

AIR QUALITY TECHNICAL MEMORANDUM

for

**Project Development and Environment (PD&E) Study
SR A1A North Causeway Bridge (#940045) Over Intracoastal Waterway
From US 1 to Approximately 1600' East of Existing Bridge
Milepost 0.0 to 1.02
St. Lucie County, Florida**

Financial Project ID: 429936-2-22-01

Federal Aid Number: 4931-040-P

ETDM Number: 14052

Prepared for:



**Florida Department of Transportation
District IV
3400 West Commercial Boulevard
Fort Lauderdale, Florida 33309**

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 December 14, 2016 and executed by FHWA and FDOT.

September 2016

AIR QUALITY TECHNICAL MEMORANDUM

Date: September 6, 2016

To: Donovan Pessoa, P.E, FDOT – D4

Cc: Ann Broadwell, Environmental Administrator

From: Lynn Kiefer, Senior Environmental Scientist

Subject: Financial Project ID Number: 429936-2-22-01
Federal Aid Number: 4931-040-P
Air Quality Screening Test
SR A1A North Causeway Bridge (#940045) Over Intracoastal Waterway
From US 1 to Approximately 1600' East of Existing Bridge
St. Lucie County, Florida

The proposed project is located in St. Lucie County, an area currently designated as being attainment for the following criteria air pollutants ozone, nitrogen dioxide, particulate matter, sulfur dioxide, carbon monoxide and lead.

The project alternatives were subjected to a carbon monoxide (CO) screening model that makes various conservative worst-case assumptions related to site conditions, meteorology and traffic. The Florida Department of Transportation's (FDOT's) screening model for CO uses the latest US 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-hour 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 SR 5/US Highway 1 (US 1) and SR A1A North Causeway intersection. The Build and No Build scenarios for both the opening year (2020) and design year (2040) 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-hour or eight-hour NAAQS for this pollutant 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.

Greenhouse Gases

Greenhouse gases (GHG) cause a global phenomenon in which heat is trapped in the earth's atmosphere. Because atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate-related phenomena. For example, warmer global temperatures

can cause changes in precipitation and sea levels. The burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Many GHGs remain in the atmosphere for time periods ranging from decades to centuries.

To date, no national standards have been established regarding GHGs, nor has USEPA established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO₂ under the Clean Air Act. GHGs are different from other air pollutants evaluated in the federal environmental reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO₂ and other GHG emissions is the entire planet. In addition, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad scale actions such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Furthermore, presently there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

Under NEPA, detailed environmental analysis should be focused on issues that are significant and meaningful to decision-making (40 CFR 1500.1(b), 1500.2(b), 1500.4(g), and 1501.7). FHWA has concluded, based on the nature of GHG emissions and the exceedingly small potential GHG impacts of the proposed action that the GHG emissions from the proposed action will not result in "reasonably foreseeable significant adverse impacts on the human environment" (40 CFR 1502.22(b)). The GHG emission from the project build alternatives will be insignificant, and will not play a meaningful role in a determination of the environmentally preferable alternative or the selection of the preferred alternative. More detailed information on GHG emissions "is not essential to a reasoned choice among reasonable alternatives" (40 CFR 1502.22(a)) or to making a decision in the best overall public interest based on a balanced consideration of transportation, economic, social, and environmental needs and impacts (23 CFR 771.105(b)).

Summary

This document does not incorporate an analysis of the GHG emissions or climate change effects of each of the alternatives because the potential change in GHG emissions is very small in the context of the affected environment. Because of the insignificance of the GHG impacts, those local impacts will not be meaningful to a decision on the environmentally preferable alternative or to a choice among alternatives. For these reasons, no alternatives-level GHG analysis has been performed for this project.

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 all applicable State and local regulations and to the FDOT Standard Specifications for Road and Bridge Construction.

TRAFFIC DATA FOR AIR QUALITY ANALYSIS

Date: September 6, 2016 Prepared by: Kimley-Horn and Associates, Inc.

