



**Date:** March 26, 2003

**To:** Robin Rhinesmith  
Florida Department of Transportation  
District 7

**From:** Daniel Doebler  
PBS&J

**Subject:** SR 60 Links  
F.P. ID: 255630-1-32-01  
Traffic Noise Reanalysis  
Hillsborough County

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### Purpose

The proposed project was evaluated for the effects of traffic noise on the Dana Shores neighborhood. A previous study was documented in a Noise Study Technical Memorandum (revised August 2000). Subsequent to the traffic noise analysis, public meetings were held with the Dana Shores residents as part of the reevaluation process being performed for this project. In response to comments from the Dana Shores residents, the noise barriers were reanalyzed to consider a noise barrier design that would minimize effects to the aesthetic view as seen from the residences. Consistent with the previous analysis, 65 dBA was considered an approach of the Noise Abatement Criteria. The most recent unit cost of \$269.10 per square meter (\$25 per square foot) was used to determine noise barrier cost. The following documents the results of the revised analysis.

### Methodology

The previous analysis was performed using the first release of TNM (TNM 1.0). The analysis was updated using the most recent version of TNM (TNM 2.0), which is the fourth release of the model. The TNM input data from the previous analysis was compared to the most recent design for the project. The input data was modified to reflect adjustments in the horizontal or vertical alignment as needed. The traffic data used in the previous study was also used in this revised analysis. The revised analysis included the following:

- Identification of residences with a predicted noise level of 65 dBA or greater for the build condition.
- Evaluation of a noise barrier option comprised of two noise barriers, referred to as the west barrier and east barrier.
- In response to potential view/aesthetic conflicts, evaluation of a noise barrier option that eliminated the west barrier.
- Evaluation of a noise barrier option that eliminated the east barrier.

## Results

**Affected Residences** – Predicted noise levels for the Dana Shores neighborhood are provided in Table 1. Sixteen residences represented by Receivers 3, 4, 5, 16, 20, 21, 22, 25, 26 and 27 are predicted to experience traffic noise levels that approach or exceed the NAC (i.e., 65 dBA or greater) for the Build condition. The residences are generally located in the front row of the Dana Shores neighborhood in closest proximity to SR 60.

Table 1  
Predicted Noise Levels

Receiver Identification	Residences Represented	2025 Build (dBA)	Approaches/ Exceeds NAC?
R1	1 residence	61.9	NO
R2	1 residence	63.9	NO
R3	2 residences	66.0	YES
R4	2 residences	66.0	YES
R5	2 residences	65.8	YES
R6	1 residence	64.3	NO
R7	1 residence	62.3	NO
R8	5 residences	61.6	NO
R9	1 residence	62.4	NO
R10	1 residence	63.8	NO
R11	2 residences	64.8	NO
R12	1 residence	63.9	NO
R13	1 residence	62.6	NO
R14	1 residence	63.0	NO
R15	1 residence	64.4	NO
R16	4 residences	66.0	YES
R17	1 residence	64.0	NO
R18	1 residence	63.9	NO
R19	2 residences	63.7	NO
R20	1 residence	65.1	YES
R21	1 residence	66.6	YES
R22	1 residence	66.7	YES
R23	1 residence	64.4	NO
R24	1 residence	64.4	NO
R25	1 residence	66.7	YES
R26	1 residence	66.2	YES
R27	1 residence	65.1	YES
R28	1 residence	64.1	NO

**Western and Eastern Barrier at a Height of 2.44 meters (8 Feet)** – The purpose of this noise barrier option is to provide a minimum 5 dBA reduction to as many of the 16 affected residences as possible. All 16 affected residences and an additional 9 residences (located in either the front row or the first residence around the corner of each block) are predicted to experience at least a 5 dBA reduction with two barriers described as follows:

- Western barrier beginning along the westbound roadway shoulder of SR 60 (about Sta. 401+40) and extending to the east for 580 meters (1,903 feet) to end along the shoulder of the westbound frontage road on ramp (about Sta. 91).
- Eastern barrier beginning along the shoulder of the westbound frontage road off ramp (about Sta. 90+40) and extending east for 651 meters (2,136 feet) to end along the shoulder of the southbound Veterans Expressway to westbound SR 60 off ramp (about Sta. 61+30).

At a unit cost of \$269.10 per square meter (\$25 per square foot), the two noise barriers would cost \$808,300 and benefit 25 first row residences at \$32,331 per residence. Receivers R3 through R6; R10 through R12, R15 through R17 and R20 through R27 represent the 25 benefited residences.

