



FINAL TRAFFIC NOISE ANALYSIS TECHNICAL MEMORANDUM

**Work Program Item Number: 257862 1
Federal Aid Project Number: 0295-005**

**Park Road and Sam Allen Road
From I-4 to the Alexander Street Extension**

Hillsborough County, Florida

**This project evaluates adding through lanes on Park Road from I-4 to Sam Allen Road
and Sam Allen Road from Park Road to the Alexander Street extension.
The approximate length of the project is 2.5 miles.**

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Prepared for:

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March 2005

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) conducted a Project Development and Environment (PD&E) Study for the improvement of Park Road from I-4 to Sam Allen Road and for Sam Allen Road from Park Road to the Alexander Street extension in Hillsborough County, Florida. The objective of the PD&E Study was to provide documented environmental and engineering analyses, to help the FDOT and the Federal Highway Administration (FHWA) reach a decision on the type, conceptual design, and location of the necessary improvements along the Park and Sam Allen Road corridor to accommodate future transportation needs in a safe and efficient manner. The total project length is approximately 2.5 miles (mi).

This Traffic Noise Analysis Technical Memorandum documents the effect of the proposed project on traffic noise levels. Specifically, this analysis evaluated the traffic noise levels at the noise sensitive sites identified during field reviews, documents predicted noise levels at the sensitive sites, and addresses noise abatement considerations for any noise sensitive site that approaches or exceeds the FHWA Noise Abatement Criteria (NAC). This analysis was prepared in accordance with Title 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise using methodology established by the FDOT in the PD&E Manual, Part 2, Chapter 17 (October, 2003).

For the Design Year (2028) Build condition, 16 residences are predicted to experience noise levels that approach or exceed the NAC. Noise abatement measures were evaluated for these noise sensitive sites. An evaluation of traffic system management techniques, alignment modifications and property acquisition indicated that these abatement measures were not feasible or cost reasonable. Land use controls can be used by local planning officials to minimize development or redevelopment of noise sensitive land uses in proximity to Sam Allen Road and Park Road. A copy of this Traffic Noise Analysis Technical Memorandum will be furnished to local officials to assist them in establishing compatible land uses for future development.

Providing noise barriers as a means of abating traffic noise was also evaluated. In this evaluation, noise barriers were modeled along the proposed right-of-way (ROW) of Sam Allen Road adjacent to the affected noise sensitive sites (noise barriers were not evaluated along Park Road because there were not any noise sensitive sites located along it's length within the project limits). Five different residential areas were considered, and noise barriers at two locations have been determined to be a potentially feasible and cost reasonable abatement measure.

A noise barrier with a driveway opening to accommodate Sunset Oak Drive is anticipated to provide at least a 5 dBA reduction to all five of the affected residences located in the Oaks at CountryWood residential development at a cost below \$35,000 per benefited residence. This noise barrier combination is potentially cost reasonable up to a height of 14 feet. However, the recommended barrier configuration at this location is the two eight foot high barriers with lengths of 291 and 346 feet at the east and west sides of West Sunset Oaks Drive respectively. The cost per benefited residence that can be achieved for these barriers is \$25,480.

Similarly, a noise barrier with a driveway opening to accommodate West Country Meadows Boulevard is anticipated to benefit all six of the affected residences located in the Meadows at CountryWood residential development along Don Tab Way at a cost below \$35,000 per benefited residence. This noise barrier combination is potentially cost reasonable up to a height of 22 feet. However, the recommended barrier configuration at this location is the two 10 foot high barriers with lengths of 559 and 50 feet at the west and east sides of West Country Meadows Boulevard respectively. The cost per benefited residence that can be achieved for these barriers is \$19,031.

The recommended barrier heights and lengths were chosen because they are the most cost effective configurations that maximize the number of affected residences that can be benefited, while remaining below the cost reasonability factor of \$35,000 per benefited

residence. Increasing the height of these barriers will not provide any substantial amount of increase to the average noise reduction at the benefited residences.

During the design phase of this project, the implementing agency is committed to further evaluate noise barriers at the two locations described above. Engineering details developed during the design phase will be incorporated into the noise barrier analysis. The design analysis will be used to refine the feasible and cost reasonable evaluation of the noise barriers. The barrier's length and height will be refined once their feasibility and cost reasonableness are reaffirmed in the design analysis.

Based on the noise analysis performed to date, there appears to be no feasible and cost reasonable abatement measures to mitigate for traffic noise at the remaining five residences along the project corridor with predicted noise levels that approach or exceed the NAC for the Design Year Build condition.

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1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) conducted a Project Development and Environment (PD&E) Study for the improvement of Park Road from I-4 to Sam Allen Road and for Sam Allen Road from Park Road to the proposed Alexander Street extension in Hillsborough County, Florida. The total project length is approximately 2.5 miles (mi). Figure 1-1 illustrates the location and limits of the project and its relationship to the regional highway system.

This PD&E Study documented the information necessary to confirm the need for this project and has developed and evaluated various improvement alternatives as they relate to the transportation facility. Information relating to the engineering and environmental characteristics essential for alignment criteria was set and alternatives were developed. Comparison of alternatives was based on a variety of parameters using a matrix format. This analytical process identifies the alternative that would have the least impact while providing the necessary improvements. The design year of the analysis is Year 2028. The No-Build Alternative was considered a viable alternative throughout this PD&E Study.

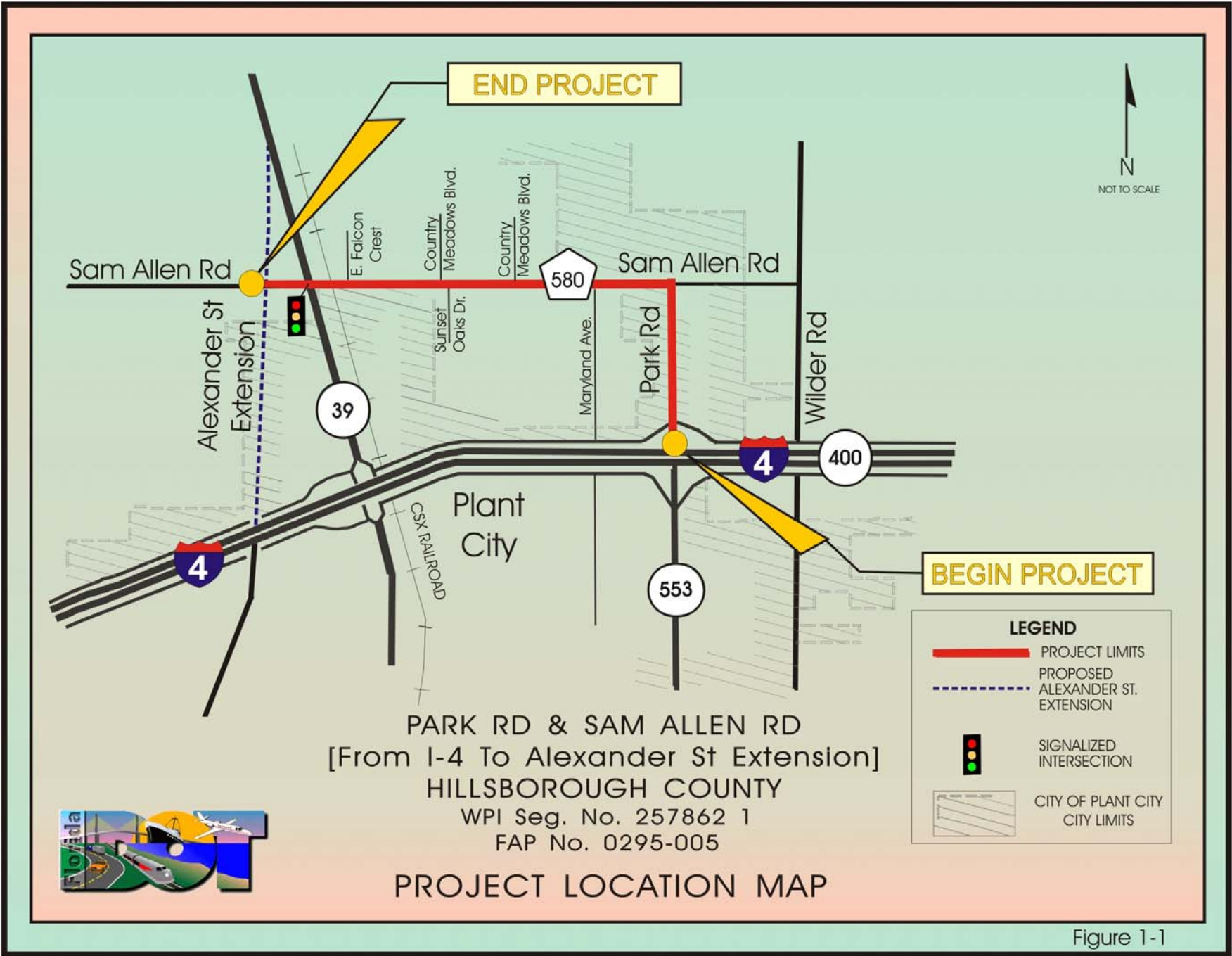


Figure 1-1



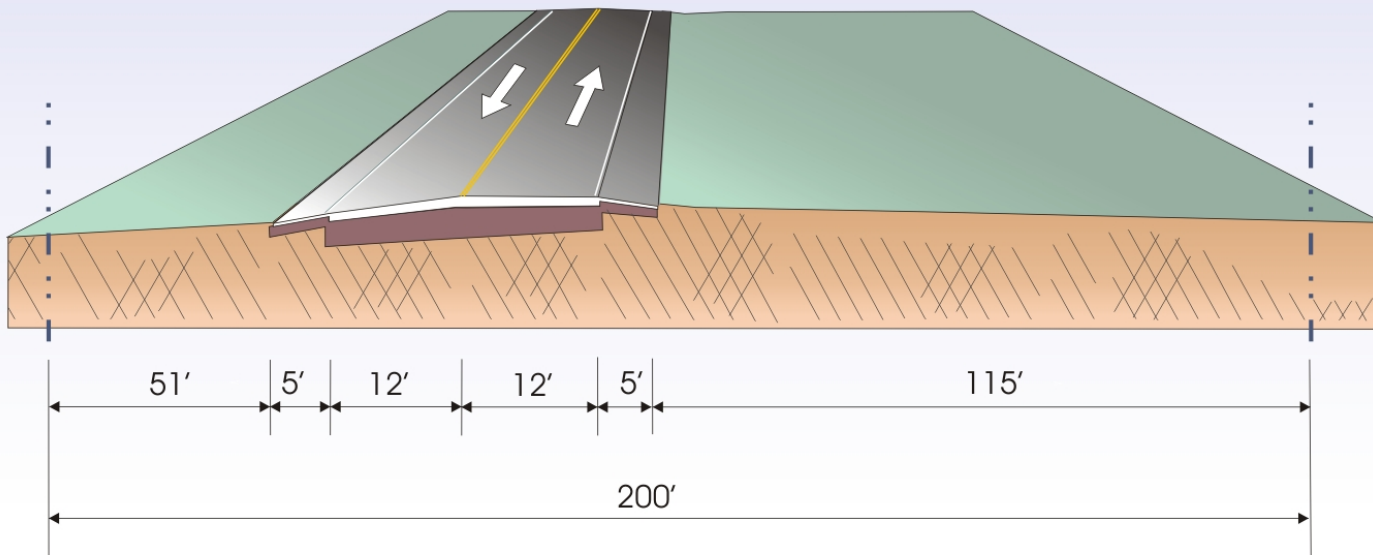
1.1 Project Description

Park Road and Sam Allen Road are local roads which act as a connector between the east side of Plant City and SR 39. This route is used by traffic traveling between Plant City and Zephyrhills to the north. The location and limits of the project are shown in Figure 1-1. This location map illustrates all intersecting streets and roadways. The project is located partly in the City of Plant City, including Park Road and Sam Allen Road from Park Road to about 6/10 mile west of Park Road. The remaining section of Sam Allen Road west to SR 39 is in unincorporated Hillsborough County.