Financial Project ID Number: 429936-2-22-01

Federal Aid Number: 4931-040-P

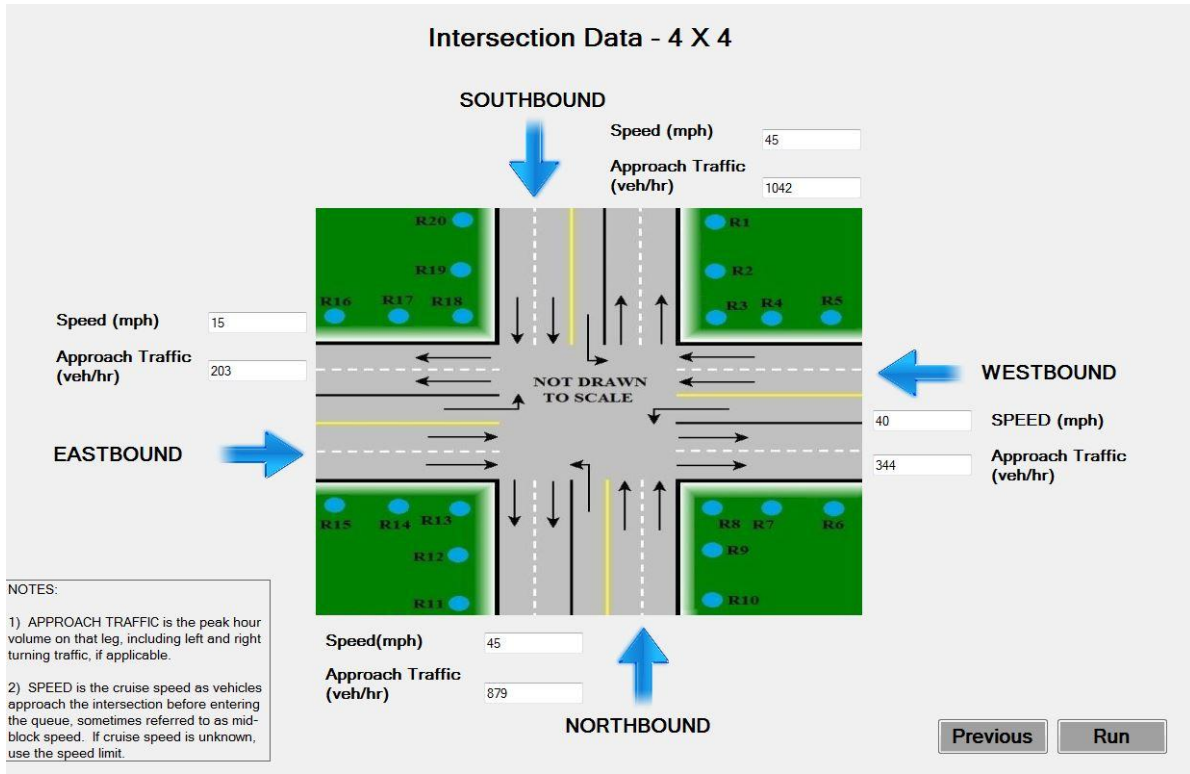
Project Description: FDOT is conducting a PD&E Study to evaluate alternatives for the replacement of the SR A1A North Causeway Bridge over the Intracoastal Waterway. The purpose of the project is to address structural and functional deficiencies of the existing bridge. Alternatives were considered north and south of the existing bridge and different vertical profiles were considered. In addition, alternatives were considered to extend the bridge over Old Dixie Highway and the Florida East Coast Railroad.

