FINAL CORRIDOR MANAGEMENT REPORT

SR 674
CORRIDOR MANAGEMENT STUDY
FROM SR 45 (US 41) TO CR 579

Hillsborough County, Florida

Prepared for:

Florida Department of Transportation
11201 North McKinley Drive
Tampa, Florida 33612

August 2006

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11201 North McKinley Drive
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Prepared By

HDR Engineering, Inc.
2202 N. West Shore Boulevard
Suite 250
Tampa, Florida 33607

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1.0 INTRODUCTION

SR 674 is an east-west arterial in southern Hillsborough County. In the vicinity of this study it provides a connection between four major north-south routes, SR 45 (US 41), SR 93 (I-75), SR 43 (US 301) and CR 579. Within the study limits, SR 674 provides access to the towns of Ruskin, Sun City Center, Wimauma and Ft. Lonesome further to the east. With the recent proposed developments in the area, SR 674 has become an important link providing access and carrying capacity for the traffic that will be generated by these developments. This corridor management report addresses accessibility and capacity issues of the corridor.

1.1 Purpose

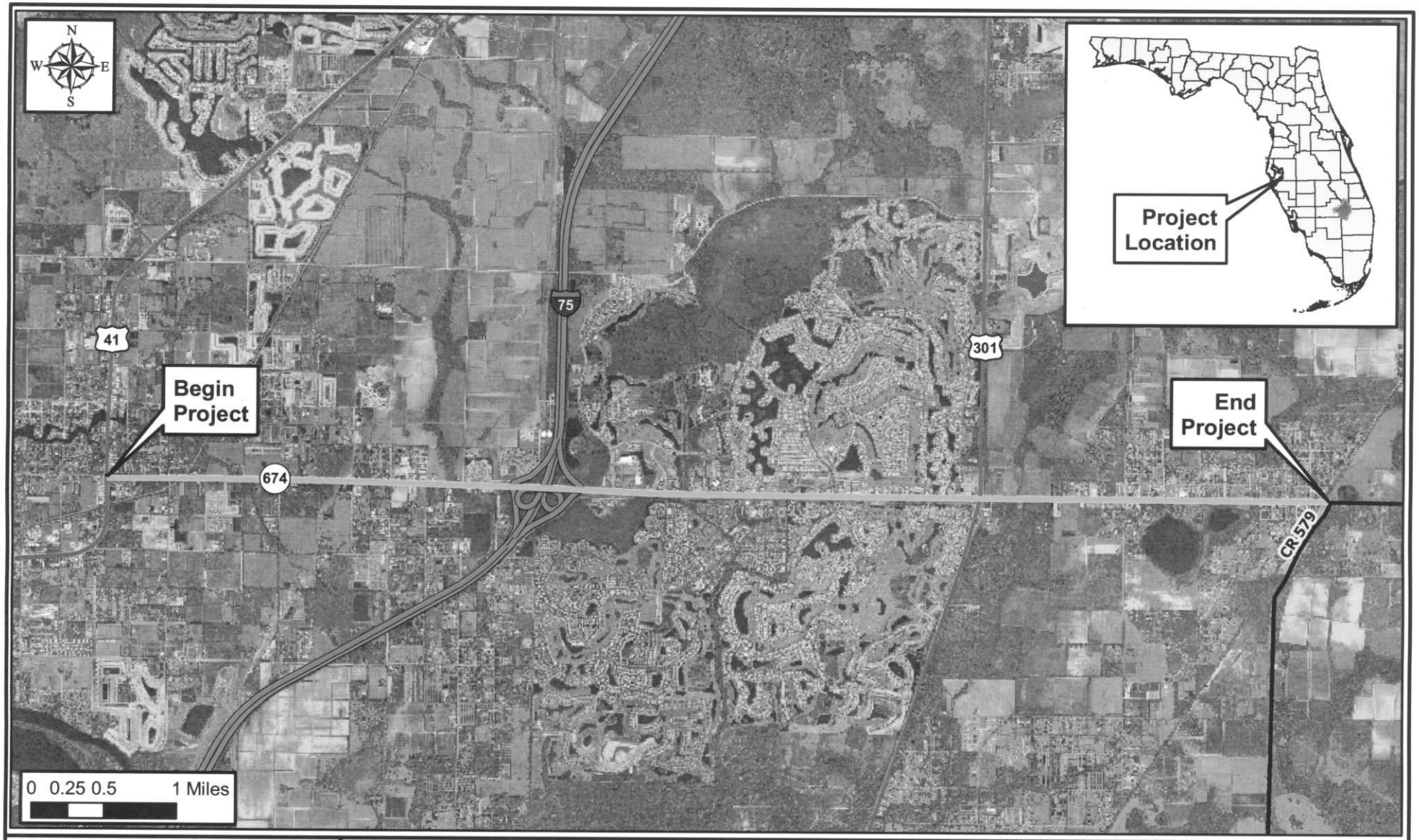
The purpose of this SR 674 Corridor Management Report is to identify future corridor access management strategies and roadway / intersection capacity improvements from SR 45 (US 41) to CR 579. This corridor management report identifies the followings:

- Type and location of median openings
- Roadway and intersection capacity improvements to improve design year (2030) arterial and intersection level of service under right-of-way constrained conditions

The report documents the following items:

- The existing year (2004) corridor traffic conditions
- The design year (2030) corridor annual average daily traffic (AADT) estimated based on the Tampa Bay Regional Planning Model (TBRPM)
- The estimation of design hour traffic volumes
- The proposed conceptual plan to manage access in accordance with Access Management Classification System and Standards
- Intersection and arterial segment LOS analysis

The SR 674 corridor management project location is shown on **Exhibit 1**.



STATE OF FLORIDA • DEPARTMENT OF TRANSPORTATION	SR 674 from US 41 to CR 579	**PROJECT LOCATION MAP**

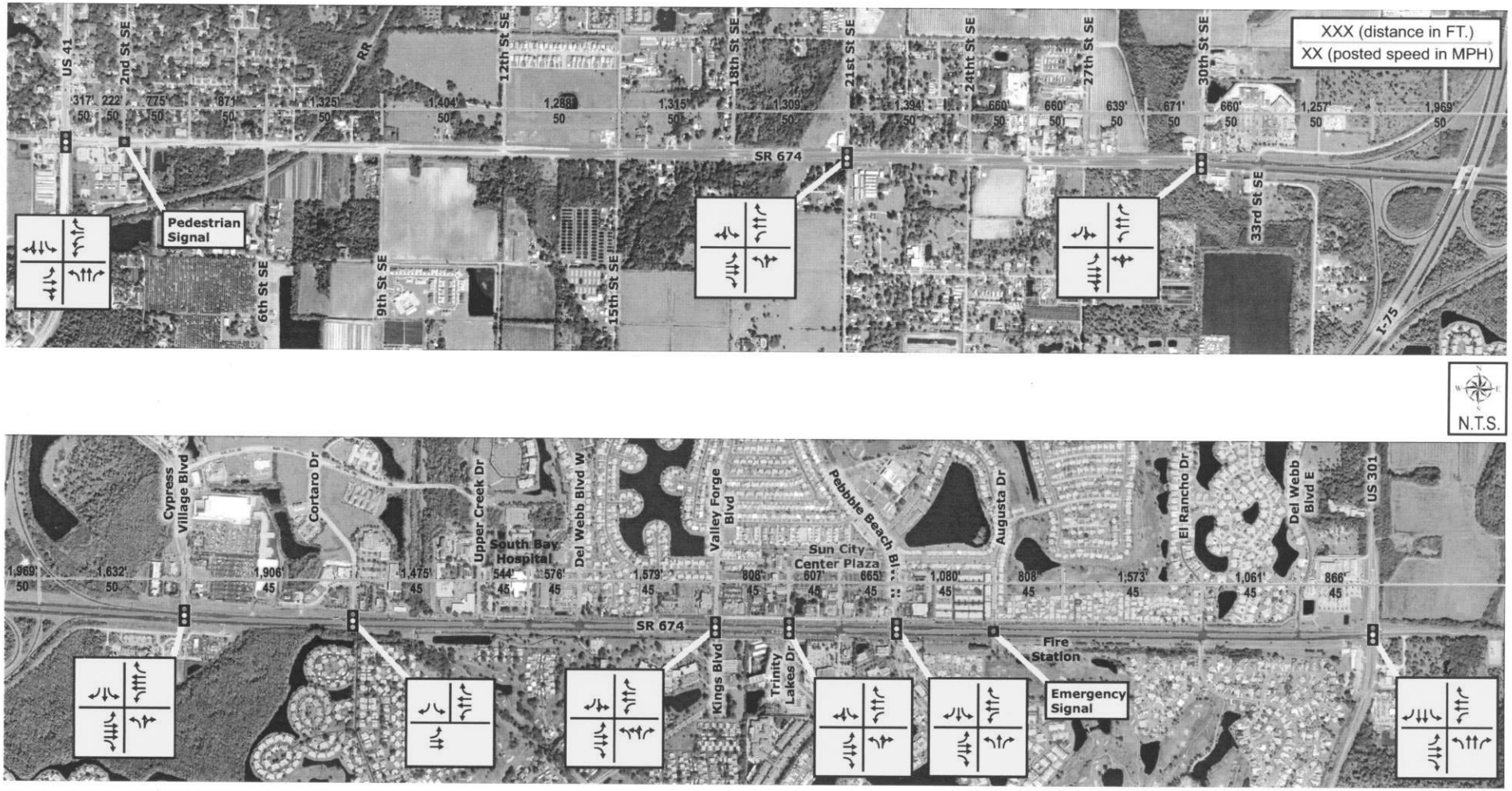
EXHIBIT 1

2.0 EXISTING YEAR (2004) CONDITIONS

The data collection effort for the SR 674 corridor included identifying the existing roadway and intersection characteristics from plans and field reviews. The 2004 intersection manual turning movement counts were obtained from the Florida Department of Transportation (FDOT). Data from Hillsborough County and other previous study sources were also compiled as well as the existing signal timing information at each signalized intersection.

