

Date: September 11, 2020

To: I-75 (SR 93) and NW 49<sup>th</sup> Street PD&E Project Files

From: Metric Engineering, Inc.

Subject: Financial Management Number 435209-1-22-01  
Air Quality Technical Memorandum  
I-75 (SR 93) at NW 49<sup>th</sup> Street  
Marion County, Florida

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been carried out, by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by the Federal Highway Administration (FHWA) and FDOT.

FDOT is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives for a new interchange to I-75 from NW 49<sup>th</sup> Street. The proposed project is located in Marion County, an area currently designated as being in attainment for particulate matter (2.5 microns in size and 10 microns in size) and carbon monoxide (CO).

The project alternatives were subjected to a CO screening model called CO Florida 2012 that makes various conservative worst-case assumptions related to site conditions, meteorology and traffic. FDOT's CO Florida 2012 model 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 along the proposed project forecast to have the highest total approach traffic volume is I-75 at NW 49<sup>th</sup> Street. The Build and No-Build scenarios for both the opening year (2025) and the design year (2045) were evaluated. The No-Build scenario would result in the retainage of the existing I-75 facility without providing an intersection at NW 49<sup>th</sup> Street. 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 CO Florida 2012, the highest project-related CO one- and eight-hour levels are not predicted to meet or exceed the one- 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.

This project is not expected to create adverse impacts on air quality because the project area is in attainment for all NAAQS. Therefore, the Clean Air Act conformity requirements do not apply to the project. Additionally, the project is expected to improve the Level of Service (LOS) and reduce delay and congestion on nearby facilities.

**TRAFFIC DATA+**  
**I-75 at NW 49<sup>th</sup> Street**

**Approach Volumes (vehicles/hour)**

Approach	Build				
	Speed (mph)	2025 AM	2025 PM	2045 AM	2045 PM
I-75 NB	65*	4373	3853	5793	5032
I-75 SB	65*	3463	4129	4507	5450
NW 49 <sup>th</sup> St EB	45	625	614	980	955
NW 49 <sup>th</sup> St WB	45	661	532	876	700

**Ramp Volumes (vehicles/hour)**

Ramps	Build				
	Speed (mph)	2025 AM	2025 PM	2045 AM	2045 PM
I-75 NB	65*	519	615	746	883
I-75 SB	65*	244	288	351	415
NW 49 <sup>th</sup> St EB	45	464	392	746	631
NW 49 <sup>th</sup> St WB	45	439	371	552	466

**Approach Volumes (vehicles/hour) \*\***

Approach	No-Build				
	Speed (mph)	2025 AM	2025 PM	2045 AM	2045 PM
I-75 NB	65*	4103	3451	5240	4413
I-75 SB	65*	3456	4112	4415	5234
NW 49 <sup>th</sup> St EB	45	118	106	720	486
NW 49 <sup>th</sup> St WB	45	107	121	544	702

\* Maximum allowable speed in CO Florida 2012 model is 65mph; actual speed is 70mph.

\*\* The No-Build alternative results in no ramps, therefore, no ramp volumes have been included for the No Build alternative.

CO Florida 2012 - Results  
 Friday, September 11, 2020

Project Description

Project Title I-75 (SR 93) at NW 49th Street PD&E Study  
 Facility Name I-75 and NW 49th Street  
 User's Name Cassandra O'Donahue  
 Run Name I-75 and NW 49th Street Build AM  
 FDOT District 5  
 Year 2025  
 Intersection Type N-S Diamond  
 Speed Arterial 45 mph Freeway 65 mph  
 Approach Traffic Arterial 661 vph Freeway 4373 vph

Environmental Data

Temperature 47.8 °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
1	6.6	4.0
2	5.8	3.5
3	5.9	3.5
4	5.9	3.5
5	5.9	3.5
6	5.9	3.5
7	6.1	3.7
8	6.0	3.6
9	5.7	3.4
10	6.4	3.8
11	6.6	4.0
12	5.8	3.5
13	5.8	3.5
14	5.8	3.5
15	5.7	3.4
16	5.8	3.5
17	6.0	3.6
18	6.0	3.6
19	5.7	3.4
20	6.6	4.0

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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CO Florida 2012 - Results  
 Friday, September 11, 2020

Project Description

Project Title I-75 (SR 93) at NW 49th Street PD&E Study  
 Facility Name I-75 and NW 49th Street  
 User's Name Cassandra O'Donahue  
 Run Name I-75 and NW 49th Street Build PM  
 FDOT District 5  
 Year 2025  
 Intersection Type N-S Diamond  
 Speed Arterial 45 mph Freeway 65 mph  
 Approach Traffic Arterial 614 vph Freeway 4129 vph

Environmental Data

Temperature 47.8 °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
1	6.5	3.9
2	5.8	3.5
3	5.9	3.5
4	6.0	3.6
5	5.8	3.5
6	5.9	3.5
7	6.1	3.7
8	5.9	3.5
9	5.6	3.4
10	6.3	3.8
11	6.5	3.9
12	5.8	3.5
13	5.7	3.4
14	5.9	3.5
15	5.7	3.4
16	5.8	3.5
17	6.0	3.6
18	5.9	3.5
19	5.6	3.4
20	6.5	3.9

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Project Description

Project Title I-75 (SR 93) at NW 49th Street PD&E Study  
 Facility Name I-75 and NW 49th Street  
 User's Name Cassandra O'Donahue  
 Run Name I-75 and NW 49th Street Build AM  
 FDOT District 5  
 Year 2045  
 Intersection Type N-S Diamond  
 Speed Arterial 45 mph Freeway 65 mph  
 Approach Traffic Arterial 980 vph Freeway 5793 vph