Opening Year: 2020

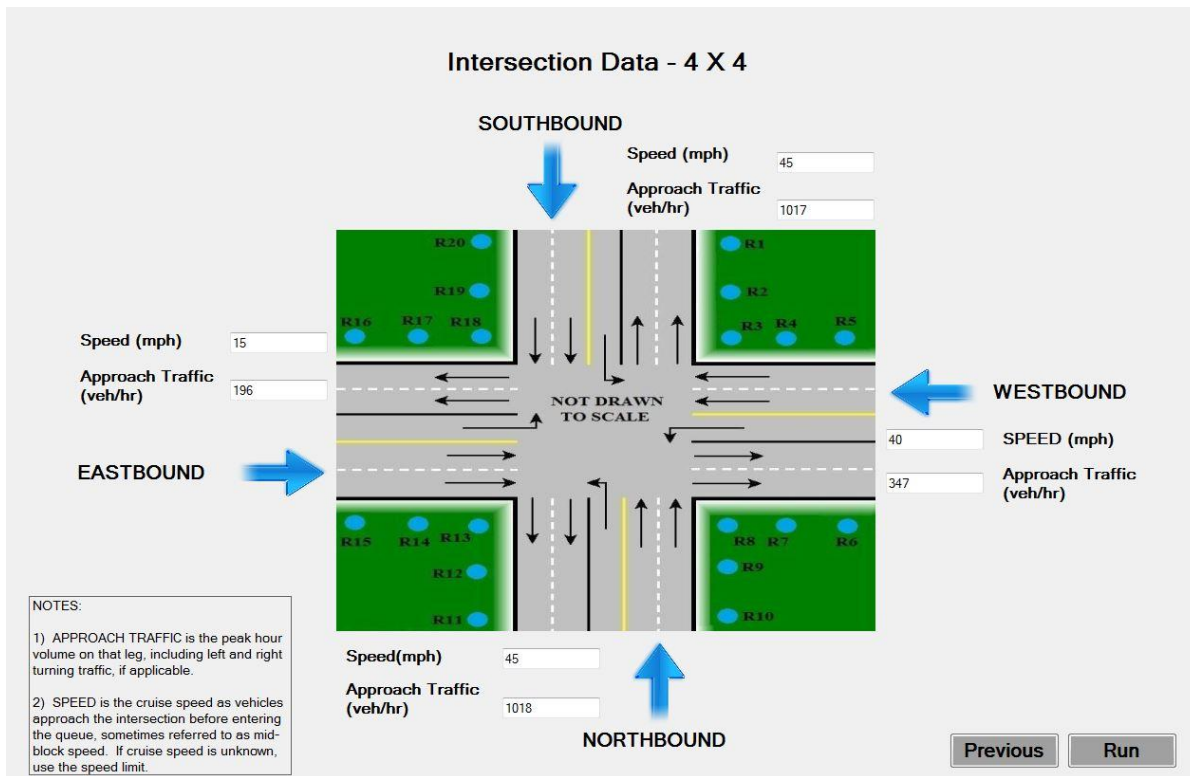
Design Year: 2040

Intersection: Build: SR 5/US Highway 1 No-Build: SR 5/US Highway 1

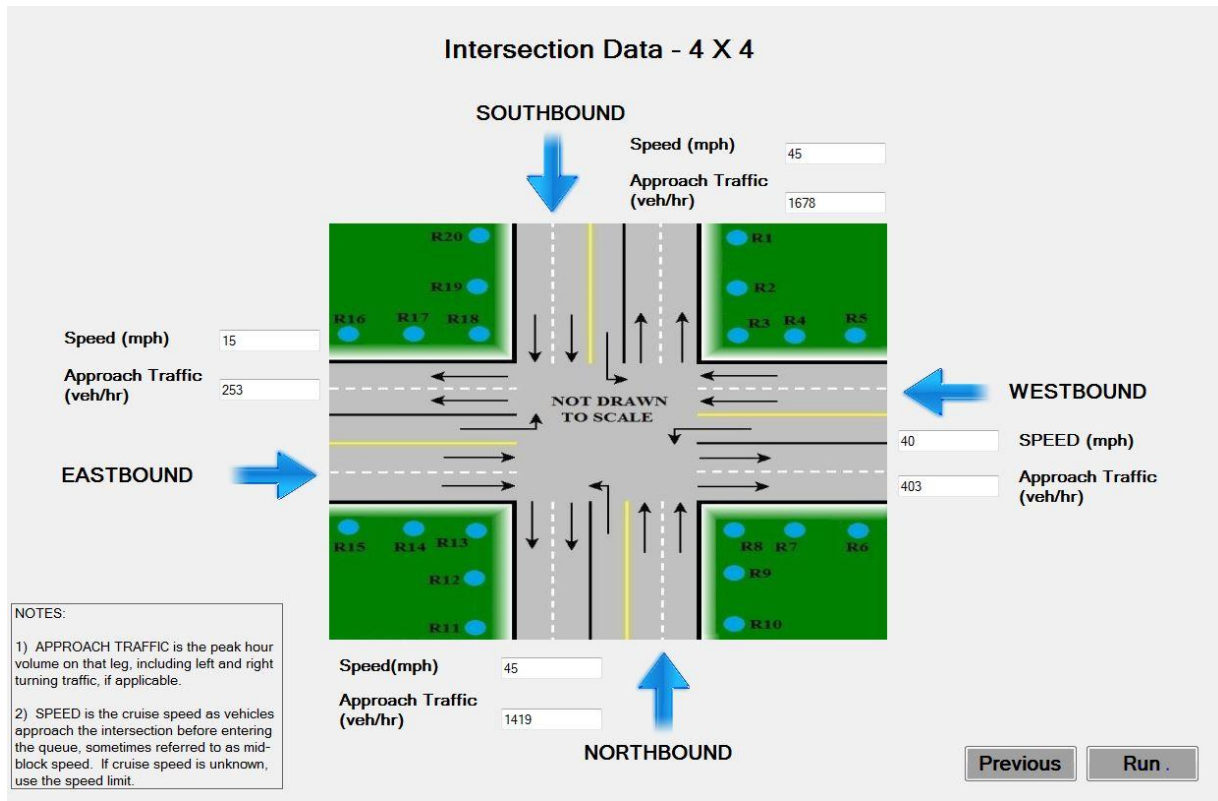
Land Use: Suburban												
Year & Condition	EB			WB			NB			SB		
	No. of Lanes	VPH	Speed	No. of Lanes	VPH	Speed	No. of Lanes	VPH	Speed	No. of Lanes	VPH	Speed
2020 No-Build	4	203	25	2	344	40	4	879	45	2	1042	45
2020 Build	4	196	25	3	347	40	4	1018	45	2	1017	45
2040 No-Build	4	253	25	2	403	40	4	1419	45	2	1678	45
2040 Build	4	230	25	3	399	40	4	1568	45	2	1645	45



