the sites location with respect to the barrier opening at Easy Avenue.

Because a contiguous barrier for Pincreast MHP and Parkview Acres would provide most of the affected residences with a reduction in traffic noise of at least five dBA, and the cost of the barrier would be below the cost reasonable guideline, the barrier was evaluated further. The results of the evaluation are provided in **Table 4-5**.

Table 4-1
Noise Barrier Results – Pinecrest MHP

Barrier Height (ft)	Barrier Length (ft)[d]	Insertion Loss (IL-dBA) for Affected Noise Sensitive Sites						Avg IL of Affected/ Benefited	Number of Benefited Noise Sensitive Sites			Total Estimated Barrier Cost[b]	Cost Per Benefited Noise Sensitive Site	Cost Reasonable[c] (Yes/No)
		5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 or >		Affected	Other[a]	Total			
8	485	2	0	0	0	0	0	5.3	2	0	2	$116,400	$58,200	No
10	474	3	2	0	0	0	0	5.9	5	0	5	$142,200	$28,440	Yes
12	496	4	1	1	1	0	0	6.4	7	7	14	$178,560	$12,754	Yes
14	463	3	2	0	2	0	0	6.6	7	7	14	$194,460	$13,890	Yes
16	453	3	1	1	1	1	0	6.8	7	8	15	$217,440	$14,496	Yes
18	442	3	2	1	1	1	0	6.8	8	8	16	$238,680	$14,918	Yes
20	442	3	1	2	1	0	1	7.1	8	10	18	$265,200	$14,733	Yes
22	431	3	1	2	1	0	1	7.1	8	9	17	$284,460	$16,733	Yes

[a] Other = Receivers not impacted by the project (traffic noise levels less than 66 dBA) but benefited by a noise barrier.
[b] Calculated at $30.00 per square foot.
[c] Barriers are considered cost reasonable if the cost per benefited receiver is less than $42,000.
[d] Barrier lengths are optimized at each height to benefit the maximum number of affected noise sensitive sites.

Table 4-2
Additional Barrier Considerations – Pinecrest MHP

Evaluation Criteria	Comment
1. Relationship of future levels to the abatement criteria	With the proposed improvements to US 301, the eight affected receivers that would be benefited by the barrier are predicted to experience traffic noise levels ranging from 66.1 to 67.2 dBA.
2. Amount of noise reduction	The results of the barrier analysis indicate that the average amount of noise reduction at the affected noise sensitive sites would range from 5.3 to 7.1 dBA and that from two to eight of the nine affected receivers would be benefited.
3. Safety	The barrier would be located outside of the clear zone.
4. Community desires	The desires of the mobile home park owner will be solicited as part of the ongoing public involvement process.
5. Accessibility	There are no accessibility issues for residences within the mobile home park.
6. Land use stability	Land use in the area is residential. It is expected that this land use will remain in the future.
7. Local controls	Pasco County does not have any regulations related to traffic noise.
8. Views of local officials with jurisdiction	The views of local officials will be solicited as part of the ongoing public involvement process.
9. Antiquity	The mobile home park was constructed prior to the date of public knowledge for the improvements to US 301.
10. Constructability	It is anticipated that the barrier could be constructed using routine construction methods. This item will be reviewed in greater detail during the design phase of the project.
11. Maintainability	There would be adequate right-of-way for maintenance purposes. This item will be reviewed in greater detail during the design phase of the project.
12. Aesthetics	The aesthetics of the noise barrier will be determined by the District in consultation with the property owner(s).
13. ROW needs including access rights, easements for construction and/or maintenance, and additional land	The noise barrier would be located as close to the right-of-way line as possible (five feet or less) within the proposed right-of-way for the project.
14. Cost	The estimated total cost of a “reasonable” noise barrier ranges from $142,200 to $284,460. The estimated cost per benefited noise sensitive site ranges from $12,754 to $28,440.
15. Utilities	It does not appear that the barrier would pose any conflicts with existing/planned utilities. This item will be reviewed in greater detail during the design phase of the project.
16. Drainage	It is not anticipated that the barrier would impede/restrict drainage in the area. This item will be reviewed in greater detail during the design phase of the project.
17. Special land use considerations	None.
18. Other environmental considerations	None.

Table 4-3
Noise Barrier Results – Parkview Acres

Barrier Height (ft)	Barrier Length (ft)[d]	Insertion Loss (IL-dBA) for Affected Noise Sensitive Sites						Avg IL of Affected/ Benefited	Number of Benefited Noise Sensitive Sites			Total Estimated Barrier Cost[b]	Cost Per Benefited Noise Sensitive Site	Cost Reasonable[c] (Yes/No)
		5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 or >		Affected	Other[a]	Total			
8	420	0	0	0	0	0	0	<5	0	0	0	--	--	--
10	328	1	1	0	0	0	0	5.6	2	0	2	$98,400	$49,200	No
12	318	1	1	0	0	0	0	5.8	2	0	2	$114,480	$57,240	No
14	318	1	1	0	0	0	0	6.1	2	0	2	$133,560	$66,780	No
16	308	1	0	1	0	0	0	6.1	2	0	2	$147,840	$73,920	No
18	308	1	0	1	0	0	0	6.3	2	0	2	$166,320	$83,160	No
20	308	1	0	1	0	0	0	6.4	2	0	2	$184,800	$92,400	No
22	308	1	0	1	0	0	0	6.4	2	0	2	$203,280	$101,640	No

[a] Other = Receivers not impacted by the project (traffic noise levels less than 66 dBA) but benefited by a noise barrier.
[b] Calculated at $30.00 per square foot.
[c] Barriers are considered cost reasonable if the cost per benefited receiver is less than $42,000.
[d] Barrier lengths are optimized at each height to benefit the maximum number of affected noise sensitive sites.

Table 4-4
Noise Barrier Results – Pinecrest MHP and Parkview Acres

Barrier Height (ft)	Barrier Height (ft)[d]	Insertion Loss (IL-dBA) for Affected Noise Sensitive Sites						Avg IL of Affected/ Benefited	Number of Benefited Noise Sensitive Sites			Total Estimated Barrier Cost[b]	Cost Per Benefited Noise Sensitive Site	Cost Reasonable[c] (Yes/No)
		5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 or >		Affected	Other[a]	Total			
8	762	3	1	0	0	0	0	5.8	4	2	6	$182,880	$30,480	Yes
10	894	3	4	3	0	0	0	6.4	10	14	24	$268,200	$11,175	Yes
12	906	3	2	2	4	0	0	7.1	11	16	27	$326,160	$12,080	Yes
14	874	3	1	2	3	2	0	7.5	11	17	28	$367,080	$13,110	Yes
16	853	4	0	2	3	2	1	7.6	12	17	29	$409,440	$14,119	Yes
18	842	4	0	1	3	2	2	7.9	12	17	29	$454,680	$15,679	Yes
20	842	4	0	1	2	3	2	8.2	12	17	29	$505,200	$17,421	Yes
22	831	4	0	1	2	2	3	8.4	12	17	29	$548,460	$18,912	Yes

[a] Other = Receivers not impacted by the project (traffic noise levels less than 66 dBA) but benefited by a noise barrier.
[b] Calculated at $30.00 per square foot.
[c] Barriers are considered cost reasonable if the cost per benefited receiver is less than $42,000.
[d] Barrier lengths are optimized at each height to benefit the maximum number of affected noise sensitive sites.

4.4.2 Wood Dale

Table 4-6 presents the results of the noise barrier analysis for the four affected residences located within the Wood Dale. Wood Dale is located north of CR 54 and west of US 301 (see Sheet 3 in Appendix A of this NSR). A noise barrier at this location was analyzed in two segments to accommodate the entrance to the community. As shown, at a height of 22 feet, a barrier would reduce predicted traffic noise levels by at least five dBA at three of the four affected residences. However, regardless of height, the cost per benefited receiver is greater than the cost reasonable guideline (the lowest cost per benefited site is an estimated $48,300). As such, although feasible, a noise barrier is not considered to be a reasonable noise abatement measure.

4.4.3 Spanish Trails Village

Table 4-7 presents the results of the noise barrier analysis for the 20 affected residences in the Spanish Trails Village. Spanish Trails Village is located north of Daughtery Road and west of US 301 (see Sheets 5 and 6 in Appendix A). A noise barrier at this location was analyzed in two segments to accommodate the entrance to the community (i.e., Spanish Trails Boulevard). As shown, at heights of 14 to 22 feet, a barrier would reduce predicted traffic noise levels by at least five dBA at 16 of the 20 affected residences. At these heights, the cost per benefited noise sensitive site (ranging from $14,852 to $23,338 per benefited site) would be less than the FDOT's cost reasonable guideline ($42,000 per benefited site). Notably, the minimum required five dBA reduction in traffic noise levels could not be achieved at four of the 20 affected sites at any barrier height. The four sites are located at the ends of the barrier or directly adjacent to the opening in the barrier that would accommodate the entrance to the community.

Because a barrier is predicted to provide most of the affected residences with a reduction in traffic noise of at least five dBA, and the cost of the barrier would be below the cost reasonable guideline, the barrier was evaluated further. The results of the evaluation are provided in **Table 4-8**. As shown, there are existing gas and power lines in the area where a noise barrier could be constructed. The location of these utilities and their impact on construction of a noise barrier for the affected residences will be evaluated during the design phase of the US 301 project. The location of the evaluated is depicted on the graphics in Appendix A of this NSR.

