TRAFFIC NOISE ANALYSIS TECHNICAL MEMORANDUM

SR 60/ADAMO DRIVE PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY FROM WEST OF 50TH STREET TO EAST OF FALKENBURG ROAD HILLSBOROUGH COUNTY, FLORIDA

FPI No: 405525 1 22 01
Federal Aid No: 1812 018 U

Prepared for:

Florida Department of Transportation
District Seven
11201 N. McKinley Drive
Tampa, Florida 33612

October 2005

TRAFFIC NOISE ANALYSIS TECHNICAL MEMORANDUM

SR 60/ADAMO DRIVE PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY FROM WEST OF 50TH STREET TO EAST OF FALKENBURG ROAD HILLSBOROUGH COUNTY, FLORIDA

FPI No: 405525 1 22 01
Federal Aid No: 1812 018 U

Prepared for:

Florida Department of Transportation
District Seven
11201 N. McKinley Drive
Tampa, Florida 33612

October 2005

TRAFFIC NOISE ANALYSIS TECHNICAL MEMORANDUM

SR 60/ADAMO DRIVE PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY FROM WEST OF 50TH STREET TO EAST OF FALKENBURG ROAD HILLSBOROUGH COUNTY, FLORIDA

FPI No: 405525 1 22 01
Federal Aid No: 1812 018 U

Prepared for:

Florida Department of Transportation
District Seven
11201 N. McKinley Drive
Tampa, Florida 33612

Prepared by:

5300 West Cypress Street
Suite 200
Tampa, Florida 33607

October 2005

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) has conducted a Project Development and Environment (PD&E) Study to evaluate improvement alternatives along SR 60/Adamo Drive (SR 60) from west of 50th Street to east of Falkenburg Road in Hillsborough County, Florida. The objective of the PD&E Study was to provide documented environmental and engineering analyses, which will 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 SR 60 corridor to accommodate future transportation needs in a safe and efficient manner.

This Noise Study Report documents the effect of the proposed project on traffic noise levels. Specifically, the study evaluates the traffic noise levels at the sensitive sites identified during field review, documents predicted noise levels at the sensitive sites, and addresses noise abatement considerations for any noise sensitive site that approaches or exceeds the Noise Abatement Criteria (NAC). 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 *Project Development & Environment Manual*[2], *Part 2, Chapter 17 (October, 2003).*

For the design year (2030) Build condition, one noise sensitive site is predicted to experience noise levels that approach or exceed the NAC. Noise abatement measures were evaluated for this noise sensitive site. 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 SR 60. A copy of the final Traffic Noise Analysis Technical Memorandum was furnished to local officials to assist them in the development of compatible land uses for future development.

Providing a noise barrier as a means of abating traffic noise was also evaluated. At the Baymont Inn pool deck location, a noise barrier situated along the proposed right-of-way was determined to not be a feasible abatement measure. This barrier would fail to provide at least a 5 decibel (dBA) reduction to the affected receiver locations.

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

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) has conducted a Project Development and Environment (PD&E) Study to evaluate capacity improvements for SR 60 from west of 50th Street to east of Falkenburg Road in Hillsborough County, Florida.

The project was divided into four distinct segments, as shown in Figure 1-1 and described below:

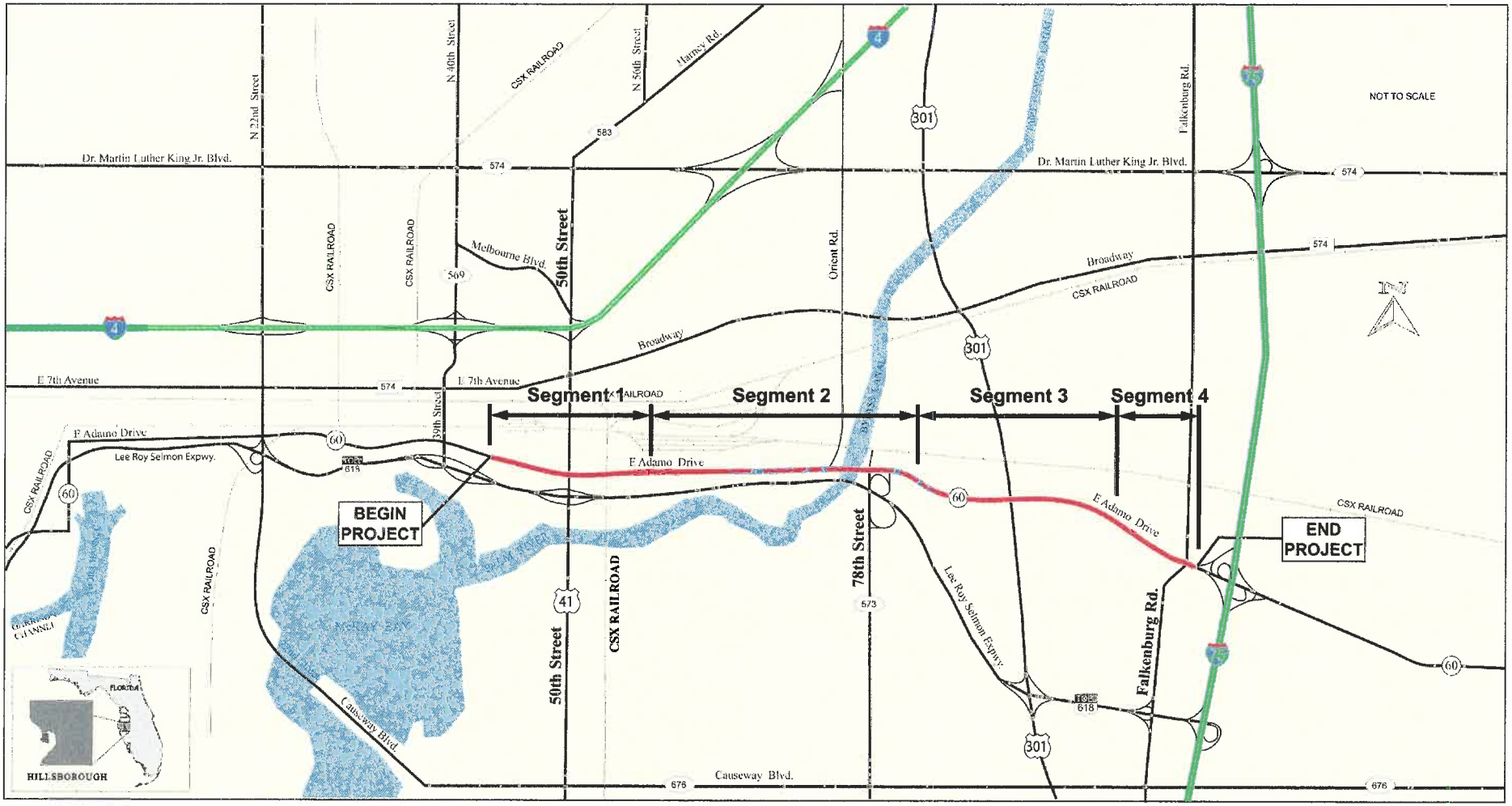
- Segment 1 – extends from west of 50th Street to east of the CSX railroad, a distance of approximately 1.53 miles;
- Segment 2 – from east of the CSX railroad to east of 78th Street, a distance of approximately 1.70 miles;
- Segment 3 – from east of 78th Street to east of Philip Lee Boulevard, a distance of approximately 1.47 miles; and
- Segment 4 - from east of Philip Lee Boulevard to East of Falkenburg Road, a distance of approximately 0.77 miles.

The total project length is approximately 5.47 miles. The proposed improvements will include widening the existing four-lane divided facility and evaluate potential grade separations at 50th Street/CSX railroad and US 301.

1.1 Purpose

The objectives of this PD&E Study were to develop a multi-lane improvement that is economically efficient and environmentally sound. This study documents the results of the environmental and engineering analyses conducted in order to assist the FDOT and the Federal Highway Administration (FHWA) in reaching a decision on the location and conceptual design for the improvements to SR 60. In addition, this study complies with the National Environmental Policy Act (NEPA) and other applicable requirements to qualify the proposed project for federal funding.

Figure 1-1
Project Location Map



SR60/Adamo Drive
PD&E STUDY
From West of 50th St. To East of Falkenburg Rd.
Hillsborough County, Florida
WPI Segment No.: 405525 1

LOCATION MAP

FIGURE 1-1

This report documents the effect of the proposed project on traffic noise levels. Specifically, the study evaluates the traffic noise levels at the sensitive sites identified during field review, documents predicted noise levels at the sensitive sites, and addresses noise abatement considerations for any noise sensitive site that approaches or exceeds the Noise Abatement Criteria (NAC). The design year for the proposed improvements is 2030.

1.2 Project Description

SR 60 is an east/west facility with a functional classification of an urban principle arterial-other. The study corridor traverses an array of urban land uses including industrial and commercial development with inter-mixed parcels of vacant land.

1.2.1 Existing Roadway

SR 60 – west of 50th Street to Philip Lee Boulevard

The existing roadway for this portion of SR 60 is a four-lane divided facility with a depressed 40-foot median, 5-foot inside unpaved shoulders, 10-foot outside shoulders with 5-foot paved and open roadside ditches. The right-of-way width varies from 128 feet to 228 feet. The posted speed limit is 50 miles per hour.

SR 60 - Philip Lee Boulevard to east of Falkenburg Road

The existing roadway for this portion of SR 60 begins as a four-lane divided facility and develops into an eight-lane divided section with a depressed 40-foot median, 5-foot inside unpaved shoulders, 10-foot outside shoulders with 5-foot paved and open roadside ditches. The right-of-way width for this segment varies from 132 feet to 300 feet. The posted speed limit is 50 miles per hour.

1.2.2. Recommended Alternative

Segment 1 – West of 50th Street to East of CSX Railroad

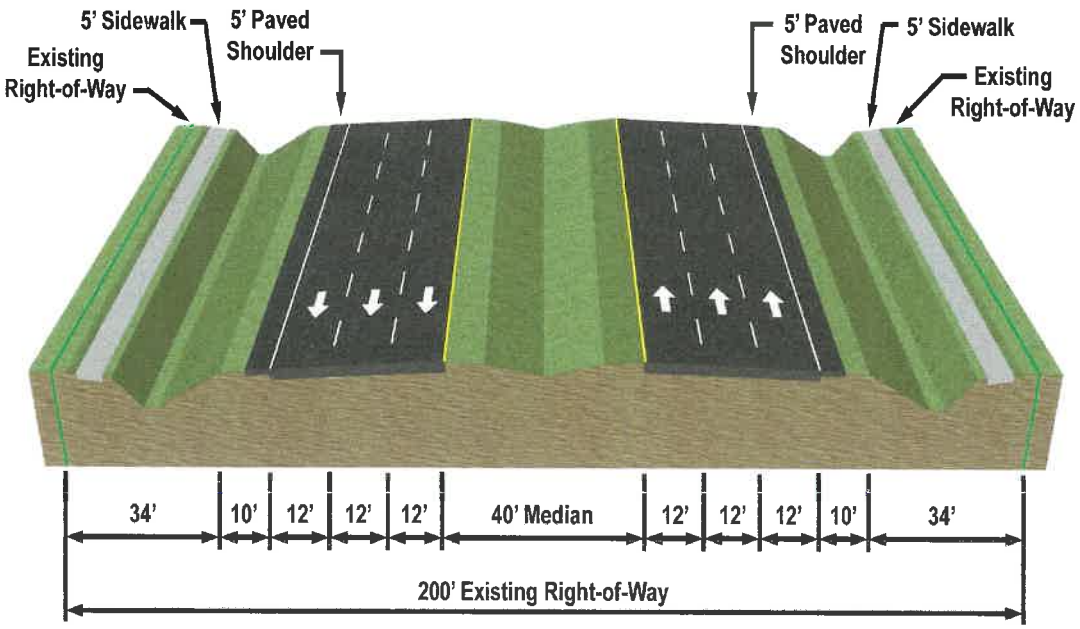
Alternative 1B modified with sidewalks is recommended for Segment 1 and utilizes the six-lane rural typical section. This alternative consists of a 40-foot median with three 12-foot travel lanes in each direction, 10-foot unpaved inside shoulders and 10-foot outside shoulders with 5-foot paved in each direction on SR 60. Drainage swales will be located on both sides of the roadway with 5-foot sidewalks and the right-of-way required for this section would be 200-feet. (Figure 1-2)

A Single Point Urban Interchange (SPUI) at 50th Street, a grade separation of mainline SR 60 over the CSX Railroad and one-way frontage roads on the north and south sides of SR 60 that require crossing the railroad at-grade. These ramps function as the access to local properties, and widen to two lanes to allow right-in and right-out turning movements for adjacent properties. Additional right-of-way will be required for the ramps/frontage roads on the north and south of SR 60. Sidewalks are located along all ramps/frontage roads and on both sides of SR 60 east of 50th Street. (Figure 1-3)

Segment 2 – East of CSX Railroad to East of 78th Street

Alternative 1 with sidewalks is recommended for Segment 2 from east of CSX Railroad to east of 78th Street and utilizes the six-lane rural typical section. This alternative consists of a 40-foot median with three 12-foot travel lanes in each direction, 10-foot unpaved inside shoulders and 10-foot outside shoulders with 5-foot paved in each direction. Drainage swales will be located on both sides of the roadway with 5-foot sidewalks and the right-of-way required for this section would be 200-feet. The proposed structure over Palm River will consist of three through lanes in each direction, inside and outside shoulders and sidewalks on both sides. No additional right-of-way will be needed for these roadway improvements. (Figure 1-2)

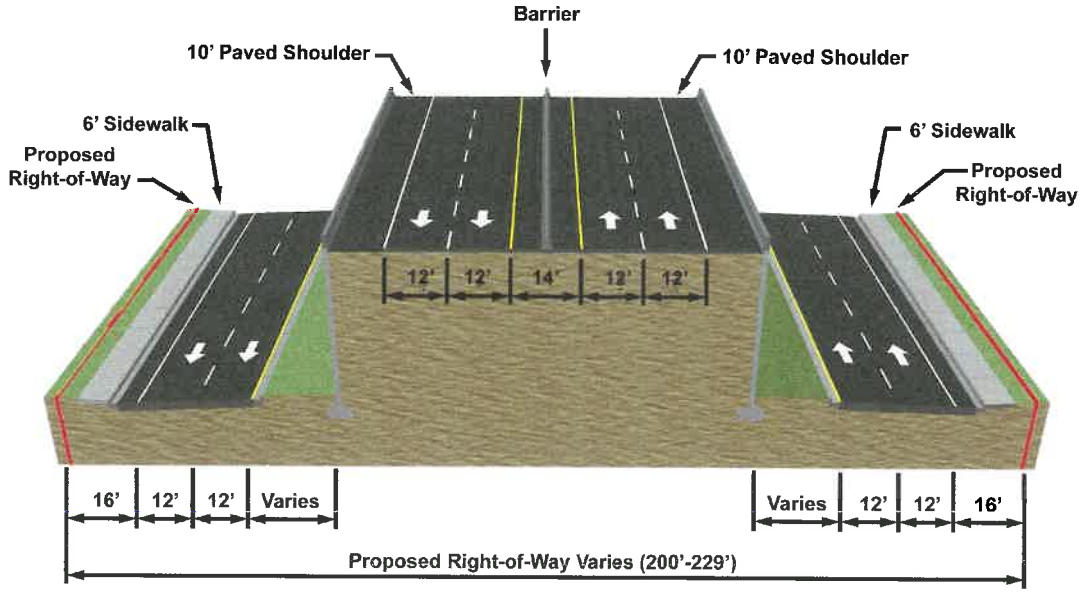
Figure 1-2
Typical Section for Segments 1 and 2



Segment 3 – East of 78th Street to East of Phillip Lee Boulevard

Alternative 1B modified 2 right with sidewalks is recommended for Segment 3 from east of 78th Street to east of Phillip Lee Boulevard and utilizes both the six-lane rural and reduced six-lane rural typical section. From 78th Street to US 301, this alternative consists of a 40-foot median with three 12-foot travel lanes in each direction, 10-foot unpaved inside shoulders and 10-foot outside shoulders with 5-foot paved in each direction on SR 60. Drainage swales will be located on both sides of the roadway with 5-foot sidewalks and the right-of-way required for this section would be 200-feet. (Figure 1-2)