2.1 Roadway and Intersection Characteristics

The existing SR 674 arterial contains two typical segments. The corridor segment between SR 45 (US 41) and SR 43 (US 301) primarily is an urban four-lane arterial. Two locations of a six-lane section occur between SR 45 (US 41) and 9th Street SE and from 30th Street SE to Cypress Village Boulevard. The corridor segment between SR 43 (US 301) and CR 579 is a rural two-lane arterial. The total length of the SR 674 study corridor is approximately 8.4 miles. The posted speed limit on SR 674 is 50 miles per hour (mph) between SR 45 (US 41) and Cypress Village Boulevard, and 45 mph between Cypress Village Boulevard and CR 579. There are nine signalized intersections located along the corridor. These signalized intersections along with arterial segment distances, posted speed limits and intersection lane geometry are shown on **Exhibits 2A and 2B**.



SR 674 from US 41 to CR 579	**EXISTING YEAR (2004) CORRIDOR LANE GEOMETRY**	**EXHIBIT 2A**

SR 674 from US 41 to CR 579	**EXISTING YEAR (2004) CORRIDOR LANE GEOMETRY**	**EXHIBIT 2B**

2.2 Traffic Parameters

The design year (2030) design hour volumes were estimated using the 30th highest hour K and D (K_{30} and D_{30}) factors. The recommended K, D, and T (Truck) factors were provided by the FDOT District Seven. These factors are deemed to be reasonable for the corridor study area and are shown below.

