

## MEMORANDUM

**To:** Town of Bay Harbor Islands

**From:** Bryant Brantley, AtkinsRéalis

**Re:** Air Quality Screening Test for Broad Causeway Bridge Replacement in the Town of Bay Harbor Islands, Dade County, Florida

Financial Management Number: 452428-1

**Date:** December 1, 2023

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The proposed Build Alternative is located in Dade County, an area currently designated as being attainment for particulate matter (2.5 microns in size and 10 microns in size) and carbon monoxide (CO).

The Build Alternative was subjected to a CO screening model that makes various conservative worst-case assumptions related to site conditions, meteorology and traffic. The FDOT's screening model for CO uses the latest United States Environmental Protection Agency (EPA)-approved software to produce estimates of one-hour and eight-hour CO at default air quality receptor locations. The one-hour and eight-hour estimates can be directly compared to the current one-and eight-hour National Ambient Air Quality Standards (NAAQS) for CO.

The roadway intersection forecast to have the highest total approach traffic volume was the Broad Causeway (SR 922)/Broadview Drive West intersection. The Build and No-Build scenarios for both the opening year (2030) and the design year (2050) were evaluated. The traffic data input used in the evaluation is attached to this memorandum.

Estimates of CO were predicted for the default receptors which are located 10 feet to 150 feet from the edge of the roadway. Based on the results from the screening model, the highest project-related CO one- and eight-hour levels are not predicted to meet or exceed the one- or eight-hour NAAQS for CO with either the No-Build or Build alternatives. As such, the project "passes" the screening model. The results of the screening model are attached to this memorandum.

Construction activities will cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to applicable state regulations and to the FDOT *Standard Specifications for Road and Bridge Construction*.

**Table 1: Year 2030 Opening Year No-Build Conditions  
Traffic Factors**

Year		2030 Opening Year No-Build											
Intersection:		Broad Causeway (SR 922)/Broadview Drive West Intersection											
Land Use:		Urban											
		Eastbound			Westbound			Northbound			Southbound		
No-Build	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	
Broad Causeway (SR 922)							2	951	30	2	1,562	30	
Broadview Drive West	1	0	30	1	11	30							

\*Vehicles per hour

**Table 2: Year 2030 Opening Year Build Conditions  
Traffic Factors**

Year		2030 Opening Year Build											
Intersection:		Broad Causeway (SR 922)/Broadview Drive West Intersection											
Land Use:		Urban											
		Eastbound			Westbound			Northbound			Southbound		
Build	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	
Broad Causeway (SR 922)							2	951	30	2	1,562	30	
Broadview Drive West	1	0	30	1	11	30							

\*Vehicles per hour

**Table 3: Year 2050 Design Year No-Build Conditions  
Traffic Factors**

Year		2050 Design Year No-Build											
Intersection:		Broad Causeway (SR 922)/Broadview Drive West Intersection											
Land Use:		Urban											
		Eastbound			Westbound			Northbound			Southbound		
No-Build	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	
Broad Causeway (SR 922)							2	1,129	30	2	1,854	30	
Broadview Drive West	1	0	30	1	13	30							

\*Vehicles per hour

**Table 4: Year 2050 Design Year Build Conditions  
Traffic Factors**

Year		2050 Design Year Build											
Intersection:		Broad Causeway (SR 922)/Broadview Drive West Intersection											
Land Use:		Urban											
		Eastbound			Westbound			Northbound			Southbound		
Build	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	No. of Lanes	VPH*	Speed (MPH)	
Broad Causeway (SR 922)							2	1,129	30	2	1,854	30	
Broadview Drive West	1	0	30	1	13	30							

