Task A5a
Air Quality Report

TAMPA INTERSTATE STUDY

State Project No. 99007-1402, WPI No. 7140004, FAP No. IR-9999(43)

Interstate 275 (I-275) from Dale Mabry Highway Interchange north to Dr. Martin Luther King Jr. Boulevard (formerly Buffalo Avenue), Interstate 4 (I-4) from I-275 (including interchange) to east of 50th Street (U.S. 41), and the Crosstown Connector from I-4 southward to the existing Tampa South Crosstown Expressway, Hillsborough County.

Prepared For The
FLORIDA DEPARTMENT OF TRANSPORTATION

Prepared By

GREINER, INC.

In Association With

KNIGHT APPRAISAL SERVICES, INC.
PIPER ARCHAEOLOGICAL SERVICES

DECEMBER 1994

EXECUTIVE SUMMARY

In accordance with 23 CFR 771 and Florida Department of Transportation (FDOT) guidelines, an air quality impact analysis was conducted to determine the effect of the proposed Tampa Interstate System improvements. The study limits for the microscale analysis are I-275 from the Dale Mabry Highway interchange north to Dr. Martin Luther King, Jr. Boulevard, I-4 from I-275 (including the interchange) to east of 50th Street (U.S. 41), the Crosstown Connector from I-4 southward to the existing Tampa South Crosstown Expressway and the existing South Crosstown Expressway from Kennedy Boulevard to Maydell Drive. The study area also includes the transition area extending from Dr. Martin Luther King, Jr. Boulevard to Hillsborough Avenue. The air quality impacts from proposed improvements within the study limits are addressed in an Environmental Impact Statement.

Compared to the No-Action Alternative, carbon monoxide (CO) concentrations predicted for the Preferred Alternative are expected to be lower in the vicinity of the project as a result of increased motor vehicle mobility, faster operating speeds, and less stop-and-go driving. The microscale analysis indicates that the Preferred Alternative will not cause, or contribute to, CO concentrations above the one- and eight-hour National Ambient Air Quality Standards.

The project is in an area which has been designated as non-attainment for the ozone standards under the criteria provided in the Clean Air Act Amendments of 1990. This project is in conformance with the SIP because it will not cause violations of any of the National Ambient Air Quality Standards. This project is included in the urban area's current approved conforming TIP which was signed by the Secretary of the Florida Department of Transportation on August 8, 1994. This project is included in the area's conforming long-range plan. This project is included in the area's Conformity Determination report which was approved by FHWA/FTA on June 30, 1994.

Construction activities causing short-term air quality impacts in the form of dust will be minimized by adherence to FDOT Standard Specifications for Road and Bridge Construction.

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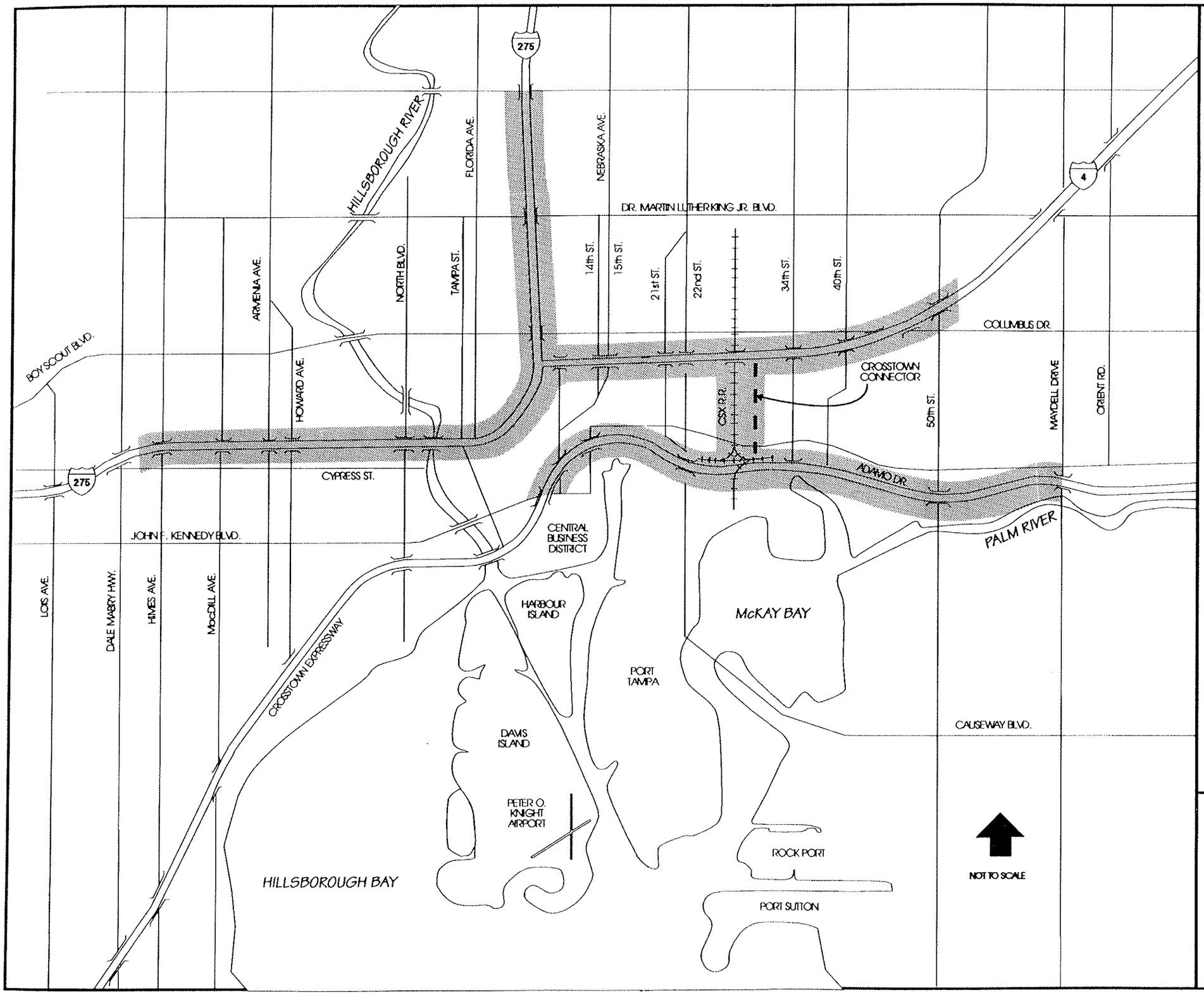
LIST OF EXHIBITS

I. INTRODUCTION

The Florida Department of Transportation (FDOT) is investigating the feasibility of improving the Tampa Interstate System in Hillsborough County, Florida. The purpose of the investigation is to produce a Master Plan, conceptual design and environmental data base for improvements to Interstate 4 (I-4), Interstate 75 (I-75) and Interstate 275 (I-275). For the purpose of developing the Master Plan, Phase I of the study, the Tampa Interstate System was divided into six study segments with established logical termini which were further sub-divided into seventeen individual design segments. Following acceptance of the Master Plan, provisions were set forth by FDOT to implement Phase II of the Tampa Interstate Study.

Phase II is intended to satisfy requirements for environmental documentation. The study limits for the air quality analysis are shown in Exhibit 1 and include I-275 from the Dale Mabry Highway interchange north to Dr. Martin Luther King, Jr. Boulevard, I-4 from I-275 (including the interchange) to east of 50th Street (U.S. 41), the Crosstown Connector from I-4 southward to the existing Tampa South Crosstown Expressway and the existing South Crosstown Expressway from Kennedy Boulevard to Maydell Drive. The total magnitude of the improvements recommended in the Tampa Interstate Study Master Plan will require a series of staged construction projects. Therefore, the air quality impacts in the transition area extending from Dr. Martin Luther King, Jr. Boulevard to Hillsborough Avenue were also addressed. Further planning and design details regarding the proposed Tampa Interstate System Study are provided in the Environmental Impact Statement and Preliminary Engineering Report.[1]

The objective of this report is to describe existing air quality conditions in the vicinity of the project; describe the methodology used to predict future air quality conditions in the project area; and to discuss the results of, and provide supporting materials for, the analyses. In accordance with 23 CFR 771 and FDOT's Project Development and Environment Manual (PD&E Manual), the assessment included a microscale analysis for carbon monoxide.[2]



