STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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DRAFT NOISE STUDY REPORT

Florida Department of Transportation

District One

North Sarasota Multimodal Connector PD&E Study

Sarasota, Florida

Financial Management Number: 442034-1

ETDM Number: 14348

Date: July 2022

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by FHWA and FDOT.

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1.0 Introduction

1.1 Project Description

Sarasota County, in coordination with the Florida Department of Transportation (FDOT), is conducting a Project Development and Environment (PD&E) study to evaluate the proposed North Sarasota Multimodal Connector, a new east-west four-lane roadway and overpass crossing SR 93 (I-75) between the Fruitville Road interchange and the University Parkway interchange in Sarasota County. The new east-west overpass will require improvements along N. Cattlemen Road to accommodate a new intersection. Improvements along N. Cattlemen Road will maintain the existing four-lane divided typical section.

The project is in the Lakewood Ranch area of north Sarasota County. Lakewood Ranch is a 30,000-acre mixed-used master planned development in Sarasota County. The project is within Sections 12 and 13 of Township 36 South Range 18 East and Section 7 of Township 36 South Range 19 East. The project limits cover approximately 0.6 miles. The proposed overpass crosses Interstate-75 (I-75). The project study area and project limits are shown in **Figure 1-1**.

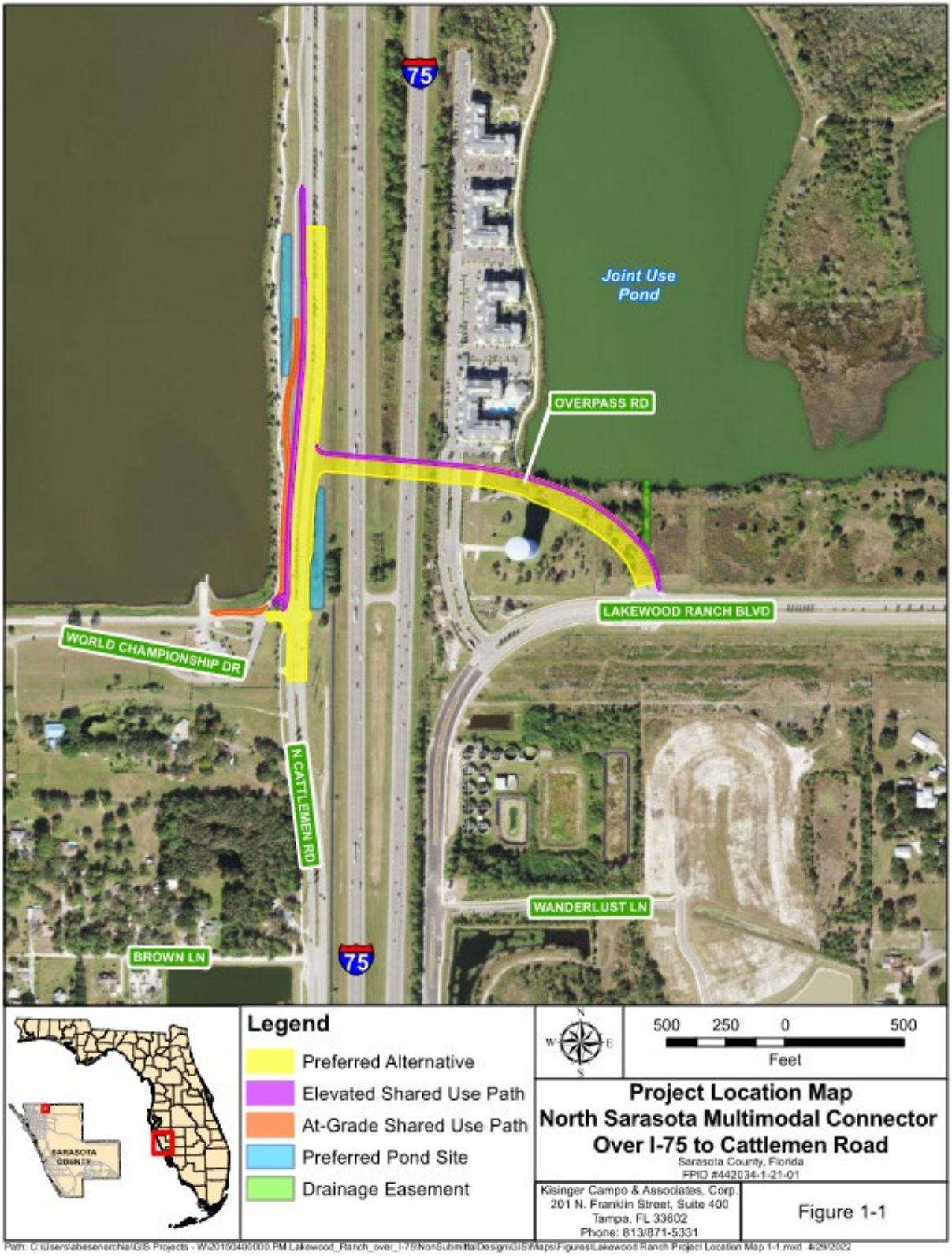
The project was evaluated through FDOT's Efficient Transportation Decision Making (ETDM) process as project #14348. An ETDM *Programming Screen Summary Report* containing comments from the Environmental Technical Advisory Team (ETAT) was published on November 9, 2018. The ETAT evaluated the project's effects on various natural, physical, and social resources. Other components of the PD&E study include a Preliminary Engineering Report (PER), concept plans, environmental studies, a public involvement program and other information for use in the development of this project.

Upon completion, the study will meet all requirements of the National Environmental Policy Act of 1969 (NEPA) as administered by the Federal Highway Administration (FHWA) and the requirements of other federal and state laws so as to qualify the proposed project for federal-aid funding.

1.2 Purpose and Need

The purpose of the project is to enhance access to destinations east and west of I-75 and to provide relief of traffic congestion on both Fruitville Road and University Parkway partly attributed to increased traffic demand from existing and planned development in the Lakewood Ranch area. The need for the project is supported by the following criteria.

Figure 1-1: Preferred Alternative Proposed Alignment



1.2.1 Improve Transportation Network Connectivity

Currently there is no efficient access to employment centers and commercial activity in the Lakewood Ranch area and other destinations east and west of I-75 within the vicinity of the project area. Under existing conditions, travelers have access to Lakewood Ranch area and other destinations east and west of I-75 via Fruitville Road and University parkway which are congested, and travelers experience long delays. Traffic analysis documented in the Traffic Technical Memorandum: *I-75 Overpass Transportation Impact Assessment (prepared in Feb. 2016; revised in Sept. 2016)* suggests that creating a link that connects destinations east and west of I-75 and Lakewood Ranch area would relieve existing and future congestions on Fruitville Road and University Parkway and hence improve accessibility for travelers.

1.2.2 Improve Operational Conditions

Existing and planned developments in the Lakewood Ranch area has increased the travel demand to use Fruitville Road and University Parkway and their interchanges with I-75. According to the traffic analysis summarized in the *Traffic Technical Memorandum: I-75 Overpass Transportation Impact Assessment (prepared in Feb. 2016; revised in Sept. 2016)*, the roadway segments west of the Fruitville Road and University Parkway interchanges with I-75 are currently operating at an unacceptable level of service (LOS) E and are projected to continue to deteriorate in the future.

1.2.3 Improve Safety Conditions

According to crash data obtained from Sarasota County, 278 total crashes, including one fatality, occurred along Fruitville Road from Cattlemen Road to Lakewood Ranch Boulevard between 2016 and 2020. Rear-end and sideswipe crashes were the most frequent crash types along Fruitville Road at 62.59% and 16.55%, respectively. The Actual Crash Rate "ACR" was calculated based on the AADT values of the years 2016 to 2020 and was found to be 3.602 crashes per million vehicles miles driven higher than the 3.144 statewide average for an urban six lane two-way divided roadway. Almost all the crashes (81.7%) occurred at the intersection of Cattlemen Road with traffic congestion being the leading factor. With a large majority of rear-end crashes, it is concluded traffic congestion and the signal timing at Cattlemen Road are the main issue along Fruitville Road.

1.3 Existing Facility

The North Sarasota Multimodal Connector is a new roadway. Within the study area, I-75 consists of eight lanes with a posted speed of 70 miles per hour (mph). The nearest existing east-west roadways crossing I-75 are Fruitville Road (to the south) and University Parkway (to the north). These existing parallel roadways are separated by approximately 3.5 miles and are the only existing roadways accommodating east-west travel across the I-75 limited access right-of-way within the project area.

