STATE ENVIRONMENTAL IMPACT REPORT (SEIR)

PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY

CLEARLAKE ROAD (SR 501)
FROM MICHIGAN AVENUE (MP 2.235) TO INDUSTRY ROAD (MP 3.358)

FINANCIAL PROJECT ID: 433605-1-22-01
EFFICIENT TRANSPORTATION DECISION MAKING (ETDM) NUMBER: 13120
BREVARD COUNTY, FLORIDA

Prepared for:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT 5
719 South Woodland Boulevard
DeLand, Florida 32720

December 2016

FLORIDA DEPARTMENT OF TRANSPORTATION
STATE ENVIRONMENTAL IMPACT REPORT (SEIR)

1. GENERAL INFORMATION:

Project Name: Clearlake Road (SR 501) Project Development and Environment Study

Project Limits: Michigan Avenue (MP 2.235) to Industry Road (MP 3.358)

ETDM Number: 13120

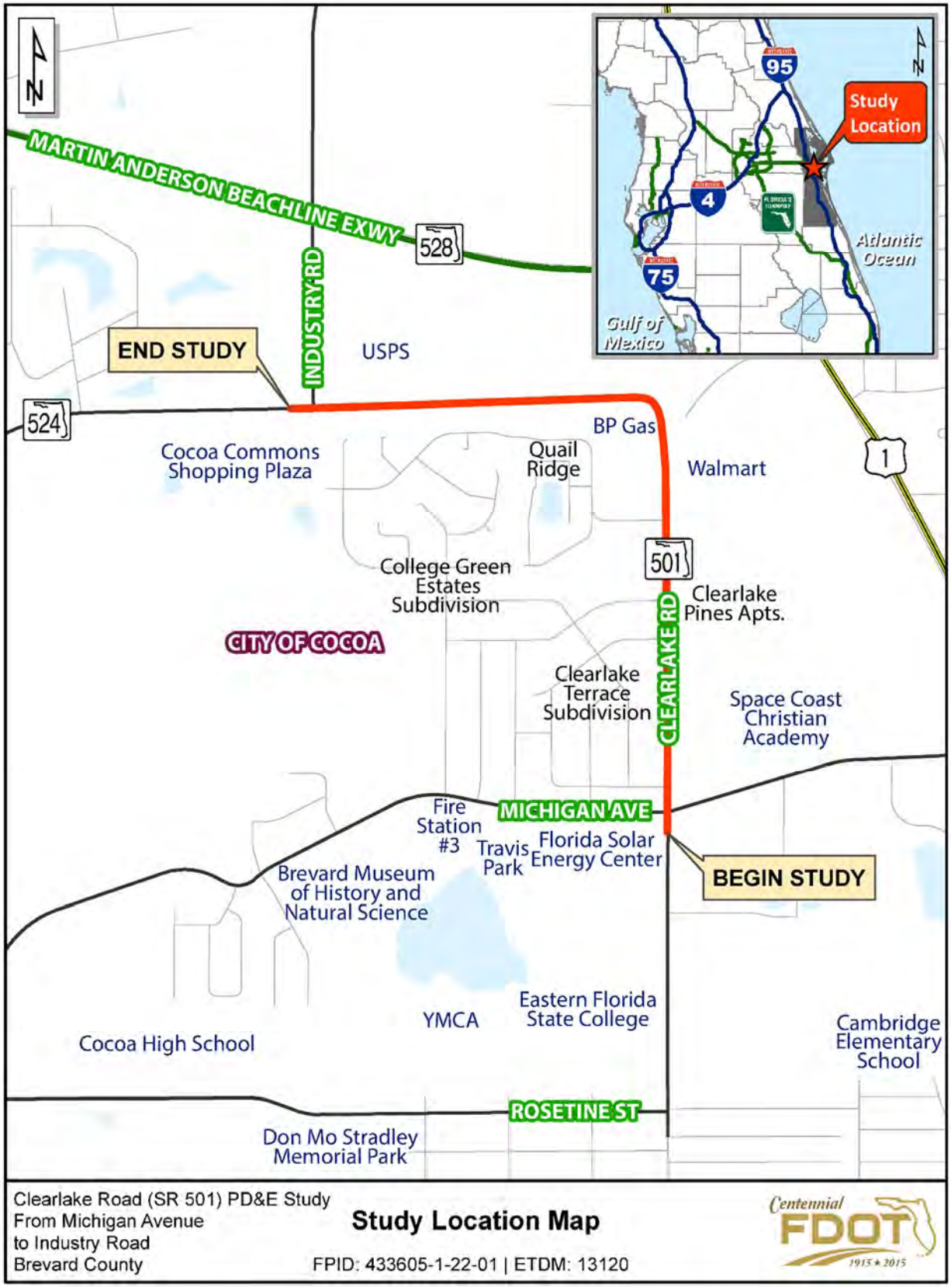
Financial Project Number: 433605-1-22-01

2. PROJECT DESCRIPTION:

a. Existing: Clearlake Road between Michigan Avenue to the south and Industry Road to the north is classified as an Urban Principle Arterial. For a short distance (0.137 miles) north of Michigan Avenue, the road has four lanes with a 12 foot paved median. For the next 0.457 miles northward, the roadway has one, 12 foot lane southbound with grass shoulders and two, 12 foot lanes with curb and gutter in the northbound direction. For the last 0.529 miles, the roadway has two, 12 foot lanes, one in each direction, with four foot paved shoulders. The posted speed limit along this section of Clearlake Road varies and is posted at 40 mph and 45 mph. The various typical sections found along this corridor is due in part to roadway improvements required of adjacent developers. There are signalized intersections at Michigan Avenue, Otterbein Avenue, and Industry Road. It is anticipated that the improved roadway will be a four lane urban typical section. Clearlake Road is not a Strategic Intermodal System (SIS) facility but Industry Road has an interchange with SR 528 (Beachline Expressway) located just to the north which is a designated SIS facility connecting the City of Orlando and the Orlando International Airport to the west with the Port of Port Canaveral to the east. A study location map is provided in Figure 1.

b. Proposed Improvements: The preferred or 'Build' alternative of the Clearlake Road mainline typical section is illustrated in the Typical Section Package, included in Appendix A of this Report. The mainline typical section for the 'Build' alternative will consist of reconstruction of the existing undivided roadway to a four-lane divided urban (curb and gutter on the inside and outside) roadway from Michigan Avenue to Industry Road. The design phase will take widening into consideration wherever possible in order to salvage existing pavement and minimize reconstruction. The proposed design speed is 45 miles per hour (mph). The typical section will provide for a 22-foot raised median with seven-foot designated bicycle lanes and six foot concrete sidewalks on both sides of the roadway. The proposed mainline typical section requires a minimum of 104 feet of right-of-way and therefore, requires additional mainline right-of-way along Clearlake Road from the intersection of Michigan Avenue to the intersection at Otterbein Avenue where existing right-of-way is limited. In addition, a new 35 mph curve is proposed in front of the Walmart entrance which will require a complete acquisition of the BP Gas property. The additional right-of-way will be used to accommodate the new 35 mph curve as well as an offsite pond. The is 35 mph curve alternative through the BP gas station is referred to as the BP Gas Alternative. The alignment of the mainline from Michigan Avenue to Otterbein Avenue is a west alignment which is Alternative 1. The BP Gas Alternative with a 35 mph curve has been selected as a subalternative that was developed based on public input received at the public hearing held on February 25, 2016.

FIGURE I: PROJECT LOCATION MAP



Clearlake Road (SR 501) PD&E Study
From Michigan Avenue
to Industry Road
Brevard County

Study Location Map

FPID: 433605-1-22-01 | ETDM: 13120

Centennial FDOT 1915 ★ 2015

3. **APPROVED FOR PUBLIC AVAILABILITY (BEFORE PUBLIC HEARING)**

District Secretary or Designee Frank J. O'Dea — 2/1/2016 Date

A Public Hearing was held on 2/25/16 Date — Legal Review

4. **APPROVAL OF FINAL DOCUMENT (AFTER PUBLIC HEARING)**

District Secretary or Designee — 1/12/17 Date

The final SEIR reflects full consideration of the comments and responses resulting from the Public Hearing.

5. IMPACT EVALUATION

Topical Categories	Sig	Min	None	NoInv	Basis for Decision *
A. SOCIAL IMPACTS					
1. Land Use Changes	[ ]	[ ]	[X]	[ ]	See Section A.1
2. Community Cohesion	[ ]	[ ]	[X]	[ ]	See Section A.2
3. Relocation Potential	[ ]	[X]	[ ]	[ ]	See Section A.3
4. Community Services	[ ]	[X]	[ ]	[ ]	See Section A.4
5. Title VI Considerations	[ ]	[ ]	[X]	[ ]	See Section A.5
6. Controversy Potential	[ ]	[X]	[ ]	[ ]	See Section A.6
7. Bicycles and Pedestrians	[ ]	[X]	[ ]	[ ]	See Section A.7
8. Utilities and Railroads	[ ]	[X]	[ ]	[ ]	See Section A.8
B. CULTURAL IMPACTS					
1. Historic Sites / District	[ ]	[ ]	[X]	[ ]	See Section B.1
2. Archaeological Sites	[ ]	[ ]	[X]	[ ]	See Section B.2
3. Recreation Areas	[ ]	[ ]	[ ]	[X]	
C. NATURAL ENVIRONMENT					
1. Wetlands	[ ]	[X]	[ ]	[ ]	See Section C.1
2. Aquatic Preserves	[ ]	[ ]	[ ]	[X]	
3. Water Quality	[ ]	[ ]	[X]	[ ]	See Section C.2
4. Outstanding Fla. Waters	[ ]	[ ]	[ ]	[X]	
5. Wild and Scenic Rivers	[ ]	[ ]	[ ]	[X]	
6. Floodplains	[ ]	[ ]	[ ]	[X]	
7. Coastal Barrier Islands	[ ]	[ ]	[ ]	[X]	
8. Wildlife and Habitat	[ ]	[ ]	[X]	[ ]	See Section C.3
9. Farmlands	[ ]	[ ]	[ ]	[X]	
10. Essential Fish Habitat	[ ]	[ ]	[ ]	[X]	
D. PHYSICAL IMPACTS					
1. Noise	[ ]	[X]	[ ]	[ ]	See Section D.1
2. Air	[ ]	[ ]	[X]	[ ]	See Section D.2
3. Construction	[ ]	[X]	[ ]	[ ]	See Section D.3
4. Contamination	[ ]	[ ]	[X]	[ ]	See Section D.4
5. Navigation	[ ]	[ ]	[ ]	[X]	

* Sig = Significant; Min = Minimal; None = None; NoInv = No Involvement. Basis of decision is documented in the referenced attachment(s).

E. PERMITS REQUIRED

Environmental Resource Permit (ERP)	SJRWMD
Dewatering Permit	SJRWMD
Section 404 Permit	USACE
National Pollutant Discharge Elimination System (NPDES) Permit	FDEP

6. COMMITMENTS AND RECOMMENDATIONS

In order to assure that adverse impacts to protected species within the vicinity of the study corridor will not occur, the Florida Department of Transportation (FDOT) will abide by standard protection measures in addition to the following commitments:

- To assure the protection of the Eastern indigo snake during site preparation and construction, the following will be added as a General Note: *Eastern indigo snake habitat has been identified within the project limits. Utilize the US Fish and Wildlife Service Standard Protection Measures for the Eastern Indigo Snake, at the US Fish and Wildlife Service Link*:

  http://www.fws.gov/northflorida/IndigoSnakes/20130812_Eastern_indigo_snake_Standard_Protection_Measures.htm

- During permitting, FDOT will coordinate with the permitting agencies to quantify and provide compensation for any unavoidable impacts to wood stork suitable foraging habitat (SFH). Mitigation for these impacts will be provided within a USFWS-approved wetland mitigation bank that provides an amount of habitat and foraging function equivalent to that of the impacted SFH in accordance with the *Corps of Engineers and U.S. Fish and Wildlife Service Effect Determination Key for the Wood Stork in Central and North Peninsular Florida*.

- During permitting, all potential gopher tortoise habitat that could be impacted by the project will be systematically surveyed according to the current guidelines published by the Florida Fish and Wildlife Conservation Commission (FFWCC). If gopher tortoise burrows are found, all practicable measures will be employed to avoid impacts to the burrows. For burrows which cannot be avoided, a permit will be obtained from the FFWCC for the relocation of gopher tortoises, and relocation will be performed at a time as close to practicable to the start of construction activities at the site of the burrows.

- Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV Chapter 373, F.S. and 33 U.S.C. s.1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

- During the design phase, the designing agency will re-evaluate reasonable and feasible noise abatement measures at the impacted location. The proposed improvement includes the recommendation of noise abatement measures (noise barriers) in the vicinity of the College Green Estates. The construction of noise abatement measures will be contingent upon the following conditions:

  a. A detailed noise analysis during the final design phase supports the need for abatement;
  b. Reasonable cost analyses show that the economic cost of the barrier(s) will not exceed the guidelines;
  c. Community input regarding desires, types, heights and locations of barrier has been solicited;
  d. Safety and engineering aspects, as related to the roadway user and the adjacent property owner have been reviewed; and
  e. Any other mitigating circumstances have been analyzed.

- The Department commits to coordinate with the City of Cocoa and Brevard County for implementing meandering sidewalks and landscaping (to be maintained by the City/County) along the west side of Clearlake Road from Michigan Avenue to Otterbein Avenue.

- A Level II Contamination Screening Evaluation is recommended for the BP gas station parcel during the design phase.

ATTACHMENT A: SOCIAL IMPACTS

A.1 Land Use Changes

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Land Use Changes in the November 6, 2014 Efficient Transportation Decision Making (ETDM) Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 Summary Degree of Effect (DOE): Enhanced (1)
Comment: The Department of Economic Opportunity commented noting that the project is consistent with the City of Cocoa's Comprehensive Plan and development goals. The project is also identified in the City's Future Transportation Map. As a primary north/south arterial, improvements to traffic flow and capacity will enhance this area of Cocoa. We are assigning an Enhanced degree of effect for land use.

Florida Department of Economic Opportunity DOE: Enhanced (1)
Comment: The proposed improvements are compatible with the City of Cocoa Comprehensive Plan, and the development goals of the City. The project is identified on the City's Future Transportation Map. Enhanced traffic flow and capacity on the primary north/south arterial will benefit the entire central area of Cocoa.

The Future Land Use Map (FLUM) of the Comprehensive Plan shows several future land uses surrounding the project, which include the following future land uses: Low and Medium Density Residential, and Commercial.

The project is not located within a quarter mile of any City parks.

The project is not located in an Area of Critical State Concern, does not encroach on a military base, and is not located within the Coastal High Hazard Area.

Within a 500 foot project buffer, about 28% of the area is residential with another 28% retail/office followed by 23% commercial, 12% vacant non-residential, 3% institutional and less than 1% being other land uses (District 5 generalized land uses). The future land use for this area is residential and commercial. Given the urbanized nature of this area, it is not anticipated that the roadway improvements will adversely impact land uses.

A.2 Community Cohesion

Community cohesion is the degree to which the residents have a sense of belonging to their neighborhood or community, including commitment to the community or a strong attachment to neighbors, institutions in the community, or particular groups. A sense of community is generally expressed through frequent social interaction, use of community facilities and services, local participation and involvement in social activities. Due to the lack of community facilities within the study limits and nature of the area, there is no clear evidence that community cohesion exists within the neighborhoods adjacent to the study corridor. Therefore, no impacts to community cohesion are anticipated as part of the proposed widening improvements.

A.3 Relocation Potential

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Relocation Potential in the November 6, 2014 ETDM Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 DOE: Minimal (2)
Comment: We attempt to minimize impacts to residential and commercial properties but there is the possibility of impacts to these properties. However, we believe the potential for total acquisition of residential property in which the tenants could qualify for relocation assistance will be low. We are assigning a Minimal degree of effect for relocations.

Federal Highway Administration DOE: Moderate (3)
Comment: Due to the area history there should be minimal to moderate impacts to the selected resources. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

Minimizing impacts to residential and commercial properties is a major component in the development of alternative alignments. The potential for total acquisition of residential and business properties qualifying for relocation assistance will vary based on the mainline alternative alignment selected and subalternative selected at the existing 90 degree curve just north of Walmart. It is anticipated that under any alternative alignment selected, residential relocations will be required. However, alternatives will be developed with consideration to minimizing relocation potential.

The potential for right-of-way acquisition for roadway and drainage improvements, and associated facilities has been evaluated as part of the PD&E Study. Right-of-way will be needed for mainline and intersection improvements as well as off-site drainage.

In order to minimize the unavoidable effects of right-of-way acquisition and displacement of people, the Florida Department of Transportation will carry out a Right of Way and Relocation Program in accordance with Florida Statute 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended by Public Law 100-17).

The Florida Department of Transportation provides advance notification of impending right-of-way acquisition. Before acquiring right-of-way, all properties are appraised. Owners of property to be acquired will be offered the appraised value for their property rights.

No person lawfully occupying real property will be required to move without at least 90 days written notice of the intended vacation date, and no occupant of a residential property will be required to move until decent, safe and sanitary replacement housing is made available. “Made available” means that the affected person has either by himself obtained and has the right of possession of replacement housing, or that the Florida Department of Transportation has offered the relocatee decent, safe and sanitary housing which is within his financial means and available for immediate occupancy.

At least one relocation specialist is assigned to each highway project to carry out the Relocation Assistance and Payments program. A relocation specialist will contact each person to be relocated to determine individual needs and desires, and to provide information, answer questions, and give help in finding replacement property. Relocation services and payments are provided without regard to race, color, religion, sex, or national origin.

All tenants and owner-occupant displacees will receive an explanation regarding all options available to them, such as (1) varying methods of claiming reimbursement for moving expenses; (2) rental replacement housing, either private or publicly subsidized; (3) purchase of replacement housing; and (4) moving owner-occupied housing to another location.

Financial assistance is available to the eligible relocatee to:

- Reimburse the relocatee for the actual reasonable costs of moving from homes, businesses, and farm operations acquired for a highway project.
- Make up the difference, if any, between the amount paid for the acquired dwelling and the cost of a comparable decent, safe and sanitary dwelling available on the private market, as determined by the department.
- Provide reimbursement of expenses, incidental to the purchase of a replacement dwelling.
- Make payment for eligible increased interest cost resulting from having to get another mortgage at a higher interest rate. Replacement housing payments, increased interest payments, and closing costs are limited to $31,000 combined total.

A displaced tenant may be eligible to receive a payment, not to exceed $7,200, to rent a replacement dwelling or room, or to use as down payment, including closing costs, on the purchase of a replacement dwelling.

The brochures that describe in detail the Florida Department of Transportation's Relocation Assistance Program and Right-of-Way acquisition program are *"Residential Relocation Under the Florida Relocation Assistance Program", "Relocation Assistance Business, Farms and Non-profit Organizations", "Sign Relocation Under the Florida Relocation Assistance Program", "Mobile Home Relocation Assistance", and "Relocation Assistance Program Personal Property Moves"*. All of these brochures are distributed at all public hearings and made available upon request to any interested persons.

Comparable replacement housing for sale and rent is available in the City of Cocoa. However, there may be some last resort rent supplements and last resort replacement housing payments necessary. Last resort housing payments would be used in order to place the relocatees in decent, safe, and sanitary housing, if necessary. Should last resort housing be constructed, the housing would be available before the displacees are required to vacate their dwellings. There are numerous residential lots available for new construction within the City of Cocoa area. Lots typical of those impacted by the Clearlake Road project are available ranging in size from 11,000 square feet to 22,000 square feet and are currently priced from $20,000 to $27,000.

A.4 Community Services

There is minimal presence of community services within the Clearlake Road Study limits. Just south of Michigan Avenue, there is the Eastern Florida State College – Cocoa Campus. Minor right-of-way acquisition from the campus may be needed but will not impact the functionality of the campus or any physical structures. In addition, there is a United State Postal Service (USPS) located just west of Industry Road. No direct impacts are anticipated to the USPS building. However, the existing access into the USPS facility may be modified as part of the proposed access management plan.

A.5 Title VI Considerations

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color or national origin in programs or activities receiving federal financial assistance. Presidential Executive Order 12898 addresses environmental justice in minority and low-income populations. Presidential Executive Order 13166 addresses services to those individuals with limited English proficiency. The rights of women, the elderly and the disabled are protected under related authorities. These Presidential Executive Orders and the related authorities fall under the umbrella of Title VI.

A review of age distribution, income distribution, and minority distribution along the study corridor was conducted. It was determined that the majority of the population along the corridor is within the ages of 30 to 65 years old. Although 20 percent of the population on the east side of the study corridor is deemed to be below poverty level, there are minimal to no impacts anticipated to these low income areas. Impacts to the west side of Clearlake Road is anticipated in which the income levels have been identified as ranging between $30,000 and $49,999 (7-20 percent west) and 21-40 percent east. Minority population on the east side of the corridor ranges between 21 and 40 percent with minimal to no impacts anticipated. Impacts to the west side of Clearlake Road is anticipated in which the minority population is estimated to range between seven and 20 percent. Based on the above information, there is no disproportionate impacts related to any specific minority, age, or other demographic group applicable to Title VI. Title VI considerations have been presented at all public meetings held for this study.

This project has been developed without regard to race, color, national origin, age, sex, religion, disability, or family status.

A.6 Controversy Potential

A public involvement program was initiated at the start of the study. This program was implemented in compliance with the FDOT *PD&E Manual* and Section 339.155 F.S.

Public Kick-Off Meeting

Before the development of alternatives, the study team wanted to gather input from the public. A Public Kick-Off Meeting was held on March 31, 2015, from 5:30 p.m. to 7:30 p.m. at the Eastern Florida State College – Cocoa Campus, Community Dining Room (Building 11, Room 129), located at 1519 Clearlake Road, Cocoa, Florida 32922. In addition to the study team, there were 18 other attendees. Study information was displayed in an open house format, which provided the opportunity for the public to review information displayed throughout the meeting as well as to discuss specific items with the study team members. Details of the Kick-Off Meeting are located in the project files and are included in the Public Involvement Program.

Several notification techniques were used to publicize the Public Kick-Off Meeting. Generally, the meeting was publicized through advertisements (Florida Administrative Register and Florida Today), website announcements (FDOT public meetings page and the Clearlake Road project website), direct mailings (emailed letters with Newsletter #1 to elected and appointed officials as well as mailed letters to property owners with Newsletter #1), hand distributions of Newsletter #1 to corridor businesses, and a news release (emailed to Brevard County media outlets).

Public Alternatives Workshop

A Public Alternatives Workshop was held on October 20, 2015 which presented the alternative alignment concepts and related evaluations. This meeting was held at Eastern Florida State College – Cocoa Campus

Community Dining Room. In addition to the study team, there were 21 signed in attendees. The purpose of this meeting was to present PD&E Study information and to obtain comments on the alternatives being considered. This meeting was conducted as an informal open house with a study presentation running on a continuous loop throughout the meeting. Individuals were also able to review displayed information at their own pace as well as have "one-on-one" conversations with PD&E Study team members.

Several notification techniques were used to publicize the Public Alternatives Workshop. Generally, the meeting was publicized through: advertisements (Florida Administrative Register and Florida Today); website announcements (FDOT public meetings page and the Clearlake Road project website); direct mailings (emailed letters with Newsletter #2 to elected and appointed officials as well as mailed letters to property owners with Newsletter #2); hand distributions of meeting notices to corridor businesses; and a news release (emailed to Brevard County media outlets).

Since this project involves the need for right-of-way acquisition and relocations, there is always a potential for controversy. However, based on public meetings conducted as part of the PD&E process, residents which may be potentially relocated have not voiced any opposition to the study. The study is generally supported by the public. The City of Cocoa and Brevard County both support the study and have been coordinated with as part of the PD&E phase.

Public Hearing

A public hearing was conducted on February 25, 2016 to seek input on the "Recommended" Alternative. The hearing, provided an overview of the "Recommended" Alternative and effects, the study schedule, and summary of the remaining steps of the study. The hearing was held at the Eastern Florida State College Community Dining Room, Building 11 – Room 129 located at 1519 Clearlake Road, Cocoa, FL 32922.

A half-hour open house preceded the formal portion of the hearing. The public was given the opportunity to ask questions and provide comments to the FDOT representatives in a one-on-one setting. A court reporter was present to receive oral comments from the public. Written comments were also accepted. The Recommended Alternative was displayed on aerial photography of the study area. A matrix with potential environmental impacts and cost estimates was presented. An audiovisual presentation describing the engineering and environmental components of the Recommended Alternative was given. After the presentation, the public was given an opportunity to offer oral comments to the FDOT hearing moderator.

Per Chapter 11 of the PD&E Manual, all property owners within at least 300 feet of either side of the centerline of the Recommended Alternative were notified of the hearing by newsletter. Tenants of the Clearlake Pines Apartments and persons who requested to be on the mailing list were also notified. A total of 24 citizens and five agency representatives attended the public hearing. The public comments from the hearing are summarized as follows:

Support for the Project

- Complete the project ASAP (1)
- Cocoa City Council resolution – passed unanimously on Feb. 23rd

Against the Project

- Against the Western Alignment for Segment 1 (1)

Consider Sidewalk/Linear Park

- Consider moving the sidewalk west (or behind) the retention ponds that will be located along the western side of Clearlake Road, north of Michigan Avenue to create a linear park and visually appealing setting (1) – Brevard County (Erin Sterk)

- Consider improvements to land use in the 'Bulb-Out' area, including meandering sidewalks with stormwater ponds (1) – Brevard County (Erin Sterk)
- Consider space for a bus pull out if the existing Walmart bus stop is moved from the Walmart property to Clearlake Road (1) - Brevard County (Erin Sterk); SCAT supports this move of the bus stop but does not want a bus bay
- Space Coast TPO – BPTAC passed a motion supporting the approach of separating sidewalks from the roadway as far as possible, where feasible

Consider Alternative Design for the 'Bulb-Out'

- Submitted alternate design for the 'Bulb-Out' – fewer wetland impacts, shorter roadway length, decreases land acquisition, better accessibility to BP gas station (1) – information submitted as letter as well as statement during the public hearing [Jay Small representing BP gas station]

Design Considerations in Light of All Aboard Florida Preferred Brevard Station Location (north of Walmart) - Brevard County (Erin Sterk & John Denninghoff) 3-4-16 Email

- County is considering closing Mantis Drive
- Recommends multi-use paths to be separated by a landscape buffer along the corridor at ten feet rather than six feet back of curb
- Traffic and design ('Bulb-Out' reconfigured) with the All Aboard Florida preferred Brevard County station should be plugged into the PD&E study analysis
- Recommends perimeter fencing that will separate parcels acquired along Clearlake Road from the rear of the adjacent property line, creating a seamless look that should be maintained as part of the corridor
- Recommend the reconstruction of the ponds within the residential parcels to reflect aesthetic features and to incorporate the multi-use path design and utilities relocation into the pond siting, rather than utilizing a design for a BURP (Big Ugly Retention Ponds).

Other

- Request for information (4)
- Request to be added to project mailing list (2)
- Clarification of funding status for right-of-way and construction (1)
- Clarify public input time frame (1)

The comments received at the public hearing and comments received following the hearing are compiled in the Public Involvement Program. In addition, an official public hearing transcript has been prepared. The Final Public Involvement Program contains hearing presentation materials and notifications.

Post Public Hearing Coordination and Decisions

Based on comments received as part of the public hearing, two post public hearing considerations were given resulting in further analysis and ultimately, slight modification to the Recommended Alternative that was presented at the public hearing. These two considerations include the following:

- Consideration for alternative design to 35 mph 'Bulb-Out' – This consisted of an evaluation for a 35 mph curve impacting the BP gas station property as opposed to the 35 mph 'Bulb-Out' alternative that was presented at the hearing. Based on the evaluation, the BP Gas Alternative with a 35 mph curve is the preferred alternative.

- Consideration for meandering sidewalks/enhancement area – This consisted of a drainage evaluation for moving the proposed sidewalk on the west side of Clearlake Road away from the proposed curb and gutter in order to meander behind proposed retention ponds from Michigan

Avenue to Otterbein Avenue with additional landscaping in order to create an enhanced and more visually appealing setting.

As a follow-up to the above mentioned considerations, the following meetings were held after the public hearing.

BP Gas Meeting

A meeting with the Department and the owners of the BP gas station located across from Walmart was held on March 29, 2016 in order to receive input regarding the realignment of Clearlake Road through the BP gas station resulting in a full acquisition of the property. This alignment, referred to as the BP Gas Alternative is the preferred alternative. Below is a summary of key topics that were discussed.

The BP gas owners indicated that they are in favor of a complete acquisition of the BP gas property in order to accommodate a 35 mph curve which will minimize impacts to wetlands, provide increased stormwater capacity, and likely be more cost effective. They indicated that there are no open releases on the property or known contamination issues. The gas station was built in the early 2000's and there was no previous gas station on the property. It was discussed that currently, there is no funding for right-of-way acquisition or construction and the project is not identified in FDOT's Five Year Work Program. The project is ranked number 7 in the Space Coast TPO priority list. The Department requested that a letter be provided from the BP gas station owners indicating their willingness to sell the entire property.

Local Agency Meeting

A meeting with the Department, the Space Coast TPO, Brevard County, City of Cocoa, and SCAT staff was held on August 2, 2016 in order to receive concurrence on the Preferred Alternative consisting of the BP Gas Alternative with a 35 mph curve and incorporating the County's "vision" of an enhancement area with meandering sidewalks and dry, interconnected ditches. Below is a summary of key topics that were discussed related to the Preferred Alternative.

BP Gas Alternative – 35mph Curve: It was presented at the meeting that the preferred alternative selected following the public hearing is a 35 mph curve which runs through the BP gas property and consists of a complete acquisition of the property which will also be used for a drainage pond, thus eliminating a need to expand the existing drainage pond located just north of Walmart. None of the meeting attendees opposed the BP Gas Alternative with 35 mph curve.

Brevard County's Vision for Enhancement Area - Based on analysis for the County's recommendation for linear ponds with meandering sidewalks, the Department agreed to support this recommendation which would consist of 8-foot sidewalks and two, linear, dry ditches within the parcels of proposed acquisition between Michigan Avenue and Otterbein Avenue. With regard to upgraded landscaping the Department will provide landscape architect services and construct the proposed improvements with an agreement that the County maintains the enhancements. A perimeter wall is proposed to serve as a buffer for residents abutting the proposed improvements. Graffiti removal will need to be included in the maintenance agreement. There is currently a maintenance agreement in place between the County and FDOT which may be amended in order to include the project enhancements. It was agreed at the meeting that there will not be any benches within the enhancement area and that this area is not to be designated as a park.

A.7 Bicycles and Pedestrians

Currently along Clearlake Road, from Michigan Avenue to Otterbein Avenue, there is only sidewalk located on the east side of the roadway. North of Otterbein Avenue, sidewalks are present on both sides up

to just south of the BP gas station, before the 90 degree bend. From this point to Industry Avenue, a sidewalk is only present on the east/north side of Clearlake Road.