LEGEND

- Proposed New Roads
- Project Study Limits

FLORIDA DEPARTMENT OF TRANSPORTATION

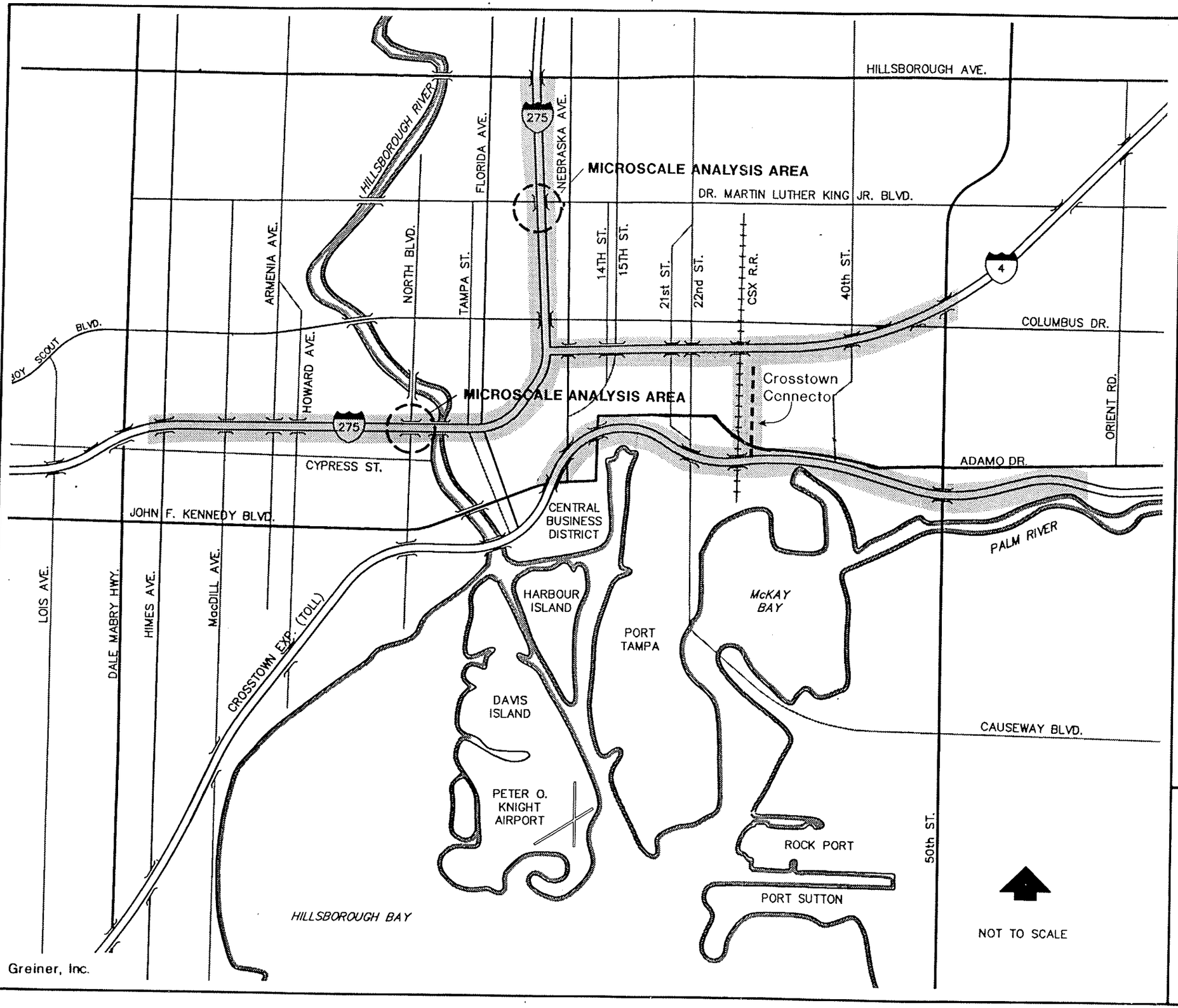
AIR QUALITY REPORT

TAMPA INTERSTATE STUDY PHASE II

Hillsborough County, Florida

PROJECT STUDY LIMITS

EXHIBIT 1



LEGEND

- Proposed New Roads
- Project Study Limits
- Microscale Analysis Area

FLORIDA DEPARTMENT OF TRANSPORTATION

AIR QUALITY REPORT

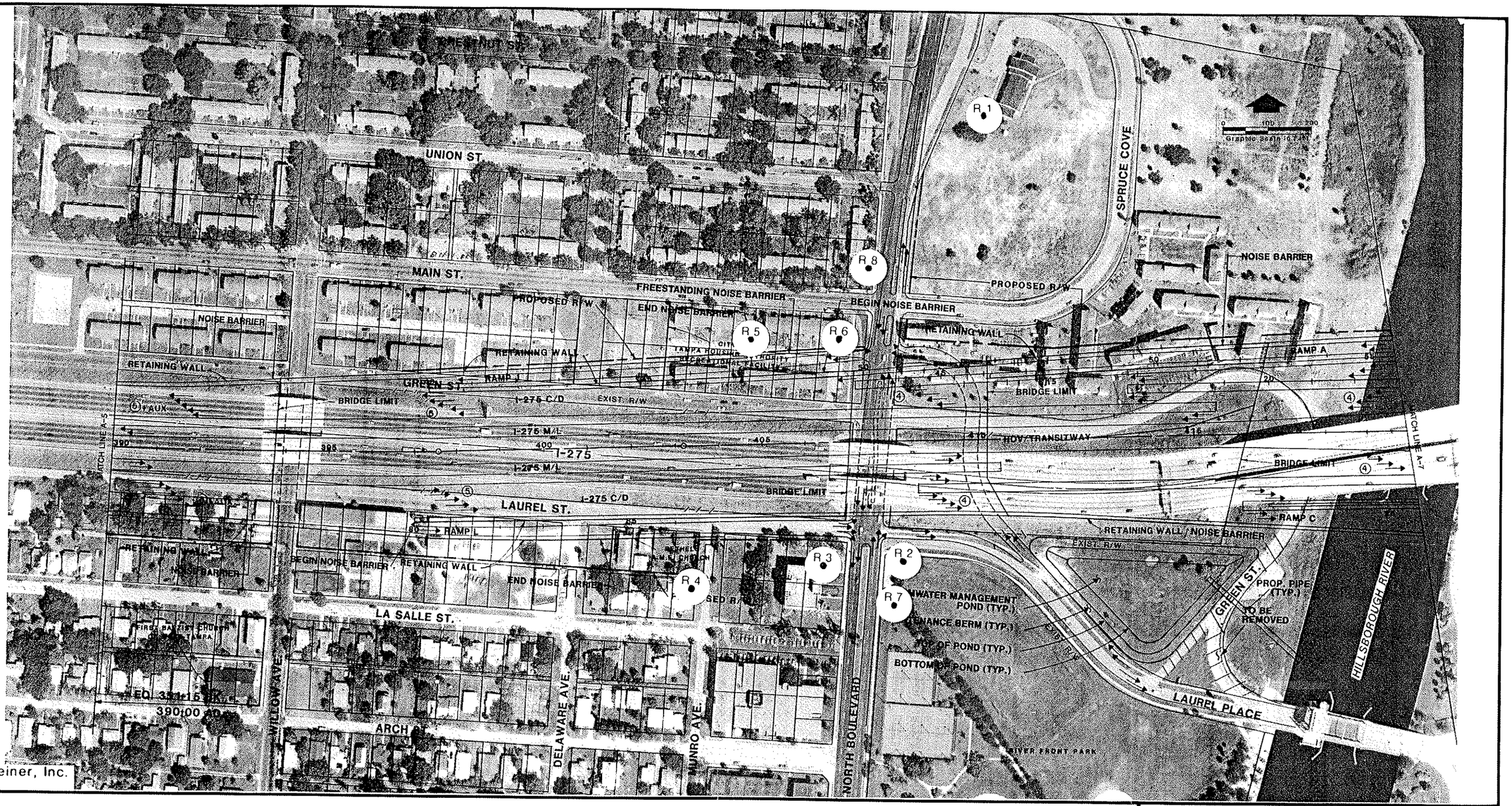
TAMPA INTERSTATE STUDY

PHASE II

Hillsborough County, Florida

MICROSCALE ANALYSIS STUDY AREA

EXHIBIT 2



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LEGEND

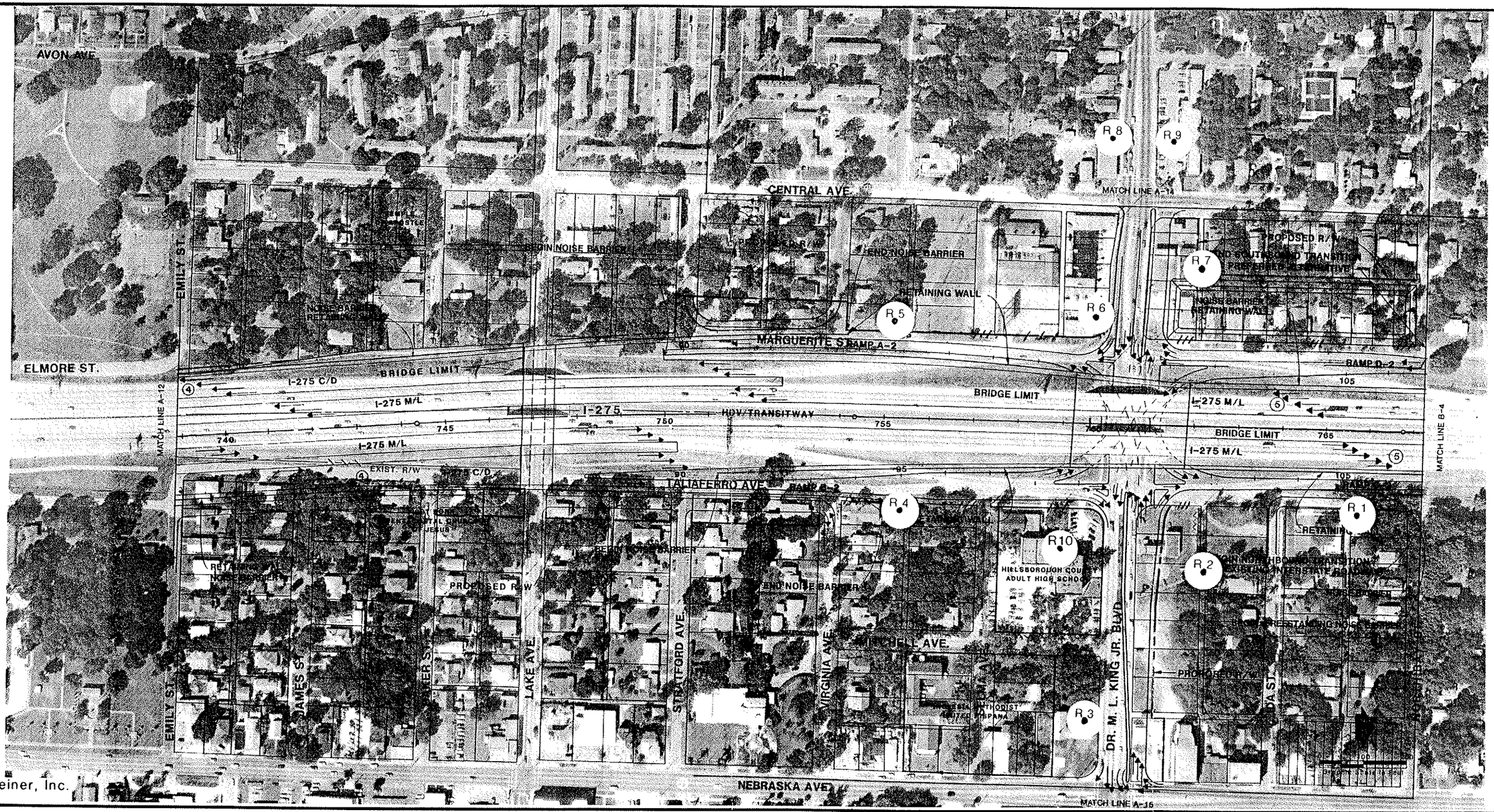
R 1 ● Receptor

FLORIDA DEPARTMENT OF TRANSPORTATION

AIR QUALITY REPORT
TAMPA INTERSTATE STUDY
PHASE II
Hillsborough County, Florida

RECEPTOR LOCATIONS AT THE I-275/ NORTH BOULEVARD INTERCHANGE

EXHIBIT 3



Greiner, Inc.

LEGEND

R1 ● Receptor

FLORIDA DEPARTMENT OF TRANSPORTATION

AIR QUALITY REPORT

TAMPA INTERSTATE STUDY
PHASE II

Hillsborough County, Florida

RECEPTOR LOCATIONS AT THE I-275/ DR.MARTIN LUTHER KING,JR. BOULEVARD INTERCHANGE

EXHIBIT 4

II. AIR QUALITY IMPACT ASSESSMENT

A. Existing Conditions

Monitoring is the most reliable means of determining ambient air quality conditions. The Hillsborough County Environmental Protection Commission (EPC), in cooperation with the Florida Department of Environmental Protection (FDEP), operates several air monitoring stations located near the study area. From the monitoring data, a general profile of existing air quality conditions in the vicinity of the project can be derived.

A synopsis of the most recent air monitoring data obtainable (1990) is presented in Table 1. This information is summarized in terms of monitoring station location, distance and direction from the study area, pollutant(s) measured and maximum recorded concentrations. Comparison of these data with the National Ambient Air Quality Standards (NAAQS) is also made.

Based on air monitoring data obtained from the monitoring stations, ozone (O_3) is the air pollutant of primary concern in the vicinity of the Tampa Interstate Study area. The formation of O_3 is a long-term photochemical reaction involving solar radiation, nitrogen oxides (NO_x), and hydrocarbons (HC). In general terms, NO_x and HC are emitted into the atmosphere in the urban core areas and air currents transport the oxidants to the suburbs. As such, violations of the NAAQS for O_3 are generally considered regional in nature.

According to the Clean Air Act (CAA) Amendments of 1977, all areas within the state are designated with respect to the NAAQS as either attainment, non-attainment, or unclassifiable. Areas that meet the NAAQS are designated as attainment. Conversely, areas that violate the NAAQS are designated as non-attainment. Finally, areas where data are insufficient for classification as either attainment or non-attainment are designated as unclassifiable. In areas designated as non-attainment, a State Implementation Plan (SIP) is developed to bring the area into compliance with the NAAQS. The current attainment, non-attainment and unclassifiable designations for Hillsborough County are shown on Table 2.

TABLE 1

AIR QUALITY MONITORING DATA
Tampa Interstate Study Phase II

Station Number	Monitoring Station Location[a]	Distance and Direction from the Study Area	Pollutant(s) Measured	Maximum Recorded Concentration[b]	Air Quality Standard[c]	Duration	Exceeds Standard
1	Downtown Tampa	0.6 km (0.4 miles), S.	Carbon monoxide	9 ppm 5 ppm	35 ppm 9 ppm	1-hour average 8-hour average	No No
2	Davis Island	2.6 km (1.6 miles), S.	Inhalable particulates Sulphur dioxide Ozone	48 ug/m^3 29 ug/m^3 21 ug/m^3 143 ug/m^3 369 ug/m^3 .124 ug/m^3	150 ug/m^3 50 ug/m^3 80 ug/m^3 365 ug/m^3 1,300 ug/m^3 .12 ppm	24-hour max Arithmetic mean Arithmetic mean 24-hour average 3-hour average 1-hour average	No No No No No No
3	HCC	2.1 km (1.3 miles), N.W.	Carbon monoxide	8 ppm 6 ppm	35 ppm 9 ppm	1-hour average 8-hour average	No No
4	Beach Park	4.2 km (2.6 miles), S.W.	Ozone	.063 ppm	.12 ppm	1-hour average	No
5	Seminole School	1.6 km (1.0 miles), N.	Inhalable particulates Carbon monoxide	70 ug/m^3 31 ug/m^3 12 ppm 7 ppm	150 ug/m^3 50 ug/m^3 35 ppm 9 ppm	24-hour max Arithmetic mean 1-hour average 8-hour average	No No No No

[a] Monitoring Station Address:

1) 200 Madison Ave.
2) 155 Columbia Dr.
3) N. Dale Mabry Hwy./Tampa Bay St.
4) Bay Way St.
5) 6201 Central Ave.

[b] Florida Department of Environmental Protection, ALLSUM Report, 1990.

[c] National Air Quality Standards established by the EPA.

ppm = parts per million
ug/m^3 = micrograms per cubic meter

TABLE 2

CURRENT ATTAINMENT/NON-ATTAINMENT DESIGNATIONS FOR HILLSBOROUGH COUNTY[a]
Tampa Interstate Study - Phase II

Pollutant	Designations
Carbon monoxide	Attainment
Nitrogen dioxide	Attainment
Sulfur dioxide	Unclassifiable
Particulate matter	Unclassifiable
Ozone	Non-Attainment
Lead	Non-Attainment[b]

[a] Source: Section 17-275, (400), (410) and (420) of the Florida Administrative Code.

[b] A portion of Hillsborough County encompassed within a radius of 5 kilometers centered at Universal Transverse Coordinates: 364.0 kilometers east, 3093.5 kilometers north, Zone 17. The pollution source is a battery plant.

Designations: Attainment: areas within which the NAAQS have not been violated.

Non-attainment: areas within which the NAAQS have been violated.

Unclassifiable: areas which cannot be classified as attainment or non-attainment.

As shown on Table 2, the U.S. Environmental Protection Agency (EPA) has designated all of Hillsborough County as a non-attainment area for O_3. The CAA Amendments of 1990 further designate the degree of the O_3 non-attainment status as either "severe", "moderate" or "marginal" and identify any necessary changes to the SIP. Hillsborough County has been classified as a marginal O_3 non-attainment area.

A portion of Hillsborough County has also been designated as non-attainment for lead (Pb). The non-attainment area is associated with a battery plant, and the project will have no effect on the non-attainment area.

B. Microscale Analysis

The purpose of the microscale analysis is to predict the impact of the proposed improvements on future air quality conditions in the project vicinity. Specifically, the analysis examines the generation and localized transport of carbon monoxide (CO), the most prevalent air pollutant emitted from motor vehicles. The results of the analysis are used to compare the No-Action Alternative and the Preferred Alternative and to indicate whether or not motor vehicle emissions associated with the project would contribute to CO concentrations in exceedance of the NAAQS.

1. Methodology

In accordance with the PD&E Manual, Part 2, Chapter 16, a "worst-case" approach was taken in the microscale analysis. For example, traffic data and aerial photography showing the concept design (October 1992) were reviewed to identify areas having a combination of heavy traffic volumes, low vehicular speeds, and nearby reasonable receptor sites. Receptor sites are areas where the public has routine access and may spend one to several hours. The premise of this approach is that CO concentrations elsewhere along the project corridor will be lower than these worst-case locations. The transition segment extending from the northern project limit and all areas within the designated project limits were considered when determining "worst-case" locations. Based on the review, two

interchanges, I-275/Dr. Martin Luther King, Jr. Boulevard and I-275/North Boulevard, were selected for the microscale analysis.

The I-275/Dr. Martin Luther King, Jr. Boulevard interchange is projected to have heavy traffic volumes on the interstate mainline sections, arterial streets and ramp system. A relatively high volume-to-capacity ratio and long average delay per vehicle are anticipated at the signalized intersections associated with this interchange. By comparison, the proposed I-275/North Boulevard interchange will require signalized intersections on North Boulevard where none presently exist, thus increasing vehicle queuing and associated excess emissions in the area. In addition, the heaviest traffic volumes and highest volume-to-capacity ratios on the Tampa Interstate System are anticipated to occur in the vicinity of this proposed interchange and the two sections of the I-275 local access freeway are projected to operate at level of service E. Properties surrounding these two interchanges are nearly all developed for residential, commercial or recreational use. The locations of the microscale analysis study areas are shown in Exhibit 2.