The existing roadways are two lane rural roads with twelve foot wide lanes and four foot paved shoulders (see Figures 1-2 and 1-3). Sam Allen Road was extended from SR 39 to Wilder Road as a two lane road in 1993, to allow for traffic to take this route around Plant City to SR 39.

This project is intended to ensure that the capacity of the roads will be sufficient through the design year, 2028.

PARK RD
Existing Typical Section
Sta. 185+00 to Sta. 202+00
Rural 2-Lane Typical Section



4

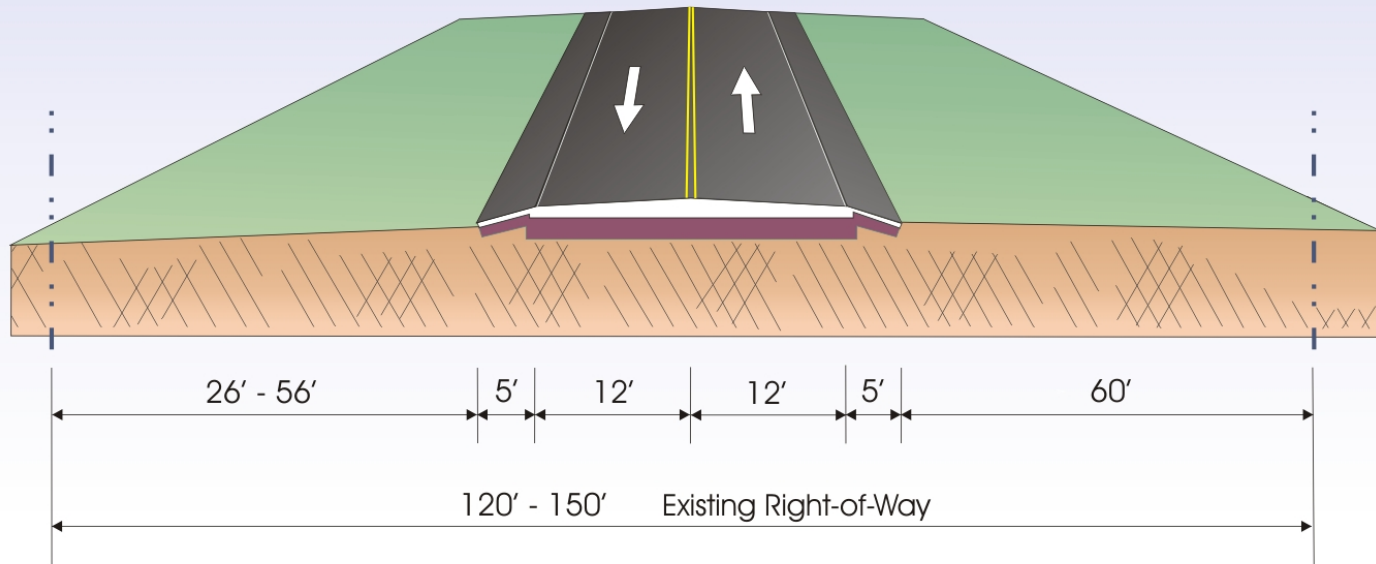


PARK RD / SAM ALLEN RD
From I-4 to Alexander St
Extension

WPI SEG 257862 1
FAP NO 0295-005

Figure 1-2

SAM ALLEN RD
Existing Typical Section
West of SR 39 to Park Rd
Two Lane Rural Typical Section



PARK RD / SAM ALLEN RD
From I-4 to Alexander St
Extension

WPI SEG 257862 1
FAP NO 0295-005

Figure 1-3

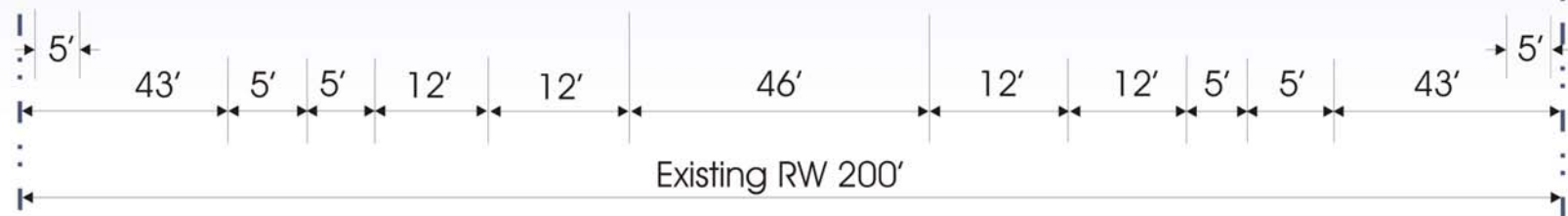
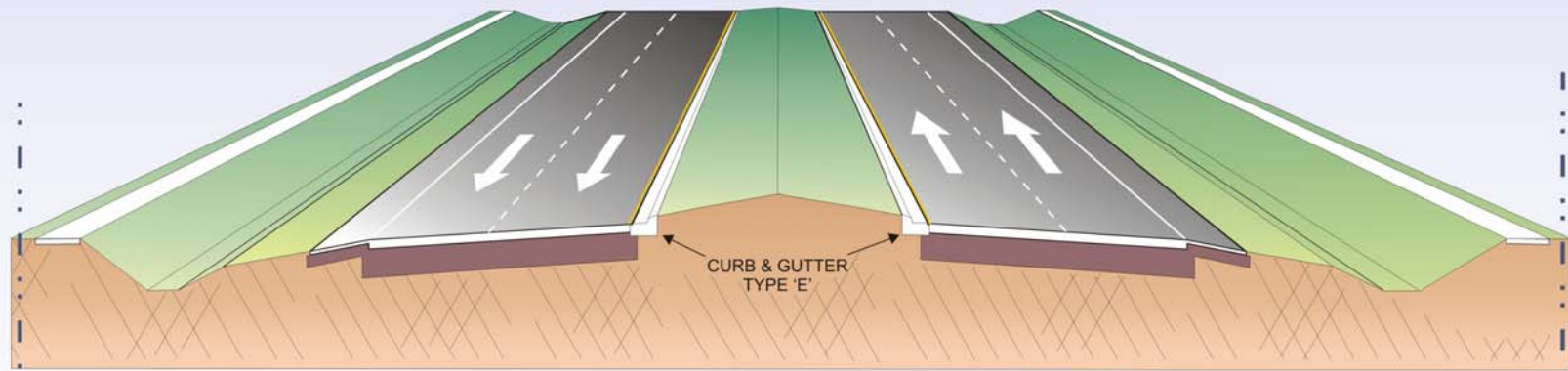
1.2 Recommended Alternative Description

The Recommended Alternative is a four lane divided typical section for both Park Road and Sam Allen Road. The realignment of the intersection of Park Road and Sam Allen Road is being considered as part of this study. This realignment would replace the existing T-intersection with a curve between the two roads, so that traffic between Park Road and Sam Allen Road would become through traffic, with a T-intersection designed for Sam Allen Road east of the intersection. The intersection realignment is considered as the ultimate design, with widening Park Road and Sam Allen Road to four lanes as a T-intersection being an interim solution.

Park Road's recommended typical section is suburban, with two 12-foot travel lanes and five foot paved shoulders on each side of a 46 foot wide raised median. Ditches are used to convey storm water to ponds. Five-foot sidewalks are proposed adjacent to the right-of-way (ROW) line. (see Figure 1-4).

Sam Allen Road's recommended typical is a modified suburban section with two 12-foot travel lanes, and a four-foot bicycle lane each side of a 26 foot wide raised median with four foot inside shoulders. Five-foot sidewalks are proposed adjacent to the ROW line. Four foot paved inside shoulders separate the inside travel lanes from the type "E" median curb. Swales are used to collect storm water. Because the swales are not large enough to convey storm water to ponds, an underground pipe system is to be used. (see Figure 1-5).

PARK RD
Proposed Typical Section
From I-4 to Sam Allen Rd
Rural 4-Lane Divided Typical Section



Design Speed = 55 mph

Not to scale

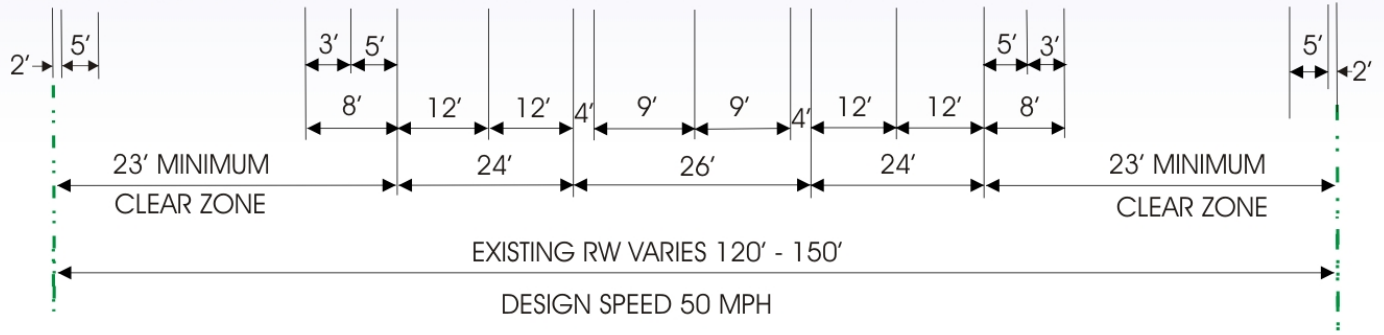
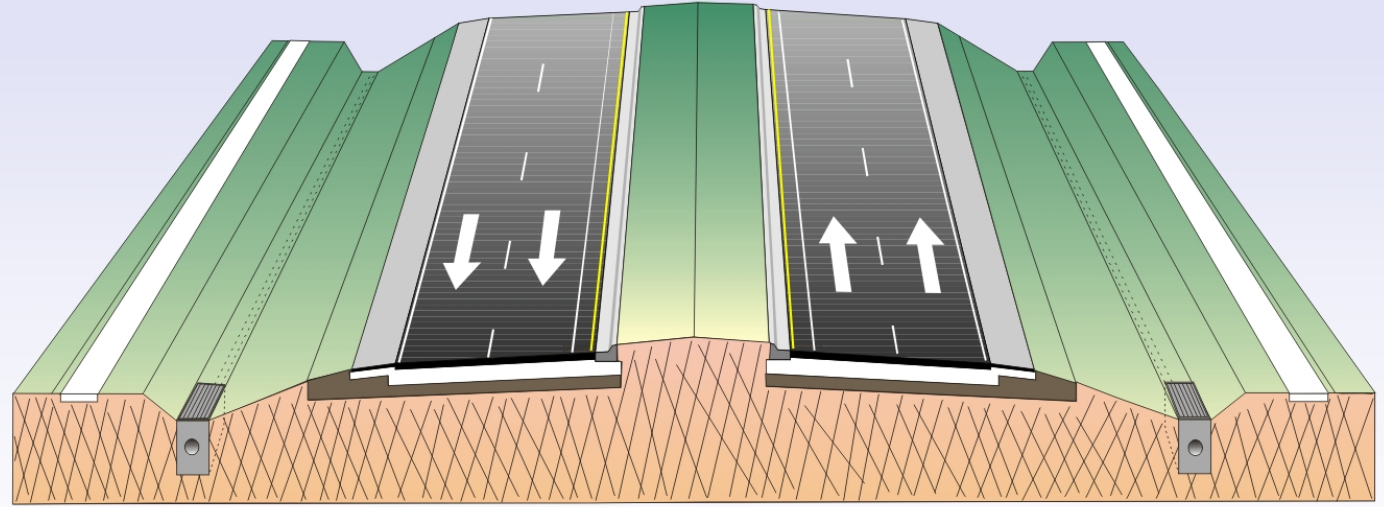