Figure 1-3
SR 60 at 50th Street/CSX Railroad



From US 301 to east of Phillip Lee Boulevard, the alternative consists of a 40-foot median with three 12-foot travel lanes in each direction, 10-foot unpaved inside shoulders and 10-foot outside shoulders with 5-foot paved in each direction. The majority of this section has 12-foot right turn lanes that will require shoulder gutters for roadway drainage. A fourth through lane is added at Phillip Lee Boulevard in the eastbound direction and continues into segment 4. This typical has 5-foot sidewalks in both directions and the right-of-way required would be 182-feet. (Figure 1-4)

A SPUI Option (Alternative 1 B Modified 2 Right) is also considered, that carries four through lanes of US 301 over SR 60. It is understood that this improvement would be considered an ultimate design and would be done at a later time in the future. The alignment of US 301 is shifted to the right (east) holding the existing west right-of-way line. The ramps for the SPUI also provide access to local properties and allow right-in and right-out turning movements. The improvements to US 301 will require the bridges over the CSX Railroad to be replaced. Additional right-of-way will be required along the east side of US 301. (Figure 1-5)

Segment 4 – East of Phillip Lee Boulevard to East of Falkenburg Road

Alternative 1 modified 2 with sidewalks is recommended for Segment 4 from east of Phillip Lee Boulevard to east of Falkenburg Road and utilizes the reduced six-lane typical section. This alternative consists of a 40-foot median with three 12-foot travel lanes in each direction, 10-foot unpaved inside shoulders and 10-foot outside shoulders with 5-foot paved in each direction. The majority of this section has 12-foot right turn lanes that will require shoulder gutters for roadway drainage. A fourth through lane is continued from segment 3 in the eastbound direction and ties into the existing fourth lane west of Falkenburg Road. This typical has 5-foot sidewalks in both directions and the right-of-way required would be 182-feet. (Figure 1-4)

Figure 1-4
Typical Section for Segments 3 and 4

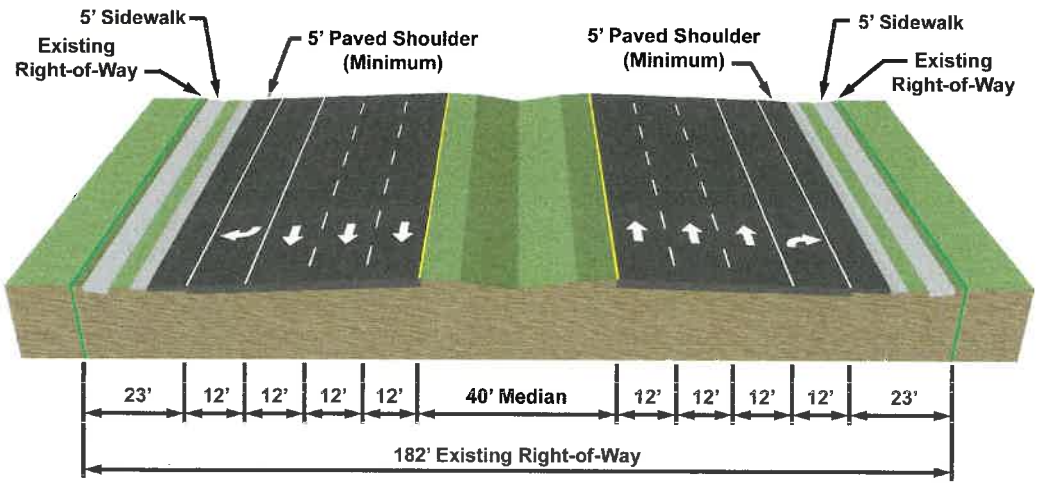
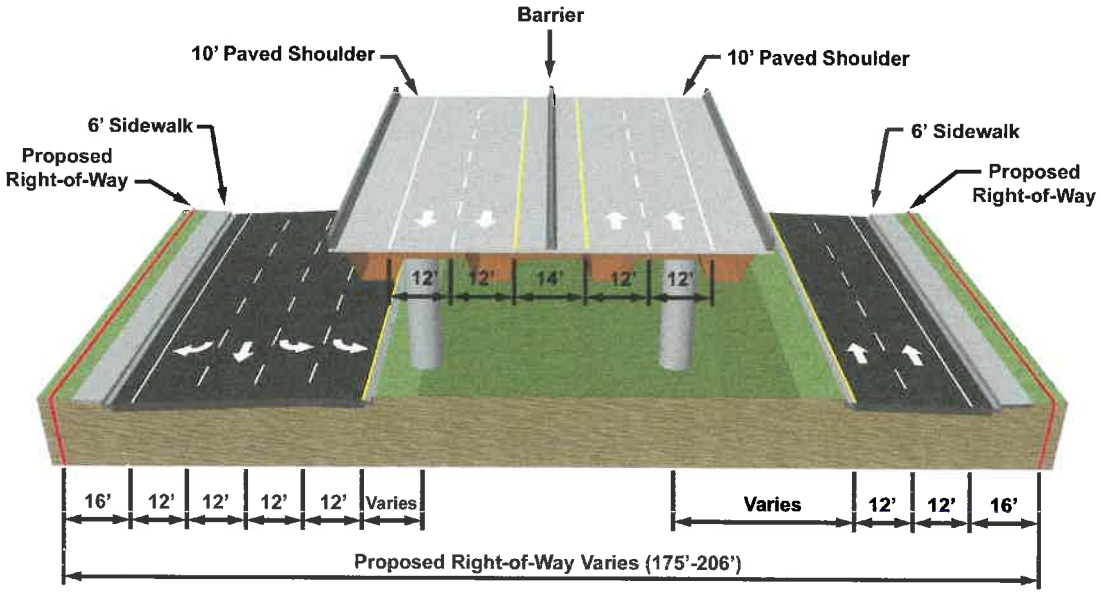


Figure 1-5
US 301 Interchange over SR 60



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* using methodology established by the FDOT in the *PD&E Manual, Part 2, Chapter 17 (October 2003)*. Noise levels were predicted using the 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 traffic speed with the amount of noise generated by traffic increasing as the vehicle speed increases. Traffic data for year 2003 and the design year (2030) 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 C or demand traffic volumes, whichever is less, was modeled at the posted speed. Traffic volumes used in the analysis are summarized in Table 2-1.

Table 2-1
Traffic Data

Roadway Segment	Average Daily Traffic (ADT)		Posted Speed (miles per hour)
	Level of Service "C"	Demand	
Year 2003 (Existing Conditions)			
50th Street to US 301 / 6-lane divided / rural typical section	34,700	40,400	50
US 301 to Falkenburg Road / 6-lane divided / rural typical section	34,700	42,250	50
US 301 to Falkenburg Road / 8-lane divided / urban typical section	34,700	42,250	50
Year 2030 (No-Build Conditions)			
50th Street to US 301 / 6-lane divided / rural typical section	34,700	51,600	50
US 301 to Falkenburg Road / 6-lane divided / rural typical section	34,700	61,200	50
US 301 to Falkenburg Road / 8-lane divided / urban typical section	34,700	61,200	50
Year 2030 (Build Conditions)			
50th Street to US 301 / 6-lane divided / rural typical section	52,100	51,600	55
US 301 to Falkenburg Road / 6-lane divided / rural typical section	52,100	61,200	55
US 301 to Falkenburg Road / 8-lane divided / urban typical section	66,100	61,200	45

Note: Shaded ADT volumes were used in the traffic noise analysis

A peak hour factor (K-factor) of 9.2 percent and directional factor (D-factor) of 57 percent was used to reduce the Average Daily Traffic (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). All of the SR 60 roadway segments utilized a total design hour truck factor of 4.5 percent, with the heavy trucks and medium trucks accounting for 1.0 percent and 3.5 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 respectively.

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 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 is predicted to 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 the SR 60 project are mostly commercial businesses and motels mixed with some light industrial properties. Within the project limits, the only noise sensitive land-use analyzed under Activity Category B included a motel pool and pool deck area located to the north of SR 60 in Segment 4 of this project.

The motel rooms along the corridor were evaluated under Activity Category E and were analyzed based on the preliminary evaluation that identified the 66 dBA contours (the maximum distance from the proposed edge of pavement that an unshielded 66 dBA noise level is predicted to occur). Based on the combination of distances between the motel rooms and the roadway, the distances to the appropriate noise contours, and the 20 dBA reduction in noise level due to the indoor usage category, the noise levels at these noise sensitive sites are not expected to exceed the NAC for the Build condition (the reduction in noise levels for Activity Category E was coordinated with the FDOT District Seven noise specialist as recommended in the *PD&E Manual*).

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 (i.e., date that the PD&E study's environmental document has been approved by FHWA) are evaluated as existing noise sensitive sites.

Because of the elapsed time between when this noise study was performed and when the date of public knowledge was to occur, noise sensitive sites beyond those considered may

require evaluation for traffic noise. 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 during the project's future design phase. Any additional noise sensitive sites will then be analyzed for traffic noise during the design phase.

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

- For noise sensitive receptors other than motel rooms, the location of the receptor will be dictated by the location of the noise source and the exterior activity that will be affected, if any.
- 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 SR 60 to service forecasted traffic volumes. As a major east/west 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 SR 60 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., the affected noise sensitive site bordering the corridor of SR 60).

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
2030 Build Noise Contours

Roadway Segment of US 98	Distance to the 66 dBA Noise Contour*
50th Street to US 301 / 6-lane divided / rural typical section	153 feet
US 301 to Falkenburg Road / 6-lane divided / rural typical section	153 feet
US 301 to Falkenburg Road / 8-lane divided / urban typical section	130 feet

* 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. Noise barriers located along the right-of-way 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 (2030) Build conditions. At each noise barrier location, the feasibility (i.e., at least a 5 dBA reduction can be achieved) was established. If feasible, then the cost reasonableness was evaluated.

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 May 26, 2004 for the purpose of verifying noise predictions generated by TNM. The noise monitoring followed procedures documented in *Measurement of Highway-Related Noise*[3] (FHWA, 1996). Noise measurements were obtained using two Quest Q-300 noise monitors. The noise monitors were calibrated using a QC-10 calibrator. All monitoring events were ten minutes in duration consistent with the *PD&E Manual*.

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 monitoring event. Traffic speeds were determined by sampling with a K-15 radar gun.

A noise prediction was generated for each monitoring event using TNM. The predicted and monitored noise levels for each event are provided in Table 3-1. The variance between predicted and measured noise levels was less than 3 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 #	Date/ Time	Field Measured Level (dBA)	Computer Predicted Level (dBA)	Decibel Difference (dBA)
Monitor # 4 South of SR 60, between the In-Town Suites and Florida Detroit Diesel - 60 feet south of the edge of pavement.	1	5/26/04 11:36AM	69.4	68.0	1.4
	2	5/26/04 11:50AM	69.4	68.7	0.7
	3	5/26/04 12:02PM	69.1	68.4	0.7
Monitor # 3 South of SR 60, between the In-Town Suites and Florida Detroit Diesel - 120 feet south of the edge of pavement.	1	5/26/04 11:36AM	65.2	63.0	2.2
	2	5/26/04 11:50AM	65.6	63.8	1.8
	3	5/26/04 12:02PM	65.1	63.5	1.6

3.2 Predicted Noise Levels

Noise levels were predicted at four receiver locations representing one motel pool and its associated deck area. This pool is located at the Baymont Inn, northeast of the intersection of SR 60 and Falkenburg Road. Predicted noise levels for this noise sensitive site are provided in Table 3-2. The locations of the receivers identified in Table 3-2 are depicted on the aerial found in Appendix A.

Table 3-2
Predicted Noise Levels

Receiver Identification	Noise Sensitive Sites Represented	2003 Existing (dBA)	2030 No-Build (dBA)	2030 Build (dBA)	Difference between Existing and Build (dBA)	NAC Approached or Exceeded
The Baymont Inn Pool Deck						
S Pool Deck	1/4 pool deck	67.1	67.1	67.3	0.2	Y
SE Pool Deck	1/4 pool deck	66.5	66.5	66.7	0.2	Y
N Pool Deck	1/4 pool deck	62.0	62.0	62.3	0.3	N
NE Pool Deck	1/4 pool deck	63.7	63.7	64.0	0.3	N

Noise levels at two of the four receiver locations are predicted to approach or exceed the NAC for the 2030 Build condition. Compared to existing conditions, noise levels for the 2030 Build condition are predicted to increase by 0.3 dBA or less (this increase can be considered as inaudible to the human ear). Therefore, none of the receivers at this noise sensitive site are expected to experience a substantial increase in traffic noise as a result of the proposed project.

Baymont Inn Pool Deck Area (Sta. 131 to 132)

Receivers S Pool Deck, SE Pool Deck, N Pool Deck, and NE Pool Deck each represent a portion of the pool deck area located on the southern, southeastern, northern, and northeastern corners respectively. The S Pool Deck and SE Pool Deck receivers are those in closest proximity to SR 60. The traffic noise levels are predicted to approach the NAC at these two locations.

The effectiveness of a noise barrier at this location is severely limited by the commercial property located to the west of the noise sensitive site. Due to the possible encroachment of the barrier upon the Eyeglass World property, the length of the barrier along the proposed right-of-way is limited to the Baymont Inn property, and will only cover half of the pool deck frontage. At the maximum barrier height of 22 feet, a reduction of at least

5 dBA could not be provided at any of the receiver locations. Therefore, a noise barrier is not a feasible abatement measure for the Baymont Inn pool deck area.

4.0 CONCLUSIONS

For the design year (2030) Build condition, one noise sensitive site is predicted to experience noise levels that approach or exceed the NAC. Noise abatement measures were evaluated for this noise sensitive site. 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 SR 60. A copy of the final Traffic Noise Analysis Technical Memorandum will be furnished to local officials to assist them in the development of compatible land uses for future development.

Providing a noise barrier as a means of abating traffic noise was also evaluated. At the Baymont Inn pool deck location, a noise barrier situated along the proposed right-of-way was determined to not be a feasible abatement measure. This barrier would not provide at least a 5 dBA reduction to the affected receiver locations.

A land-use review will be implemented during the design phase to identify noise sensitive sites that may have received a building permit subsequent to this noise study being completed, but prior to the date of public knowledge. 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 during the project's future design phase.

Based on the noise analysis performed to date, there appears to be no feasible and reasonable abatement measures to mitigate for traffic noise at the receiver locations 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 Construction*[4].

Using FDOT's listing of vibration sensitive sites; no sites within the project limits 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 be modified as needed.

5.1 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 of exterior land uses associated with residences, motels, schools, churches, and recreational facilities which would be considered incompatible with traffic noise generated from the SR 60 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.

6.0 REFERENCES

1. Title 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise; Federal Highway Administration; April, 2001.

2. Planning Development and Environment Manual, Part 2, Chapter 17, Florida Department of Transportation; Tallahassee, Florida; October, 2003.