CO concentrations were predicted for the year 2010 to coincide with the project's design year. For comparative purposes, the microscale analysis was performed for the No-Action Alternative and the Preferred Alternative.

Implementing all of the improvements recommended in the Tampa Interstate Study Master Plan will require a series of staged construction projects. The opening year for the various projects will be staggered over several years and the opening of a particular project segment will affect traffic volumes and operational characteristic on other project segments with different opening dates. Therefore, since a single opening year for the ultimate improvement of the Tampa Interstate System cannot be established, an opening year analysis was not conducted.

Representative, "worst-case" receptors were simulated at the I-275/Dr. Martin Luther King, Jr. Boulevard and the I-275/North Boulevard interchanges. Sensitive sites within the vicinity of the interchanges include residences, businesses, a park, and a church. The closest reasonable receptor sites at each interchange were modeled in the analysis. At the I-275/North Boulevard interchange,

model receptors include a church in the northeast quadrant (Receptor 1), residences in the southwest and northwest quadrants (Receptors 4, 5, 6 and 8); a recreational park in the southeast quadrant (Receptors 2 and 7); and the front walk of a business in the southwest quadrant (Receptor 3). At the I-275/Dr. Martin Luther King, Jr. Boulevard interchange, modeled receptors include residences in the northeast, southeast, southwest and northwest quadrants (Receptors 1, 2, 3, 4, 5, 7 and 8), business front walks in the southwest and northwest quadrants (Receptors 6 and 9) and a former school site in the southeast quadrant (Receptor 10). As with the selection of the worst-case microscale analysis areas, the premise of modeling the closest reasonable receptors is that CO concentrations at other reasonable receptors will be lower. The locations of the receptors are shown in Exhibits 3 and 4.

In accordance with FDOT guidelines, the computer models used in the microscale analysis include MOBILE5a and CAL3QHC.[3] A summary of input parameters is provided in Table 3.

The MOBILE5a mobile source emissions model from EPA was used to compute area-specific motor vehicle emission factors. Hillsborough County has implemented a motor vehicle inspection/maintenance (I/M) program and anti-tampering program (ATP) as a means of reducing mobile sources of air pollution. Therefore, the I/M program and ATP options were implemented in MOBILE5a.

The CAL3QHC model was used to simulate the dispersion of motor vehicle emissions from roadways and at intersections. This model is designed to account for both free flow emissions from non-delayed traffic and excess emissions from delays occurring at intersections.

Peak-hour traffic volumes and roadway operating conditions were obtained from the Tampa Interstate Study: Traffic Memorandum, published separately.[4] Other input data such as vehicle mix, operating mode and air temperature were obtained from the PD&E Manual, Part 2, Chapter 16. Input data for the modeled roadway links are provided in the Appendix of this report.

TABLE 3

SUMMARY OF MICROSCALE ANALYSES
MODELING PARAMETERS
Tampa Interstate Study Phase II

MOBILE5a and CAL3QHC	
Parameter	**Value**
Region	Low Altitude
Operating mode	20.6% cold, 27.3% hot
Ambient temperature	52°F
Vehicle mix	Default
Analysis year	2010
Stability class	D
Wind speed	1 meter/second
Wind direction	10° - 360° @ 10° intervals
Mixing height	1,000 meters
Persistence factors	
- Traffic	0.75
- Meteorological	0.60
Surface roughness	108 centimeters
Inspection/maintenance	Yes
- Program start year	1991
- Stringency level	20%
- First model year	1975
- Last model year	2020
- Pre - 1981 waiver rate	10%
- 1981 and beyond waiver rate	10%
- Compliance rate	98%
- Program type	Centralized
- Inspection frequency	Annual
- Vehicle types	LDGV, LDGT1, LDGT2
- Test type	Idle test
- Alternate I/M credits	Default
- Reid vapor pressures	10.5; 9.0

In order to determine the most critical wind angles, a series of 36 wind directions (10°-360° at 10° intervals) was simulated over the modeling grid. Other simulated worst-case meteorological factors included an average wind speed of one meter per second, an atmospheric mixing height of 1,000 meters and Class D for atmospheric stability.

The computer modeling of worst-case traffic and meteorological data was conducted for the peak one-hour period. To account for the long-term variation in traffic and meteorological data over time, persistence factors were used to convert the one-hour modeled conditions to comparable worst-case eight-hour conditions. In this way, the results can be compared to the NAAQS which are also based on one-hour and eight-hour time periods. For this analysis, traffic and meteorological one-hour to eight-hour persistence factors of 0.75 and 0.60, respectively, were used. The eight-hour CO concentrations were derived from the one-hour values by the following formula:

$$CO_{8hr} = [(CO_{1hr} - \text{background}) \times MPF \times TPF] + \text{background}$$

Where: MPF = meteorological persistence factor (0.6)
TPF = traffic persistence factor (0.75)
Background = background CO.

To account for CO sources beyond the study area, a background CO value was added to the modeled one-hour and the computed eight-hour results. Based on the PD&E Manual and FDEP Guidelines, a background CO value of 2.0 ppm was used for the analysis.

2. Results

The results of the microscale analysis are presented in Tables 4 and 5. The results include contributions from future-year traffic and background CO concentrations. Both the one-hour and eight-hour values are provided.

As shown in Table 4, for the year 2010, the predicted worst-case one- and eight-hour CO concentrations in the vicinity of the I-275/North Boulevard interchange are 12.4 ppm and 6.7 ppm, respectively, under the No-Action Alternative. By comparison, the highest one- and eight-hour

TABLE 4

PREDICTED ONE-HOUR AND EIGHT-HOUR WORST-CASE CARBON MONOXIDE CONCENTRATIONS IN THE VICINITY OF THE I-275/NORTH BOULEVARD INTERCHANGE FOR THE YEAR 2010
Tampa Interstate Study - Phase II

Receptor	No-Action Alternative		Preferred Alternative		Location/Description[b]
	1-Hour[a] (ppm)	8-Hour[a] (ppm)	1-Hour[a] (ppm)	8-Hour[a] (ppm)	
1	5.1	3.4	3.8	2.8	NE Quad/Front walk of Church
2	12.4	6.7	7.1	4.3	SE Quad/Riverfront Park
3	10.7	5.9	6.4	4.0	SW Quad/Business, front walk
4	9.0	5.2	4.8	3.3	SW Quad/Residential backyard
5	8.2	4.8	5.4	3.5	NW Quad/Multi-Family, residential side yard
6	8.2	4.8	7.5	4.5	NW Quad/Multi-Family, residential side yard
7	9.3	5.3	6.9	4.2	SE Quad/Riverfront Park
8	7.2	4.3	6.5	4.0	NW Quad/Residential front yard

[a] Includes background concentration of 2.0 ppm.

[b] NE Quad = Northeast Quadrant
NW Quad = Northwest Quadrant
SE Quad = Southeast Quadrant
SW Quad = Southwest Quadrant

National Ambient Air Quality Standards for Carbon Monoxide -- levels considered not to pose any significant health risks:

One-Hour Standard = 35 parts per million
Eight-Hour Standard = 9 parts per million

TABLE 5

PREDICTED ONE-HOUR AND EIGHT-HOUR WORST-CASE CARBON MONOXIDE CONCENTRATIONS IN THE VICINITY OF THE I-275/DR. MARTIN LUTHER KING, JR. BOULEVARD INTERCHANGE FOR THE YEAR 2010

Tampa Interstate Study - Phase II

Receptor	No-Action Alternative		Preferred Alternative		Location/Description[b]
	1-Hour[a] (ppm)	8-Hour[a] (ppm)	1-Hour[a] (ppm)	8-Hour[a] (ppm)	
1	9.9	5.6	6.2	3.9	NE Quad/Residential backyard
2	9.1	5.2	8.0	4.7	NE Quad/Residential backyard
3	10.7	5.9	9.2	5.2	SE Quad/Residential front yard
4	10.6	5.9	5.7	3.7	SE Quad/Residential backyard
5	10.0	5.6	5.9	3.8	SW Quad/Residential backyard
6	14.9	7.8	11.6	6.3	SW Quad/Business, front walk
7	9.9	5.6	7.9	4.7	NW Quad/Residential backyard
8	16.3	8.4	11.3	6.2	SW Quad/Residential side yard
9	9.6	5.4	10.3	5.7	NW Quad/Business, front walk
10	12.4	6.7	8.6	5.0	SE Quad/Former site of Hillsborough County Adult High School

[a] Includes background concentration of 2.0 ppm.

[b] NE Quad = Northeast Quadrant
NW Quad = Northwest Quadrant
SE Quad = Southeast Quadrant
SW Quad = Southwest Quadrant

National Ambient Air Quality Standards for Carbon Monoxide -- levels considered not to pose any significant health risks:

One-Hour Standard = 35 parts per million
Eight-Hour Standard = 9 parts per million

values for the Preferred Alternative are 7.5 ppm and 4.5 ppm, respectively. The projected reduction in CO levels for the Preferred Alternative is a result of improved motor vehicle mobility, faster-operating speeds, and reduction in stop-and-go driving that would be realized with the proposed improvements. CO concentrations are projected to remain below the NAAQS at all receptor sites in the vicinity of the I-275/North Boulevard interchange for the No-Action Alternative and the Preferred Alternative.

As shown in Table 5, the highest predicted one- and eight-hour CO concentrations under the 2010 No-Action Alternative at the I-275/Dr. Martin Luther King, Jr. Boulevard interchange are 16.3 ppm and 8.4 ppm, respectively. Under the 2010 Preferred Alternative, the highest one-hour value is 11.6 ppm and the highest eight-hour value is 6.3 ppm, a decrease compared to the No-Action Alternative. Again, CO concentrations are expected to remain below the NAAQS at all receptor sites in the vicinity of the I-275/Dr. Martin Luther King, Jr. Boulevard interchange for the No-Action Alternative and the Preferred Alternative.

III. CONSTRUCTION IMPACTS

Construction activities will cause minor short-term air quality impacts in the form of dust from earthwork and unpaved roads and smoke from open burning. These impacts will be minimized by adherence to all State and local regulations and to the FDOT Standard Specifications for Road and Bridge Construction.[5]

IV. CONCLUSION

Based on the microscale dispersion analysis results, the Tampa Interstate project will not cause, or contribute to, CO concentrations above the one- and eight-hour NAAQS for CO. The analysis indicates that CO levels under the Preferred Alternative will be lower than concentrations under the No-Action Alternative.

The project is in an area which has been designated as non-attainment for the ozone standards under the criteria provided in the Clean Air Act Amendments of 1990. This project is in conformance with the SIP because it will not cause violations of any of the National Ambient Air Quality Standards. This project is included in the urban area's current approved conforming TIP which was signed by the Secretary of the Florida Department of Transportation on August 8, 1994. This project is included in the area's conforming long-range plan. This project is included in the area's Conformity Determination report which was approved by FHWA/FTA on June 30, 1994.

V. AGENCY COORDINATION

Federal, state and local agencies were notified of the proposed action through the Advance Notification process. No comments concerning air quality issues were received in response to the Advance Notification packages.

In accordance with FHWA policies and regulations, a copy of the Draft Air Quality Report, dated December 1993, was submitted to state and local agencies for review. Comments were received from the Florida Department of Environmental Protection (FDEP), Hillsborough County Environmental Protection Commission, and Pinellas County Department of Environmental Management. Comments generally addressed discrepancies between FDEP and FDOT methodology for performing a microscale CO analysis and the need for an HC and NO_x evaluation to demonstrate conformity with the SIP.

The Draft Air Quality Report was reviewed and found to conform with established and accepted FDOT methodology as documented in Part 2, Chapter 16 of the PD&E Manual.

Comments concerning the analysis of ozone precursors (HC and NO_x) are a result of 40 CFR Part 51, which became effective December 27, 1993. The rule calls for an analysis of NO_x emissions in O_3 nonattainment areas; however, it also states that the analysis must be done on a regional basis. For determining conformity with the SIP, a project must be analyzed under a "baseline" and "action" scenario as part of the areawide transportation system. The relationship between this project and the

conforming TIP and Long Range Transportation Plan has been discussed. A project level evaluation of HC and NO_x is not necessary for the purpose of demonstrating conformity with the SIP.

Specific comments by agencies and responses to those comments are contained in the Appendix.

REFERENCES

1. Tampa Interstate Study: Preliminary Engineering Report, Prepared for the Florida Department of Transportation; Prepared by Greiner, Inc., March 1991.

2. Project Development and Environment Manual, Florida Department of Transportation, July 1988.

3. MOBILE5a, Chapter 2, U.S. Environmental Protection Agency, March 1993; User's Guide to CAL3QHC, U.S. Environmental Protection Agency, September 1990.

4. Tampa Interstate Study: Traffic Memorandum, Prepared for the Florida Department of Transportation; Prepared by Greiner, Inc., February 1991.

5. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, State of Florida Department of Transportation, 1991.