PARK RD / SAM ALLEN RD
 From I-4 to Alexander St Extension
 PD&E STUDY

WPI SEG 257862 1
 FAP NO 0295-005

Figure 1-4

SAM ALLEN RD
Proposed Typical Section
West of SR 39 to Park Rd
Suburban 4-Lane Divided Typical Section



PARK RD / SAM ALLEN RD
 From I-4 to Alexander St Extension
 PD&E STUDY

WPI SEG 257862 1
 FAP NO 0295-005

Figure 1-5

2.0 METHODOLOGY

2.1 Model and Noise Metrics

The study was prepared in accordance with *Title 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise*¹ using methodology established by the FDOT in the PD&E Manual², *Part 2, Chapter 17* (October 2003). Noise levels were predicted using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM), version 2.5. All measured and predicted noise levels are expressed in decibels (dB) using an “A”-scale (dBA) weighting. This scale most closely approximates the response characteristics of the human ear to traffic noise. All noise levels are reported as hourly equivalent noise levels (L_{Aeq1h}), which can be compared directly to criteria levels established by FHWA. The L_{Aeq1h} is defined as the equivalent steady-state sound level that, in a given hourly period, contains the same acoustic energy as the time-varying sound for the same hourly period.

2.2 Traffic Data

Traffic noise is heavily dependent on vehicle speed with the amount of noise generated by traffic increasing as the vehicle speed increases. Traffic data for year 2002 and the design year (2028) were reviewed to determine maximum traffic volumes that would allow traffic to flow at speeds consistent with established speed limits. To simulate “worst-case” conditions, Level of Service (LOS) C or demand traffic volumes, whichever is less, was modeled. Traffic volumes used in the analysis are summarized in Table 2-1.

**Table 2-1
Traffic Data**

Roadway Segment	Average Daily Traffic		Speed (miles per hour)
	Level of Service "C"	Demand	
Year 2002 (Existing Conditions)			
Park Road from I-4 to Sam Allen Road	13,800	8,300	45
Sam Allen Road from SR 39 to Park Road	13,800	6,600	50
Year 2028 (No Build Conditions)			
Park Road from I-4 to Sam Allen Road	13,800	17,700	45
Sam Allen Road from SR 39 to Park Road	13,800	14,100	50
Year 2028 (Build Conditions)			
Park Road from I-4 to Sam Allen Road	34,700	17,700	45
Sam Allen Road from SR 39 to Park Road	34,700	14,100	50

Note: Shaded Average Daily Traffic (ADT) volumes were used in the traffic noise analysis

A peak hour factor (K-factor) of 9.65 percent and directional factor (D-factor) of 55 percent were used to reduce the ADT volumes to hourly directional volumes. The hourly volumes were divided into five vehicle classifications (i.e., cars, heavy trucks, medium trucks, buses and motorcycles). The Park Road roadway segment utilized a total design hour truck factor of 4.5 percent with heavy trucks and medium trucks accounting for 3.2 percent and 1.3 percent of the hourly vehicle volume, respectively. Additionally, buses and motorcycles account for 0.4 percent and 0.1 percent of the hourly vehicle volume. The Sam Allen Road roadway segment utilized a total design hour truck factor of 5 percent with heavy trucks and medium trucks accounting for 3.5 percent and 1.5 percent of the hourly vehicle volume, respectively. Additionally, buses and motorcycles account for 0.4 percent and 0.1 percent of the hourly vehicle volume.

2.3 Noise Abatement Criteria

The FHWA has established noise levels at which noise abatement must be considered for various types of noise sensitive sites. These noise levels are referred to as the Noise

Abatement Criteria (NAC). As shown in Table 2-2, the NAC vary according to the activity category. Noise abatement measures are considered at noise sensitive sites when predicted traffic noise levels for Design Year Build conditions approach or exceed the NAC. The FDOT defines “approach” as within 1 dBA of the FHWA criteria.

**Table 2-2
FHWA Noise Abatement Criteria**

Activity Category	Leq(h)	Description of Land Use Activity Category
A	57 (Exterior)	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.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, FHWA, 2001.

Noise abatement must also be considered when a substantial increase in traffic noise will occur as a direct result of the transportation project. The FDOT defines a substantial increase as 15 or more decibels above existing conditions.

2.4 Noise Sensitive Sites

Noise sensitive sites are any property (owner-occupied, rented, or leased) where frequent human use occurs and where a lowered noise level would be of benefit. The existing land use adjacent to Park and Sam Allen Roads is mostly agricultural with developed areas used for residences and a few businesses. Within the project limits, noise sensitive land uses where frequent human use may occur and a lowered noise level may be of

benefit include the existing individual houses and residential development areas located to the north and south of Sam Allen Road.

In addition to existing noise sensitive sites, a traffic noise evaluation must also consider sites that have been planned, designed and programmed. Consistent with the FDOT PD&E Manual, sites that have been granted a building permit prior to the date of public knowledge are evaluated as existing noise sensitive sites. The residential developments that have received building permits are to be included in this noise analysis (i.e., residential sites within the Meadows at CountryWood along Arbor Estate Way and the Arbors at CountryWood along Grand Arbor Way).

Because of the elapsed time between when the final review of building permits was performed for this noise study (11/9/04) and when the date of public knowledge will be established, additional noise sensitive sites other than those considered in this report will require a future evaluation for traffic noise level changes due to the proposed project. As part of the commitments made during the PD&E phase, a review of building permit acquisition dates for more recently established noise sensitive sites will be performed prior to our project's future design phase. Any additional noise sensitive sites will be analyzed then.

Receiver points representing the noise sensitive sites were located in accordance with the PD&E Manual as follows:

- Residential receiver sites were placed at the edges of buildings closest to the major traffic noise source.
- Where more than one noise sensitive site was clustered together, a single receiver site was analyzed as representative of the group.
- Ground floor receiver sites were assumed to be 5 feet above the ground elevation.

2.5 Noise Abatement Consideration

As stipulated by 23 CFR 772, noise abatement was considered at all noise sensitive sites that were predicted to approach/exceed the NAC or where a substantial increase attributable to the project was predicted to occur. Abatement measures considered include traffic management measures, alignment modifications, property acquisition, land use controls and noise barriers.

2.5.1 Traffic Management Measures

As an abatement technique, traffic management measures include modified speed limits or prohibition of certain vehicle types. Modifying the speed limit would reduce the capacity of Park and Sam Allen Roads necessary to service the forecasted traffic volumes. As a public use corridor used to transport goods and support businesses, prohibiting truck traffic is not a viable option to reduce traffic noise. Therefore, traffic management measures are not considered a feasible abatement technique.

2.5.2 Alignment Modification

Alignment modification involves orientating and/or constructing the roadway at a sufficient distance from the noise sensitive areas so as to minimize traffic noise. The existing alignment of Park and Sam Allen Roads dictates the proposed horizontal and vertical alignment with project costs and detrimental effects on land use minimized by making use of the existing corridor. An alignment modification that could provide a substantial noise reduction is, therefore, not a feasible or reasonable abatement measure.

2.5.3 Property Acquisition

The acquisition of property to provide noise buffers is not feasible due to the unavailability of vacant land in proximity to noise sensitive sites (i.e., affected noise sensitive sites bordering the corridor of Park and Sam Allen Roads).

2.5.4 Land Use Controls

Land use controls can be used to minimize traffic noise in future developments or areas where redevelopment occurs. The distance to the 66 dBA noise contour for Design Year Build conditions is provided in Table 2-3. Local planning officials can use the noise contour information in an effort to avoid development of noise sensitive land uses on currently undeveloped lands.

**Table 2-3
Design Year Noise Contours**

Roadway Segment of US 98	Distance to the 66 dBA Noise Contour¹
Park Road from I-4 to Sam Allen Road	54 ft
Sam Allen Road from SR 39 to Park Road	76 ft

¹ Distance from the proposed nearest edge of pavement.

2.5.5 Noise Barriers

Noise barriers reduce noise levels by blocking the sound path between a roadway and noise sensitive site. To effectively reduce traffic noise, a noise barrier must be relatively long, continuous (with no intermittent openings) and of sufficient height. Interrupting a continuous barrier for a driveway or secondary roadway connection may negate any potential noise reduction. Noise barriers located along the ROW line were evaluated for heights ranging from 8 to 22 feet in 2-foot increments. For a particular height, the length

of a barrier was optimized to minimize cost while trying to maintain at least a 5 dBA reduction at noise sensitive sites that have predicted noise levels which approach or exceed the NAC.

For a noise barrier to be considered feasible and cost reasonable, the following minimum conditions should be met:

- A noise barrier must provide a minimum noise reduction of at least 5 dBA with a design goal of 10 dBA, or more.
- The cost of the noise barrier should not exceed \$35,000 per benefited noise sensitive site. This is the reasonable cost limit established by the FDOT. A benefited noise sensitive site is defined as a site that would experience at least a 5 dBA reduction as a result of providing a noise barrier. The current unit cost used to evaluate economic reasonableness is \$25 per square foot, which covers barrier materials and labor.

A noise barrier was evaluated for each noise sensitive site with a predicted noise level that approaches or exceeds the NAC for the Design Year (2028) Build conditions. At each noise barrier location at least a 5 dBA reduction was established. Based on this reduction, the barrier's cost reasonableness was evaluated.

At some locations, noise barriers may benefit residences with a predicted noise level of less than 66 dBA. Since abatement consideration at these residences was not required, noise barrier lengths or heights were not increased to benefit these sites. However, if benefited because of the proximity to an affected residence, these sites were included when determining cost per benefited noise sensitive site. This methodology is consistent with FHWA guidance.

After determining the amount of noise reduction and cost, other factors such as community desires, adjacent land uses, and land use stability, antiquity, predicted noise level increases, safety considerations, drainage issues, utility conflicts, maintenance

requirements, and construction issues are also considered when evaluating the feasibility and reasonableness of providing noise barriers.

3.0 RESULTS

3.1 Noise Monitoring

Noise monitoring was performed on January 30, 2003 for the purpose of validating noise predictions generated by TNM. The noise monitoring followed procedures documented in Measurement of Highway-Related Noise³ (FHWA, 1996). Noise measurements were obtained using a Metrosonics (meter 1) and two CEL (meters 2 and 3) noise monitors. These noise monitors were calibrated at 102.0 dB for meter 1 and 114.0 dB for meters 2 and 3. Most of the monitoring events were ten minutes in duration consistent with the PD&E Manual. Trials 4 and 5 from monitoring site #1 were 30 minutes.

Site selection for the noise monitoring was dependent on the location of noise sensitive sites and access to monitoring sites where traffic data could be simultaneously recorded. Traffic volumes by vehicle classification (i.e., cars, medium trucks, heavy trucks) were documented for each 10-minute monitoring event. Buses and motorcycles were also classified separately during the 30-minute events. Average traffic speeds for each vehicle type were determined by sampling with a radar gun.

A noise level prediction was modeled for each monitoring event using TNM. The predicted and monitored noise levels for each event are provided in Table 3-1. The average variance between predicted and measured noise levels for all three of the meters at each monitoring site was less than three dBA. Therefore, the noise model verification was within the accepted level of accuracy documented in FDOT's PD&E Manual.