3. Measurement of Highway-Related Noise; Federal Highway Administration; Springfield, Virginia; May, 1996.

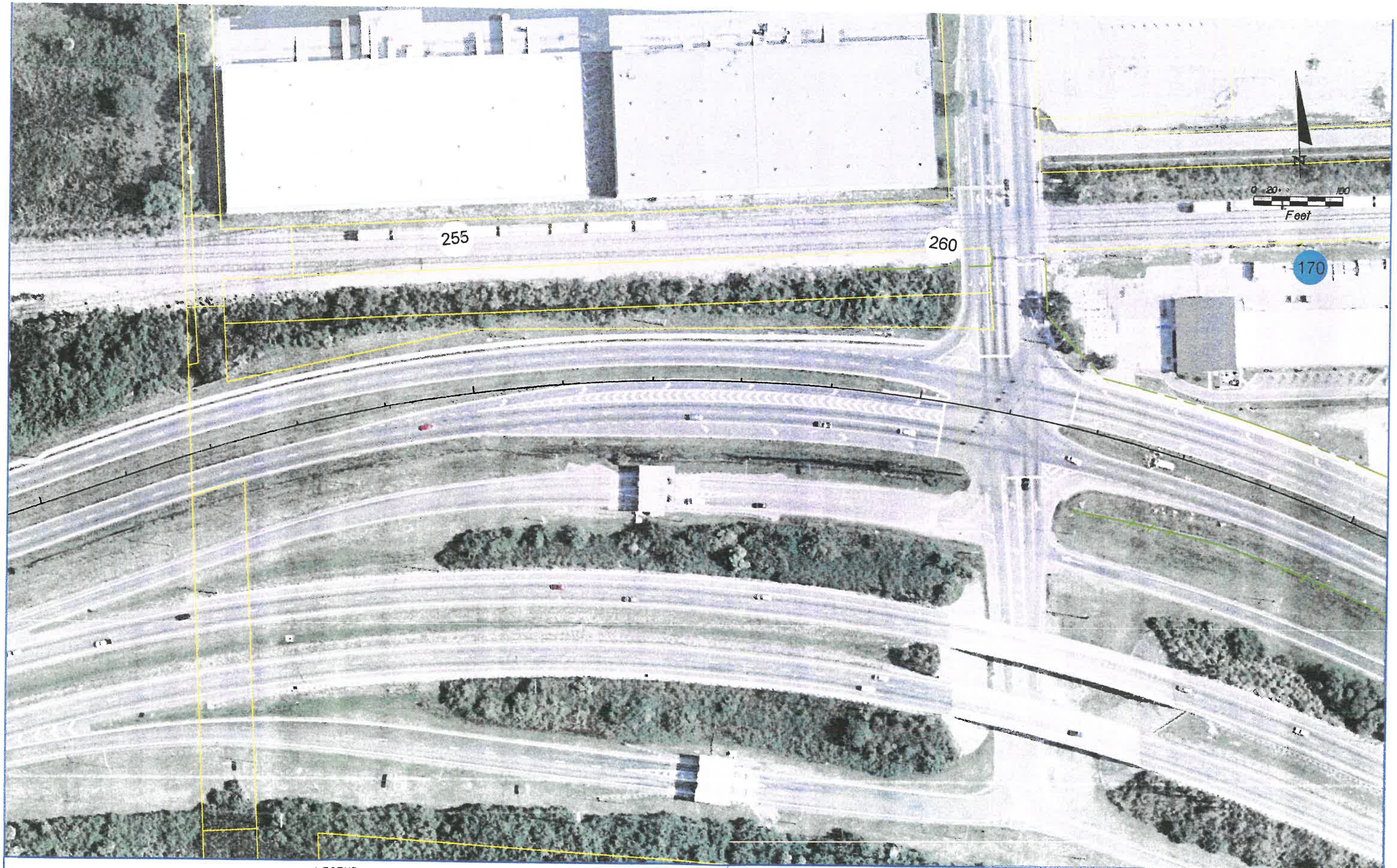
4. Standard Specifications for Road and Bridge Construction; Florida Department of Transportation; Tallahassee, Florida; 2003.

APPENDICES

Appendix A: Project Aerials

Appendix A

Project Aerials



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

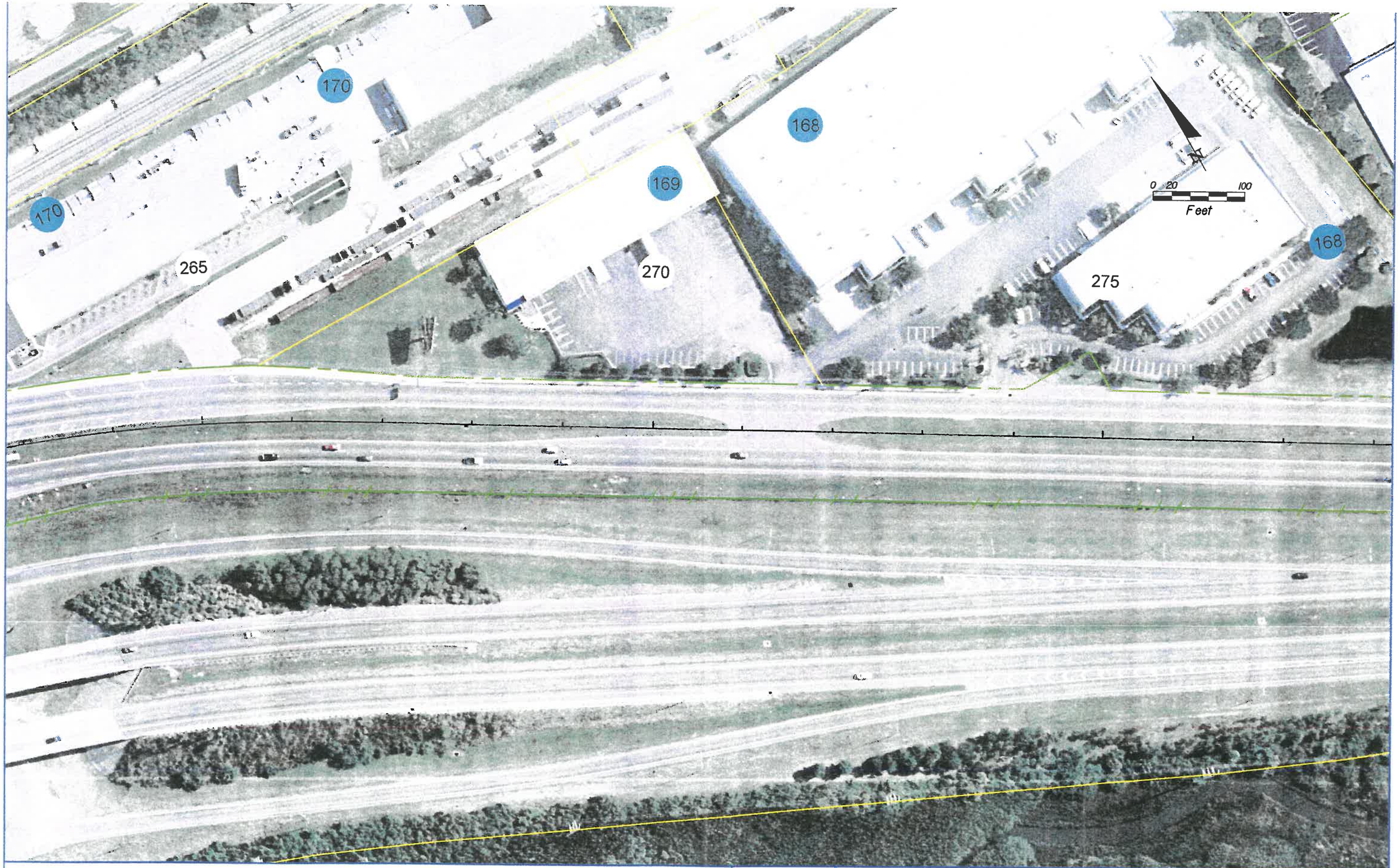
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 1



LEGEND

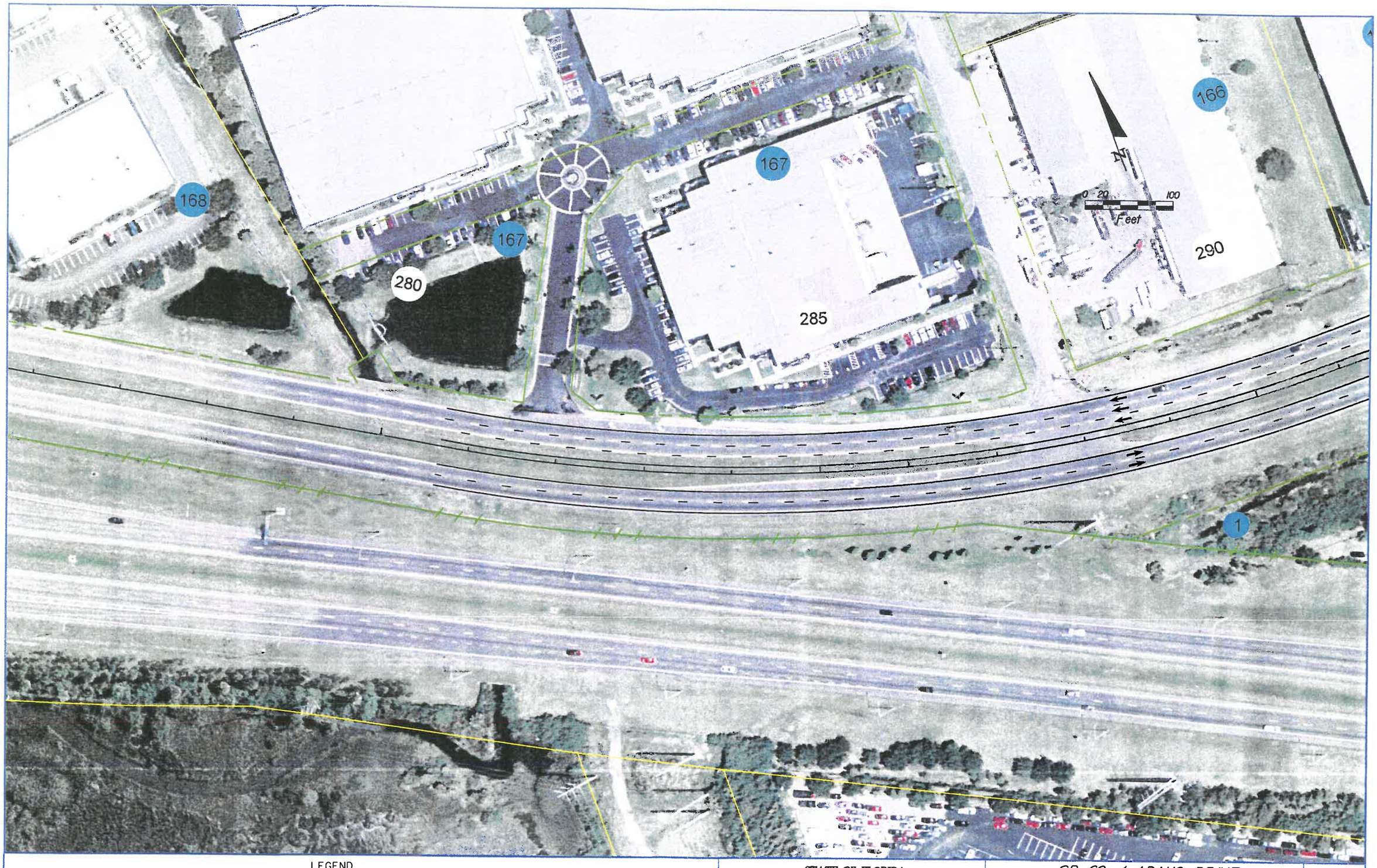
RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SR 60 / ADAMO DRIVE PD&E STUDY TRAFFIC NOISE ANALYSIS	SHEET NO.
	HILLSBOROUGH	405525-1-22-01		2



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

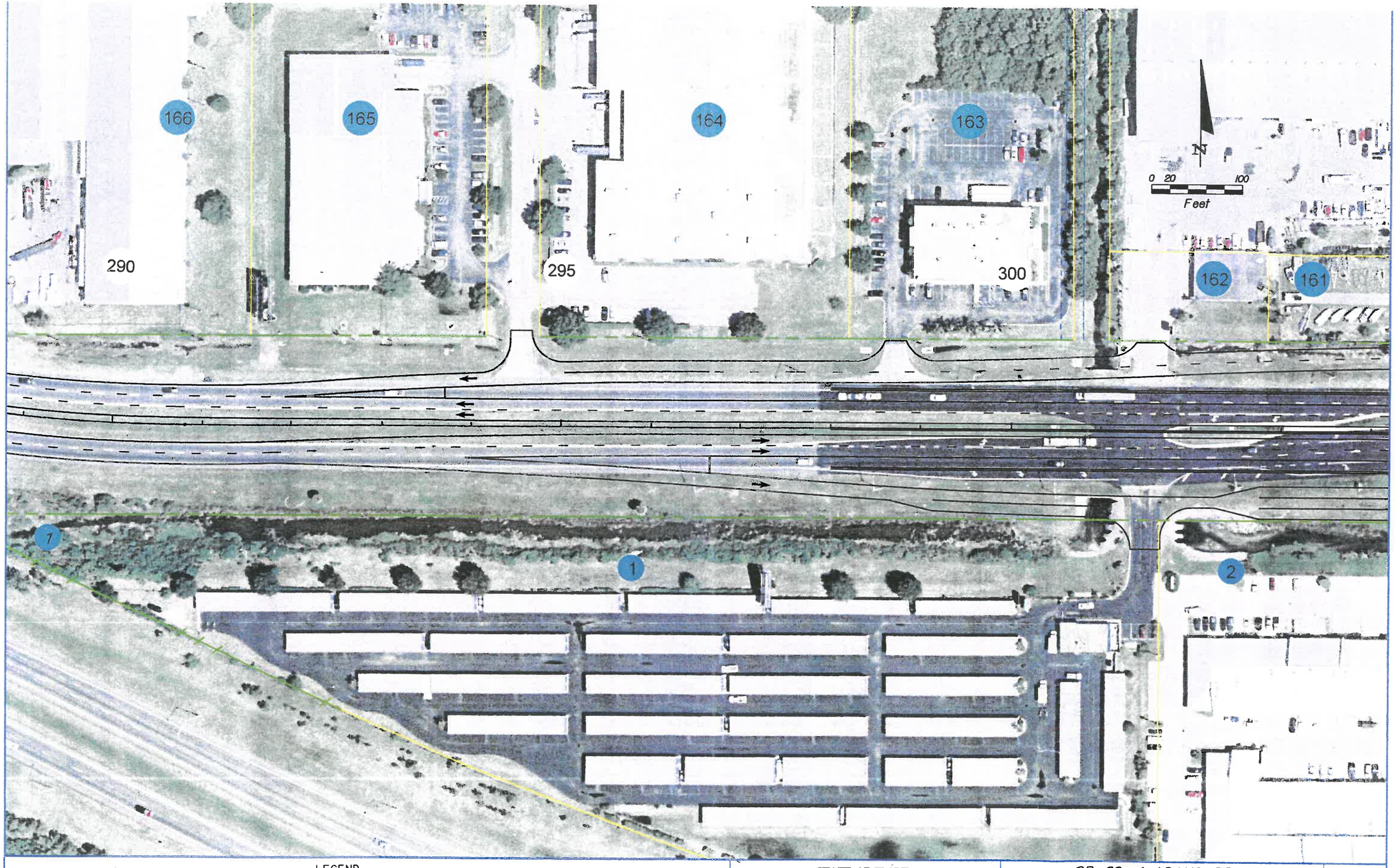
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 3



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

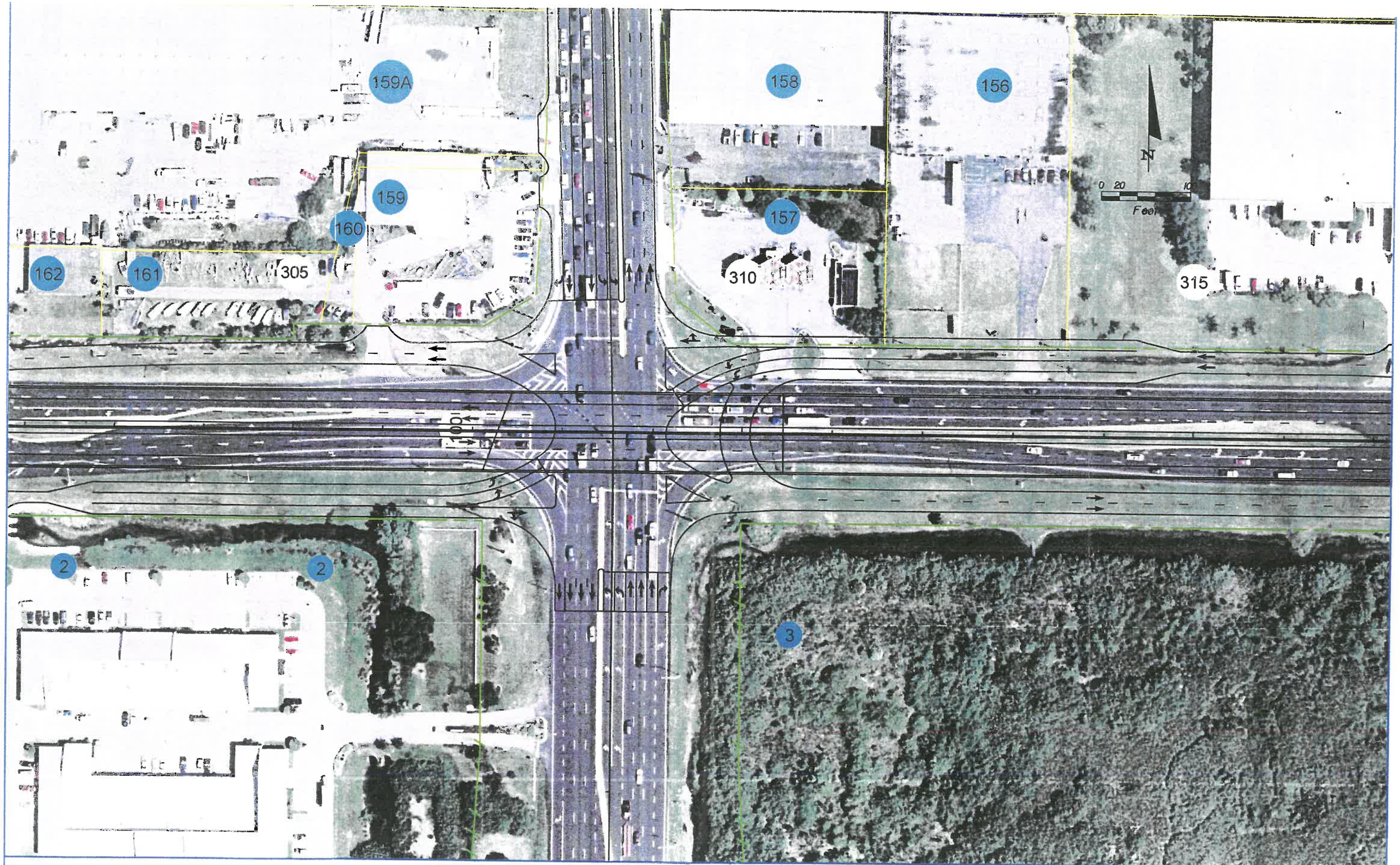
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 4