APPENDIX

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RECP 1                    224.      870.        6.
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GREEN STREET FREE   AG   320.   290.   530.   130.    762.17.7  0. 44.
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GREEN STREET DEPART AG     0.   130. -1300.   140.    926.17.7  0. 44.
  1
I-275 WB            FL  1230.   180.   570.    40.  10650.35.0 20. 36.
  1
I-275 WB            FL   570.    40. -1760.    40.  10650.35.0 20. 36.
  1
I-275 EB            FL -1760.   -40.   570.   -40.  10650.35.0 20. 36.
  1
I-275 EB            FL   570.   -40.  1230.   120.  10650.35.0 20. 36.
 1.000.4 1000.  0.Y 10  1 36
```

A-1

J08: I275/NORTH BLVD 2010 NO BUILD RUN: 2010 NO BUILD
DATE: 10/04/94 TIME: 13:27

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. NORTH BLVD SB FREE	75.0	1120.0	0.0	550.0	575.	187.	AG	1516.	13.1	0.0	44.0		
2. NORTH BLVD SB FREE	0.0	550.0	-10.0	130.0	420.	181.	AG	1516.	13.1	0.0	44.0		
3. NORTH BLVD SB FREE	-10.0	130.0	-15.0	-130.0	260.	181.	AG	1342.	13.1	0.0	44.0		
4. NORTH BLVD SB FREE	-15.0	-130.0	-30.0	-870.0	740.	181.	AG	1342.	13.1	0.0	44.0		
5. NORTH BLVD SB LEFT	0.0	-115.0	0.0	0.0	115.	360.	AG	200.	31.1	0.0	12.0		
6. NORTH BLVD NB FREE	20.0	-870.0	20.0	-130.0	740.	360.	AG	1098.	13.1	0.0	44.0		
7. NORTH BLVD NB FREE	20.0	-130.0	20.0	130.0	260.	360.	AG	1221.	13.1	0.0	44.0		
8. NORTH BLVD NB FREE	20.0	130.0	20.0	550.0	420.	360.	AG	1221.	13.1	0.0	44.0		
9. NORTH BLVD NB FREE	20.0	550.0	95.0	1120.0	575.	7.	AG	1221.	13.1	0.0	44.0		
10. NORTH BLVD NB LEFT	0.0	130.0	0.0	0.0	130.	180.	AG	244.	31.1	0.0	12.0		
11. LAUREL STREET FREE	-1300.0	-140.0	0.0	-130.0	1300.	90.	AG	767.	17.7	0.0	44.0		
12. LAUREL STREET QUEU	-40.0	-130.0	-1300.0	-140.0	1260.	270.	AG	767.	35.0	0.0	24.0		
13. LAUREL PLACE FREE	0.0	-130.0	250.0	-130.0	250.	90.	AG	624.	17.7	0.0	44.0		
14. GREEN STREET FREE	820.0	290.0	530.0	130.0	331.	241.	AG	762.	17.7	0.0	44.0		
15. GREEN STREET FREE	530.0	130.0	0.0	130.0	530.	270.	AG	762.	17.7	0.0	44.0		
16. GREEN STREET QUEU	35.0	130.0	530.0	130.0	495.	90.	AG	762.	35.0	0.0	12.0		
17. GREEN STREET DEPART	0.0	130.0	-1300.0	140.0	1300.	270.	AG	936.	17.7	0.0	44.0		
18. I-275 WB	1230.0	180.0	570.0	40.0	675.	258.	FL	10650.	35.0	20.0	36.0		
19. I-275 WB	570.0	40.0	-1760.0	40.0	2330.	270.	FL	10650.	35.0	20.0	36.0		
20. I-275 EB	-1760.0	-40.0	570.0	-40.0	2330.	90.	FL	10650.	35.0	20.0	36.0		
21. I-275 EB	570.0	-40.0	1230.0	120.0	679.	76.	FL	10650.	35.0	20.0	36.0		

1

J08: I275/NORTH BLVD 2010 NO BUILD RUN: 2010 NO BUILD
DATE: 10/04/94 TIME: 13:27

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECP 1	220.0	870.0	6.0
2. RECP 2	85.0	-180.0	6.0
3. RECP 3	-90.0	-220.0	6.0
4. RECP 4	-385.0	-280.0	6.0
5. RECP 5	-295.0	310.0	6.0
6. RECP 6	-85.0	300.0	6.0

7. RECP 7	*	55.0	-285.0	6.0 *
8. RECP 8	*	-35.0	465.0	6.0 *

1

JOB: I275/NORTH BLVD 2010 NO BUILD RUN: 2010 NO BUILD

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8
10.	* 0.0	7.2	7.2	5.4	0.0	0.5	5.4	1.1
20.	* 0.0	7.1	7.4	5.6	0.1	0.7	5.3	1.5
30.	* 0.0	7.6	7.2	5.9	0.2	0.7	5.4	1.4
40.	* 0.0	7.9	7.4	6.1	0.2	0.6	5.7	1.1
50.	* 0.0	8.5	8.0	6.6	0.3	0.6	6.3	1.0
60.	* 0.0	9.6	8.7	7.0	0.2	0.5	6.6	0.9
70.	* 0.0	9.3	8.4	6.6	0.2	0.5	5.1	0.8
80.	* 0.0	5.6	5.2	4.0	0.4	0.8	2.0	0.8
90.	* 0.0	1.5	1.9	1.2	1.6	1.9	0.3	1.2
100.	* 0.0	0.1	0.6	0.2	3.9	4.0	0.0	2.1
110.	* 0.1	0.0	0.5	0.2	5.4	5.5	0.0	3.4
120.	* 0.7	0.0	0.5	0.2	6.2	6.2	0.0	4.4
130.	* 1.6	0.0	0.5	0.2	5.6	6.2	0.0	4.9
140.	* 2.1	0.0	0.5	0.2	5.3	5.8	0.0	5.0
150.	* 2.1	0.0	0.6	0.1	5.4	5.8	0.0	4.8
160.	* 2.2	0.0	0.6	0.0	5.3	5.9	0.0	4.8
170.	* 2.4	0.0	0.5	0.0	5.1	5.5	0.1	5.2
180.	* 2.4	0.3	0.3	0.0	5.0	5.5	0.5	4.7
190.	* 2.6	0.5	0.1	0.0	5.0	5.2	0.8	4.3
200.	* 2.5	0.6	0.0	0.0	5.1	5.3	1.0	3.7
210.	* 2.9	0.6	0.0	0.0	5.2	5.3	0.9	3.9
220.	* 3.1	0.6	0.0	0.0	5.3	5.5	0.9	4.1
230.	* 3.1	0.6	0.0	0.0	5.7	5.9	0.7	4.3
240.	* 2.6	0.6	0.0	0.0	6.0	6.2	0.7	4.3
250.	* 1.4	0.5	0.0	0.0	5.5	6.0	0.7	3.5
260.	* 0.6	1.6	0.5	0.1	3.2	4.0	0.9	1.6
270.	* 0.4	5.1	2.7	1.2	0.9	1.3	2.4	0.3
280.	* 0.4	9.3	6.6	3.8	0.1	0.1	5.4	0.0
290.	* 0.4	10.4	8.4	6.1	0.0	0.0	7.3	0.0
300.	* 0.4	9.7	8.1	6.6	0.0	0.0	7.3	0.0
310.	* 0.4	8.8	7.5	6.3	0.0	0.0	7.0	0.0
320.	* 0.4	8.5	7.1	6.0	0.0	0.0	6.5	0.0
330.	* 0.2	8.1	6.7	5.6	0.0	0.0	6.4	0.0
340.	* 0.1	7.7	6.6	5.5	0.0	0.0	6.4	0.0
350.	* 0.0	7.9	6.5	5.4	0.0	0.0	6.1	0.1
360.	* 0.0	7.7	6.9	5.4	0.0	0.2	6.1	0.5
MAX	* 3.1	10.4	8.7	7.0	6.2	6.2	7.3	5.2
DEGR.	* 220	290	60	60	120	120	300	170

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I-275/NORTH BLVD 2010 BUILD              60.108.   0.   0. 0    0.5048    1    1
RECP 1                    385.      775.        6.
RECP 2                     60.     -385.        6.
RECP 3                   -130.     -255.        6.
RECP 4                   -430.     -315.        6.
RECP 5                   -275.      260.        6.
RECP 6                    -70.      240.        6.
RECP 7                     15.     -365.        6.
RECP 8                     -5.      380.        6.
2010 BUILD                              32  1   0
  1
NORTH BLVD SB APP    AG   170.  1030.    60.   565.   1516.13.1  0. 44.
  1
NORTH BLVD SB APP    AG    60.   565.     5.   200.   1516.13.1  0. 44.
  2
NORTH BLVD SB QUEU   AG    10.   220.    60.   565.      0. 24.   2
        60        30       2.0 1516   214.
  1
NORTH BLVD SB DEPARTAG     5.   200.  -115.  -935.   1342.13.1  0. 44.
  2
NORTH BLVD SB LEFT   AG   -20.  -200.    10.    60.      0. 12.   1
        60        47       2.0  200   214.
  1
NORTH BLVD NB APP    AG   -70.  -935.     0.  -200.   1098.13.1  0. 44.
  2
NORTH BLVD NB QUEU   AG    -5.  -225.   -70.  -935.      0. 24.   2
        60        34       2.0 1098   214.
  1
NORTH BLVD NB DEPARTAG     0.  -200.    80.   565.   1221.13.1  0. 44.
  1
NORTH BLVD NB DEPARTAG    80.   565.   190.  1030.   1221.13.1  0. 44.
  2
NORTH BLVD NB LEFT   AG    20.   200.     0.     0.      0. 12.   1
        60        24       2.0  244   214.
  1
WB RAMP WB APP       AG   250.  -170.   205.   175.    762.17.7  0. 44.
  1
WB RAMP WB APP       AG   205.   175.    25.   200.    762.17.7  0. 44.
  2
WB RAMP WB QUEU      AG    60.   200.   205.   175.      0. 24.   2
        60        43       2.0  762   214.
  1
WB RAMP WB DEPART    AG    25.   200. -1030.   160.    936.17.7  0. 44.
  1
EB RAMP EB APP       AG -1060.  -180.   -20.  -200.    767.17.7  0. 32.
  2
EB RAMP EB QUEU      AG   -50.  -205.  -350.  -200.      0. 36.   3
        60        39       2.0  767   214.
  1
EB RAMP EB DEPART    AG   -20.  -200.   220.  -225.    624.17.7  0. 44.
  1
EB RAMP EB DEPART    AG   220.  -225.   530.  -545.    624.17.7  0. 44.
  1
I-275 WB LOCAL       FL  1700.   150.   590.   125.   2292.11.7 25. 56.
  1
I-275 WB LOCAL       FL   590.   110.   -45.   100.   5231.13.2 25. 68.
  1
I-275 WB LOCAL       FL   -45.   100. -1030.   100.   6427.11.7 25. 80.
  1
I-275 WB LOCAL       FL -1030.   100. -1750.    70.   7155.11.7 25. 80.
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  1
RAMP A              FL  1400.   200.   -45.   150.   1186.11.7 25. 44.
  1
I-275 WB MAIN       FL  1700.    65.   800.    65.   6538. 9.9 25. 80.
  1
I-275 WB MAIN       FL   800.    40. -1765.    15.   3495. 9.9 25. 56.
  1
I-275 EB LOCAL      FL -1760.  -130. -1085.  -115.   7155.11.7 25. 80.
  1
I-275 EB LOCAL      FL -1085.  -115.   100.  -145.   6427.11.7 25. 80.
  1
I-275 EB LOCAL      FL   100.  -145.   850.  -140.   3489.13.1 25. 68.
  1
I-275 EB LOCAL      FL   850.  -140.  1450.  -140.   1817.13.1 25. 56.
  1
RAMP C              FL   850.  -195.  1430.  -215.   1672.11.7 25. 44.
  1
I-275 EB MAIN       FL -1770.   -50.   290.   -45.   3495. 9.9 25. 56.
  1
I-275 EB MAIN       FL   290.   -45.  1700.   -70.   6538. 9.9 25. 80.
 1.000.4 1000.  0.Y 10  1 36
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JOB: I275/NORTH BLVD 2010 BUILD RUN: 2010 BUILD
DATE: 10/04/94 TIME: 13:31

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. NORTH BLVD SB APP	170.0	1030.0	60.0	565.0	478.	193.	AG	1516.	13.1	0.0	44.0		
2. NORTH BLVD SB APP	60.0	565.0	5.0	200.0	369.	189.	AG	1516.	13.1	0.0	44.0		
3. NORTH BLVD SB QUEU	10.0	220.0	139.8	1115.6	905.	8.	AG	574.	100.0	0.0	24.0	1.09	46.0
4. NORTH BLVD SB DEPART	5.0	200.0	-115.0	-935.0	1141.	186.	AG	1342.	13.1	0.0	44.0		
5. NORTH BLVD SB LEFT	-20.0	-200.0	-11.8	-129.1	71.	7.	AG	450.	100.0	0.0	12.0	0.84	3.6
6. NORTH BLVD NB APP	-70.0	-935.0	0.0	-200.0	738.	5.	AG	1098.	13.1	0.0	44.0		
7. NORTH BLVD NB QUEU	-5.0	-225.0	-19.9	-387.9	164.	185.	AG	651.	100.0	0.0	24.0	0.94	8.3
8. NORTH BLVD NB DEPART	0.0	-200.0	80.0	565.0	769.	6.	AG	1221.	13.1	0.0	44.0		
9. NORTH BLVD NB DEPART	80.0	565.0	190.0	1030.0	478.	13.	AG	1221.	13.1	0.0	44.0		
10. NORTH BLVD NB LEFT	20.0	200.0	16.8	168.1	32.	186.	AG	230.	100.0	0.0	12.0	0.29	1.6
11. WB RAMP WB APP	250.0	-170.0	205.0	175.0	348.	353.	AG	762.	17.7	0.0	44.0		
12. WB RAMP WB APP	205.0	175.0	25.0	200.0	182.	278.	AG	762.	17.7	0.0	44.0		
13. WB RAMP WB QUEU	60.0	200.0	586.5	109.2	534.	100.	AG	823.	100.0	0.0	24.0	1.10	27.1
14. WB RAMP WB DEPART	25.0	200.0	-1030.0	160.0	1056.	268.	AG	936.	17.7	0.0	44.0		
15. EB RAMP EB APP	-1060.0	-180.0	-20.0	-200.0	1040.	91.	AG	767.	17.7	0.0	32.0		
16. EB RAMP EB QUEU	-50.0	-205.0	-104.4	-204.1	54.	271.	AG	1119.	100.0	0.0	36.0	0.56	2.8
17. EB RAMP EB DEPART	-20.0	-200.0	220.0	-225.0	241.	96.	AG	624.	17.7	0.0	44.0		
18. EB RAMP EB DEPART	220.0	-225.0	580.0	-545.0	482.	132.	AG	624.	17.7	0.0	44.0		
19. I-275 WB LOCAL	1700.0	150.0	590.0	135.0	1110.	269.	FL	2293.	11.7	25.0	56.0		
20. I-275 WB LOCAL	590.0	110.0	-45.0	100.0	635.	269.	FL	5231.	12.2	25.0	68.0		
21. I-275 WB LOCAL	-45.0	100.0	-1030.0	100.0	985.	270.	FL	6427.	11.7	25.0	80.0		
22. I-275 WB LOCAL	-1030.0	100.0	-1750.0	70.0	721.	268.	FL	7155.	11.7	25.0	80.0		
23. RAMP A	1400.0	200.0	-45.0	150.0	1446.	268.	FL	1196.	11.7	25.0	44.0		
24. I-275 WB MAIN	1700.0	65.0	800.0	65.0	900.	270.	FL	6538.	9.9	25.0	80.0		
25. I-275 WB MAIN	800.0	40.0	-1765.0	15.0	2565.	269.	FL	3495.	9.9	25.0	56.0		
26. I-275 EB LOCAL	-1760.0	-130.0	-1085.0	-115.0	675.	89.	FL	7155.	11.7	25.0	80.0		
27. I-275 EB LOCAL	-1085.0	-115.0	100.0	-145.0	1185.	91.	FL	6427.	11.7	25.0	80.0		
28. I-275 EB LOCAL	100.0	-145.0	850.0	-140.0	750.	90.	FL	3489.	13.1	25.0	68.0		
29. I-275 EB LOCAL	850.0	-140.0	1450.0	-140.0	600.	90.	FL	1817.	13.1	25.0	56.0		
30. RAMP C	850.0	-195.0	1430.0	-215.0	580.	92.	FL	1672.	11.7	25.0	44.0		
31. I-275 EB MAIN	-1770.0	-50.0	290.0	-45.0	2060.	90.	FL	3495.	9.9	25.0	56.0		
32. I-275 EB MAIN	290.0	-45.0	1700.0	-70.0	1410.	91.	FL	6538.	9.9	25.0	80.0		

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JOB: I275/NORTH BLVD 2010 BUILD RUN: 2010 BUILD
DATE: 10/04/94 TIME: 13:31

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
3. NORTH BLVD SB QUEU	60	30	2.0	1516	1600	214.00	1	3

5. NORTH BLVD SB LEFT	*	60	47	2.0	200	1600	214.00	1	3
7. NORTH BLVD NB QUEU	*	60	34	2.0	1098	1600	214.00	1	3
10. NORTH BLVD NB LEFT	*	60	24	2.0	244	1600	214.00	1	3
13. W8 RAMP WB QUEU	*	60	43	2.0	762	1600	214.00	1	3
16. E8 RAMP EB QUEU	*	60	39	2.0	767	1600	214.00	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. RECP 1	*	285.0	775.0	6.0	*
2. RECP 2	*	60.0	-265.0	6.0	*
3. RECP 3	*	-130.0	-285.0	6.0	*
4. RECP 4	*	-430.0	-315.0	6.0	*
5. RECP 5	*	-275.0	260.0	6.0	*
6. RECP 6	*	-70.0	240.0	6.0	*
7. RECP 7	*	15.0	-365.0	6.0	*
8. RECP 8	*	-5.0	380.0	6.0	*

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JOB: I275/NORTH BLVD 2010 BUILD RUN: 2010 BUILD

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8
10.	* 0.0	2.8	3.7	1.9	0.0	0.8	3.1	2.0
20.	* 0.0	2.5	4.1	2.1	0.1	1.5	2.3	2.9
30.	* 0.0	2.6	4.3	2.6	0.5	1.7	1.9	3.0
40.	* 0.0	2.5	4.4	2.7	0.6	1.5	1.9	2.6
50.	* 0.0	2.6	4.3	2.7	0.8	1.5	2.1	2.3
60.	* 0.0	2.5	4.0	2.8	0.6	1.3	1.8	2.2
70.	* 0.0	2.3	3.5	2.8	0.5	1.3	1.6	2.0
80.	* 0.0	1.9	2.8	2.2	0.6	1.6	1.0	2.0
90.	* 0.0	1.0	2.0	1.1	1.8	2.9	0.2	2.2
100.	* 0.0	0.1	1.3	0.3	3.0	4.7	0.1	3.0
110.	* 0.1	0.1	1.2	0.3	3.4	5.5	0.0	3.6
120.	* 0.4	0.1	1.1	0.2	2.8	4.4	0.0	4.2
130.	* 0.7	0.0	0.9	0.2	2.4	3.7	0.0	4.5
140.	* 0.8	0.0	0.7	0.2	2.5	3.0	0.0	4.5
150.	* 0.9	0.0	0.6	0.1	2.6	2.9	0.0	4.4
160.	* 0.9	0.0	0.5	0.0	2.7	2.9	0.0	4.5
170.	* 1.0	0.0	0.5	0.0	2.6	3.3	0.1	4.1
180.	* 1.1	0.1	0.3	0.0	2.3	3.2	0.4	3.5
190.	* 1.2	0.4	0.1	0.0	2.3	2.7	0.7	2.7
200.	* 1.4	0.8	0.0	0.0	2.3	2.6	1.1	1.9
210.	* 1.8	1.1	0.0	0.0	2.3	2.6	1.1	1.7
220.	* 1.8	1.4	0.0	0.0	2.4	2.6	1.2	1.7
230.	* 1.8	1.6	0.0	0.0	2.5	2.9	1.6	1.9

240.	*	1.7	1.6	0.0	0.0	2.7	3.1	1.7	1.9
250.	*	1.4	1.5	0.0	0.0	2.7	3.1	1.9	1.8
260.	*	0.9	1.6	0.1	0.0	1.9	2.5	2.1	1.0
270.	*	0.8	2.9	0.9	0.4	0.7	1.2	2.5	0.2
280.	*	0.8	4.2	2.1	1.3	0.1	0.3	3.4	0.0
290.	*	0.8	5.1	2.5	2.1	0.0	0.0	4.1	0.0
300.	*	0.8	4.6	2.6	2.3	0.0	0.0	4.3	0.0
310.	*	0.9	4.3	2.5	2.3	0.0	0.0	4.4	0.0
320.	*	0.8	3.8	2.4	2.1	0.0	0.0	4.8	0.0
330.	*	0.8	3.5	2.3	2.1	0.0	0.0	4.8	0.0
340.	*	0.4	3.2	2.3	2.0	0.0	0.0	4.9	0.0
350.	*	0.1	3.4	2.3	1.9	0.0	0.0	4.7	0.1
360.	*	0.0	3.5	2.7	2.1	0.0	0.2	3.8	0.8
MAX	*	1.8	5.1	4.4	2.8	3.4	5.5	4.9	4.5
DEGR.	*	210	290	40	70	110	110	340	130

THE HIGHEST CONCENTRATION IS 5.50 PPM AT 110 DEGREES FROM REC6 .