From Michigan Avenue to the north Walmart entrance, there are no designated bicycle lanes. This segment consists of curb and gutter on the east side. On the west side it is partially curb and gutter as well as a grass shoulder. The segment of Clearlake Road from the north Walmart entrance to Industry Road consists of four foot paved shoulders on each side and has been identified in the Space Coast TPO Bicycle & Pedestrian Mobility Plan (December 2013) as an existing on-road bicycle facility. The entire study segment has been identified as a proposed on-road bicycle facility for including designated bicycle lanes.

There is potential for high pedestrian volumes with the Eastern Florida State College – Cocoa Campus just south of Michigan Avenue which may require giving consideration to lighting along the corridor. Currently, there is conventional cobra head lighting at the intersection of Clearlake Road and Michigan Avenue and north of the intersection on the east side of Clearlake Road up to Otterbein Avenue. North of the intersection of Clearlake Road and Otterbein Avenue up to the north entrance of Walmart, lighting is provided from Walmart and the Paradise Shoppes of Cocoa on the east and west sides, respectively. There is also a conventional cobra head light pole just south of the Clearlake Road and Otterbein Avenue intersection on the west side as well as at Clearlake Road and the 90 degree bend in front of the BP gas station.

A.8 Utilities and Railroads

Preliminary identification of utility owners within the Clearlake Road study corridor was gathered through contacting Sunshine State One and reaching out to local utility owners. Table 1 lists agencies that have been identified as having utilities along Clearlake Road from Michigan Avenue to Industry Road.

TABLE 1: UTILITY CONTACTS

Brevard County Public Works Engineering 580 Manor Drive Merritt Island, FL 32952 Contact: Brandon Collins; Phone: 321-455-1440
City of Cocoa 351 Shearer Boulevard Cocoa, FL 32922 Contact: Peggy Turner; Phone 321-433-8799
Florida City Gas 4180 South US Highway 1 Rockledge, FL 32955 Contact: Ron Muller; Phone: 321-638-3424
Florida Gas Transmission – Melbourne 2405 Lucien Way, Suite 200 Maitland, FL 32751 Contact: Joseph E. Sanchez; Phone: 407-838-7171
Florida Power & Light 2900 Catherine Street Palatka, FL 32177 Contact: Tracy Stern; Phone: 800-868-9554
MCI 1909 US Highway 301 North, Building D Tampa, FL 33619 Contact: John Bachelder; Phone: 972-729-6322

AT&T Distribution 146 Orange Place Maitland, FL 32751 Contact: Mark Gutierrez; Phone: 772-460-4443
Transcore 719 South Woodland Boulevard DeLand, FL 32720 Contact: Tushar Patel; Phone: 386-943-5315
Bright House Networks, LLC 1571 Palm Bay Road, NE Palm Bay, FL 32905 Contact: Mike Isom; Phone: 321-757-6451

Initial utility contact letters to utility owners that were identified in the preliminary identification were mailed out in August 2015. The Department has received responses from AT&T, Brighthouse Networks, the City of Cocoa, Florida City Gas, Florida Power & Light (FP&L), Florida Gas Transmission (FGT) Company, and Verizon – MCI. The following is a description of the utilities and summary of impacts if any, based on the preferred alternative.

AT&T – AT&T has identified overhead utilities (fiber) south of Michigan Avenue on the west side of Clearlake Road. This connection then crosses over to the east side just north of Michigan Avenue and runs parallel along Clearlake Road to just south of Otterbein Avenue. Another overhead line (copper) runs along the east-west segment of the corridor from the Walmart to Industry Road. AT&T also has buried utilities throughout various locations along the corridor. Overhead utilities within the FDOT right-of-way between Michigan Avenue and Otterbein Avenue will likely be impacted in order to accommodate the proposed improvements although the alignment is being shifted to the west.

Bright House Networks, LLC – Bright House Networks, LLC has identified overhead (television) utilities Clearlake Road from south of Michigan Avenue to the north of entrance of Walmart. Within these limits, the overhead utilities vary shift back and from the west side to the east of Clearlake Road. From the north entrance of Walmart to Industry Road, the overhead utilities run parallel to Clearlake Road on the south side of the corridor. Overhead utilities within the FDOT right-of-way between Michigan Avenue and the north Walmart entrance will likely be impacted. No impacts are anticipated for the overhead utilities along the east-west segment of the corridor on the south side from the Walmart to Industry Road.

City of Cocoa – The City responded as having water, sewer, and reclaimed water within the study limits. The City stated they will claim for reimbursement for any required utility relocation for the roadway study outside of the FDOT right-of-way. The City also desires to enter into a Joint Project Agreement (JPA) with FDOT. There are several utilities which they would like to replace in addition to required relocations. Coordination regarding utility relocations with the City will be conducted in the design phase.

Florida City Gas – Florida City Gas has a gas line that generally runs along the east side of Clearlake Road from south of Michigan Avenue to Otterbein Avenue and then crosses over to the west side of Clearlake Road. North of Otterbein, a new connection of the gas line generally runs on the west side of Clearlake Road and on the south side of the east-west segment to Industry Road. Throughout the corridor, the gas lines has various locations with connections crossing Clearlake Road. Coordination with Florida City Gas will be conducted in the design phase.

Florida Power & Light (FP&L) – FP&L provided utility plans indicating there are overhead distribution lines on the east side of Clearlake Road from Michigan Avenue to the north entrance of Walmart. Distribution lines are also present on the south side of Clearlake Road from Industry Road to the near the

north Walmart entrance. These poles are typically located within FDOT right-of-way. The transmission lines are located on the west side of Clearlake Road, with poles located between Michigan Avenue and the north side of the Otterbein intersection. The transmission line crosses over Clearlake Road connecting near the north Walmart entrance. Seven (7) out of eight transmission poles on the west side of Clearlake Road are outside of the FDOT's right-of-way. All of these poles will require relocation as part of the preferred alternative and are reimbursable. Distribution lines on the east side of Clearlake Road are typically within FDOT's right-of-way and will likely require relocation as part of the preferred alternative.

Florida Gas Transmission (FGT) Company – FGT responded as not having facilities located within the study limits and do not expect any conflicts with proposed construction.

Verizon-MCI – MCI responded that they do have utilities within the study area which may be in conflict with the proposed improvements. In order to avoid potential conflict, it will be necessary for construction to maintain a minimum of 24 inches vertical clearance when crossing MCI facilities and 60 inches horizontal clearance running parallel to MCI facilities.

There is no involvement with railroads as part of the study and therefore, no associated impacts with the preferred alternative.

ATTACHMENT B: CULTURAL IMPACTS

B.1 Historical Sites

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Historic and Archaeological Sites in the November 6, 2014 ETDM Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 DOE: Moderate (3)
Comment: FHWA and Florida Department of State (FDOS) provided comments on this issue with FDOS noting that no formal cultural resource survey has been performed in this location. A Cultural Resource Assessment Survey (CRAS) will be conducted during the study in order to identify potential archaeological or historical resources in the area. We are assigning a Moderate degree of effect for this issue.

Federal Highway Administration DOE: Minimal (2)
Comment: Due to the area history there should be minimal impacts to the selected resources. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

Florida Department of State DOE: Moderate (3)
Comment: This office requests that the project area be comprehensively surveyed for cultural resources. All cultural resources, including potential historic districts, within the area of potential effect should be documented and assessed for NRHP eligibility. The resultant survey report shall conform to the specifications set forth in Chapter 1A-46 Florida Administrative Code, FDOT PD&E Manual Part 2, Chapter 12and will need to be forwarded to this agency (or the appropriate Federal Agency) for review and comment.

A Cultural Resource Assessment, conducted in accordance with the procedures contained in 36 CFR Part 800 and including background research and a field survey coordinated with the State Historic Preservation Officer (SHPO), was performed for the project. As a result of the assessment, 31 sites (Florida Master Site File Nos. 8BR03301-8BR03331), were identified. The SHPO, after application of the National Register Criteria of Significance, found that the sites were not eligible for listing on the National Register of Historic Places. Based on the fact that no additional archaeological or historical sites or properties are expected to be encountered during subsequent project development, the SHPO, has determined that no National Register properties would be impacted. The SHPO coordination letters are shown in Appendix B.

B.2 Archaeological Sites

Refer to Section B.1 for the *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Historic and Archaeological Sites in the November 6, 2014 ETDM Programming Screen Summary Report (#13120).

The CRAS of the Clearlake Road Area of Potential Effect (APE) included pedestrian surface inspections combined with limited subsurface shovel tests placed at intervals throughout eight proposed pond footprints and the road corridor. Much of the existing and proposed right-of-way is occupied by commercial development and numerous buried and above-ground utilities. Given the high degree of disturbance within the APE, and the lack of cultural material recovered from shovel testing, no further archaeological survey is recommended. As noted in Section B.1, the SHPO concurred with the findings and recommendations of the CRAS and CRAS Addendum (Appendix B).

ATTACHMENT C: NATURAL ENVIRONMENT

C.1 Wetlands

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Wetlands in the November 6, 2014 ETDM Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 DOE: Minimal (2)
Comment: A Wetland Evaluation Report (WER) will conducted during the PD&E Study which will delineate and evaluate the functions and values of adjacent wetland communities. The WER will also estimate approximate wetland impacts for the roadway widening and stormwater ponds. We will attempt to locate any new stormwater ponds in disturbed upland areas and avoid wetland areas to the extent practicable. Best Management Practices will be employed during construction of the project in order to minimize if not prevent point and nonpoint discharges of turbid waters. At this stage we believe that proposed improvements can be accomplished with none to very minimal wetland impacts. We are assigning a Minimal degree of effect for wetland issues.

US Environmental Protection Agency DOE: Minimal (2)
Comment: EPA utilized the GIS analysis data for the project at the programming screen phase to evaluate potential wetlands impacts, based upon the National Wetlands Inventory, for the project. The GIS analysis data indicated that there are approximately 1.6 acres of palustrine wetlands within the 200-foot buffer distance of the project and approximately 12.3 acres of palustrine wetlands within the 500-foot buffer distance. The actual amount of direct impact to wetlands is unknown and should be assessed during the PD&E phase of the project.

The proposed project may have direct, indirect, and cumulative effects on wetlands, wetlands habitat and water quality in the area. The degree of direct wetlands impacts associated with the project will be dependent upon the right-of-way needs for the entire project including stormwater treatment areas. Potential impacts include, but are not limited to, loss of wetlands function, loss of wildlife habitat, degradation of water quality in wetlands, degradation of water quality in surface waters, and reduction in flood storage and capacity.

Other issues of concern include increased stormwater runoff and the increase of pollutants into surface waters and wetlands as a result of the project and other point and nonpoint sources. Every effort should be made to maximize the collection and treatment of stormwater. Stormwater collection and treatment mechanisms should be designed to protect the function of surrounding wetlands, floodplains, and surface water features.

The PD&E study should include a wetland impact analysis which focuses on the wetlands areas to be impacted by the project. This analysis should include a delineation of wetlands; functional analysis of wetlands to determine their value and function; an evaluation of stormwater pond sites to determine their impact on wetlands; avoidance and minimization strategies for wetlands; and mitigation plans to compensate for adverse impacts.

Florida Department of Environmental Protection DOE: Minimal (2)
Comment: The proposed project will likely require an environmental resource permit (ERP) from the St. Johns River Water Management District. The ERP applicant will be required to

eliminate or reduce the proposed wetland resource impacts of roadway construction to the greatest extent practicable:

- Minimization should emphasize avoidance-oriented corridor alignments, wetland fill reductions via pile bridging and steep/vertically retained side slopes, and median width reductions within safety limits.

- Wetlands should not be displaced by the installation of stormwater conveyance and treatment swales; compensatory treatment in adjacent uplands is the preferred alternative.

- After avoidance and minimization have been exhausted, mitigation must be proposed to offset the adverse impacts of the project to existing wetland functions and values. Significant attention is given to forested wetland systems, which are difficult to mitigate.

- The cumulative impacts of concurrent and future transportation improvement projects in the vicinity of the subject project should also be addressed.

St. Johns River Water Management District DOE: Moderate (3)
Comment: Amount of wetland impacts unknown at this time.

National Marine Fisheries Service DOE: Moderate (3)
Comment: The wetlands along the proposed roadway expansion provide water quality functions, such as removal of sediments, excess nutrients, and contaminants, which benefit and support these aquatic ecosystems. Through hydrological connections, these wetlands also contribute plant material and other useable nutrients (both dissolved and particulate organic matter) into aquatic food webs that include recreationally, commercially, and ecologically important species within downstream estuaries. If wetland impacts are unavoidable, sequential minimization and mitigation should take place.

In addition to the direct impacts from filling wetlands, construction activities may impact adjacent wetlands through sedimentation and runoff.

U.S. Fish and Wildlife DOE: Minimal (2)
Comment: The advance notification package does not disclose the amount of wetland habitat that might be impacted by this proposal. Direct impacts could include dredging and filling large, moderate quality large wetlands located north of the highway. Indirect impacts from the road widening, include stormwater runoff that may increase sedimentation in nearby wetlands and contamination from oil, grease, gas, trash may also increase. The large wetland area to the SW of the project contains the Cocoa Conservation Area. Best Management Practices should be followed to avoid further degradation of the habitat from contaminated water.

FHWA DOE: Moderate (3)
Comment: Due to the area history there should be minimal to moderate impacts to the selected resources. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

US Army Corps of Engineers DOE: Minimal (2)

Comment: Minimal effects are expected based on the limited functional value of the system.

A *Natural Resource Evaluation (NRE) Report* was prepared in accordance with Executive Order 11990, Protection of Wetlands using assessment methodology, evaluation procedures, and document preparation guidance found in Part 2, Chapter 18 of FDOT's *PD&E Manual*.

The Urban Four Lane Divided typical section for the west (preferred alignment) from Michigan Avenue to Otterbein Avenue, does not involve impacts to jurisdictional wetlands or surface waters. The BP Gas Alternative (preferred) with a 35 mph curve, from just north of Otterbein Avenue to Industry Road, however, involves impacts to wetlands and/or surface waters that occur adjacent to the study corridor.

Direct and secondary impacts associated with the subalternative are depicted in Figures 2(a) through 2(g). To determine the extent of secondary impacts, the US Army Corps of Engineers' Scope of Effect Tool was utilized. A 250 foot buffer around each subalternative was chosen on based on the type of forest, the level of effect to hydrology, water quality, vegetative community, fish, wildlife, and habitat. These impacts and an evaluation of the functional loss associated with the direct impacts of each roadway subalternative are summarized in Table 2 and discussed below. Impacts associated with pond alternatives are depicted in Figures 3(a) and 3(b), and are summarized in Table 3.

Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV Chapter 373, F.S. and 33 U.S.C. s.1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

FIGURE 2(a): SUBALTERNATIVE A – 45 MPH CURVE

FIGURE 2(b): SUBALTERNATIVE B – 35 MPH CURVE

FIGURE 2(c): SUBALTERNATIVE C – ROUNDABOUT

FIGURE 2(d): SUBALTERNATIVE D – 'BULB-OUT'

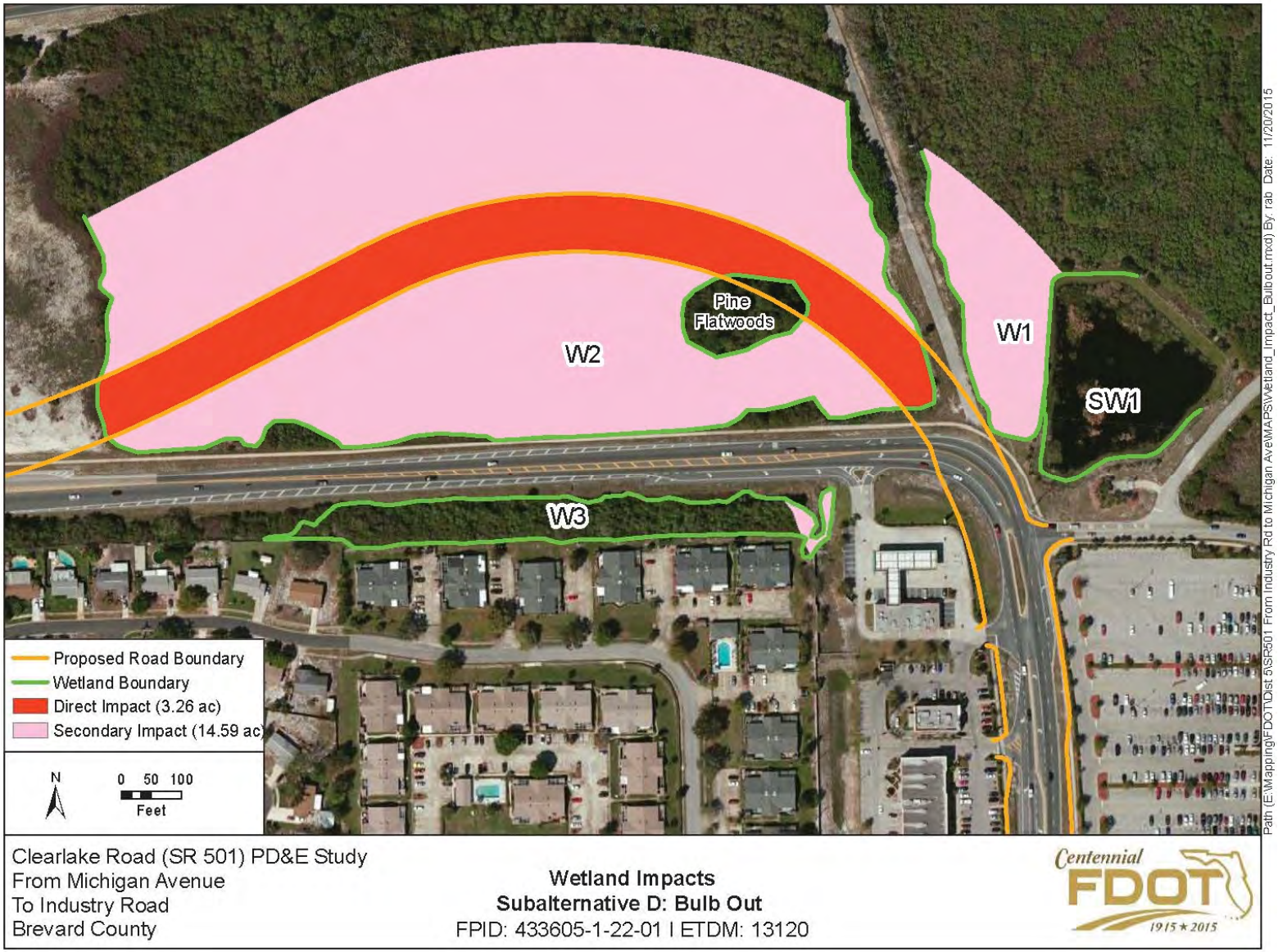


FIGURE 2(e): SUBALTERNATIVE – 35 MPH 'BULB-OUT'

FIGURE 2(f): SUBALTERNATIVE – 35 MPH 'BULB-OUT' (RECOMMENDED) WITH POND 3C

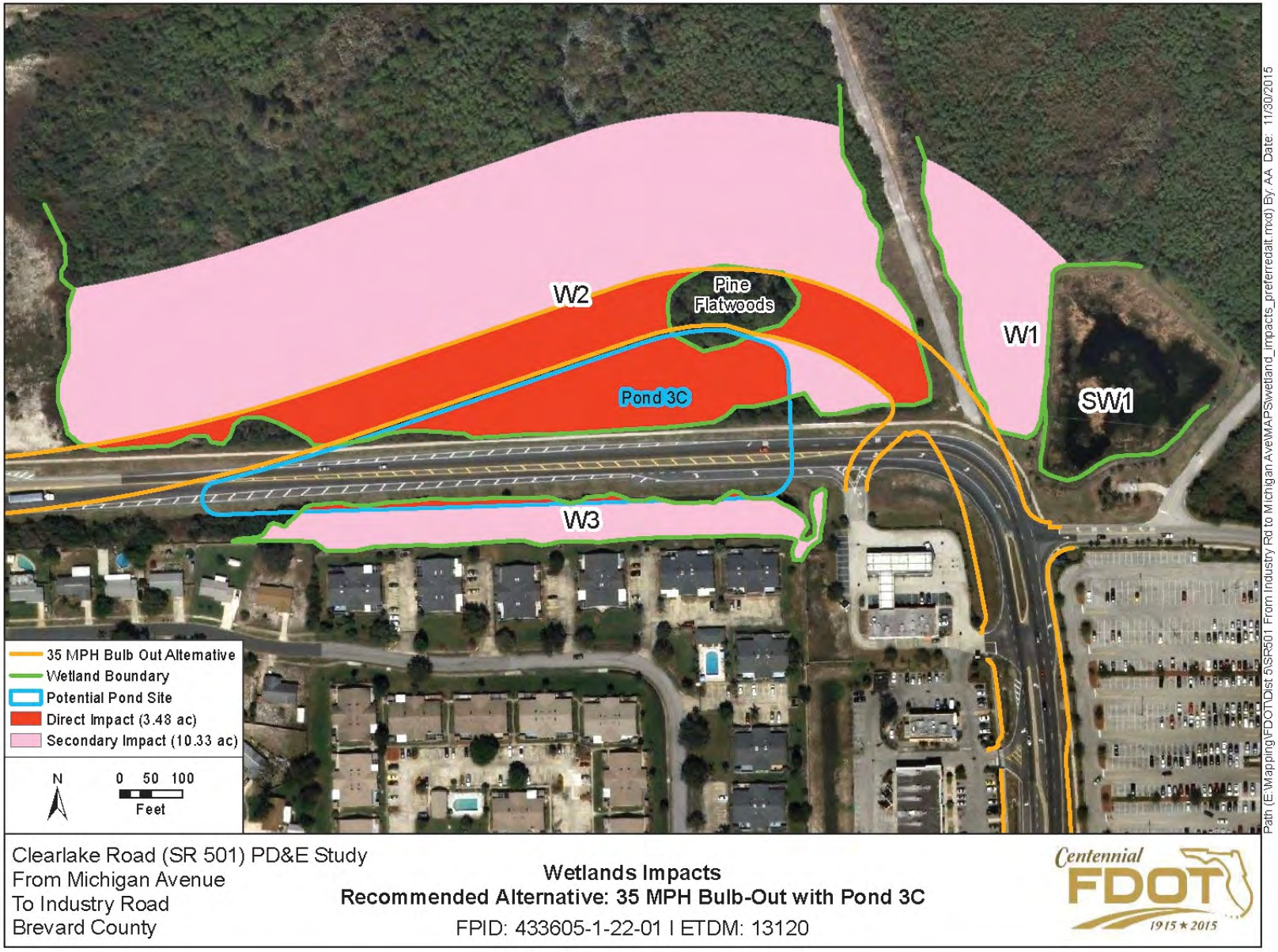


FIGURE 2(g): SUBALTERNATIVE – BP GAS (PREFERRED)

FIGURE 3(a): WETLAND IMPACTS – POND ALTERNATIVES 3B, 3C, AND 2A

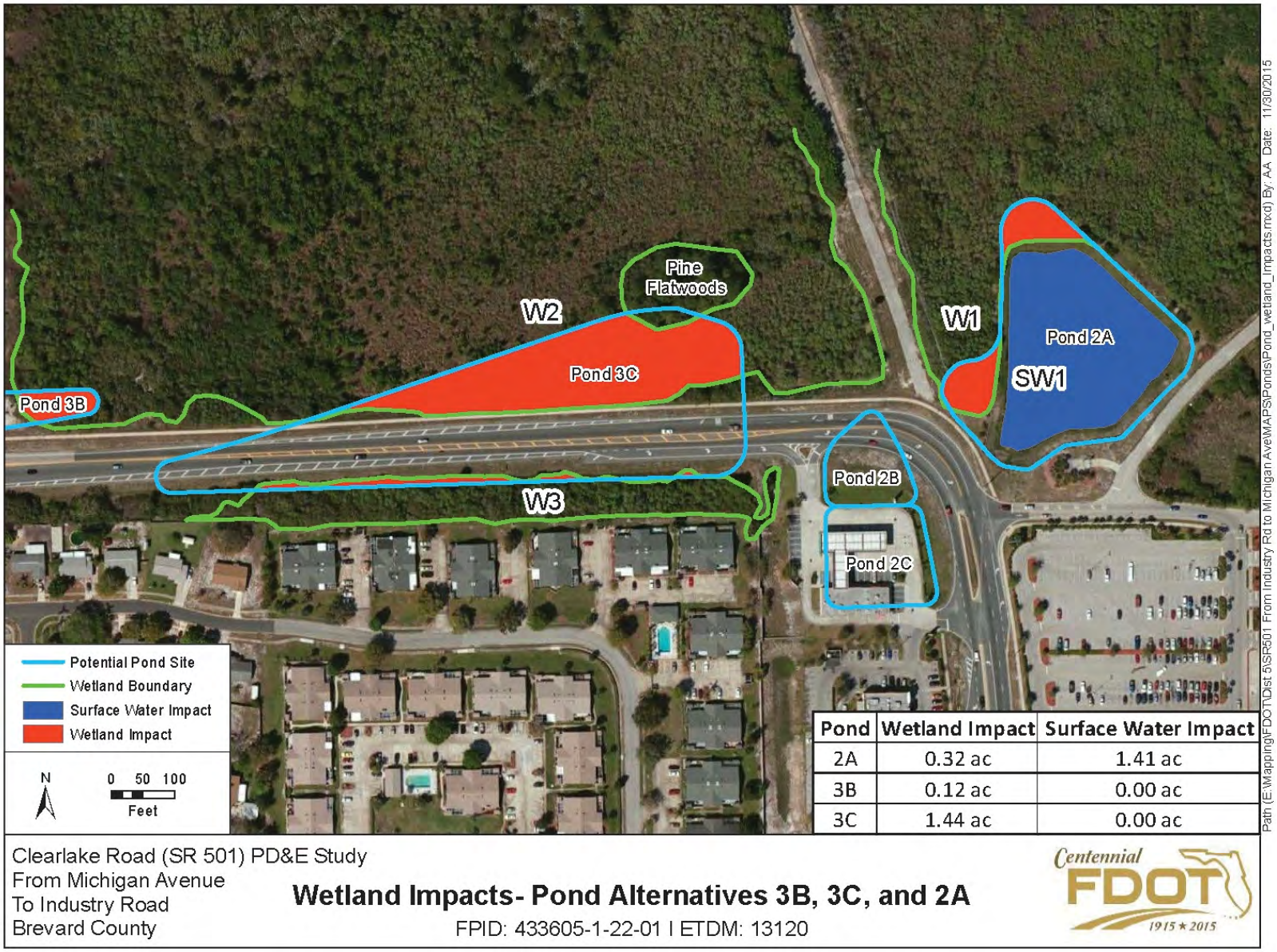
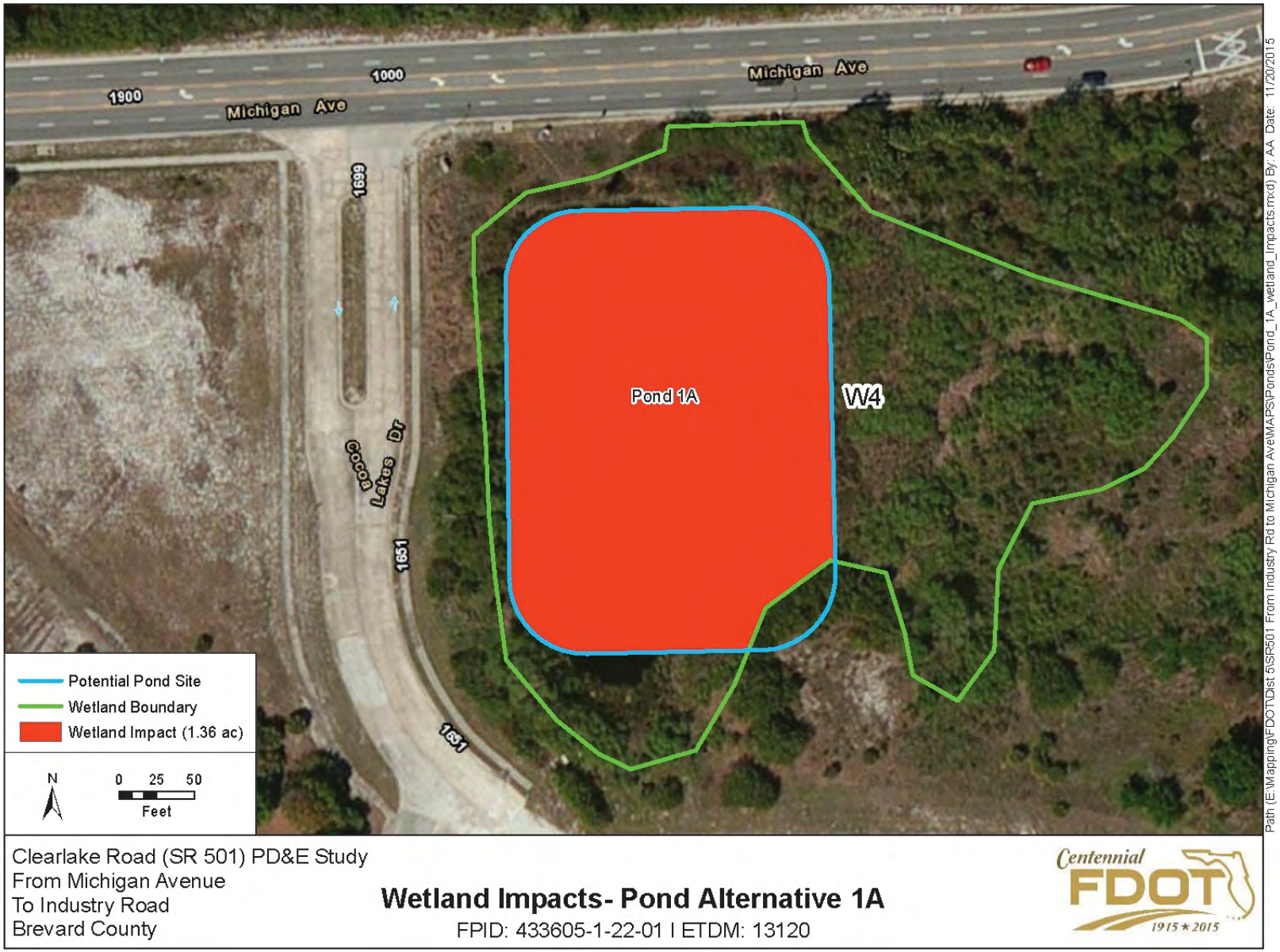


FIGURE 3(b): WETLAND IMPACTS – POND ALTERNATIVE 1A



Results of UMAM Analysis

Uniform Mitigation Assessment Method (UMAM) analyses were conducted to evaluate wetland function and values for each of the wetlands that may be affected by the proposed improvements. UMAM values range from 0 to 1, with a value of 0 reflecting the lowest quality wetland and a value of 1 representing the highest quality wetland. The scores for wetlands that may be directly impacted by the project are: 0.47 for W1; 0.6 for W2; 0.3 for W3; and 0.6 for W4.

The total Functional Losses (FL) that would result from the proposed alternatives including the preferred range on the low side from 2.24 for Subalternative C, which impacts a small portion of the lower quality wetlands, W1 and W3; to FL of 5.79 for Subalternative D, which impacts the largest amount of wetlands and to the highest quality area, W2. Subalternatives A and B also involve impacts to W2, however to only the outer fringes, thus resulting in total FL of 2.59 and 2.86, respectively as shown in Table 2. The total FL of the Preferred Alternative (BP Gas with ponds) is 2.97 as shown in Table 4.