LEGEND

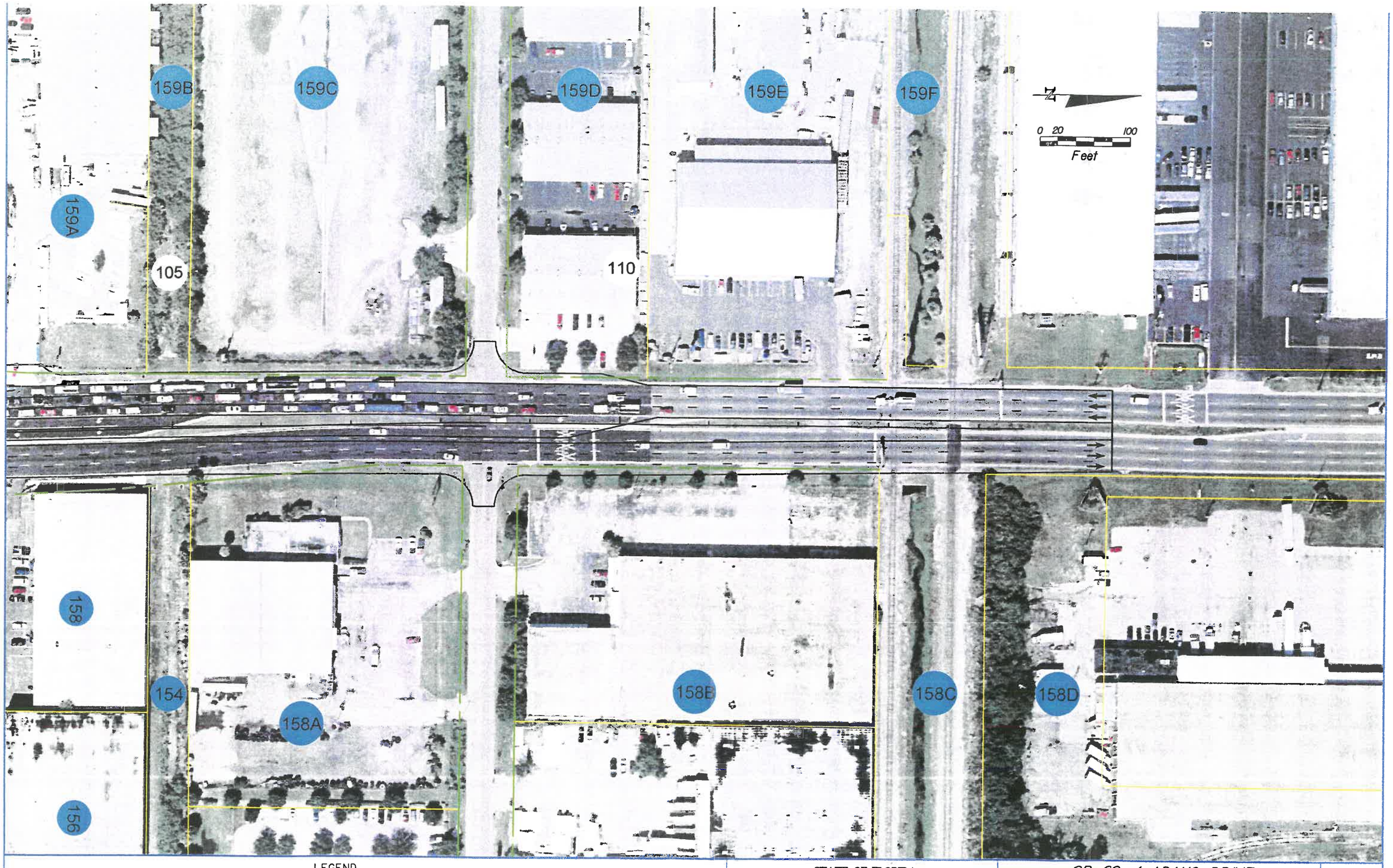
RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 60 / ADAMO DRIVE PD&E STUDY TRAFFIC NOISE ANALYSIS	SHEET NO.
ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
	HILLSBOROUGH	405525-1-22-01		5



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

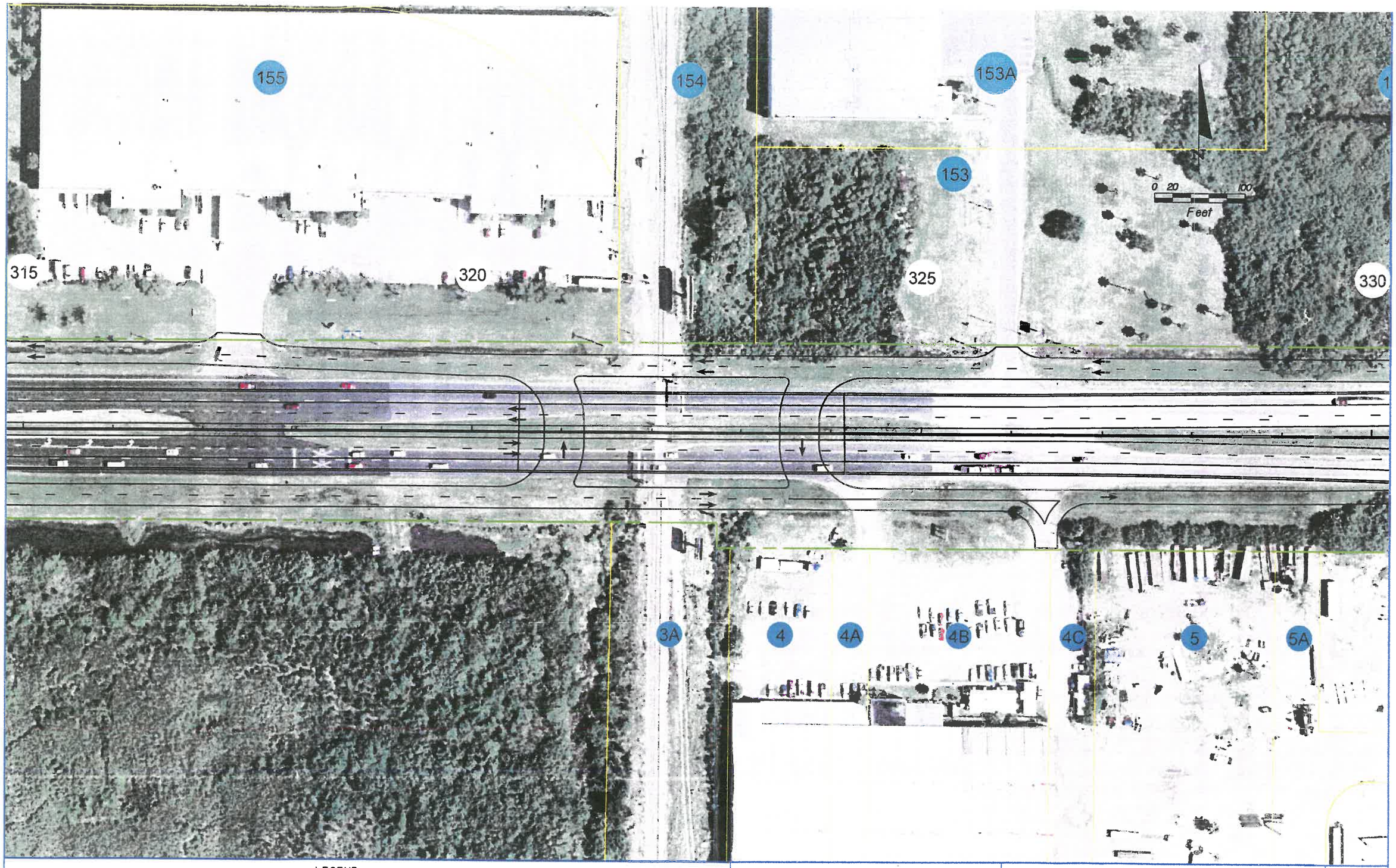
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 5B



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

130 EXISTING PROPERTY LINES

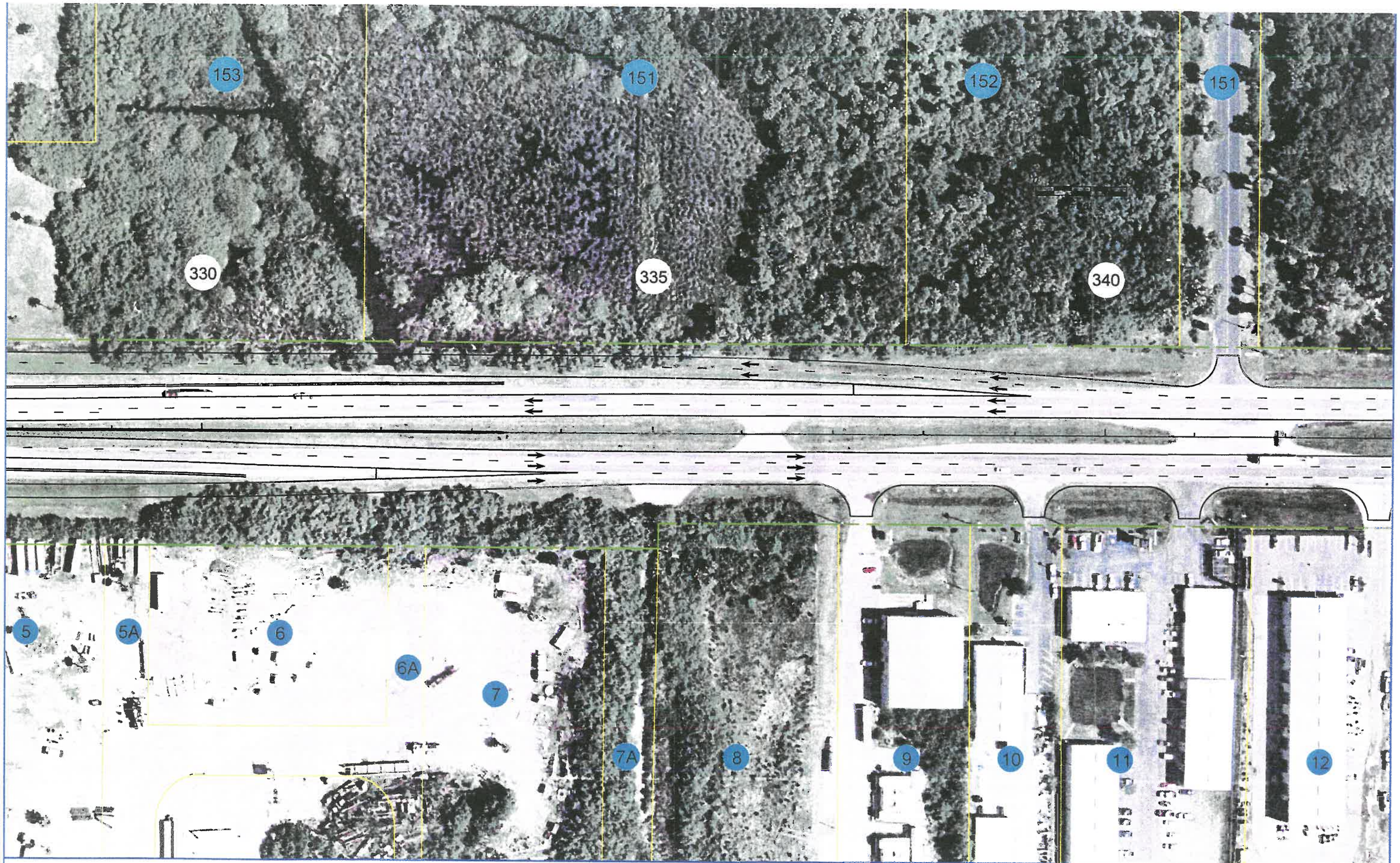
BASELINE OF CONSTRUCTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 6



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

130 EXISTING PROPERTY LINES

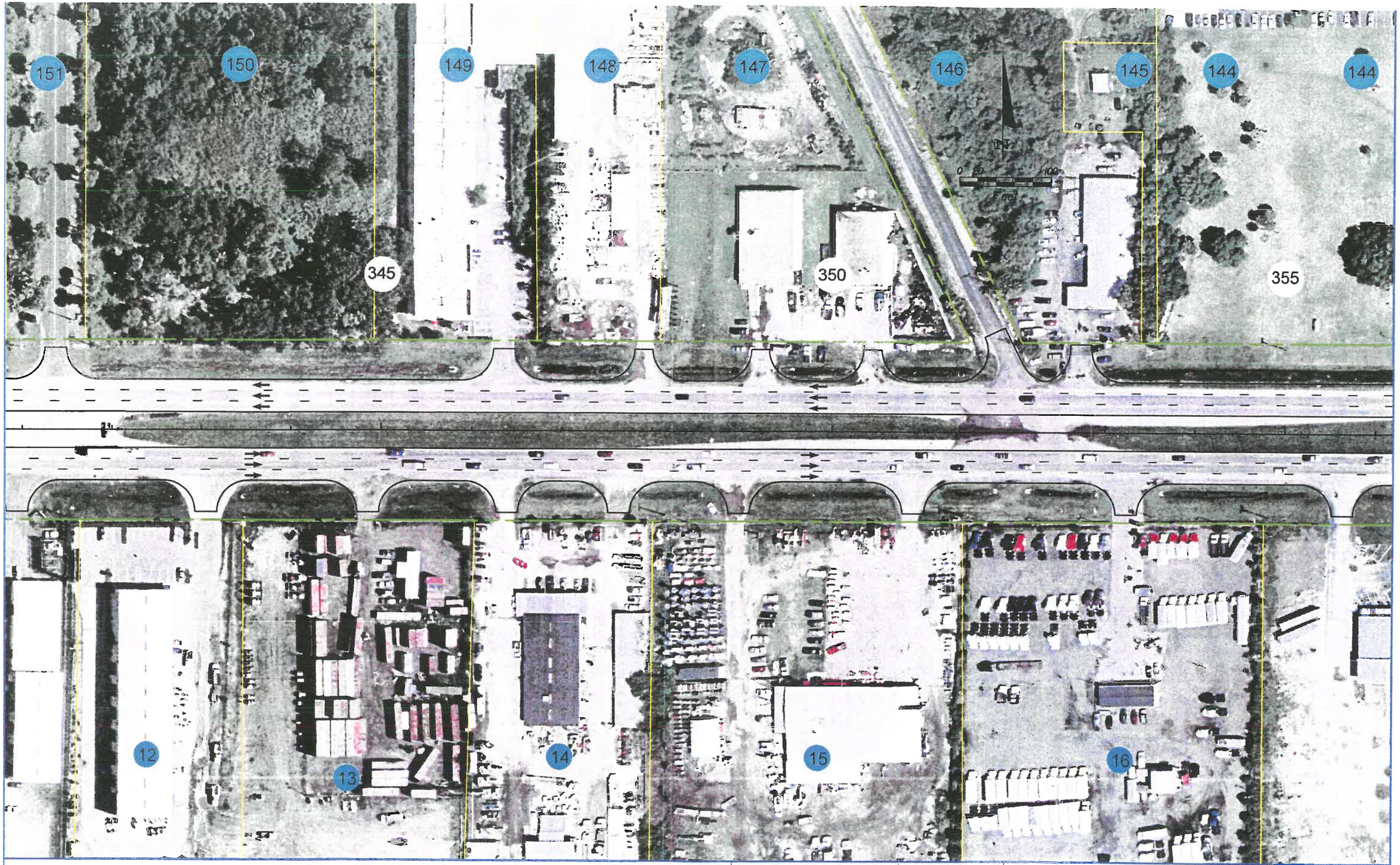
BASELINE OF CONSTRUCTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 7