4.4.4 Brightside MHP

Table 4-9 presents the results of the noise barrier analysis for the four affected residences located in Brightside MHP. Brightside MHP is located in the northwest quadrant of the Pretty Pond Road and US 301 intersection (see Sheet 7 in Appendix A). A noise barrier at this location was analyzed in three

segments to accommodate the multiple entrances to the community. As shown, at heights of 14 to 22 feet, a barrier would reduce predicted traffic noise levels by at least five dBA at one of the four affected residences. However, regardless of height, the cost per benefited receiver is greater than the cost reasonable guideline (the lowest cost per benefited site is an estimated $107,100). As such, although feasible, a noise barrier is not considered to be a reasonable noise abatement measure.

Table 4-5
Additional Barrier Considerations –Pinecrest MHP and Parkview Acres

Evaluation Criteria	Comment
1. Relationship of future levels to the abatement criteria	With the proposed improvements to US 301, the 12 affected receivers that would be benefited by the barrier are predicted to experience traffic noise levels ranging from 66.1 to 67.5 dBA.
2. Amount of noise reduction	The results of the barrier analysis indicate that the average amount of noise reduction at the affected noise sensitive sites would range from 5.8 to 8.4 dBA and that from four to 12 of the 13 affected receivers would be benefited.
3. Safety	The barrier would be located outside of the clear zone.
4. Community desires	The desires of the property owners will be solicited as part of the ongoing public involvement process.
5. Accessibility	A noise barrier could be designed in two segments to accommodate the entrance roadway to Parkview Acres at Easy Avenue. As such, there would be no accessibility issues for the residences.
6. Land use stability	Land use in the area is residential. It is expected that this land use will remain in the future.
7. Local controls	Pasco County does not have any regulations related to traffic noise.
8. Views of local officials with jurisdiction	The views of local officials will be solicited as part of the ongoing public involvement process.
9. Antiquity	The two neighborhoods were constructed prior to the date of public knowledge for the improvements to US 301.
10.Constructability	It is anticipated that the barrier could be constructed using routine construction methods. This item will be reviewed in greater detail during the design phase of the project.
11.Maintainability	There would be adequate right-of-way for maintenance purposes. This item will be reviewed in greater detail during the design phase of the project.
12.Aesthetics	The aesthetics of the noise barrier will be determined by the District in consultation with the property owners.
13.ROW needs including access rights, easements for construction and/or maintenance, and additional land	The noise barrier would be located as close to the right-of-way line as possible (five feet or less) within the proposed right-of-way for the project.
14.Cost	The estimated total cost of a “reasonable” noise barrier ranges from $182,880 to $548,460. The estimated cost per benefited noise sensitive site ranges from $11,175 to $30,480.
15.Utilities	It does not appear that the barrier would pose any conflicts with existing/planned utilities. This item will be reviewed in greater detail during the design phase of the project.
16.Drainage	It is not anticipated that the barrier would impede/restrict drainage in the area. This item will be reviewed in greater detail during the design phase of the project.
17.Special land use considerations	None.
18.Other environmental considerations	None.

Table 4-6
Noise Barrier Results – Wood Dale

Barrier Height (ft)	Barrier Length (ft)[d]	Insertion Loss (IL-dBA) for Affected Noise Sensitive Sites						Avg IL of Affected/ Benefited	Number of Benefited Noise Sensitive Sites			Total Estimated Barrier Cost[b]	Cost Per Benefited Noise Sensitive Site	Cost Reasonable[c] (Yes/No)
		5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 or >		Affected	Other[a]	Total			
8	241	1	0	0	0	0	0	5.0	1	0	1	$57,840	$57,840	No
10	161	1	0	0	0	0	0	5.0	1	0	1	$48,300	$48,300	No
12	153	1	0	0	0	0	0	5.0	1	0	1	$55,080	$55,080	No
14	146	1	0	0	0	0	0	5.0	1	0	1	$61,320	$61,320	No
16	134	1	0	0	0	0	0	5.0	1	0	1	$64,320	$64,320	No
18	134	1	0	0	0	0	0	5.1	1	0	1	$72,360	$72,360	No
20	306	1	0	1	0	0	0	6.2	2	1	3	$183,600	$61,200	No
22	306	2	0	1	0	0	0	5.9	3	1	4	$201,960	$50,490	No

[a] Other = Receivers not impacted by the project (traffic noise levels less than 66 dBA) but benefited by a noise barrier.
[b] Calculated at $30.00 per square foot.
[c] Barriers are considered cost reasonable if the cost per benefited receiver is less than $42,000.
[d] Barrier lengths are optimized at each height to benefit the maximum number of affected noise sensitive sites.

Table 4-7
Noise Barrier Results – Spanish Trails Village

Barrier Height (ft)	Barrier Length (ft)[d]	Insertion Loss (IL-dBA) for Affected Noise Sensitive Sites						Avg IL of Affected/ Benefited	Number of Benefited Noise Sensitive Sites			Total Estimated Barrier Cost[b]	Cost Per Benefited Noise Sensitive Site	Cost Reasonable[c] (Yes/No)
		5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 or >		Affected	Other[a]	Total			
8	1,273	6	0	0	0	0	0	5.4	6	0	6	$305,520	$50,920	No
10	1,273	6	6	3	0	0	0	6.1	15	12	27	$381,900	$14,144	Yes
12	1,273	4	4	5	2	0	0	6.8	15	18	33	$458,280	$13,887	Yes
14	1,273	2	5	3	5	1	0	7.3	16	20	36	$534,660	$14,852	Yes
16	1,273	1	4	3	4	4	0	7.9	16	20	36	$611,040	$16,973	Yes
18	1,273	1	3	2	4	2	4	8.3	16	20	36	$687,420	$19,095	Yes
20	1,273	1	2	3	3	3	4	8.7	16	20	36	$763,800	$21,217	Yes
22	1,273	0	2	4	2	2	6	9.0	16	20	36	$840,180	$23,338	Yes

[a] Other = Receivers not impacted by the project (traffic noise levels less than 66 dBA) but benefited by a noise barrier.
[b] Calculated at $30.00 per square foot.
[c] Barriers are considered cost reasonable if the cost per benefited receiver is less than $42,000.
[d] Barrier lengths are optimized at each height to benefit the maximum number of affected noise sensitive sites.

Table 4-8
Additional Barrier Considerations – Spanish Trails Village

Evaluation Criteria	Comment
1. Relationship of future levels to the abatement criteria	With the proposed improvements to US 301, the 16 affected receivers that would be benefited by the barrier are predicted to experience traffic noise levels ranging from 66.5 to 67.4 dBA.
2. Amount of noise reduction	The results of the barrier analysis indicate that the average amount of noise reduction at the affected noise sensitive sites would range from 5.4 to 9.0 dBA and that from six to 16 of the 20 affected receivers would be benefited.
3. Safety	The barrier would be located outside of the clear zone.
4. Community desires	The desires of the property owners will be solicited as part of the ongoing public involvement process.
5. Accessibility	A noise barrier could be designed in two segments to accommodate the entrance roadway to Spanish Trails Village. As such, there would be no accessibility issues for the residences.
6. Land use stability	Land use in the area is residential. It is expected that this land use will remain in the future.
7. Local controls	Pasco County does not have any regulations related to traffic noise.
8. Views of local officials with jurisdiction	The views of local officials will be solicited as part of the ongoing public involvement process.
9. Antiquity	The neighborhood was constructed prior to the date of public knowledge for the improvements to US 301.
10. Constructability	It is anticipated that the barrier could be constructed using routine construction methods. This item will be reviewed in greater detail during the design phase of the project.
11. Maintainability	There would be adequate right-of-way for maintenance purposes. This item will be reviewed in greater detail during the design phase of the project.
12. Aesthetics	The aesthetics of the noise barrier will be determined by the District in consultation with the property owners.
13. ROW needs including access rights, easements for construction and/or maintenance, and additional land	The noise barrier would be located as close to the right-of-way line as possible (five feet or less) within the proposed right-of-way for the project.
14. Cost	The estimated total cost of a “reasonable” noise barrier ranges from 3812900 to $840,180. The estimated cost per benefited noise sensitive site ranges from $13,887 to $23,338.
15. Utilities	There is a gas line and overhead power lines in the area. The location of these utilities, and their affect on construction of the barrier, should be considered during the design phase of the US 301 project.
16. Drainage	It is not anticipated that the barrier would impede/restrict drainage in the area. This item will be reviewed in greater detail during the design phase of the project.
17. Special land use considerations	None.
18. Other environmental considerations	None.