**Table 3-1
Noise Monitoring and Model Verification**

Location	Trial #	Time/ Date		Field Measured Level (dBA)	Computer Predicted Level (dBA)	Decibel Difference (dBA)	Average Decibel Difference (dBA)
Monitoring Site # 1 Meter #1 West of Park Road, just east of a mobile home park - 38 ft west of the edge of pavement.	1	1/30/03	10:05AM	65.7	66.7	1.0	1.18
	2	1/30/03	10:20AM	63.7	65.7	2.0	
	3	1/30/03	10:38AM	66.0	67.7	1.7	
	4	1/30/03	1:46PM	66.1	65.7	0.4	
	5	1/30/03	2:24PM	65.7	66.5	0.8	
Monitoring Site # 1 Meter #2 West of Park Road, just east of a mobile home park - 100 ft west of the centerline of the road.	1	1/30/03	10:05AM	59.3	60.9	1.6	2.30
	2	1/30/03	10:20AM	56.3	60.0	3.7	
	3	1/30/03	10:38AM	58.4	61.8	3.4	
	4	1/30/03	1:46PM	58.6	59.9	1.3	
	5	1/30/03	2:24PM	59.1	60.6	1.5	
Monitoring Site # 1 Meter #3 West of Park Road, just east of a mobile home park - 200 ft west of the center line of the road.	1	1/30/03	10:05AM	54.1	55.5	1.4	2.82
	2	1/30/03	10:20AM	50.2	54.9	4.7	
	3	1/30/03	10:38AM	52.6	56.4	3.8	
	4	1/30/03	1:46PM	52.3	54.5	2.2	
	5	1/30/03	2:24PM	53.1	55.1	2	
Monitoring Site # 2 Meter #1 East of Sam Allen Road at Fox Den Lane - 50 ft east of the edge of pavement.	1	1/30/03	11:05AM	60.0	59.5	0.5	N/A
Monitoring Site # 2 Meter #2 East of Sam Allen Road at Fox Den Lane - 100 ft east of the centerline of the road.	1	1/30/03	11:05AM	55.3	55.1	0.2	N/A

3.2 Predicted Noise Levels

Noise levels were predicted at 43 receiver locations representing 82 residences along Sam Allen Road. There were no noise sensitive sites located along Park Road within the

project limits. Predicted noise levels for the noise sensitive sites are provided in Appendix A. The locations of the receivers identified in Appendix A are depicted in the aerials found in Appendix B.

3.2.1 Noise Sensitive Sites South of Sam Allen Road

Sixteen receivers representing 28 residences were evaluated on the south side of Sam Allen Road. All of these residences are single-family homes where frequent human use would commonly occur, and were evaluated under Activity Category B of the NAC. These receivers represent one house located west of SR 39, 12 houses located in the Oaks at CountryWood residential development, and 15 houses located east of Country Meadows Boulevard.

Noise levels at six of the residences are predicted to approach or exceed the NAC for the Design Year Build condition. Compared to existing conditions, noise levels for the Design Year (2028) Build condition are predicted to increase by 5.3 dBA or less. Therefore, no noise sensitive sites are expected to experience a substantial increase in traffic noise as a result of the proposed project.

House West of SR 39 (Sta. 118)

Receiver R1 represents a single family home located about 950 feet west of the SR 39/ Sam Allen Road intersection and approximately 43 feet from the nearest proposed through lane of Sam Allen Road. For year 2028 Build conditions, the traffic noise level is predicted to exceed the NAC at this residence.

The effectiveness of a noise barrier at this location is severely limited by the driveway opening. Due to the line-of-sight requirement for drivers accessing Sam Allen Road, the opening would negate the construction of a barrier of sufficient length to be effective. Therefore, a noise barrier is not a feasible abatement measure.

The Oaks at CountryWood Residential Development (Sta. 146 to Sta. 153)

Receivers R34 through R43 represent 12 residences located to the west and east of Sunset Oaks Drive. Traffic noise levels at the five residences in closest proximity to Sam Allen Road (i.e., most of the front row), represented by receivers R35, R36, R38, R39 and R40, are predicted to approach the NAC. These residences are located approximately 70 to 75 feet from the nearest proposed through lane of Sam Allen Road.

The results of the barrier analysis are provided in Table 3-2. A noise barrier at this location must be divided into two sections to accommodate Sunset Oaks Drive. Two noise barrier sections located within the ROW (exact location to be determined during the design phase) are predicted to provide at least a 5 dBA reduction to all five affected residences.

As shown in Table 3-2, the noise barrier combination is potentially cost reasonable up to a height of 14 feet. However, the lowest cost per benefited residence that can be achieved by these barriers is \$25,480 at a height of eight feet, and lengths of 291 and 346 feet on the east and west side of Sunset Oaks Drive respectively. The eight foot barrier height and corresponding lengths are the recommended barrier configuration at this location because it is the most cost effective choice that maximizes the amount of affected residences that can be benefited, while remaining below the cost reasonable factor of \$35,000 per benefited residence. Increasing the height of these barriers to 10, 12 or 14 feet will not provide any substantial amount of increase to the average noise reduction at the benefited residences.

**Table 3-2
Noise Barrier Evaluation for The Oaks At
CountryWood Residential Development**

Barrier Height (ft)	Barrier Length ¹ (ft)	Number of Benefited Residences			Average Noise Reduction (dBA)	Total Cost ⁴	Cost per Benefited Residence
		Affected ²	Not Affected ³	Total			
8 ⁵	E - 291 W - 346	5	0	5	6.0	\$127,400	\$25,480
10	E - 242 W - 296	5	0	5	6.3	\$134,500	\$26,900
12	E - 242 W - 247	5	0	5	6.2	\$146,700	\$29,340
14	E - 242 W - 247	5	0	5	6.4	\$171,150	\$34,230
16	E - 242 W - 247	5	0	5	6.6	\$195,600	\$39,120
18	E - 194 W - 247	5	0	5	6.0	\$198,450	\$39,690
20	E - 194 W - 247	5	0	5	6.1	\$220,500	\$44,100
22	E - 194 W - 247	5	0	5	6.2	\$242,550	\$48,510

¹Variation in the barrier length is a result of optimizing the length for a particular height. (TNM file - OAKS_bars)

²Residences with a predicted noise level that approaches or exceeds the NAC.

³Residences with a predicted noise level that does not approach the NAC.

⁴Unit cost of \$25 per square foot.

⁵Recommended barrier height.

During the design phase of this project, the proposed noise barrier at this location should be further evaluated. Engineering details developed during the design phase will be incorporated into the noise barrier analysis. The design analysis will refine the feasible and cost reasonable evaluation of the noise barrier. A refined length and height will be established if the noise barrier is determined to remain a feasible and cost reasonable abatement measure in the design analysis. Other considerations for evaluating feasibility and reasonableness are provided in Table 3-3.

**Table 3-3
Traffic Noise Abatement Considerations for The Oaks at CountryWood Residential
Development**

Evaluation Criteria	Comment
1. Relationship of future levels to the NAC	The approach to the NAC is exceeded by a maximum of 0.7 decibels (66.7 dBA).
2. Insertion Loss	Average insertion loss of between 6.0 and 6.4 dBA for the cost reasonable and feasible barrier configurations.
3. Safety	The noise barrier is to be located along the proposed ROW line. Line-of-sight was considered.
4. Community desires	No documented public comments to date.
5. Accessibility	Driveways, intersecting streets and merge/diverge areas were considered.
6. Land use stability	The existing residential land use is not anticipated to change due to this project.
7. Local controls	Since a barrier would be placed within the proposed ROW line, there should be no restrictions imposed by local agencies.
8. Views of local officials with jurisdiction	No documented comments to date.
9. Noise level changes from existing to future build conditions	Predicted increase ranging from 1.5 to 5.3 dBA.
10. Noise level changes from future no-build to future build conditions	Predicted increase ranging from 1.5 to 2.0 dBA.
11. Antiquity	The residences were constructed between 1996 and 2004.
12. Constructability	No known issues, but will be given further consideration during the design phase of this project.
13. Maintainability	No known issues, but will be given further consideration during the design phase of this project.
14. Aesthetics	Will be considered further during the design phase of this project.
15. ROW needs including access rights, easements for construction and/or maintenance, and additional land	Will be considered further during the design phase of this project if required.
16. Cost	The cost reasonable and feasible barrier configurations are below the criteria of \$35,000 per benefited residence.
17. Utilities	Will be considered further during the design phase of this project.
18. Drainage	Will be considered further during the design phase of this project.
19. Special land use considerations	None
20. Other environmental considerations	Will be considered further during the design phase of this project.
21. Additional considerations	None

Residences East of Country Meadows Boulevard (Sta. 153 to Sta. 178)

Receivers R29 through R33 represent 15 residences located on lots adjacent to Sam Allen Road. These single family homes have large front yards and are at least 130 feet from the nearest proposed through lane of Sam Allen Road. Traffic noise levels are not predicted to approach or exceed the NAC at any of these residences.

3.2.2 Noise Sensitive Sites North of Sam Allen Road

Twenty-seven receivers representing 54 residences were evaluated on the north side of Sam Allen Road. All of these residences are single-family homes where frequent human use would commonly occur, and were evaluated under Activity Category B of the NAC. These receivers represent two houses located west of SR 39, 20 houses located in the Lakes at CountryWay residential development, 26 houses located in the Meadows at CountryWood residential development, and six houses located in the Arbors at CountryWood residential development. Within the Meadows at CountryWood development, 17 residences are located along Don Tab Way, and the other nine houses are located along Arbor Estate Way.

Noise levels at a total of 10 residences are predicted to approach or exceed the NAC for the Design Year Build condition. Compared to existing conditions, noise levels for the 2028 Build condition are predicted to increase by 5.5 dBA or less. Therefore, no noise sensitive sites are expected to experience a substantial increase in traffic noise as a result of the proposed project.

Houses West of SR 39 (Sta. 118 to Sta.121)

Receivers R2 and R3 represent two single family homes located about 650 and 850 feet west of the SR 39 and Sam Allen Road intersection, respectively. Traffic noise at both residences located adjacent to Sam Allen Road are predicted to approach or exceed the

NAC. The residences are located approximately 70 to 75 feet from the nearest proposed through lane of Sam Allen Road.

The effectiveness of a noise barrier at this location is limited by the driveway opening. Due to the line-of-sight requirement for drivers accessing Sam Allen Road, the opening would negate the construction of a barrier of sufficient length to be effective. Therefore, a noise barrier is not a feasible abatement measure.

The Lakes at CountryWay Residential Development (Sta. 129 to Sta. 146)

Receivers R4 through R6 represent 20 residences located to the west and east of Falcon Crest Street East. The residences to the east of this entrance drive are separated from Sam Allen road by a golf course and all of the residences within this development are greater than 110 feet from the nearest proposed through lane. Traffic noise levels are not predicted to approach or exceed the NAC at any of the residences.

The Meadows at CountryWood Residential Development along Don Tab Way (Sta. 147 to Sta. 153)

Receivers R7 through R13 represent 17 residences located along Don Tab Way. Traffic noise levels at six of the residences in closest proximity to Sam Allen Road, represented by receivers R8, R9, R11 and R12, are predicted to approach the NAC for year 2028 Build conditions. These residences are located approximately 70 to 75 feet from the nearest proposed through lane of Sam Allen Road.

The results of the barrier analysis are provided in Table 3-4. A noise barrier at this location must be divided into two sections to accommodate West Country Meadows Boulevard. Two noise barrier sections located within the ROW (exact location to be determined during the design phase) are predicted to provide at least a 5 dBA reduction to all six affected residences.