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

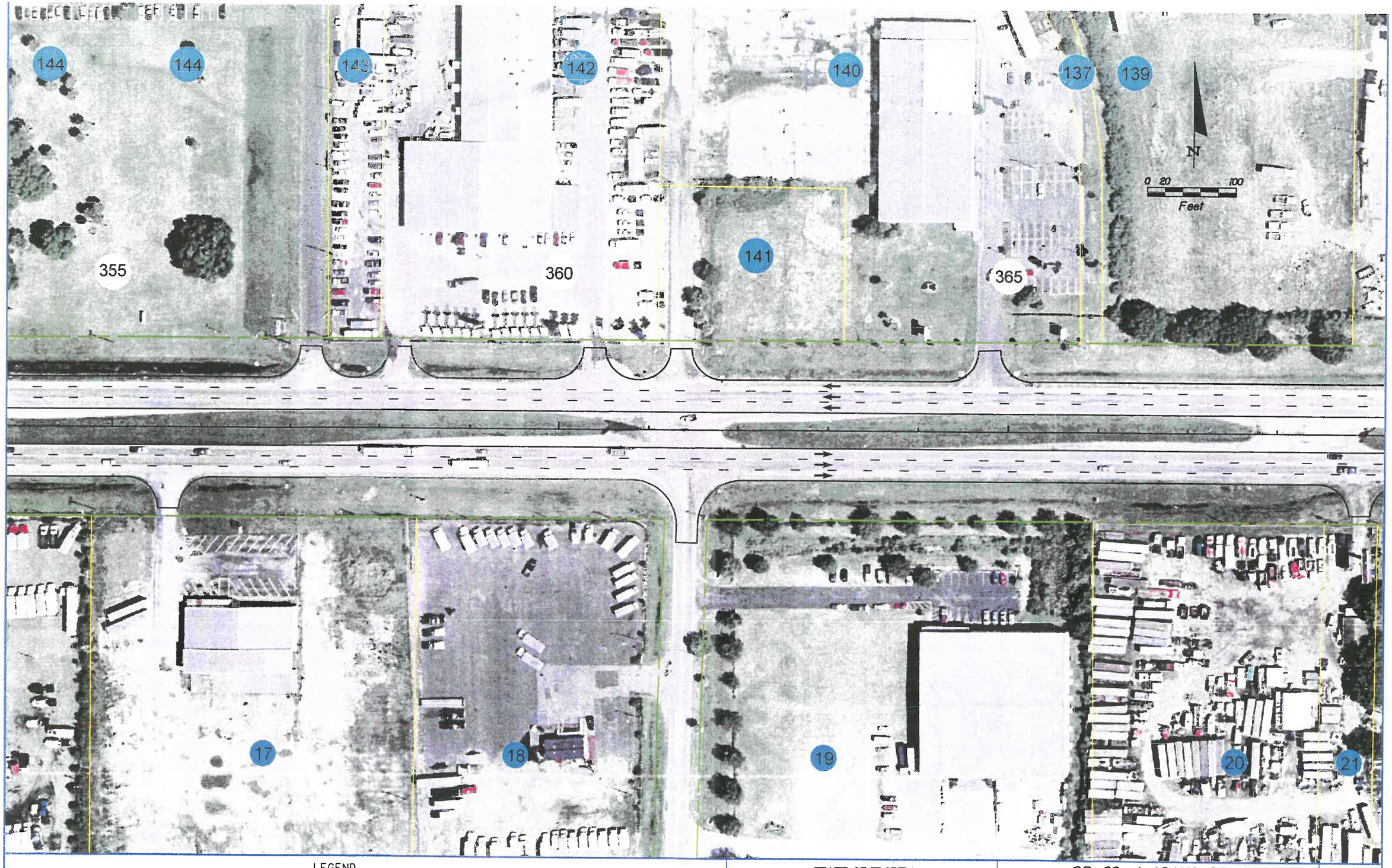
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 8



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

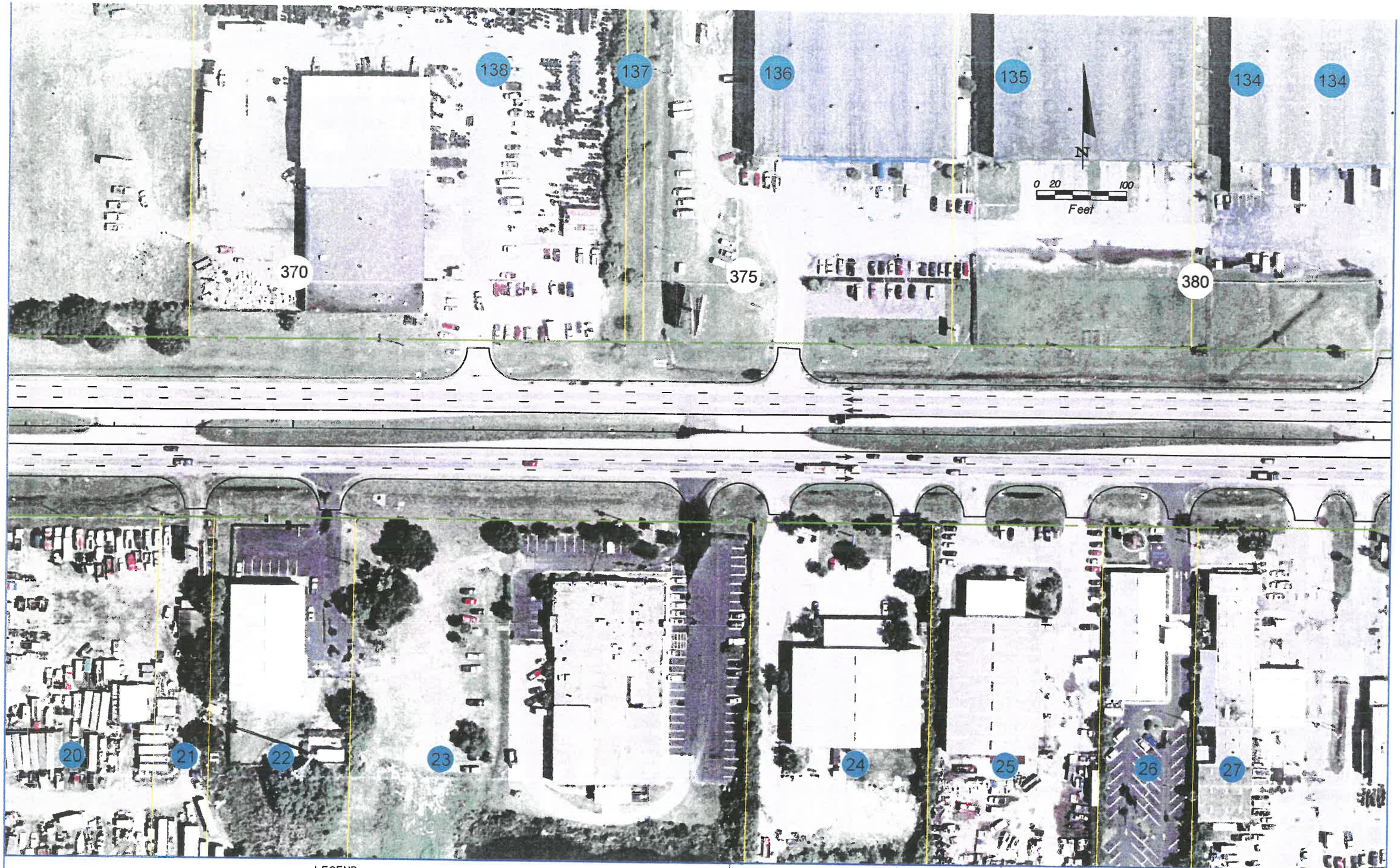
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 9



LEGEND

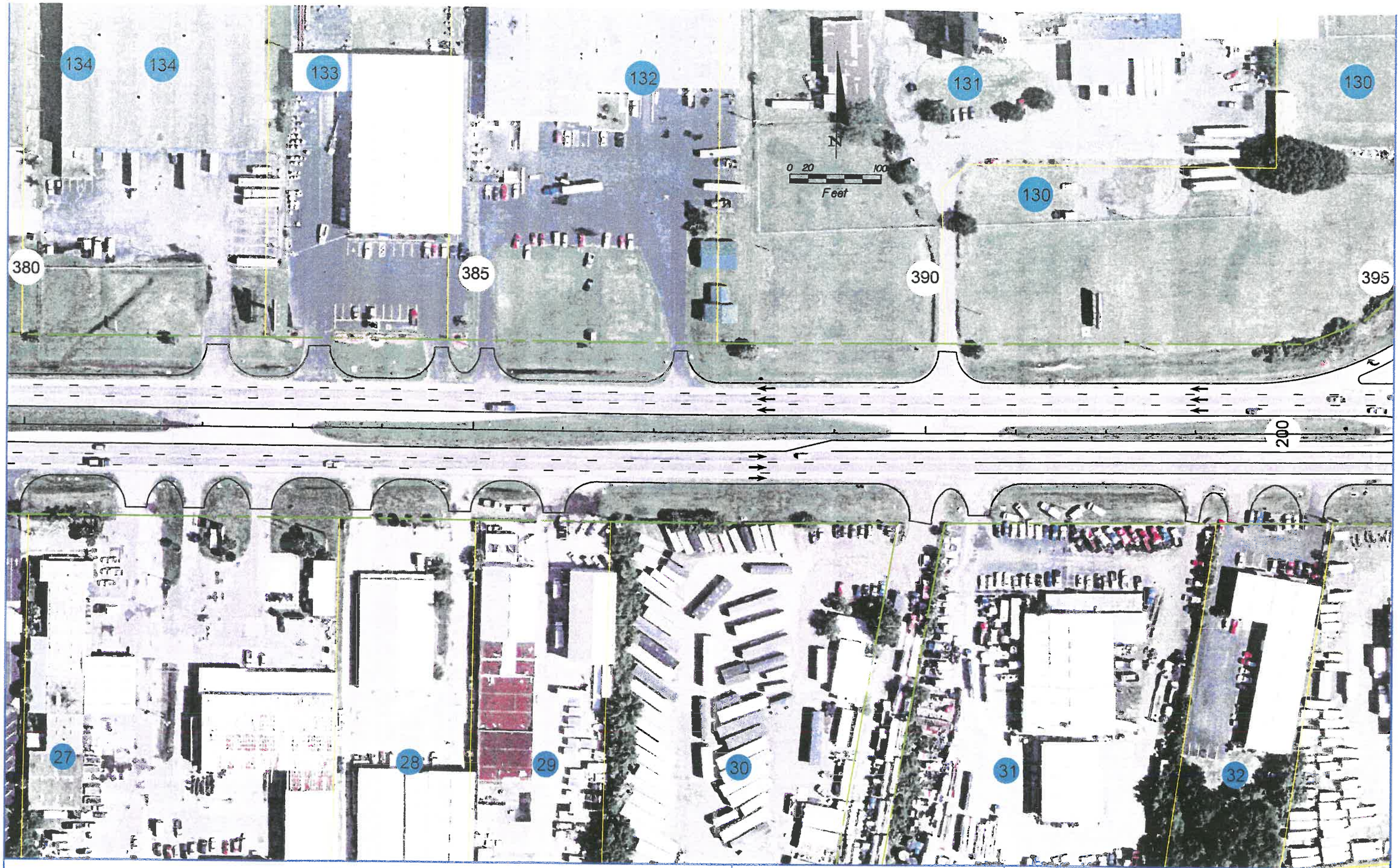
RIGHT OF WAY	130 EXISTING PROPERTY LINES
.NE RECEIVER LOCATION AND IDENTIFICATION	BASELINE OF CONSTRUCTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 10



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

130 EXISTING PROPERTY LINES

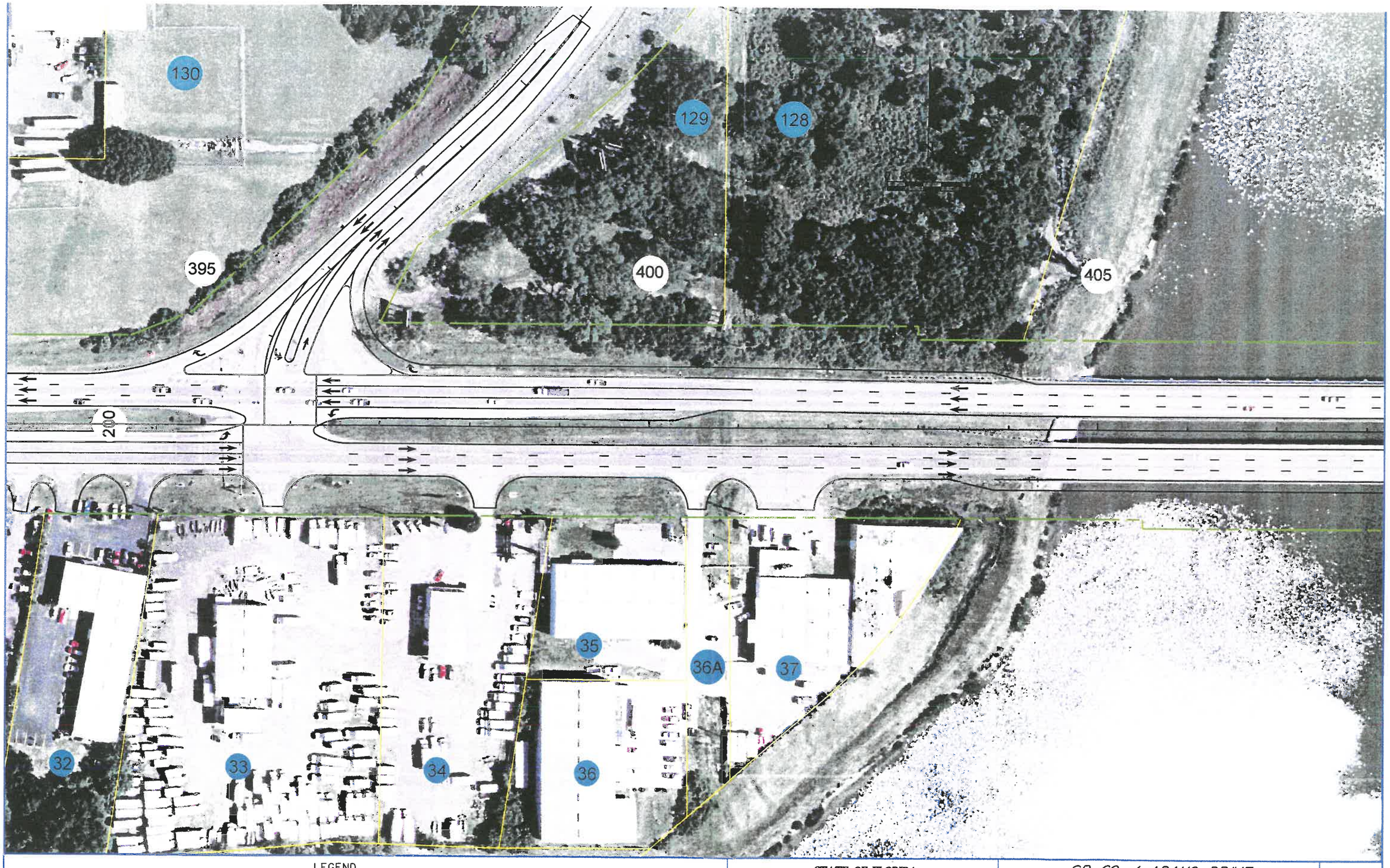
BASELINE OF CONSTRUCTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
11