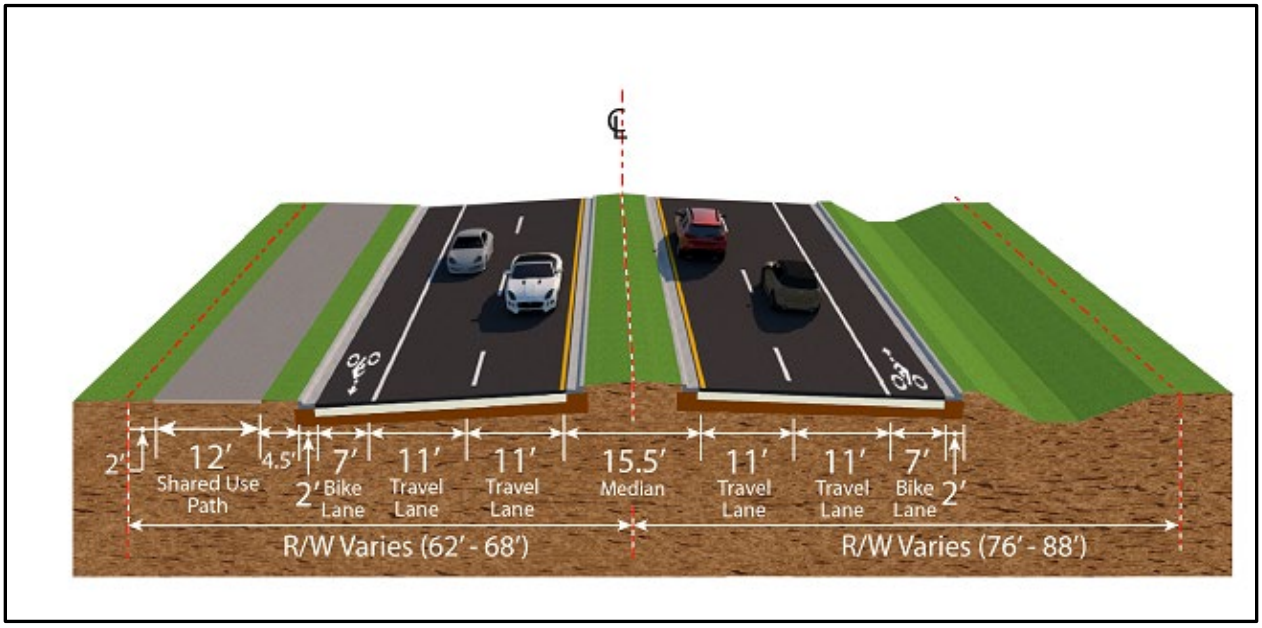
1.4 Proposed Action

The proposed action is to construct a new four-lane roadway and overpass with two eastbound and two westbound lanes over I-75 (Overpass Road) connecting Lakewood Ranch Boulevard to Cattlemen Road.

1.4.1 Four-lane Typical Section

The Overpass Road section is comprised of four 11-foot travel lanes, two in each direction, two seven-foot bicycle lanes, one in each direction, and a 12-foot shared use path on the north side of the roadway. The proposed roadway is divided by a 15.5-foot grassed median (**Figure 1-2**). The design speed is 40 mph. The total right-of-way width required to accommodate the proposed overpass along this segment varies from 138 feet to 156 feet.

Figure 1-2: Four-lane At-Grade Typical Section



1.4.2 Four-lane Elevated Typical Section

The North Sarasota Multimodal Connector includes two separate typical sections for the segments of the roadway near the proposed overpass where the vertical alignment separates from natural ground.

The first elevated typical section is for the section along the Overpass Road and includes four 11-foot travel lanes, two in each direction, two seven-foot bicycle lanes, one in each direction, and a 12-foot shared use path on the north side of the roadway. The proposed roadway will be divided by a grassed median varying from seven feet to 15.5 feet in width to transition the roadway to match the proposed bridge typical section (**Figure 1-3**). The design speed is 40 mph. The total

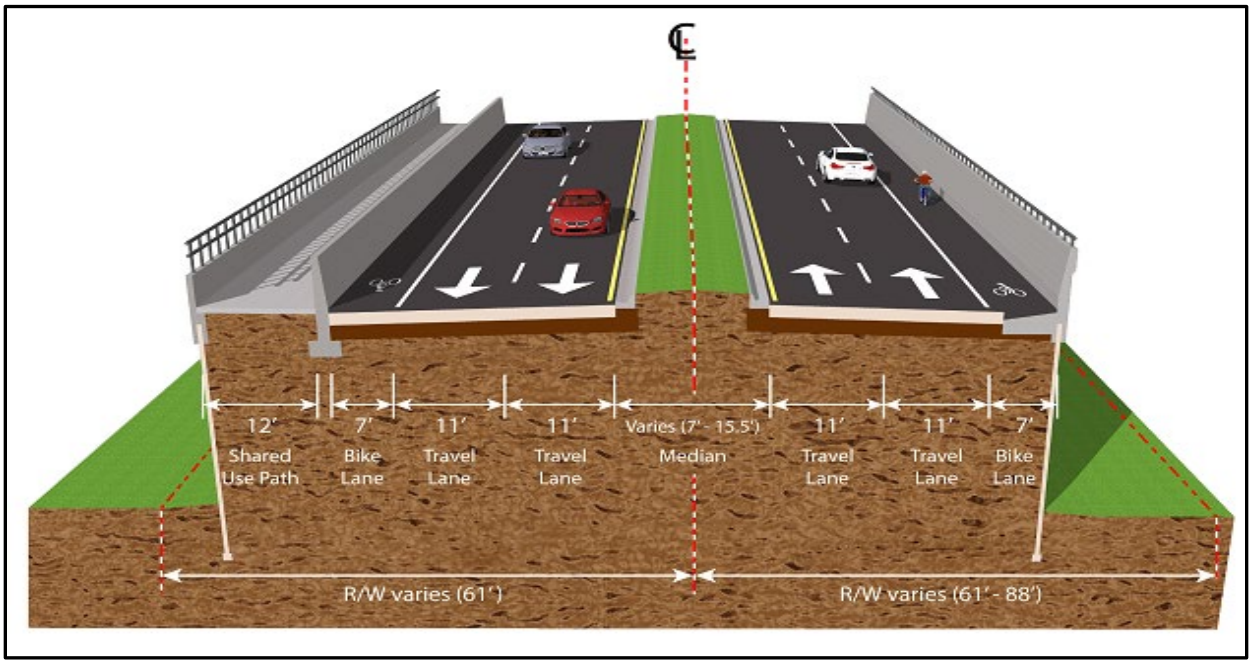
right-of-way width required to accommodate the proposed overpass along this segment varies from 122 feet to 149 feet.

The second elevated typical section is along N. Cattlemen Road and includes four 12-foot travel lanes, two in each direction, two five-foot bicycle lanes, one on each direction, and a 15-foot shared use path is provided on the west side of the roadway and is separated from the adjacent bicycle lane by a concrete barrier. The proposed roadway is divided by a 19-foot grassed median (**Figure 1-4**). The design speed is 40 mph.

MSE (Mechanically Stabilized Earth) walls and concrete barrier are proposed where roadway side slope**s** cannot tie to natural ground within the proposed right-of-way (**Figure 1-3** and **Figure 1-4**).

The proposed 15-foot shared-use path on Cattlemen Road and the 12-foot shared-use path on the Overpass Road will be located along the proposed elevated overpass roadway and will provide a connection between the Nathan Benderson Park and the Lakewood Ranch Development. The existing alignment of the unpaved path and paved Bill Robinson Trail traversing the perimeter of the lake will be modified, as needed, to maintain the 15-foot paved trail.

Figure 1-3: Four-lane Elevated Typical Section along Overpass Road



1.4.3 Four-lane Bridge Typical Section

The proposed bridge over I-75 includes four 11-foot travel lanes, two in each direction, and two seven-foot bicycle lanes, one in each direction. A concrete bridge rail and 2.5-foot inside shoulders separate the opposing travel lanes. A 12-foot shared use path is provided on the north side of the bridge and is separated from the adjacent bicycle lane by a concrete bridge rail. The total bridge width is approximately 83'-1.5" (**Figure 1-5**).