Table 4-9
Noise Barrier Results – Brightside MHP

Barrier Height (ft)	Barrier Length (ft)[d]	Insertion Loss (IL-dBA) for Affected Noise Sensitive Sites						Avg IL of Affected/ Benefited	Number of Benefited Noise Sensitive Sites			Total Estimated Barrier Cost[b]	Cost Per Benefited Noise Sensitive Site	Cost Reasonable[c] (Yes/No)
		5.0 - 5.9	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9	9.0 - 9.9	10.0 or >		Affected	Other[a]	Total			
8	280	0	0	0	0	0	0	<5	0	0	0	--	--	--
10	280	0	0	0	0	0	0	<5	0	0	0	--	--	--
12	280	0	0	0	0	0	0	<5	0	0	0	--	--	--
14	255	1	0	0	0	0	0	5.1	1	0	1	$107,100	$107,100	No
16	228	1	0	0	0	0	0	5.0	1	0	1	$109,440	$109,440	No
18	208	1	0	0	0	0	0	5.0	1	0	1	$112,320	$112,320	No
20	208	1	0	0	0	0	0	5.0	1	0	1	$124,800	$124,800	No
22	198	1	0	0	0	0	0	5.0	1	0	1	$130,680	$130,680	No

[a] Other = Receivers not impacted by the project (traffic noise levels less than 66 dBA) but benefited by a noise barrier.
[b] Calculated at $30.00 per square foot.
[c] Barriers are considered cost reasonable if the cost per benefited receiver is less than $42,000.
[d] Barrier lengths are optimized at each height to benefit the maximum number of affected noise sensitive sites.

4.5 COMMITMENTS

The FDOT will perform an update to this Noise Study Report during the final design phase for the project. The Noise Study Report Update will be undertaken to confirm that the potential noise barrier locations would remain a reasonable and feasible method of reducing the predicted increase in traffic noise levels for the Pinecrest MHP, Parkview Acres, and Spanish Trails Village due to the proposed widening of US 301. The FDOT will consider construction of these noise barriers as part of the US 301 project contingent on the following:

- The property owners of the Pinecrest MHP, Parkview Acres, and Spanish Trails Village indicate a positive desire for a barrier (including type, height, length, and location) and
- all safety and engineering aspects of a barrier, as they relate to the roadway user and to the adjacent property owners, have been reviewed and approved.

SECTION 5
CONSTRUCTION NOISE AND VIBRATION

Construction of roadway improvements would have a temporary impact on noise-sensitive sites adjacent to the project corridor. Trucks, earth moving equipment, pumps, and generators are construction noise and vibration sources. Construction noise and vibration could be controlled by the contractor's adherence to the FDOT's "Standard Specifications for Road and Bridge Construction".

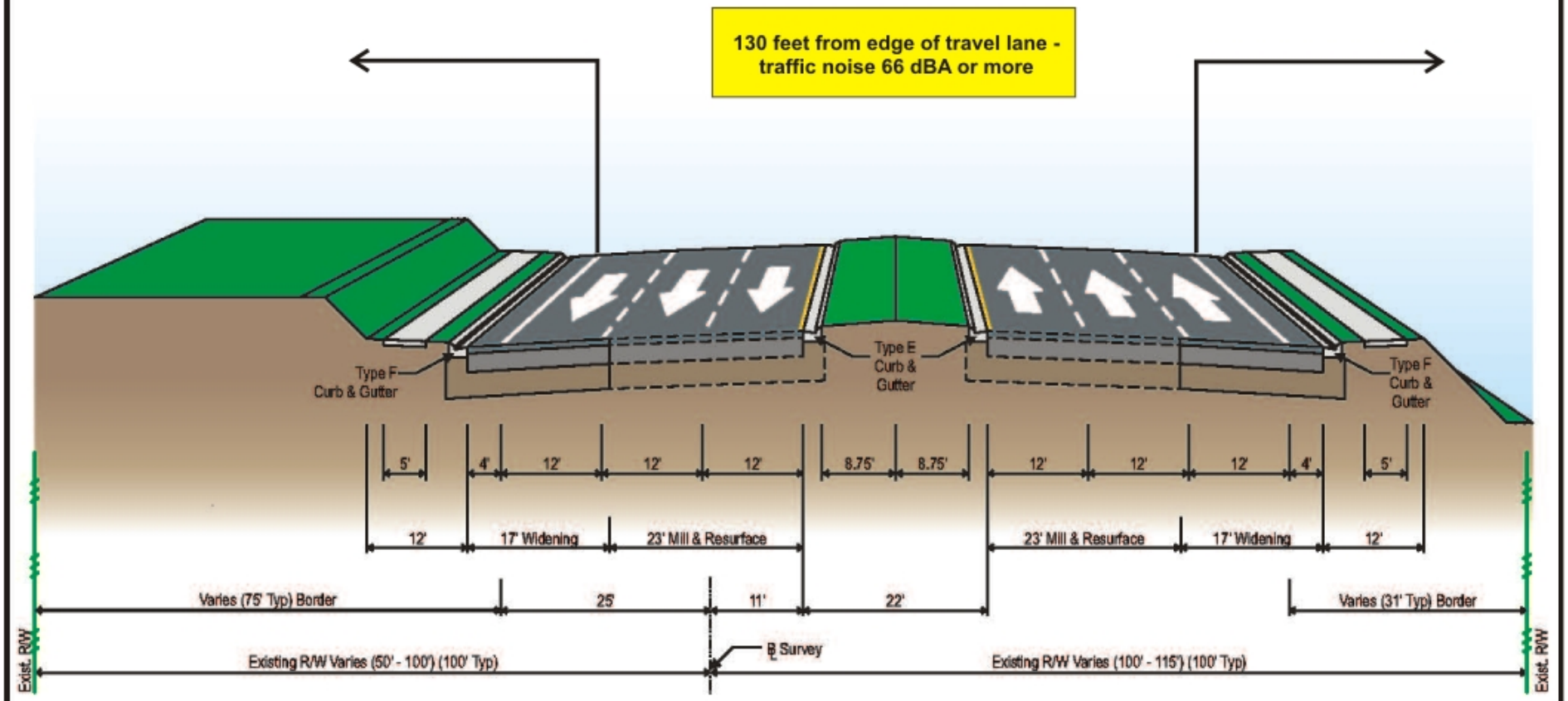
SECTION 6
NOISE CONTOURS

As previously stated, land uses such as residences, motels, schools, churches, recreation areas and parks are considered *incompatible* with highway noise levels above 66 dBA. In order to reduce the possibility of additional noise sensitive sites being located within an area with traffic noise of this level, a noise contour was developed for the future improved roadway facility. This noise contour delineates the unobstructed distance from the improved roadway's edge of pavement where the FHWA's NAC is predicted to be approached (within one dBA of the NAC). **Table 6-1** provides the distance from the edge of the near travel lane to where traffic noise levels are predicted to be 66.0 dBA or higher with the Recommended Build Alternative.

Table 6-1
Noise Contour

Roadway Segment	Distance from Edge of Near Travel Lane (feet)
South of CR 54 to north of Kossik Rd	130
South of US 98 to CR 52A	190

Figure 6-1 illustrates the noise contour for US 301 from south of CR 54 to Kossik Road (Segment A). **Figure 6-2** illustrates the noise contour for US 301 from south of US 98 to CR 52A (a portion of Segment C). Notably, local officials should not approve construction of any additional noise-sensitive sites (e.g., residences, parks, churches, etc.) within the traffic noise contour areas.

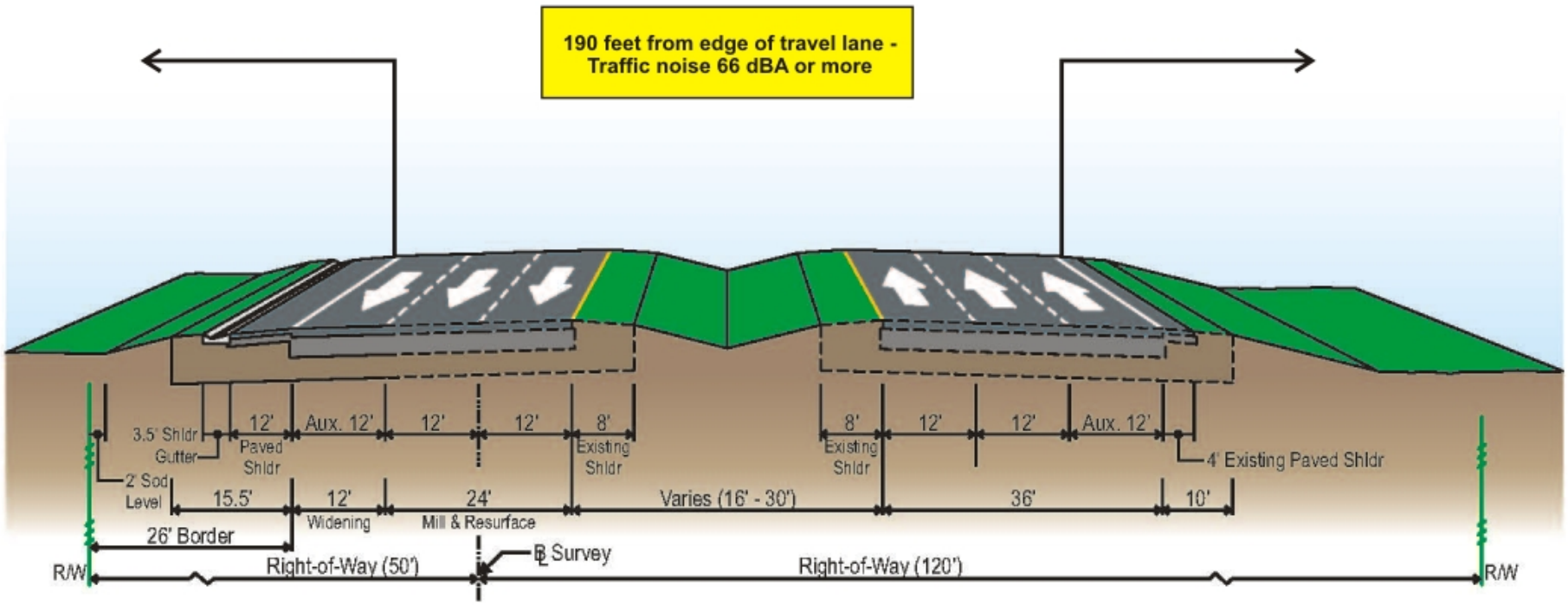


Design Speed = 45 mph

US 301 (SR 39)
PD&E Study
from South of CR 54
(Eiland Boulevard)
to US 98 Bypass (SR 533)