As shown in Table 3-4, the noise barrier combination is potentially cost reasonable up to a height of 22 feet. However, the recommended barrier configuration at this location is the two 10 foot high barriers with lengths of 559 and 50 feet at the west and east sides of West Country Meadows Boulevard respectively. The cost per benefited residence for the 10 foot high barriers is \$19,031. The 10 foot barrier height and corresponding lengths were chosen because they are the most cost effective configurations that maximize the number of affected residences that can be benefited, while remaining below the cost reasonability factor of \$35,000 per benefited residence. Increasing the height of these barriers to 12, 14, 16, 18, 20 or 22 feet will not provide any substantial amount of increase to the average noise reduction at the benefited residences.

**Table 3-4
Noise Barrier Evaluation for The Meadows at CountryWood Residential
Development along Don Tab Way**

Barrier Height (ft)	Barrier Length ¹ (ft)	Number of Benefited Residences			Average Noise Reduction (dBA)	Total Cost ⁴	Cost per Benefited Residence
		Impacted ²	Not Impacted ³	Total			
8	W - 628 E - 1155	6	2	8	6.3	\$356,600	\$44,575
10 ⁵	W - 559 E - 50	6	2	8	7.0	\$152,250	\$19,031
12	W - 559 E - 50	6	5	11	7.2	\$182,700	\$16,609
14	W - 508 E - 50	6	5	11	7.0	\$195,300	\$17,755
16	W - 508 E - 50	6	6	12	6.9	\$223,200	\$18,600
18	W - 508 E - 50	6	6	12	7.1	\$251,100	\$20,925
20	W - 508 E - 50	6	6	12	7.3	\$279,000	\$23,250
22	W - 508 E - 50	6	6	12	7.4	\$306,900	\$25,575

(TNM file – PSABarsN_11_11_04)

¹ Variation in the barrier length is a result of optimizing the length for a particular height.

² Residences with a predicted noise level that approaches or exceeds the NAC.

³ Residences with a predicted noise level that does not approach the NAC.

⁴ Unit cost of \$25 per square foot.

⁵ Recommended barrier height.

During the design phase of this project, the proposed noise barrier at this location should be further evaluated. Engineering details developed during the design phase will be incorporated into the noise barrier analysis. The design analysis will refine the feasible and cost reasonable evaluation of the noise barrier. A refined length and height will be established if the noise barrier is determined to remain a feasible and cost reasonable abatement measure in the design analysis. Other considerations for evaluating feasibility and reasonableness are provided in Table 3-5.

**Table 3-5
Traffic Noise Abatement Considerations for The Meadows at CountryWood
Residential Development along Don Tab Way**

Evaluation Criteria	Comment
1. Relationship of future levels to the NAC	The approach to the NAC is exceeded by a maximum of 0.7 decibels (66.7 dBA).
2. Insertion Loss	Average insertion loss of between 6.9 and 7.4 dBA for the cost reasonable and feasible barrier configurations.
3. Safety	The noise barrier is to be located along the proposed ROW line. Line-of-sight was considered.
4. Community desires	No documented public comments to date.
5. Accessibility	Driveways, intersecting streets and merge/diverge areas were considered.
6. Land use stability	The existing residential land use is not anticipated to change due to this project.
7. Local controls	Since a barrier would be placed within the proposed ROW line, there should be no restrictions imposed by local agencies.
8. Views of local officials with jurisdiction	No documented comments to date.
9. Noise level changes from existing to future build conditions	Predicted increase ranging from 4.4 to 4.6 dBA.
10. Noise level changes from future no-build to future build conditions	Predicted increase ranging from 1.1 to 1.3 dBA.
11. Antiquity	The residences were constructed between 1983 and 1988.
12. Constructability	No known issues, but will be given further consideration during the design phase of this project.
13. Maintainability	No known issues, but will be given further consideration during the design phase of this project.
14. Aesthetics	Will be considered further during the design phase of this project.
15. ROW needs including access rights, easements for construction and/or maintenance, and additional land	Will be considered further during the design phase of this project if required.
16. Cost	The cost reasonable and feasible barrier configurations are below the criteria of \$35,000 per benefited residence.
17. Utilities	Will be considered further during the design phase of this project.
18. Drainage	Will be considered further during the design phase of this project.
19. Special land use considerations	None
20. Other environmental considerations	Will be considered further during the design phase of this project.
21. Additional considerations	None

**The Meadows at CountryWood Residential Development along Arbor Estate Way
(Sta. 154 to Sta. 165)**

Receivers R749 through R774 represent nine residences located along Arbor Estate Way. Traffic noise levels at the two residences in closest proximity to Sam Allen Road, represented by receivers R14 through R17, are predicted to exceed the NAC for year 2028 Build conditions. These residences are located approximately 60 to 65 feet from the nearest proposed through lane of Sam Allen Road.

The results of the barrier analysis are provided in Table 3-6. A noise barrier located along the ROW is predicted to provide at least a 5 dBA reduction to both of the affected residences at all barrier heights analyzed. However, the low density of residential development at this location influences the cost per benefited residence. The lowest cost per benefited residence that could be achieved was \$40,200 for the 8 foot barrier height, which exceeds the reasonableness criteria of \$35,000.

Considering residences permitted at the time of this noise analysis, a noise barrier at this location was determined to not be a cost reasonable abatement measure. Construction within this residential community is ongoing, and permitted residences were determined through a field review performed on November 9, 2004. Building permit acquisition dates will be reviewed during the design phase to identify residences that received a building permit after November 9, 2004 but prior to the date of public knowledge (i.e., date that the project's environmental document is approved). Using the status of building permits determined during the design phase, the noise study will be updated and any barrier's cost reasonableness will be re-determined as needed.

Table 3-6
Noise Barrier Evaluation for The Meadows at CountryWood Residential
Development along Arbor Estate Way

Barrier Height (ft)	Barrier Length ¹ (ft)	Number of Benefited Residences			Average Noise Reduction (dBA)	Total Cost ⁴	Cost per Benefited Residence
		Impacted ²	Not Impacted ³	Total			
8	402	2	0	2	5.6	\$80,400	\$40,200
10	352	2	0	2	5.9	\$88,000	\$44,000
12	352	2	0	2	6.2	\$105,600	\$52,800
14	352	2	0	2	6.5	\$123,200	\$61,600
16	352	2	0	2	6.6	\$140,800	\$70,400
18	352	2	0	2	6.8	\$158,400	\$79,200
20	352	2	0	2	6.8	\$176,000	\$88,000
22	352	2	0	2	6.9	\$193,600	\$96,800

(TNM file – PSABarsN_11_11_04)

¹ Variation in the barrier length is a result of optimizing the length for a particular height.

² Residences with a predicted noise level that approaches or exceeds the NAC.

³ Residences with a predicted noise level that does not approach the NAC.

⁴ Unit cost of \$25 per square foot.

The Arbors at CountryWood Residential Development along Grand Arbor Way
(Sta. 169 to Sta. 179)

Receivers R792 through R807 represent six residences located on the north side of Grand Arbor Way. These residences are located more than 180 feet from the nearest proposed through lane of Sam Allen Road and traffic noise levels are not predicted to approach the NAC. Therefore, abatement considerations are not warranted.

Considering residences permitted at the time of this noise analysis, a noise barrier at this location was determined to not be a cost reasonable abatement measure. Construction within this residential community is ongoing, and permitted residences were determined through a field review performed on November 9, 2004. Building permit acquisition dates will be reviewed during the design phase to identify residences that received a

building permit after November 9, 2004 but prior to the date of public knowledge (i.e., date that the project's environmental document is approved). Using the status of building permits determined during the design phase, the noise study will be updated and any barrier's cost reasonableness will be re-determined as needed.

4.0 CONCLUSIONS

For the Design Year Build condition, 16 residences are predicted to experience noise levels that approach or exceed the NAC. Noise abatement measures were evaluated for these noise sensitive sites. An evaluation of traffic system management techniques, alignment modifications and property acquisition indicated that these abatement measures were not feasible or reasonable. Land use controls can be used by local planning officials to minimize development or redevelopment of noise sensitive land uses in proximity to Sam Allen and Park Roads. A copy of the final Traffic Noise Analysis Technical Memorandum will be furnished to local officials to assist them in establishing compatible land uses for future development.

Providing noise barriers as a means of abating traffic noise was also evaluated. At two locations, noise barriers situated within the proposed ROW were determined to be a potentially feasible and cost reasonable abatement measure. These barriers could provide at least a 5 dBA reduction to 11 of the 16 affected residences at a cost below \$35,000. A summary of potentially feasible and cost reasonable noise barriers is provided in Table 4-1.

**Table 4-1
Summary of Feasible and Cost Reasonable Noise Barrier Configurations**

Location	Barrier Heights ¹ (ft)	Barrier Lengths ² (ft)	Number of Benefited Residences			Total Estimated Costs ⁵	Cost per Benefited Residence ⁵
			Affected	Other ³	Total ⁴		
Oaks at CountryWood	8 to 14	East Section 242 to291 West Section 247 to346	5	0	5	\$127,400 to \$171,150	\$25,480 to \$34,230
Meadows at CountryWood (Don Tab Way)	10 to 22	East Section 50 West Section 508 to559	6	2 to 6	8 to 12	\$152,250 to \$306,900	\$16,609 to \$25,575

1 Barrier height would be constant for a particular barrier configuration.

2 Barrier length varies depending on barrier height.

3 "Other" refers to residences that are not impacted by the project (traffic noise levels predicted to be less than 66 dBA) but are benefited by the noise barrier. The number of other residences benefited varies depending on barrier height,

4 Total number of residences benefited varies depending on the number of "other" residences benefited.

5 Cost is based on a unit cost of \$25 per square foot. Total cost varies depending on the barrier height and cost per benefited residence varies depending on the number of "other" residences benefited.

Recommended barrier configurations for the Oaks at CountryWood and Meadows at CountryWood along Don Tab Way residential developments are shown in Table 4-2. These barrier heights and lengths were chosen because they are the most cost effective configurations that maximize the amount of affected residences that can be benefited, while remaining below the cost reasonability factor of \$35,000 per benefited residence. Increasing the height of these barriers will not provide any substantial amount of increase to the average noise reduction at the benefited residences.

**Table 4-2
Summary of Recommended Noise Barrier Configurations**

Location	Barrier Heights ¹ (ft)	Barrier Lengths ² (ft)	Number of Benefited Residences			Total Estimated Cost ⁵	Cost per Benefited Residence ⁵
			Affected	Other ³	Total ⁴		
Oaks at CountryWood	8	East Section 291 West Section 346	5	0	5	\$127,400	\$25,480
Meadows at CountryWood (Don Tab Way)	10	East Section 50 West Section 559	6	2	8	\$152,250	\$19,031

- 1 Barrier height would be constant for a particular barrier configuration.
- 2 Barrier length varies depending on barrier height.
- 3 "Other" refers to residences that are not impacted by the project (traffic noise levels predicted to be less than 66 dBA) but are benefited by the noise barrier. The number of other residences benefited varies depending on barrier height.
- 4 Total number of residences benefited varies depending on the number of "other" residences benefited.
- 5 Cost is based on a unit cost of \$25 per square foot. Total cost varies depending on the barrier height and cost per benefited residence varies depending on the number of "other" residences benefited.

Based on the noise evaluation performed to date, further consideration of noise barriers will be given during the project's final design process. The traffic noise barrier evaluation for each location will be refined using specific horizontal and vertical alignment data along with other factors that are developed during final design.