Figure 1-4: Four-lane Elevated Typical Section along N. Cattlemen Road

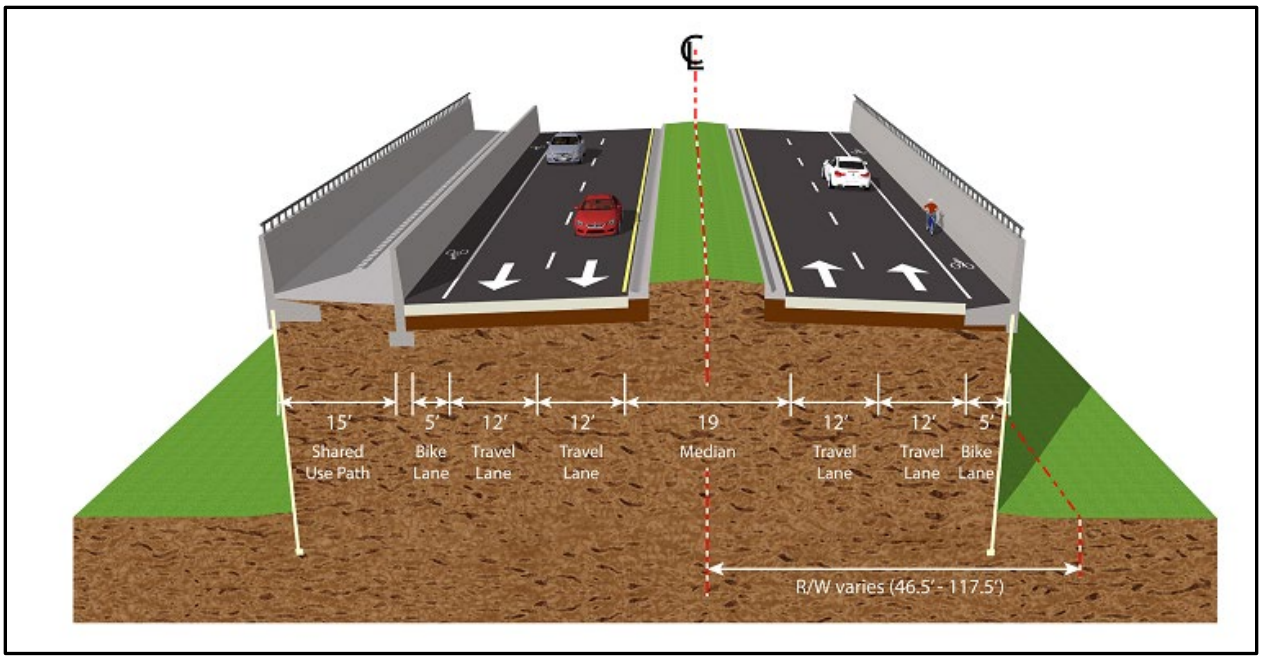
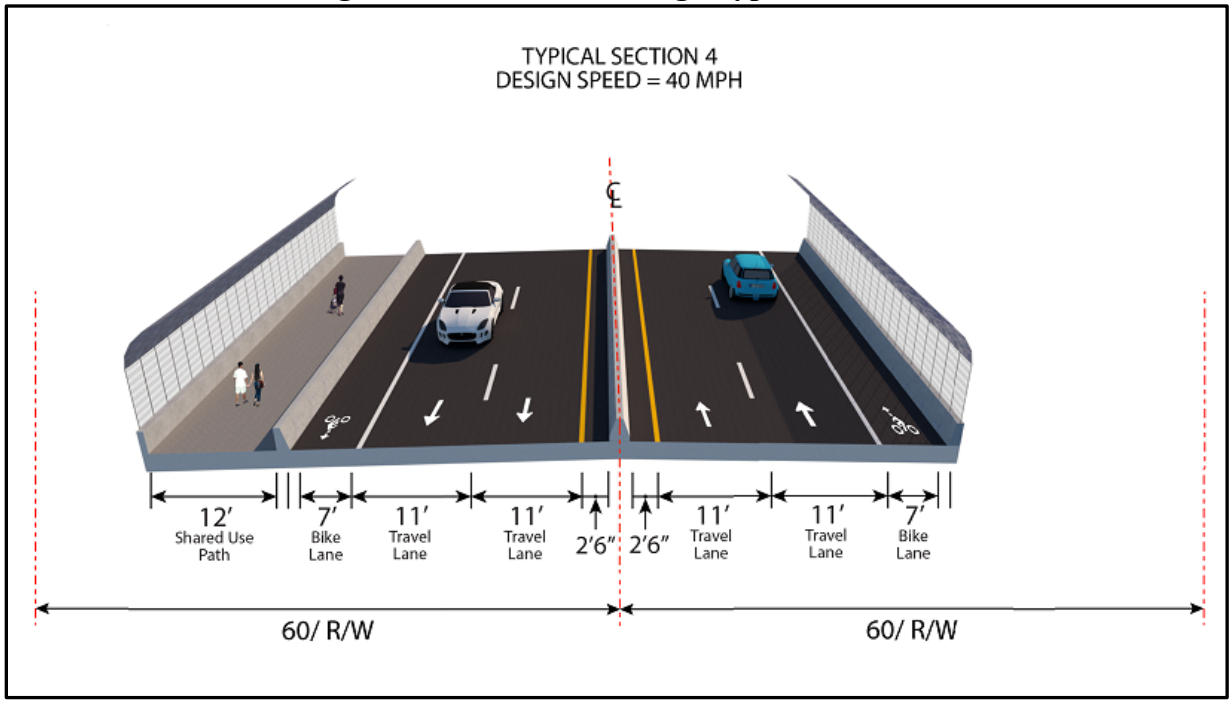


Figure 1-5: Four-lane Bridge Typical Section



1.5 Proposed Improvements

1.5.1 No-Build Alternative

Throughout this study, a "No-Build" (no-action) alternative is also considered. The "No-Build" alternative assumes that the North Sarasota Multimodal Connector over I-75 is not built, but accounts for routine maintenance on existing adjacent roads.

The No-Build Alternative minimizes right-of-way and construction costs along with environmental impacts. However, it does not accomplish the purpose and need for this project.

1.5.2 Build Alternative

Three build alternatives, Build Alternative 1 (South), Build Alternative 2 (Center), and Build Alternative 3 (North) were evaluated. These alternatives applied the typical sections described in **Section 1.4** along three independent alignments connecting N. Cattlemen Road west of I-75 to Professional Parkway or Lakewood Ranch Boulevard east of I-75. With considerations for residential relocations and environmental impacts, Build Alternative 2 was selected as the Preferred Alternative. A detailed alternatives analysis and concept plans are included in the Preliminary Engineering Report (PER) prepared under separate cover.

1.6 Proposed Pond Sites

There are 3 preferred stormwater management facilities (SMF) associated with the Preferred Alternative described above. Two SMF's are located on the west side of the overpass along N. Cattlemen Road. Stormwater will also be treated in the existing joint-use facility directly northeast of the overpass. There will be an easement from the roadway to this joint-use facility. All drainage improvements are within the project study area.

1.7 Purpose of Report

This Noise Study Report (NSR) describes the methodologies, analysis assumptions, data, and results of a highway traffic noise analysis for the Preferred Alternative of the proposed North Sarasota Multimodal Connector.

2.0 Methodology

The methodologies used to prepare the highway traffic noise analysis are documented in Part 2, Chapter 18 of the PD&E Manual. This is FDOT's traffic noise policy. The FDOT's *Traffic Noise Modeling and Analysis Practitioners Handbook* and *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations* were also used in preparing the noise analysis.

This NSR section describes the sound level metrics and motor vehicle traffic data that were used to prepare the analysis and the criteria used to determine if a future design year (year 2045) traffic noise level with the new roadway would be considered an impact. Potential noise abatement measures are also described.

2.1 Noise Metrics

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

2.2 Traffic Data

Highway traffic noise levels are low when traffic volumes are low and operating conditions are good (level of service (LOS) A or B). Highway traffic noise levels are also low when traffic is so congested that movement is slow (LOS D, E, or F). Generally, the maximum hourly noise level occurs between these two conditions (i.e., LOS C). For these reasons, when demand volumes are forecast to be less than LOS C conditions, LOS A or B conditions are modeled (because the demand volume is not forecast to reach the LOS C level). Conversely, when demand volumes are forecast to be greater than LOS C conditions, LOS C conditions are modeled because use of the LOS C data provides conservative results.

The traffic data (i.e., vehicle volume, fleet mix, and motor vehicle speeds) that were used to perform the highway traffic noise analysis are provided in **Appendix A** of this NSR.

2.3 Noise Abatement Criteria

To evaluate highway traffic noise, the FHWA established Noise Abatement Criteria (NAC). As shown in **Table 2-1,** these criteria vary according to a land uses' activity category. For comparative purposes, typical sound levels produced by common indoor and outdoor activities are provided in **Table 2-2**.

Table 2-1. FHWA and FDOT Noise Abatement Criteria

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

Sources: Table 1 of 23 CFR Part 772 and Figure 18.1 of Chapter 18 of the FDOT's PD&E Manual (dated 7-1-20).
[1] The Leq(h) activity criteria values are for impact determination only and are not design standards for noise abatement measures.
[2] Includes undeveloped lands permitted for this activity category.
Note: FDOT defines that a substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 decibels or more as a result of the transportation improvement project. When this occurs, the requirement for abatement consideration will be followed.

Table 2-2. Typical Sound Levels

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

Source: California Dept. of Transportation Technical Noise Supplement, Nov. 2009, Page 2-21.

Following Part 23, Section 772 of the Code of Federal Regulations (23 CFR 772), highway traffic noise is predicted to impact a land use for which there is a NAC when design year traffic noise levels with a roadway improvement approach, meet, or exceed the NAC or when design year levels with an improvement increase substantially when compared to existing levels. FDOT's Noise Policy considers a NAC to be "approached" when a traffic noise level is predicted to be within 1 dB(A) of the NAC and a substantial increase is predicted when future highway traffic noise levels with a roadway improvement increase 15 dB(A) or more when compared to existing levels.

2.4 Receptors and Analysis Considerations

A computer model is used to predict existing as well as future design year traffic noise levels with and without the proposed roadway improvements. Following the requirements of the FDOT's Noise Policy, the FHWA's Traffic Noise Model (TNM, Version 2.5) was used to predict traffic noise for the North Sarasota Multimodal Connector.

Receptors, part of the TNM input that is prepared by a highway traffic noise analyst, are modeled discrete representative locations of a land use for which there is a NAC. Within the study area for the North Sarasota Multimodal Connector, there are two land uses for which there are NAC that have the potential to be impacted by traffic noise— a running/biking trail west of I-75 in Nathan Benderson Park and residences east of I-75 and north of the proposed roadway (The Adley Lakewood Ranch Waterside Apartments). The location of these land uses and the location of the evaluated receptors are depicted on the project aerials in **Appendix B** of this NSR.