\*Vehicles per hour

**Table 5: Year 2030 Opening Year No-Build Conditions  
Broad Causeway (SR 922)/Broadview Drive West Intersection**

<b>Receptor</b>	<b>Peak Hour Traffic Volume</b>	<b>Average Speed (MPH)</b>	<b>Max. 1-hour ppm*</b>	<b>Max. 8-hour ppm*</b>
Default Receptor 1	1,562	30	5.8	3.5
Default Receptor 2	1,562	30	6.0	3.6
Default Receptor 3	1,562	30	6.3	3.8
Default Receptor 4	1,562	30	5.9	3.5
Default Receptor 5	1,562	30	5.9	3.5
Default Receptor 6	1,562	30	5.8	3.5
Default Receptor 7	1,562	30	6.0	3.6
Default Receptor 8	1,562	30	6.3	3.8
Default Receptor 9	1,562	30	5.9	3.5
Default Receptor 10	1,562	30	5.9	3.5
Default Receptor 11	1,562	30	5.8	3.5
Default Receptor 12	1,562	30	6.0	3.6
Default Receptor 13	1,562	30	6.3	3.8
Default Receptor 14	1,562	30	5.9	3.5
Default Receptor 15	1,562	30	5.9	3.5
Default Receptor 16	1,562	30	5.8	3.5
Default Receptor 17	1,562	30	6.1	3.7
Default Receptor 18	1,562	30	6.3	3.8
Default Receptor 19	1,562	30	6.0	3.6
Default Receptor 20	1,562	30	5.9	3.5

**\*PPM: parts per million**

**Table 6: Year 2030 Opening Year Build Conditions  
Broad Causeway (SR 922)/Broadview Drive West Intersection**

<b>Receptor</b>	<b>Peak Hour Traffic Volume</b>	<b>Average Speed (MPH)</b>	<b>Max. 1-hour ppm*</b>	<b>Max. 8-hour ppm*</b>
Default Receptor 1	1,562	30	5.8	3.5
Default Receptor 2	1,562	30	6.0	3.6
Default Receptor 3	1,562	30	6.3	3.8
Default Receptor 4	1,562	30	5.9	3.5
Default Receptor 5	1,562	30	5.9	3.5
Default Receptor 6	1,562	30	5.8	3.5
Default Receptor 7	1,562	30	6.0	3.6
Default Receptor 8	1,562	30	6.3	3.8
Default Receptor 9	1,562	30	5.9	3.5
Default Receptor 10	1,562	30	5.9	3.5
Default Receptor 11	1,562	30	5.8	3.5
Default Receptor 12	1,562	30	6.0	3.6
Default Receptor 13	1,562	30	6.3	3.8
Default Receptor 14	1,562	30	5.9	3.5
Default Receptor 15	1,562	30	5.9	3.5
Default Receptor 16	1,562	30	5.8	3.5
Default Receptor 17	1,562	30	6.1	3.7
Default Receptor 18	1,562	30	6.3	3.8
Default Receptor 19	1,562	30	6.0	3.6
Default Receptor 20	1,562	30	5.9	3.5

**\*PPM: parts per million**

**Table 7: Year 2050 Design Year No-Build Conditions  
Broad Causeway (SR 922)/Broadview Drive West Intersection**

<b>Receptor</b>	<b>Peak Hour Traffic Volume</b>	<b>Average Speed (MPH)</b>	<b>Max. 1-hour ppm*</b>	<b>Max. 8-hour ppm*</b>
Default Receptor 1	1,854	30	6.0	3.6
Default Receptor 2	1,854	30	6.1	3.7
Default Receptor 3	1,854	30	6.5	3.9
Default Receptor 4	1,854	30	6.1	3.7
Default Receptor 5	1,854	30	6.0	3.6
Default Receptor 6	1,854	30	6.0	3.6
Default Receptor 7	1,854	30	6.1	3.7
Default Receptor 8	1,854	30	6.5	3.9
Default Receptor 9	1,854	30	6.1	3.7
Default Receptor 10	1,854	30	6.0	3.6
Default Receptor 11	1,854	30	6.0	3.6
Default Receptor 12	1,854	30	6.1	3.7
Default Receptor 13	1,854	30	6.5	3.9
Default Receptor 14	1,854	30	6.1	3.7
Default Receptor 15	1,854	30	6.0	3.6
Default Receptor 16	1,854	30	6.0	3.6
Default Receptor 17	1,854	30	6.2	3.7
Default Receptor 18	1,854	30	6.5	3.9
Default Receptor 19	1,854	30	6.2	3.7
Default Receptor 20	1,854	30	6.0	3.6