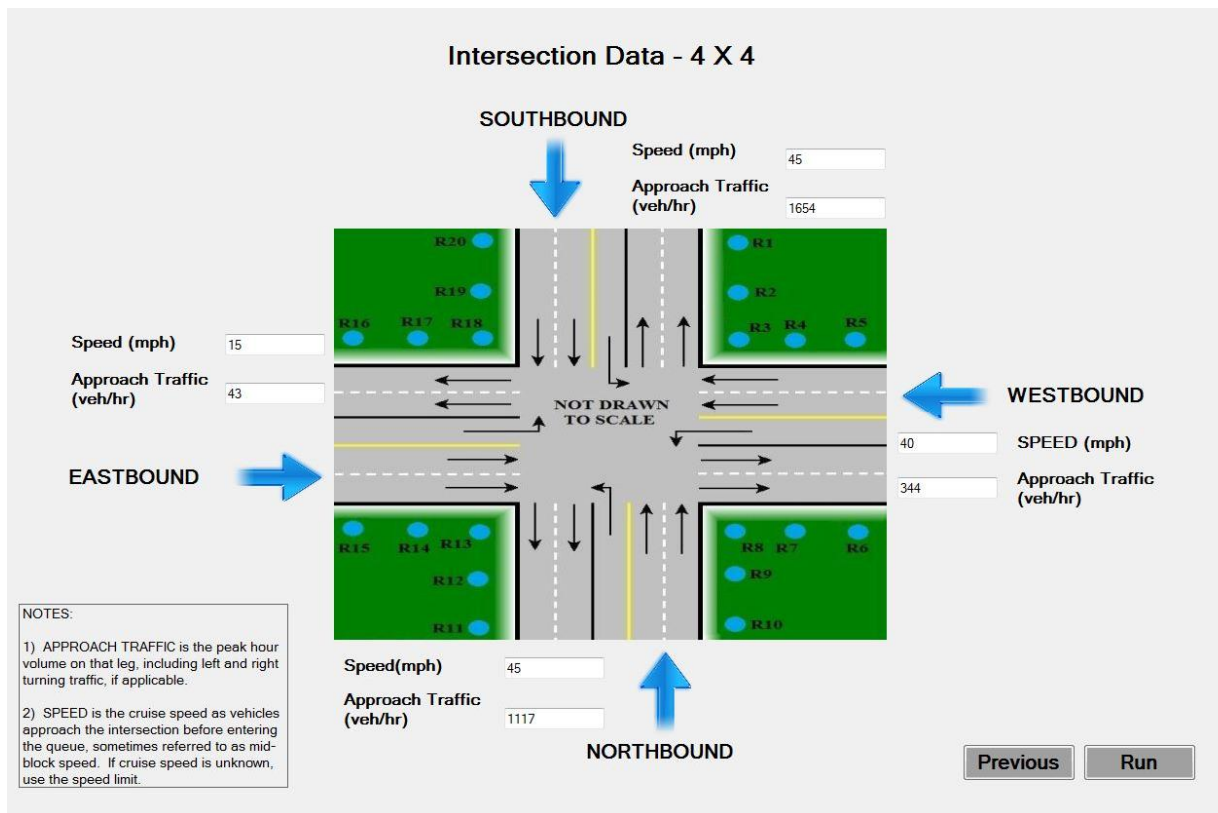
2020 No-Build



2020 Build



2040 No Build



2040 Build

CO Florida 2012 - Results
 Wednesday, September 07, 2016

Project Description

Project Title SR A1A North Causeway PD&E Study
 Facility Name SR A1A North Causeway
 User's Name FDOT D4
 Run Name 2020 No Build
 FDOT District 4
 Year 2020
 Intersection Type 4 X 4
 Speed Arterial 15 mph
 Approach Traffic Arterial 1042 vph