K_{30} = 9.6%

D_{30} = 57.0%

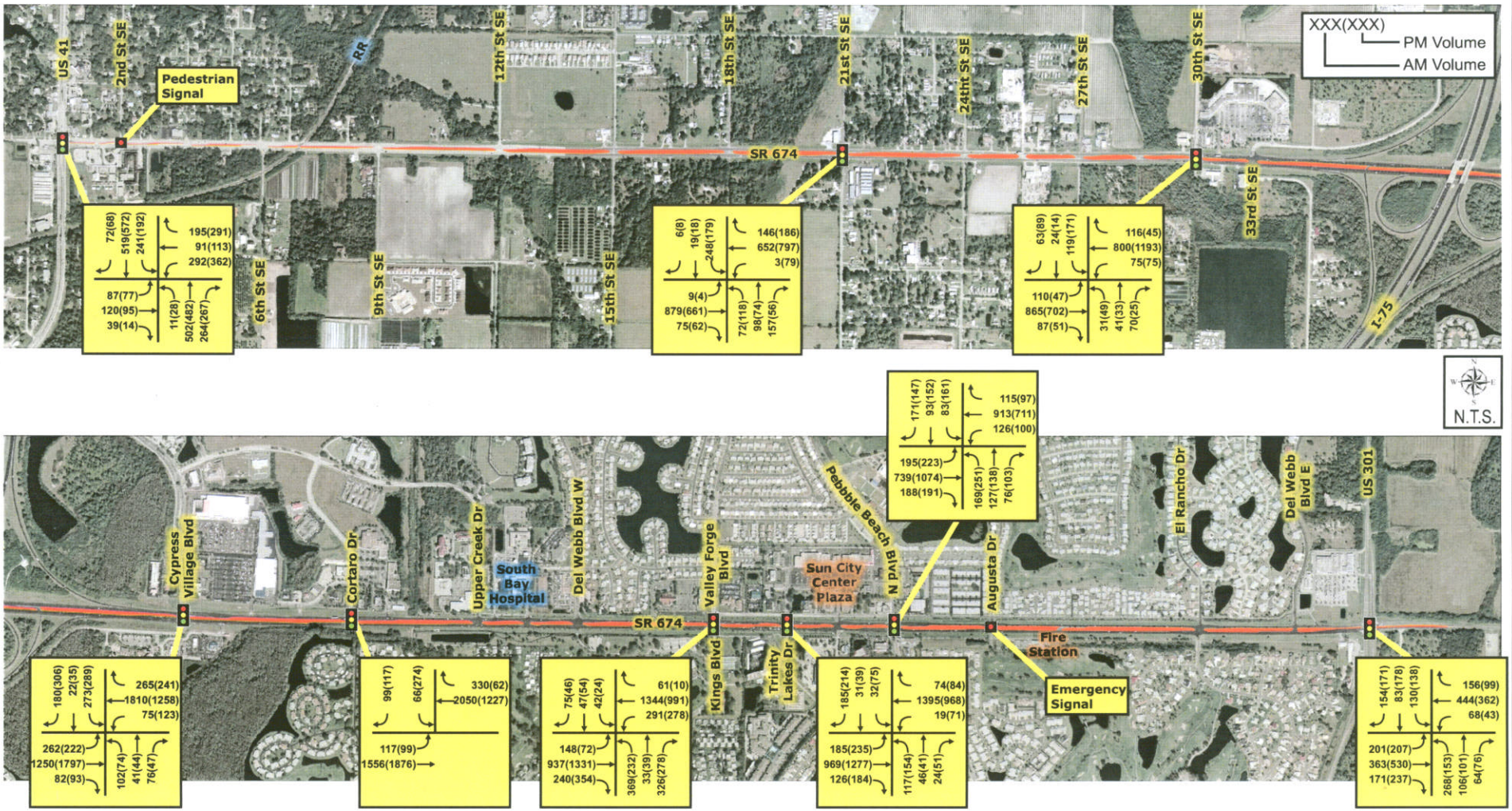
West of SR 93 (I-75)	East of SR 93 (I-75)	East of SR 43 (US 301)
T–Daily = 8.0%	T–Daily = 6.0%	T–Daily = 12.0%
T–Design Hour = 4.0%	T–Design Hour = 3.0%	T–Design Hour = 6.0%

2.3 Development of Existing Year (2004) Design Hour Volumes

The existing year (2004) AADT volumes are shown in **Exhibits 3A and 3B**. The existing year (2004) directional design hour volumes (DDHV) were obtained by multiplying the AADT volumes first by the K_{30} factor of 9.6 percent and then by the D_{30} factor of 57.0 percent (peak direction). At the intersections, the design hour AM and PM intersection turning movement volumes were estimated by multiplying the directional design hour volumes by AM and PM field collected turning movement percentages, respectively. It is assumed that for the estimation of design hour turning movement volumes it is appropriate to assume individual approach peak hour turning movement percentages. If the field collected approach volume for any intersection is higher than the estimated design hour approach volume then the field collected turning movement volumes were used for that particular approach in the analyses. For the SR 674 and for the cross streets the peak hour traffic peak directions are determined based on the collected field traffic count data. The developed existing year (2004), AM and PM turning movement traffic volumes are shown on **Exhibits 4A and 4B**.