TABLE 2: ROADWAY ALTERNATIVE WETLAND IMPACTS & FUNCTIONAL LOSSES

Roadway Alternatives	W1 (ac)	W2 (ac)	W3 (ac)	Direct Wetland Impacts (ac)	Secondary Wetland Impact (ac)	Direct Functional Loss	Secondary Functional Loss	Total Functional Loss	SW1 (ac)
Alt. 1, West	0	0	0	0	0	0	0	0	0
Alt. 2, Center	0	0	0	0	0	0	0	0	0
Alt. 3, East	0	0	0	0	0	0	0	0	0
Subalt. A, 45 mph Curve	0	0.89	0.02	0.91	8.43	0.54	2.05	2.59	0
Subalt. B, 35 mph Curve	0	1.09	0	1.09	9.15	0.65	2.21	2.86	0
Subalt. C, Roundabout	0.14	0	0.05	0.19	9.03	0.08	2.16	2.24	0.02
Subalt. D, 'Bulb-Out'	0	3.26	0	3.26	14.59	1.96	3.83	5.79	0
VE Subalt., 35 mph 'Bulb-Out' (w/o Pond)	0	2.04	0	2.04	11.87	1.22	2.9	4.12	0
BP Gas (w/o Ponds)	0	0.47	0	0.47	8.96	0.28	2.16	2.44	0

Of the 16 pond alternatives evaluated, six involve impacts to wetlands or surface waters. Functional losses range from 0.01 for Pond 3D to 0.83 for Pond 3C. Of the ten ponds selected for the Preferred BP Gas Alternative, two ponds impact wetlands: Ponds 3D and 3E. Pond 3D impacts 0.04 acres of Wetland 3 and has a functional loss of 0.01. Pond 3E impacts 0.77 acres of Wetland 2 and has a functional loss of 0.46 (Table 3).

TABLE 3: POND ALTERNATIVES WETLAND IMPACTS AND FUNCTIONAL LOSSES

Pond Alternatives	Wetland Impacts (ac)	Surface Water Impacts (ac)	Functional Loss
1A	1.36	0	0.82
1B	0	0	0
1C	0	0	0
2A	0.32	1.41	0.15
2B	0	0	0
2C	0	0	0
2D	0	0	0
3A	0	0	0
3B	0.12	0	0.07
3C	1.44	0	0.83
3D	0.04	0	0.01
3E	0.77	0	0.46
4A	0	0	0
4B	0	0	0
4C	0	0	0
4D	0	0	0

The Preferred Alternative is the BP Gas Alternative with ten ponds. This alternative would primarily impact W2 (1.23 ac) and the outer fringe of W3 (0.04 ac). Secondary wetland impacts would affect W1, W2, and W3 to varying degrees. The direct functional loss associated with this alternative is 0.75, the secondary functional loss is 2.22 and the total functional loss is 2.97 as shown in Table 4.

TABLE 4: PREFERRED ALTERNATIVE – BP GAS WITH PONDS: WETLAND IMPACTS AND FUNCTIONAL LOSSES

W1 (ac)	W2 (ac)	W3 (ac)	Direct Wetland Impacts (ac)	Secondary Wetland Impact (ac)	Direct Functional Loss	Secondary Functional Loss	Total Functional Loss
0	1.23	0.04	1.27	9.14	0.75	2.22	2.97

C.2 Water Quality

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Water Quality in the November 6, 2014 ETDM Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 DOE: Minimal (2)
Comment: US EPA, FL DEP, and FHWA each reviewed this issue and assigned Minimal Degrees of Effect. The project is expected to have minimal impacts to water quality.

US Environmental Protection Agency DOE: Minimal (2)
Comment: According to the GIS data, there are no impaired waters, total maximum daily loads, basin management action plans, outstanding Florida waters nor any potable water wells within the 500 foot buffer area. The project is expected to have minimal impacts to water quality.

General water quality comments for the project include:
Potential pollutant sources to surface water quality from roadways include stormwater runoff into nearby surface water bodies via drainage ditches or other conveyance systems. Stormwater runoff from urban sources, including roadways, carries pollutants such as volatile organics, petroleum hydrocarbons, heavy metals, and pesticides/herbicides. Proper stormwater conveyance, containment, and treatment will be required in accordance with state and federal regulations and guidelines. Engineering design features and hydrological drainage structures should be such that stormwater transport, flow, and discharge meet or exceed requirements.

Increase in traffic volumes as a result of any roadway project could potentially have both direct and indirect impacts to water quality in nearby surface water bodies.

Florida Department of Environmental Protection DOE: Minimal (2)
Comments: Every effort should be made to maximize the treatment of stormwater runoff from the proposed roadway construction project, as area stormwater ultimately discharges to the Indian River Lagoon. We recommend that the PD&E study include an evaluation of existing area stormwater treatment adequacy and details on the future stormwater treatment facilities.

FHWA DOE: Minimal (2)
Comment: Due to the area history there should be minimal impacts to the selected resources. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

The project is located within the St. Johns River Water Management District (SJRWMD) North Indian River Lagoon Basin. The overall drainage patterns within the immediate area historically run from west to east. This particular portion of Clearlake Road discharges into either wet detention ponds (Basins No.1 and 2) or wetland/preserve areas through a series of roadside lateral ditches, swales, and inlets and ultimately discharges into the Indian River Lagoon.

The study area is approximately 0.75 miles from the Indian River Lagoon, which is not a designated Outstanding Florida Water (OFW) or Aquatic Preserve. According to the Environmental Screening Tool (EST) GIS analysis results, there are no Outstanding Florida Waters, Aquatic Preserves or other features of special designation located within the 200-foot study buffer; therefore, no impacts to these resources are anticipated. The Water Quality Impact Evaluation (WQIE) has been prepared and is included in Appendix C of this report.

The proposed stormwater facility design will include, at a minimum, the water quantity requirements for water quality impacts as required by the SJRWMD in Rules 62-4, 62-302, 62-330, 62-520, 62-550, 40E-1, 40E-2, 40E-4, 40E-40 and 40E-400.

C.3 Wildlife and Habitat

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Wildlife and Habitat in the November 6, 2014 ETDM Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 DOE: Minimal (2)

Comment: The USF&WS and FFWCC provided comments on wildlife issues noting the potential presence of listed species, but giving minimal degrees of effect. We will conduct surveys during the study and coordinate those efforts with the Service and the Commission. We are assigning a Minimal Degree of Effect for this issue.

US Fish and Wildlife Service DOE: Minimal (2)

Comment: **Wood Stork (*Mycteria americana*)**

The purpose of the project is to provide increased capacity on SR 501 between Michigan Ave and Industry Rd in the City of Cocoa, Brevard County, FL

The surrounding area is mainly residential and commercial development, with a large area of undeveloped forested habitat with undisturbed wetlands. The action area falls within the Core Foraging Areas (CFA) of at least four active nesting colonies of the endangered wood stork. Direct impacts to wetlands should be avoided.

The Service has determined that the loss of wetlands within a CFA due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork and other wetland dependent species, we recommend that impacts to suitable foraging habitat be avoided. If avoidance is not possible, minimization measure should be employed and best management practices to avoid further degradation of the site. Mitigation for wetland impacts should be discussed with USFWS and will require further coordination. Please refer to the North Florida Field Office website for WOST colony locations. http://www.fws.gov/northflorida

Eastern Indigo Snakes (*Drymarchon corais couperi*)

Fragmented agricultural lands, undisturbed uplands and wetlands within the proposed corridor are suitable habitat for the threatened eastern indigo snake (EIS). It is very likely that this species occurs on undeveloped lands and may be found in the agricultural lands and wetland areas within the action area. Widening the highway and increasing the number of vehicle trips per day will likely increase the risks to this species from direct mortality and indirectly from habitat fragmentation and noise disturbance. Development adjacent to the expanded highway would further fragment this already isolated habitat. Individual snakes may have large home ranges of 200 to 250 acres. Direct impacts from vehicles, loss and fragmentation of habitat would contribute to the further decline of this species. Implementing the current standard construction conditions and protection measures for EIS will reduce the direct risks to snakes during the construction phase but not the long term impacts from habitat fragmentation and loss of individuals from interactions with vehicles for the life of the facility. Complete surveys for gopher tortoise burrows (currently a federal candidate species, which may be listed as Threatened before construction begins) should be conducted. Protection guidelines can be found on the North Florida Ecological Services website: http://www.fws.gov/northflorida. Surveys for gopher tortoise burrows will also facilitate the use of the EIS Effect determination key utilized by the Army COE.

The USFWS requests that nylon netting or any type of non-biodegradable material not be used under sod or for erosion control along roadsides or retention ponds due to the risk of entrapment and death for many species of snakes and amphibians. The netting has been found buried and unburied many years after the project is completed, still entrapping and killing many individuals from a variety of species. The netting frequently gets caught in the mowers and can be seen in tangled piles on the side of the road throughout Florida.

Florida Scrub-Jay *(Aphelocoma coerulescens)*
This species was found throughout Brevard County less than ten years ago. Habitat fragmentation and lack of management has continued to take a toll on the populations in Brevard. It is possible that small pockets of families may be utilizing habitat within 500 feet of the proposed widening. FLUCCS maps and soil maps were not included in the Advance Notification package. Historic jay locations for Brevard County should be examined. If necessary, surveys should be done according to guidelines found on the USFWS website (http://www.fws.gov/northflorida). Surveys within two years of the construction date are recommended. Survey methodology and results should be submitted to the USFWS office for review at least 60 days before the project commences.

No federally listed plants are known to occur in this area.

Coordination with the Office of Migratory birds will be needed for any eagle nests located within 600 feet of corridor.

FHWA DOE: Moderate (3)
Comment: Due to the area history there should be minimal to moderate impacts to the selected. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

Florida Fish and Wildlife Conservation Commission DOE: Minimal (2)
Comment: Based on the project information provided, we believe that direct and indirect effects of this project could be minimal, provided that roadway construction avoids the remaining wetland area to the maximum degree possible, any new DRAs are not constructed within areas of natural habitat, and degradation of adjacent or downstream water quality is avoided via inclusion of Best Management Practices in the project design.

The study corridor was assessed for the presence of suitable habitat for federal- and/or state-listed protected species in accordance with 50 Code of Federal Regulations (CFR) Part 402 of the Endangered Species Act (ESA) of 1973, as amended, Chapters 5B-40: Preservation of Native Flora of Florida and 68A-27 Florida Administrative Code (F.A.C.) Rules Relating to Endangered or Threatened Species, and Part 2, Chapter 27 - Wildlife and Habitat Impacts of the FDOT *PD&E Manual*. An *NRE* was prepared for this study, the purpose of which was to evaluate whether the proposed action is likely to jeopardize the continued existence of endangered or threatened species, result in the destruction or adverse modification of critical habitat of such species, and summarize the results of the wetland assessment.

Database searches to determine potential and documented occurrences for protected species were performed, and field surveys were conducted on February 18, 2015. No federally or state protected wildlife species were observed, however one federal listed and one state listed wildlife species have a high likelihood for utilization of study habitats. One (1) state listed plant species was observed in the study area.

The wood stork (*Mycteria americana*) is designated as threatened by both the US Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FWC). The study corridor is located within the Core Foraging Area (CFA) of one (1) documented wood stork colony. No wood storks were observed during field reviews, however, Suitable Foraging Habitat (SFH) exists within a stormwater pond on the corridor. A Foraging Habitat Assessment Procedure may be required to quantify impacts to SFH. However, because loss of these areas is anticipated to be minor, and will either be mitigated or replaced, an effects determination of "may affect, but is not likely to adversely affect" is anticipated for this species.

Eastern indigo snakes are listed as threatened by both the USFWS and FWC. No individuals were observed during the field surveys, however, some limited areas of suitable habitat for this species occur immediately adjacent to the study corridor, and larger areas of suitable habitat do occur in the vicinity. The probability of occurrence for this species within the corridor is therefore moderate.

To assure the protection of this species during construction, when it is most likely to be affected, the FDOT will require that the Standard Construction Precautions for the Eastern Indigo Snake be implemented (Appendix D). As such, when applying the study specifics to the August 13, 2013, updated addendum to the Eastern Indigo Snake Programmatic Effect Determination Key, indications are that the study "may affect, but is not likely to adversely affect" the Eastern indigo snake.

One (1) FWC listed wetland dependent avian species, white ibis (*Eudocimus albus*), has a high likelihood of occurrence and several have a moderate likelihood of occurrence along the study corridor. Wetland dependent species with moderate potential to utilize corridor habitats include: Florida sandhill crane (*Grus canadensis pratensis*), little blue heron (*Egretta caerulea*), roseate spoonbill (*Platalea ajaja*), snowy egret (*Egretta thula*), and tricolored heron (*Egretta tricolor*). Florida sandhill crane is listed as threatened by the FWC; the remaining species are listed as species of special concern by the FWC. Because unavoidable impacts to surface waters which provide foraging habitat will be mitigated, the project is not anticipated to result in unacceptable impacts to wetland dependent bird species.

One (1) plant listed by the state as Commercially Exploited (CE), royal fern (*Osmunda regalis*), was observed in one of the study area wetlands. This fern was observed along the excavated channel of a disturbed shrub wetland. Since only portions of existing habitat for this species may be affected by the proposed improvements, and it is thought to be common in local habitats, long term viability of this species is not anticipated to be affected. Therefore, the proposed project is not anticipated to have long-term negative effects on this plant species.

In conclusion, the FDOT has determined that the study may affect but is not likely to adversely affect federally and state protected wildlife species. Federally protected species which may be affected but are not likely to be adversely affected by the study include the wood stork and Eastern indigo snake. State protected species which may be present but are not likely to significantly impacted by the study include wetland dependent avian species and fern species listed as Commercially Exploited.

Commitments to protect these species and habitats include but are not limited to protection measures employed during design and construction phases. Standard operating measures such as providing compensatory mitigation for impacts to foraging habitat and resurveying of suitable habitat areas prior to construction will also provide protection for species and habitat. Further measures include BMPs during construction, adherence to FDOT's "*Standard Specification for Road and Bridge Construction*", and utilization of standard construction precautions for species such as the Eastern indigo snake. If protected species are located, coordination with the USFWS, FWC and/or the Florida Department of Agriculture and Consumer Services - Division of Plant Industry (FDACS–DPI) will be initiated to determine permit requirements or modifications to construction activities that may be required.

ATTACHMENT D: PHYSICAL IMPACTS

D.1 Noise

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Noise in the November 6, 2014 ETDM Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 DOE: Moderate (3)
Comment: Due to several noise sensitive sites in the project area, and in agreement with FHWA's review of this issue, we are assigning a Moderate Degree of Effect. A noise study will be conducted during the PD&E study phase to determine the specific characteristics of receptor sites and to determine eligibility for noise abatement measures.

FHWA DOE: Moderate (3)
Comments: Noise impacts must be addressed per 23 CFR 772 and the State standards.

A Noise Study Report (NSR) has been developed as part of the PD&E study in accordance with FDOT's Project Development & Environment (PD&E) Manual, Part 2, Chapter 17 (May 24, 2011) and Title 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (July 13, 2010) and is included as part of the project file.

One hundred and nine (109) noise sensitive receptors were evaluated within four common noise environments (CNEs). Common noise environments are groups of receptors of the same Activity Category and whose impacted receptors would benefit from the same noise barrier. The four CNEs included:

- CNE 1 – Residences within the Clear Lake Terrace neighborhood on the west side of Clearlake Road between Michigan Avenue and Otterbein Avenue.
- CNE 2 – The tennis courts at the office complex on the east side of Clearlake Road between Michigan Avenue and Otterbein Avenue.
- CNE 3 – Residences within the Clearlake Pines Apartments on the east side of Clearlake Road between Michigan Avenue and Otterbein Avenue.
- CNE 4 – Residences within The College Green Estates neighborhood and the Courtyard Condominiums on the south side of Clearlake Road and east of Industry Road.

Of the 109 evaluated receptors, 108 represented residential land uses (Activity Category B), and one represented a recreational (tennis courts) area (Activity Category C). For these land use categories, exterior traffic noise levels are considered to impact the uses of the sites and noise abatement measures are considered if the traffic noise levels are determined to be 66 dB(A) or more, or if exterior traffic noise levels were predicted to increase 15 dB(A) or more from existing levels.

Measured Noise Levels

Existing and future noise levels with and without the proposed improvements were modeled using the Traffic Noise Model (TNM). To verify the accuracy of the predictions, the computer model was validated using measured noise levels adjacent to the study corridor. Traffic data including motor vehicle volumes, vehicle mix, vehicle speeds, and meteorological conditions were recorded during each measurement period.

The field measurements were conducted in accordance with the FHWA's Measurement of Highway Related Noise. The measurements were obtained using a Larson Davis LxT Type II integrating sound level meter

(SLM). The SLM was calibrated before and after the measurement periods with a Larson Davis CAL200 calibrator.

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

Table 5 presents the field measurements and the validation results. As shown, the ability of the model to predict noise levels within the FDOT limits of plus or minus three dB(A) for the project was confirmed.

TABLE 5: VALIDATION DATA

Location	Measurement Period	Modeled dB(A)	Measured dB(A)	Difference dB(A)
Site 1 – Next to post office across from College Green Estates	1	63.6	64.0	-0.4
	2	62.9	63.4	-0.5
	3	63.9	64.4	-0.5
Site 2 – Next to the Yardley Law offices across from Clear Lake Terrace	1	62.9	63.8	-0.9
	2	62.7	64.7	-2.0
	3	62.4	62.6	-0.2

Results of the Noise Analysis

Table 6 presents the results of the traffic noise analysis for the proposed improvements. As shown, existing (2014) exterior traffic noise levels range from 53.4 to 68.5 dB(A) and future 'No-Build' (2043) exterior traffic noise levels are predicted to range from 54.5 to 69.6 dB(A). These levels are below the NAC for the existing land uses. In the future with the proposed improvements ('Build' 2043), exterior traffic noise levels are predicted to range from 54.3 to 68.0 dB(A). As also shown in Table 6, with the proposed improvements, 14 of the 109 evaluated receptors are predicted to be impacted by traffic noise. One (1) of these receptors represents a residence located in the Clear Lake Terrace neighborhood (CNE 1), eight represent residences at the Clearlake Pines Apartments (CNE 3), and five represent residences within the College Green Estates Neighborhood (CNE 4).

When compared to the existing condition, traffic noise levels are not predicted to increase more than 4.3 dB(A) above existing conditions at any of the evaluated receptors. As such, the project would not substantially increase traffic noise (i.e., increase traffic noise 15 dB(A) or more). Notably, some receptors (e.g., within Clearlake Pines Apartments and Courtyard Condominiums) are predicted to have traffic noise levels that decrease when compared to the existing condition due the proposed roadway alignment moving farther away from these receptors.

TABLE 6: PREDICTED TRAFFIC NOISE LEVELS

Site ID	Activity Category	Description	Leq(h) (dB(A))				
			Existing (2011)	'No-Build' (2035)	'Build' (2035)	Increase from Existing	Approaches, Meets, or Exceeds the NAC?
Clear Lake Terrace (CNE 1)							
1	B	Residential	63.3	64.5	66.2	2.9	Yes
2	B	Residential	60.2	61.3	62.8	2.6	No
3	B	Residential	59.6	60.8	62.4	2.8	No
4	B	Residential	59.9	61.1	63.0	3.1	No
5	B	Residential	60.2	61.3	63.5	3.3	No
6	B	Residential	59.6	60.8	62.5	2.9	No
7	B	Residential	59.4	60.6	62.2	2.8	No
8	B	Residential	60.3	61.5	63.5	3.2	No
9	B	Residential	59.7	60.9	62.5	2.8	No
10	B	Residential	59.0	60.2	61.4	2.4	No
11	B	Residential	61.3	62.5	65.1	3.8	No
12	B	Residential	61.4	62.6	65.1	3.7	No
13	B	Residential	61.0	62.2	65.2	4.2	No
14	B	Residential	59.9	61.1	64.2	4.3	No
Tennis Courts at Office Complex (CNE 2)							
1	C	Sports Area	56.7	57.9	57.5	0.8	No
Clearlake Pines Apartments (CNE 3)							
1	C	Residential	57.9	59.0	58.9	1.0	No
2	B	Residential	67.4	68.5	67.2	-0.2	Yes
3	B	Residential	62.9	64.1	63.9	1.0	No
4	B	Residential	61.1	62.2	62.4	1.3	No
5	B	Residential	59.7	60.8	60.9	1.2	No
6	B	Residential	65.9	67.0	65.8	-0.1	No
7	B	Residential	61.4	62.5	62.3	0.9	No
8	B	Residential	59.6	60.7	60.9	1.3	No
9	B	Residential	57.9	59.0	58.7	0.8	No
10	B	Residential	56.9	58.0	57.2	0.3	No
11	B	Residential	64.5	65.6	64.6	0.1	No
12	B	Residential	60.9	62.0	62.0	1.1	No
13	B	Residential	59.2	60.3	60.5	1.3	No
14	B	Residential	57.5	58.6	58.4	0.9	No
15	B	Residential	54.5	55.6	55.1	0.6	No
16	B	Residential	68.5	69.6	68.0	-0.5	Yes
17	B	Residential	64.0	65.1	64.5	0.5	No
18	B	Residential	61.1	62.2	62.2	1.1	No
19	B	Residential	59.2	60.3	60.1	0.9	No
20	B	Residential	57.8	59.0	58.1	0.3	No
21	B	Residential	65.3	66.4	65.4	0.1	No
22	B	Residential	61.4	62.5	62.3	0.9	No
23	B	Residential	59.1	60.2	59.9	0.8	No
24	B	Residential	57.6	58.8	58.0	0.4	No
25	B	Residential	55.7	56.8	55.6	-0.1	No

TABLE 6: PREDICTED TRAFFIC NOISE LEVELS (CONTINUED)

Site ID	Activity Category	Description	Leq(h) (dB(A))				
			Existing (2011)	'No-Build' (2035)	'Build' (2035)	Increase from Existing	Approaches, Meets, or Exceeds the NAC?
Clearlake Pines Apartments (CNE 3)							
26	B	Residential	66.6	67.7	66.7	0.1	Yes
27	B	Residential	61.8	62.9	62.8	1.0	No
28	B	Residential	60.8	61.9	62.0	1.2	No
29	B	Residential	59.1	60.2	59.3	0.2	No
30	B	Residential	56.3	57.4	56.6	0.3	No
31	B	Residential	65.2	66.3	66.1	0.9	Yes
32	B	Residential	65.8	66.9	66.7	0.9	Yes
33	B	Residential	66.5	67.6	67.2	0.7	Yes
34	B	Residential	67.1	68.2	67.7	0.6	Yes
35	B	Residential	60.0	61.1	61.5	1.5	No
36	B	Residential	61.6	62.7	63.4	1.8	No
37	B	Residential	63.8	64.9	65.2	1.4	No
38	B	Residential	66.8	67.9	67.4	0.6	Yes
39	B	Residential	60.2	61.4	61.7	1.5	No
40	B	Residential	56.3	57.4	57.5	1.2	No
41	B	Residential	55.3	56.4	56.4	1.1	No
42	B	Residential	54.5	55.6	55.6	1.1	No
43	B	Residential	55.1	56.3	56.2	1.1	No
44	B	Residential	53.4	54.5	54.3	0.9	No
45	B	Residential	54.3	55.4	55.0	0.7	No
46	B	Residential	53.8	55.0	54.7	0.9	No
Courtyard Condominiums and College Green Estates (CNE 4)							
1	B	Residential	60.4	62.3	62.4	2.0	No
2	B	Residential	60.3	62.2	62.1	1.8	No
3	B	Residential	58.0	59.8	59.1	1.1	No
4	B	Residential	57.9	59.6	58.8	0.9	No
5	B	Residential	60.3	62.1	62.1	1.8	No
6	B	Residential	60.3	62.1	62.1	1.9	No
7	B	Residential	57.9	59.5	58.6	0.7	No
8	B	Residential	57.8	59.4	58.5	0.7	No
9	B	Residential	60.3	62.1	62.3	2.0	No
10	B	Residential	60.4	62.1	62.5	2.1	No
11	B	Residential	57.7	59.3	58.4	0.7	No
12	B	Residential	57.4	59.0	58.2	0.8	No
13	B	Residential	60.0	61.7	62.0	2.0	No
14	B	Residential	60.1	61.7	62.2	2.1	No
15	B	Residential	57.4	58.9	58.2	0.8	No
16	B	Residential	57.4	59.0	58.4	1.0	No
17	B	Residential	60.7	62.4	63.2	2.5	No
18	B	Residential	60.9	62.5	63.6	2.7	No
19	B	Residential	57.5	59.1	58.6	1.1	No
20	B	Residential	57.9	59.4	59.0	1.1	No

TABLE 6: PREDICTED TRAFFIC NOISE LEVELS (CONTINUED)

Site ID	Activity Category	Description	Leq(h) (dB(A))				
			Existing (2011)	'No-Build' (2035)	'Build' (2035)	Increase from Existing	Approaches, Meets, or Exceeds the NAC?
Courtyard Condominiums and College Green Estates (CNE 4)							
21	B	Residential	60.7	62.4	63.5	2.8	No
22	B	Residential	60.8	62.5	63.6	2.8	No
23	B	Residential	58.0	59.5	59.2	1.2	No
24	B	Residential	58.1	59.6	59.4	1.3	No
25	B	Residential	60.1	61.7	62.6	2.5	No
26	B	Residential	60.9	62.5	64.0	3.1	No
27	B	Residential	61.7	63.4	65.1	3.4	No
28	B	Residential	62.9	64.6	66.3	3.4	Yes
29	B	Residential	61.9	63.6	65.5	3.6	No
30	B	Residential	63.5	65.2	66.7	3.2	Yes
31	B	Residential	63.2	64.7	66.3	3.1	Yes
32	B	Residential	62.0	63.3	65.0	3.0	No
33	B	Residential	59.8	61.0	62.1	2.3	No
34	B	Residential	58.0	59.2	59.9	1.9	No
35	B	Residential	57.9	59.1	59.9	2.0	No
36	B	Residential	65.3	66.4	66.6	1.3	Yes
37	B	Residential	64.1	65.2	65.8	1.7	No
38	B	Residential	59.3	60.4	61.1	1.8	No
39	B	Residential	58.7	59.8	60.5	1.8	No
40	B	Residential	63.4	64.5	65.3	1.9	No
41	B	Residential	66.4	67.5	67.6	1.2	Yes
42	B	Residential	58.6	59.7	60.4	1.8	No
43	B	Residential	55.6	56.9	57.3	1.7	No
44	B	Residential	56.2	57.5	58.0	1.8	No
45	B	Residential	55.8	57.2	57.7	1.9	No
46	B	Residential	55.9	57.4	57.7	1.8	No
47	B	Residential	55.3	56.7	57.2	1.9	No
48	B	Residential	54.8	56.2	56.9	2.1	No

Note: Site and receptor locations are illustrated on project aerials in Appendix E of this report

Noise Barriers

Noise barriers have the potential to reduce traffic noise levels by blocking the sound path between the motor vehicles on the roadway (the source) and the noise-sensitive sites adjacent to the roadway. However, in order to effectively reduce traffic noise, a noise barrier must be relatively long, continuous (without intermittent openings), and sufficiently tall. Following FDOT procedures, the minimum requirements for a noise barrier to be considered both acoustically feasible and reasonable, and cost reasonable are:

- *Minimum Noise Reduction Requirements* - A barrier must provide at least a five dB(A) reduction in traffic noise for two or more impacted noise-sensitive receptors and also provide at least a seven dB(A) reduction (i.e., the FDOT's noise reduction design goal) for at least one benefited receptor. Receptors are discrete representative locations on a property that has noise sensitive land uses.

- *Cost Effective Criteria* - The current estimated cost to construct noise barriers (i.e., materials and labor) is $30 per square foot. A barrier should not cost more than $42,000 per benefited noise-sensitive receptor (a benefited receptor is a receptor that receives at least a five dB(A) reduction in noise from a mitigation measure). For special land uses, such as the tennis court, the cost of a barrier should not be more than $995,935 per person-hour per square foot ($/person-hr/ft^2).

After considering the amount of reduction that may be provided and the cost effectiveness of a noise barrier, additional factors may also be considered. These factors address both the feasibility and reasonableness of a barrier as an abatement measure and include factors that relate to design and construction (i.e., given site-specific details, can a barrier actually be constructed), safety, accessibility, right-of-way requirements, maintenance, and impacts on utilities and drainage. The viewpoint of the impacted property owners, and renters if applicable, who may, or may not, desire a noise barrier is also a factor considered when evaluating noise barriers as an abatement measure.

The TNM was used to evaluate the ability of a noise barrier(s) to reduce traffic noise levels for the impacted noise sensitive receptors along Clearlake Road. Noise barriers were evaluated at a location five feet within the right-of-way and at heights ranging from eight to 22 feet (in two-foot increments).

The following provides the results of the noise barrier evaluation and discusses the potential amount of noise reduction and the cost effectiveness of providing barriers as an abatement measure for the impacted residences.

Notably, to be considered feasible, an abatement measure must benefit at least two impacted receptors. As such, a noise barrier was not evaluated for the impacted residence located within Clear Lake Terrace (CNE 1) because it is the only impacted receptor at this location. Additionally, a noise barrier was not evaluated for the impacted residences at Clearlake Pines Apartments (CNE 3) due to line-of-sight restrictions at both accesses to the community and insufficient right-of-way due to the presence of utilities (overhead power lines).

College Green Estates (CNE 4)

A noise barrier was also evaluated for the five impacted residences within College Green Estates (CNE 4). Note that although the residences within the Courtyard Condominiums were also part of CNE 4, they were not predicted to be impacted, and thus not included in the noise barrier evaluation. As shown in Table 7, at barrier heights of ten to 16 feet, all five of the impacted residences would receive a benefit from a reduction in traffic noise of five dB(A) or more, the noise reduction design goal of seven dB(A) would be achieved, and the cost of the barrier would be below the FDOT's cost reasonable limit of $42,000 per benefited receptor. A noise barrier height of 16 feet is recommended because all five of the impacted receptors achieve the noise reduction of 5 dB(A), four of the five impacted receptors achieve the noise reduction design goal of 7 dB(A) while still maintaining cost reasonableness.

TABLE 7: CNE 4 – NOISE BARRIER RESULTS

Barrier Height (feet)	Barrier Length (feet)	Noise Reduction at Impacted Receptors (dB(A))[1]			Number of Benefited Receptors[2]			Total Estimated Cost[3]	Cost per Benefited Receptor[4]	Cost Reasonable Yes/No
		5 -5.9	6 – 6.9	≥7	Impacted	Not Impacted	Total			
Number of Impacted Receptors = 3										
8	1,478	0	3	1	4	6	10	$354,720	$35,472	Yes
10	1,478	1	0	4	5	8	13	$443,400	$34,108	Yes
12	1,478	0	1	4	5	11	16	$532,080	$33,255	Yes
14	1,478	0	1	4	5	12	17	$620,760	$36,515	Yes
16	1,478	0	1	4	5	12	17	$709,440	$41,732	Yes
18	1,478	0	0	5	5	14	19	$798,120	$42,006	No
20	1,478	0	0	5	5	14	19	$886,800	$46,674	No
22	1,478	0	0	5	5	15	20	$975,480	$48,774	No

[1] Receptors with a predicted noise level of 66 dB(A) or greater.
[2] Receptors with a predicted reduction of five dB(A) or more are considered benefited.
[3] Based on a unit cost of $30 per square foot.
[4] FDOT cost reasonable criterion is $42,000 per benefited receptor.