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

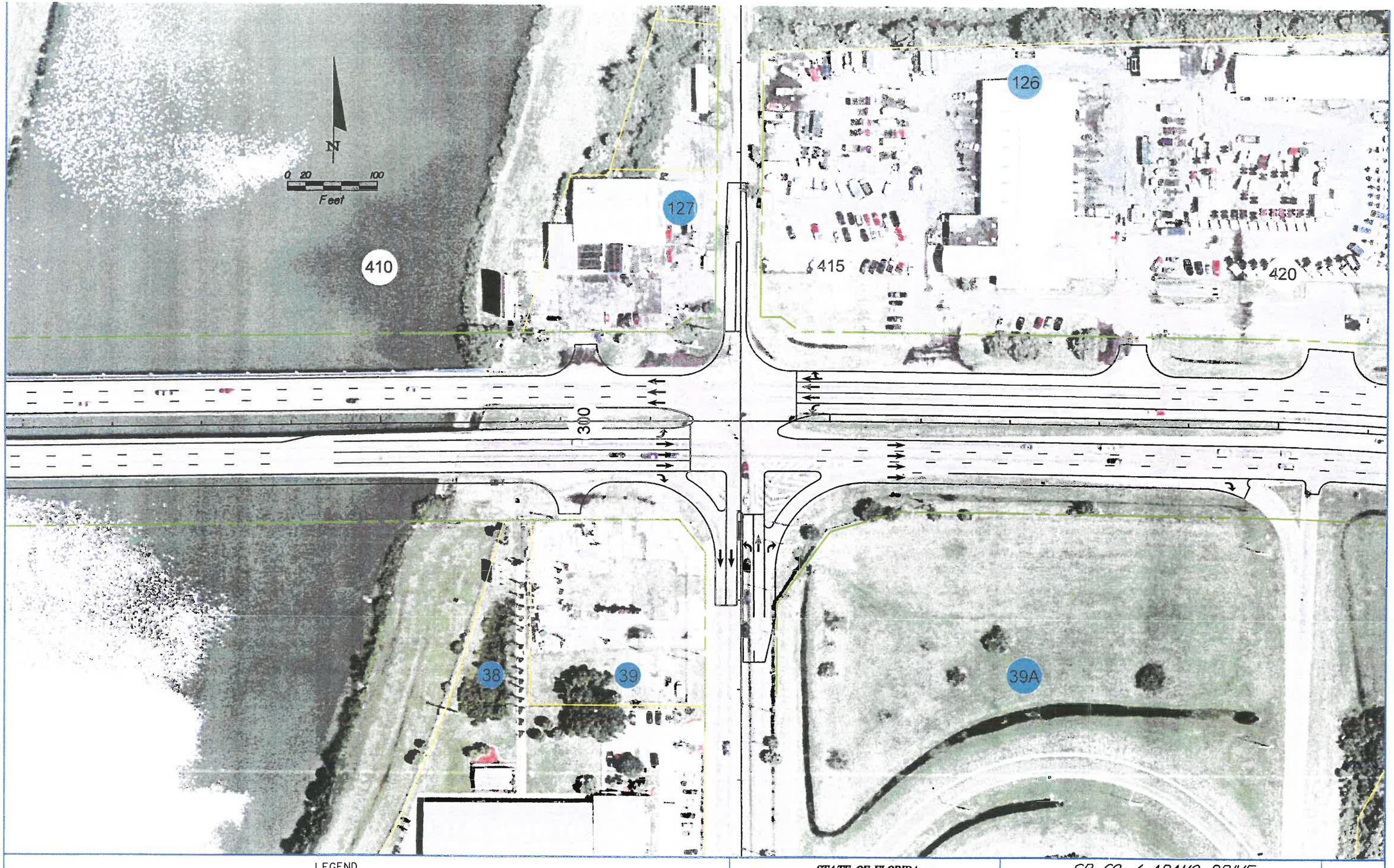
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 12



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

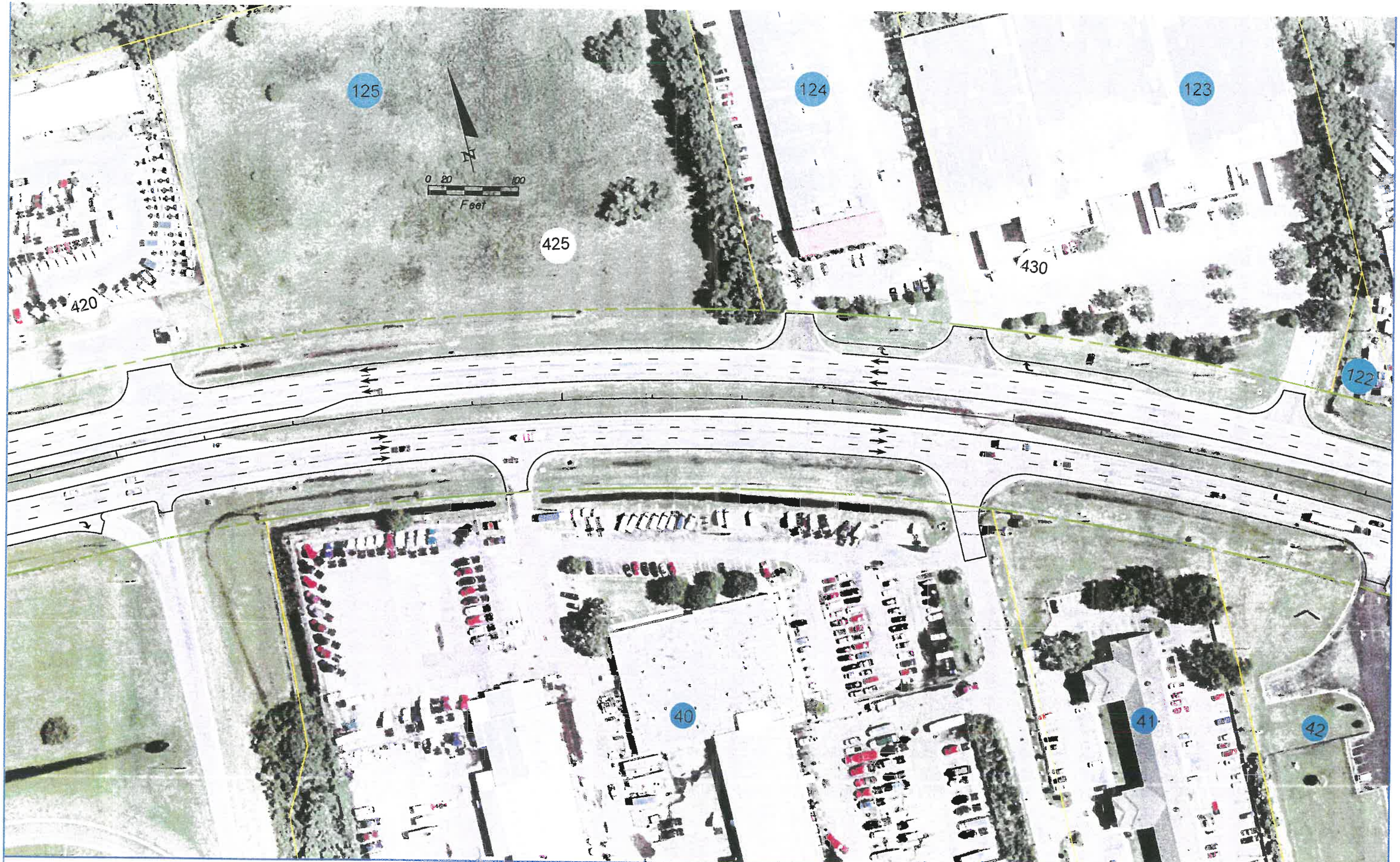
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 13



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

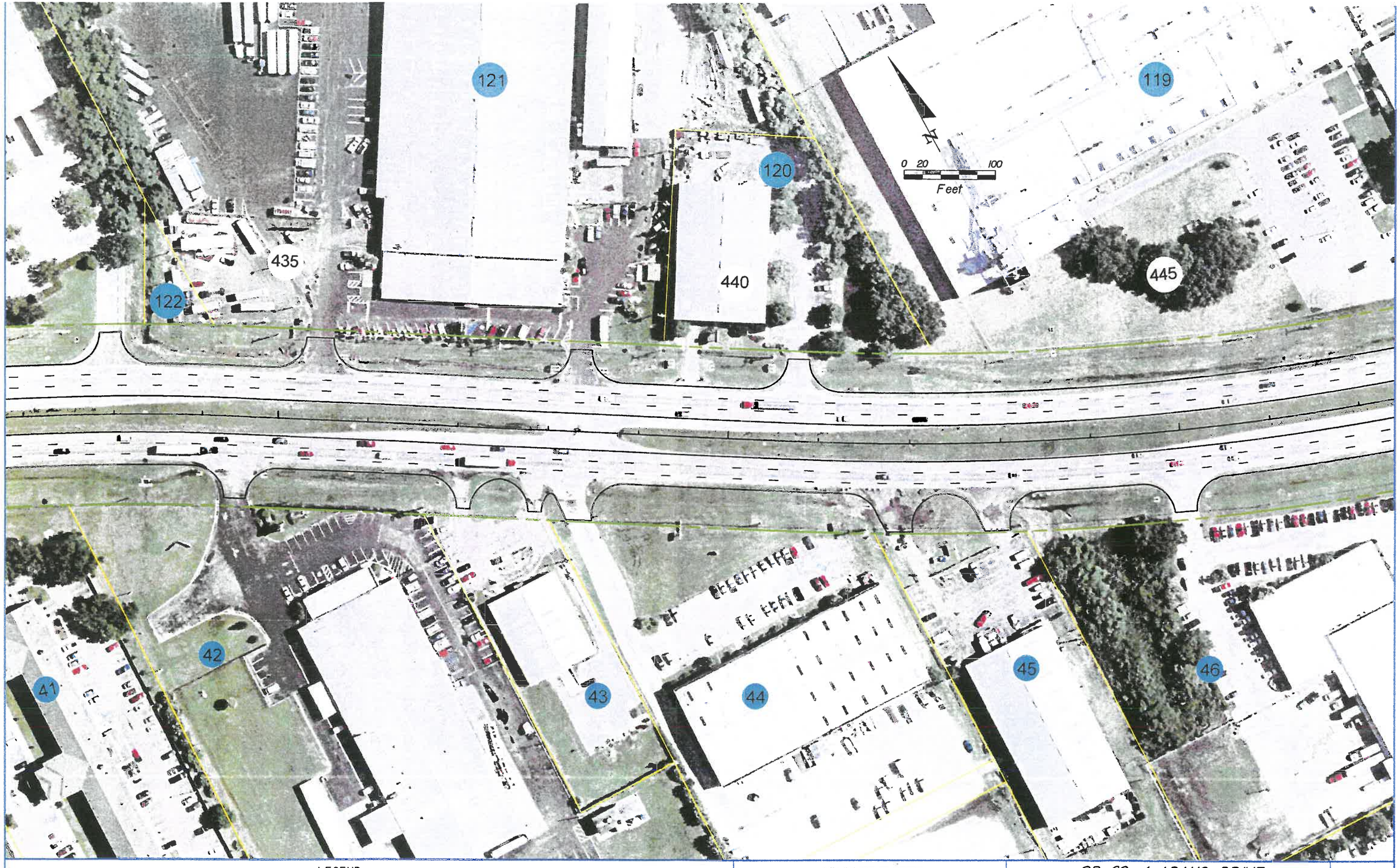
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 14



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

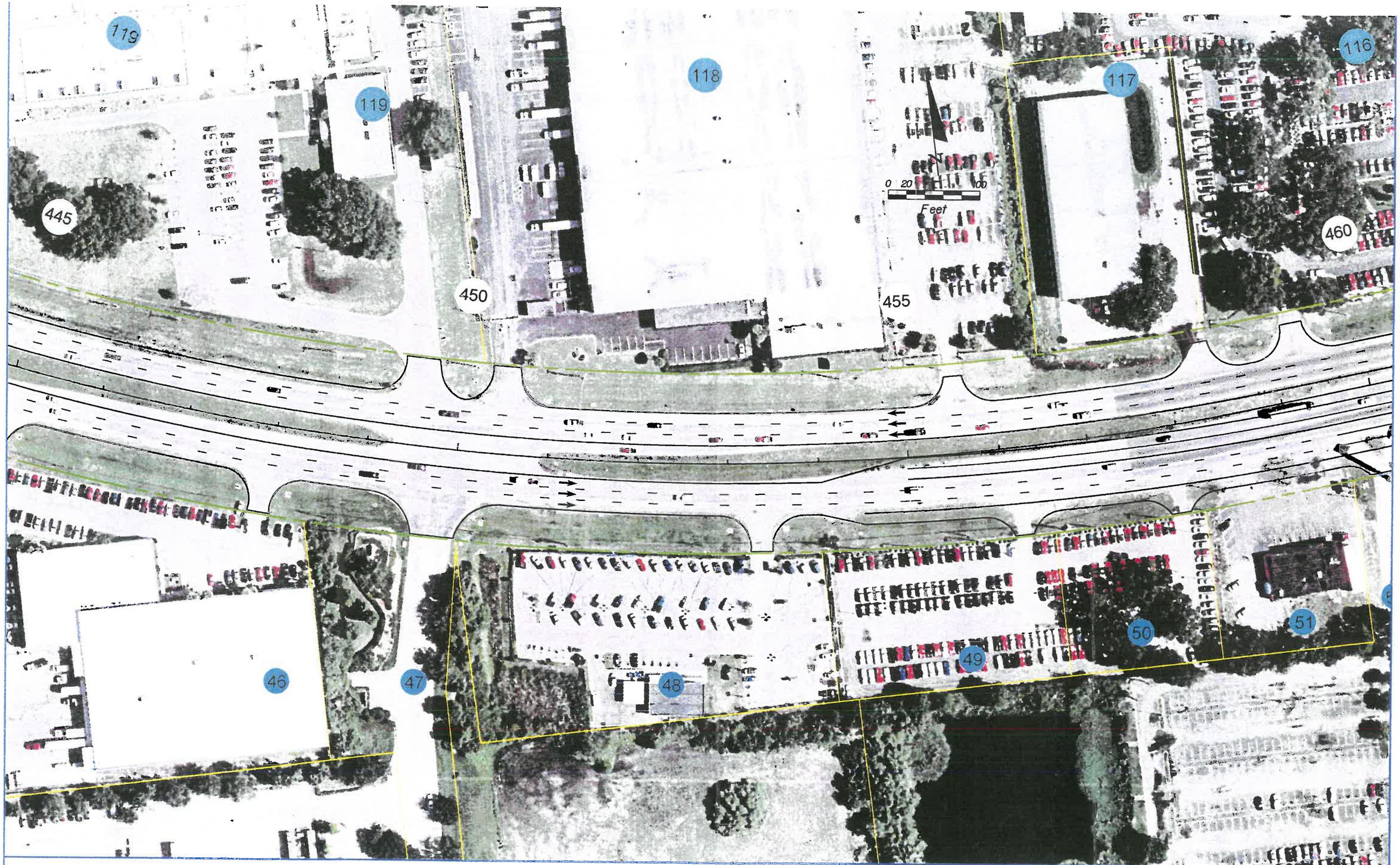
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 15



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

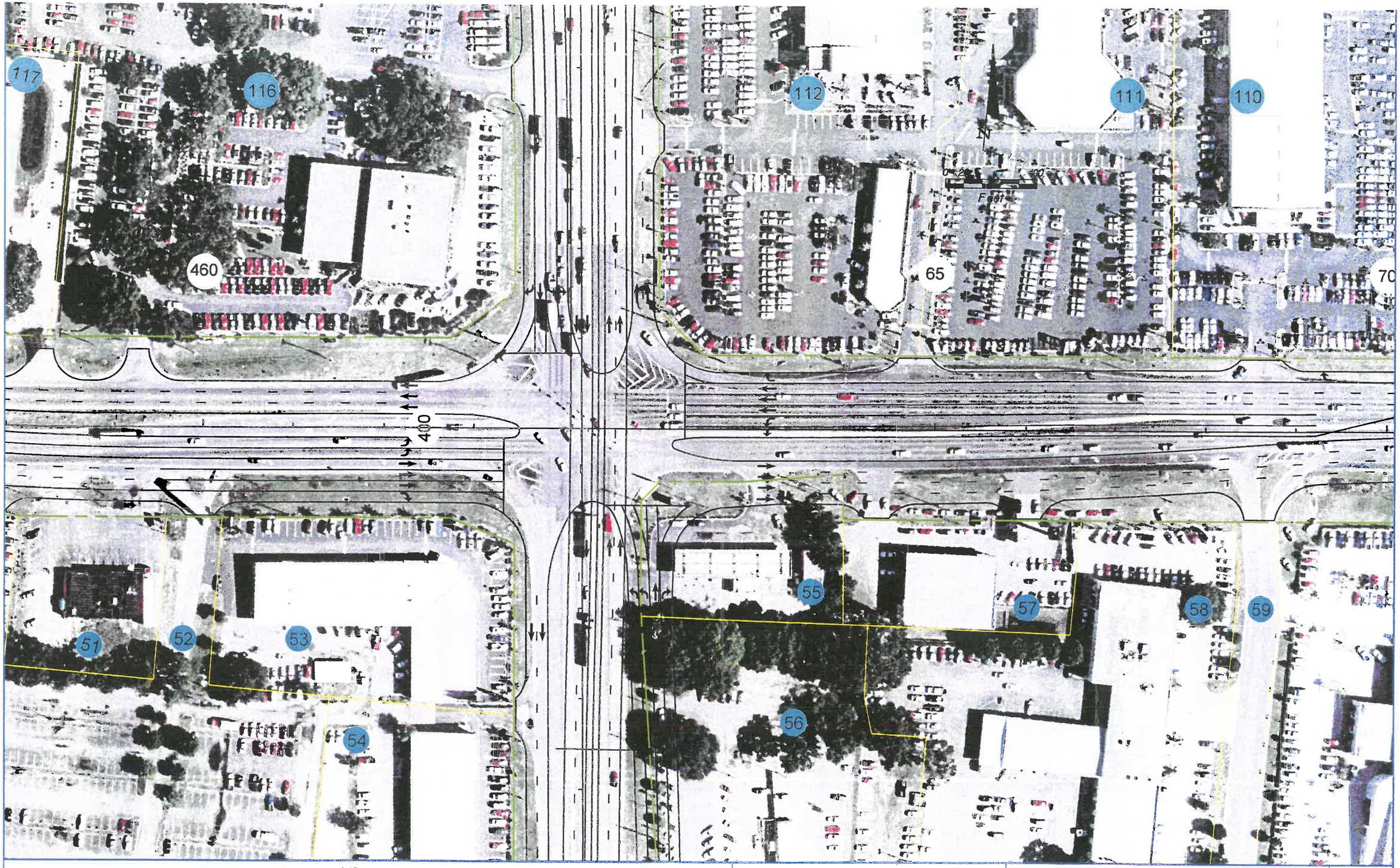
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 16