For the North Sarasota Multimodal Connector, a series of receptors were modeled for the trail and one receptor was modeled for each of the residences in the apartment complex nearest the proposed overpass. The trail was evaluated as Activity Category C and the residences were evaluated as Activity Category B. As such, a traffic noise impact was predicted to occur if computer model levels with the proposed project in the design year were 66 dB(A) or greater.

2.5 Noise Abatement Measures

2.5.1 Traffic Management

Some traffic management measures can reduce motor vehicle-related noise. For example, trucks can be prohibited from certain streets and roads, or be permitted to only use certain streets and roads during daylight hours. The timing of traffic lights can also be changed to smooth out the flow of traffic and eliminate the need for frequent stops and starts. Reducing speed limits and increasing enforcement of speed limits is also an effective method of reducing motor vehicle noise.

2.5.2 Alignment Modifications

Modifying the alignment of a roadway can also be an effective traffic noise mitigation measure. When the horizontal alignment is shifted away from a noise sensitive land use, the sound level is reduced for the land uses that are farther from the roadway than before the shift. In certain circumstances, when a change is made to the vertical alignment (i.e., shifting the alignment so that it is below or above the elevation of a land use), highway traffic noise may be reduced due to shielding.

2.5.3 Buffer Zones

Providing a buffer between a roadway and future noise sensitive land uses is an abatement measure that can minimize/eliminate noise impacts in areas of future development. To encourage use of this abatement measure through local land use planning, noise contours have been developed and

are further discussed in Section 5 of this NSR. To abate traffic noise for an existing land use using this abatement measure, the property would have to be acquired.

2.5.4 Noise Barriers

Noise barriers have the potential to reduce traffic noise by interrupting the sound path between the motor vehicles on a roadway and a noise sensitive land use next to the roadway. To effectively reduce traffic noise, a barrier must be relatively long, continuous, and sufficiently tall. Use of noise barriers is the most common traffic noise abatement measure. Generally, noise barriers are most effective when placed as close to the noise source or as close to the noise receptor as possible.

2.5.5 Feasible and Reasonable Abatement Measures

For PD&E studies, an abatement measure is considered a potential noise abatement measure if the following criteria are met:

- Minimum Noise Reduction – To meet the minimum noise reduction criteria, an abatement measure must provide at least a 5 dB(A) reduction in traffic noise for two or more impacted receptors and provide a 7 dB(A) reduction, the FDOT's Noise Reduction Design Goal (NRDG), for one or more benefited receptors. Failure of a measure to provide at least a 5 dB(A) reduction for two or more impacted receptors results in a measure being deemed not feasible. Failure to achieve the NRDG results in a measure being deemed not reasonable.
- Cost Effectiveness Criteria –Based on FDOT's Noise Policy, to be considered a reasonable abatement measure for a residence, the measure should cost no more than $42,000 per benefited receptor (i.e., per benefited residence). For the cost of an abatement measure for a trail to be considered reasonable, the measure should cost no more than $995,935 per person-hour per square foot. The FDOT currently uses an estimated cost of $30 per square foot for noise barrier-related materials and labor.

If the results of an abatement measure evaluation indicate that a measure would provide at least the minimum required reduction in traffic noise at a cost that is less than the cost effectiveness criteria, additional factors are considered. Depending on the measure, feasibility factors relate to design and construction (i.e., given site-specific details, can an abatement measure be implemented), safety, accessibility, ROW requirements, maintenance, and impacts on utilities and/or drainage. If a measure is determined to potentially be both feasible and reasonable in a project's PD&E phase, additional analysis is performed in the project's design phase and the viewpoints of the property owners and/or residents of the benefited properties are considered.

3.0 Traffic Noise Analysis

This section discusses sound level measurements that were previously obtained within the study area to validate the TNM and provides the results of the traffic noise analysis for the trail and the residences.

3.1 Model Validation

The purpose of model validation is to ensure that motor vehicle traffic is the primary source of noise within a project's study area and to verify that the TNM can accurately predict existing traffic noise levels. The validation process involves taking field measurements of sound levels, and during each measurement period, average vehicle travel speeds, vehicle count and fleet identification (i.e., automobiles, trucks, buses, and motorcycles), site conditions (i.e., typography, distance from the roadway(s)), and sources of sound other than motor vehicles (e.g., aircraft flyovers, birds, barking dogs) are noted. The motor vehicle data and site conditions are used to create input for the TNM, and the model is executed. Following FDOT's methodology, the TNM is considered valid to predict existing conditions if the field measured sound levels are within 3 dB(A) of the TNM predicted highway traffic noise levels.

The proposed overpass is located on a section of I-75 where the TNM was previously determined to be valid. The validation data are documented in the *I-75 from SR 681 to University Parkway Project Development & Environment Study Noise Study Report* (FPID: 201277-1-22-01).

3.2 Predicted Noise Levels and Abatement Analysis

The predicted traffic noise levels for each of the evaluated receptors are provided in **Appendix C**. The analysis results are summarized in **Table 3-1**. As shown, in the existing year (2019) with the current roadway geometry, traffic noise is predicted to range from 69.8 to 72.6 dB(A) along the trail at Nathan Benderson Park and 49.2 to 75.8 dB(A) at the residences of The Adley Apartments nearest the proposed overpass. As also shown, in the project's design year (2045) with the No-Build Alternative traffic noise is predicted to range from 72.3 to 75.2 dB(A) along the trail and 51.2 to 78.0 dB(A) at the residences of The Adley Apartments. Finally, with the North Sarasota Multimodal Connector (the Build Alternative) traffic noise is predicted to range from 58.4 to 74.1 dB(A) along the trail and 57.7 to 78.2 dB(A) at the residences of The Adley Apartments. As also shown in Table 3-1, traffic noise with the North Sarasota Multimodal Connector is not predicted to increase substantially from existing levels with the maximum increases for the trail and the residences being 1.8 dB(A) and 8.5 dB(A), respectively.

A series of 17 receptors were evaluated along the trail at Nathan Benderson Park. Four of the 17 receptors are predicted to be impacted by traffic noise in the future with the Build Alternative. The remaining 13 receptors are shielded from traffic noise from I-75 by the elevated section of Cattlemen Road.

Twenty-two residences were evaluated at The Adley Lakewood Ranch Waterside Apartments. Nineteen of the 22 residences are predicted to be impacted by traffic noise in the future (2045) with the Build Alternative.

Table 3-1. Summary of the Traffic Noise Levels

Receptor Numbers	Land Use	Activity Category/ NAC	Predicted Traffic Noise Levels (dB(A))			Approaches, Meets, or Exceeds the NAC?	Substantial Increase (Yes/No)
			Existing (2019)	No-Build (2045)	Build (2045)		
1-17	Trail at Nathan Benderson Park	C / 66	69.8–72.6	72.3–75.2	58.4–74.1	Yes	No (1.8 dB(A) maximum increase)
18a-24d	Residential at The Adley Apartments	B / 66	49.2–75.8	51.2–78.0	57.7–78.2	Yes	No (8.5 dB(A) maximum increase)

Note: Receptor numbers containing a letter correspond to the floor that receptor is located (e.g., "a" is first floor, "b" is second floor, etc.).

3.3 Abatement Considerations

As previously stated, when traffic noise impacts are predicted, noise abatement measures are considered for the impacted properties. The following discusses the FDOT's consideration of each of the measures previously described in this NSR.

3.3.1 Traffic Management

Reducing traffic speeds and/or the traffic volume or changing the motor vehicle fleet is inconsistent with the goal of improving the ability of the roadway to handle the forecast traffic volume. Therefore, traffic management measures are not considered to be a reasonable measure to abate the predicted traffic noise impacts for the North Sarasota Multimodal Connector.

3.3.2 Alignment Modification

As stated in Section 1.5 of this NSR, three Build Alternatives (Alternative 1, Alternative 2, and Alternative 3) were evaluated and, with considerations for residential relocations and environmental impacts, Alternative 2 was selected as the Preferred Alternative. Additionally, suppressing the roadway's vertical alignment to create a natural berm between the highway and receptors would not be possible and raising the vertical alignment of the new roadway is not considered reasonable due to the cost to do so.

3.3.3 Buffer Zones

As previously stated, to abate predicted traffic noise at an existing noise sensitive land use, the impacted property would have to be acquired. As also previously stated, to be considered a cost-effective measure, the cost of abatement should cost no more than $42,000 per benefited residential

receptor. A review of data from the Sarasota County Property Appraiser indicates that the cost to acquire the impacted properties adjacent to the North Sarasota Multimodal Connector would exceed the cost-effective limit. Therefore, creating a buffer zone by acquiring the properties is not considered to be a reasonable noise abatement measure.

3.3.4 Noise Barriers

The TNM was used to evaluate the potential for noise barriers to reduce traffic noise levels for the impacted receptors along the trail at Nathan Benderson Park and at the residences of The Adley Apartments.

The Trail at Nathan Benderson Park

Four receptors, representing approximately 400 feet of the trail at Nathan Benderson Park, are predicted to be impacted by highway traffic noise. A noise barrier was evaluated along and just inside the I-75 ROW at a height of 22 feet—the maximum allowable barrier height for ground mounted barriers. The results of the evaluation indicate that a noise barrier would not reduce traffic noise by at least 5 dB(A) within the impacted area of the trail. The inability of a barrier to reduce traffic noise is likely due to the contribution of noise from the motor vehicle traffic on Cattlemen Road. Because a reduction in traffic noise of at least 5 dB(A) could not be achieved, a noise barrier is not considered to be a feasible abatement measure for the impacted portion of the trail.