Because a noise barrier is predicted to provide the minimum noise reduction requirements at a cost below the cost effective limit, providing a noise barrier as an abatement measure was evaluated further. A summary of the additional barrier considerations is provided in Table 8.

TABLE 8: ADDITIONAL BARRIER CONSIDERATIONS

Type of Factor	Evaluation Criteria	Comment
Feasibility	Design and Construction	A determination will be made of whether the noise barrier can be constructed using standard construction methods and techniques. Additional costs to solely construct the noise barrier will be included in the final cost reasonableness evaluation of the noise barrier.
	Safety	A determination of safety concerns will be made (e.g., loss of sight distance).
	Accessibility	The barrier would be located along the FDOT right-of-way and is not expected to block ingress or egress to any property.
	Right-of-Way	No acquisition of right-of-way or easements for construction/ maintenance would be necessary to construct the barrier within the FDOT's right-of-way.
	Maintenance	The FDOT should be able to maintain the barrier at this location using standard practices.
	Drainage	A determination will be made as to whether the barriers can be designed so that water would be directed along, under, or away from the barrier.
	Utilities	A determination of utility conflicts will be made.
Reasonableness	Community desires	The desires of the property owners and renters (if applicable) will be solicited.

The noise barrier evaluation was conducted based on the preferred alternative (BP Gas Alternative), depicted in Appendix F: Conceptual Roadway Plans (Preferred Alternative).

Noise Conclusions

As previously stated, future traffic noise levels with the proposed improvements are predicted to approach, meet, or exceed the NAC at 14 receptors located at the Clear Lake Terrace (CNE 1), the Clearlake Pines Apartments (CNE3), and the College Green Estates (CNE 4). The tennis courts (CNE 2) and the Courtyard Condominiums (CNE 4) are not predicted to approach, meet, or exceed the NAC. Based on the results of the noise barrier evaluation, a noise barrier appears to be a reasonable and feasible noise abatement method for the five impacted receptors at College Green Estates. There appear to be no reasonable or feasible methods to reduce predicted traffic noise for the impacted receptors within Clear Lake Terrace or Clearlake Pines Apartments. A noise barrier is not feasible for Clear Lake Terrace because at least two impacted receptors must achieve a 5 dB(A) noise reduction or greater in order to be feasible, and this location has only one impacted receptor. A noise barrier for Clearlake Pines Apartments is also not feasible due to line-of-site restrictions on barrier length at both community entrances and insufficient ROW due to the presence of overhead utilities.

D.2 Air Quality

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Air Quality in the November 6, 2014 ETDM Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 DOE: Minimal (2)

Comments: In agreement with both FHWA and USEPA, a Degree of Effect of Minimal is being assigned to this issue. This portion of Brevard County and the area surrounding the proposed project has not been designated non-attainment or maintenance for ozone, carbon monoxide (CO), particulate matter (PM), or any of the National Ambient Air Quality Standards (NAAQS) in accordance with the Clean Air Act. The proposed project is expected to have minimal impact on air quality.

US Environmental Protection Agency DOE: Minimal (2)

Comments: This portion of Brevard County and the area surrounding the proposed project has not been designated non-attainment or maintenance for ozone, carbon monoxide (CO), particulate matter (PM), or any of the National Ambient Air Quality Standards (NAAQS) in accordance with the Clean Air Act. The proposed project is expected to have minimal impact on air quality.

Generally for transportation projects within the State of Florida, EPA recommends that the environmental review phase of this project consider the need for additional air impact analyses. These types of analyses would include documenting the current pollutant concentrations recorded at the nearest air quality monitors, an evaluation of anticipated emissions, and air quality trend analyses. It is also recommended that environmental reviews of the project include hot spot analyses at the points in time and places where congestion are expected to be greatest or in areas of sensitive receptors. Air quality modeling using an approved software program could be used as a means to determine whether any conformity issues or violations of air quality standards are anticipated within the project area and/or county. The number and types of vehicles traveling along the roadway should be considered and evaluated with regards to air quality conformity and mobile source air toxics. Current and proposed air quality requirements and standards should be used in modeling software programs.

FHWA DOE: Minimal (2)

Comment: Due to the area history there should be minimal impacts to the selected resources. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

In accordance with Part 2, Chapter 16 of the FDOT *PD&E Manual*, an *Air Quality Impact Technical Memorandum* was prepared for this study. The proposed project was analyzed for potential air quality impacts using FDOT's air quality screening model, CO Florida 2012. The project passes the screening model for the proposed project. No further air quality impact analysis is required.

The project is located in an area which is designated attainment for all of the National Ambient Air Quality Standards (NAAQS) under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements do not apply to the project.

Because the project is in an attainment area and the project would reduce congestion, it is not likely that the proposed improvements will have an impact on local or regional air pollutant/pollutant precursor emissions or concentrations. For additional information regarding air quality, refer to the Air Quality Technical Memorandum prepared as part of the study.

D.3 Construction

Construction activities for the project may have short-term air, noise, vibration, water quality, traffic flow, and visual effects for those residents and travelers within the immediate vicinity of the study corridor.

The air quality effect will be temporary and will primarily be in the form of emissions from diesel-powered construction equipment and dust.

Noise and vibrations effects will be from heavy equipment movement and construction activities. Noise control measures will include those contained in FDOT's Standard Specifications for Road and Bridge Construction. Specific noise level problems that may arise during construction will be addressed by the FDOT's Construction Engineer in cooperation with the appropriate District Environmental specialist.

Best Management Practices will be incorporated during construction to minimize wetland impacts.

Maintenance of traffic and sequence of construction will be planned and scheduled so as to minimize traffic delays throughout construction. Signs will be used as appropriate to provide notice of road closures and other pertinent information to the traveling public. The local news media will be notified in advance of road closings and other construction related activities, which could inconvenience the community so that motorists, residents, and business persons can plan travel routes in advance.

A sign providing the name, address, and telephone of a local FDOT contact person will be displayed on-site to assist the public in obtaining immediate answers to questions and logging complaints about project activity.

Access to all businesses and residences will be maintained to the extent practical through controlled construction scheduling. Traffic delays will be controlled to the extent possible where many construction operations are in progress at the same time.

For the residents living along the study corridor, some of the materials stored for the project may be displeasing visually; however, this is a temporary condition and should pose no problem in the long term.

D.4 Contamination

The following *Degrees of Effect* assigned by review agencies and the *Summary Degree of Effect* assigned by FDOT for Contamination in the November 6, 2014 ETDM Programming Screen Summary Report (#13120) are as follows:

FDOT District 5 DOE: Moderate (3)
Comment: We are assigning a Moderate Degree of Effect to this issue in agreement with both US EPA and FL DEP's comments. During the PD&E phase a Contamination Screening Evaluation will be conducted to determine impacts.

US Environmental Protection Agency DOE: Moderate (3)
Comment: EPA reviewed the GIS analysis data for contaminated sites within the 100-, 200-, and 500-foot buffer distances. There were some contaminated site features were listed as being within the project area which could be impacted as a result of the roadway widening.

The Cocoa Brownfield Area, located within close proximity to SR 501 between Michigan Ave. and Industry Road, is listed as a Brownfields project. Brownfields projects are defined as abandoned, idled or under-utilized property where expansion or redevelopment is complicated by the presence or potential presence of environmental contamination. Previous thriving areas of economic activity are listed as brownfields if the area is abandoned by contamination from past uses. Areas being unused or underutilized are impediments to economic development in rural and urban communities. Redeveloped, these brownfields areas can be catalysts for community revitalization. The Brownfields program brings together federal agencies to address cleanup and redevelopment in a more coordinated approach. Often times, federal grant programs and public/private organizations assist in the cleanup and redevelopment of brownfields areas. The PD&E phase of the project should include coordination with state and federal Brownfields project managers to determine if the classification of the Cocoa Brownfield Area as a Brownfields Project will impact the design and/or construction of the proposed roadway widening project.

In addition to the Brownfield site, there are 3 hazardous waste facilities, 4 storage tank contamination monitoring sites and 2 USEPA RCRA facilities within the 500-foot buffer distance.

The environmental review (PD&E) phase of the project should include a survey of the area to confirm the location of these businesses, along with other contaminated site features which may have been previously located in the area. Potential issues relating to contaminated sites include leaking underground petroleum storage tanks, leaking above ground storage tanks, improper storage and/or disposal of hazardous materials, spills and/or leaks from transportation vehicles (trucks, trains, etc.). Direct and indirect impacts resulting from these issues include contamination of soils, groundwater, and surface water. If any petroleum storage tanks are to be impacted or removed during the construction phase of the project, sampling and analysis of soils and groundwater should be conducted to determine if petroleum and hydrocarbon pollutants are present above regulatory levels. If high levels of pollutants are identified, remediation of soils and/or groundwater may be required prior to commencement of construction of the project.

Florida Department of Environmental Protection DOE: Moderate (3)
Comment: A Contamination Screening Evaluation (similar to Phase I and Phase II Audits) will need to be conducted along the project right-of-way in considering the proximity to potential

petroleum and hazardous material handling facilities. The Contamination Screening Evaluation should outline specific procedures that would be followed by the applicant in the event drums, wastes, tanks or potentially contaminated soils are encountered during construction. Special attention should be made in the screening evaluation to historical land uses (such as solid waste disposal) that may have an effect on the proposed project, including stormwater retention and treatment areas.

FHWA DOE: Minimal (2)

Comment: Due to the area history there should be minimal impacts to the selected resources. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

A *Contamination Screening Evaluation Report (CSER)* was prepared in accordance with the FDOT's *PD&E Manual* Part 2, Chapter 22. On July 8, 2015, a site reconnaissance was conducted along the proposed road corridor on foot and by driving the study corridor and surrounding areas. The survey also included observation of the adjacent properties.

Three (3) gas stations were observed within the study area. No monitor wells were observed within the right-of-way related to these stations. A well was observed adjacent to the east of the right-of-way at the northwest end of the Sunrise Food Mart #88 property. A dry transformer was observed adjacent to the right-of-way at the Clearlake Pines Apartment complex. A lift station was also observed east of Clearlake Road north of the Walmart. A potential contamination sites map is provided in Figure 4. The gas stations within the project area are as follows:

Cocoa Mobil - Florida Department of Environmental Protection (FDEP) Facility 9804418 is located at 2201 SR 524 at the southwest corner of the intersection of Industry Road and Clearlake Road. This facility is a retail station currently with one 20,000-gallon Underground Storage Tank (UST) used to store diesel and two 15,000-gallon USTs storing two grades of unleaded gasoline. A search of the FDEP records revealed that this site has no reported discharges of petroleum products. Due to the lack of reported contamination, this site is rated Low risk.

Sunshine Food Mart #121 - FDEP Facility 9803432 is located at 1907 SR 524. Review of the FDEP's Oculus database shows that the facility currently has two 16,000-gallons USTs used to store two grades of unleaded gasoline. A search of the FDEP records revealed that this site has no reported discharges of petroleum products. Due to the lack of reported contamination, this site is rated Low risk.

Sunrise Food Mart #88 - FDEP facility 8841193 is located at 1990 Michigan Avenue at the northeast corner of the intersection of Michigan Avenue and Clearlake Road. Review of the FDEP Oculus database revealed that this facility has one 18,000-gallon UST used to store one grade of unleaded gasoline. This tank was installed in July 2008. During May 1988, two 10,000-gallon and one 6,000-gallon USTs containing unleaded gasoline were removed from the facility. A Closure Report was submitted by Terra-Com Engineering and Consulting, Inc. dated June 5, 2009. The report concluded that no contamination was identified at the facility during closure activities. This site is rated Low risk due to the storing of petroleum products and proximity to the project corridor.

FIGURE 4: POTENTIAL CONTAMINATION SITES

The State of Florida has evaluated the proposed right-of-way and has identified potentially low risk contaminated sites for the various proposed alternatives. Results of this evaluation will be utilized in the selection of a preferred alternative. When a specific alternative is selected for implementation, a site assessment will be performed to the degree necessary to determine levels of contamination and, if necessary, evaluate the options to remediate along with the associated costs. Resolution of problems associated with contamination will be coordinated with appropriate regulatory agencies and, prior to right-of-way acquisition, appropriate action will be taken, where applicable.

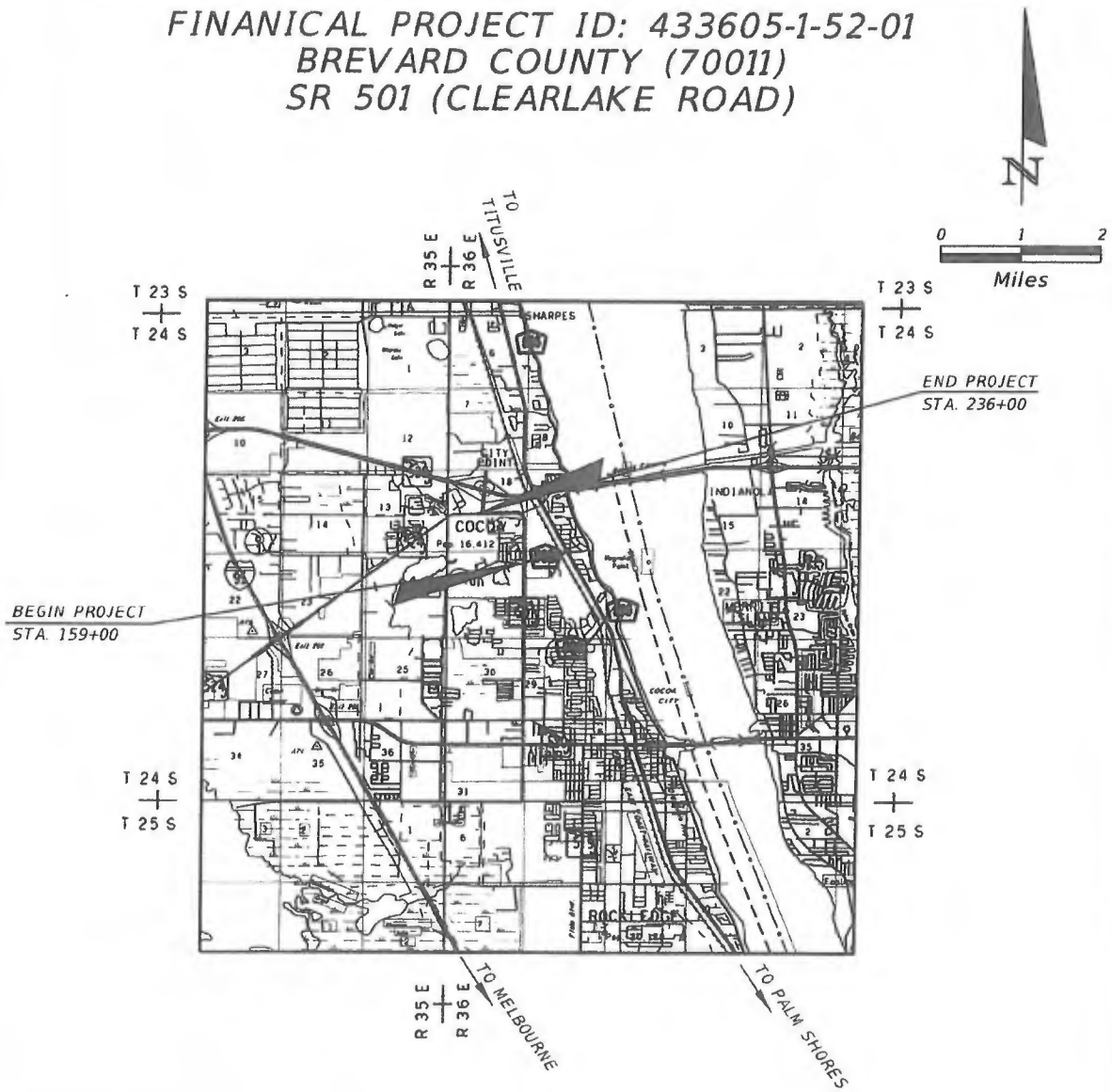
This proposed project contains no known significant contamination.

APPENDIX A:
Typical Section Package

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION PACKAGE

FINANICAL PROJECT ID: 433605-1-52-01
BREVARD COUNTY (70011)
SR 501 (CLEARLAKE ROAD)



LENGTH OF PROJECT SR 501	(FEET)	(MILES)
ROADWAY	7,700.00	1.458
BRIDGES	0.00	0.000
NET LENGTH	7,700.00	1.458
EXCEPTIONS	0.00	0.000
GROSS LENGTH	7,700.00	1.458

SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FL 33404
TEL. NO. (561) 429-5065
CERTIFICATE OF AUTHORIZATION NO. 29560
CONTRACT NO. C-9H54
VENDOR NO. 451909667002
ENGINEER OF RECORD: ANIRUDDHA GOTMARE, P.E.
FL P.E. NO. 54801

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 433605-1-52-01 COUNTY (SECTION) BREVARD (70011)

PROJECT DESCRIPTION SR 501 (CLEARLAKE ROAD) WIDENING FROM SOUTH OF MICHIGAN AVE. TO WEST OF INDUSTRY ROAD.

PROJECT CONTROLS

FUNCTIONAL CLASSIFICATION

( ) RURAL

(X) URBAN

( ) FREEWAY/EXPWY. ( ) MAJOR COLL.

(X) PRINCIPAL ART. ( ) MINOR COLL.

( ) MINOR ART. ( ) LOCAL

HIGHWAY SYSTEM

Yes	No	
(X)	( )	NATIONAL HIGHWAY SYSTEM
( )	(X)	STRATEGIC INTERMODAL SYSTEM
(X)	( )	STATE HIGHWAY SYSTEM
( )	(X)	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY

( ) 2 - RESTRICTIVE w/Service Roads

( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing

( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing

(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing

( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing

( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION

( ) RRR INTERSTATE / FREEWAY

( ) RRR NON-INTERSTATE / FREEWAY

( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION

( ) TDLC / RRR

( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

TRAFFIC

	YEAR	AADT
CURRENT	2016	20,000
OPENING	2023	22,000
DESIGN	2043	26,000

DESIGN SPEED

STA. 159+00 TO STA. 188+50	45
STA. 188+50 TO STA. 208+00	35
STA. 208+00 TO STA. 236+00	45

POSTED SPEED

STA. 159+00 TO STA. 188+50	45
STA. 188+50 TO STA. 208+00	35
STA. 208+00 TO STA. 236+00	45

DISTRIBUTION

K	9%
D	55.3%
T_{24}	7.1%

DESIGN SPEED APPROVALS

AK Brennan — DISTRICT DESIGN ENGINEER — 2/9/2016 DATE

Robert B. Moore — DISTRICT TRAFFIC OPERATIONS ENGINEER — 3/8/16 DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

N/A

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

BREVARD COUNTY PUBLIC WORKS ENGINEERING
CITY OF COCOA
FLORIDA CITY GAS
FLORIDA GAS TRANSMISSION - MELBOURNE
FLORIDA POWER & LIGHT
MCI
AT&T DISTRIBUTION
TRANSCORE
BRIGHT HOUSE NETWORKS, LLC

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

DESIGN SPEED CHANGES FROM 45 MPH TO 35 MPH TO ACCOMODATE THE CURVE AND R/W IMPACTS.

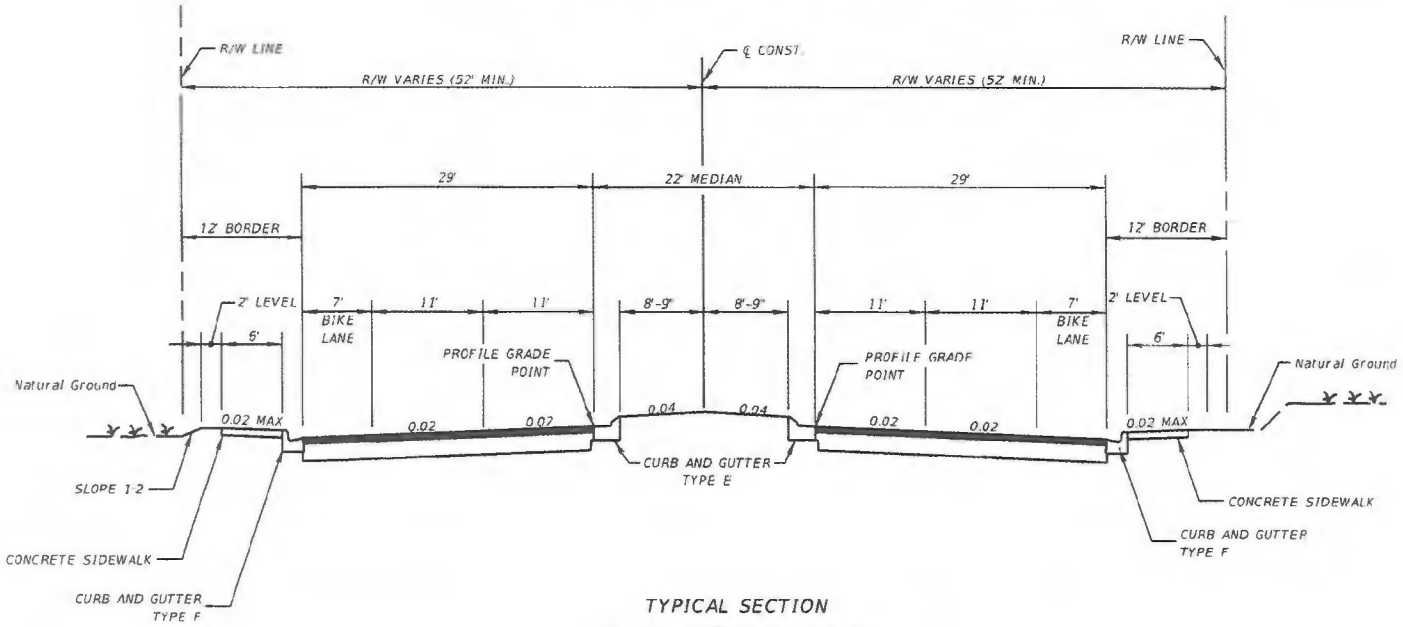
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 433605-1-52-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME BREVARD

SECTION NO. 70011 ROAD DESIGNATION SR 501 LIMITS/MILEPOST SOUTH OF MICHIGAN AVE. (MP 2.235) TO WEST OF INDUSTRY ROAD (MP 3.358)

PROJECT DESCRIPTION SR 501 (CLEARLAKE ROAD) WIDENING FROM SOUTH OF MICHIGAN AVENUE TO WEST OF INDUSTRY ROAD.

PROPOSED ROADWAY TYPICAL SECTION



TYPICAL SECTION
SR 501 (CLEARLAKE ROAD)
STA. 159+00 TO STA. 188+50

DESIGN SPEED = 45 MPH

APPROVED BY: ANIRUDDHA GOTMARE, P.E.	FDOT CONCURRENCE	RECOMMENDED BY
Engineer of Record Scalar Consulting Group, Inc 4152 W. Eau Gallie Boulevard, Suite Riviera Beach, Fl. 33404	1/25/2016 Date	A K Brennan 2/9/2016 Annette K. Brennan, P.E. FDOT District Design Engineer Date	Amy Sirmans, P.E. D-5 Project Development Engineer Date

ANIRUDDHA S. GOTMARE LICENSE NO. 54801 STATE OF FLORIDA PROFESSIONAL ENGINEER

swilliams 1/25/2016 4:45:59 PM P:\2014\SP14D5001 (SR 501 PD&E Study)\43360512201\roadway\TypPack.dgn

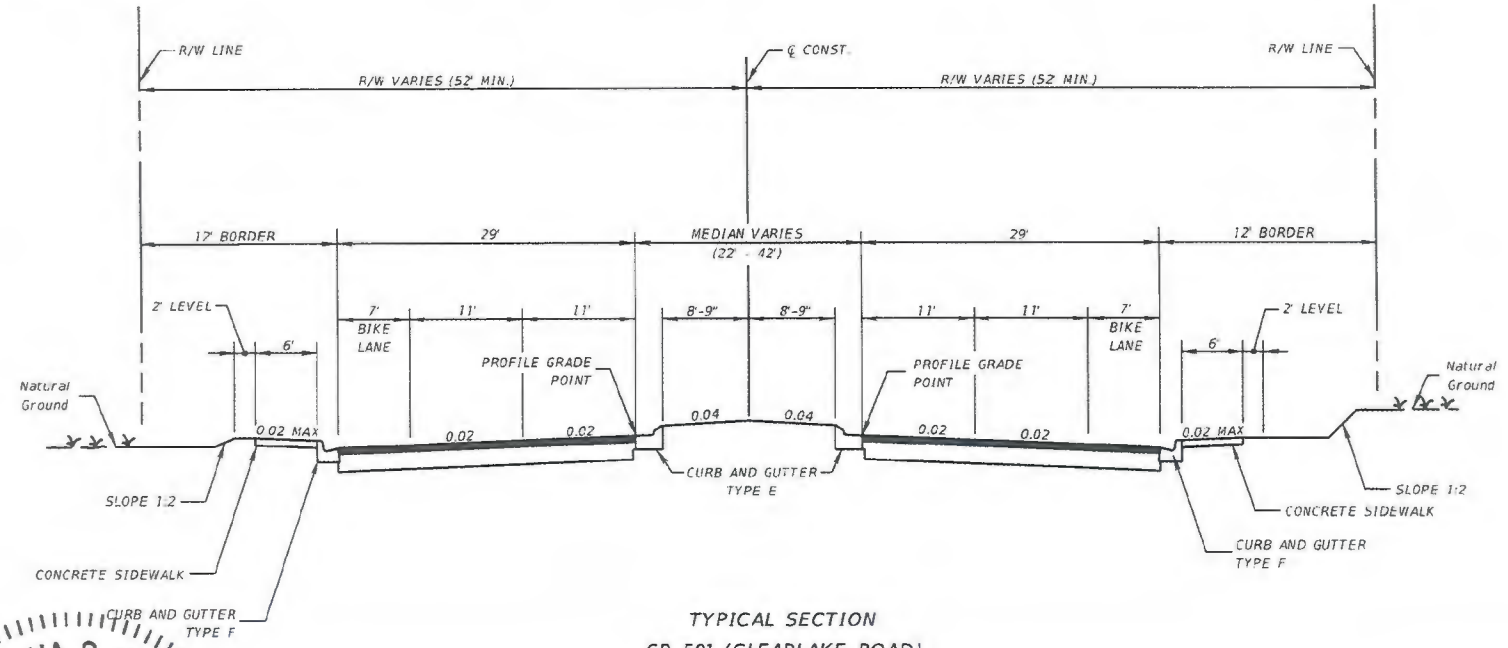
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 433605-1-52-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME BREVARD

SECTION NO. 70011 ROAD DESIGNATION SR 501 LIMITS/MILEPOST SOUTH OF MICHIGAN AVE. (MP 2.235) TO WEST OF INDUSTRY ROAD (MP 3.358)

PROJECT DESCRIPTION SR 501 (CLEARLAKE ROAD) WIDENING FROM SOUTH OF MICHIGAN AVENUE TO WEST OF INDUSTRY ROAD.

PROPOSED ROADWAY TYPICAL SECTION



TYPICAL SECTION
SR 501 (CLEARLAKE ROAD)
STA. 188+50 TO STA. 236+00

DESIGN SPEED = 35 MPH / 45 MPH

ANIRUDDHA S. GOTMARE LICENSE No. 54801 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY: ANIRUDDHA GOTMARE, P.E.	FDOT CONCURRENCE	RECOMMENDED BY
Engineer of Record Scalar Consulting Group 4152 W. Blue Heron Boulevard, Suite Riviera Beach, FL 33404 1/25/2016 Date	AK Brennan Annette K. Brennan, P.E. FDOT District Design Engineer 2/9/2016 Date	Amy Sirmans, P.E. D-5 Project Development Engineer Date

swilliams 1/25/2016 4:46:11 PM P:\2014\SP14D5001 (SR 501 PD&E Study)\43360512201\roadway\TypPack.dgn

APPENDIX B:
SHPO Letters

Centennial FDOT 1915 ★ 2015

Florida Department of Transportation

RICK SCOTT
GOVERNOR

719 S. Woodland Blvd.
DeLand, FL 32720

JIM BOXOLD
SECRETARY

November 3, 2015

Mr. Robert Bendus
State Historic Preservation Officer
Office of Cultural and Historical Programs
Division of Historical Resources
500 South Bronough Street
Tallahassee, Florida 32399-0250

Attn: Ms. Ginny Jones, Transportation Compliance Review Program

RE: *Cultural Resource Assessment Survey of Clearlake Road (SR 501) from South of Michigan Avenue to West of Industry Road, Brevard County, Florida*
Financial Management # 433605-1

Dear Mr. Bendus,

Enclosed please find one copy of the report titled *Cultural Resource Assessment Survey of Clearlake Road (SR 501) from South of Michigan Avenue to West of Industry Road, Brevard County, Florida.* This report presents the findings of a Phase I cultural resource assessment survey (CRAS) conducted in support of improvements to Clearlake Road (State Road [SR] 501) in Brevard County, Florida. The Florida Department of Transportation (FDOT), District 5, is proposing multiple alternatives to accommodate traffic improvements to Clearlake Road from south of Michigan Avenue to west of Industry Road. Alternatives included a proposed four-lane divided urban alignment as well as four subalternatives: a 45 mph curve, a 35 mph curve, a roundabout, and a "jug handle" curve. The project includes the addition of right-of-way along Clearlake Road from Michigan Avenue to Industry Road, bicycle lanes in each direction, sidewalks on both sides, and off-site ponds.

To encompass all potential improvements, the Area of Potential Effect (APE) was defined to include the existing and proposed right-of-way from approximately 850 feet south of Michigan Avenue to approximately 1,000 feet west of Industry Road. This APE was extended to the back or side property lines of parcels adjacent to the right-of-way or a distance of no more than 100 meters (330 feet) from the right-of-way line. The archaeological survey was conducted within the existing and proposed right-of-way. The historic structure survey was conducted within the entire APE. The proposed off-site ponds were not included in the present study and will be addressed by a forthcoming CRAS addendum.

The archaeological survey consisted of a pedestrian survey and shovel testing within the current and proposed right-of-way. No artifacts were recovered and no archaeological sites or

occurrences were identified within the APE. No further archaeological survey is recommended in support of the proposed Clearlake Road improvements.

The architectural survey resulted in the identification and evaluation of 31 newly recorded historic resources (8BR03301-8BR03331) within the Clearlake Road APE. The newly recorded resources include 31 historic buildings (8BR03301-8BR03331). All 31 resources identified within the Clearlake Road APE lack the architectural distinction and the significant historical associations necessary to be considered for listing in the NRHP and are recommended ineligible. No existing or potential historic districts were identified. No further architectural history survey is recommended.