**\*PPM: parts per million**

**Table 8: Year 2050 Design Year Build Conditions  
Broad Causeway (SR 922)/Broadview Drive West Intersection**

<b>Receptor</b>	<b>Peak Hour Traffic Volume</b>	<b>Average Speed (MPH)</b>	<b>Max. 1-hour ppm*</b>	<b>Max. 8-hour ppm*</b>
Default Receptor 1	1,854	30	6.0	3.6
Default Receptor 2	1,854	30	6.1	3.7
Default Receptor 3	1,854	30	6.5	3.9
Default Receptor 4	1,854	30	6.1	3.7
Default Receptor 5	1,854	30	6.0	3.6
Default Receptor 6	1,854	30	6.0	3.6
Default Receptor 7	1,854	30	6.1	3.7
Default Receptor 8	1,854	30	6.5	3.9
Default Receptor 9	1,854	30	6.1	3.7
Default Receptor 10	1,854	30	6.0	3.6
Default Receptor 11	1,854	30	6.0	3.6
Default Receptor 12	1,854	30	6.1	3.7
Default Receptor 13	1,854	30	6.5	3.9
Default Receptor 14	1,854	30	6.1	3.7
Default Receptor 15	1,854	30	6.0	3.6
Default Receptor 16	1,854	30	6.0	3.6
Default Receptor 17	1,854	30	6.2	3.7
Default Receptor 18	1,854	30	6.5	3.9
Default Receptor 19	1,854	30	6.2	3.7
Default Receptor 20	1,854	30	6.0	3.6

**\*PPM: parts per million**

## Table 9: Year 2030 Opening Year No-Build Conditions CO Florida 2012 Output Sheets

CO Florida 2012 - Results  
Thursday, September 14, 2023

### Project Description

Project Title	Broad Causeway
Facility Name	Broad Causeway(SR 922)/Broadview West Intersection
User's Name	Bryant Brantley
Run Name	2030 No-Build
FDOT District	6
Year	2030
Intersection Type	4 X 4
Speed	Arterial 30 mph
Approach Traffic	Arterial 1562 vph

### Environmental Data

Temperature	53.9 °F
Reid Vapor Pressure	13.3 psi
Land Use	Urban
Stability Class	D
Surface Roughness	175 cm
1 Hr. Background Concentration	5.0 ppm
8 Hr. Background Concentration	3.0 ppm

Results		
(ppm, including background CO)		
Receptor	Max 1-Hr	Max 8-Hr
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1	5.8	3.5
2	6.0	3.6
3	6.3	3.8
4	5.9	3.5
5	5.9	3.5
6	5.8	3.5
7	6.0	3.6
8	6.3	3.8
9	5.9	3.5
10	5.9	3.5
11	5.8	3.5
12	6.0	3.6
13	6.3	3.8
14	5.9	3.5
15	5.9	3.5
16	5.8	3.5
17	6.1	3.7
18	6.3	3.8
19	6.0	3.6
20	5.9	3.5

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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**Table 10: Year 2030 Opening Year Build Conditions CO Florida 2012 Output Sheets**

CO Florida 2012 - Results  
Thursday, September 14, 2023

Project Description

Project Title Broad Causeway  
 Facility Name Broad Causeway(SR 922)/Broadview West Intersection  
 User's Name Bryant Brantley  
 Run Name 2030 Build  
 FDOT District 6  
 Year 2030  
 Intersection Type 4 X 4  
 Speed Arterial 30 mph  
 Approach Traffic Arterial 1562 vph