Residences of The Adley Lakewood Ranch Waterside Apartments

As previously stated, 19 of the units (i.e., residences) at The Adley Apartments are predicted to be impacted by highway traffic noise levels. A noise barrier system comprised of a barrier along/inside the I-75 ROW and a barrier on the shoulder of the proposed overpass were evaluated. The ROW barrier was evaluated at the maximum allowable height of 22 feet. Because the barrier on the proposed overpass would be on structure, the overpass barrier was evaluated at the maximum allowable height of 8 feet. The results of the noise barrier evaluation indicate that a combination ROW and shoulder barrier would not reduce traffic noise by at least 5 dB(A) at any of the impacted receptors. As such, the barrier system is not considered a feasible abatement measure for the impacted residences of The Adley Apartments.

4.0 Summary

Sarasota County, in coordination with FDOT, is preparing a PD&E Study for a new roadway—the North Sarasota Multimodal Connector. The proposed project would enhance transportation network connectivity by providing an alternate route across I-75 and contributing to better distribution of traffic on the roadway network in the Lakewood Ranch area. This NSR documents the results of an analysis that was performed for the PD&E Study to identify land uses that would be impacted by highway traffic noise in the design year with the new roadway.

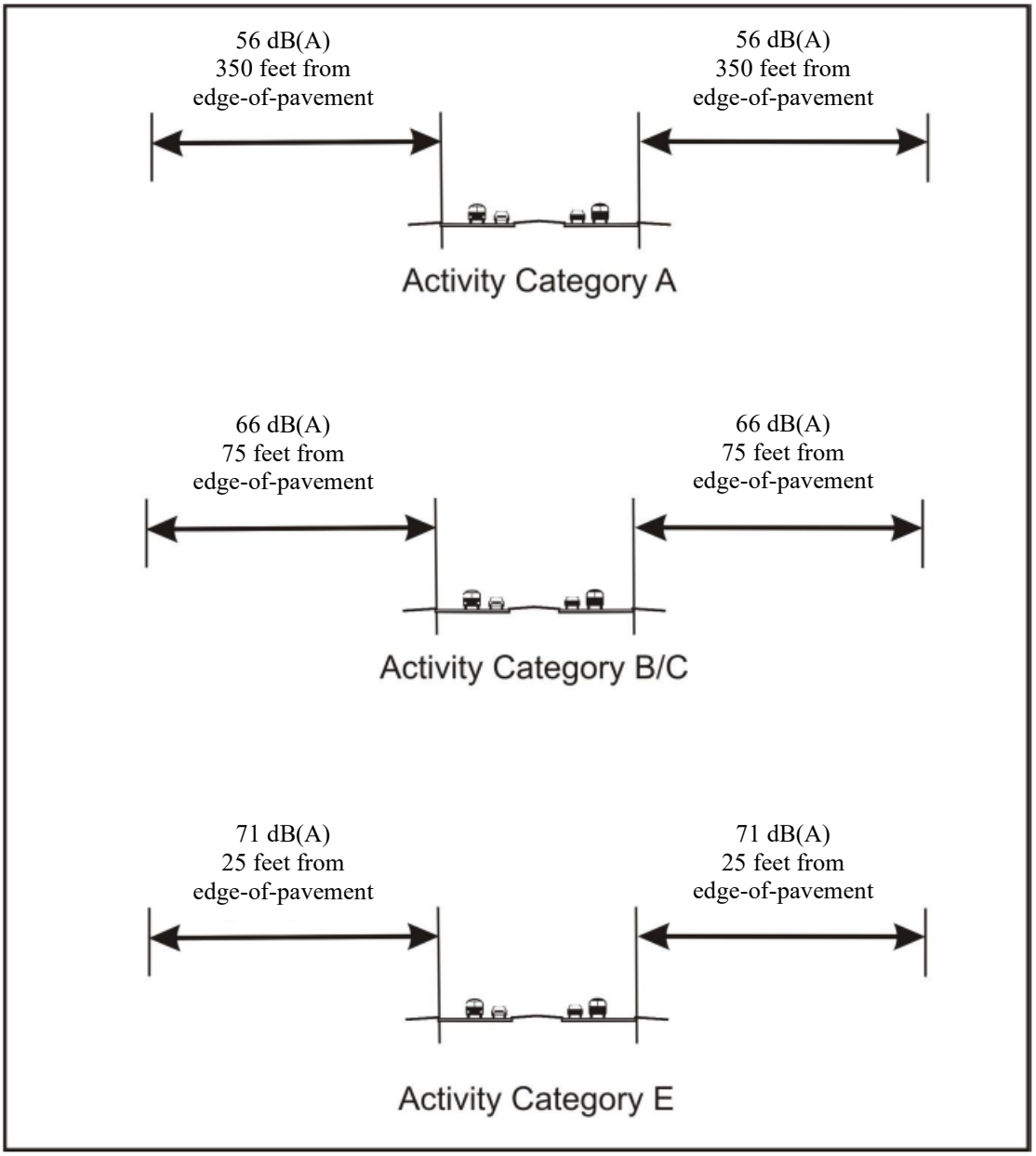
The results of the highway traffic noise analysis indicate that a segment of the trail at Nathan Benderson Park (Activity Category C) and 19 residences of The Adley Lakewood Ranch Waterside Apartments (Activity Category B) would be impacted by traffic noise in the design year (2045) of the project. Noise abatement measures were evaluated for the impacted land uses.

Although feasible, traffic management measures, alignment modifications, and buffer zones were determined to be unreasonable abatement measures. Noise barriers were also evaluated. The results of the evaluation indicate that barriers would not benefit any of the impacted land uses and therefore are not a feasible abatement measure. Based on the analysis results, there appear to be no feasible solutions to abate the predicted traffic noise impacts at either the trail or the residences.

5.0 Noise Contours

The land uses in Table 2-1 of this NSR are considered incompatible with highway noise levels that approach, meet, or exceed the NAC. To reduce the potential for these land uses to be permitted for construction in areas where traffic noise impacts have been predicted, noise contours were developed. The contours delineate a distance from the improved roadway's edge-of-pavement where a traffic noise level of 56 dB(A)—the FDOT approach criteria for land uses classified as Activity Category A, 66 dB(A)—the approach criteria for land uses classified as Activity Category B and C, and 71 dB(A)—the approach criteria for land uses classified as Activity Category E, are predicted. For convenience, the land uses for which there are NAC are repeated in **Figure 5-1** with their corresponding contour distances.

Figure 5-1. Noise Contours



6.0 Construction Noise and Vibration

The residences and Nathan Benderson Park in the vicinity of the North Sarasota Multimodal Connector are identified in FDOT's Noise Policy as being noise- and vibration-sensitive sites. Construction of the proposed roadway is not expected to have a significant noise or vibration effect. Additionally, the application of the FDOT *Standard Specifications for Road and Bridge Construction* may minimize or eliminate any effect. Should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

7.0 References

Florida Department of Transportation. 2020. Project Development and Environment Manual, Part 2, Chapter 18 – Highway Traffic Noise. July 1.

Florida Department of Transportation. Environmental Management Office. 2018. Traffic Noise Modeling and Analysis Practitioners Handbook. December 31.

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

Federal Highway Administration. 2018. Noise Measurement Handbook – Final Report. FHWA-HEP-18-065. June.

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

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

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

Florida Department of Transportation. 2021. Standard Specifications for Road and Bridge Construction. July.

Appendices

Appendix A

Traffic Data

TRAFFIC DATA FOR NOISE STUDIES - SUMMARY OUTPUT
FDOT DISTRICT 1

Federal Aid Number(s):	0
FPID Number(s):	0
State/Federal Route No.:	0
Road Name:	North Sarasota Multimodal Connector
Project Description:	North Sarasota Multimodal Connector
Segment Description:	Alternative 2
Section Number:	0
Mile Post To/From:	0

Existing Facility:		D =	53.00%	%
		T24 =	7.00%	% of 24 Hour Volume
Year:	2019	Tpeak =	3.50%	% of Design Hour Volume
		MT =	0.00%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	0	HT =	3.50%	% of Design Hour Volume
Demand Peak Hour Volume:	1	B =	0.00%	% of Design Hour Volume
Posted Speed:	0	MC =	0.00%	% of Design Hour Volume

No Build Alternative (Design Year):		D =	53.00%	%
		T24 =	7.00%	% of 24 Hour Volume
Year:	2045	Tpeak =	3.50%	% of Design Hour Volume
		MT =	0.00%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	0	HT =	3.50%	% of Design Hour Volume
Demand Peak Hour Volume:	1	B =	0.00%	% of Design Hour Volume
Posted Speed:	0	MC =	0.00%	% of Design Hour Volume

Build Alternative (Design Year):		D =	53.00%	%
		T24 =	7.00%	% of 24 Hour Volume
Year:	2045	Tpeak =	3.50%	% of Design Hour Volume
		MT =	0.00%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1910	HT =	3.50%	% of Design Hour Volume
Demand Peak Hour Volume:	1646	B =	0.00%	% of Design Hour Volume
Posted Speed:	40	MC =	0.00%	% of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise analysis

Prepared By: Fathy Abdalla Ph.D., PE, PTOE (Print Name) — Mohamed F Abdalla 2022.05.05 13:48:12 -04'00' (Signature) — Date: 5/5/2022

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer: _____ (Print Name) _____ (Signature) — Date: _____

Note: Traffic data for I-75 was obtained from the *I-75 at University Parkway Interchange Design Sarasota & Manatee Counties, Florida, Noise Study Report Addendum* (FPID: 201032-4-32-01 and 201277-2-32-01).