A land use review will be implemented again during the project's design phase to identify noise sensitive sites that have received a building permit after November 9, 2004, but prior to the date of public knowledge (i.e., date that the project's environmental document is approved). If the review identifies noise sensitive sites that have been permitted prior to the date of public knowledge, then those noise sensitive sites will be evaluated for traffic noise and abatement considerations, if needed.

During final design, a commitment to construct feasible and reasonable noise abatement will be contingent upon the following conditions:

- Detailed noise analysis during the final design process supports the need for abatement.
- Detailed noise barrier analysis indicates that the cost of the barriers will not exceed the cost reasonable criteria.
- Community input regarding desires, types, heights, and locations of barriers is received by the implementing agency and supports the construction of noise barriers.
- Preferences regarding compatibility with adjacent land uses, particularly as expressed by officials having jurisdiction over such lands, has been addressed.
- Safety and engineering aspects related to roadway users and adjacent property owners have been reviewed and any conflicts or issues resolved.
- Any other mitigating circumstances revealed during final design have been analyzed and resolved.

Based on the noise analysis performed to date, there appears to be no feasible and reasonable abatement measures to mitigate traffic noise level changes due to the proposed project at the remaining five residences along the project corridor with predicted noise levels that approach or exceed the NAC for the Design Year Build condition.

5.0 CONSTRUCTION NOISE AND VIBRATION

During the construction phase of the proposed project, short-term noise may be generated by stationary and mobile construction equipment. The construction noise will be temporary at any location and will be controlled by adherence to the most recent edition of the FDOT Standard Specifications for Road and Bridge Construction⁴.

Using FDOT's listing of vibration sensitive sites, residences were identified as potentially sensitive to vibration caused during construction. If during final design it is determined that provisions to control vibration are necessary, the project's construction provisions can include the necessary provisions as needed.

6.0 PUBLIC COORDINATION

Local officials can promote compatibility between land development and highways. A copy of this report will be provided to local agencies responsible for controlling land use.

The 66 dBA noise contour previously described in Section 2.5.4 and other predicted noise levels provided in this report can be used to restrict development which would be considered incompatible with traffic noise generated from the Park and Sam Allen Road corridor. Local officials can use the noise contour data to establish compatible development of currently undeveloped parcels or compatible redevelopment in areas where land use changes.

7.0 REFERENCES

1. Title 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise; Federal Highway Administration; April 2001.
2. PD&E Manual, Part 2, Chapter 17, Florida Department of Transportation; Tallahassee, Florida; October, 2003.
3. Measurement of Highway-Related Noise; Federal Highway Administration; Springfield, VA; May 1996.
4. Standard Specifications for Road and Bridge Construction; Florida Department of Transportation; Tallahassee, Florida; 2003.

APPENDICES

Appendix A: Predicted Noise Levels
Appendix B: Project Aerials

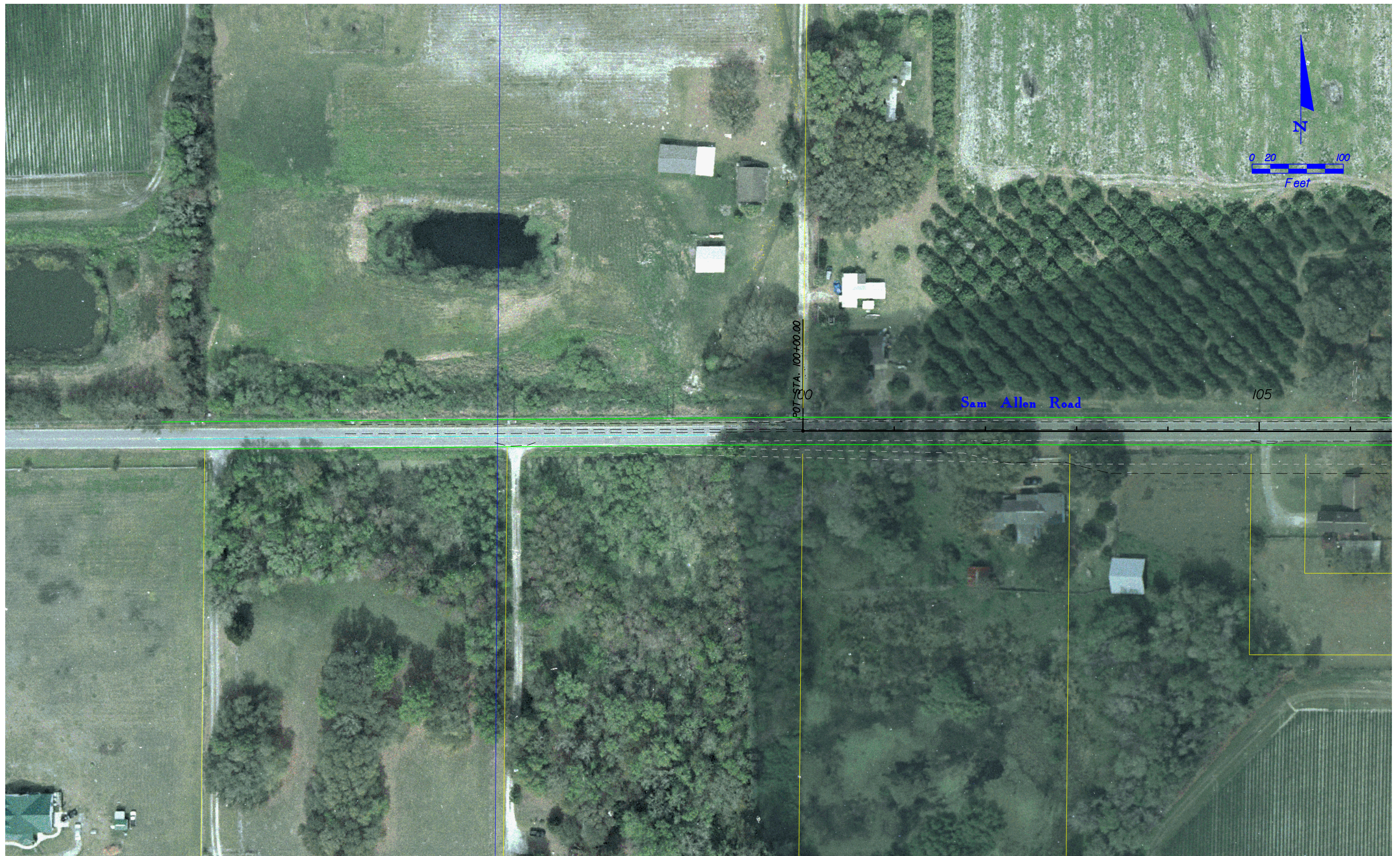
Appendix A
Predicted Noise Levels

Predicted Noise Levels for the Park/Sam Allen Road PD&E Study

Receiver Identification (Aerial Sheet No.)	Noise Sensitive Sites Represented	2002 Existing (dBA)	2028 No-Build (dBA)	2028 Build (dBA)	Difference between Existing and Build (dBA)	NAC Approached Or Exceeded
Southern Receivers						
House west of SR 39						
R1 (A1)	1 residence	67.0	70.3	70.4	3.3	Y
The Oaks at CountryWood Residential Development						
R34 (A3)	1 residence	58.8	62.1	63.6	1.5	N
R35 (A3)	1 residence	61.2	64.5	66.2	5	Y
R36 (A3)	1 residence	61.8	65.1	66.6	4.8	Y
R37(A3)	1 residence	60.2	63.5	65.4	5.2	N
R38 (A3)	1 residence	61.7	65.0	66.7	5	Y
R39 (A3)	1 residence	61.6	64.8	66.5	4.9	Y
R40 (A3)	1 residence	61.9	65.1	66.7	4.8	Y
R41 (A3)	3 residences	53.5	56.8	58.5	5	N
R42 (A3)	1 residence	53.5	56.8	58.7	5.2	N
R43 (A3)	1 residence	54.8	58.1	60.1	5.3	N
Houses east of Country Meadows Boulevard						
R29 (A5)	1 residence	56.0	59.3	60.1	4.1	N
R30 (A5)	4 residences	51.5	54.8	56.8	5.3	N
R31 (A4)	1 residence	56.1	59.4	60.6	4.5	N
R32 (A4)	4 residences	53.9	57.2	58.2	4.3	N
R33 (A4)	5 residences	53.1	56.4	57.4	4.3	N
Northern Receivers						
Houses west of SR 39						
R2 (A1)	1 residence	65.2	68.4	68.4	3.2	Y
R3 (A1)	1 residence	63.8	67.1	66.7	2.9	Y
The Lakes at CountryWay Residential Development						
R4 (A2)	4 residences	60.9	64.2	62.6	1.7	N
R5 (A3)	2 residences	57.3	60.6	61.2	3.9	N
R6 (A3)	14 residences	54.7	58.0	58.7	4.0	N
The Meadows at CountryWood Residential Development Along Don Tab Way						
R7 (A3)	1 residence	60.4	63.6	64.8	4.4	N
R8 (A3)	1 residence	61.8	65.0	66.2	4.4	Y
R9 (A3)	3 residences	61.7	65.0	66.2	4.5	Y
R10 (A3)	2 residences	60.8	64.1	65.4	4.6	N
R11 (A3)	1 residence	62.3	65.6	66.7	4.4	Y
R12 (A4)	1 residence	62.2	65.5	66.7	4.5	Y
R13 (A3)	8 residences	55.0	58.3	59.5	4.5	N

The Meadows at CountryWood Residential Development Along Arbor Estate Way						
R749 (A4)	1 residence	63.0	66.2	67.2	4.2	Y
R753 (A4)	1 residence	62.7	66.0	67.0	4.3	Y
R764 (A4)	1 residence	54.9	58.2	59.1	4.2	N
R765 (A4)	1 residence	54.7	58.0	58.9	4.2	N
R769 (A4)	1 residence	54.5	57.8	59.1	4.6	N
R770 (A4)	1 residence	54.9	58.2	59.7	4.8	N
R771 (A4)	1 residence	54.9	58.2	59.9	5.0	N
R772 (A4)	1 residence	54.4	57.7	59.5	5.1	N
R774 (A4)	1 residence	54.2	57.5	59.3	5.1	N
The Arbors at CountryWood Residential Development Along Grand Arbor Way						
R792 (A5)	1 residence	53.4	56.7	57.6	4.2	N
R793 (A5)	1 residence	54.0	57.3	58.3	4.3	N
R803 (A5)	1 residence	54.1	57.4	59.6	5.5	N
R805 (A5)	1 residence	54.4	57.7	59.9	5.5	N
R806 (A5)	1 residence	54.5	57.8	59.9	5.4	N
R807 (A5)	1 residence	54.4	57.7	59.8	5.4	N