Environmental Data

Temperature 53.9 °F  
 Reid Vapor Pressure 13.3 psi  
 Land Use Urban  
 Stability Class D  
 Surface Roughness 175 cm  
 1 Hr. Background Concentration 5.0 ppm  
 8 Hr. Background Concentration 3.0 ppm

Receptor	Results (ppm, including background CO)	
	Max 1-Hr	Max 8-Hr
1	5.8	3.5
2	6.0	3.6
3	6.3	3.8
4	5.9	3.5
5	5.9	3.5
6	5.8	3.5
7	6.0	3.6
8	6.3	3.8
9	5.9	3.5
10	5.9	3.5
11	5.8	3.5
12	6.0	3.6
13	6.3	3.8
14	5.9	3.5
15	5.9	3.5
16	5.8	3.5
17	6.1	3.7
18	6.3	3.8
19	6.0	3.6
20	5.9	3.5

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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**Table 11: Year 2050 Design Year No-Build Conditions CO Florida 2012 Output Sheets**

CO Florida 2012 - Results  
 Thursday, September 14, 2023

Project Description

Project Title Broad Causeway  
 Facility Name Broad Causeway(SR 922)/Broadview West Intersection  
 User's Name Bryant Brantley  
 Run Name 2050 No-Build  
 FDOT District 6  
 Year 2050  
 Intersection Type 4 X 4  
 Speed Arterial 30 mph  
 Approach Traffic Arterial 1854 vph

Environmental Data

Temperature 53.9 °F  
 Reid Vapor Pressure 13.3 psi  
 Land Use Urban  
 Stability Class D  
 Surface Roughness 175 cm  
 1 Hr. Background Concentration 5.0 ppm  
 8 Hr. Background Concentration 3.0 ppm

Receptor	Results (ppm, including background CO)	
	Max 1-Hr	Max 8-Hr
1	6.0	3.6
2	6.1	3.7
3	6.5	3.9
4	6.1	3.7
5	6.0	3.6
6	6.0	3.6
7	6.1	3.7
8	6.5	3.9
9	6.1	3.7
10	6.0	3.6
11	6.0	3.6
12	6.1	3.7
13	6.5	3.9
14	6.1	3.7
15	6.0	3.6
16	6.0	3.6
17	6.2	3.7
18	6.5	3.9
19	6.2	3.7
20	6.0	3.6

\*\*\*\*\*  
 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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**Table 12: Year 2050 Design Year Build Conditions CO Florida 2012 Output Sheets**

CO Florida 2012 - Results  
 Thursday, September 14, 2023

Project Description

Project Title Broad Causeway  
 Facility Name Broad Causeway(SR 922)/Broadview West Intersection  
 User's Name Bryant Brantley  
 Run Name 2050 Build  
 FDOT District 6  
 Year 2050  
 Intersection Type 4 X 4  
 Speed Arterial 30 mph  
 Approach Traffic Arterial 1854 vph

Environmental Data

Temperature 53.9 °F  
 Reid Vapor Pressure 13.3 psi  
 Land Use Urban  
 Stability Class D  
 Surface Roughness 175 cm  
 1 Hr. Background Concentration 5.0 ppm  
 8 Hr. Background Concentration 3.0 ppm

Receptor	Results (ppm, including background CO)	
	Max 1-Hr	Max 8-Hr
1	6.0	3.6
2	6.1	3.7
3	6.5	3.9
4	6.1	3.7
5	6.0	3.6
6	6.0	3.6
7	6.1	3.7
8	6.5	3.9
9	6.1	3.7
10	6.0	3.6
11	6.0	3.6
12	6.1	3.7
13	6.5	3.9
14	6.1	3.7
15	6.0	3.6
16	6.0	3.6
17	6.2	3.7
18	6.5	3.9
19	6.2	3.7
20	6.0	3.6

\*\*\*\*\*  
 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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