LEGEND

RIGHT OF WAY

130 EXISTING PROPERTY LINES

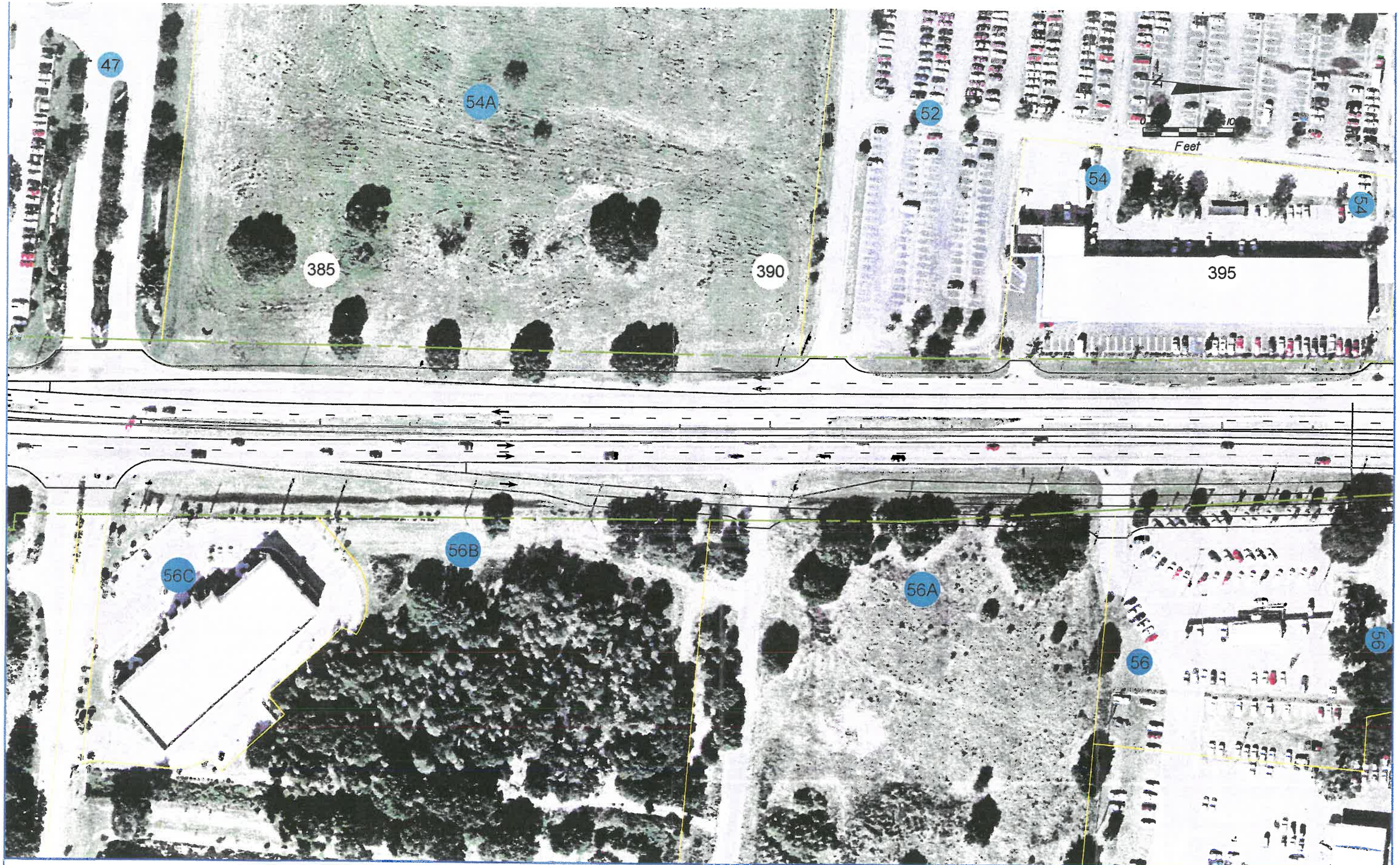
.NE RECEIVER LOCATION AND IDENTIFICATION

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 17



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

130 EXISTING PROPERTY LINES

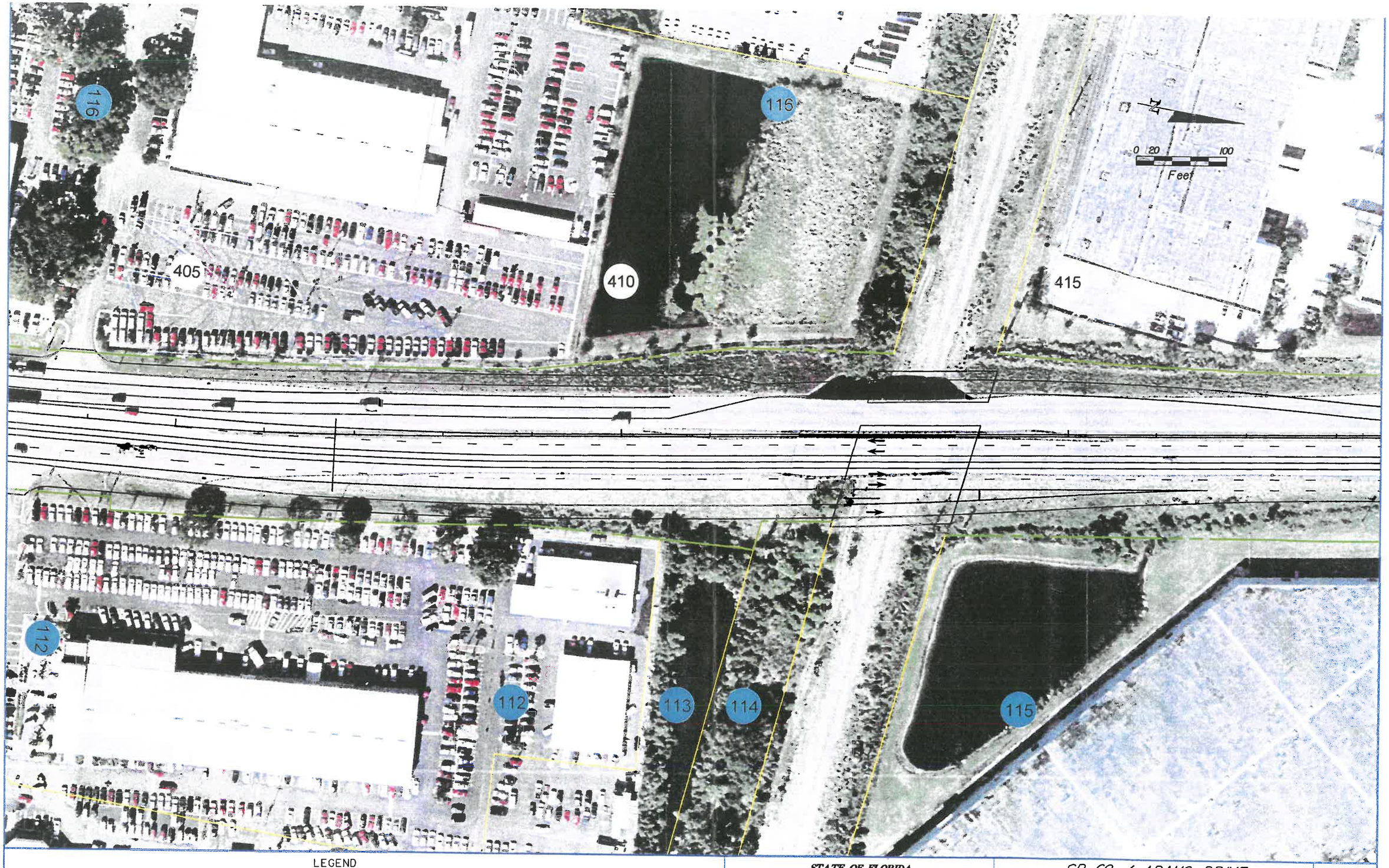
BASELINE OF CONSTRUCTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 17A



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

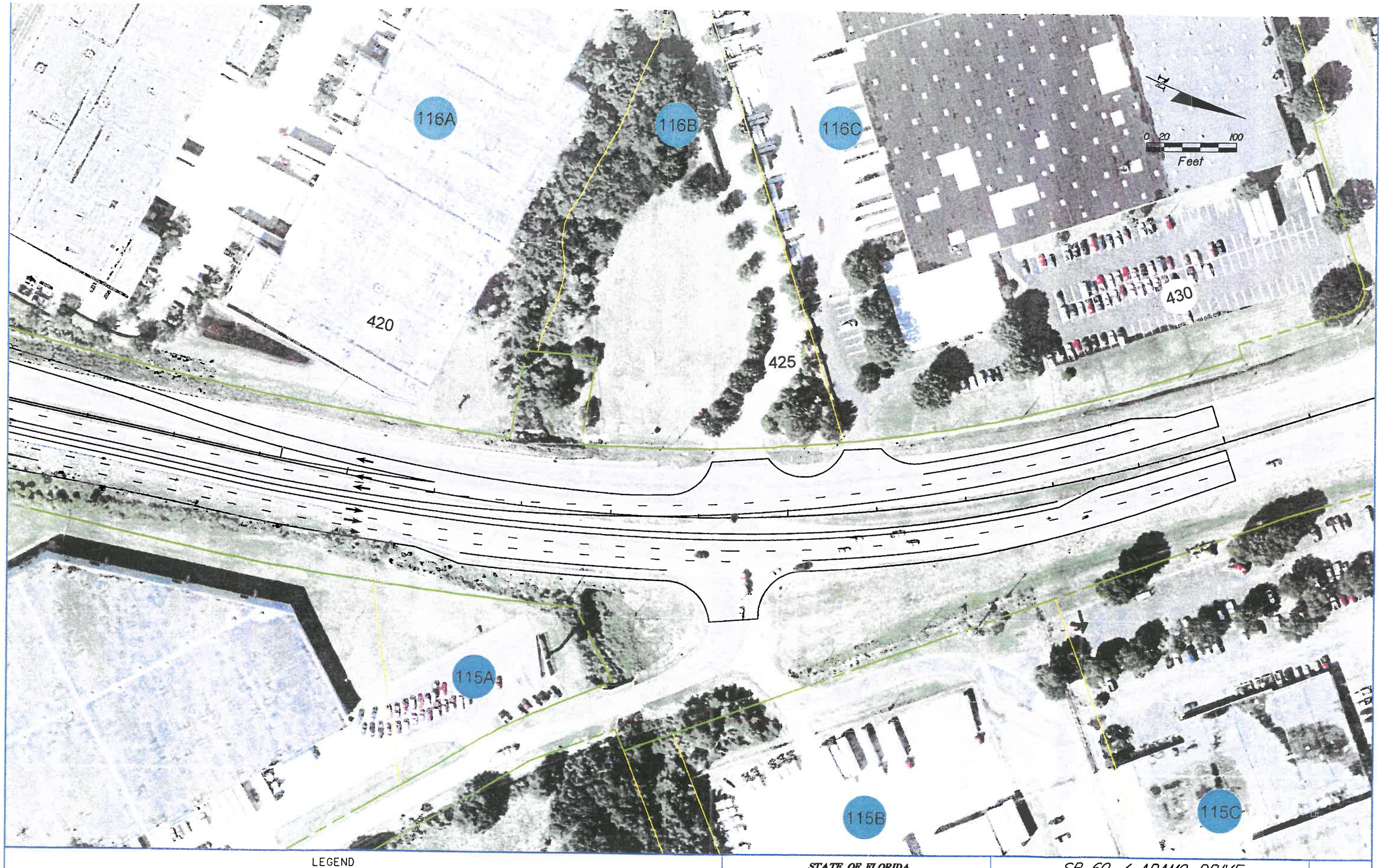
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 17B



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

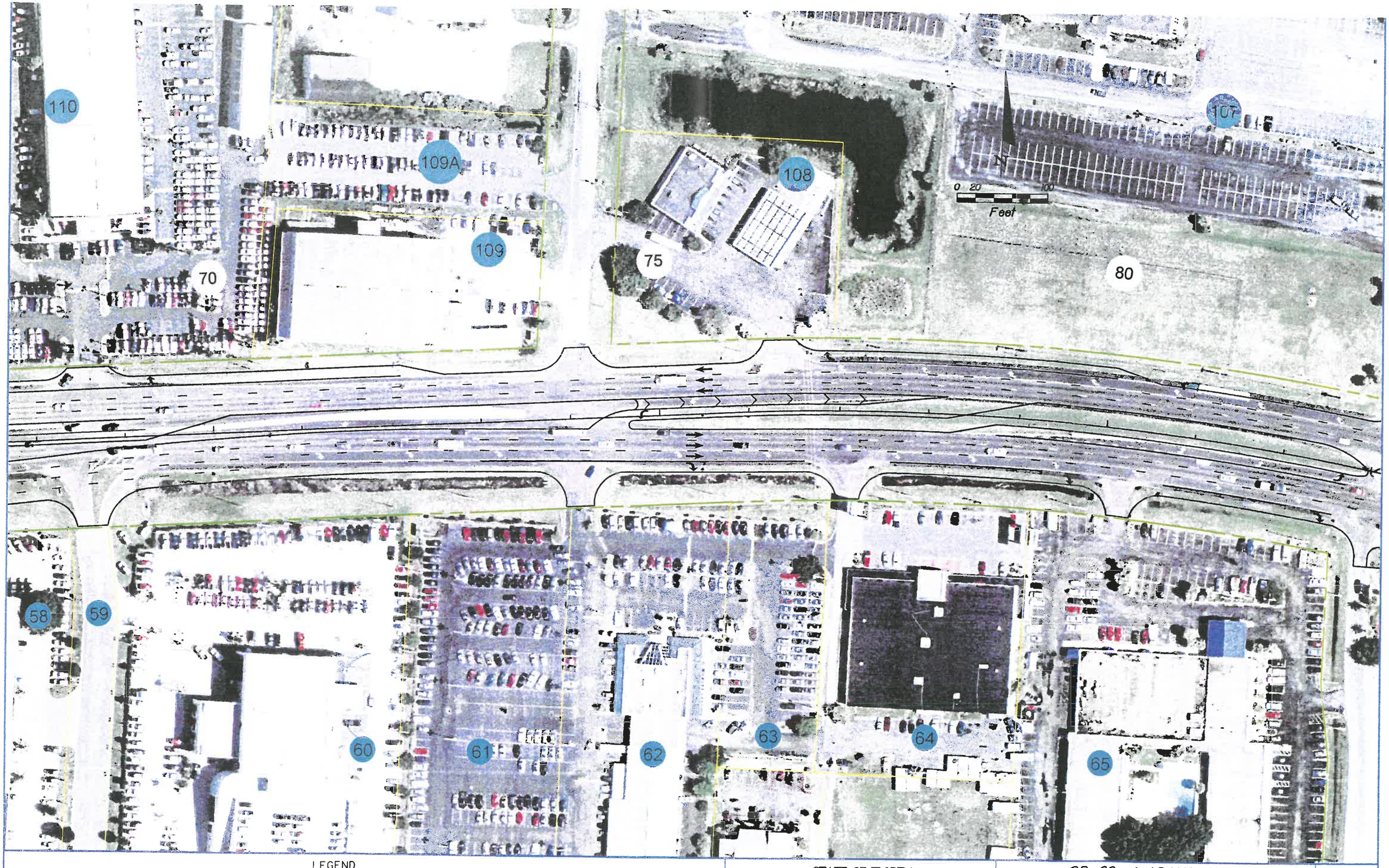
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 17C