NOISE CONTOUR
FROM SOUTH OF CR 54 (EILAND BOULEVARD) TO NORTH OF KOSSIK ROAD
SEGMENT A - RECOMMENDED ALTERNATIVE

FIGURE 6-1



Design Speed = 55 mph

US 301 (SR 39) PD&E Study from South of CR 54 (Eiland Boulevard) to US 98 Bypass (SR 533)	**NOISE CONTOUR RECOMMENDED ROADWAY TYPICAL SECTION FROM US 98 (SR 700) TO CR 52A (CLINTON AVENUE)**	**FIGURE 6-2**

SECTION 7
REFERENCES

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

Federal Highway Administration, Title 23 CFR, Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, April 1, 2009 Edition.

Florida Department of Transportation, Project Development and Environment Manual, Chapter 17 (Noise), April 18, 2007.

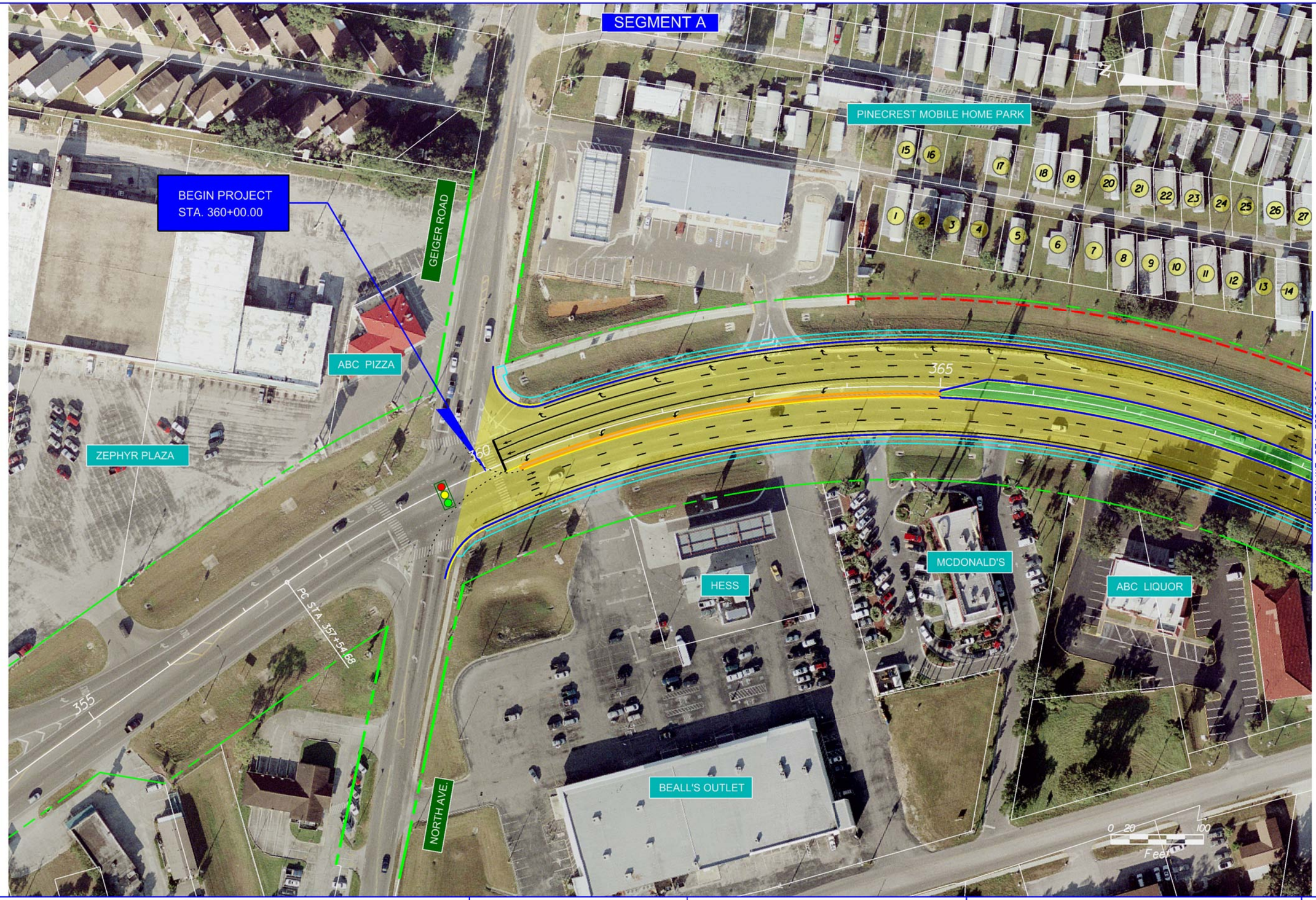
Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, 2010.

Federal Highway Administration, Measurement of Highway-Related Noise: Final Report, October 2003.

Federal Highway Administration, Highway Traffic Noise Analysis and Abatement: Policy and Guidance, June 1995.

APPENDIX A

NOISE SENSITIVE SITES



LEGEND

- EOP
- EXISTING R/W
- PROPOSED R/W
- CONC. SIDEWALK
- POTENTIAL SOUND BARRIER
- STREET ST. STREET NAME
- PLACE PLACE NAME
- PROPERTY LINES
- PAVEMENT REMOVAL
- (5) NOISE SENSITIVE SITE
- WETLAND
- MEDIAN MODIFICATION

HDR Engineering, Inc.
HDR Engineering, Inc.
5426 Bay Center Dr., Suite 400
Tampa, FL 33609-3444
CERTIFICATE OF AUTHORIZATION 4213

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
39 (US 301)	PASCO	408075-1-22-01

RECOMMENDED ALTERNATIVE LOW SPEED URBAN SEGMENT A

SHEET NO. 1

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SEGMENT A

PARKVIEW ACRES

EASY AVE.

FORT KING RD.

KAUFMAN EYE INSTITUTE

MATCHLINE STA. 369+00.00

MATCHLINE STA. 383+00.00

370

375

380

PC STA. 376+95.10

PT STA. 371+19.15

FAMILY PRACTICE WALK-IN CLINIC / ARTISTIC DENTAL

SUN STATE ALUMINUM

PRINTING ZONE

HERCULES AQUATIC CENTER

0 20 100
Feet

LEGEND

EOP
EXISTING R/W
PROPOSED R/W
CONC. SIDEWALK
POTENTIAL SOUND BARRIER
STREET ST. STREET NAME
PLACE PLACE NAME
PROPERTY LINES
PAVEMENT REMOVAL
5 NOISE SENSITIVE SITE
WETLAND
MEDIAN MODIFICATION

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HDR Engineering, Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
39 (US 301)	PASCO	408075-1-22-01

RECOMMENDED ALTERNATIVE LOW SPEED URBAN SEGMENT A

SHEET NO. 2

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SEGMENT A

WALGREENS

NOTE:
FOR EILAND BLVD.
SEE SHEET 30

PT STA. 386+18.18

EILAND BLVD. (CR 54)

CVS

53x

(BY OTHERS)

WOOD DALE MOBILE HOME PARK

FRONTAGE RD.

MATCHLINE STA. 383+00.00

385

390

395

MATCHLINE STA. 397+00.00

(BY OTHERS)

RADIANT GAS STATION

MARKET SQUARE DR.