```
I275/MLK BLVD 2010 NO BUILD              60.108.   0.   0.10    0.3048    1    1
RECP 1                    195.      530.        6.
RECP 2                    320.      200.        6.
RECP 3                    680.      -65.        6.
RECP 4                    195.     -495.        6.
RECP 5                   -200.     -500.        6.
RECP 6                   -240.      -75.        6.
RECP 7                   -350.      165.        6.
RECP 8                   -650.      -40.        6.
RECP 9                   -630.      105.        6.
RECP 10                   290.      -75.        6.
2010 NO BUILD                          24  1   0
  1
MLK WB APP          AG  1000.    20.     0.    20.   3162.35.0  0. 24.
  2
MLK WB QUEU         AG   165.    20.  1000.    20.      0. 24.   2
       80        43       2.0 3162   214.
  1
MLK WB DEPART       AG   150.    20.  -160.    20.   3119.35.0  0. 24.
  1
MLK WB DEPART       AG  -160.    20. -1000.    25.   2167.35.0  0. 24.
  2
MLK WB LEFT         AG  -140.     5.     0.     5.      0. 12.   1
       80        55       2.0  629   214.
  1
MLK EB APP          AG -1000.    -5.  -160.   -20.   2809.35.0  0. 24.
  2
MLK EB QUEU         AG  -180.   -20. -1000.    -5.      0. 36.   3
       80        43       2.0 2150   214.
  1
MLK EB DEPART       AG  -160.   -20.   160.   -15.   2861.35.0  0. 24.
  1
MLK EB DEPART       AG   160.   -15.  1000.   -15.   3822.35.0  0. 24.
  2
MLK EB LEFT         AG   130.    -5.     0.    -5.      0. 12.   1
       80        59       2.0  554   214.
  1
NB RAMPS APP        AG    80.  -770.   155.     0.   1064.35.0  0. 12.
  2
NB RAMPS NB QUEU    AG   160.   -35.    80.  -770.      0. 12.   1
       80        59       2.0  515   214.
  2
NB RAMPS NB LEFT    AG   140.   -35.   130.  -280.      0. 24.   2
       80        59       2.0  539   214.
  1
NB RAMP NB DEPART   AG   155.     0.    70.   715.   1136.31.1  0. 12.
  1
SB RAMPS SB APP     AG   -80.   730.  -160.     0.   1388.31.1  0. 12.
  2
SB RAMPS SB QUEU    AG  -160.    65.   -80.   730.      0. 36.   3
       80        62       2.0  677   214.
  2
SB RAMPS SB LEFT    AG  -145.    65.  -130.   350.      0. 24.   2
       80        62       2.0  711   214.
  1
SB RAMP SB DEPART   AG  -160.     0.   -80.  -910.   1288.35.0  0. 12.
  1
I-275 SB            FL   -40.  2000.   -40.   720.   9211.35.0 20. 36.
  1
I-275 SB            FL   -40.   720.   -40.  -910.   7823.35.0 20. 36.
```

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  :
I-275 SB           PL   -40.  -810.   -40. -2000.   3112.35.0 20. 36.
  :
I-275 NB           PL    40. -2000.    40.  -780.   7466.31.1 20. 36.
  :
I-275 NB           PL    40.  -780.    40.   720.   6401.31.1 20. 36.
  :
I-275 NB           PL    40.   720.    40.  2000.   7536.31.1 20. 36.
 1.000.4 1000.  0.T 10  1 36
```

JOB: I275/MLK BLVD 2010 NO BUILD RUN: 2010 NO BUILD
DATE: 10/04/94 TIME: 13:43

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT) X1	Y1	X2	Y2	*	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. MLK WB APP	*	1000.0	20.0	0.0	20.0	*	1000.	270.	AG	3162.	35.0	0.0	24.0		
2. MLK WB QUEU	*	165.0	20.0	9902.2	20.0	*	9737.	90.	AG	617.	100.0	0.0	24.0	2.40	494.6
3. MLK WB DEPART	*	150.0	20.0	-160.0	20.0	*	310.	270.	AG	3119.	35.0	0.0	24.0		
4. MLK WB DEPART	*	-160.0	20.0	-1000.0	25.0	*	840.	270.	AG	3167.	35.0	0.0	24.0		
5. MLK WB LEFT	*	-140.0	5.0	2256.1	5.0	*	2396.	90.	AG	395.	100.0	0.0	12.0	1.50	121.7
6. MLK EB APP	*	-1000.0	-5.0	-160.0	-20.0	*	840.	91.	AG	2809.	35.0	0.0	24.0		
7. MLK EB QUEU	*	-180.0	-20.0	-1035.5	-4.4	*	856.	271.	AG	926.	100.0	0.0	36.0	1.08	43.5
8. MLK EB DEPART	*	-160.0	-20.0	160.0	-15.0	*	320.	89.	AG	2861.	35.0	0.0	24.0		
9. MLK EB DEPART	*	160.0	-15.0	1000.0	-15.0	*	840.	90.	AG	2822.	35.0	0.0	24.0		
10. MLK EB LEFT	*	130.0	-5.0	-2301.7	-5.0	*	2432.	270.	AG	423.	100.0	0.0	12.0	1.63	123.5
11. NB RAMPS APP	*	80.0	-770.0	155.0	0.0	*	774.	6.	AG	1054.	35.0	0.0	12.0		
12. NB RAMPS NB QUEU	*	160.0	-35.0	-59.1	-2048.1	*	2025.	186.	AG	423.	100.0	0.0	12.0	1.51	102.9
13. NB RAMPS NB LEFT	*	140.0	-35.0	136.0	-133.8	*	99.	182.	AG	847.	100.0	0.0	24.0	0.79	5.0
14. NB RAMP NB DEPART	*	155.0	0.0	70.0	715.0	*	720.	353.	AG	1136.	31.1	0.0	12.0		
15. SB RAMPS SB APP	*	-80.0	730.0	-160.0	0.0	*	734.	186.	AG	1388.	31.1	0.0	12.0		
16. SB RAMPS SB QUEU	*	-160.0	65.0	-149.2	155.0	*	91.	7.	AG	1335.	100.0	0.0	36.0	0.80	4.6
17. SB RAMPS SB LEFT	*	-145.0	65.0	-94.4	1025.8	*	962.	3.	AG	890.	100.0	0.0	24.0	1.27	48.9
18. SB RAMP SB DEPART	*	-160.0	0.0	-80.0	-910.0	*	914.	175.	AG	1288.	35.0	0.0	12.0		
19. I-275 SB	*	-40.0	2000.0	-40.0	720.0	*	1280.	180.	FL	9211.	35.0	20.0	36.0		
20. I-275 SB	*	-40.0	720.0	-40.0	-910.0	*	1630.	180.	FL	7823.	35.0	20.0	36.0		
21. I-275 SB	*	-40.0	-910.0	-40.0	-2000.0	*	1090.	180.	FL	9112.	35.0	20.0	36.0		
22. I-275 NB	*	40.0	-2000.0	40.0	-780.0	*	1220.	360.	FL	7455.	31.1	20.0	36.0		
23. I-275 NB	*	40.0	-780.0	40.0	720.0	*	1500.	360.	FL	6401.	31.1	20.0	36.0		
24. I-275 NB	*	40.0	720.0	40.0	2000.0	*	1280.	360.	FL	7536.	31.1	20.0	36.0		