I respectfully request your concurrence with the findings of the enclosed report. If you have any questions or need further assistance, please contact Catherine Owen, District Cultural Resource Coordinator, at (386) 943-5383 or me at (386) 943-5411.

Sincerely,

FOR William G. Walsh
Environmental Manager
FDOT, District Five

The Florida State Historic Preservation Officer:

__√__ finds the attached report complete and sufficient and __√__ concurs/ ___ does not concur with the findings and recommendations contained in this cover letter and the enclosed report.

___ does not find the attached report complete and sufficient and requires additional information in order to provide an opinion on the potential effects of the proposed project on historic resources.

/s/
For: Robert Bendus
Florida State Historic Preservation Officer

Date 11/23/15

2015-5439
DHR Project No.

Florida Department of Transportation

RICK SCOTT
GOVERNOR

719 S. Woodland Blvd.
DeLand, FL 32720

JIM BOXOLD
SECRETARY

February 24, 2016

Mr. Timothy A. Parsons, Ph.D.
Interim Director, State Historic Preservation Officer
Office of Cultural and Historical Programs
Division of Historical Resources
500 South Bronough Street
Tallahassee, Florida 32399-0250

Attn: Mr. Dan McClarnon, Transportation Compliance Review Program

RE: *Technical Memorandum: Cultural Resource Assessment Survey of Eight Proposed Ponds in Support of the Improvements to Clearlake Road (SR 501), Brevard County, Florida*
Financial Management # 433605-1

Dear Mr. Parsons,

Enclosed please find one copy of the report titled *Technical Memorandum: Cultural Resource Assessment Survey of Eight Proposed Ponds in Support of the Improvements to Clearlake Road (SR 501), Brevard County, Florida.* This report presents the findings of a Phase I cultural resource assessment survey (CRAS) conducted in support of improvements to Clearlake Road (State Road [SR] 501) in Brevard County, Florida. The Florida Department of Transportation (FDOT), District 5, is proposing multiple alternatives to accommodate traffic improvements to Clearlake Road from south of Michigan Avenue to west of Industry Road. This technical memorandum serves as an addendum to the 2015 SEARCH report titled *Cultural Resource Assessment Survey of Clearlake Road (SR 19) from Michigan Avenue to Industry Road, Brevard County, Florida* (SEARCH 2015, Florida Master Site File [FMSF] Survey No. 22376).

The Area of Potential Effect (APE) was defined to include eight proposed pond footprints in addition to a 100-foot buffer of each. The archaeological survey was conducted within the proposed pond footprints. The historic structure survey was conducted within the entire pond APE.

The archaeological survey consisted of a pedestrian inspection of eight proposed pond footprints, as field conditions precluded the excavation of subsurface tests. It is the opinion of the District that, based on the heavily disturbed nature of the soils, there is no potential for intact archaeological sites to be located within the proposed pond footprints. No further archaeological survey is recommended in support of the proposed Clearlake Road (SR 501) ponds.

The architectural survey resulted in the identification and evaluation of 13 historic resources within the Clearlake Road (SR 501) Ponds APE. The 13 historic resources within the Clearlake Road (SR 501) Ponds APE lack the architectural distinction and the significant historical associations necessary to be considered for listing in the National Register of Historic Places (NRHP) and are recommended ineligible. No further architectural work is recommended.

It is the opinion of the District, the proposed undertaking will have no effect on cultural resources listed or eligible for listing on the NRHP. I respectfully request your concurrence with the findings of the enclosed report.

If you have any questions or need further assistance, please contact Catherine Owen, District Cultural Resource Coordinator, at (386) 943-5383 or me at (386) 943-5411.

Sincerely,

FOR William G. Walsh
Environmental Manager
FDOT, District Five

The Florida State Historic Preservation Officer:

__✓__ finds the attached report complete and sufficient and __✓__ concurs/ ___ does not concur with the findings and recommendations contained in this cover letter and the enclosed report.

___ does not find the attached report complete and sufficient and requires additional information in order to provide an opinion on the potential effects of the proposed project on historic resources.

/s/
For: Timothy A. Parsons, Ph.D.
Interim Director, Division of Historical Resources
Florida State Historic Preservation Officer

3/16/16
Date

2015.5439
DHR Project No.

APPENDIX C: Water Quality Impact Evaluation Checklist

WQIE CHECK LIST

Project Name: Clearlake Road (SR 501) PD&E Study

County: Brevard

FIN (Financial Number): 433605-1-22-01

Federal Aid Project No: N/A

Short project description: Clearlake Road between Michigan Avenue to the south and Industry Road to the north is classified as an Urban Principle Arterial. For a short distance (0.137 miles) north of Michigan Avenue, the road has four lanes with a 12 foot paved median. For the next 0.457 miles northward, the roadway has one, 12 foot lane southbound with grass shoulders and two, 12 foot lanes with curb and gutter in the northbound direction. For the last 0.529 miles, the roadway has two, 12 foot lanes, one in each direction, with four foot paved shoulders. The posted speed limit along this section of Clearlake Road varies and is posted at 40 mph and 45 mph. The various typical sections found along this corridor is due in part to roadway improvements required of adjacent developers. There are signalized intersections at Michigan Avenue, Otterbein Avenue, and Industry Road. It is anticipated that the improved roadway will be a four lane urban typical section. Clearlake Road is not a Strategic Intermodal System (SIS) facility but Industry Road has an interchange with SR 528 (Beachline Expressway) located just to the north which is a designated SIS facility connecting the City of Orlando and the Orlando International Airport to the west with the Port of Port Canaveral to the east. The proposed typical section will consist of a four lane divided urban typical section with a 22 foot median, seven foot buffered bicycle lanes, and six foot sidewalks. The minimum proposed right-of-way width is 104 feet.

PART 1: DETERMINATION OF WQIE SCOPE

- Does project increase impervious surface? Yes
- Does project alter the drainage system? Yes

If the answer to both questions is no, complete the WQIE by checking Box A in Part 4.

- Do environmental regulatory requirements apply? Yes

PART 2: PROJECT CHARACTERISTICS

20-year design AADT: 26,000 Expected speed limit: 45 mph

Drainage area: 42.66 acres 53.26 % Impervious 46.74 % Pervious

Land Use: 42.2% % Residential 27.5% % Commercial 0.0% % Industrial

0.0% % Agricultural 11.8% % Wetlands 0.03% % Other Natural

Potential large sources of pollution: Stormwater runoff

Groundwater receptor (name of aquifer or N/A): Surficial Aquifer

☐ Designated well head protection area? No

☐ Sole source aquifer: No

Groundwater recharge mechanism:

Infiltration

(Notify District Drainage Engineer if karst conditions expected)

WQIE CHECK LIST (Contd.)

Surface water receptor (name or N/A): The project is located within the St. Johns River Water Management District (SJRWMD) North Indian River Lagoon Basin. The overall drainage patterns within the immediate area historically run from west to east. This particular portion of Clearlake Road discharges into either wet detention ponds (Basins No.1 and 2) or wetland/preserve areas through a series of roadside lateral ditches, swales, and inlets and ultimately discharges into the Indian River Lagoon.

☐ Classification III

Special designation (check all that apply):

☐ ONRW ☐ OFW ☐ Aquatic Preserve ☐ Wild & Scenic River

☐ Special Water ☐ SWIM Area ☐ Local Comp Plan ☐ MS4 Area

☑ Other (specify): N/A: The study area is approximately 0.75 miles from the Indian River Lagoon, which is not a designated Outstanding Florida Water (OFW) or Aquatic Preserve. According to the EST GIS analysis results, there are no Outstanding Florida Waters, Aquatic Preserves or other features of special designation located within the 200-foot study buffer; therefore, no impacts to these resources are anticipated.

Conceptual storm water conveyances & system (check all that apply):

☑ Swales ☑ Curb and Gutter ☐ Scuppers ☑ Pipe ☑ French Drains

☑ Retention/Detention Ponds ☐ Other: N/A

PART 3: ENVIRONMENTAL REGULATORY REQUIREMENTS

Regulatory Agency	Reference citation for regulatory criteria	Most stringent criteria
FDEP ☑	National Pollutant Discharge Elimination System (NPDES) permit from the Florida Department of Environmental Protection	☐
USACOE ☑	40 CFR Part 230 – Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material	☐
SJRWMD ☑	Environmental Resource Permit (ERP) from the SJRWMD Rule 40E-4.301 and 40E-4.302, Florida Administrative Code (F.A.C.); Dewatering Permit	☑
OTHER ☐ (Specify)		☐

Proceed to Part 4 and check Box C.

WQIE CHECK LIST (Contd.)

PART 4: WQIE DOCUMENTATION

☐ Water quality is not an issue.

☐ No regulatory requirements apply to water quality issues
(Document by checking the "none" box for water quality in Section 6.C.3 of the ***Environmental Determination Form*** or Section 5.C.3 of the SEIR.

☑ Regulatory requirements apply to water quality issues. Water quality issues will be mitigated through compliance with the quantity design requirements placed by St. Johns River Water Management District, an authorized regulatory agency.
(Document by checking the "none" box for water quality in Section 6.C.3 of the Environmental Determination Form or Section 5.C.3 of the SEIR.

Evaluator Name (print): JOHN D. WHITAKER, P.E.

Office: SCALAR CONSULTING GROUP, INC.

Signature: _____ Date: 11/20/15

APPENDIX D: Standard Protection Measures for the Eastern Indigo Snake

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE
U.S. Fish and Wildlife Service
August 12, 2013

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: jaxregs@fws.gov; South Florida Field Office: verobeach@fws.gov; Panama City Field Office: panamacity@fws.gov). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or "approval" from the USFWS is needed and the applicant may move forward with the project.

If the applicant decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or "approval" from the USFWS that the plan is adequate must be obtained. At least 30 days prior to any clearing/land alteration activities, the applicant shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

POSTER INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11" x 17" or larger paper and laminated, is attached):

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION UNDER FEDERAL AND STATE LAW: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

IF YOU SEE A <u>LIVE</u> EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A <u>DEAD</u> EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

PRE-CONSTRUCTION ACTIVITIES

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.

2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.

3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).

2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.

3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.

ATTENTION:

THREATENED EASTERN INDIGO SNAKES MAY BE PRESENT ON THIS SITE!!!

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the eastern indigo snake sufficient time to move away from the site without interference.
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate U.S. Fish and Wildlife Service (USFWS) office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

Killing, harming, or harassing indigo snakes is strictly prohibited and punishable under State and Federal Law.

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

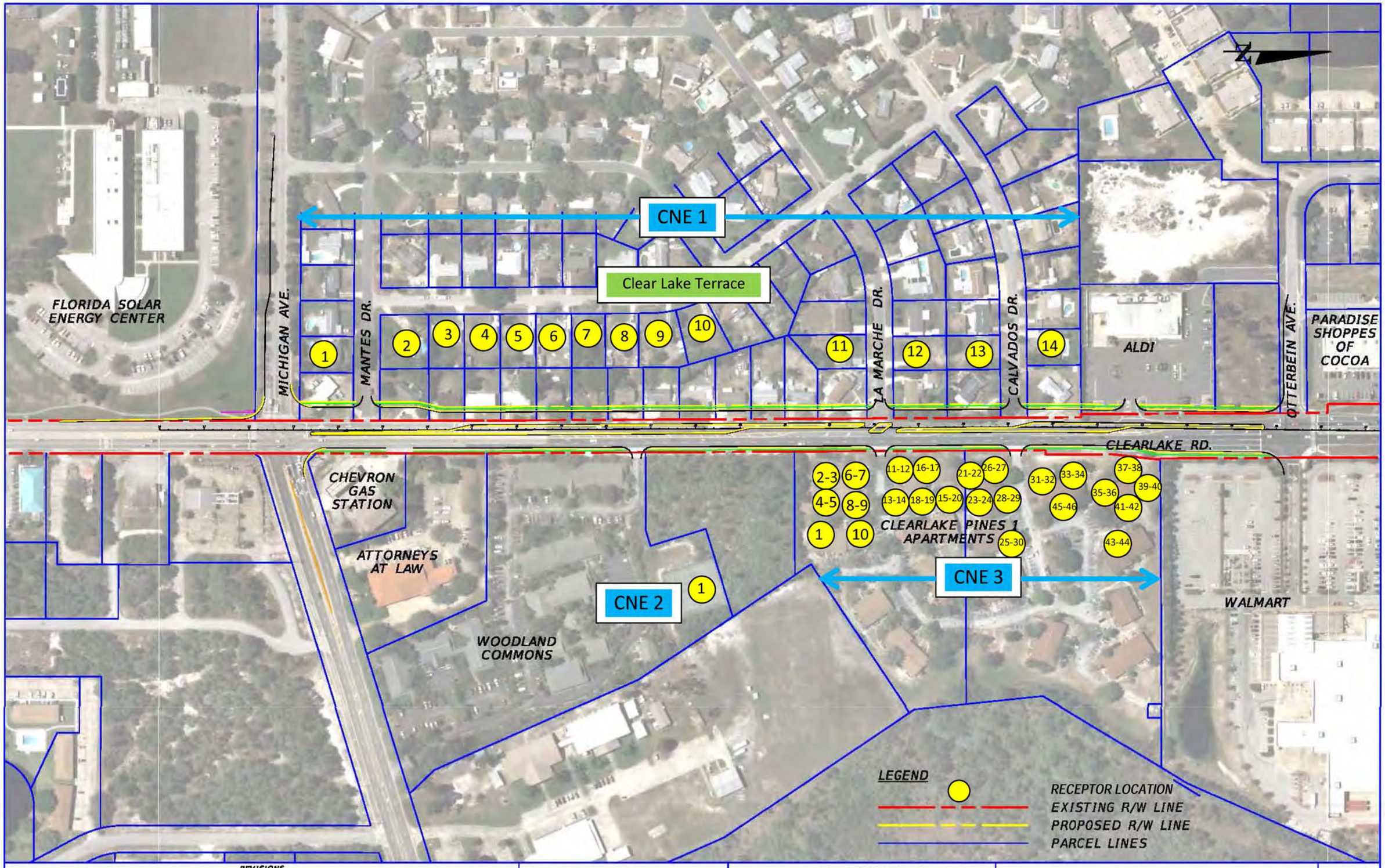
SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

APPENDIX E:
Noise Site and Receptor Locations



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

ALTERNATIVE 1: WEST ALIGNMENT

SHEET NO.

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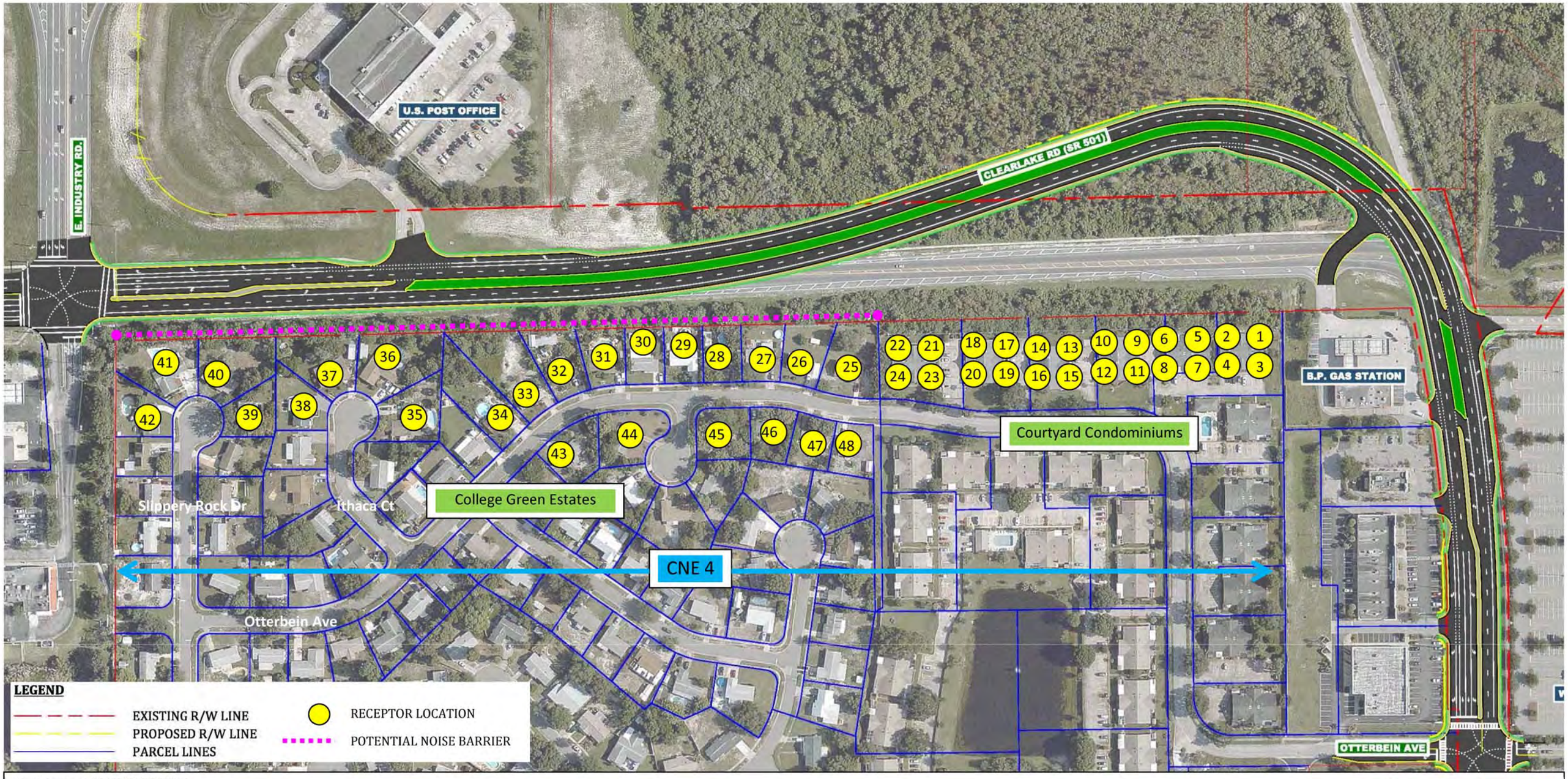


Clearlake Road (SR 501) PD&E Study
From Michigan Avenue
To Industry Road
Brevard County

VE Subalternative: 35 mph 'Bulb-Out'

FPID: 433605-1-22-01 I ETDM: 13120

Centennial FDOT 1915 ★ 2015

APPENDIX F: Conceptual Roadway Plans (Preferred Alternative)

COMPONENTS OF CONTRACT PLANS SET

ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
SIGNALIZATION PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

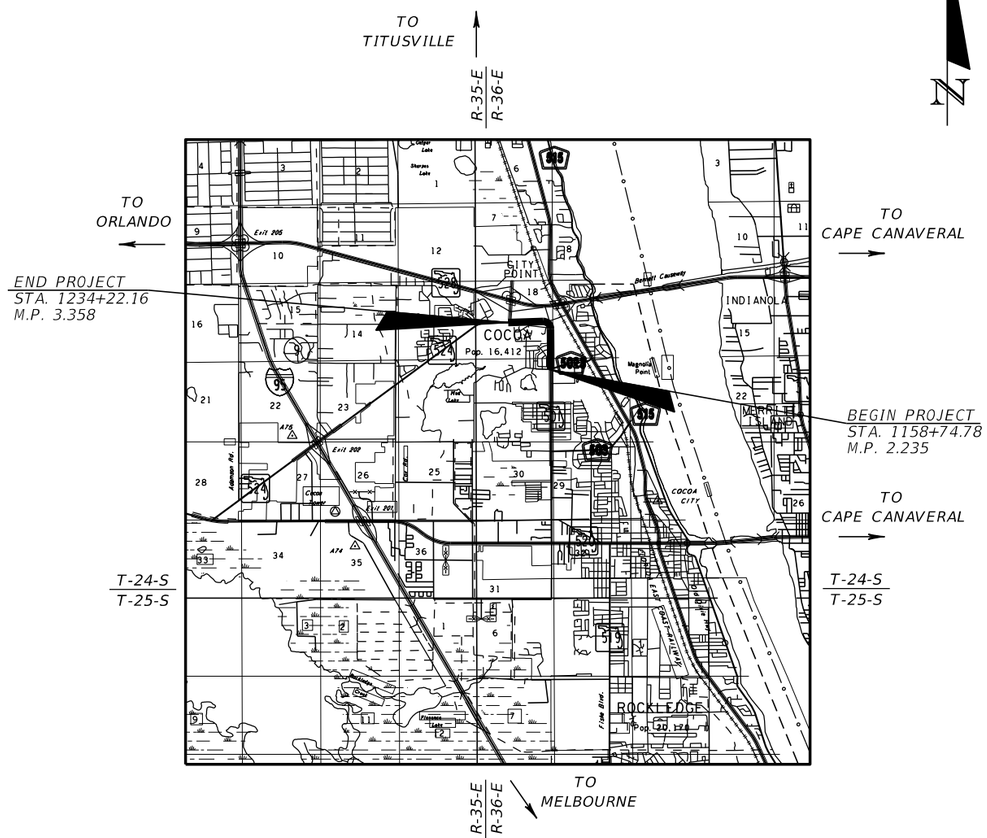
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

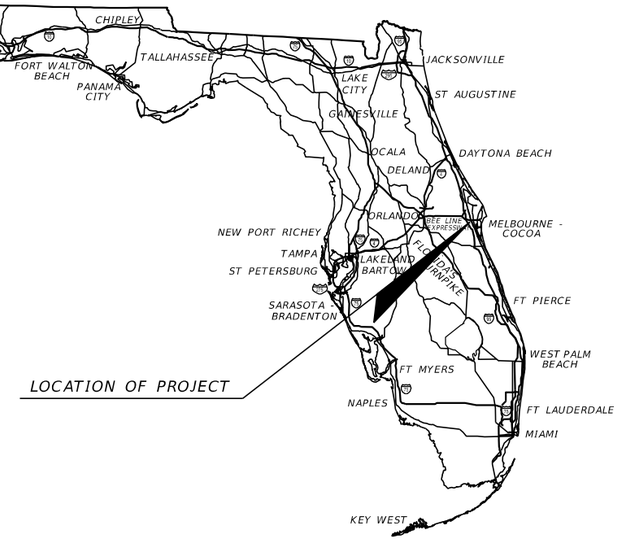
CONTRACT PLANS

FINANCIAL PROJECT ID 433605-1-52-01

BREVARD COUNTY (70011)

STATE ROAD NO. 501





GOVERNING DESIGN STANDARDS:

Florida Department of Transportation, FY 2017-18 Design Standards eBook (DSeB) and applicable Design Standards Revisions (DSRs) at the following website:
http://www.fdot.gov/rddesign/DesignStandards/Standards.shtm

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, 2017 Standard Specifications for Road and Bridge Construction at the following website:
http://www.fdot.gov/programmanagement/Implemented/SpecBooks

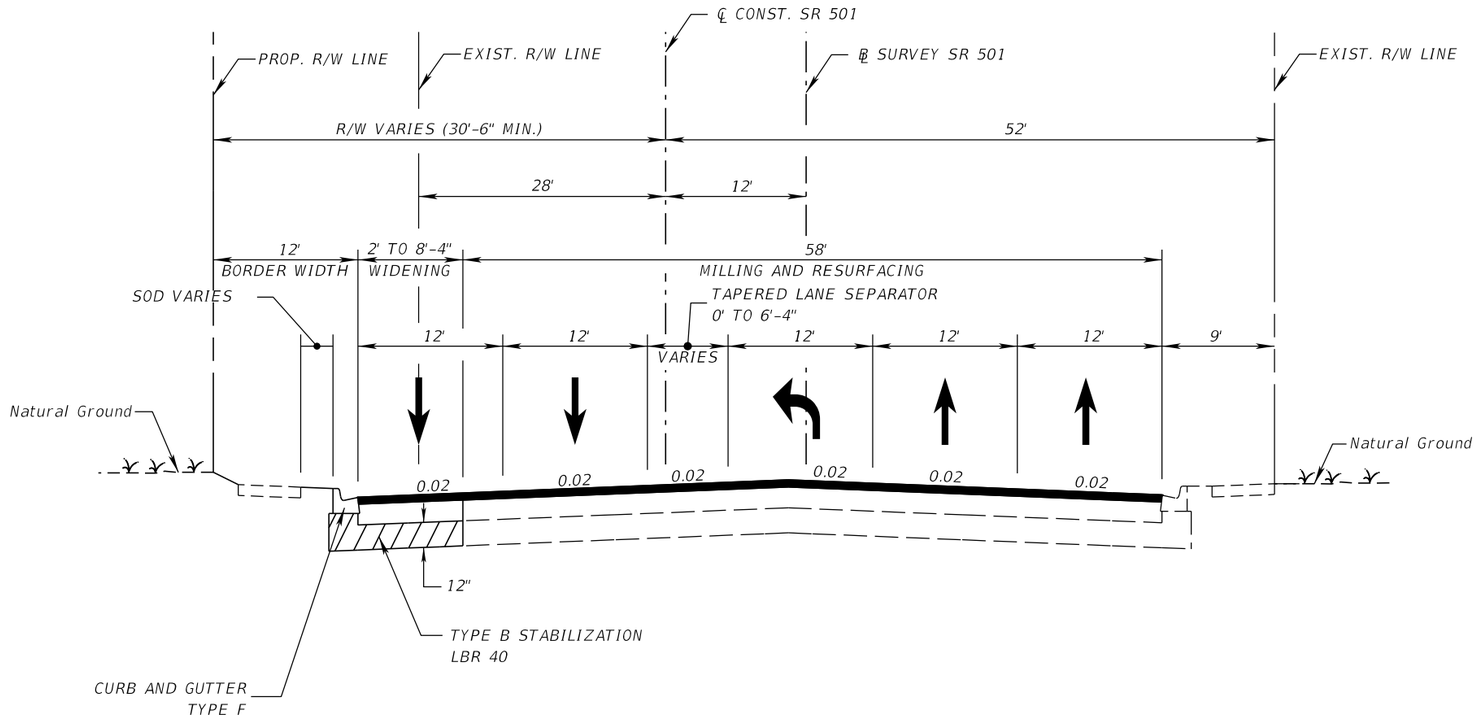
ROADWAY PLANS
ENGINEER OF RECORD:

ANIRUDDHA GOTMARE, P.E.
P.E. NO.: 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BLVD., SUITE 119
RIVIERA BEACH, FL 33404
CONTRACT NO.: C9H54
VENDOR NO.: 451909667002
CERTIFICATE OF AUTHORIZATION NO.: 29560

FDOT PROJECT MANAGER:

TALEB SHAMS, P.E.