SR 674 from US 41 to CR 579	**EXISTING YEAR (2004) AADT**	**EXHIBIT 3A**

SR 674 from US 41 to CR 579	**EXISTING YEAR (2004) AADT**	**EXHIBIT 3B**



SR 674 from US 41 to CR 579	EXISTING YEAR (2004) TURNING MOVEMENT VOLUMES	EXHIBIT 4A

SR 674 from US 41 to CR 579	**EXISTING YEAR (2004) TURNING MOVEMENT VOLUMES**	**EXHIBIT 4B**

2.4 Intersection Level of Service Analysis

Intersection level of service (LOS) were estimated using the Highway Capacity Software (HCS). In the analysis, existing year (2004) geometric conditions and design hour turning movement traffic volumes with respect to individual intersections were used. Existing signal timing information collected from Hillsborough County was also used in the analysis. The analysis results for signalized intersections and major streets (East of SR 43 (US 301)) unsignalized intersections are summarized in **Table 1** and **Table 2**, respectively and are shown on **Exhibits 5A and 5B**. The existing year HCS intersection analysis sheets for the existing conditions are included in Appendix A (under separate cover).

Table 1
Existing Year (2004) Peak Hour Level of Service at Signalized Intersections

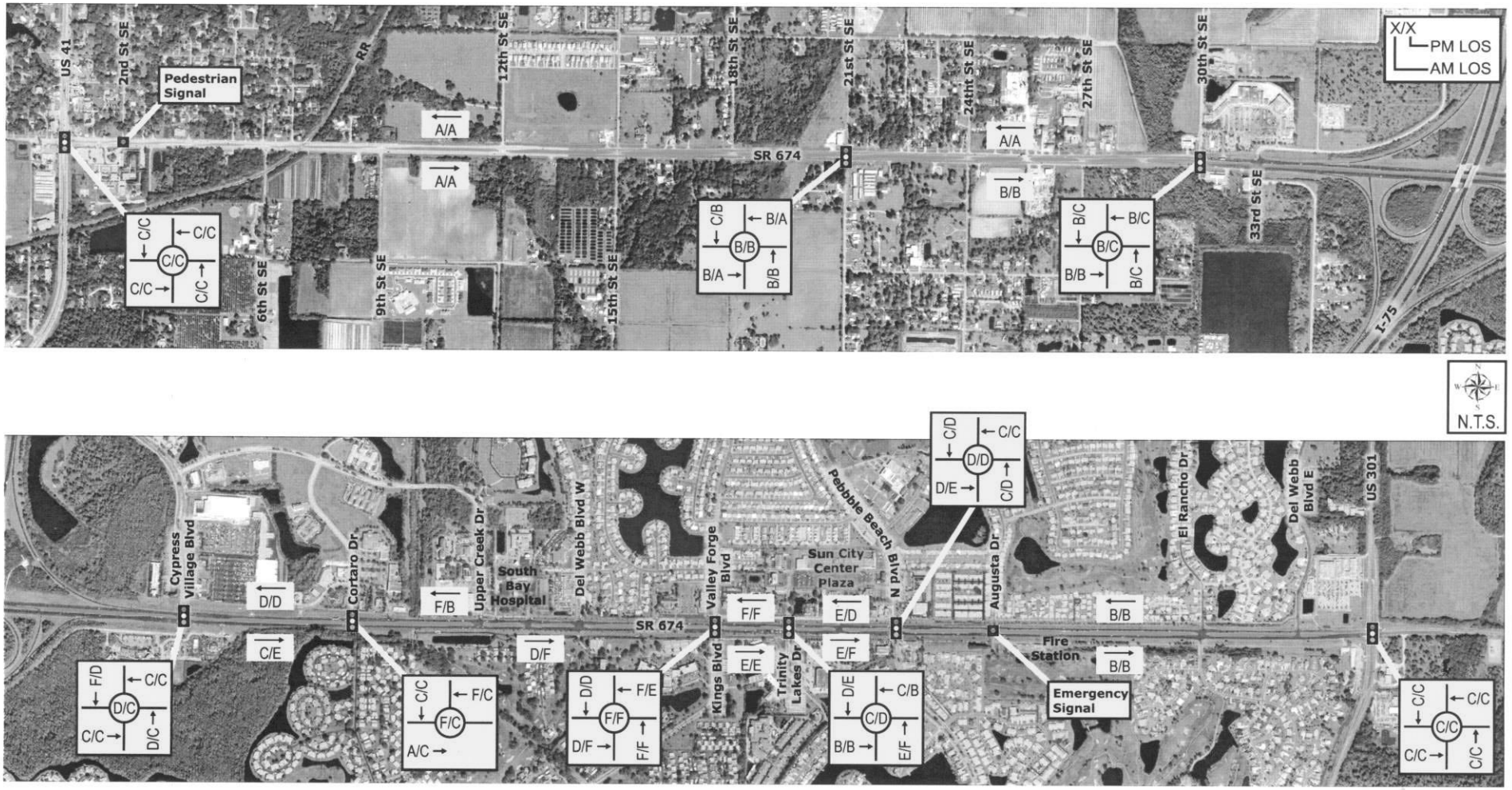
Intersections	Level of Service (Delay sec/veh)	
	AM Peak	***PM Peak***
SR 674 with SR 45 (US 41)	**C (25.0 sec)**	**C (27.4 sec)**
EB Approach	C	C
WB Approach	C	C
NB Approach	C	C
SB Approach	C	C
SR 674 with 21st Street SE	**B (14.7 sec)**	**B (11.5 sec)**
EB Approach	B	A
WB Approach	B	A
NB Approach	B	B
SB Approach	C	B
SR 674 with 30th Street SE	**B (18.4 sec)**	**C (23.6 sec)**
EB Approach	B	B
WB Approach	B	C
NB Approach	B	C
SB Approach	B	C
SR 674 with Cypress Village Boulevard	**D (39.7 sec)**	**C (32.3 sec)**
EB Approach	C	C
WB Approach	C	C
NB Approach	D	C
SB Approach	F	D