**Western Barrier Eliminated and Eastern Barrier at a Height of 2.44 meters (8 Feet)** – The primary purpose of this noise barrier option is to preserve the aesthetics and view for the portion of SR 60 that is adjacent to Tampa Bay and the secondary purpose is to provide a minimum 5 dBA reduction to as many of the 16 affected residences as possible. This option would eliminate the entire western barrier while leaving the entire eastern barrier at a height of 2.44 meters (8 feet). Ten of the affected residences and an additional four residences (located in either the front row or the first residence around the corner of each block) are predicted to experience at least a 5 dBA reduction with an eastern barrier described as follows:

- Eastern barrier beginning along the shoulder of the westbound frontage road off ramp (about Sta. 90+65) and extending east for 688 meters (2,257 feet) to end along the shoulder of the southbound Veterans Expressway to westbound SR 60 off ramp (about Sta. 61+40).

At a unit cost of \$269.10 per square meter (\$25 per square foot), the noise barrier would cost \$451,700 and benefit 14 first row residences at \$32,267 per residence. Receivers R15 through R17 and R20 through R27 represent the 14 benefited residences.

**Eastern Barrier Eliminated and Western Barrier at a Height of 2.44 meters (8 Feet)** – This option is the least likely to be considered because it would not preserve the aesthetics and view for the portion of SR 60 that is adjacent to Tampa Bay and it would not provide any abatement to the residences currently located behind businesses along SR 60. However this option was analyzed to provide results for all barrier combinations. This option would eliminate the entire eastern barrier while leaving the entire western barrier at a height of 2.44 meters (8 feet).

An eastern barrier would primarily abate traffic noise from the proposed elevated portions of SR 60. With the elimination of the eastern barrier, the remaining western barrier is ineffective at reducing traffic noise. None of the residences in the Dana Shores neighborhood would be provided at least a 5 dBA reduction. Therefore, the option of providing just the western barrier is not a feasible abatement measure.

### Conclusions

The results of analyzing various noise barrier options for Dana Shores is provided in Table 2. An option that would provide an 8-foot high eastern and western barrier was feasible but the cost

per-benefited-residence-exceeded-the-FDOT-reasonable-criteria. An option that would provide only the 8-foot high eastern barrier was also feasible but the cost per benefited residence exceeded the FDOT reasonable criteria for this option. An option that would provide only an 8-foot high western barrier was not feasible (i.e., a 5 dBA reduction could not be achieved at any of the affected residences).