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
		1



TYPICAL SECTION
SR 501 (CLEARLAKE ROAD)
STA. 1158+74.78 TO STA. 1165+60.43

TRAFFIC DATA
STA. 1160+76.37 TO STA. 1188+50.00

CURRENT YEAR = 2016 AADT = 18,000
ESTIMATED OPENING YEAR = 2023 AADT = 22,000
ESTIMATED DESIGN YEAR = 2043 AADT = 26,000
K = 9.0% D = 55.3% T = 7.1% (24 HOUR)
DESIGN HOUR T = 3.5%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

MILLING

MILL EXISTING ASPHALT
PAVEMENT FOR DEPTH (1 ½")

RESURFACING

FRICTION COURSE FC-12.5 (TRAFFIC C) (1 ½") (PG 76-22 (ARB))

WIDENING

OPTIONAL BASE GROUP 9 (TYPE B-12.5) WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (3")
AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 ½") (PG 76-22 (ARB))

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

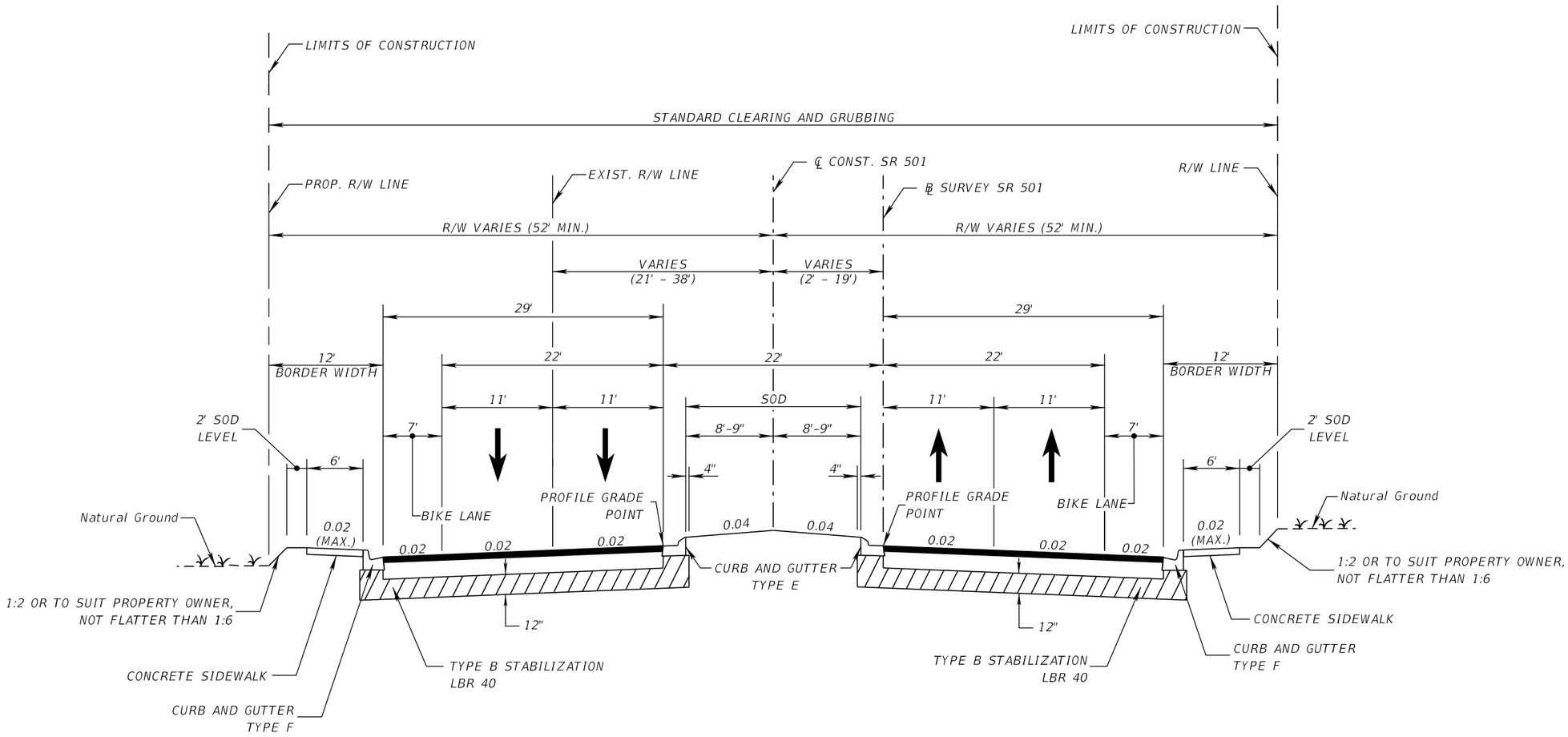
ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

TYPICAL SECTION (1)

SHEET NO. 2



TYPICAL SECTION
SR 501 (CLEARLAKE ROAD)
STA. 1165+60.43 TO STA. 1193+63.83

TRAFFIC DATA
STA. 1160+76.37 TO STA. 1188+50.00

CURRENT YEAR = 2016 AADT = 18,000
ESTIMATED OPENING YEAR = 2023 AADT = 22,000
ESTIMATED DESIGN YEAR = 2043 AADT = 26,000
K = 9.0% D = 55.3% T = 7.1% (24 HOUR)
DESIGN HOUR T = 3.5%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

RECONSTRUCTION

OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (1 ½")
AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 ½") (PG 76-22 (ARB))

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
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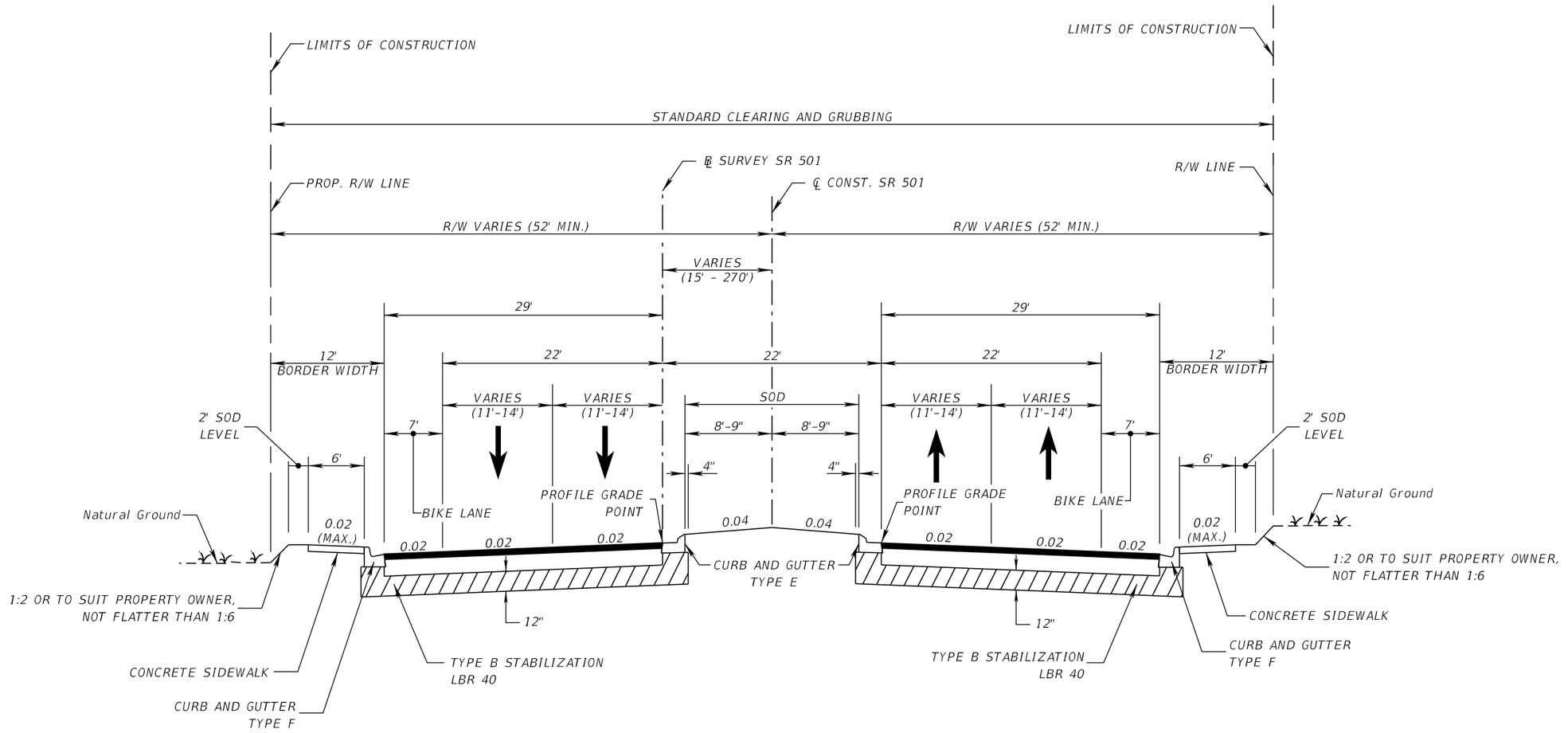
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

TYPICAL SECTION (2)

SHEET NO. 3



TYPICAL SECTION
SR 501 (CLEARLAKE ROAD)
STA. 1193+63.83 TO STA. 1222+50.00

TRAFFIC DATA
STA. 1188+50.00 TO STA. 1225+20.00

CURRENT YEAR = 2016 AADT = 18,000
ESTIMATED OPENING YEAR = 2023 AADT = 22,000
ESTIMATED DESIGN YEAR = 2043 AADT = 26,000
K = 9.0% D = 55.3% T = 7.1% (24 HOUR)
DESIGN HOUR T = 3.5%
DESIGN SPEED = 35/45 MPH
POSTED SPEED = 35/45 MPH

RECONSTRUCTION

OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (1 ½")
AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 ½") (PG 76-22 (ARB))

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

TYPICAL SECTION (3)

SHEET NO. 4

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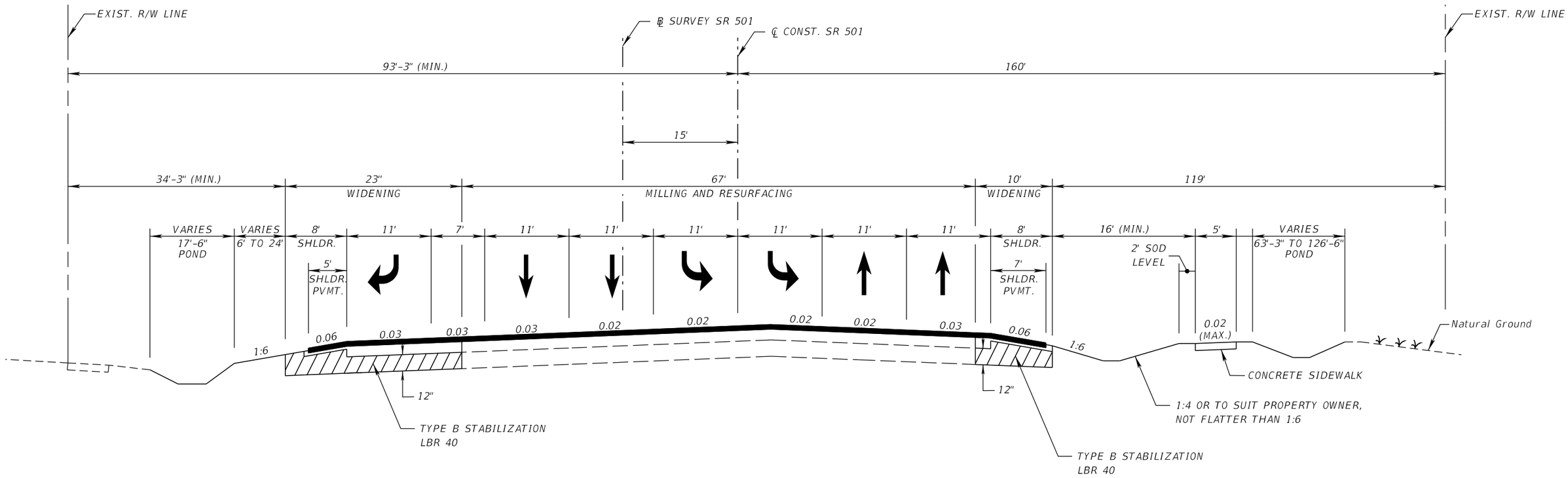

TYPICAL SECTION
SR 501 (CLEARLAKE ROAD)
STA. 1222+56.01 TO STA. 1234+22.16

TRAFFIC DATA
STA. 1188+50.00 TO STA. 1225+20.00

CURRENT YEAR = 2016 AADT = 18,000
ESTIMATED OPENING YEAR = 2023 AADT = 22,000
ESTIMATED DESIGN YEAR = 2043 AADT = 26,000
K = 9.0% D = 55.3% T = 7.1% (24 HOUR)
DESIGN HOUR T = 3.5%
DESIGN SPEED = 35/45 MPH
POSTED SPEED = 35/45 MPH

MILLING

MILL EXISTING ASPHALT
PAVEMENT FOR DEPTH (1 ½")

RESURFACING

FRICTION COURSE FC-12.5 (TRAFFIC C) (1 ½") (PG 76-22 (ARB))

MAINLINE WIDENING

OPTIONAL BASE GROUP 9 (TYPE B-12.5) WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (3")
AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 ½") (PG 76-22 (ARB))

SHOULDER WIDENING

OPTIONAL BASE GROUP 1 (TYPE B-12.5) WITH
AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 ½") (PG 76-22 (ARB))

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

TYPICAL SECTION (4)

SHEET NO. 5

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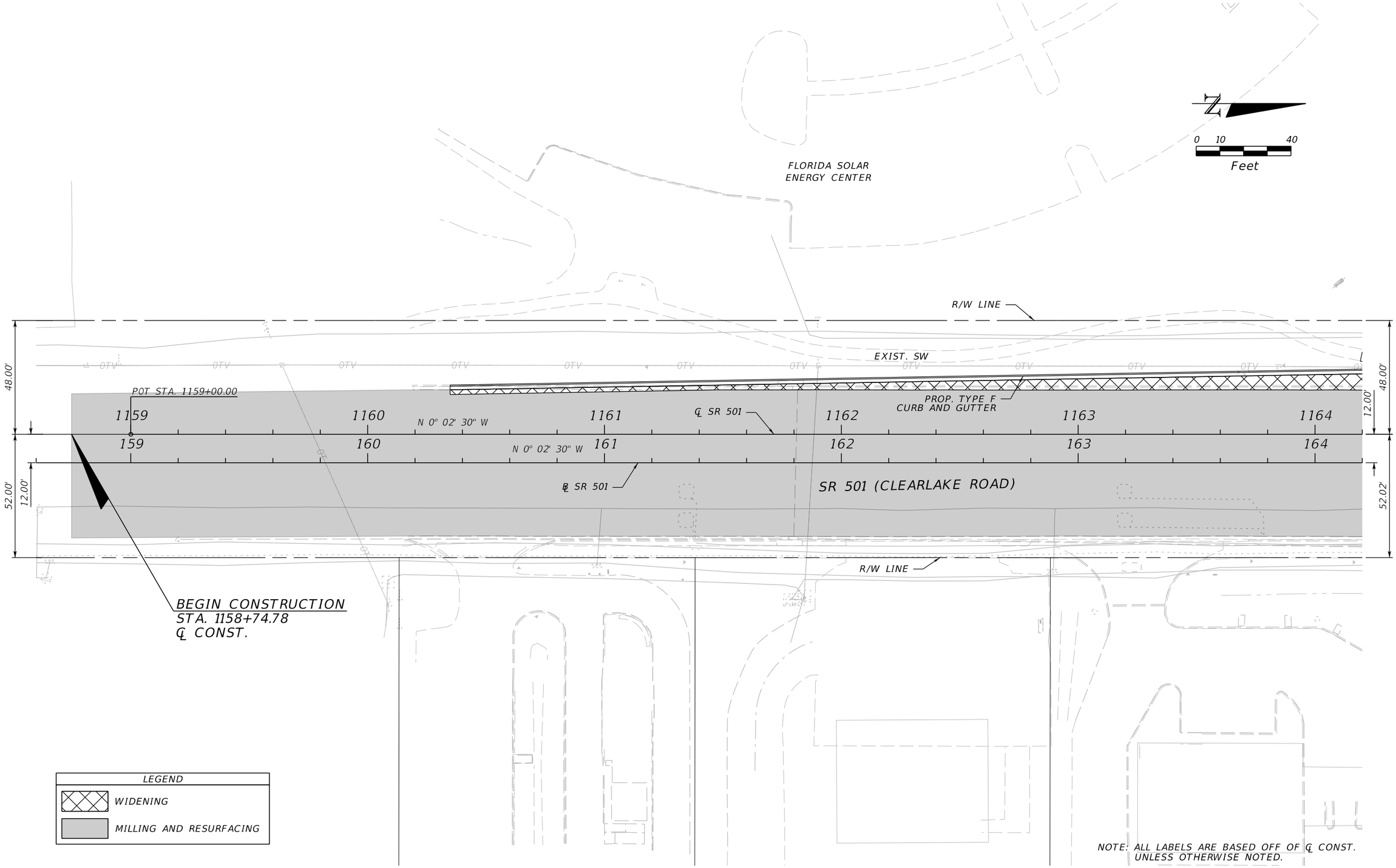


REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

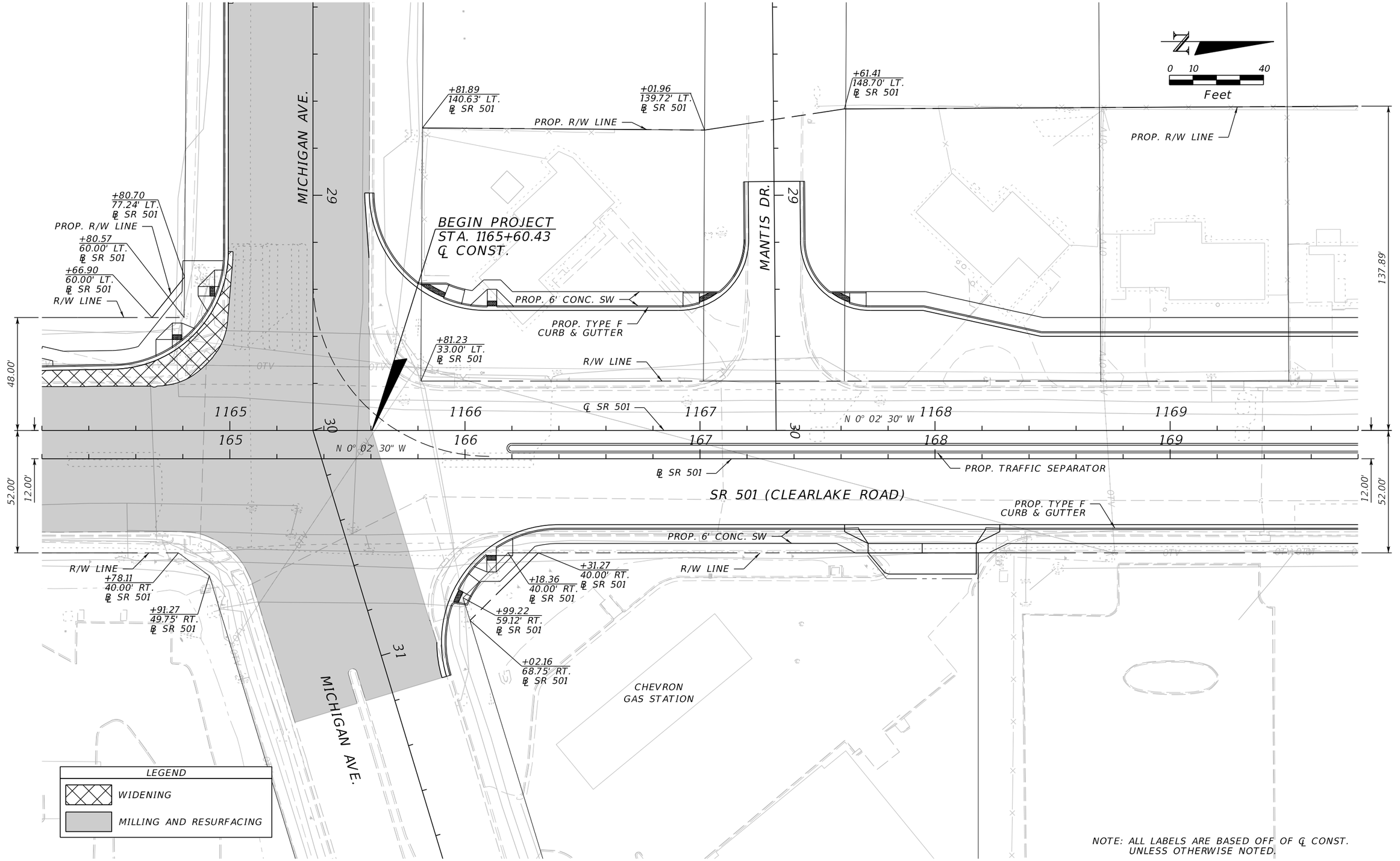
ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 6



NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

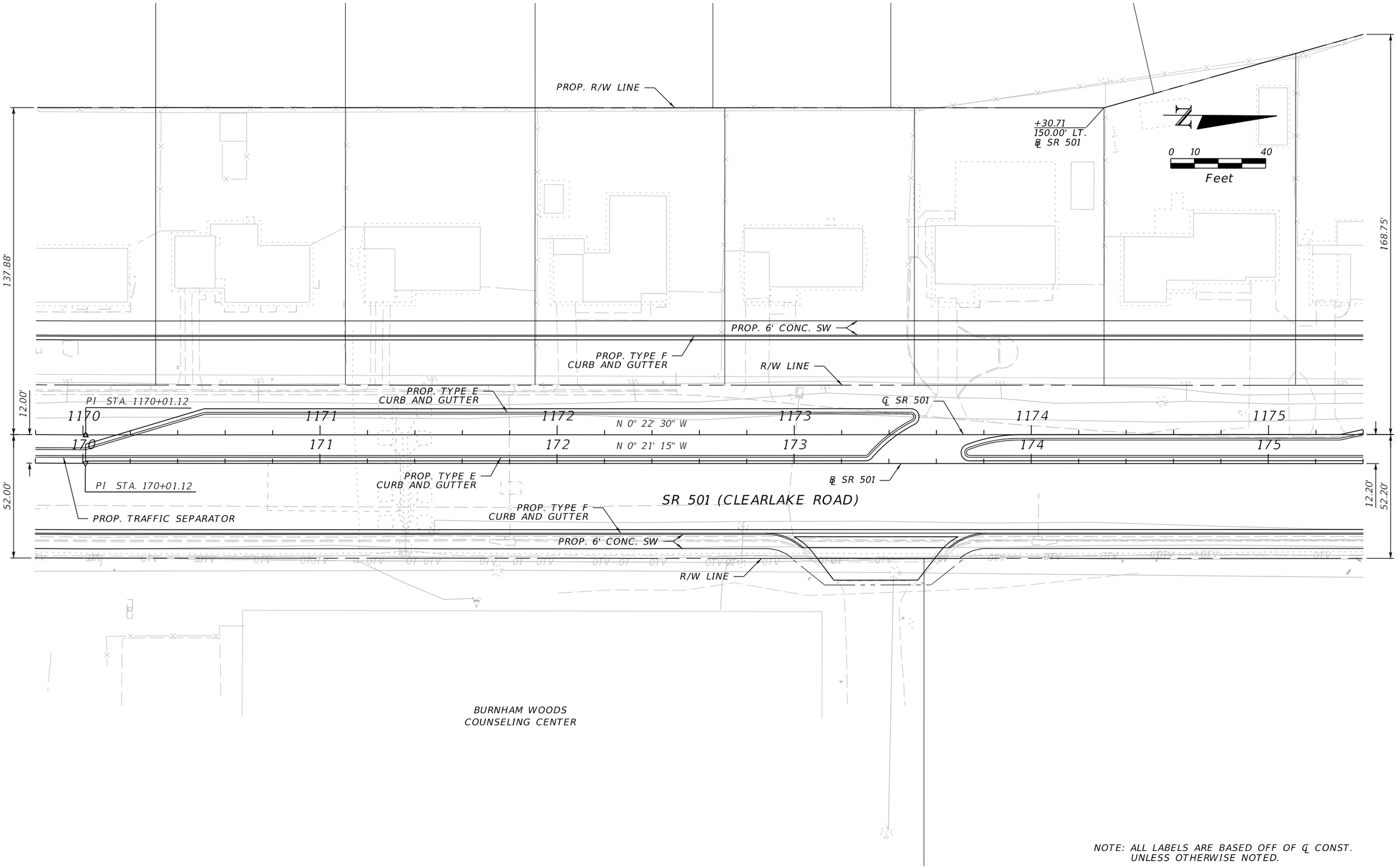
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 7

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
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4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
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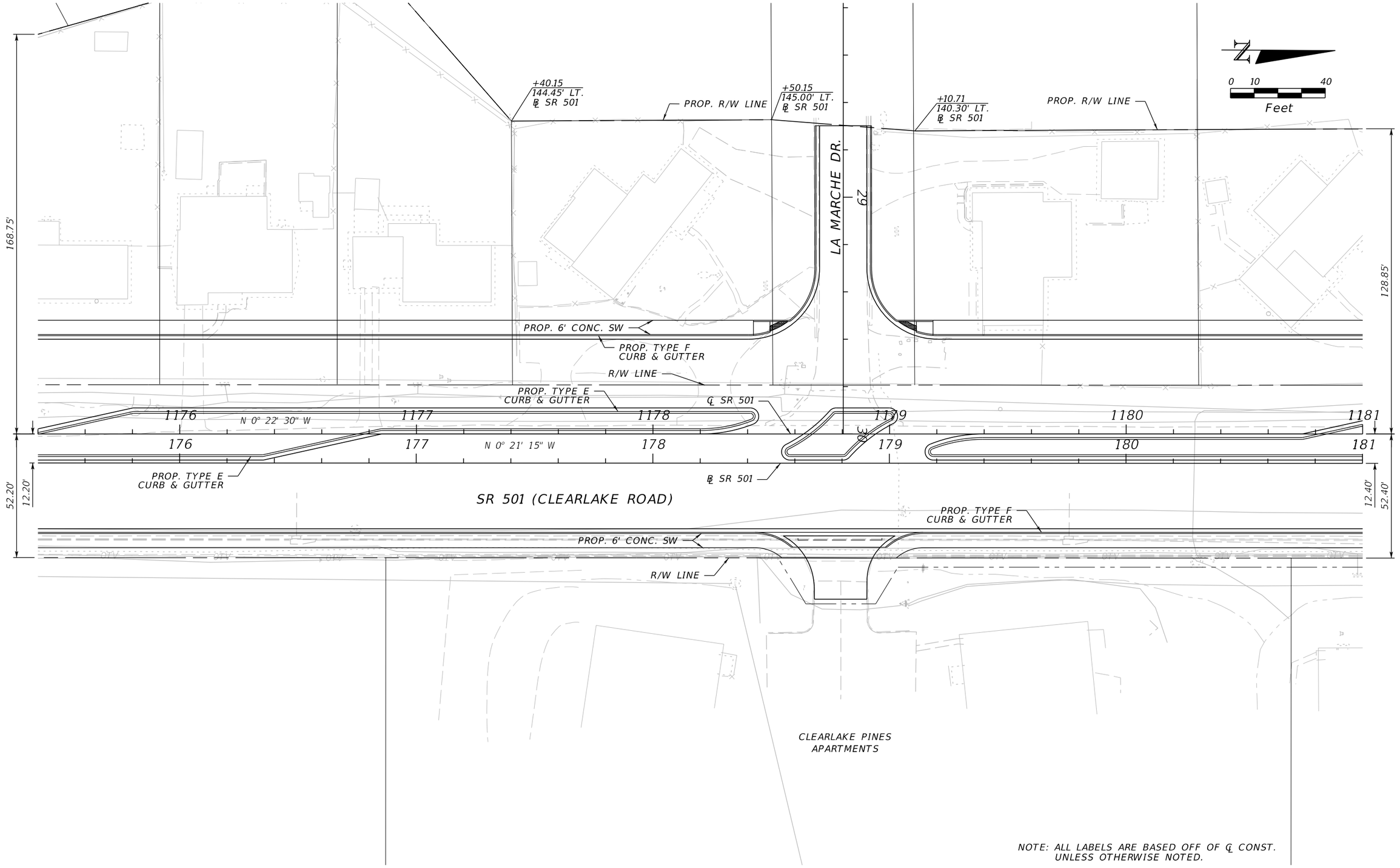
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 8



NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

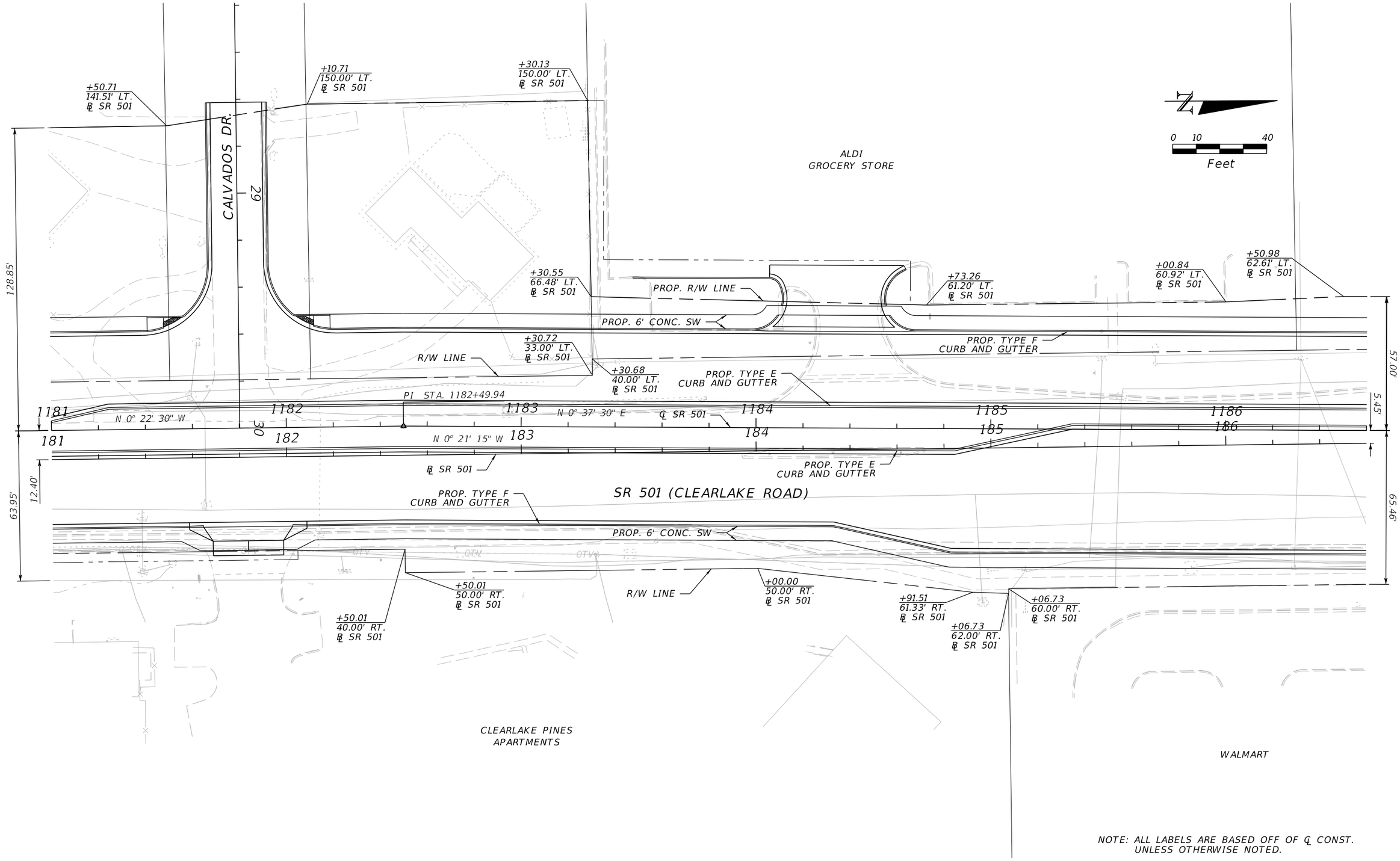
ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 9



NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 10

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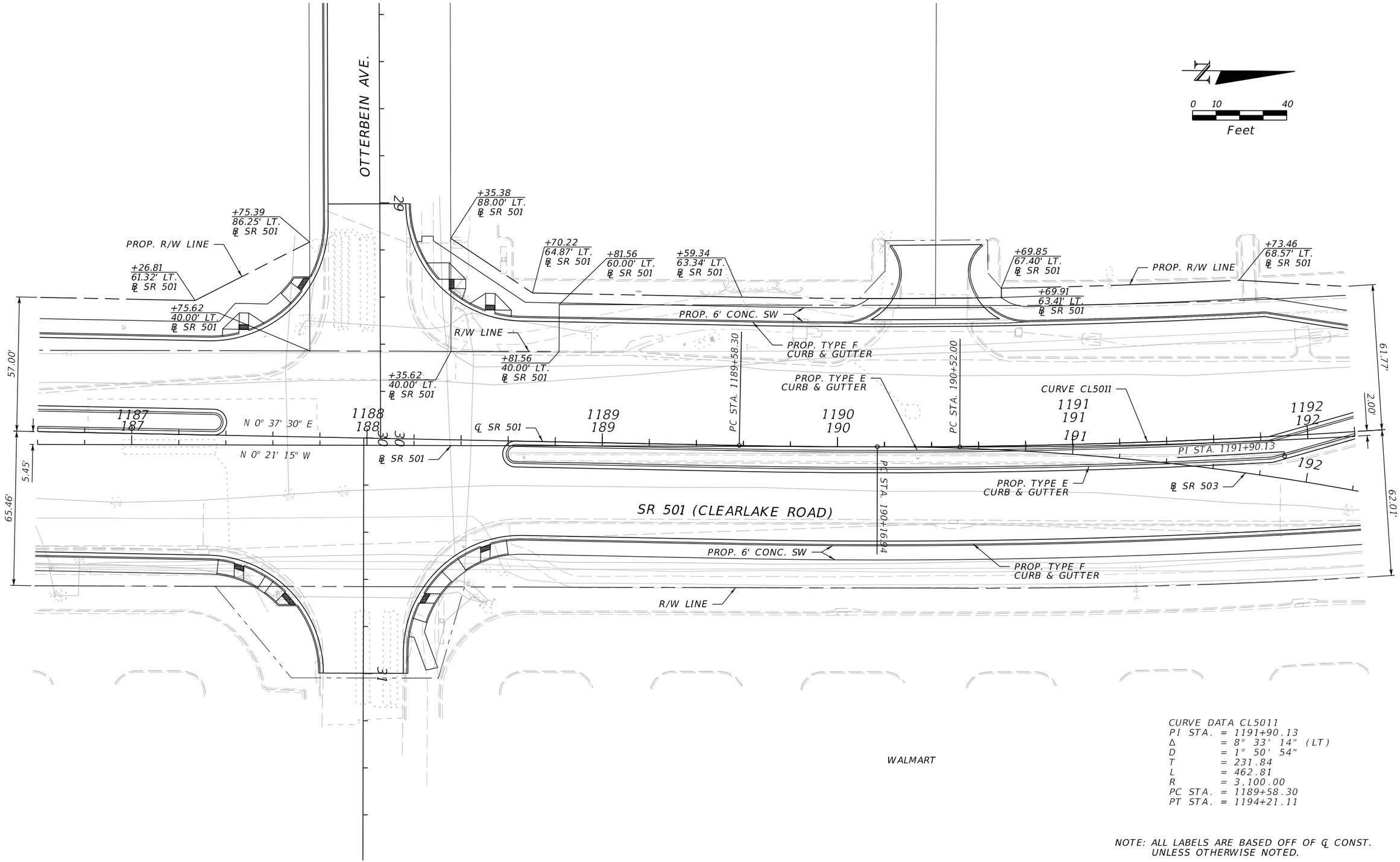