1

JOB: I275/MLK BLVD 2010 NO BUILD RUN: 2010 NO BUILD
DATE: 10/04/94 TIME: 13:43

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. MLK WB QUEU	*	80	43	2.0	3162	1600	214.00	1	3
5. MLK WB LEFT	*	80	55	2.0	629	1600	214.00	1	3
7. MLK EB QUEU	*	80	43	2.0	2150	1600	214.00	1	3
10. MLK EB LEFT	*	80	59	2.0	554	1600	214.00	1	3
12. NB RAMPS NB QUEU	*	80	59	2.0	515	1600	214.00	1	3
13. NB RAMPS NB LEFT	*	80	59	2.0	539	1600	214.00	1	3
16. SB RAMPS SB QUEU	*	80	62	2.0	677	1600	214.00	1	3
17. SB RAMPS SB LEFT	*	80	62	2.0	711	1600	214.00	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. RECP 1	185.0	530.0	6.0
2. RECP 2	320.0	200.0	6.0
3. RECP 3	680.0	-65.0	6.0
4. RECP 4	195.0	-495.0	6.0
5. RECP 5	-200.0	-500.0	6.0
6. RECP 6	-240.0	-75.0	6.0
7. RECP 7	-350.0	165.0	6.0
8. RECP 8	-650.0	-40.0	6.0
9. RECP 9	-630.0	105.0	6.0
10. RECP 10	290.0	-75.0	6.0

1

JOB: I275/MLK BLVD 2010 NO BUILD RUN: 2010 NO BUILD

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10
10.	0.4	0.1	4.4	2.2	8.0	11.6	2.7	8.0	0.6	4.2
20.	0.0	0.0	4.4	1.1	7.9	12.9	4.4	9.3	1.8	3.9
30.	0.0	0.0	4.6	1.3	7.5	12.3	4.5	10.5	2.5	4.2
40.	0.0	0.0	4.8	1.2	6.9	11.0	4.4	10.9	2.7	4.4
50.	0.0	0.0	5.1	1.3	6.8	9.9	4.0	11.7	2.8	4.7
60.	0.0	0.0	5.4	0.9	6.4	10.0	4.0	12.3	2.7	5.0
70.	0.0	0.0	5.1	0.6	5.9	10.6	3.8	13.8	2.6	5.4
80.	0.0	0.1	4.3	0.5	5.6	10.4	4.3	14.3	3.4	5.0
90.	0.2	0.7	2.4	0.2	5.2	8.4	5.9	11.6	5.6	3.0
100.	0.5	1.7	0.6	0.0	4.9	5.6	7.7	5.9	7.6	0.8
110.	0.5	2.4	0.0	0.0	4.9	4.6	7.9	2.6	7.3	0.0
120.	0.9	2.7	0.0	0.0	5.1	4.6	7.4	2.2	7.2	0.0
130.	1.2	2.7	0.0	0.0	5.3	4.7	6.6	2.4	7.0	0.0
140.	1.2	2.4	0.0	0.0	5.8	5.1	6.7	2.4	6.9	0.0
150.	1.3	2.4	0.0	0.0	6.3	5.5	6.9	2.4	6.6	0.0
160.	1.1	2.3	0.0	0.0	6.4	5.8	7.1	1.8	6.0	0.0
170.	1.9	2.4	0.0	0.3	5.1	4.6	6.0	0.6	4.6	0.1
180.	4.9	3.5	0.0	2.1	2.2	2.0	3.8	0.0	4.1	1.2
190.	7.9	5.8	0.4	5.1	0.4	0.3	3.0	0.0	3.9	3.5
200.	7.6	7.1	1.5	6.4	0.0	0.0	2.9	0.0	3.9	5.0
210.	7.4	7.1	2.4	6.4	0.0	0.0	2.9	0.0	4.1	4.7
220.	7.4	6.7	2.5	5.9	0.0	0.0	3.1	0.0	4.3	4.5
230.	7.2	6.6	2.4	5.5	0.0	0.0	3.3	0.0	4.5	4.2
240.	6.5	6.6	2.1	5.2	0.0	0.0	3.4	0.0	4.5	4.2
250.	5.9	6.7	2.0	5.0	0.0	0.1	3.0	0.4	3.9	4.3
260.	5.3	5.9	3.6	4.9	0.0	1.0	1.9	1.8	2.4	5.7
270.	5.2	4.7	6.8	5.0	0.0	3.4	0.6	5.4	1.0	7.9

280.	*	5.1	3.7	8.7	5.2	0.1	6.0	0.0	8.9	0.2	10.3
290.	*	5.1	3.6	8.4	5.8	0.4	7.0	0.0	10.5	0.0	10.4
300.	*	5.6	3.8	7.9	6.5	0.9	6.6	0.0	9.9	0.0	9.8
310.	*	5.8	3.9	7.5	6.9	1.4	6.1	0.0	9.0	0.0	9.2
320.	*	6.1	4.1	7.3	7.4	1.5	5.6	0.0	8.4	0.0	9.0
330.	*	6.4	4.2	6.9	7.8	1.4	5.4	0.0	8.0	0.0	8.8
340.	*	6.3	4.1	5.9	8.6	1.3	5.2	0.0	7.5	0.0	8.8
350.	*	4.9	2.6	4.9	8.3	2.4	5.6	0.1	7.3	0.0	7.6
360.	*	2.1	0.8	4.4	4.9	5.1	8.1	0.8	7.5	0.0	5.2
MAX	*	7.9	7.1	8.7	8.6	8.0	12.9	7.9	14.3	7.6	10.4
DEGR.	*	190	200	280	340	10	20	110	80	100	290

THE HIGHEST CONCENTRATION IS 14.30 PPM AT 80 DEGREES FROM REC8 .

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I-275/MLK BLVD 2010 BUILD                60.108.   0.   0.10    0.3046    1    1
RECP 1                    180.     495.        6.
RECP 2                    330.     170.        6.
RECP 3                    680.     -95.        6.
RECP 4                    200.    -525.        6.
RECP 5                   -200.    -530.        6.
RECP 6                   -235.    -105.        6.
RECP 7                   -350.     130.        6.
RECP 8                   -650.     -70.        6.
RECP 9                   -640.      70.        6.
RECP 10                   290.    -110.        6.
2010 BUILD                              21  1   0
  1
MLK WB APP          AG  1000.    25.     0.    25.   3162.35.0  0. 36.
  2
MLK WB DELAY        AG   150.    25.  1000.    25.      0. 48.   4
      120        73       2.0 2533   214.
  2
MLK WB LEFT         AG   150.     0.   650.     0.      0. 24.   2
      120        86       2.0  629   214.
  1
MLK WB DEPART       AG     0.    25. -1000.    30.   3167.35.0  0. 36.
  1
MLK EB APP          AG -1000.   -36.     0.   -40.   2809.35.0  0. 36.
  2
MLK EB DELAY        AG  -150.   -36. -1000.   -36.      0. 48.   4
      120        73       2.0 2255   214.
  2
MLK EB LEFT         AG  -150.     0.  -300.     0.      0. 24.   2
      120        86       2.0  554   214.
  1
MLK EB DEPART       AG     0.   -40.  1000.   -40.   2822.35.0  0. 24.
  1
SB RAMP APP         AG  -145.  1000.  -150.     0.   1388.17.7  0. 44.
  2
SB RAMP DELAY       AG  -150.    45.  -145.  1000.      0. 24.   2
      120        86       2.0  677   214.
  2
SB RAMP LEFT        AG  -120.    45.  -150.   550.      0. 24.   2
      120        87       2.0  711   214.
  1
SB RAMP DEPART      AG  -150.     0.  -145. -1000.   1288.17.7  0. 44.
  1
NB RAMP APP         AG   145. -1000.   145.     0.   1054.17.7  0. 44.
  2
NB RAMP DELAY       AG   140.   -60.   145. -1000.      0. 24.   2
      120        86       2.0  515   214.
  2
NB RAMP LEFT        AG   110.   -60.   150.  -550.      0. 24.   2
      120        87       2.0  539   214.
  1
NB RAMP DEPART      AG   145.     0.   145.  1000.   1136.17.7  0. 44.
  1
I-275 SB EXPRESS    AG   -60.  1000.   -60.  -800.   7323. 8.5 20. 92.
  1
I-275 SB EXPRESS    AG   -60.  -800.    25. -2000.   3518. 8.5 20. 68.
  1
I-275 SB LOCAL      AG  -100.  -800.   -30. -2000.   5555.10.2 20. 56.
  1
I-275 NB EXPRESS    AG   140. -2000.    60. -1240.   7423. 8.8 20.132.
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I
I-275 NB EXPRESS    AG    60. -1240.    60.  1000.   6401. 8.5 20. 93.
 1.000.4 1000.  0.Y 10  1 36
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JOB: I275/MLK BLVD 2010 BUILD RUN: 2010 BUILD
DATE: 10/04/94 TIME: 13:36

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	LENGTH (FT)	BRG (DEG)	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)	V/C	QUEUE (VEH)
1. MLK WB APP	1000.0	25.0	0.0	25.0	1000.	270.	AG	3162.	35.0	0.0	36.0		
2. MLK WB DELAY	150.0	25.0	1121.8	25.0	972.	90.	AG	1397.	100.0	0.0	48.0	1.10	49.4
3. MLK WB LEFT	150.0	0.0	306.5	0.0	156.	90.	AG	823.	100.0	0.0	24.0	0.79	8.0
4. MLK WB DEPART	0.0	25.0	-1000.0	30.0	1000.	270.	AG	3167.	35.0	0.0	36.0		
5. MLK EB APP	-1000.0	-36.0	0.0	-40.0	1000.	90.	AG	2809.	35.0	0.0	36.0		
6. MLK EB DELAY	-150.0	-36.0	-471.8	-36.0	322.	270.	AG	1397.	100.0	0.0	48.0	0.98	16.3
7. MLK EB LEFT	-150.0	0.0	-280.3	0.0	130.	270.	AG	823.	100.0	0.0	24.0	0.69	6.6
8. MLK EB DEPART	0.0	-40.0	1000.0	-40.0	1000.	90.	AG	2822.	35.0	0.0	24.0		
9. SB RAMP APP	-145.0	1000.0	-150.0	0.0	1000.	180.	AG	1388.	17.7	0.0	44.0		
10. SB RAMP DELAY	-150.0	45.0	-149.1	224.3	179.	0.	AG	823.	100.0	0.0	24.0	0.85	9.1
11. SB RAMP LEFT	-120.0	45.0	-132.7	258.3	214.	357.	AG	832.	100.0	0.0	24.0	0.92	10.9
12. SB RAMP DEPART	-150.0	0.0	-145.0	-1000.0	1000.	180.	AG	1288.	17.7	0.0	44.0		
13. NB RAMP APP	145.0	-1000.0	145.0	0.0	1000.	360.	AG	1054.	17.7	0.0	44.0		
14. NB RAMP DELAY	140.0	-60.0	140.6	-180.9	121.	180.	AG	823.	100.0	0.0	24.0	0.64	6.1
15. NB RAMP LEFT	110.0	-60.0	120.4	-187.5	128.	175.	AG	832.	100.0	0.0	24.0	0.70	6.5
16. NB RAMP DEPART	145.0	0.0	145.0	1000.0	1000.	360.	AG	1136.	17.7	0.0	44.0		
17. I-275 SB EXPRESS	-60.0	1000.0	-60.0	-800.0	1800.	180.	AG	7823.	8.5	20.0	92.0		
18. I-275 SB EXPRESS	-60.0	-800.0	25.0	-2000.0	1203.	176.	AG	3518.	8.5	20.0	68.0		
19. I-275 SB LOCAL	-100.0	-800.0	-30.0	-2000.0	1202.	177.	AG	5555.	10.2	20.0	56.0		
20. I-275 NB EXPRESS	140.0	-2000.0	60.0	-1240.0	764.	354.	AG	7423.	8.8	20.0	****		
21. I-275 NB EXPRESS	60.0	-1240.0	60.0	1000.0	2240.	360.	AG	6401.	8.8	20.0	92.0		

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JOB: I275/MLK BLVD 2010 BUILD RUN: 2010 BUILD
DATE: 10/04/94 TIME: 13:36

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. MLK WB DELAY	120	73	2.0	2533	1600	214.00	1	3
3. MLK WB LEFT	120	86	2.0	629	1600	214.00	1	3
6. MLK EB DELAY	120	73	2.0	2255	1600	214.00	1	3
7. MLK EB LEFT	120	86	2.0	554	1600	214.00	1	3
10. SB RAMP DELAY	120	86	2.0	677	1600	214.00	1	3
11. SB RAMP LEFT	120	87	2.0	711	1600	214.00	1	3
14. NB RAMP DELAY	120	86	2.0	515	1600	214.00	1	3
15. NB RAMP LEFT	120	87	2.0	539	1600	214.00	1	3

RECEPTOR LOCATIONS

	COORDINATES (FT)

RECEPTOR	X	Y	Z
1. RECP 1	185.0	495.0	6.0
2. RECP 2	320.0	170.0	6.0
3. RECP 3	680.0	-95.0	6.0
4. RECP 4	200.0	-525.0	6.0
5. RECP 5	-200.0	-530.0	6.0
6. RECP 6	-235.0	-105.0	6.0
7. RECP 7	-350.0	130.0	6.0
8. RECP 8	-650.0	-70.0	6.0
9. RECP 9	-640.0	70.0	6.0
10. RECP 10	290.0	-110.0	6.0

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JOB: I275/MLK BLVD 2010 BUILD RUN: 2010 BUILD