Appendix B
Project Aerials

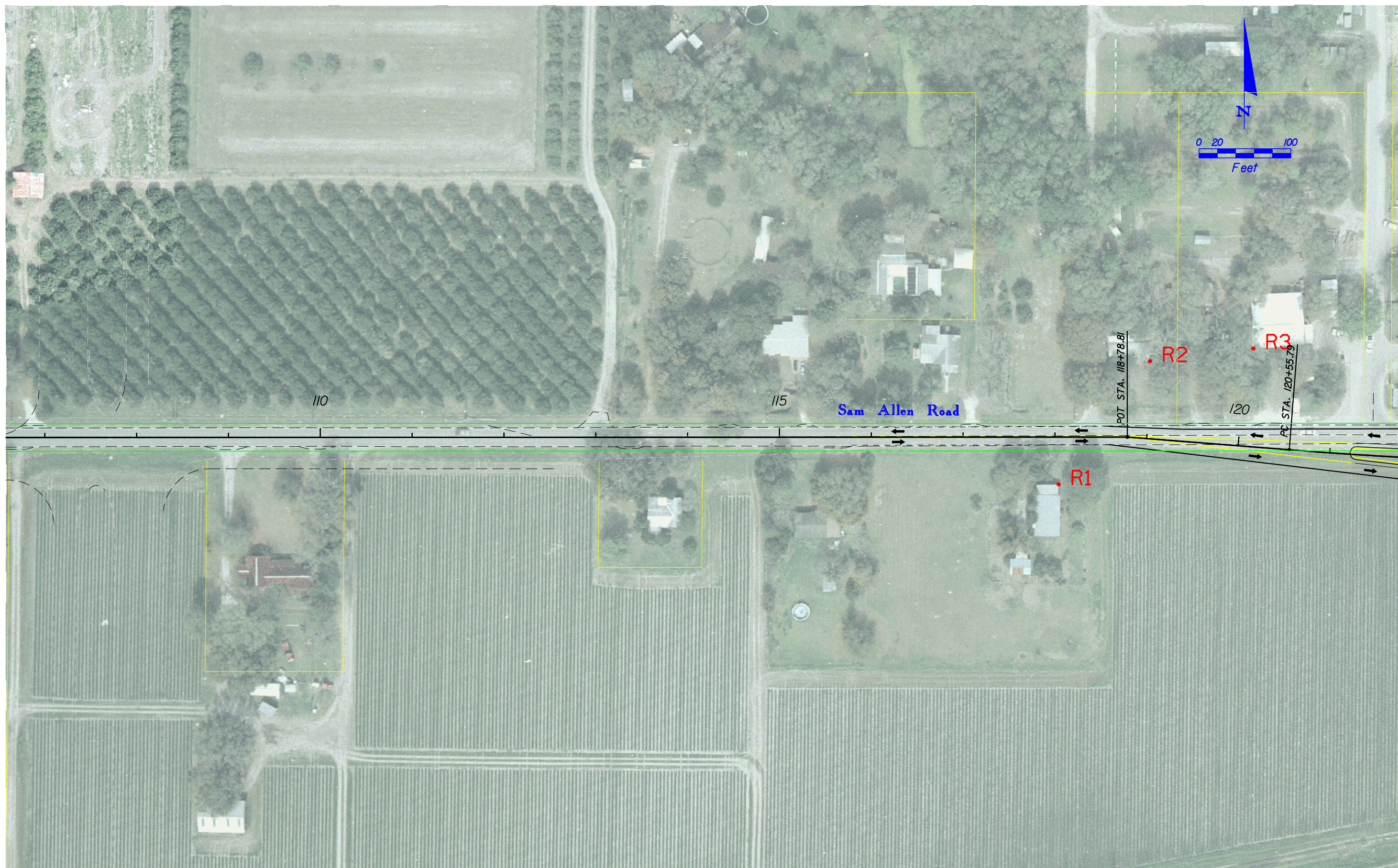







<p>— RIGHT OF WAY</p> <p>. R1 RECEIVER LOCATION AND IDENTIFICATION</p>	<p>LEGEND</p> <p>— EXISTING PROPERTY LINES</p> <p>— PROPOSED SIDEWALK</p> <p>— BASELINE OF CONSTRUCTION</p>
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
01

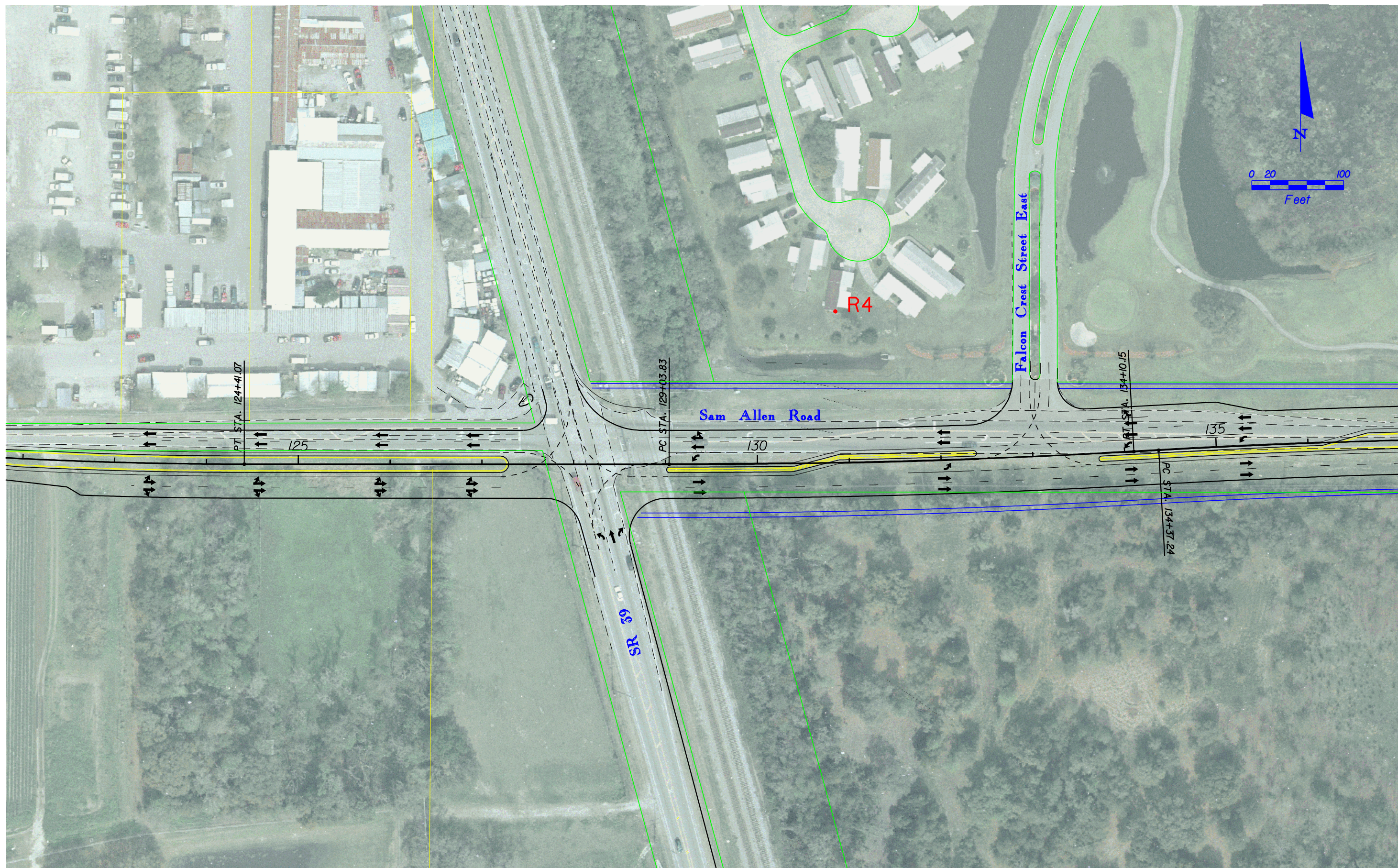


LEGEND	
	RIGHT OF WAY
	RECEIVER LOCATION AND IDENTIFICATION
	EXISTING PROPERTY LINES
	PROPOSED SIDEWALK
	BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
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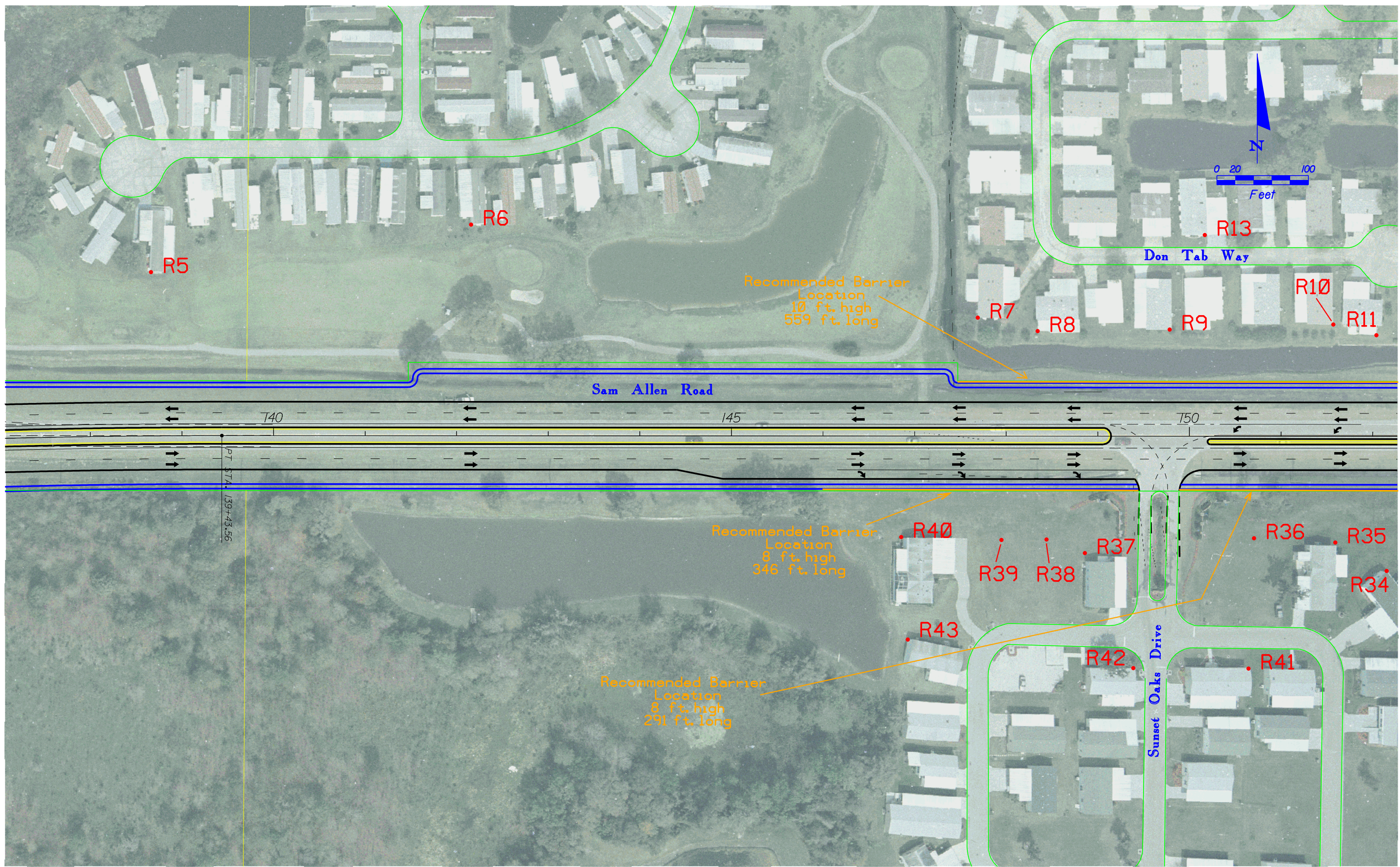


LEGEND	
—	RIGHT OF WAY
• R1	RECEIVER LOCATION AND IDENTIFICATION
—	EXISTING PROPERTY LINES
—	PROPOSED SIDEWALK
—	BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
03