FLORIDA MEDICAL CLINIC

0 20 100
Feet

LEGEND

- EOP
- EXISTING R/W
- PROPOSED R/W
- CONC. SIDEWALK
- POTENTIAL SOUND BARRIER
- STREET ST. — STREET NAME
- PLACE — PLACE NAME
- PROPERTY LINES
- PAVEMENT REMOVAL
- (5) NOISE SENSITIVE SITE
- WETLAND
- MEDIAN MODIFICATION

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
39 (US 301)	PASCO	408075-1-22-01

RECOMMENDED ALTERNATIVE LOW SPEED URBAN SEGMENT A

SHEET NO. 3

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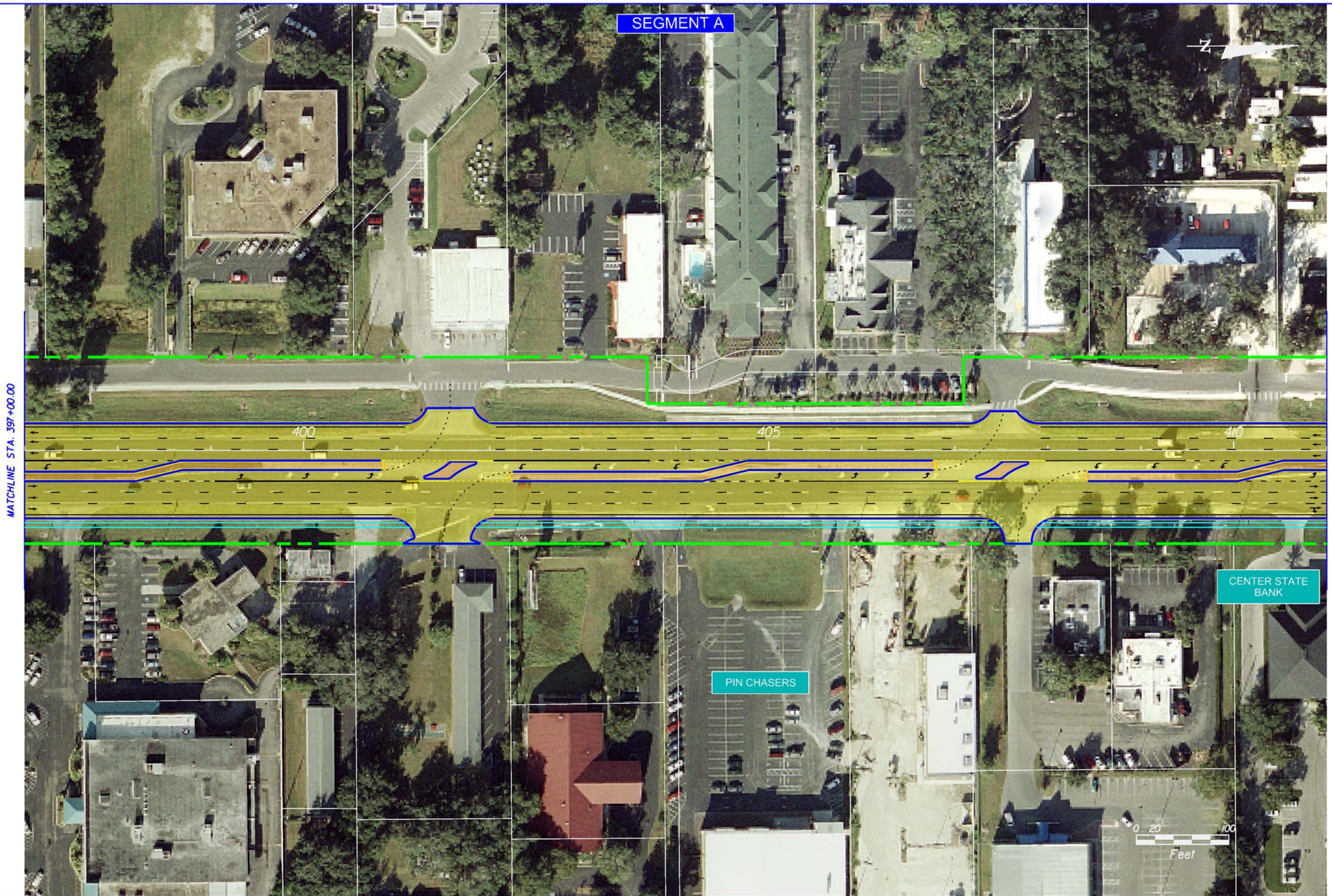

LEGEND

EOP
EXISTING R/W
PROPOSED R/W
CONC. SIDEWALK
POTENTIAL SOUND BARRIER
STREET ST. STREET NAME
PLACE PLACE NAME
PROPERTY LINES
PAVEMENT REMOVAL
5 NOISE SENSITIVE SITE
WETLAND
MEDIAN MODIFICATION

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
39 (US 301)	PASCO	408075-1-22-01

RECOMMENDED ALTERNATIVE LOW SPEED URBAN SEGMENT A

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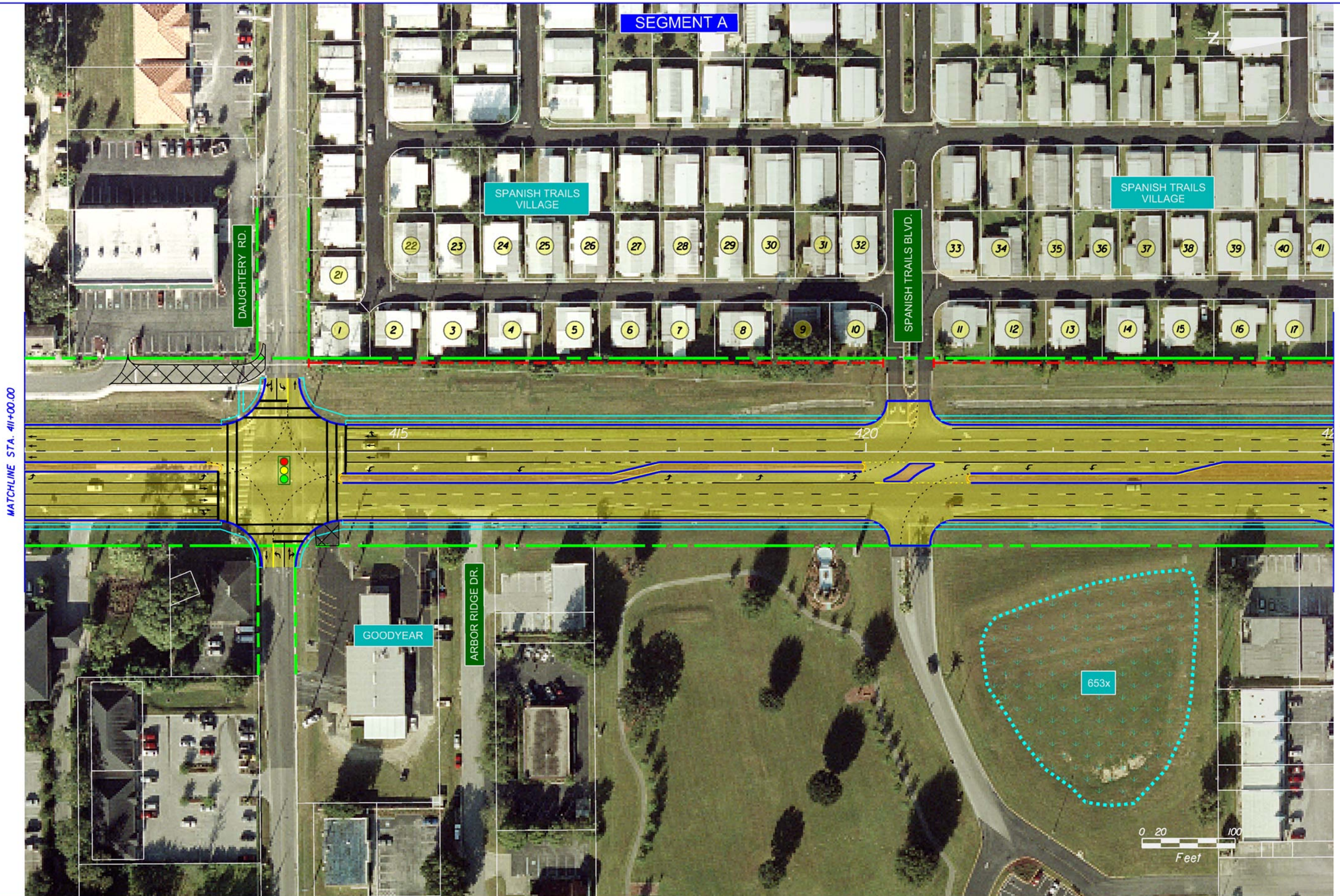

LEGEND

EOP
EXISTING R/W
PROPOSED R/W
CONC. SIDEWALK
POTENTIAL SOUND BARRIER
STREET ST. STREET NAME
PLACE PLACE NAME
PROPERTY LINES
PAVEMENT REMOVAL
5 NOISE SENSITIVE SITE
WETLAND
MEDIAN MODIFICATION

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
39 (US 301)	PASCO	408075-1-22-01

RECOMMENDED ALTERNATIVE LOW SPEED URBAN SEGMENT A

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SEGMENT A

MERCHANT SQUARE

MERCHANT SQUARE ENTRANCE

MERCHANT SQUARE

SPANISH TRAILS VILLAGE

MEDICAL ARTS CT.

HESS GAS

PC STA. 425+12.25

430

435

MATCHLINE STA. 425+00.00

MATCHLINE STA. 439+00.00

653x

MEDICAL CENTER DR.