Environmental Data

Temperature 53.9 °F
 Reid Vapor Pressure 13.3 psi
 Land Use Suburban
 Stability Class D
 Surface Roughness 108 cm
 1 Hr. Background Concentration 3.3 ppm
 8 Hr. Background Concentration 2.0 ppm

Results

(ppm, including background CO)		
Receptor	Max 1-Hr	Max 8-Hr
-----	-----	-----
1	4.1	2.5
2	4.4	2.6
3	4.6	2.8
4	4.5	2.7
5	4.2	2.5
6	4.0	2.4
7	4.4	2.6
8	4.6	2.8
9	4.4	2.6
10	4.2	2.5
11	4.0	2.4
12	4.4	2.6
13	4.7	2.8
14	4.4	2.6
15	4.2	2.5
16	4.0	2.4
17	4.4	2.6
18	4.6	2.8
19	4.4	2.6
20	4.2	2.5

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

CO Florida 2012 - Results
 Wednesday, September 07, 2016

Project Description

Project Title SR A1A North Causeway PD&E Study
 Facility Name SR A1A North Causeway
 User's Name FDOT D4
 Run Name 2020 Build
 FDOT District 4
 Year 2020
 Intersection Type 4 X 4
 Speed Arterial 15 mph
 Approach Traffic Arterial 1018 vph

Environmental Data

Temperature 53.9 °F
 Reid Vapor Pressure 13.3 psi
 Land Use Suburban
 Stability Class D
 Surface Roughness 108 cm
 1 Hr. Background Concentration 3.3 ppm
 8 Hr. Background Concentration 2.0 ppm

Results
 (ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	4.1	2.5
2	4.3	2.6
3	4.6	2.8
4	4.5	2.7
5	4.2	2.5
6	4.0	2.4
7	4.3	2.6
8	4.6	2.8
9	4.4	2.6
10	4.2	2.5
11	4.0	2.4
12	4.3	2.6
13	4.6	2.8
14	4.4	2.6
15	4.2	2.5
16	4.0	2.4
17	4.4	2.6
18	4.6	2.8
19	4.4	2.6
20	4.2	2.5

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

CO Florida 2012 - Results
 Wednesday, September 07, 2016

Project Description

Project Title SR A1A North Causeway PD&E Study
 Facility Name SR A1A North Causeway
 User's Name FDOT D4
 Run Name 2040 No Build
 FDOT District 4
 Year 2040
 Intersection Type 4 X 4
 Speed Arterial 15 mph
 Approach Traffic Arterial 1678 vph

Environmental Data

Temperature 53.9 °F
 Reid Vapor Pressure 13.3 psi
 Land Use Suburban
 Stability Class D
 Surface Roughness 108 cm
 1 Hr. Background Concentration 3.3 ppm
 8 Hr. Background Concentration 2.0 ppm

Results

(ppm, including background CO)		
Receptor	Max 1-Hr	Max 8-Hr
-----	-----	-----
1	4.2	2.5
2	4.4	2.6
3	4.8	2.9
4	4.4	2.6
5	4.3	2.6
6	4.2	2.5
7	4.4	2.6
8	4.8	2.9
9	4.4	2.6
10	4.3	2.6
11	4.2	2.5
12	4.4	2.6
13	4.9	2.9
14	4.4	2.6
15	4.3	2.6
16	4.2	2.5
17	4.5	2.7
18	4.8	2.9
19	4.5	2.7
20	4.3	2.6

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

Project Description

Project Title SR A1A North Causeway PD&E Study
 Facility Name SR A1A North Causeway
 User's Name FDOT D4
 Run Name 2040 Build
 FDOT District 4
 Year 2040
 Intersection Type 4 X 4
 Speed Arterial 15 mph
 Approach Traffic Arterial 1654 vph

Environmental Data

Temperature 53.9 °F
 Reid Vapor Pressure 13.3 psi
 Land Use Suburban
 Stability Class D
 Surface Roughness 108 cm
 1 Hr. Background Concentration 3.3 ppm
 8 Hr. Background Concentration 2.0 ppm

Results
 (ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	4.2	2.5
2	4.4	2.6
3	4.6	2.8
4	4.4	2.6
5	4.3	2.6
6	4.2	2.5
7	4.4	2.6
8	4.6	2.8
9	4.4	2.6
10	4.3	2.6
11	4.2	2.5
12	4.4	2.6
13	4.7	2.8
14	4.4	2.6
15	4.3	2.6
16	4.2	2.5
17	4.5	2.7
18	4.6	2.8
19	4.5	2.7
20	4.3	2.6

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