TRAFFIC DATA FOR NOISE STUDIES - SUMMARY OUTPUT
FDOT DISTRICT 1

Federal Aid Number(s):	0
FPID Number(s):	0
State/Federal Route No.:	0
Road Name:	Cattlemen Road
Project Description:	North Sarasota Multimodal Connector
Segment Description:	At NSMC
Section Number:	0
Mile Post To/From:	0

Existing Facility:		D =	53.00%	%
		T24 =	7.00%	% of 24 Hour Volume
Year:	2019	Tpeak =	3.50%	% of Design Hour Volume
		MT =	0.00%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	0	HT =	3.50%	% of Design Hour Volume
Demand Peak Hour Volume:	539	B =	0.00%	% of Design Hour Volume
Posted Speed:	40	MC =	0.00%	% of Design Hour Volume

No Build Alternative (Design Year):		D =	53.00%	%
		T24 =	7.00%	% of 24 Hour Volume
Year:	2045	Tpeak =	3.50%	% of Design Hour Volume
		MT =	0.00%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	0	HT =	3.50%	% of Design Hour Volume
Demand Peak Hour Volume:	954	B =	0.00%	% of Design Hour Volume
Posted Speed:	40	MC =	0.00%	% of Design Hour Volume

Build Alternative (Design Year):		D =	53.00%	%
		T24 =	7.00%	% of 24 Hour Volume
Year:	2045	Tpeak =	3.50%	% of Design Hour Volume
		MT =	0.00%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1910	HT =	3.50%	% of Design Hour Volume
Demand Peak Hour Volume:	1264	B =	0.00%	% of Design Hour Volume
Posted Speed:	40	MC =	0.00%	% of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise analysis

Prepared By: Fathy Abdalla Ph.D., PE, PTOE — Mohamed F Abdalla 2022.05.05 13:47:48 -04'00' — Date: 5/5/2022

Print Name — Signature

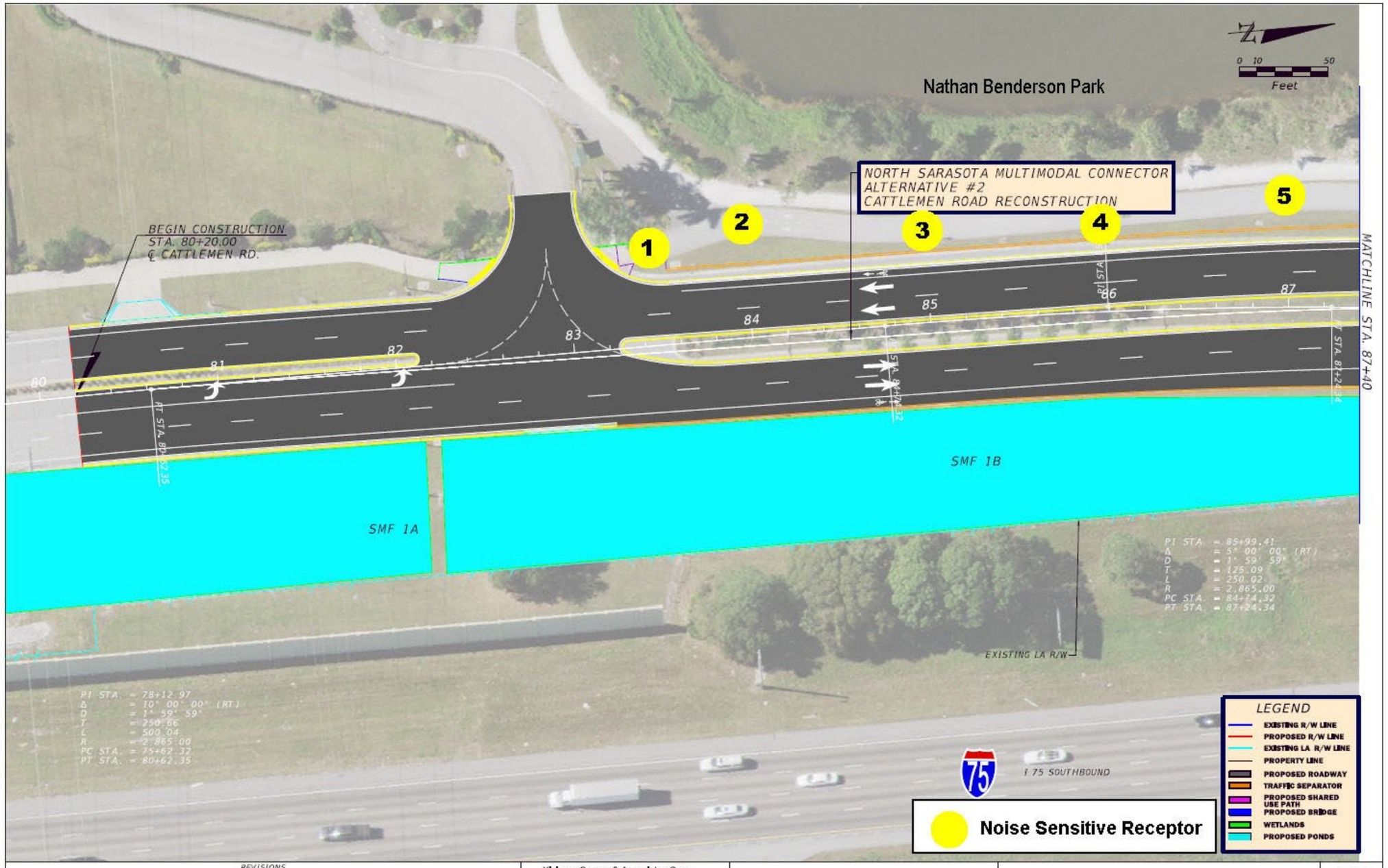
I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer: _____ Date: _____

Print Name — Signature

Appendix B

Project Aerials



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

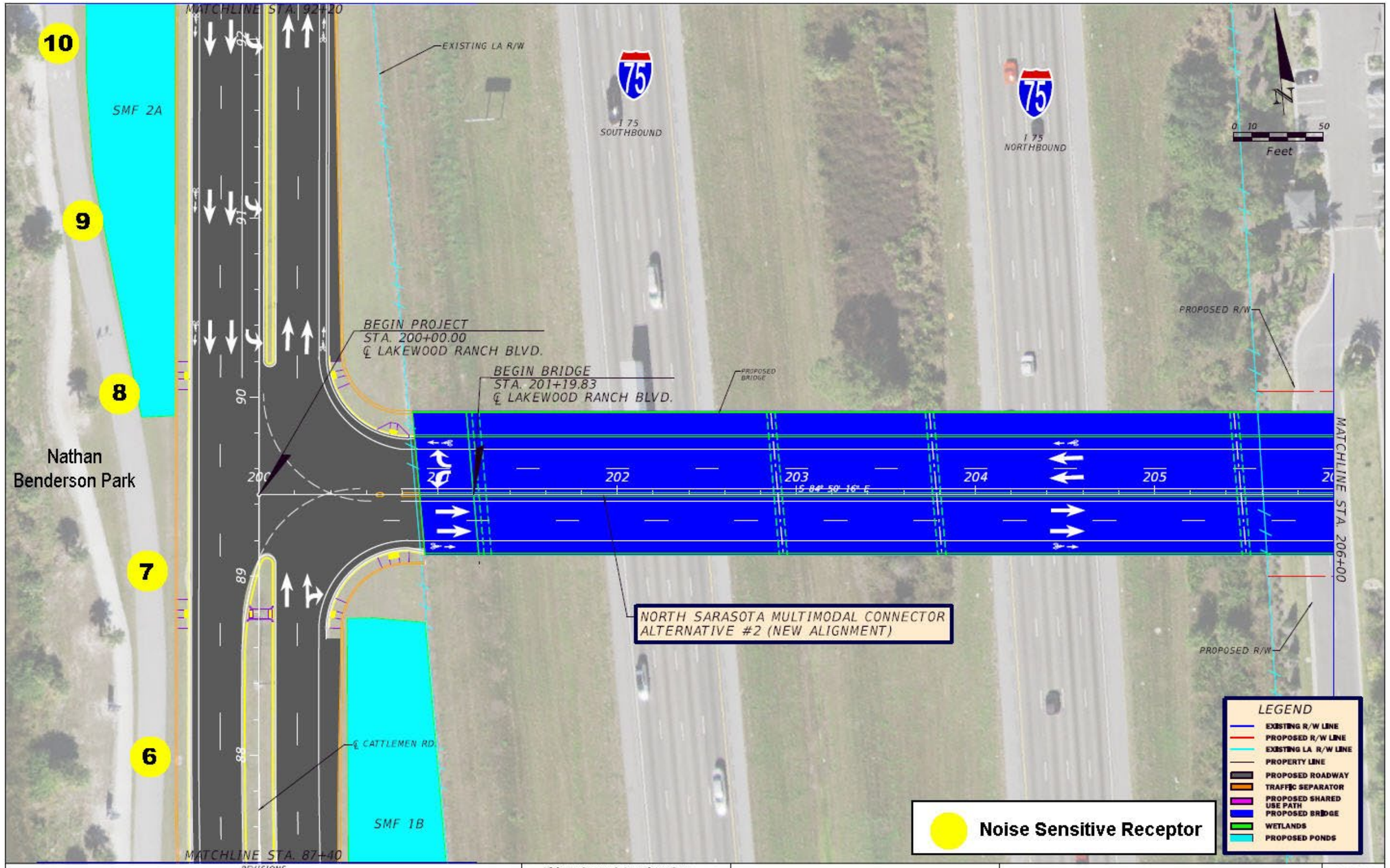
Kisinger Campo & Associates Corp.
201 N. Franklin Street, Suite 400
Tampa, Florida 33602
Florida Certificate of Authorization No. 02317