Table 2  
Noise Barrier Evaluation Summary

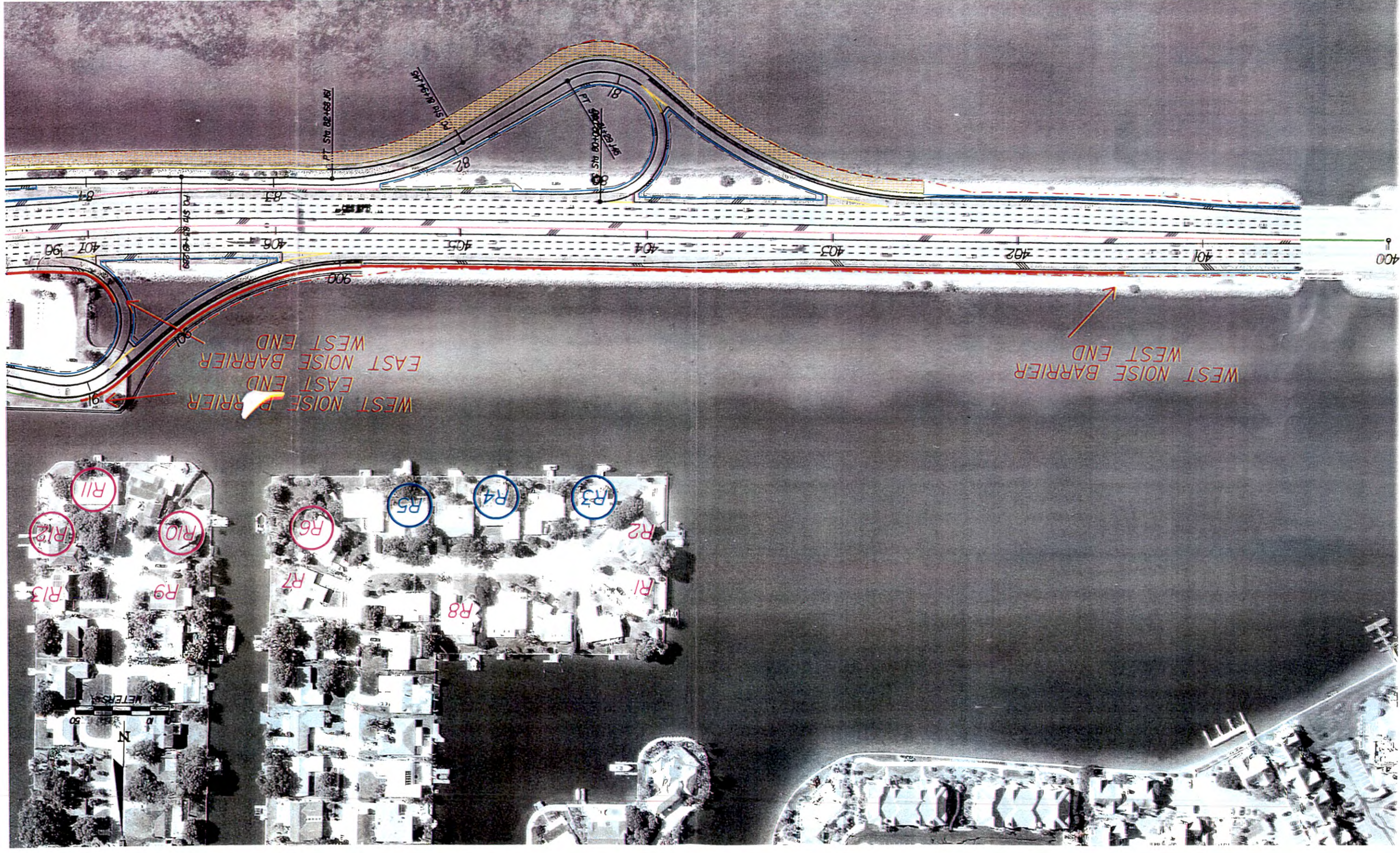
Noise Barrier Option	Barrier Height (meters [feet])	Barrier Length (meters [feet])	Average Insertion Loss <sup>1</sup>	Number of Benefited Residences			Total Cost <sup>3</sup>	Cost per Benefited Residence
				Affected	Other <sup>2</sup>	Total		
Western and Eastern Barrier	2.44 [8]	Western Barrier – 580 [1,903] Eastern Barrier – 651 [2,136]	6.0	16	9	25	\$808,300	\$32,331
Eastern Barrier Only	2.44 [8]	688 [2,257]	6.2	14	0	14	\$451,700	\$32,267
Western Barrier Only	2.44 [8]	775 [2,542]	NA	0	0	0	NA	NA

<sup>1</sup> Average for front-row residences achieving a minimum 5 dBA reduction.

<sup>2</sup> Other refers to residences with predicted noise levels that do not approach or exceed the NAC, but would receive a 5 dBA reduction.

<sup>3</sup> Unit cost of \$269.10 per square meter (\$25 per square foot).