TOWNVIEW SQUARE

TOWNVIEW SQUARE ENTRANCE

TOWNVIEW SQUARE

0 20 100

Feet

LEGEND

- EOP
- EXISTING R/W
- PROPOSED R/W
- CONC. SIDEWALK
- POTENTIAL SOUND BARRIER
- STREET ST. STREET NAME
- PLACE PLACE NAME
- PROPERTY LINES
- PAVEMENT REMOVAL
- (5) NOISE SENSITIVE SITE
- WETLAND
- MEDIAN MODIFICATION

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HDR Engineering, Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
39 (US 301)	PASCO	408075-1-22-01

RECOMMENDED ALTERNATIVE LOW SPEED URBAN SEGMENT A

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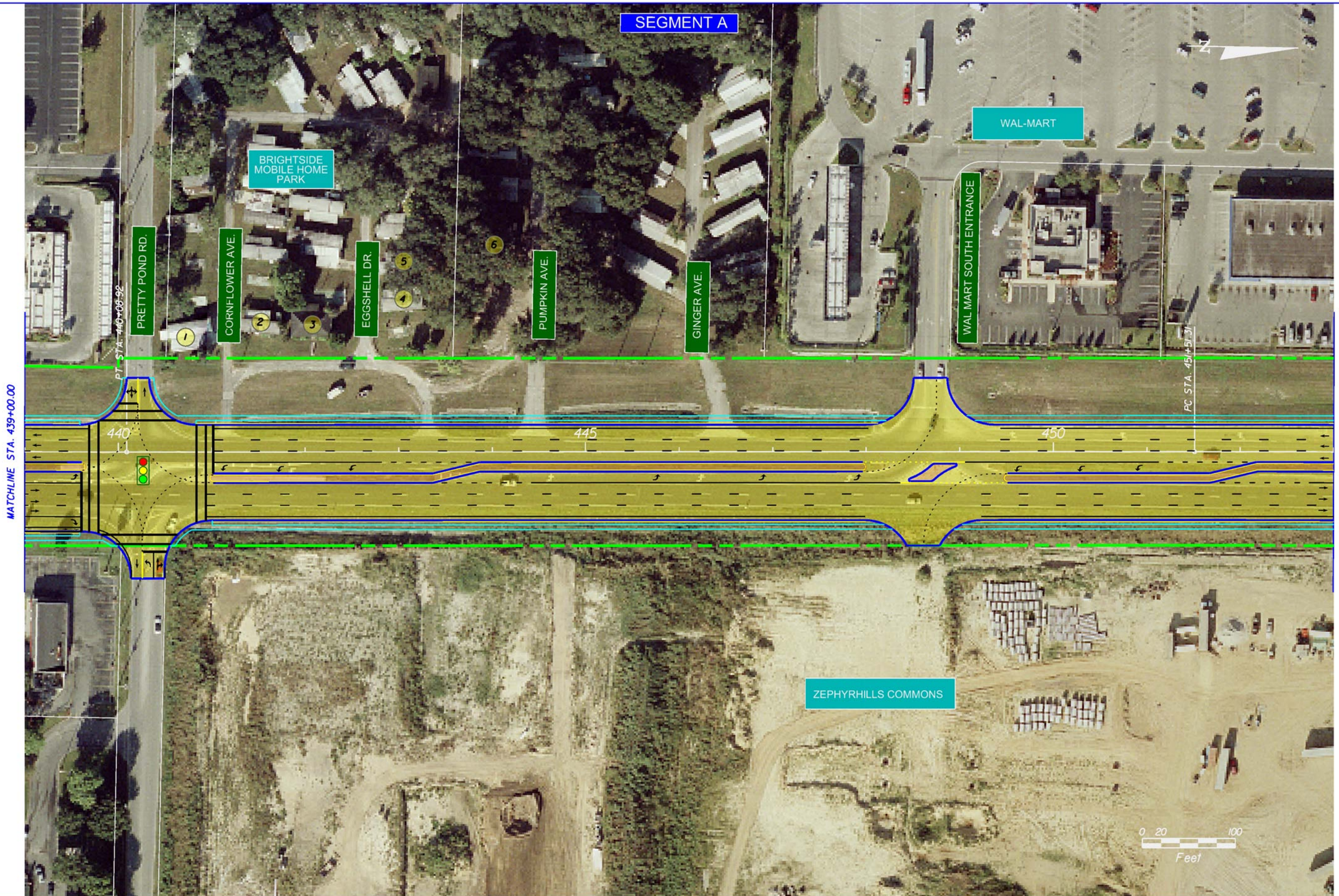

LEGEND

EOP
EXISTING R/W
PROPOSED R/W
CONC. SIDEWALK
POTENTIAL SOUND BARRIER
STREET ST. STREET NAME
PLACE PLACE NAME
PROPERTY LINES
PAVEMENT REMOVAL
5 NOISE SENSITIVE SITE
WETLAND
MEDIAN MODIFICATION

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
39 (US 301)	PASCO	408075-1-22-01

RECOMMENDED ALTERNATIVE LOW SPEED URBAN SEGMENT A

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LEGEND

- EOP
- EXISTING R/W
- PROPOSED R/W
- CONC. SIDEWALK
- POTENTIAL SOUND BARRIER
- STREET ST. STREET NAME
- PLACE PLACE NAME
- PROPERTY LINES
- PAVEMENT REMOVAL
- 5 NOISE SENSITIVE SITE
- WETLAND
- MEDIAN MODIFICATION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
39 (US 301)	PASCO	408075-1-22-01

RECOMMENDED ALTERNATIVE LOW SPEED URBAN SEGMENT A

SHEET NO. 8

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APPENDIX B

TRAFFIC DATA SHEETS

TRAFFIC DATA FOR NOISE STUDIES

Project:	SR 39 (US 301) from South of CR 54 (Eiland Boulevard) to SR 533 (US 98 Bypass)	Date:	3/25/2009
State Project Number(s):	408075-1-22-01	Prepared By:	S. Chambers/HDR, Inc.
Work Program Number(s):			
Federal Aid Number(s):	3112-020-P		
Segment Description:	South of CR 54 (Eiland Boulevard)	Alternative:	Alternative 2 - Low Speed Urban

(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 (Design Year)		Build (Design Year)	
Lanes:	4	Lanes:	4	Lanes:	6
Year:	2008	Year:	2035	Year:	2035
ADT:		ADT:		ADT:	
LOS (C)	24,400	LOS (C)	24,400	LOS (C)	38,000
Demand	25,100	Demand	38,700	Demand	38,700
Posted Spd:	45 mph	Posted Spd:	45 mph	Posted Spd:	45 mph
	72 kmh		72 kmh		72 kmh
K=	9.40 %	K=	9.40 %	K=	9.40 %
D=	56.00 %	D=	56.00 %	D=	56.00 %
T=	6.00 % for 24 hrs.	T=	6.00 % for 24 hrs.	T=	6.00 % for 24 hrs.
T=	3.00 % Design hr	T=	3.00 % Design hr	T=	3.00 % Design hr
1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV
1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV
0.02	% Buses DHV	0.02	% Buses DHV	0.02	% Buses DHV
0.58	% Motorcycles DHV	0.58	% Motorcycles DHV	0.58	% Motorcycles DHV

STAMINA/TNM INPUT

The following are spreadsheet calculations based on the input above - do not enter data below this line

Existing Facility Model:		**LOS (C)**	**No-Build (Design Year) Model:**		**LOS (C)**	**Build (Design Year) Model:**		**LOS (C)**
LOS (C)			LOS (C)			LOS (C)		
Peak:	Autos	1238	Peak:	Autos	1238	Peak:	Autos	1929
	Med Trucks	19		Med Trucks	19		Med Trucks	29
	Hvy Trucks	20		Hvy Trucks	20		Hvy Trucks	30
	Buses	0		Buses	0		Buses	0
	Motorcycles	7		Motorcycles	7		Motorcycles	12
Off Peak:	Autos	973	Off Peak:	Autos	973	Off Peak:	Autos	1515
	Med Trucks	15		Med Trucks	15		Med Trucks	23
	Hvy Trucks	15		Hvy Trucks	15		Hvy Trucks	24
	Buses	0		Buses	0		Buses	0
	Motorcycles	6		Motorcycles	6		Motorcycles	9
Demand			Demand			Demand		
Peak:	Autos	1274	Peak:	Autos	1964	Peak:	Autos	1964
	Med Trucks	19		Med Trucks	30		Med Trucks	30
	Hvy Trucks	20		Hvy Trucks	31		Hvy Trucks	31
	Buses	0		Buses	0		Buses	0
	Motorcycles	8		Motorcycles	12		Motorcycles	12
Off Peak:	Autos	1001	Off Peak:	Autos	1543	Off Peak:	Autos	1543
	Med Trucks	15		Med Trucks	23		Med Trucks	23
	Hvy Trucks	16		Hvy Trucks	24		Hvy Trucks	24
	Buses	0		Buses	0		Buses	0
	Motorcycles	6		Motorcycles	9		Motorcycles	9

TRAFFIC DATA FOR NOISE STUDIES

Project:	SR 39 (US 301) from South of CR 54 (Eiland Boulevard) to SR 533 (US 98 Bypass)	Date:	3/25/2009
State Project Number(s):	408075-1-22-01	Prepared By:	S. Chambers/HDR, Inc.
Work Program Number(s):			
Federal Aid Number(s):	3112-020-P		
Segment Description:	CR 54 (Eiland Boulevard) to Daughtery Road	Alternative:	Alternative 2 - Low Speed Urban