SARASOTA COUNTY PUBLIC WORKS

PROJECT	PROJECT NO.
NORTH SARASOTA MULTIMODAL CONNECTOR	442034-1-21-01

CONCEPT PLANS (4) ALTERNATIVE #2

SHEET NO. 1



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

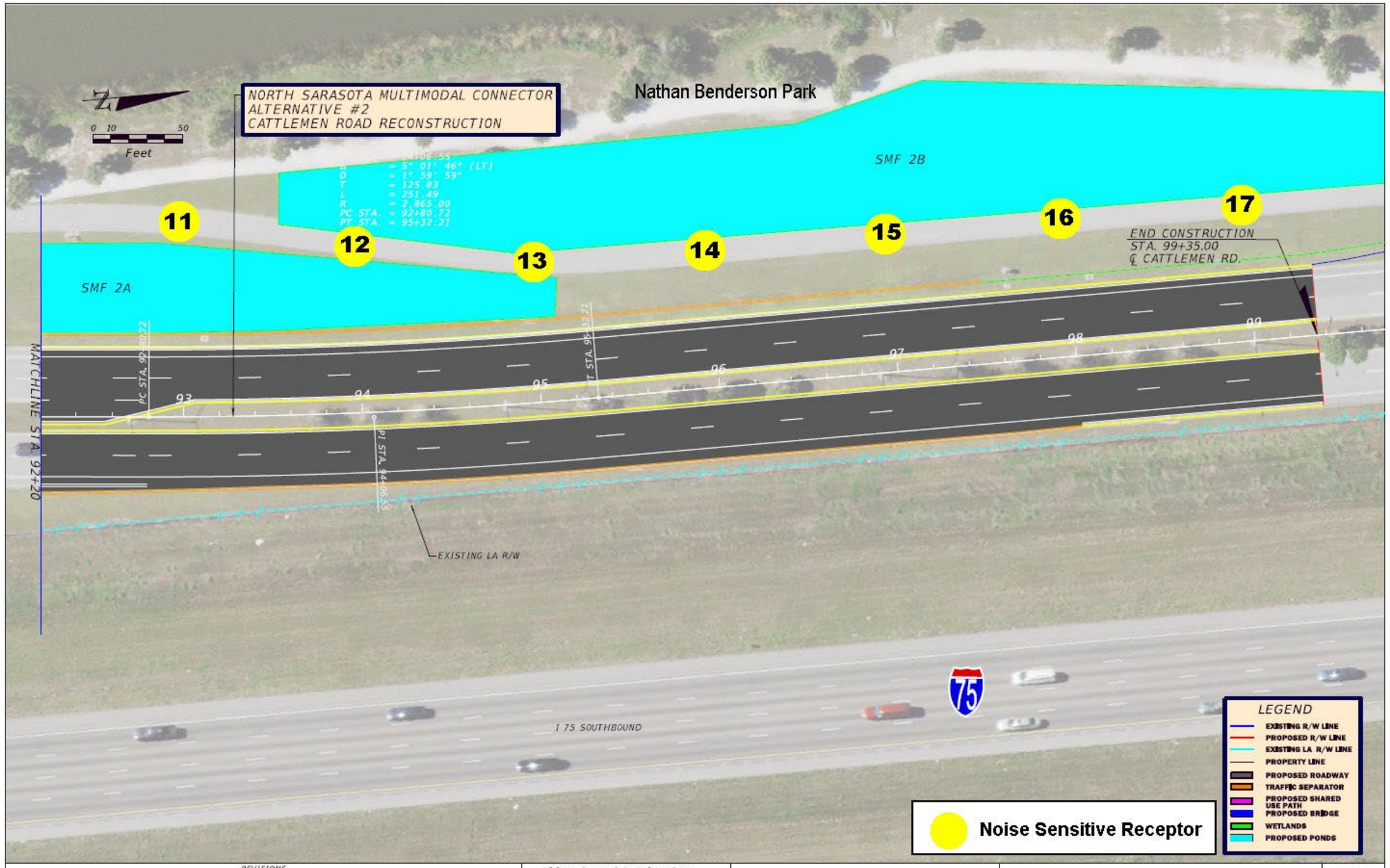
Kisinger Campo & Associates Corp.
201 N. Franklin Street, Suite 400
Tampa, Florida 33602
Florida Certificate of Authorization No. 02317

SARASOTA COUNTY PUBLIC WORKS

PROJECT	PROJECT NO.
NORTH SARASOTA MULTIMODAL CONNECTOR	442034-1-21-01

CONCEPT PLANS (1) ALTERNATIVE #2

SHEET NO. 2



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

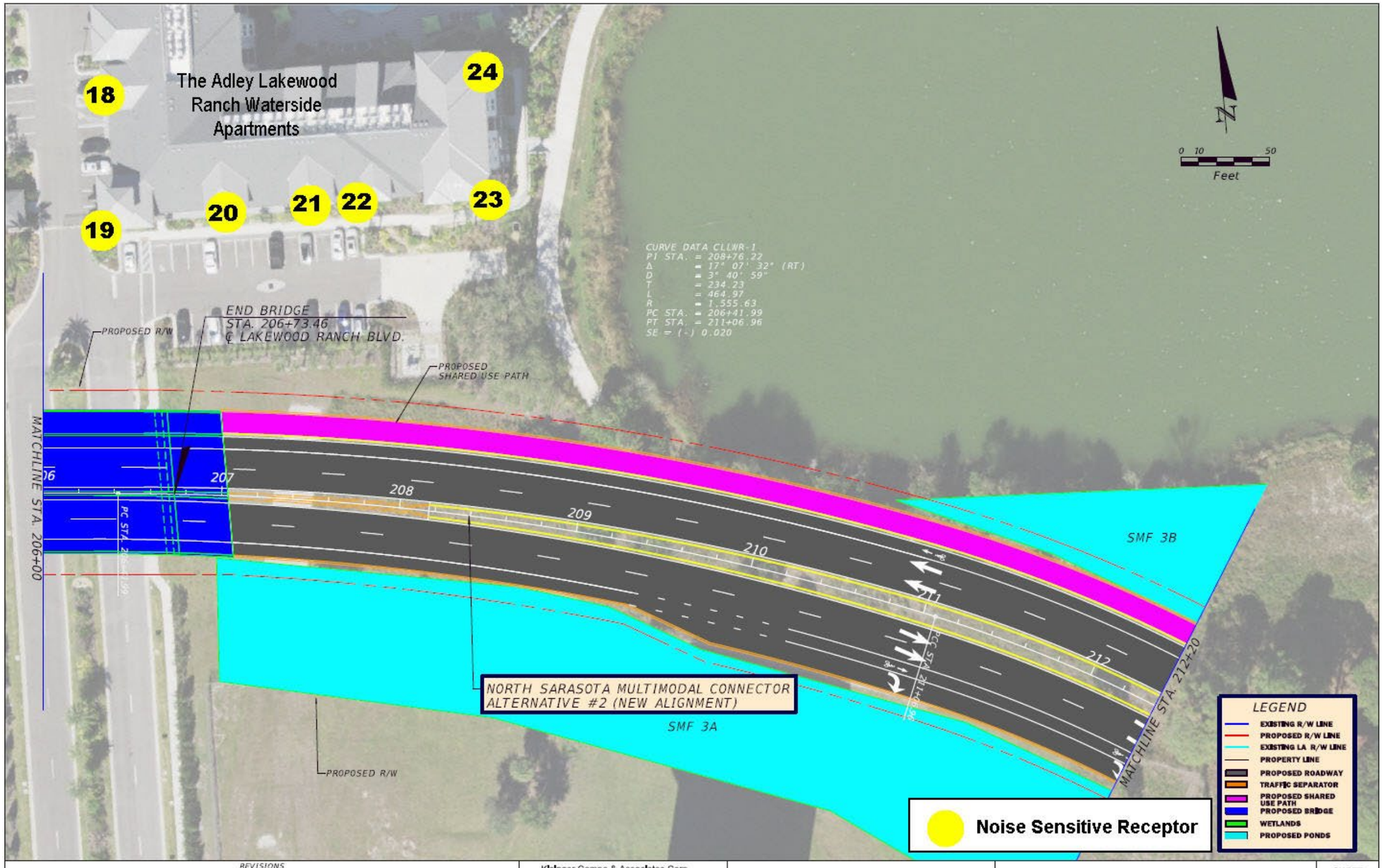
Kisinger Campo & Associates Corp.
201 N. Franklin Street, Suite 400
Tampa, Florida 33602
Florida Certificate of Authorization No. 02317