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

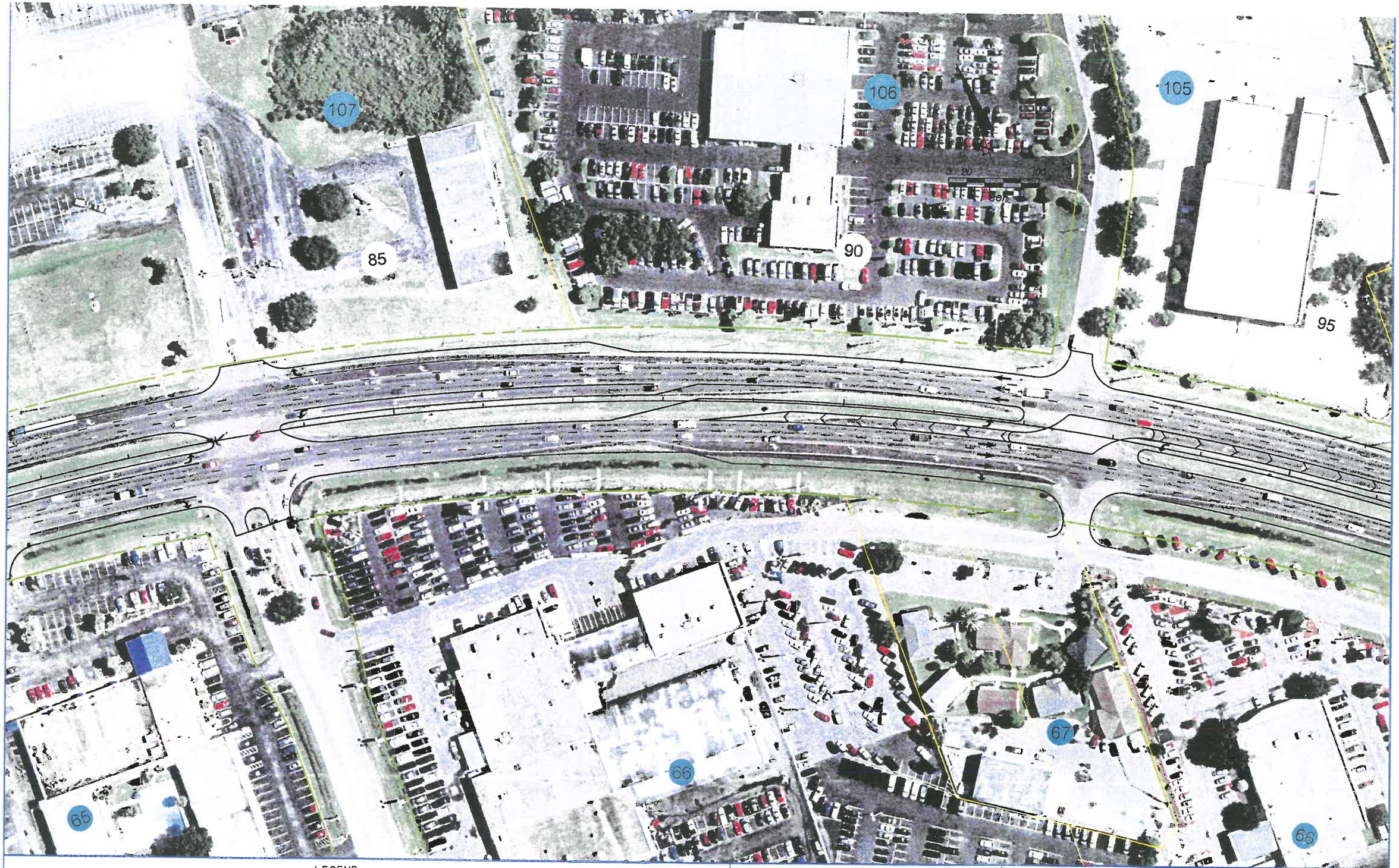
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 18



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

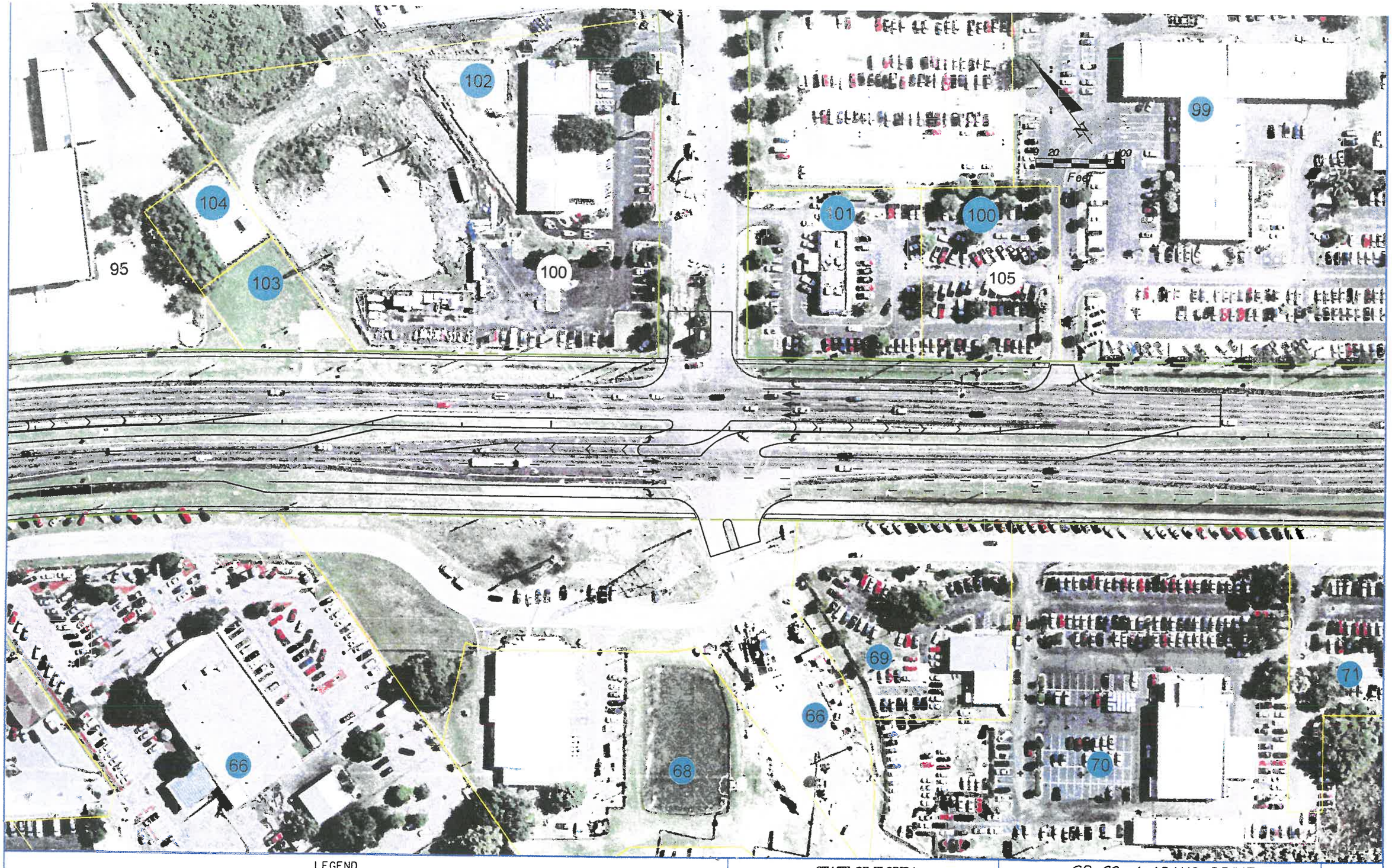
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO.
19



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

130 EXISTING PROPERTY LINES

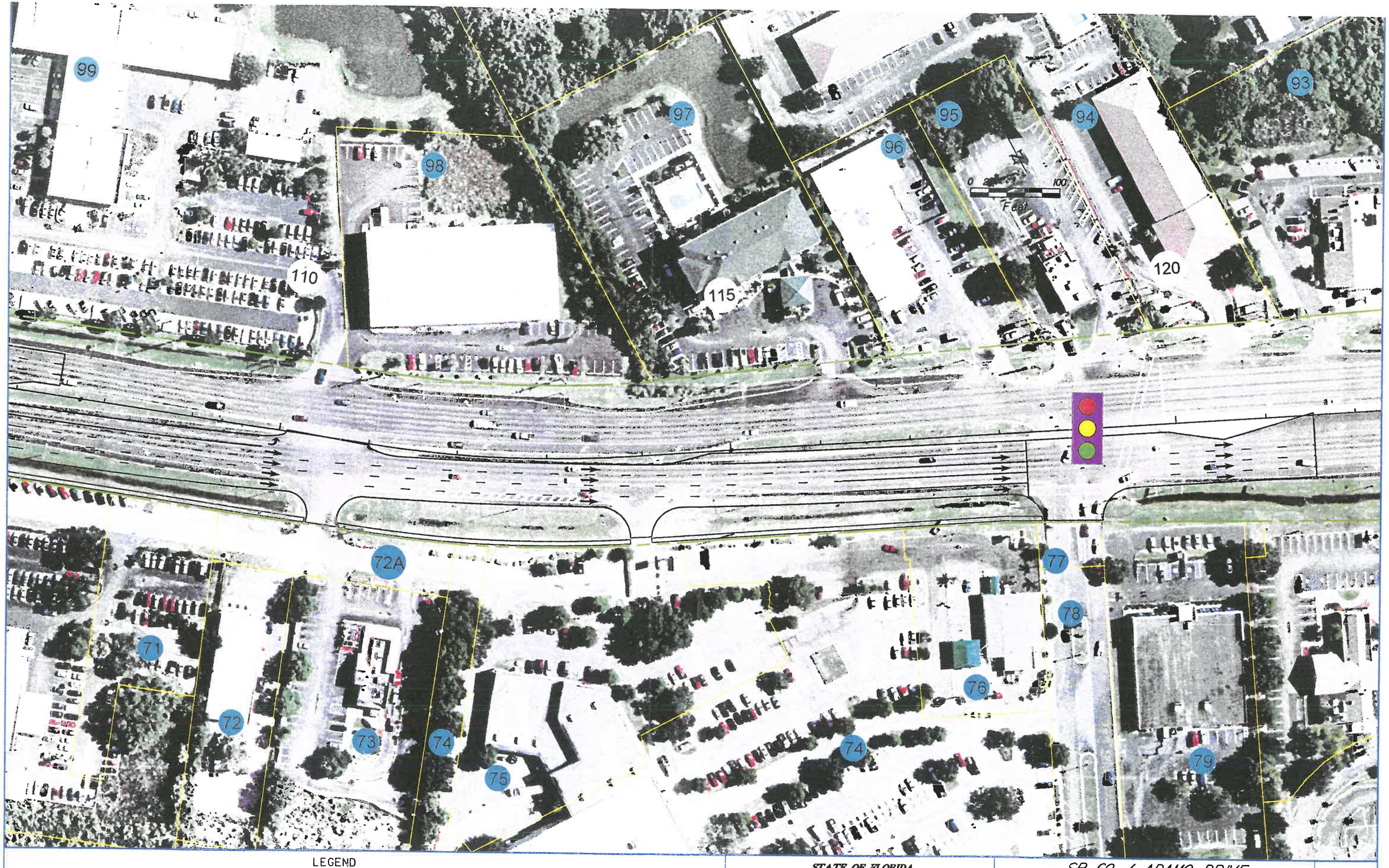
BASELINE OF CONSTRUCTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 20



LEGEND

RIGHT OF WAY

.NE RECEIVER LOCATION AND IDENTIFICATION

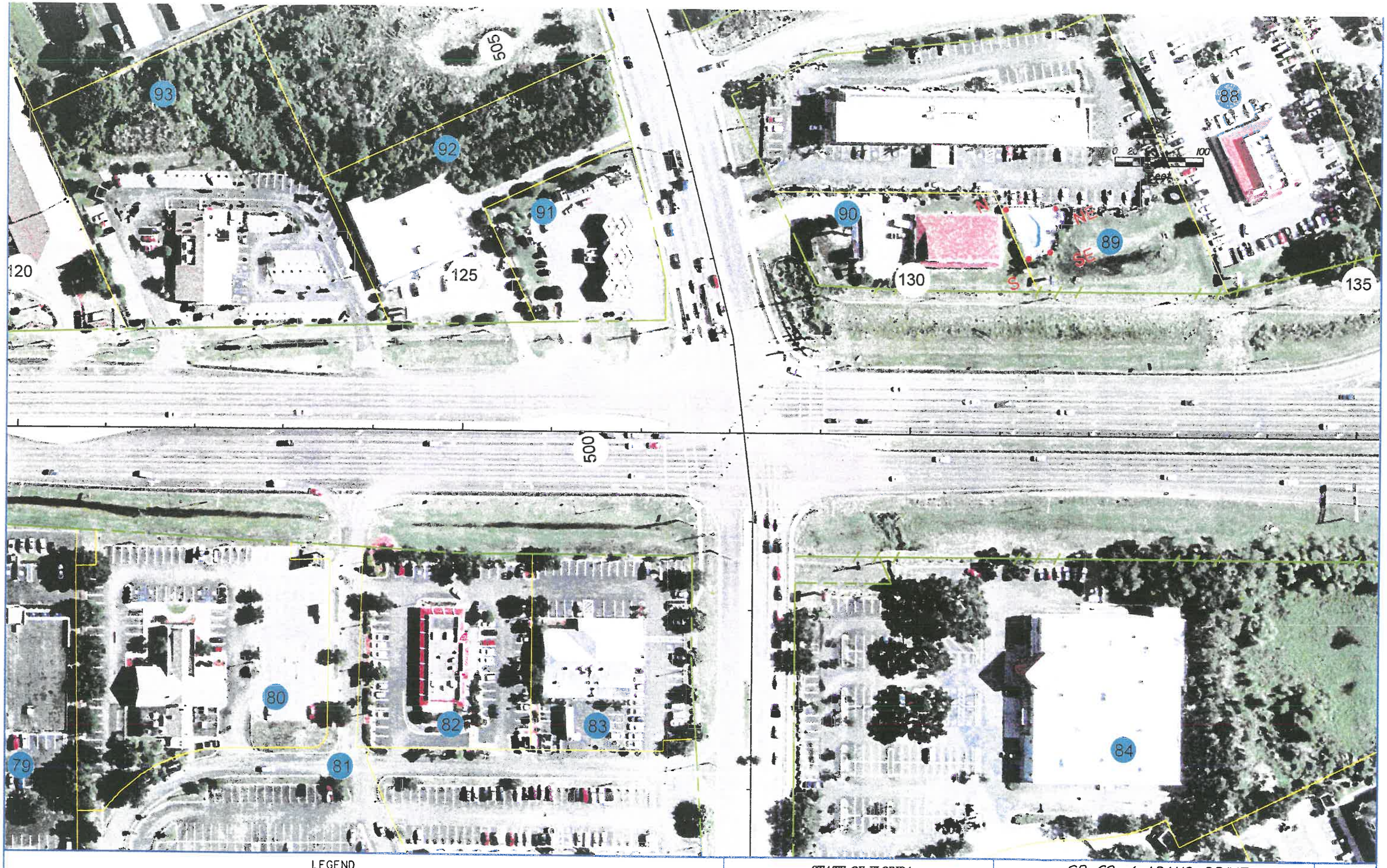
130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 21



LEGEND

RIGHT OF WAY

NE RECEIVER LOCATION AND IDENTIFICATION

130 EXISTING PROPERTY LINES

BASELINE OF CONSTRUCTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	405525-1-22-01

SR 60 / ADAMO DRIVE
PD&E STUDY
TRAFFIC NOISE
ANALYSIS

SHEET NO. 22