CURVE DATA CL5011
PI STA. = 1191+90.13
Δ = 8° 33' 14" (LT)
D = 1° 50' 54"
T = 231.84
L = 462.81
R = 3,100.00
PC STA. = 1189+58.30
PT STA. = 1194+21.11

NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 11

0 10 40
Feet

TACO BELL

BP GAS STATION

PROP. R/W LINE

PROP. 6' CONC. SW

61.77'

2.00'

62.01'

101.31'

PROP. TYPE F CURB AND GUTTER

+37.47
60.00' LT.
℄ SR 501

CURVE CL5011

PCC STA. 1194+21.11

CURVE CL5012

℄ SR 501

+75.29
60.00' LT.
℄ SR 501

PROP. TYPE E CURB AND GUTTER

PROP. TYPE E CURB AND GUTTER

SR 501 (CLEARLAKE ROAD)

℄ SR 501

PROP. TYPE F CURB AND GUTTER

PROP. 6' CONC. SW

℄ SR 503

R/W LINE

WALMART

1193
193
1194
194
1195
195
1196
196
1197
197

CURVE DATA CL5011
PI STA. = 1191+90.13
Δ = 8° 33' 14" (LT)
D = 1° 50' 54"
T = 231.84
L = 462.81
R = 3,100.00
PC STA. = 1189+58.30
PT STA. = 1194+21.11

CURVE DATA CL5012
PI STA. = 1198+56.99
Δ = 88° 10' 27" (LT)
D = 12° 43' 57"
T = 435.88
L = 692.52
R = 450.00
PCC STA. = 1194+21.11
PT STA. = 1201+13.63

PI STA. 197+21.33

NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

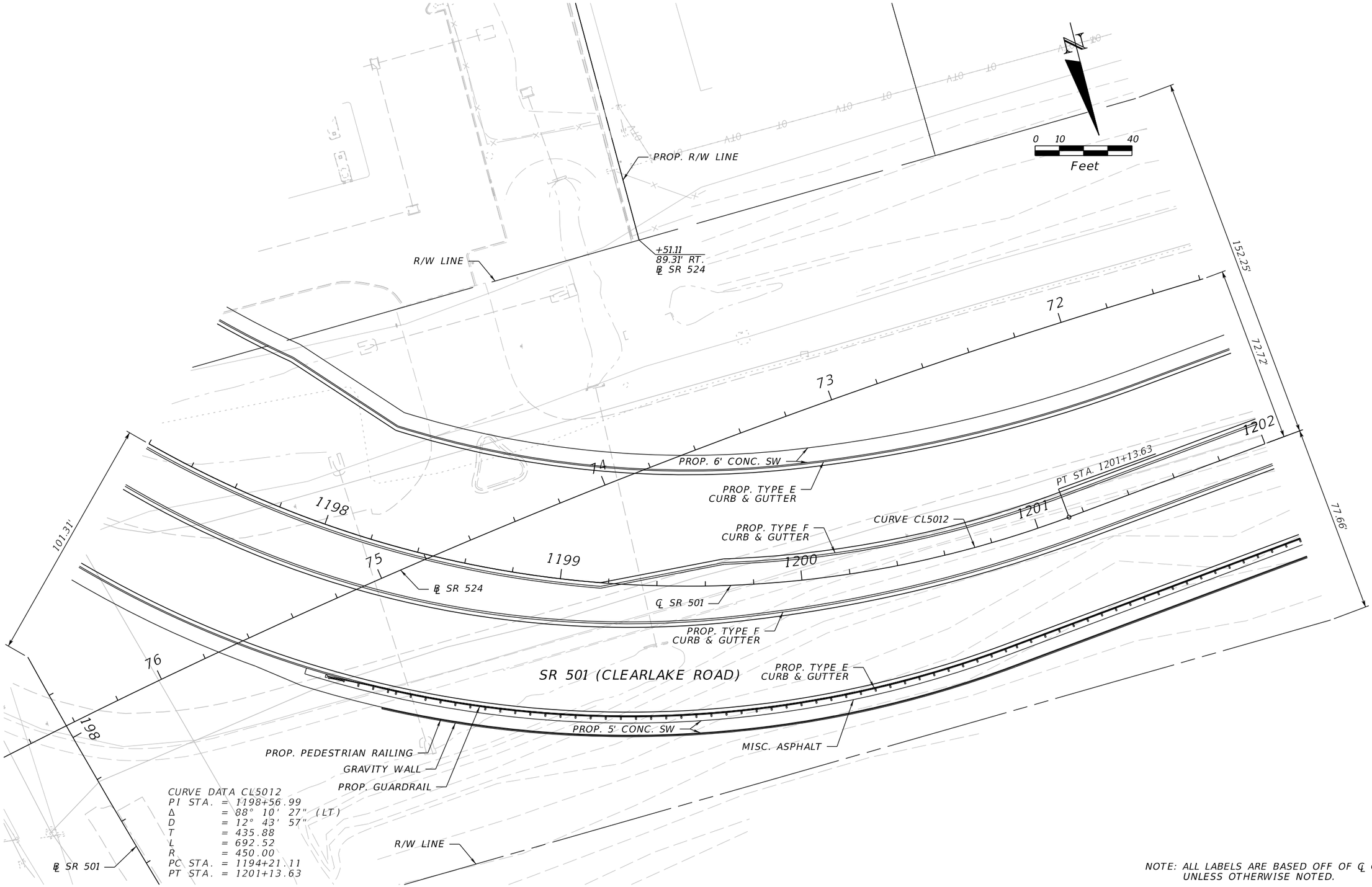
ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 12



NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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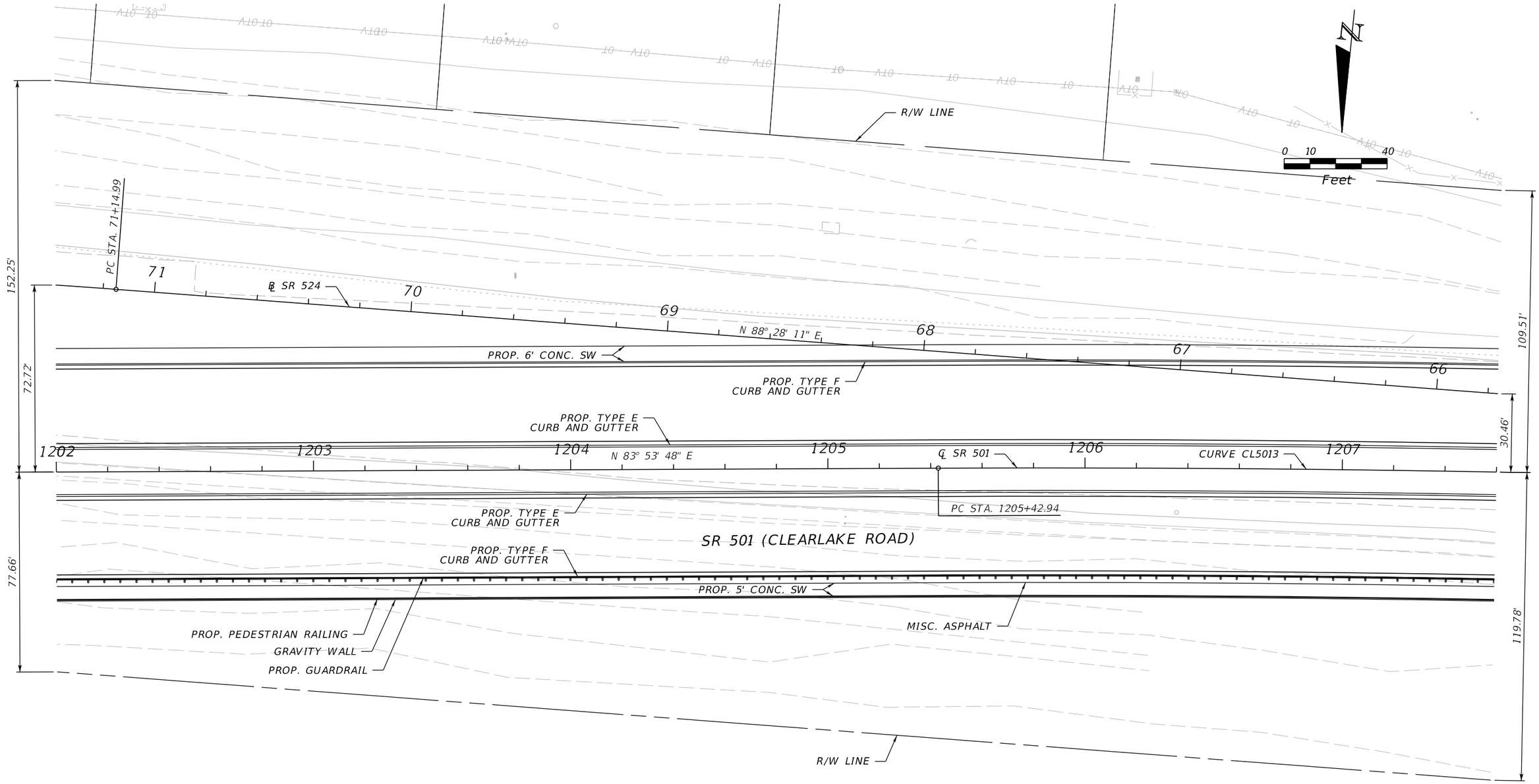
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 13



CURVE DATA CL5013
PI STA. = 1209+22.26
Δ = 4° 34' 23" (RT)
D = 0° 36' 11"
T = 379.33
L = 758.25
R = 9,500.00
PC STA. = 1205+42.94
PT STA. = 1213+01.19

NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
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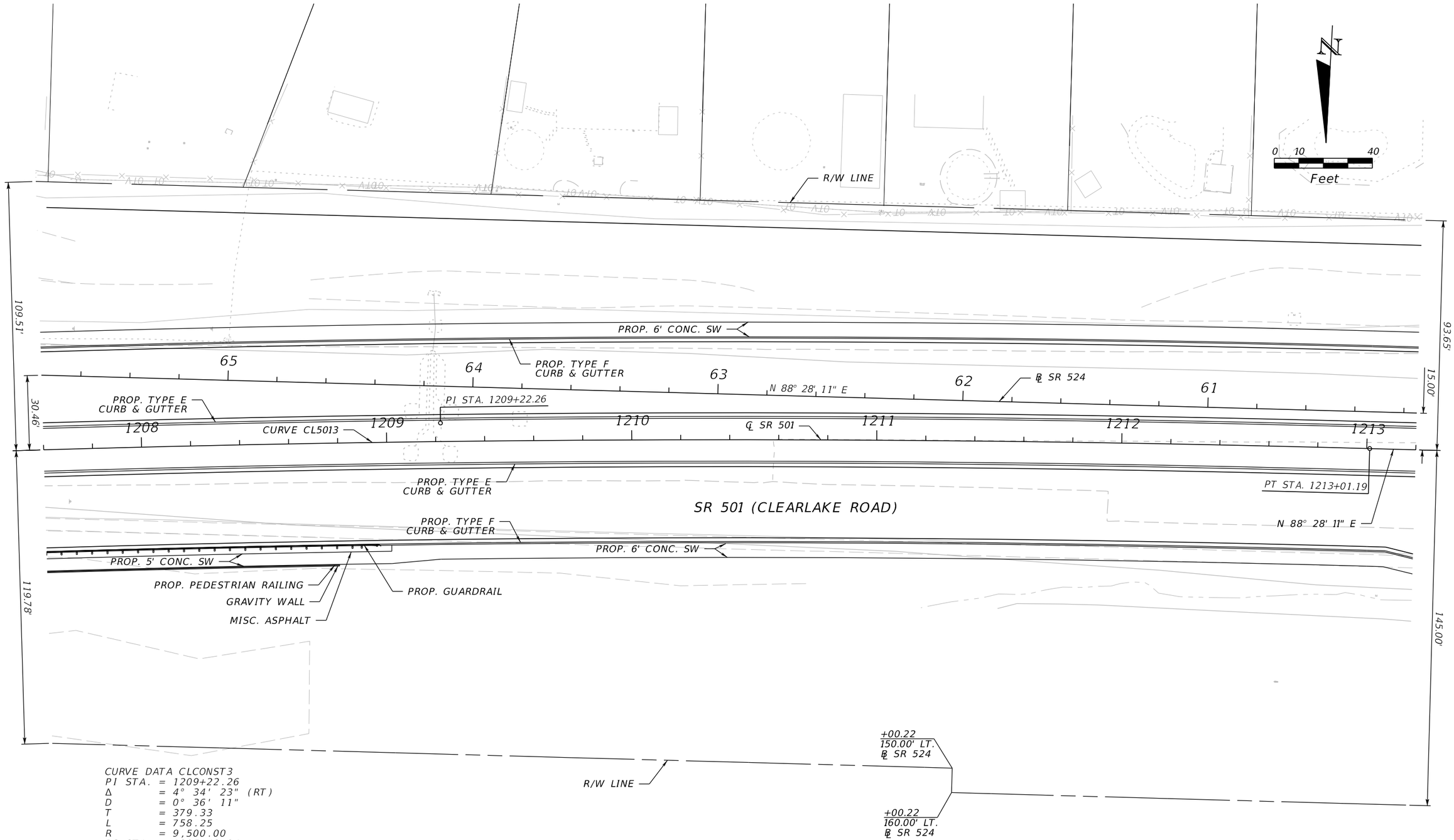
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 14



CURVE DATA CLCONST3
PI STA. = 1209+22.26
Δ = 4° 34' 23" (RT)
D = 0° 36' 11"
T = 379.33
L = 758.25
R = 9,500.00
PC STA. = 1205+42.94
PT STA. = 1213+01.19

NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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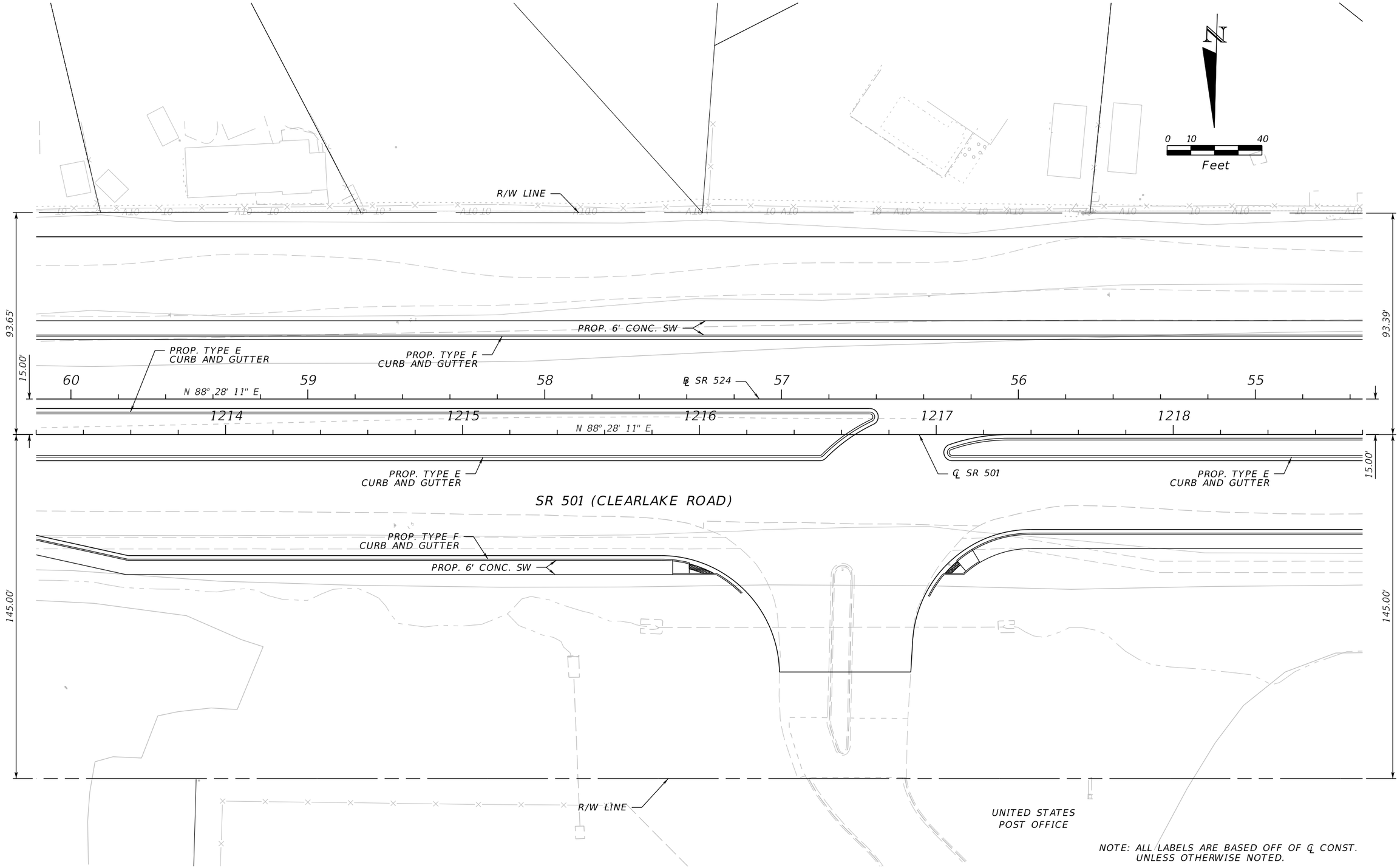
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 15



NOTE: ALL LABELS ARE BASED OFF OF ℄ CONST. UNLESS OTHERWISE NOTED.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
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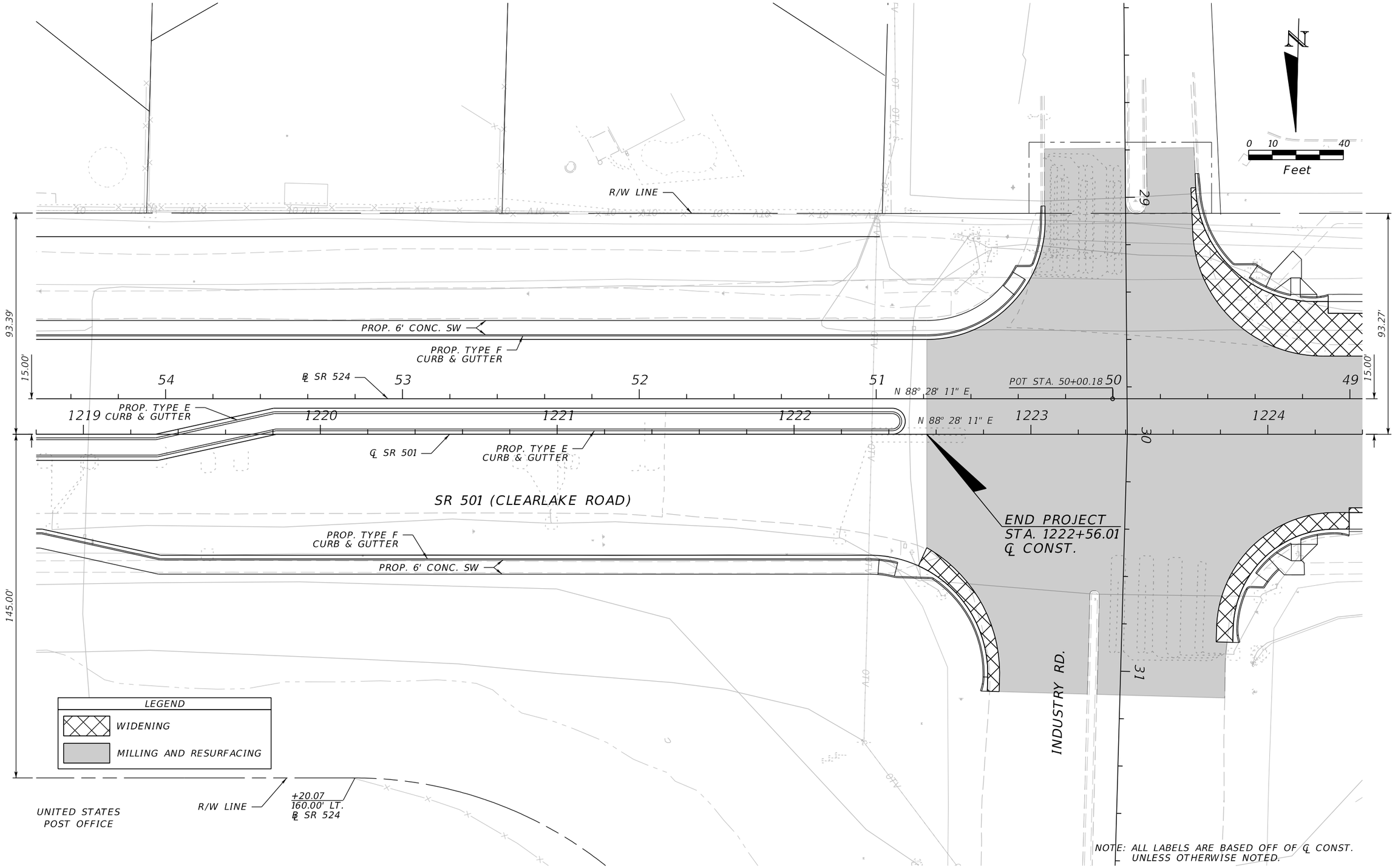
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 16



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
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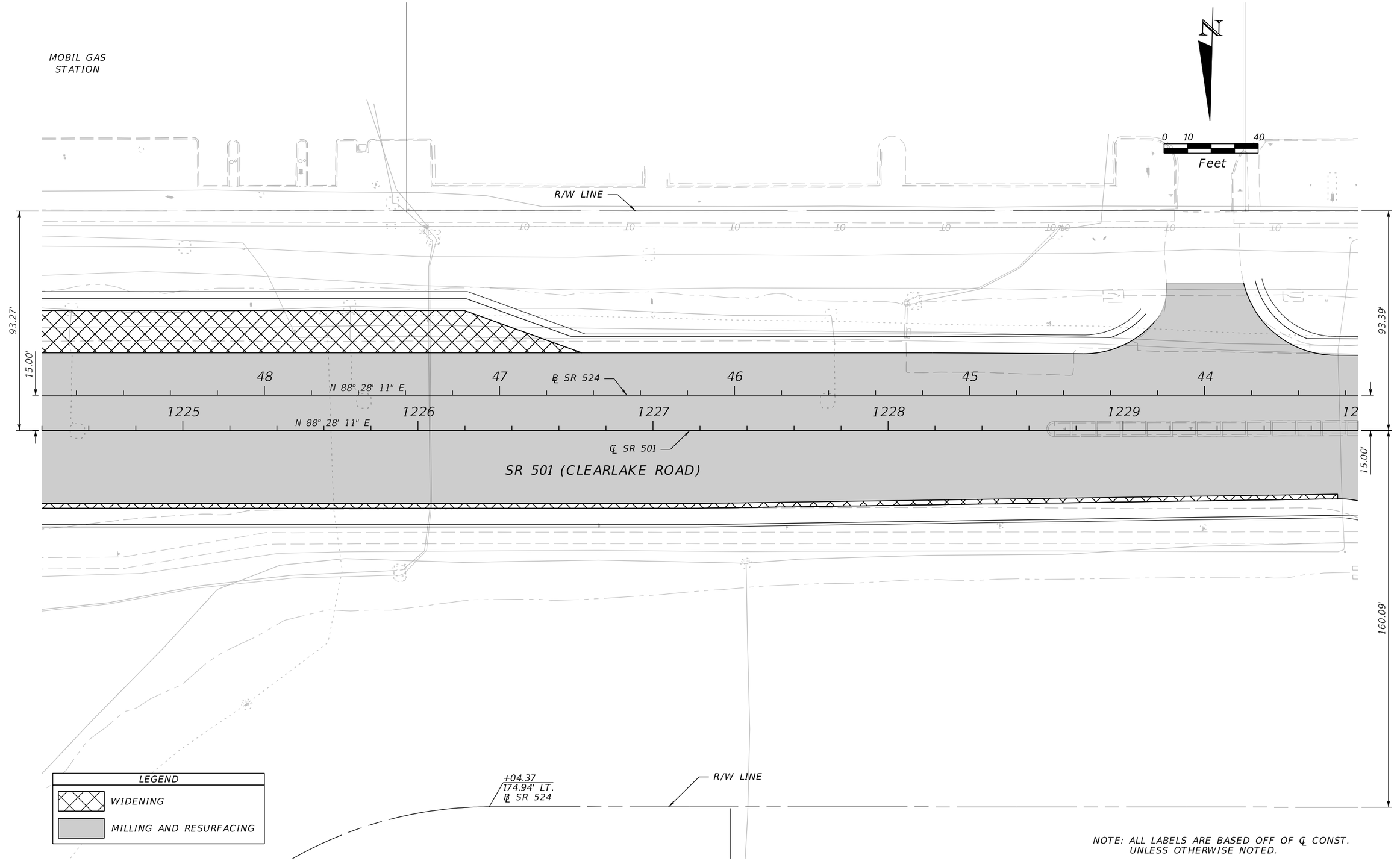
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 17

USER: Mike Wilson 12/15/2016 8:32:47 AM P:\2014\SP14D5001 (SR 501 PD&E Study)\433605152O1\roadway\PLANRD12.dgn



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 18

COCOA COMMONS

N

0 10 40
Feet

R/W LINE

93.39'

93.50'

43 42 41 ℄ SR 524 40 39 38

N 88° 28' 11" E

30 1231 1232 1233 1234

N 88° 28' 11" E

15.00'

SR 501 (CLEARLAKE ROAD)

℄ SR 501

POT STA. 1234+34.68

15.00'

160.09'

125.26'

END CONSTRUCTION
STA. 1234+22.16
℄ CONST.

+99.58
140.26' LT.
℄ SR 524

R/W LINE

+99.60
175.22' LT.
℄ SR 524

LEGEND

WIDENING

MILLING AND RESURFACING

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REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PLAN

SHEET NO. 19

48
44
40
36
32
28
24
20
16

EXIST. GROUND @ PGL RT.

EXIST. GROUND @ PGL LT.

1159+00 1160+00 1161+00 1162+00 1163+00 1164+00

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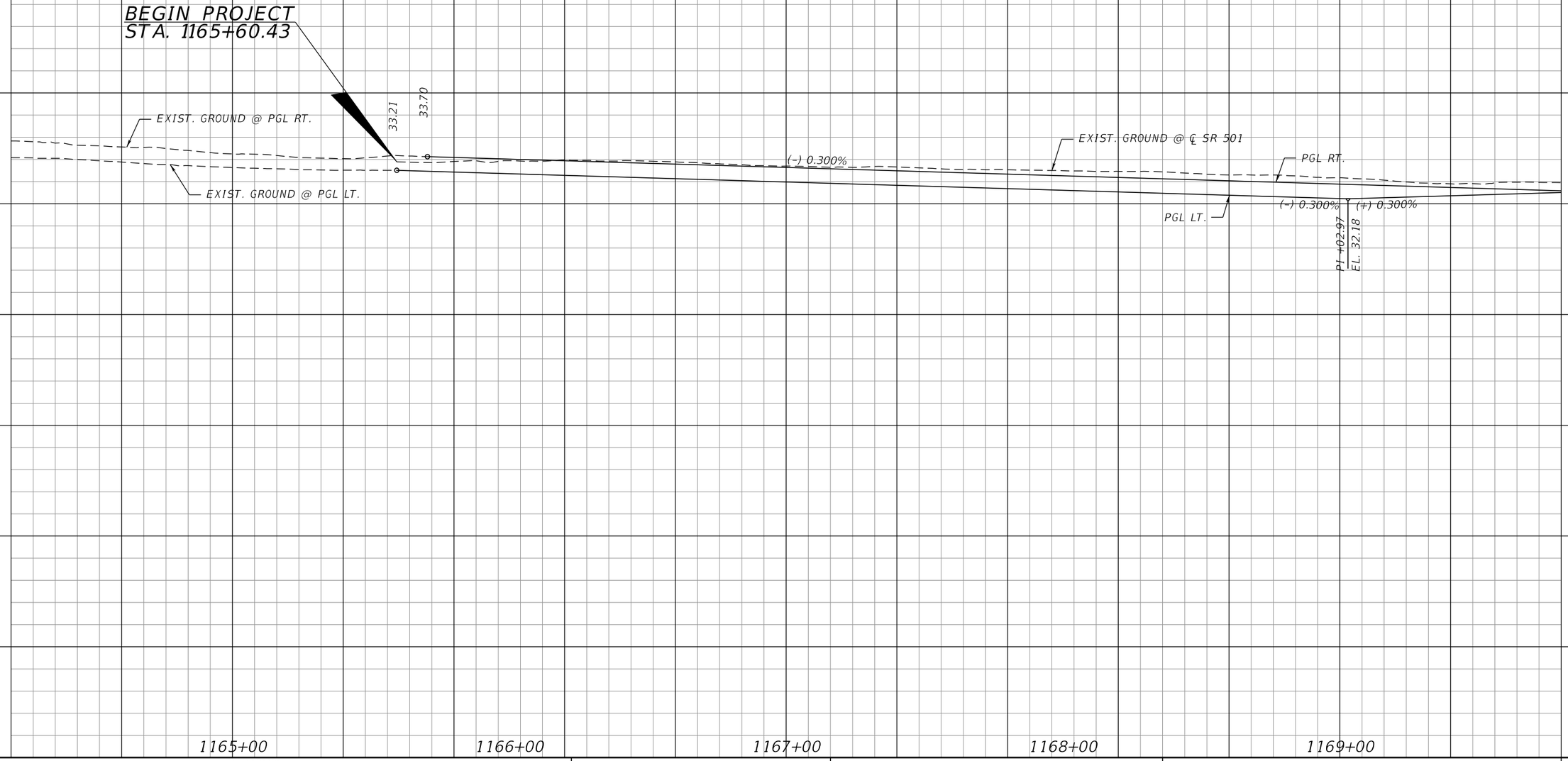
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 20