Environmental Data

Temperature 47.8 °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
1	7.3	4.4
2	6.1	3.7
3	6.0	3.6
4	6.1	3.7
5	5.9	3.5
6	6.1	3.7
7	6.2	3.7
8	6.1	3.7
9	5.8	3.5
10	6.9	4.1
11	7.3	4.4
12	6.1	3.7
13	6.0	3.6
14	5.9	3.5
15	5.8	3.5
16	6.0	3.6
17	6.1	3.7
18	6.0	3.6
19	5.8	3.5
20	7.0	4.2

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Project Title I-75 (SR 93) at NW 49th Street PD&E Study  
 Facility Name I-75 and NW 49th Street  
 User's Name Cassandra O'Donahue  
 Run Name I-75 and NW 49th Street Build PM  
 FDOT District 5  
 Year 2045  
 Intersection Type N-S Diamond  
 Speed Arterial 45 mph Freeway 65 mph  
 Approach Traffic Arterial 955 vph Freeway 5450 vph

Environmental Data

Temperature 47.8 °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
1	7.1	4.3
2	5.9	3.5
3	6.0	3.6
4	6.0	3.6
5	6.0	3.6
6	6.1	3.7
7	6.2	3.7
8	6.1	3.7
9	5.8	3.5
10	6.8	4.1
11	7.1	4.3
12	5.9	3.5
13	5.9	3.5
14	5.9	3.5
15	5.8	3.5
16	6.0	3.6
17	6.1	3.7
18	6.0	3.6
19	5.8	3.5
20	6.9	4.1

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Project Title I-75 (SR 93) at NW 49th Street PD&E Study  
 Facility Name I-75 and NW 49th Street  
 User's Name Cassandra O'Donahue  
 Run Name I-75 and NW 49th Street No Build AM  
 FDOT District 5  
 Year 2025  
 Intersection Type N-S Diamond  
 Speed Arterial 45 mph Freeway 65 mph  
 Approach Traffic Arterial 118 vph Freeway 4103 vph

Environmental Data

Temperature 47.8 °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
1	6.6	4.0
2	5.8	3.5
3	5.9	3.5
4	5.9	3.5
5	5.9	3.5
6	5.9	3.5
7	6.1	3.7
8	6.0	3.6
9	5.7	3.4
10	6.4	3.8
11	6.6	4.0
12	5.8	3.5
13	5.8	3.5
14	5.8	3.5
15	5.7	3.4
16	5.8	3.5
17	6.0	3.6
18	6.0	3.6
19	5.7	3.4
20	6.6	4.0

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 User's Name Cassandra O'Donahue  
 Run Name I-75 and NW 49th Street No Build PM  
 FDOT District 5  
 Year 2025  
 Intersection Type N-S Diamond  
 Speed Arterial 45 mph Freeway 65 mph  
 Approach Traffic Arterial 121 vph Freeway 4112 vph

Environmental Data

Temperature 47.8 °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
1	6.6	4.0
2	5.8	3.5
3	5.9	3.5
4	5.9	3.5
5	5.9	3.5
6	5.9	3.5
7	6.1	3.7
8	6.0	3.6
9	5.7	3.4
10	6.4	3.8
11	6.6	4.0
12	5.8	3.5
13	5.8	3.5
14	5.8	3.5
15	5.7	3.4
16	5.8	3.5
17	6.0	3.6
18	6.0	3.6
19	5.7	3.4
20	6.6	4.0

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 User's Name Cassandra O'Donahue  
 Run Name I-75 and NW 49th Street No Build AM  
 FDOT District 5  
 Year 2045  
 Intersection Type N-S Diamond  
 Speed Arterial 45 mph Freeway 65 mph  
 Approach Traffic Arterial 720 vph Freeway 5240 vph

Environmental Data

Temperature 47.8 °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
1	7.3	4.4
2	6.1	3.7
3	6.0	3.6
4	6.1	3.7
5	5.9	3.5
6	6.1	3.7
7	6.2	3.7
8	6.1	3.7
9	5.8	3.5
10	6.9	4.1
11	7.3	4.4
12	6.1	3.7
13	6.0	3.6
14	5.9	3.5
15	5.8	3.5
16	6.0	3.6
17	6.1	3.7
18	6.0	3.6
19	5.8	3.5
20	7.0	4.2

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 FDOT District 5  
 Year 2045  
 Intersection Type N-S Diamond  
 Speed Arterial 45 mph Freeway 65 mph  
 Approach Traffic Arterial 702 vph Freeway 5234 vph

Environmental Data

Temperature 47.8 °F  
 Reid Vapor Pressure 13.3 psi  
 Land Use Urban  
 Stability Class D  
 Surface Roughness 175 cm  
 1 Hr. Background Concentration 5.0 ppm  
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Results

(ppm, including background CO)

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1	6.6	4.0
2	5.8	3.5
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4	5.9	3.5
5	5.9	3.5
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7	6.1	3.7
8	6.0	3.6
9	5.7	3.4
10	6.4	3.8
11	6.6	4.0
12	5.8	3.5
13	5.8	3.5
14	5.8	3.5
15	5.7	3.4
16	5.8	3.5
17	6.0	3.6
18	6.0	3.6
19	5.7	3.4
20	6.6	4.0

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