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) REC1	REC2	REC3	REC4	REC5	REC6	REC7	REC8	REC9	REC10
10.	0.1	0.0	4.8	2.1	3.8	8.5	0.3	4.0	0.0	4.7
20.	0.0	0.0	4.6	1.5	3.8	9.6	0.7	4.1	0.0	4.3
30.	0.0	0.0	4.8	1.5	3.9	9.3	1.2	4.6	0.4	4.4
40.	0.0	0.0	5.1	1.6	3.9	8.4	1.3	5.2	0.6	4.7
50.	0.0	0.0	5.3	1.4	3.8	7.4	1.3	5.8	0.7	5.0
60.	0.0	0.0	5.3	0.8	3.3	6.5	1.6	6.7	0.8	5.2
70.	0.0	0.0	4.4	0.2	2.5	7.1	2.0	8.4	1.1	5.1
80.	0.0	0.1	2.6	0.0	1.9	6.9	2.7	9.3	2.8	3.9
90.	0.0	0.7	1.0	0.0	1.7	4.8	4.4	7.5	5.8	1.7
100.	0.0	2.2	0.2	0.0	1.7	2.8	5.8	3.5	8.3	0.3
110.	0.3	3.6	0.0	0.0	1.7	1.9	5.9	1.1	7.9	0.0
120.	1.0	4.1	0.0	0.0	1.9	1.6	5.5	0.7	6.7	0.0
130.	1.5	3.9	0.0	0.0	1.9	1.7	5.6	0.7	5.7	0.0
140.	1.6	3.7	0.0	0.0	2.2	1.8	5.8	0.8	5.0	0.0
150.	1.6	3.5	0.0	0.0	2.2	1.8	5.5	0.7	4.8	0.0
160.	1.7	3.3	0.0	0.0	2.5	2.2	5.2	0.4	4.3	0.0
170.	2.1	3.5	0.0	0.2	2.1	1.8	4.8	0.1	3.8	0.0
180.	3.2	4.0	0.0	0.9	1.0	0.8	4.0	0.0	3.7	0.5
190.	3.9	4.9	0.1	1.7	0.2	0.2	3.7	0.0	3.7	1.0
200.	3.8	5.8	0.5	2.1	0.0	0.0	3.6	0.0	3.8	1.5
210.	4.2	6.0	0.6	2.0	0.0	0.0	3.4	0.0	4.0	1.5
220.	4.0	5.6	0.8	1.9	0.0	0.0	3.1	0.0	4.0	1.5
230.	4.2	4.9	0.8	1.9	0.0	0.0	2.8	0.0	4.4	1.5
240.	3.2	4.4	0.8	1.7	0.0	0.0	2.8	0.0	4.6	1.8
250.	2.4	4.6	0.9	1.6	0.0	0.0	2.6	0.2	4.4	2.1
260.	2.0	3.9	2.0	1.6	0.0	0.5	1.7	0.7	3.2	3.1
270.	1.8	2.6	4.5	1.6	0.0	1.9	0.6	2.1	1.8	5.1
280.	1.9	1.5	6.8	1.7	0.0	4.3	0.1	3.8	0.5	6.6
290.	1.9	1.2	7.2	2.0	0.1	6.0	0.0	5.0	0.1	6.5
300.	2.0	1.2	6.8	2.6	0.4	6.4	0.0	5.0	0.0	6.2

310.	*	2.1	1.2	6.2	3.3	0.8	6.3	0.0	4.9	0.0	6.0
320.	*	2.1	1.2	5.8	3.7	1.1	6.0	0.0	4.5	0.0	6.2
330.	*	2.1	1.2	5.2	3.7	1.3	6.0	0.0	4.2	0.0	6.6
340.	*	1.6	0.8	4.6	3.6	1.5	6.1	0.0	4.1	0.0	6.3
350.	*	1.1	0.3	4.8	3.6	2.1	6.4	0.0	4.0	0.0	5.6
360.	*	0.5	0.0	4.8	2.6	2.9	7.2	0.0	4.1	0.0	5.1
MAX	*	4.2	6.0	7.2	3.7	3.9	9.6	5.9	9.3	8.3	6.6
DEGR.	*	210	210	290	320	40	20	110	80	100	330

THE HIGHEST CONCENTRATION IS 9.60 PPM AT 20 DEGREES FROM REC6 .

1TIS EIS EMISSION FACTORS
MOBILE5a (26-Mar-93)
0I/M program selected:

0 Start year (January 1): 1991
Pre-1981 MYR stringency rate: 20%
First model year covered: 1975
Last model year covered: 2020
Waiver rate (pre-1981): 10.%
Waiver rate (1981 and newer): 10.%
Compliance Rate: 98.%
Inspection type: Test Only
Inspection frequency Annual
Vehicle types covered: LDGV - Yes
LDGT1 - Yes
LDGT2 - Yes
HDGV - No
1981 & later MYR test type: Idle
Cutpoints, HC: 220.000 CO: 1.200 NOx: 999.000

0Functional Check Program Description:

0Check Start (Jan1)	Model Yrs Covered	Vehicle Classes Covered LDGV	LDGT1	LDGT2	HDGV	Inspection Type	Freq	Comp Rate
ATP 1991	1975-2020	Yes	Yes	Yes	No	Test Only	Annual	98.0%

0Air pump system disablements: No Catalyst removals: Yes
Fuel inlet restrictor disablements: No Tailpipe lead deposit test: No
EGR disablement: No Evaporative system disablements: No
PCV system disablements: No Missing gas caps: Yes
0TAMPA FL
Minimum Temp: 50. (F) Maximum Temp: 70. (F)
Period 1 RVP: 10.5 Period 2 RVP: 9.0 Period 2 Yr: 1992
0Non-methane HC emission factors include evaporative HC emission factors.
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0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 0.0 / 0.0 / 0.0
Reformulated Gas: No

0Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
0Composite Emission Factors (Gm/Mile)										
No-Mth HC:	7.16	8.57	12.25	9.69	13.23	0.94	1.27	4.41	8.63	7.84
Exhst CO:	83.28	92.76	129.82	104.05	89.04	3.49	3.80	35.72	140.31	85.60
Exhst NOX:	1.85	2.11	3.07	2.41	3.51	1.87	1.93	12.11	0.91	2.87

0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

0Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
0Composite Emission Factors (Gm/Mile)										
No-Mth HC:	4.65	5.71	7.92	6.38	8.74	0.91	1.25	3.87	7.74	5.22
Exhst CO:	54.05	62.49	83.56	68.91	71.14	3.69	4.11	29.16	106.41	56.94
Exhst NOX:	1.74	1.99	2.85	2.25	3.61	1.67	1.90	10.89	0.95	2.67

0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

0Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
0Composite Emission Factors (Gm/Mile)										
No-Mth HC:	3.97	4.86	6.73	5.43	7.86	0.87	1.19	3.68	6.75	4.49
Exhst CO:	46.95	54.51	72.81	60.09	65.29	3.42	3.80	26.97	88.79	49.75
Exhst NOX:	1.67	1.91	2.74	2.16	3.64	1.61	1.82	10.46	0.92	2.57

0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

0Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
0Composite Emission Factors (Gm/Mile)										
No-Mth HC:	3.50	4.28	5.91	4.78	7.15	0.83	1.14	3.51	6.00	3.98
Exhst CO:	41.87	48.81	65.13	53.78	60.04	3.17	3.52	24.99	75.53	44.54
Exhst NOX:	1.62	1.85	2.66	2.10	3.68	1.55	1.75	10.06	0.90	2.49

0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

0Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	8.0	8.0	8.0		8.0	8.0	8.0	8.0	8.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
0Composite Emission Factors (Gm/Mile)										
No-Mth HC:	3.18	3.88	5.35	4.33	6.60	0.79	1.08	3.34	5.41	3.63
Exhst CO:	38.07	44.53	59.37	49.05	55.34	2.94	3.27	23.20	65.35	40.58
Exhst NOX:	1.59	1.81	2.59	2.05	3.72	1.49	1.69	9.69	0.88	2.43

0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

0Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	10.0	10.0	10.0		10.0	10.0	10.0	10.0	10.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
0Composite Emission Factors (Gm/Mile)										
No-Mth HC:	2.74	3.32	4.57	3.70	5.67	0.72	0.99	3.04	4.57	3.14
Exhst CO:	32.74	38.54	51.31	42.43	47.33	2.55	2.83	20.11	51.12	34.95
Exhst NOX:	1.53	1.75	2.51	1.98	3.79	1.39	1.57	9.03	0.86	2.33

0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
Composite Emission Factors (Gm/Mile)										
No-Mth HC:	2.45	2.95	4.05	3.28	4.93	0.66	0.90	2.78	4.01	2.79
Exhst CO:	29.18	34.55	45.94	38.02	40.84	2.22	2.47	17.55	41.92	31.12
Exhst NOX:	1.50	1.71	2.45	1.94	3.86	1.30	1.48	8.47	0.86	2.25

Emission factors are as of Jan. 1st of the indicated calendar year.
Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	15.0	15.0	15.0		15.0	15.0	15.0	15.0	15.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
Composite Emission Factors (Gm/Mile)										
No-Mth HC:	2.15	2.57	3.52	2.86	4.06	0.58	0.79	2.44	3.48	2.44
Exhst CO:	25.63	30.56	40.57	33.61	33.27	1.84	2.04	14.51	33.20	27.22
Exhst NOX:	1.46	1.67	2.40	1.89	3.97	1.19	1.35	7.77	0.88	2.17

Emission factors are as of Jan. 1st of the indicated calendar year.
Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	16.0	16.0	16.0		16.0	16.0	16.0	16.0	16.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
Composite Emission Factors (Gm/Mile)										
No-Mth HC:	2.08	2.48	3.38	2.75	3.82	0.55	0.76	2.34	3.36	2.35
Exhst CO:	24.74	29.56	39.22	32.51	31.21	1.73	1.92	13.67	31.11	26.23
Exhst NOX:	1.46	1.66	2.38	1.88	4.01	1.16	1.32	7.57	0.89	2.14

Emission factors are as of Jan. 1st of the indicated calendar year.
Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	20.0	20.0	20.0		20.0	20.0	20.0	20.0	20.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
Composite Emission Factors (Gm/Mile)										
No-Mth HC:	1.83	2.17	2.96	2.41	3.07	0.47	0.65	2.00	2.98	2.05
Exhst CO:	21.69	26.17	34.69	28.77	24.71	1.39	1.54	10.96	24.95	22.90
Exhst NOX:	1.44	1.63	2.33	1.84	4.15	1.06	1.21	6.92	0.96	2.07

Emission factors are as of Jan. 1st of the indicated calendar year.
Cal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh

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 Veh. Spd.: 25.0   25.0   25.0          25.0   25.0   25.0   25.0   25.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  1.52   1.84   2.49   2.04   2.44   0.40   0.54   1.68   2.68   1.71
 Exhst  CO: 16.55  20.44  27.16  22.49  19.39   1.10   1.22   8.66  19.90  17.67
 Exhst NOX:  1.48   1.64   2.35   1.86   4.34   0.98   1.11   6.38   1.06   2.06

------------------------------------------------------------------------------
OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                      I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                 Anti-tam. Program: Yes    Operating Mode:   20.6 / 27.3 / 20.6
                  Reformulated Gas: No
OVeh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+
 Veh. Spd.: 29.0   29.0   29.0          29.0   29.0   29.0   29.0   29.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  1.35   1.66   2.24   1.83   2.10   0.35   0.48   1.48   2.49   1.52
 Exhst  CO: 13.71  17.28  23.01  19.02  16.61   0.94   1.04   7.41  16.89  14.79
 Exhst NOX:  1.50   1.65   2.36   1.86   4.48   0.94   1.07   6.14   1.13   2.06

------------------------------------------------------------------------------
OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                      I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                 Anti-tam. Program: Yes    Operating Mode:   20.6 / 27.3 / 20.6
                  Reformulated Gas: No
OVeh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+
 Veh. Spd.: 30.0   30.0   30.0          30.0   30.0   30.0   30.0   30.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  1.31   1.62   2.18   1.79   2.03   0.34   0.47   1.44   2.44   1.49
 Exhst  CO: 13.12  16.62  22.14  18.30  16.07   0.91   1.01   7.16  16.24  14.20
 Exhst NOX:  1.50   1.65   2.36   1.86   4.52   0.94   1.06   6.10   1.15   2.07

------------------------------------------------------------------------------
OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                      I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                 Anti-tam. Program: Yes    Operating Mode:   20.6 / 27.3 / 20.6
                  Reformulated Gas: No
OVeh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+
 Veh. Spd.: 31.0   31.0   31.0          31.0   31.0   31.0   31.0   31.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  1.28   1.58   2.13   1.75   1.97   0.33   0.45   1.40   2.40   1.45
 Exhst  CO: 12.57  16.00  21.33  17.63  15.58   0.88   0.98   6.93  15.63  13.64
 Exhst NOX:  1.51   1.65   2.36   1.87   4.56   0.93   1.06   6.08   1.16   2.07

------------------------------------------------------------------------------
OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                      I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                 Anti-tam. Program: Yes    Operating Mode:   20.6 / 27.3 / 20.6
                  Reformulated Gas: No
OVeh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+
 Veh. Spd.: 32.0   32.0   32.0          32.0   32.0   32.0   32.0   32.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  1.25   1.55   2.09   1.71   1.91   0.32   0.44   1.36   2.37   1.41
```

```
 Exhst  CO: 12.05  15.43  20.57  16.99  15.14   0.85   0.95   6.73  15.05  13.12
 Exhst NOX:  1.51   1.65   2.36   1.87   4.59   0.93   1.06   6.06   1.18   2.07

 ------------------------------------------------------------------------------
 0Emission factors are as of Jan. 1st of the indicated calendar year.
 0Cal. Year: 2010          Region: Low          Altitude:  500. Ft.
                      I/M Program: Yes       Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
 0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
 +
              ------ ------ ------ ------ ------ ------ ------ ------ ------ ------
  Veh. Spd.: 33.0   33.0   33.0          33.0   33.0   33.0   33.0   33.0
    VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
 0Composite Emission Factors (Gm/Mile)
  No-Mth HC:  1.22   1.52   2.04   1.68   1.86   0.31   0.43   1.33   2.33   1.38
  Exhst  CO: 11.57  14.88  19.86  16.40  14.75   0.83   0.92   6.53  14.51  12.63
  Exhst NOX:  1.51   1.65   2.37   1.87   4.63   0.93   1.05   6.04   1.19   2.07