# WESTERN AND EASTERN NOISE BARRIER



WEST NOISE BARRIER  
EAST END  
EAST NOISE BARRIER  
WEST END

WEST NOISE BARRIER  
WEST END

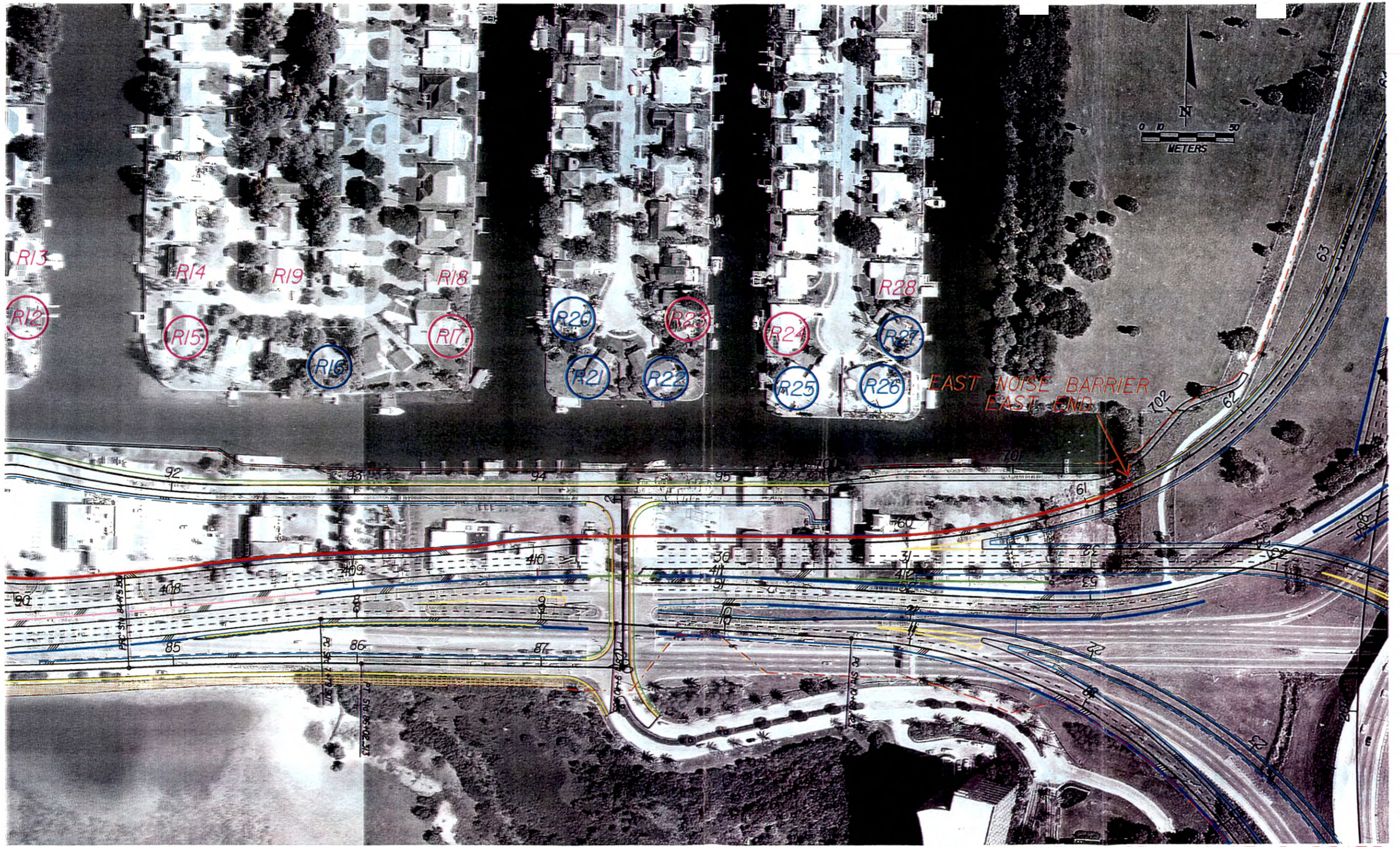
**PRBS**  
 5300 West Cypress Street  
 Suite 300  
 Tampa, Florida 33607-1168  
 FPR Certificate of  
 Authorization No. 24

STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION  
 ROAD NO. \_\_\_\_\_ COUNTY \_\_\_\_\_  
 FINANCIAL PROJECT ID \_\_\_\_\_  
 S.R. 60 HILLSBOROUGH 255630-1-32-01

NO.	DATE	BY	DESCRIPTION

R## AFFECTED RECEIVER ID  
R## NON-AFFECTED RECEIVER ID  
R## FEASIBLE AND COST REASONABLE NOISE BARRIER LOCATION  
R## NON-AFFECTED BUT BENEFITED RECEIVER ID

SHEET NO.



WESTERN AND EASTERN NOISE BARRIER

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**PBS&** 5300 West Cypress Street  
 Suite 300  
 Tampa, Florida 33607-1168  
 FBPR Certificate of  
 Authorization No. 24

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 60	HILLSBOROUGH	255630-1-32-01

R\*\* AFFECTED RECEIVER ID  
 R\*\* NON-AFFECTED RECEIVER ID  
 — FEASIBLE AND COST REASONABLE NOISE BARRIER LOCATION

R\*\* AFFECTED & BENEFITED RECEIVER ID  
R\*\* NON-AFFECTED BUT BENEFITED RECEIVER ID

SHEET NO.