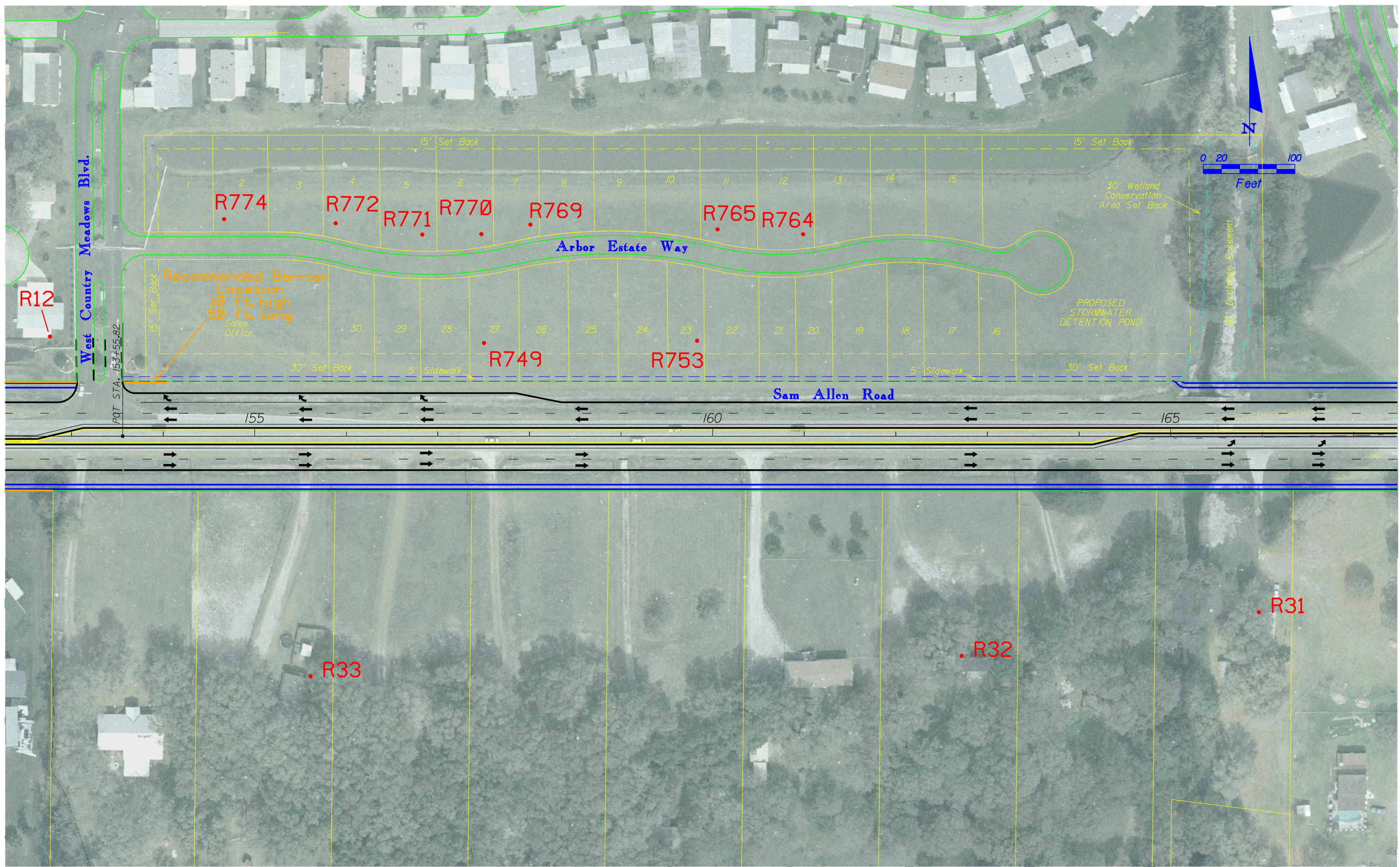


LEGEND	
	RIGHT OF WAY
	RECEIVER LOCATION AND IDENTIFICATION
	EXISTING PROPERTY LINES
	PROPOSED SIDEWALK
	BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
04

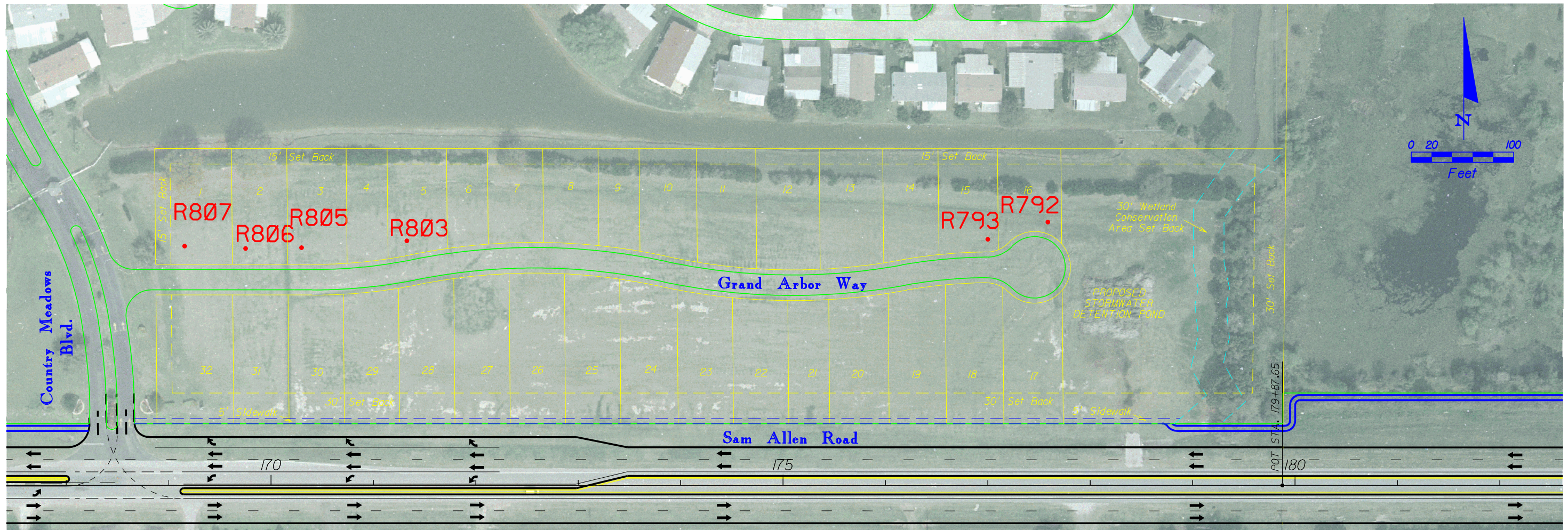


LEGEND	
	RIGHT OF WAY
	EXISTING PROPERTY LINES
	PROPOSED SIDEWALK
	BASELINE OF CONSTRUCTION
	RECEIVER LOCATION AND IDENTIFICATION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
05



LEGEND	
	RIGHT OF WAY
	RECEIVER LOCATION AND IDENTIFICATION
	EXISTING PROPERTY LINES
	PROPOSED SIDEWALK
	BASELINE OF CONSTRUCTION






STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
06



LEGEND






	RIGHT OF WAY		EXISTING PROPERTY LINES
	RECEIVER LOCATION AND IDENTIFICATION		PROPOSED SIDEWALK
			BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
07








LEGEND	
	RIGHT OF WAY
	RECEIVER LOCATION AND IDENTIFICATION
	EXISTING PROPERTY LINES
	PROPOSED SIDEWALK
	BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
08

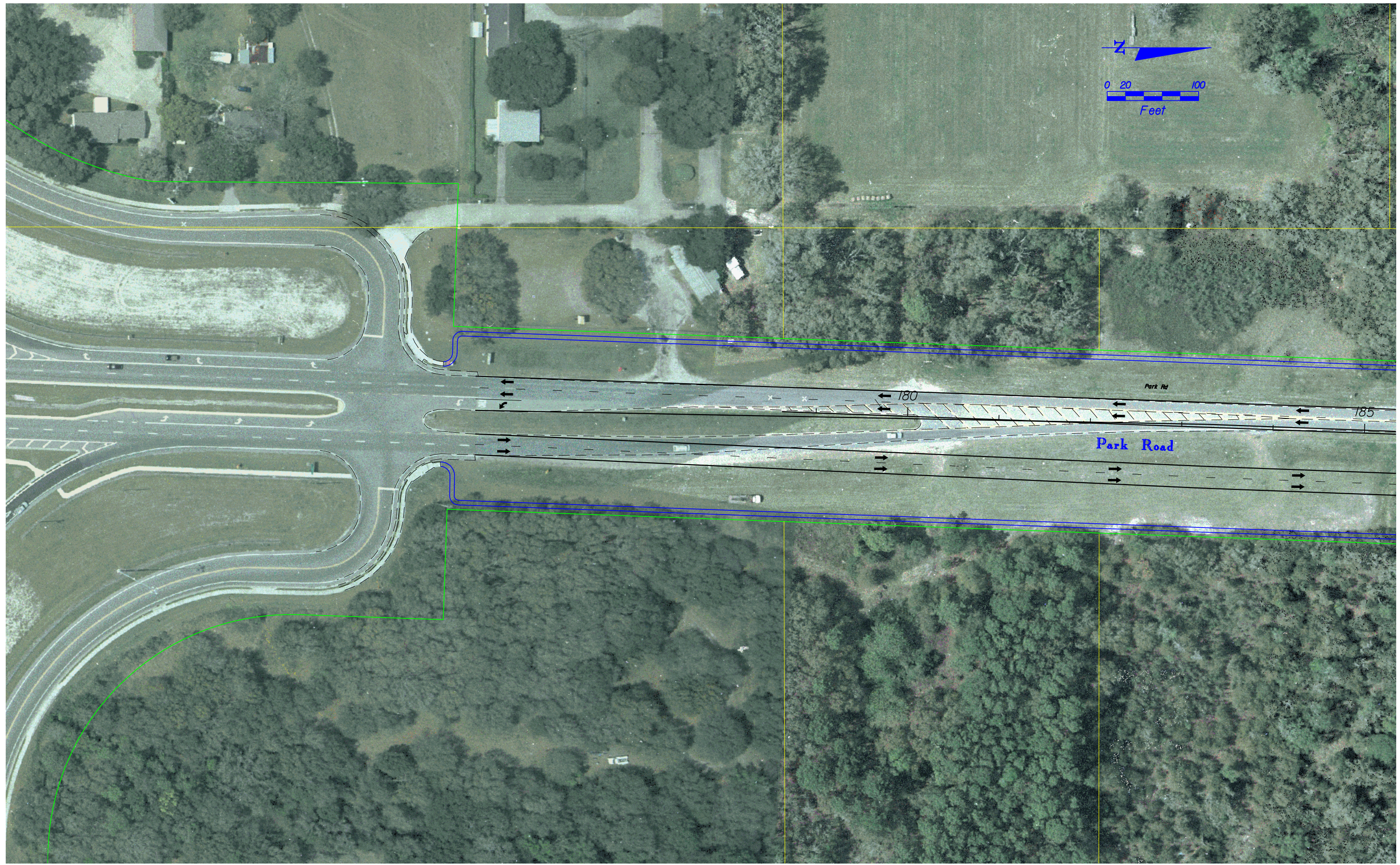


LEGEND	
	RIGHT OF WAY
	RECEIVER LOCATION AND IDENTIFICATION
	EXISTING PROPERTY LINES
	PROPOSED SIDEWALK
	BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
09








- LEGEND
- RIGHT OF WAY
 - EXISTING PROPERTY LINES
 - = PROPOSED SIDEWALK
 - BASELINE OF CONSTRUCTION
 - . R1 RECEIVER LOCATION AND IDENTIFICATION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

**PARK RD / SAM ALLEN RD
 PD&E STUDY
 TRAFFIC NOISE
 ANALYSIS**

SHEET NO.
10



LEGEND	
	RIGHT OF WAY
	RECEIVER LOCATION AND IDENTIFICATION
	EXISTING PROPERTY LINES
	PROPOSED SIDEWALK
	BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	257862-1-21-01

PARK RD / SAM ALLEN RD
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
11