(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 (Design Year)		Build (Design Year)	
Lanes:	4	Lanes:	4	Lanes:	6
Year:	2008	Year:	2035	Year:	2035
ADT:		ADT:		ADT:	
LOS (C)	24,400	LOS (C)	24,400	LOS (C)	38,000
Demand	30,700	Demand	47,500	Demand	47,500
Posted Spd:	45 mph	Posted Spd:	45 mph	Posted Spd:	45 mph
	72 kmh		72 kmh		72 kmh
K=	9.40 %	K=	9.40 %	K=	9.40 %
D=	56.00 %	D=	56.00 %	D=	56.00 %
T=	6.0 % for 24 hrs.	T=	6.0 % for 24 hrs.	T=	6.0 % for 24 hrs.
T=	3.0 % Design hr	T=	3.0 % Design hr	T=	3.0 % Design hr
1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV
1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV
0.02	% Buses DHV	0.02	% Buses DHV	0.02	% Buses DHV
0.58	% Motorcycles DHV	0.58	% Motorcycles DHV	0.58	% Motorcycles DHV

STAMINA/TNM INPUT

The following are spreadsheet calculations based on the input above - do not enter data below this line

Existing Facility Model:		**LOS (C)**	**No-Build (Design Year) Model:**		**LOS (C)**	**Build (Design Year) Model:**		**LOS (C)**
LOS (C)			LOS (C)			LOS (C)		
Peak:	Autos	1238	Peak:	Autos	1238	Peak:	Autos	1929
	Med Trucks	19		Med Trucks	19		Med Trucks	29
	Hvy Trucks	20		Hvy Trucks	20		Hvy Trucks	30
	Buses	0		Buses	0		Buses	0
	Motorcycles	7		Motorcycles	7		Motorcycles	12
Off Peak:	Autos	973	Off Peak:	Autos	973	Off Peak:	Autos	1515
	Med Trucks	15		Med Trucks	15		Med Trucks	23
	Hvy Trucks	15		Hvy Trucks	15		Hvy Trucks	24
	Buses	0		Buses	0		Buses	0
	Motorcycles	6		Motorcycles	6		Motorcycles	9
Demand			Demand			Demand		
Peak:	Autos	1558	Peak:	Autos	2411	Peak:	Autos	2411
	Med Trucks	24		Med Trucks	37		Med Trucks	37
	Hvy Trucks	25		Hvy Trucks	38		Hvy Trucks	38
	Buses	0		Buses	1		Buses	1
	Motorcycles	9		Motorcycles	15		Motorcycles	15
Off Peak:	Autos	1224	Off Peak:	Autos	1894	Off Peak:	Autos	1894
	Med Trucks	19		Med Trucks	29		Med Trucks	29
	Hvy Trucks	19		Hvy Trucks	30		Hvy Trucks	30
	Buses	0		Buses	0		Buses	0
	Motorcycles	7		Motorcycles	11		Motorcycles	11

TRAFFIC DATA FOR NOISE STUDIES

Project:	SR 39 (US 301) from South of CR 54 (Eiland Boulevard) to SR 533 (US 98 Bypass)	Date:	3/25/2009
State Project Number(s):	408075-1-22-01	Prepared By:	S. Chambers/HDR, Inc.
Work Program Number(s):			
Federal Aid Number(s):	3112-020-P		
Segment Description:	Daughtery Road to Spanish Trails Boulevard	Alternative:	Alternative 2 - Low Speed Urban

(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 (Design Year)		Build (Design Year)	
Lanes:	4	Lanes:	4	Lanes:	6
Year:	2008	Year:	2035	Year:	2035
ADT: LOS (C)	24,400	ADT: LOS (C)	24,400	ADT: LOS (C)	38,000
Demand	29,100	Demand	45,200	Demand	45,200
Posted Spd:	45 mph / 72 kmh	Posted Spd:	45 mph / 72 kmh	Posted Spd:	45 mph / 72 kmh
K=	9.40 %	K=	9.40 %	K=	9.40 %
D=	56.00 %	D=	56.00 %	D=	56.00 %
T=	6.00 % for 24 hrs.	T=	6.00 % for 24 hrs.	T=	6.00 % for 24 hrs.
T=	3.00 % Design hr	T=	3.00 % Design hr	T=	3.00 % Design hr
1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV
1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV
0.02	% Buses DHV	0.02	% Buses DHV	0.02	% Buses DHV
0.58	% Motorcycles DHV	0.58	% Motorcycles DHV	0.58	% Motorcycles DHV

STAMINA/TNM INPUT

The following are spreadsheet calculations based on the input above - do not enter data below this line

Existing Facility Model:		**LOS (C)**	**No-Build (Design Year) Model:**		**LOS (C)**	**Build (Design Year) Model:**		**LOS (C)**
LOS (C)			LOS (C)			LOS (C)		
Peak:	Autos	1238	Peak:	Autos	1238	Peak:	Autos	1929
	Med Trucks	19		Med Trucks	19		Med Trucks	29
	Hvy Trucks	20		Hvy Trucks	20		Hvy Trucks	30
	Buses	0		Buses	0		Buses	0
	Motorcycles	7		Motorcycles	7		Motorcycles	12
Off Peak:	Autos	973	Off Peak:	Autos	973	Off Peak:	Autos	1515
	Med Trucks	15		Med Trucks	15		Med Trucks	23
	Hvy Trucks	15		Hvy Trucks	15		Hvy Trucks	24
	Buses	0		Buses	0		Buses	0
	Motorcycles	6		Motorcycles	6		Motorcycles	9
Demand			Demand			Demand		
Peak:	Autos	1477	Peak:	Autos	2294	Peak:	Autos	2294
	Med Trucks	22		Med Trucks	35		Med Trucks	35
	Hvy Trucks	23		Hvy Trucks	36		Hvy Trucks	36
	Buses	0		Buses	0		Buses	0
	Motorcycles	9		Motorcycles	14		Motorcycles	14
Off Peak:	Autos	1160	Off Peak:	Autos	1803	Off Peak:	Autos	1803
	Med Trucks	18		Med Trucks	27		Med Trucks	27
	Hvy Trucks	18		Hvy Trucks	28		Hvy Trucks	28
	Buses	0		Buses	0		Buses	0
	Motorcycles	7		Motorcycles	11		Motorcycles	11

TRAFFIC DATA FOR NOISE STUDIES

Project: SR 39 (US 301) from South of CR 54 (Eiland Boulevard) to SR 533 (US 98 Bypass)

Date: 3/25/2009

State Project Number(s): 408075-1-22-01

Prepared By: S. Chambers/HDR, Inc.

Work Program Number(s):

Federal Aid Number(s): 3112-020-P

Segment Description: Spanish Trails Boulevard to Townview Square Shopping Center Entran

Alternative: Alternative 2 - Low Speed Urban

(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 (Design Year)		Build (Design Year)	
Lanes:	4	Lanes:	4	Lanes:	6
Year:	2008	Year:	2035	Year:	2035
ADT: LOS (C)	24,400	ADT: LOS (C)	24,400	ADT: LOS (C)	38,000
Demand	29,100	Demand	45,200	Demand	45,200
Posted Spd:	45 mph / 72 kmh	Posted Spd:	45 mph / 72 kmh	Posted Spd:	45 mph / 72 kmh
K=	9.40 %	K=	9.40 %	K=	9.40 %
D=	56.00 %	D=	56.00 %	D=	56.00 %
T=	6.00 % for 24 hrs.	T=	6.00 % for 24 hrs.	T=	6.00 % for 24 hrs.
T=	3.00 % Design hr	T=	3.00 % Design hr	T=	3.00 % Design hr
1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV
1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV
0.02	% Buses DHV	0.02	% Buses DHV	0.02	% Buses DHV
0.58	% Motorcycles DHV	0.58	% Motorcycles DHV	0.58	% Motorcycles DHV

STAMINA/TNM INPUT

The following are spreadsheet calculations based on the input above - do not enter data below this line

Existing Facility Model:		**LOS (C)**	**No-Build (Design Year) Model:**		**LOS (C)**	**Build (Design Year) Model:**		**LOS (C)**
LOS (C)			LOS (C)			LOS (C)		
Peak:	Autos	1238	Peak:	Autos	1238	Peak:	Autos	1929
	Med Trucks	19		Med Trucks	19		Med Trucks	29
	Hvy Trucks	20		Hvy Trucks	20		Hvy Trucks	30
	Buses	0		Buses	0		Buses	0
	Motorcycles	7		Motorcycles	7		Motorcycles	12
Off Peak:	Autos	973	Off Peak:	Autos	973	Off Peak:	Autos	1515
	Med Trucks	15		Med Trucks	15		Med Trucks	23
	Hvy Trucks	15		Hvy Trucks	15		Hvy Trucks	24
	Buses	0		Buses	0		Buses	0
	Motorcycles	6		Motorcycles	6		Motorcycles	9
Demand			Demand			Demand		
Peak:	Autos	1477	Peak:	Autos	2294	Peak:	Autos	2294
	Med Trucks	22		Med Trucks	35		Med Trucks	35
	Hvy Trucks	23		Hvy Trucks	36		Hvy Trucks	36
	Buses	0		Buses	0		Buses	0
	Motorcycles	9		Motorcycles	14		Motorcycles	14
Off Peak:	Autos	1160	Off Peak:	Autos	1803	Off Peak:	Autos	1803
	Med Trucks	18		Med Trucks	27		Med Trucks	27
	Hvy Trucks	18		Hvy Trucks	28		Hvy Trucks	28
	Buses	0		Buses	0		Buses	0
	Motorcycles	7		Motorcycles	11		Motorcycles	11