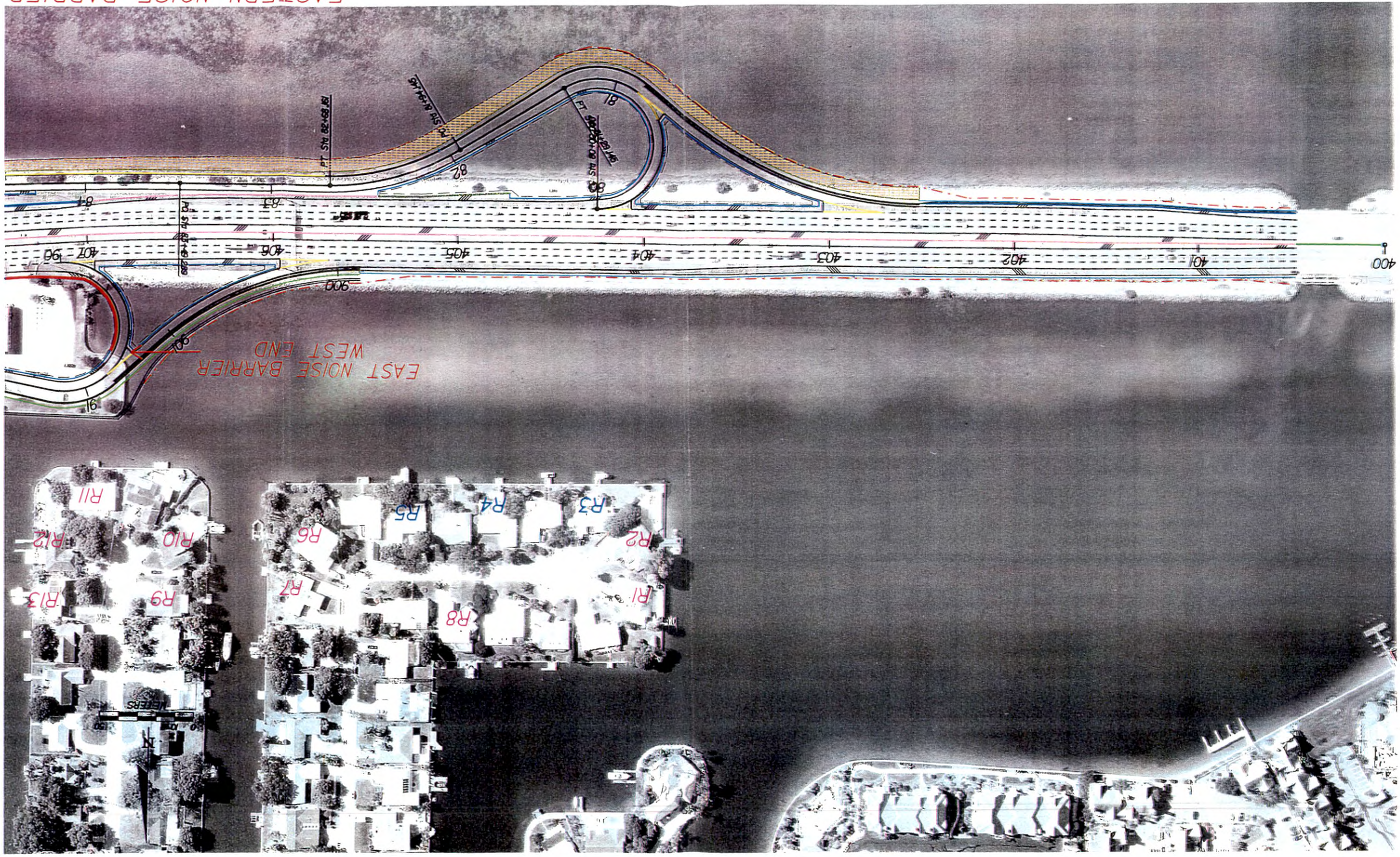
DATE	BY	DESCRIPTION

**PRSI**  
 5300 West Orange Street  
 Suite 300  
 Tampa, Florida 33607-0761  
 FDOT Certificate of  
 Authorization No. 24  
 Brown D. Manning, P.E. 448358