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

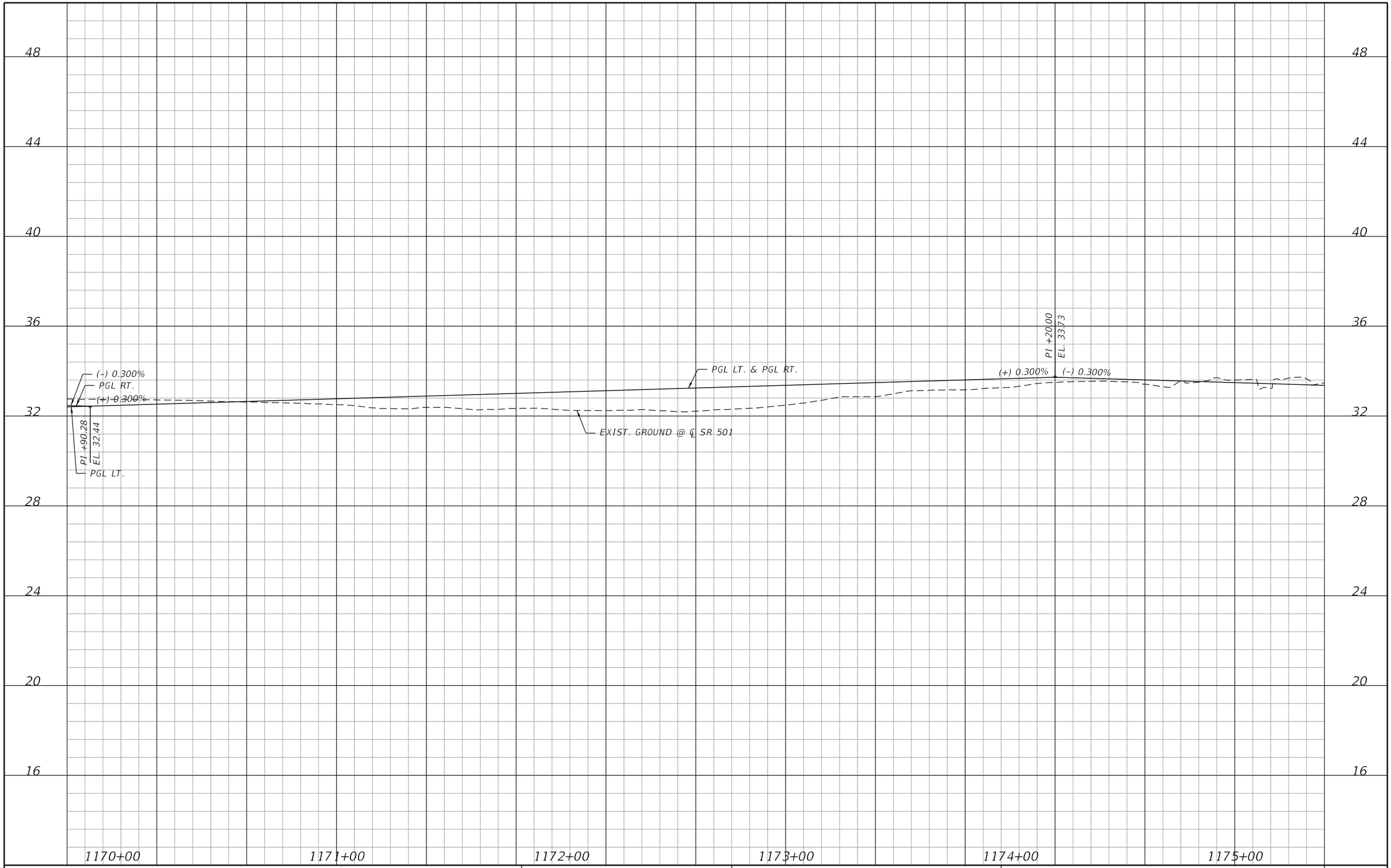
ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 21



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 22

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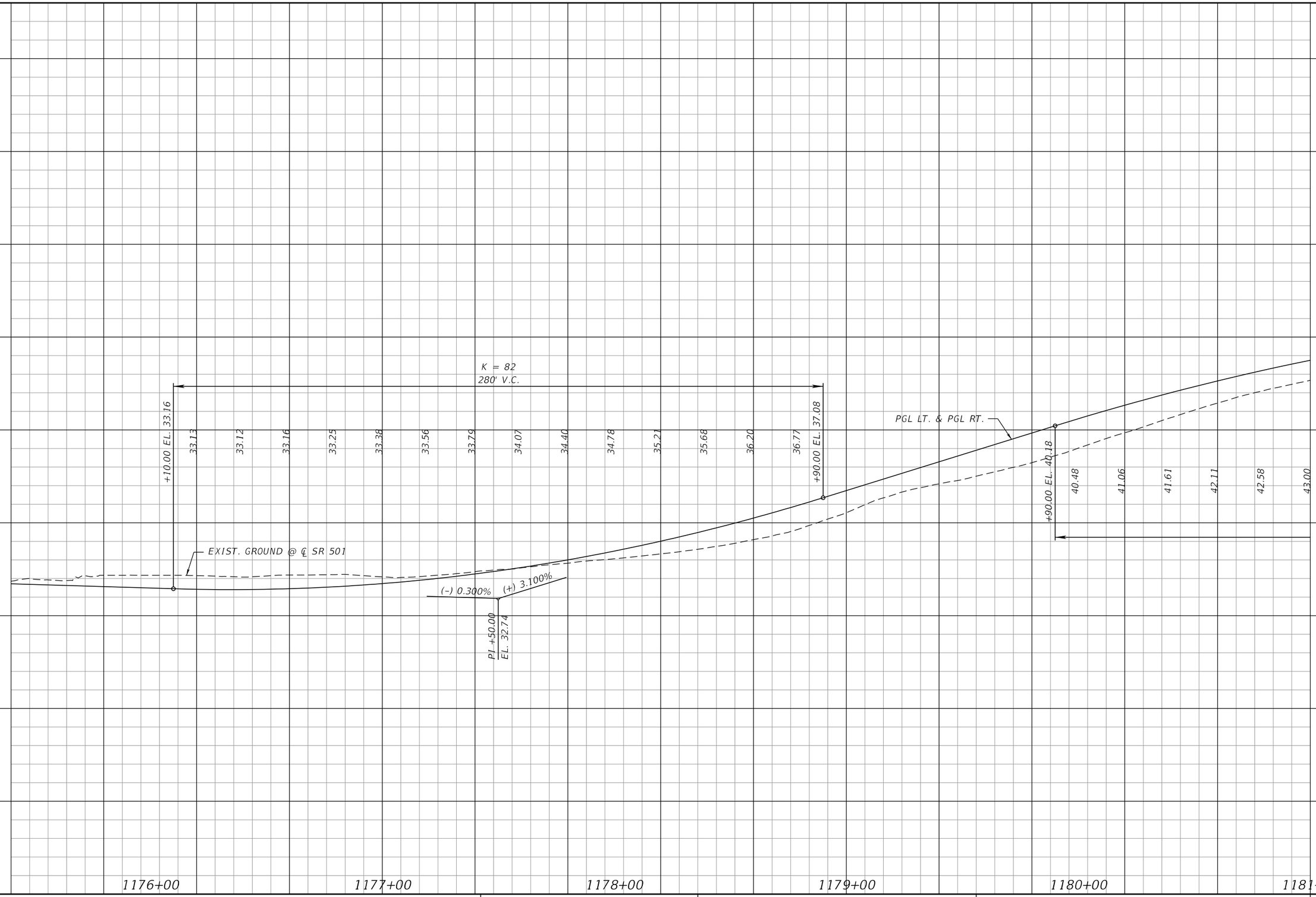
USER: Mike Wilson 12/15/2016 8:32:49 AM P:\2014\SP14D5001 (SR 501 PD&E Study)\433605152O1\roadway\PROFRD03.dgn



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

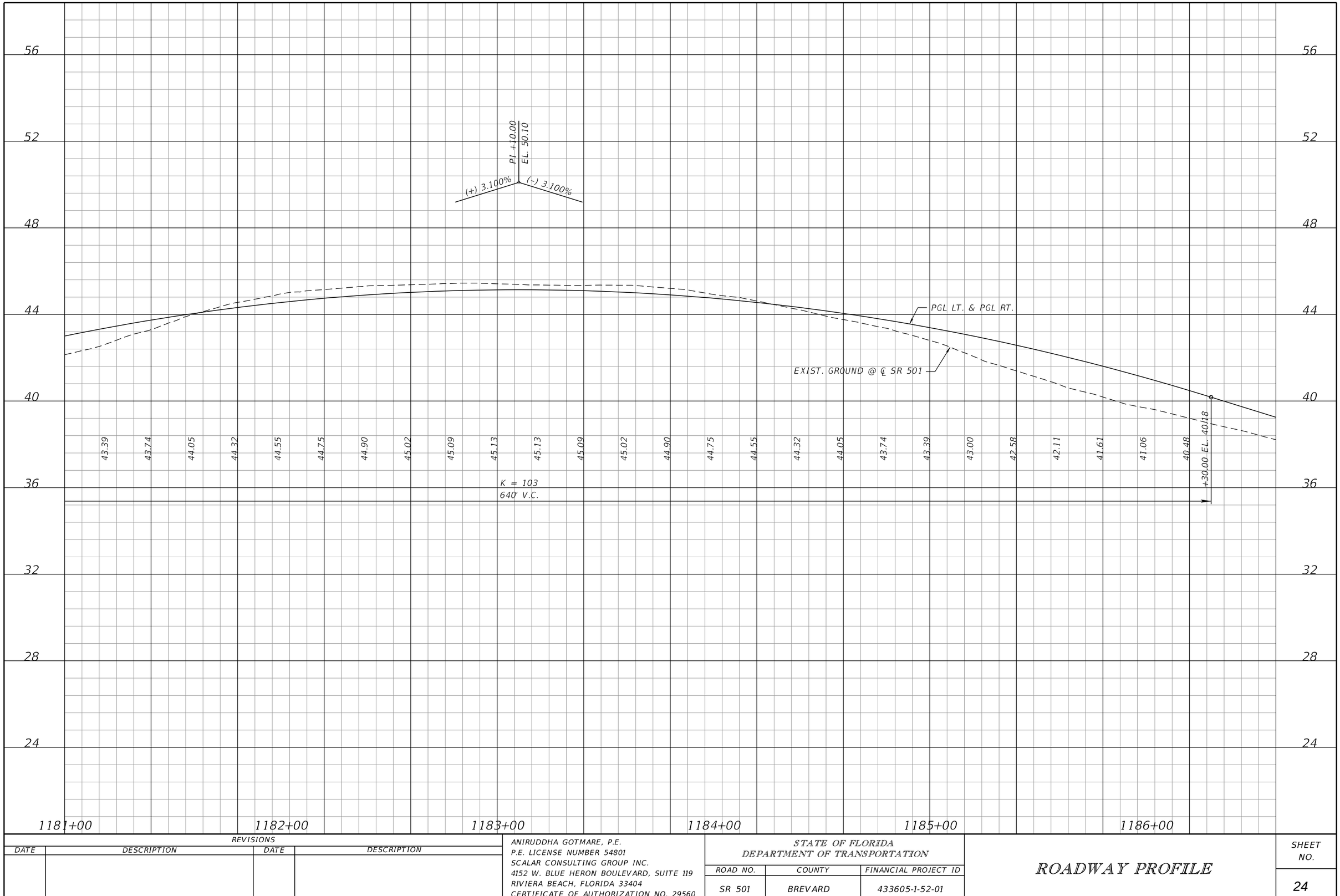
ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 23



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 24

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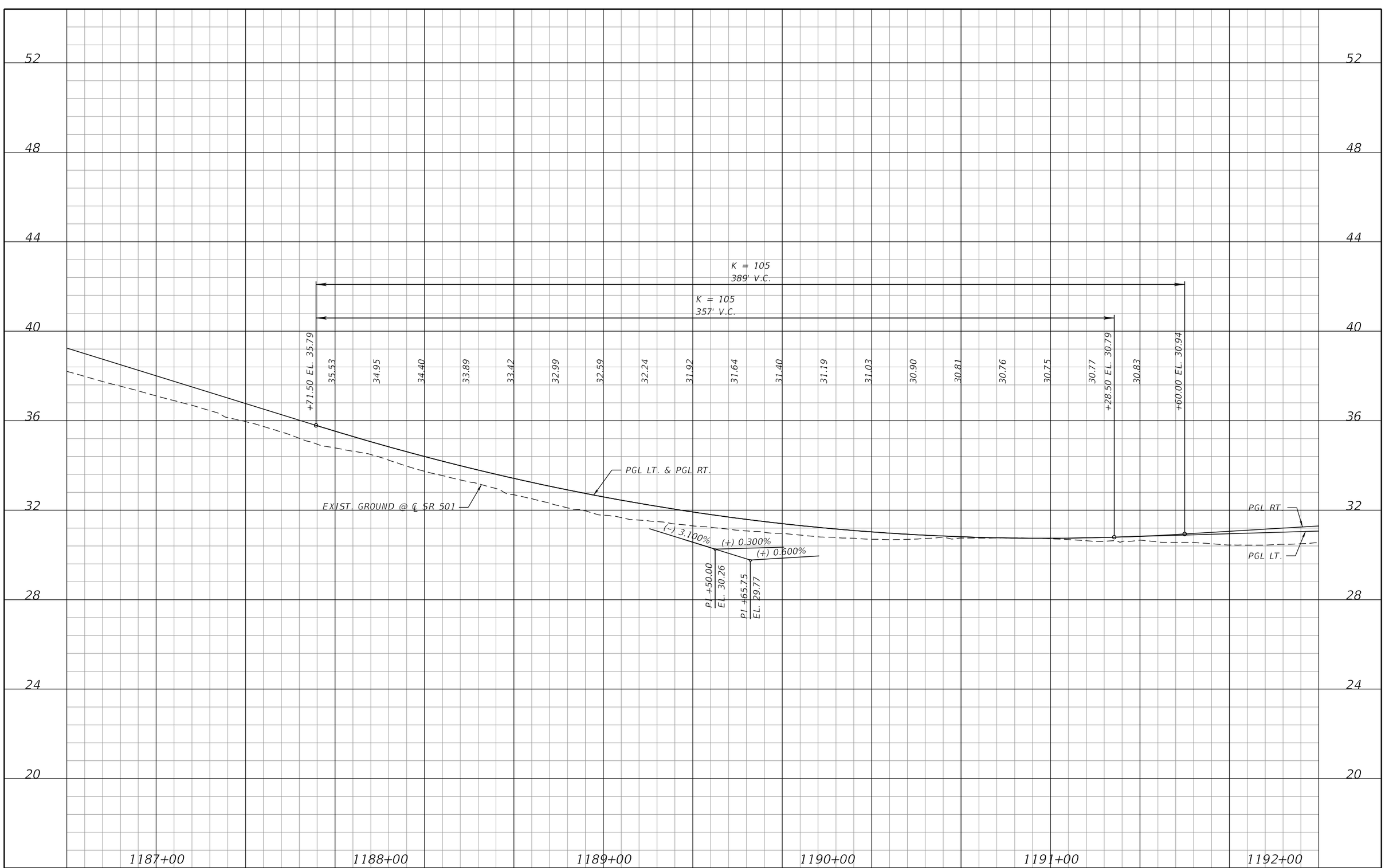

REVISIONS			
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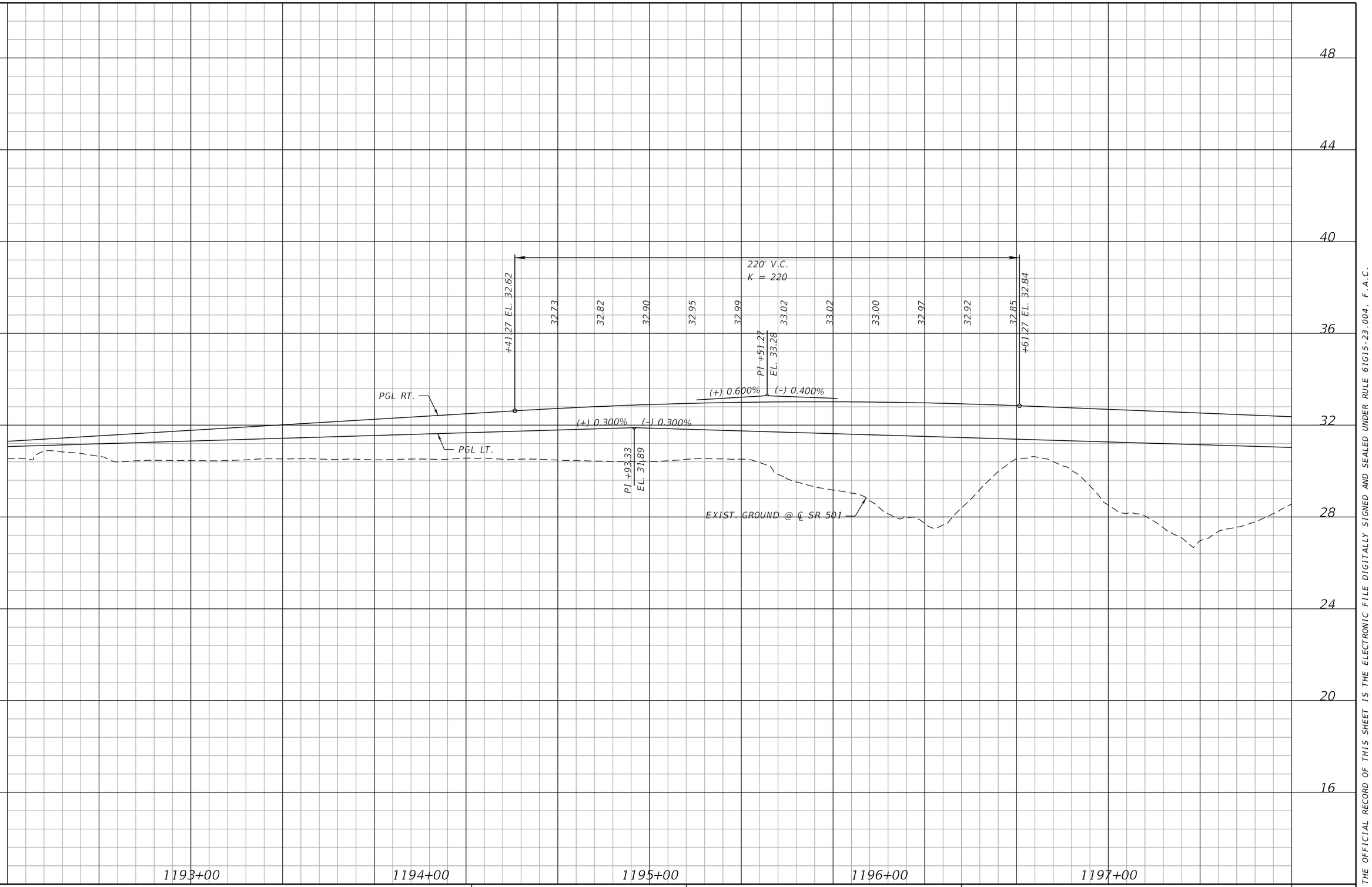
ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 29560

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 25



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
RIVIERA BEACH, FLORIDA 33404
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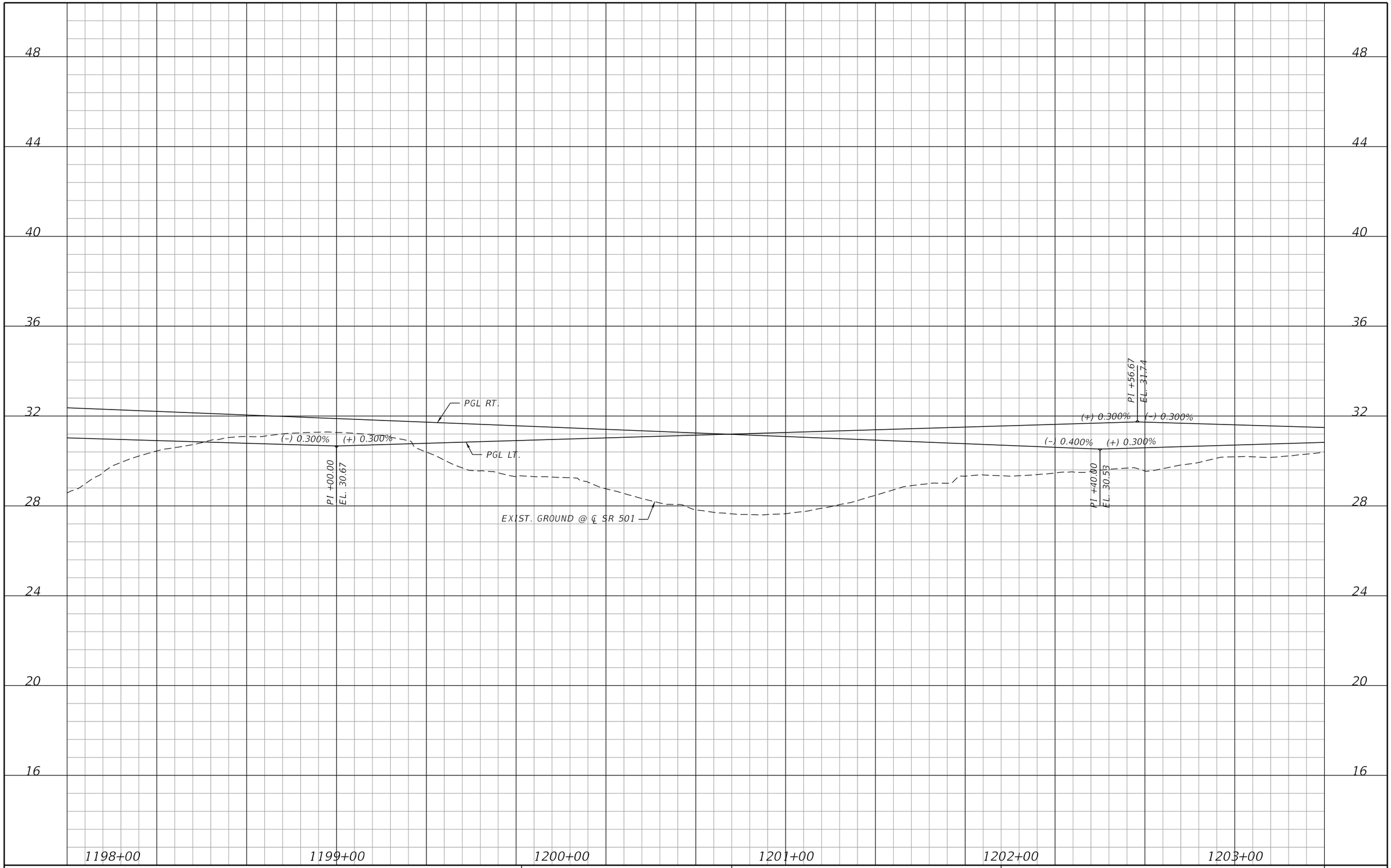
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 26



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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4152 W. BLUE HERON BOULEVARD, SUITE 119
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 27

48
44
40
36
32
28
24
20
16

EXIST. GROUND @ ℄ SR 501

PGL RT.

PGL LT.

(–) 0.300% (+) 0.300%

PI +00.00
EL. 30.71

(+) 0.300% (–) 0.300%

PI +50.00
EL. 32.36

1204+00 1205+00 1206+00 1207+00 1208+00 1209+00

REVISIONS			
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4152 W. BLUE HERON BOULEVARD, SUITE 119
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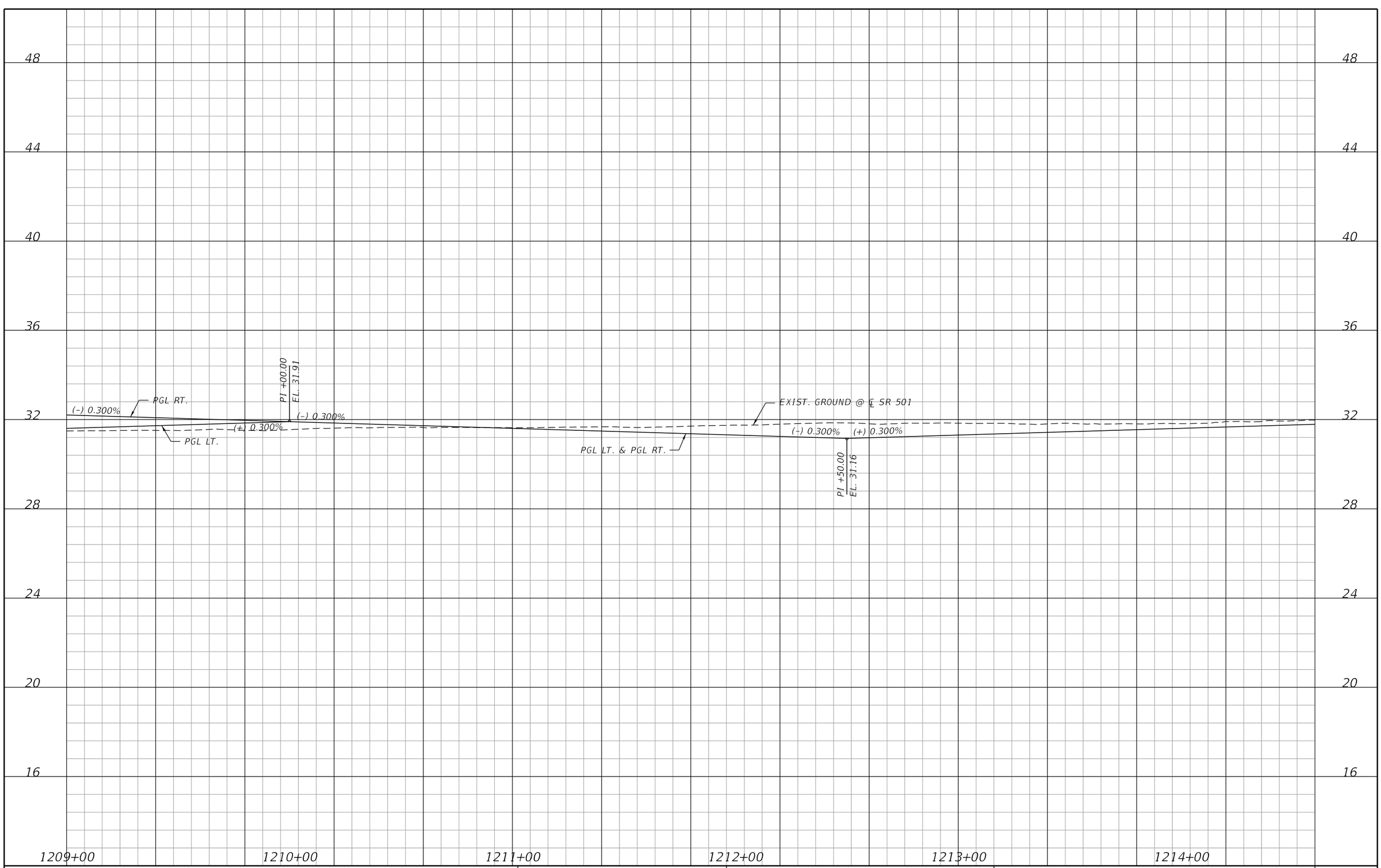
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 28



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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P.E. LICENSE NUMBER 54801
SCALAR CONSULTING GROUP INC.
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 29

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
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SCALAR CONSULTING GROUP INC.
4152 W. BLUE HERON BOULEVARD, SUITE 119
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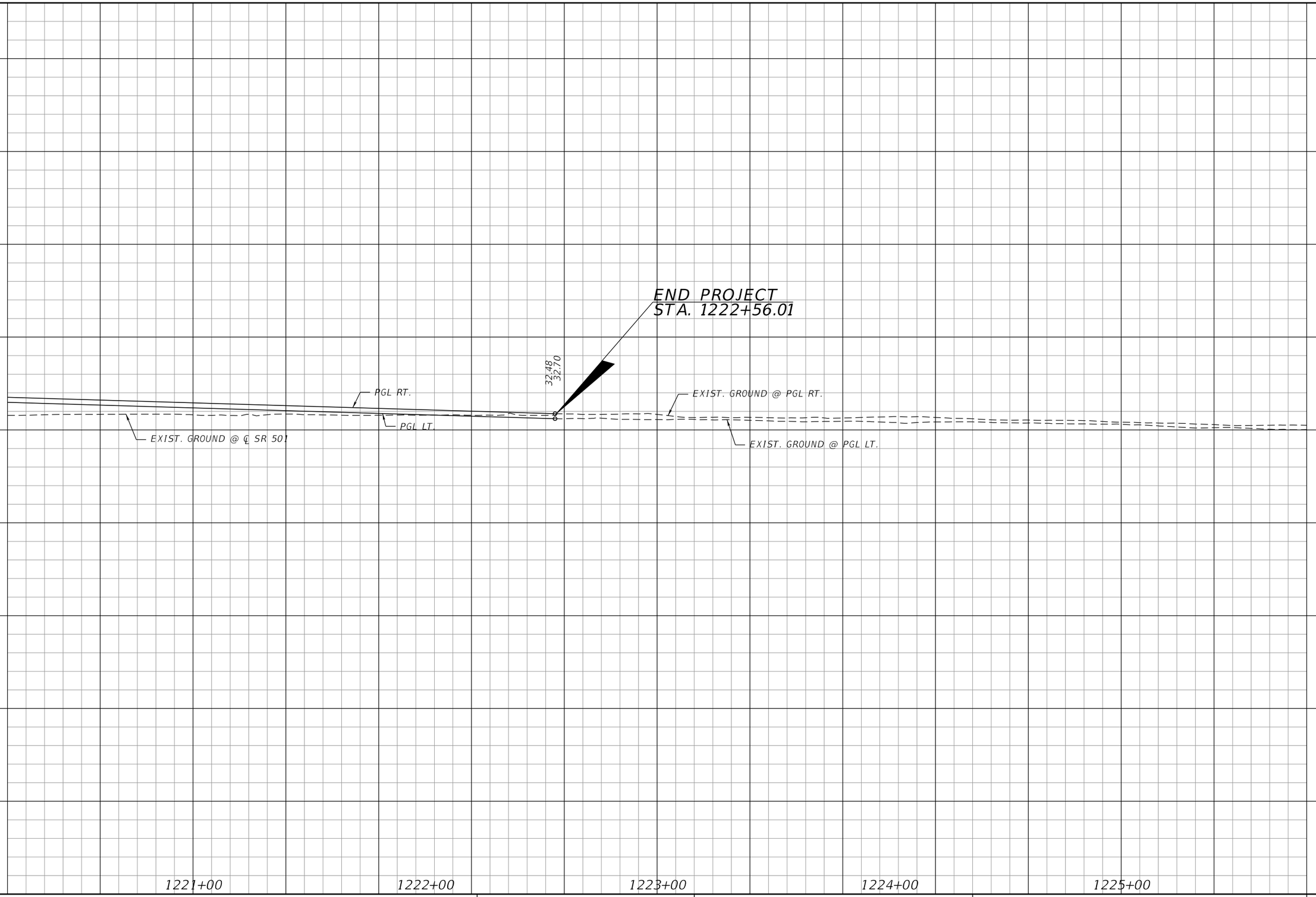
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 30



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
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4152 W. BLUE HERON BOULEVARD, SUITE 119
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 31

48
44
40
36
32
28
24
20
16

EXIST. GROUND @ PGL RT.

EXIST. GROUND @ PGL LT.

1226+00 1227+00 1228+00 1229+00 1230+00 1231+00

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 32

USER: Mike Wilson 12/15/2016 8:32:52 AM P:\2014\SP14D5001 (SR 501 PD&E Study)\433605152O1\roadway\PROFRD13.dgn

48
44
40
36
32
28
24
20
16

EXIST. GROUND @ PGL RT.

EXIST. GROUND @ PGL LT.

1232+00

1233+00

1234+00

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ANIRUDDHA GOTMARE, P.E.
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 501	BREVARD	433605-1-52-01

ROADWAY PROFILE

SHEET NO. 33