TRAFFIC DATA FOR NOISE STUDIES

Project:	SR 39 (US 301) from South of CR 54 (Eiland Boulevard) to SR 533 (US 98 Bypass)	Date:	3/25/2009
State Project Number(s):	408075-1-22-01	Prepared By:	S. Chambers/HDR, Inc.
Work Program Number(s):			
Federal Aid Number(s):	3112-020-P		
Segment Description:	Townview Square Shopping Center Entrance to Kossik Road	Alternative:	Alternative 2 - Low Speed Urban

(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 (Design Year)		Build (Design Year)	
Lanes:	4	Lanes:	4	Lanes:	6
Year:	2008	Year:	2035	Year:	2035
ADT:		ADT:		ADT:	
LOS (C)	24,400	LOS (C)	24,400	LOS (C)	38,000
Demand	25,100	Demand	38,900	Demand	38,900
Posted Spd:	45 mph	Posted Spd:	45 mph	Posted Spd:	45 mph
	72 kmh		72 kmh		72 kmh
K=	9.40 %	K=	9.40 %	K=	9.40 %
D=	56.00 %	D=	56.00 %	D=	56.00 %
T=	6.00 % for 24 hrs.	T=	6.00 % for 24 hrs.	T=	6.00 % for 24 hrs.
T=	3.00 % Design hr	T=	3.00 % Design hr	T=	3.00 % Design hr
1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV	1.46	% Medium Trucks DHV
1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV	1.52	% Heavy Trucks DHV
0.02	% Buses DHV	0.02	% Buses DHV	0.02	% Buses DHV
0.58	% Motorcycles DHV	0.58	% Motorcycles DHV	0.58	% Motorcycles DHV

STAMINA/TNM INPUT

The following are spreadsheet calculations based on the input above - do not enter data below this line

Existing Facility Model:		**LOS (C)**	**No-Build (Design Year) Model:**		**LOS (C)**	**Build (Design Year) Model:**		**LOS (C)**
LOS (C)			LOS (C)			LOS (C)		
Peak:	Autos	1238	Peak:	Autos	1238	Peak:	Autos	1929
	Med Trucks	19		Med Trucks	19		Med Trucks	29
	Hvy Trucks	20		Hvy Trucks	20		Hvy Trucks	30
	Buses	0		Buses	0		Buses	0
	Motorcycles	7		Motorcycles	7		Motorcycles	12
Off Peak:	Autos	973	Off Peak:	Autos	973	Off Peak:	Autos	1515
	Med Trucks	15		Med Trucks	15		Med Trucks	23
	Hvy Trucks	15		Hvy Trucks	15		Hvy Trucks	24
	Buses	0		Buses	0		Buses	0
	Motorcycles	6		Motorcycles	6		Motorcycles	9
Demand			Demand			Demand		
Peak:	Autos	1274	Peak:	Autos	1974	Peak:	Autos	1974
	Med Trucks	19		Med Trucks	30		Med Trucks	30
	Hvy Trucks	20		Hvy Trucks	31		Hvy Trucks	31
	Buses	0		Buses	0		Buses	0
	Motorcycles	8		Motorcycles	12		Motorcycles	12
Off Peak:	Autos	1001	Off Peak:	Autos	1551	Off Peak:	Autos	1551
	Med Trucks	15		Med Trucks	23		Med Trucks	23
	Hvy Trucks	16		Hvy Trucks	24		Hvy Trucks	24
	Buses	0		Buses	0		Buses	0
	Motorcycles	6		Motorcycles	9		Motorcycles	9

TRAFFIC DATA FOR NOISE STUDIES

Project:	SR 39 (US 301) from South of CR 54 (Eiland Boulevard) to SR 533 (US 98 Bypass)	Date:	2/25/2010
State Project Number(s):	408075-1-22-01	Prepared By:	HDR, Inc.
Work Program Number(s):			
Federal Aid Number(s):	3112-020-P		
Segment Description:	Centennial Road to US 98 (SR 700)	Alternative:	Recommended

(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 (Design Year)			Build (Design Year)		
Lanes:	4		Lanes:	4		Lanes:	6	
Year:	2008		Year:	2035		Year:	2035	
ADT:			ADT:			ADT:		
LOS (C)	32,800		LOS (C)	32,800		LOS (C)	49,300	
Demand	25,200		Demand	40,100		Demand	40,100	
Posted Spd:	55	mph	Posted Spd:	55	mph	Posted Spd:	55	mph
	89	kmh		89	kmh		89	kmh
K=	9.40	%	K=	9.40	%	K=	9.40	%
D=	56.00	%	D=	56.00	%	D=	56.00	%
T=	6.0	% for 24 hrs.	T=	6.0	% for 24 hrs.	T=	6.0	% for 24 hrs.
T=	3.00	% Design hr	T=	3.00	% Design hr	T=	3.00	% Design hr
1.46	% Medium Trucks DHV		1.46	% Medium Trucks DHV		1.46	% Medium Trucks DHV	
1.52	% Heavy Trucks DHV		1.52	% Heavy Trucks DHV		1.52	% Heavy Trucks DHV	
0.02	% Buses DHV		0.02	% Buses DHV		0.02	% Buses DHV	
0.58	% Motorcycles DHV		0.58	% Motorcycles DHV		0.58	% Motorcycles DHV	

STAMINA/TNM INPUT

The following are spreadsheet calculations based on the input above - do not enter data below this line

Existing Facility Model:		**Demand**	**No-Build (Design Year) Model:**		**LOS (C)**	**Build (Design Year) Model:**		**Demand**
LOS (C)			LOS (C)			LOS (C)		
Peak:	Autos	1665	Peak:	Autos	1665	Peak:	Autos	2502
	Med Trucks	25		Med Trucks	25		Med Trucks	38
	Hvy Trucks	26		Hvy Trucks	26		Hvy Trucks	39
	Buses	0		Buses	0		Buses	1
	Motorcycles	10		Motorcycles	10		Motorcycles	15
Off Peak:	Autos	1308	Off Peak:	Autos	1308	Off Peak:	Autos	1966
	Med Trucks	20		Med Trucks	20		Med Trucks	30
	Hvy Trucks	21		Hvy Trucks	21		Hvy Trucks	31
	Buses	0		Buses	0		Buses	0
	Motorcycles	8		Motorcycles	8		Motorcycles	12
Demand			Demand			Demand		
Peak:	Autos	1279	Peak:	Autos	2035	Peak:	Autos	2035
	Med Trucks	19		Med Trucks	31		Med Trucks	31
	Hvy Trucks	20		Hvy Trucks	32		Hvy Trucks	32
	Buses	0		Buses	0		Buses	0
	Motorcycles	8		Motorcycles	12		Motorcycles	12
Off Peak:	Autos	1005	Off Peak:	Autos	1599	Off Peak:	Autos	1599
	Med Trucks	15		Med Trucks	24		Med Trucks	24
	Hvy Trucks	16		Hvy Trucks	25		Hvy Trucks	25
	Buses	0		Buses	0		Buses	0
	Motorcycles	6		Motorcycles	10		Motorcycles	10

APPENDIX C

NOISE MEASUREMENT DATA SHEETS/TNM VALIDATION

NOISE MEASUREMENT DATA SHEET

Measurements Taken By: Sarah Sloan, Wayne Arner, Joseph Severson Date: 7/23/09
Time Study Started: 0857 Time Study Ended: 0931
Project Identification:
Financial Management Number: FAP No. 3112 020 P
Project Location: US 301- CR 54 to US 98 Bypass

Site Identification: Site #1 – Spanish Trails

Weather Conditions:
Sky: Clear X Partly Cloudy ___ Cloudy ___ Other ___
Temperature 82F Wind Speed 4.5 mph Wind Direction S Humidity 91%
Equipment:
Sound Level Meter:
Type: Larson Davis LxT Serial Number(s): 1843
Did you check the battery? Yes X No ___
Calibration Readings: Start 114.1 End 113.8
Response Settings: Fast ___ Slow X
Weighting: A X Other ___
Calibrator:
Type: Larson Davis CAL200 Serial Number: 5592
Did you check the battery? Yes X No ___

TRAFFIC DATA

Roadway Identification	US 301 NB		US 301 SB	
	Roadway 1		Roadway 2	
Vehicle Type	Volume	Speed (mph)	Volume	Speed (mph)
Autos	130-121-138	41-41-41	112-108-98	43-45-43
Medium Trucks	1-3-3	43-41-36	6-1-3	43-45-42
Heavy Trucks	1-1-4	43-41-37	1-2-0	43-45-N/A
Buses	N/A	N/A	N/A	N/A
Motorcycles	N/A	N/A	N/A	N/A
Duration	10 minutes per run		10 minutes per run	

RESULTS [dB(A)]

L_{EQ} 62.1-63.5-62.9 Lmax 71.4-74.7-80.1

Background Noise: ___
Major Sources: ___
Unusual Events: ___

KB Environmental Sciences