SARASOTA COUNTY PUBLIC WORKS

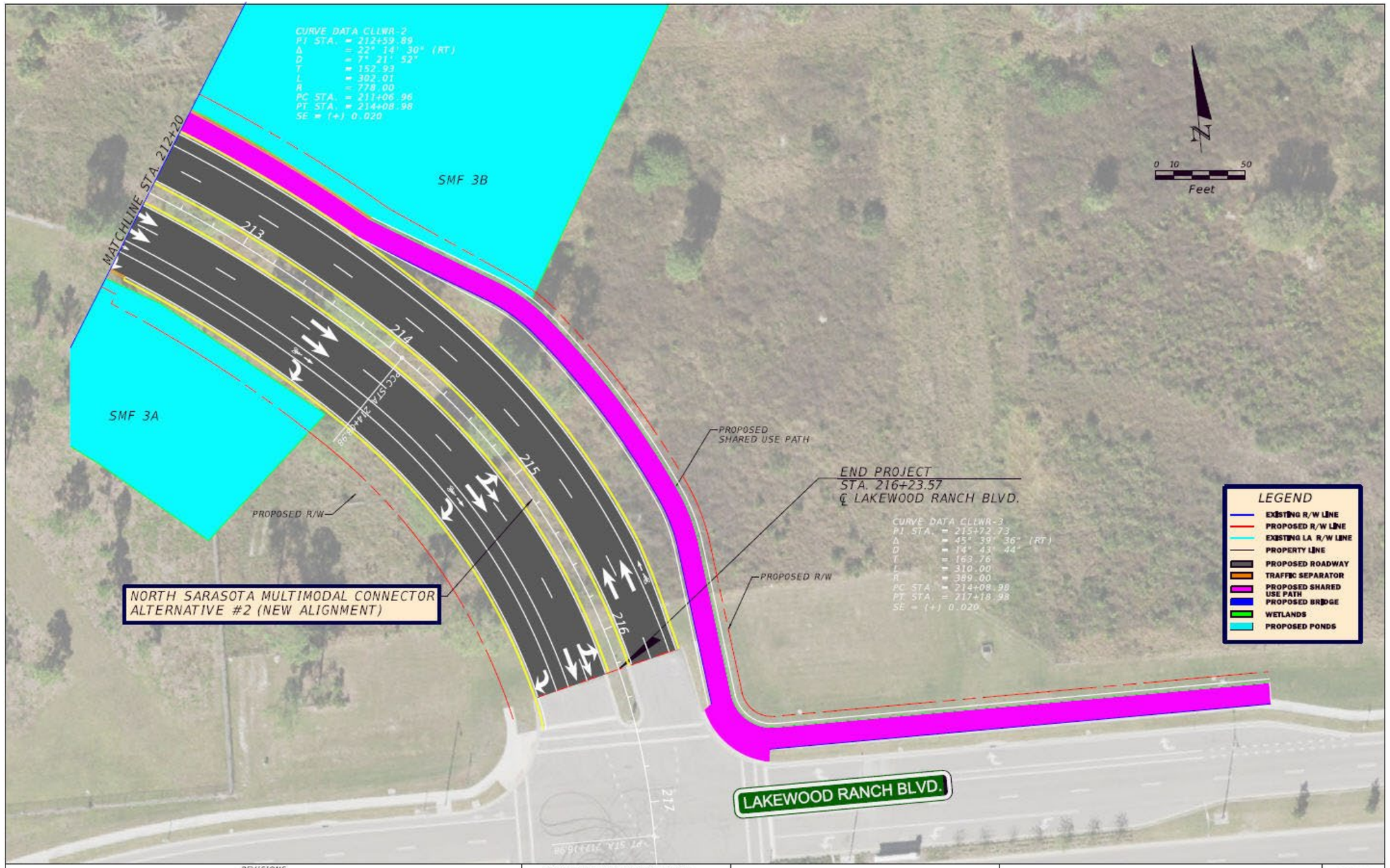
PROJECT	PROJECT NO.
NORTH SARASOTA MULTIMODAL CONNECTOR	442034-1-21-01

CONCEPT PLANS (5)
ALTERNATIVE #2

SHEET NO. 3



REVISIONS				Kisinger Campo & Associates Corp. 201 N. Franklin Street, Suite 400 Tampa, Florida 33602 Florida Certificate of Authorization No. 02317	SARASOTA COUNTY PUBLIC WORKS		CONCEPT PLANS (2) ALTERNATIVE #2	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT	PROJECT NO.		
					NORTH SARASOTA MULTIMODAL CONNECTOR	442034-1-21-01		4



REVISIONS				Klsinger Campo & Associates Corp. 201 N. Franklin Street, Suite 400 Tampa, Florida 33602 Florida Certificate of Authorization No. 02317	SARASOTA COUNTY PUBLIC WORKS		CONCEPT PLANS (3) ALTERNATIVE #2	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT	PROJECT NO.		
					NORTH SARASOTA MULTIMODAL CONNECTOR	442034-1-21-01		5

Appendix C

Predicted Traffic Noise Levels

ReceptorID#	Activity Category	Description of Activity Category	Predicted Traffic Noise Level (Leq(h)) [Expressed as dB(A)]				
			Existing (2019)	No-Build (2045)	Build (2045)	Increase from Existing	Build Approaches, Meets, or Exceeds the NAC?
1	C	Trail at Nathan Benderson Park	70.3	72.8	65.5	-4.8	no
2	C	Trail at Nathan Benderson Park	69.8	72.3	63.7	-6.1	no
3	C	Trail at Nathan Benderson Park	70.6	73.3	59.5	-11.1	no
4	C	Trail at Nathan Benderson Park	71.0	73.6	58.5	-12.5	no
5	C	Trail at Nathan Benderson Park	71.1	73.5	58.5	-12.6	no
6	C	Trail at Nathan Benderson Park	71.6	74.0	58.4	-13.2	no
7	C	Trail at Nathan Benderson Park	71.8	74.2	59.3	-12.5	no
8	C	Trail at Nathan Benderson Park	71.3	73.7	60.9	-10.4	no
9	C	Trail at Nathan Benderson Park	70.8	73.2	60.5	-10.3	no
10	C	Trail at Nathan Benderson Park	70.4	72.9	61.7	-8.7	no
11	C	Trail at Nathan Benderson Park	70.6	73.2	62.2	-8.4	no
12	C	Trail at Nathan Benderson Park	71.5	74.1	62.9	-8.6	no
13	C	Trail at Nathan Benderson Park	72.2	75.0	63.8	-8.4	no
14	C	Trail at Nathan Benderson Park	72.4	75.1	66.2	-6.2	yes
15	C	Trail at Nathan Benderson Park	72.6	75.2	69.3	-3.3	yes
16	C	Trail at Nathan Benderson Park	72.1	74.8	73.5	1.4	yes
17	C	Trail at Nathan Benderson Park	72.3	74.8	74.1	1.8	yes
18a	B	The Adley Apartments	72.6	74.8	74.8	2.2	yes
18b	B	The Adley Apartments	74.9	77.0	77.1	2.2	yes
18c	B	The Adley Apartments	75.6	77.8	77.9	2.3	yes
18d	B	The Adley Apartments	75.8	78.0	78.1	2.3	yes
19c	B	The Adley Apartments	75.5	77.8	77.9	2.4	yes
19d	B	The Adley Apartments	75.8	78.0	78.2	2.4	yes
20c	B	The Adley Apartments	71.4	73.4	73.2	1.8	yes
20d	B	The Adley Apartments	71.7	73.8	73.9	2.2	yes
21a	B	The Adley Apartments	66.1	68.3	67.5	1.4	yes
21b	B	The Adley Apartments	69.7	71.3	70.3	0.6	yes
21c	B	The Adley Apartments	70.4	72.3	71.3	0.9	yes
21d	B	The Adley Apartments	70.9	72.9	72.6	1.7	yes
22a	B	The Adley Apartments	65.3	67.6	66.6	1.3	yes
22b	B	The Adley Apartments	69.2	70.8	69.4	0.2	yes
22c	B	The Adley Apartments	69.9	71.8	70.5	0.6	yes
22d	B	The Adley Apartments	70.4	72.4	72.0	1.6	yes
23a	B	The Adley Apartments	63.3	66.1	64.6	1.3	no
23b	B	The Adley Apartments	68.0	69.4	67.3	-0.7	yes
23c	B	The Adley Apartments	68.8	70.5	68.6	-0.2	yes
23d	B	The Adley Apartments	69.3	71.1	70.7	1.4	yes
24c	B	The Adley Apartments	49.2	51.2	57.7	8.5	no
24d	B	The Adley Apartments	52.3	54.3	60.3	8.0	no

Note: The letters for the Adley Apartments receptors correspond to which floor the receptor is located (e.g., "a" is the first floor, "b" is the second floor, etc.).