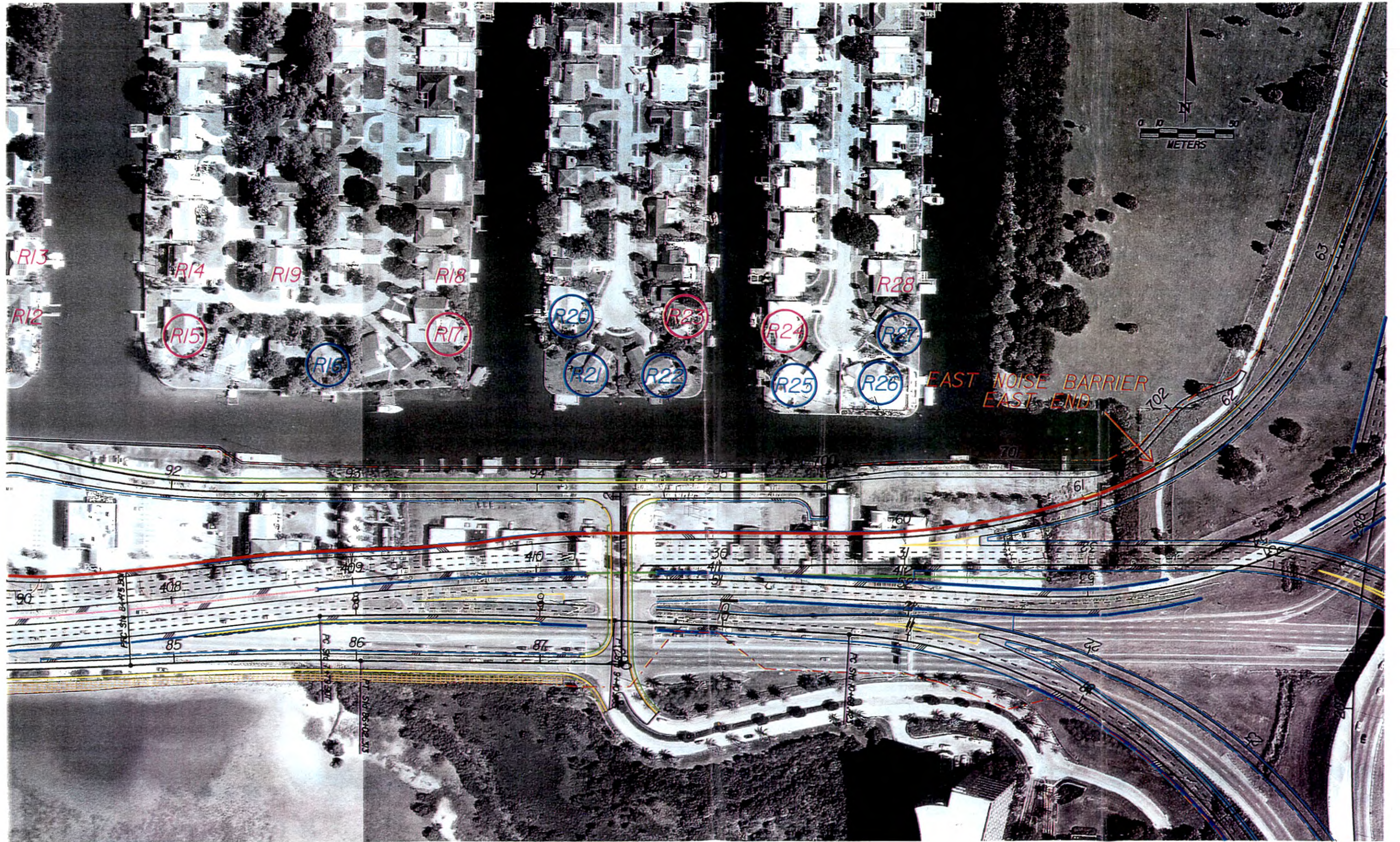
STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION  
 ROAD NO. \_\_\_\_\_ COUNTY \_\_\_\_\_  
 S.R. 60 HILLSBOROUGH  
 FINANCIAL PROJECT ID 255630-1-32-01

\*\*\* AFFECTED RECEIVER ID  
 \*\*\* AFFECTED & BENEFITED  
 RECEIVER ID  
 \*\*\* NON-AFFECTED BUT BENEFITED  
 RECEIVER ID  
 \*\*\* FEASIBLE AND COST REASONABLE  
 NOISE BARRIER LOCATION

SHEET NO.



EASTERN NOISE BARRIER



**EASTERN NOISE BARRIER**

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**PBS&J** 5300 West Cypress Street  
 Suite 300  
 Tampa, Florida 33607-1768  
 FBPR Certificate of  
 Authorization No. 24

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 60	HILLSBOROUGH	255630-1-32-01

R##	AFFECTED RECEIVER ID		AFFECTED & BENEFITED RECEIVER ID
R##	NOW-AFFECTED RECEIVER ID		NOW-AFFECTED BUT BENEFITED RECEIVER ID
	FEASIBLE AND COST REASONABLE NOISE BARRIER LOCATION		

SHEET NO.