 ------------------------------------------------------------------------------
 0Emission factors are as of Jan. 1st of the indicated calendar year.
 0Cal. Year: 2010          Region: Low          Altitude:  500. Ft.
                      I/M Program: Yes       Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
 0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
 +
              ------ ------ ------ ------ ------ ------ ------ ------ ------ ------
  Veh. Spd.: 34.0   34.0   34.0          34.0   34.0   34.0   34.0   34.0
    VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
 0Composite Emission Factors (Gm/Mile)
  No-Mth HC:  1.19   1.49   2.00   1.64   1.81   0.31   0.42   1.29   2.30   1.35
  Exhst  CO: 11.11  14.37  19.19  15.84  14.39   0.81   0.90   6.36  14.00  12.17
  Exhst NOX:  1.52   1.65   2.37   1.87   4.67   0.93   1.05   6.04   1.21   2.08

 ------------------------------------------------------------------------------
 0Emission factors are as of Jan. 1st of the indicated calendar year.
 0Cal. Year: 2010          Region: Low          Altitude:  500. Ft.
                      I/M Program: Yes       Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
 0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
 +
              ------ ------ ------ ------ ------ ------ ------ ------ ------ ------
  Veh. Spd.: 35.0   35.0   35.0          35.0   35.0   35.0   35.0   35.0
    VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
 0Composite Emission Factors (Gm/Mile)
  No-Mth HC:  1.17   1.46   1.96   1.61   1.76   0.30   0.41   1.26   2.26   1.32
  Exhst  CO: 10.68  13.89  18.56  15.31  14.08   0.79   0.87   6.20  13.53  11.74
  Exhst NOX:  1.52   1.65   2.37   1.87   4.70   0.93   1.05   6.05   1.22   2.08

 ------------------------------------------------------------------------------
 0Emission factors are as of Jan. 1st of the indicated calendar year.
 0Cal. Year: 2010          Region: Low          Altitude:  500. Ft.
                      I/M Program: Yes       Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
 0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
 +
              ------ ------ ------ ------ ------ ------ ------ ------ ------ ------
  Veh. Spd.: 36.0   36.0   36.0          36.0   36.0   36.0   36.0   36.0
    VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
 0Composite Emission Factors (Gm/Mile)
  No-Mth HC:  1.14   1.43   1.93   1.58   1.72   0.29   0.40   1.23   2.24   1.30
  Exhst  CO: 10.27  13.44  17.96  14.81  13.80   0.77   0.85   6.06  13.09  11.33
  Exhst NOX:  1.52   1.65   2.37   1.87   4.74   0.93   1.06   6.06   1.23   2.08

 ------------------------------------------------------------------------------
 0Emission factors are as of Jan. 1st of the indicated calendar year.
```

```
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                     I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
OVeh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+
 Veh. Spd.: 39.0   39.0   39.0          39.0   39.0   39.0   39.0   39.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  1.07   1.36   1.83   1.50   1.61   0.27   0.37   1.15   2.16   1.22
 Exhst  CO:  9.17  12.21  16.35  13.47  13.17   0.72   0.80   5.71  11.96  10.24
 Exhst NOX:  1.53   1.66   2.37   1.87   4.85   0.95   1.07   6.16   1.26   2.10

-------------------------------------------------------------------------------
OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                     I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
OVeh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  1.05   1.34   1.80   1.48   1.58   0.27   0.37   1.13   2.14   1.20
 Exhst  CO:  8.84  11.84  15.87  13.07  13.03   0.71   0.79   5.62  11.65   9.92
 Exhst NOX:  1.54   1.66   2.38   1.88   4.89   0.95   1.08   6.21   1.27   2.11

-------------------------------------------------------------------------------
OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                     I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
OVeh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+
 Veh. Spd.: 42.0   42.0   42.0          42.0   42.0   42.0   42.0   42.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  1.02   1.30   1.74   1.44   1.52   0.26   0.35   1.09   2.10   1.16
 Exhst  CO:  8.23  11.16  14.97  12.32  12.83   0.69   0.77   5.47  11.10   9.32
 Exhst NOX:  1.54   1.66   2.38   1.88   4.96   0.97   1.10   6.34   1.28   2.12

-------------------------------------------------------------------------------
OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                     I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
OVeh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+
 Veh. Spd.: 44.0   44.0   44.0          44.0   44.0   44.0   44.0   44.0
   VMT Mix:  0.590  0.201  0.088         0.032  0.002  0.003  0.079  0.005
OComposite Emission Factors (Gm/Mile)
 No-Mth HC:  0.98   1.27   1.69   1.40   1.48   0.25   0.34   1.05   2.08   1.13
 Exhst  CO:  7.67  10.54  14.16  11.64  12.74   0.68   0.76   5.36  10.65   8.78
 Exhst NOX:  1.54   1.66   2.38   1.88   5.03   1.00   1.13   6.50   1.29   2.14

-------------------------------------------------------------------------------
OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010          Region: Low          Altitude:  500. Ft.
                     I/M Program: Yes      Ambient Temp:   52.0 / 52.0 / 52.0 F
                Anti-tam. Program: Yes     Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
```

OVeh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	45.0	45.0	45.0		45.0	45.0	45.0	45.0	45.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
OComposite Emission Factors (Gm/Mile)										
No-Mth HC:	0.97	1.25	1.67	1.38	1.46	0.24	0.34	1.03	2.07	1.11
Exhst CO:	7.41	10.25	13.78	11.33	12.74	0.67	0.75	5.33	10.46	8.53
Exhst NOX:	1.55	1.66	2.38	1.88	5.07	1.01	1.15	6.60	1.30	2.15

OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

OVeh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	46.0	46.0	46.0		46.0	46.0	46.0	46.0	46.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
OComposite Emission Factors (Gm/Mile)										
No-Mth HC:	0.95	1.23	1.64	1.36	1.44	0.24	0.33	1.02	2.06	1.09
Exhst CO:	7.17	9.97	13.41	11.02	12.77	0.67	0.75	5.30	10.28	8.29
Exhst NOX:	1.55	1.66	2.38	1.88	5.10	1.03	1.17	6.71	1.31	2.16

OEmission factors are as of Jan. 1st of the indicated calendar year.
OCal. Year: 2010 Region: Low Altitude: 500. Ft.
I/M Program: Yes Ambient Temp: 52.0 / 52.0 / 52.0 F
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6
Reformulated Gas: No

OVeh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Spd.:	47.0	47.0	47.0		47.0	47.0	47.0	47.0	47.0	
VMT Mix:	0.590	0.201	0.088		0.032	0.002	0.003	0.079	0.005	
OComposite Emission Factors (Gm/Mile)										
No-Mth HC:	0.94	1.22	1.62	1.34	1.42	0.24	0.33	1.01	2.05	1.08
Exhst CO:	6.93	9.71	13.07	10.73	12.82	0.67	0.74	5.28	10.12	8.07
Exhst NOX:	1.55	1.66	2.38	1.88	5.14	1.05	1.19	6.84	1.32	2.18

MEMORANDOM

Date: September 18, 1991

To: David Twiddy, PD&E Administrator

From: James H. Edwards, Transportation Planning Manager
By: Fawzi Bitar, Transportation Planning Coordinator FB

Copies to: File, Dan Doebler

Subject:

W.P.I. #	: 7140004, 5 ←
State Proj. #:	99007-1402
FAP No	: IR-9999(43)
County	: Hillsborough

The above referenced project has a District-Wide number, that is why it was not in the Tampa MPO's Transportation Improvement Program (TIP), Fiscal Year 1987/88 through 91/92. It is part of their 2010 Long Range Transportation Plan.

/FKB

Greiner

C2380.30
March 11, 1994

MEMORANDUM

TO: Elaine Illes

FROM: Daniel Doebler

SUBJECT: **Agency Comments on the TIS EIS Air Quality Report (December 1993)**

FDOT transmitted FDEP, Hillsborough County EPC and Pinellas County DEM comments for the TIS EIS Air Quality Report on February 24, 1994. Responses to those comments are as follows:

FDEP Comments

Comment 1: **Meteorological Persistence Factor (MPF)**

The analysis identifies a 0.6 MPF. The generally accepted MPF is 0.8. When the MPF (0.8) is multiplied by the Traffic Persistence Factor (TPF) of 0.75, the resulting overall persistence factor of 0.6 can be used to convert one-hour to eight-hour concentrations.

Attached, is a copy of Figure C-1, from the Department of Environmental Protection's draft modeling guidelines. The curves on this graph were developed from actual monitoring data and can be used to correct for overestimated persistence factors.

Response 1: As required by the Phase II Scope of Services Document (Section A.5.b.14), the Air Quality Analysis was performed in accordance with Part 2, Chapter 16 of the PD & E Manual. Section 16.2.2.5.2.b of PD & E Manual states that the usual meteorological persistence factor to be used is 0.6. FDOT has been using this factor for all projects statewide since the early 1980's. The discrepancy between the FDOT methodology and FDEP methodology has existed since the drafting of the FDEP guidelines in 1986. Since the meteorological persistence factor used in the analysis is consistent with FDOT methodology, revision of the Air Quality Report is not required.

Comment 2: **Receptor Locations**

I-275/North Boulevard Interchange - Relocate Receptor 1 or add an additional receptor at the SW corner of the church property. Although this area of the property is presently undeveloped, at interstate buildout (2010) it may be developed.

Response 2: FDEP guidelines require the siting of receptors in each intersection quadrant based on a distance from the roadway edge. PD & E guidelines (Section 16-2.2.4.2) require the selection of reasonable worst-case receptor sites based on land use and the expectation of people to spend a significant amount of time. As documented in the Air Quality Report, receptors were sited in residential yards, a recreational park and front walkways of a church and business. Notably, five of the receptors are in close proximity to the modeled roadways. Since receptor placement is consistent with FDOT methodology, revision of the Air Quality Report is not required.

Comment 3: **I-275/Dr. Martin Luther King, Jr. Boulevard - A receptor should be sited at the NW corner of the Hillsborough County Adult High School Property. As with the above church property, future (2010) use should be considered.**

Response 3: Again, receptors were sited at reasonable, worst-case locations (i.e., residential yards and front walk of businesses) consistent with FDOT methodology. Notably, four of the receptors are in close proximity to the modeled roadways.

Comment 4: **Background Carbon Monoxide (CO) Concentration**

The background CO concentration reported is 3.0 ppm. This concentration is usually associated with the central business district (CBD). The two interchanges analyzed are both outside the CBD. A more appropriate default value for those locations would be 2.0 ppm.

Response 4: A background value of 2.0 ppm was initially used in the analysis. However, at the request of FDOT, the background value was increased to 3.0 ppm.

EPC Comments:

Comment 1: **On the surface, we see no problem with the CO and HC microscale dispersion analysis results, but would like to know why there was not a build/no build analysis done for oxides of nitrogen (NO_x).**

Response 1: As stated in the PD & E Guidelines (Section 16-2.2.1.2), HC emissions should be analyzed only if the project meets the five stipulated criteria and a reviewing agency requests the analysis. Furthermore, NO_x should be included only if requested by another agency and FHWA concurs. Although not specifically requested by another agency, FDOT felt that an HC analysis would be appropriate because of the size of the project and to address the Interim Guidance For Determining Conformity issued by the USDOT and EPA.

Interest in NO_x emissions is a result of the EPA rule, 40 CFR Part 51, which replaced the Interim Guidance on December 27, 1993. The rule calls for an analysis of VOC and NO_x emissions in O_3 nonattainment areas, however, it also states that the analysis must be done on a regional basis. For determining conformity, a project must be analyzed under a "baseline" and "action" scenario as part of the areawide transportation system. An analysis of this magnitude is beyond the scope of this Air Quality Report. A "project only" analysis of NO_x or HC cannot be used to demonstrate conformity.

For the purpose of demonstrating conformity, the conformity section of the Air Quality Report has been revised to state that "this project is included in the urban area's current approved conforming TIP. . .". This statement should satisfy 40 CFR Part 51 and local agency concerns regarding HC and NO_x emissions which are precursors to O_3 formation.

COMMENT 2: **Please provide a more specific map/diagram to determine the actual number of lanes in each direction at the North Boulevard and Dr. Martin Luther King, Jr. Boulevard interchanges.**

Response 2: Figure 3 and 4 in the Air Quality Report depict conceptual design plans for the Preferred Alternative. These figures show the proposed number of lanes at each interchange.

Comment 3: **Why not model the I-4/I-275 junction since it appears that there will still exist a major slow down of traffic in this area?**

Response 3: A review of the Traffic Memorandum showed that interchange roads for the Preferred Alternative will be generally operating under free flow conditions at Level of Service C or better. Furthermore, traffic volumes and, hence, emissions will be spread over a wide area. In contrast, traffic at the I-275/North Boulevard interchange and I-275/Dr. Martin Luther King, Jr. Boulevard interchange will experience delay at traffic signals. Traffic volumes are also concentrated in a comparatively small area. The PD & E Guidelines (Section 16-2.2.2.2) require the analysis of the worst-case intersection. Review of the Traffic Memorandum shows the interchanges at North Boulevard and Dr. Martin Luther King, Jr. Boulevard to be the worst-case locations.

DEM COMMENTS

Comment 1: **It is appropriate for the MOBILE5.A model output to utilize the January 1st option for wintertime CO analysis. However, the MOBILE5.A model reflects the January 1st option when calculating the Hydrocarbon (HC) emission factors for the microscale analysis. Since the summer months have been shown to be the period with the higher emission values, the July 1st option for HC emission factors would be recommended.**

In addition, the study does not comment on Oxides of Nitrogen (NO_x) emissions. The executive summary discusses HC, but fails to discuss NO_x. NO_x contributes as a precursor to form ozone (O_3). Recent EPA guidance would indicate a need to evaluate NO_x emissions.

Response 1: Based on 40CFR Part 51, HC and/or NO_x analysis at the project level is not appropriate to make a conformity determination. For further details, see the response to EPC Comment 1.

Comment 2: **Also, the MOBILE4.1 model output is not included in the analysis package.**

Response 2: MOBILE 4.1 was only used to calculate an idle emission factor. The MOBILE 4.1 model uses the same input file as the MOBILE5a model. The idle emission factor used in the analysis is documented in the CAL3QHC input files found in the Appendix.