Table 1 (Cont.)
Existing Year (2004) Peak Hour Level of Service at Signalized Intersections

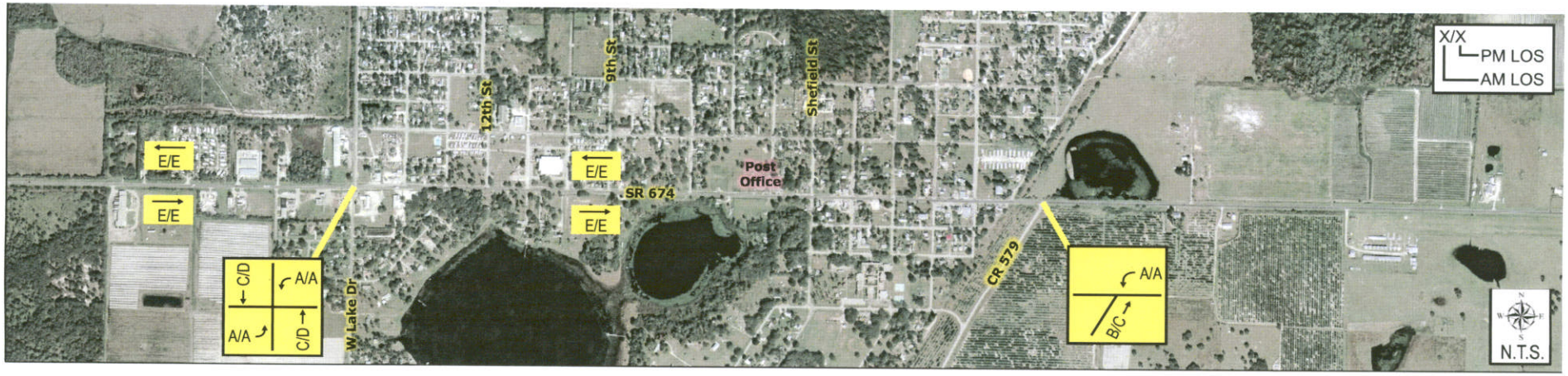
Intersections	Level of Service (Delay sec/veh)	
	AM Peak	***PM Peak***
SR 674 with Cortaro Drive	**F (96.3 sec)**	**C (29.4 sec)**
EB Approach	A	C
WB Approach	F	C
SB Approach	C	C
SR 674 with Kings Boulevard / Valley Forge Boulevard	**F (124.4 sec)**	**F (121.4 sec)**
EB Approach	D	F
WB Approach	F	E
NB Approach	F	F
SB Approach	D	D
SR 674 with Trinity Lakes Drive	**C (27.0 sec)**	**D (37.0 sec)**
EB Approach	B	B
WB Approach	C	B
NB Approach	E	F
SB Approach	D	E
SR 674 with Pebble Beach Boulevard	**D (36.1 sec)**	**D (47.7 sec)**
EB Approach	D	E
WB Approach	C	C
NB Approach	C	D
SB Approach	C	D
SR 674 with SR 43 (US 301)	**C (28.1 sec)**	**C (27.4 sec)**
EB Approach	C	C
WB Approach	C	C
NB Approach	C	C
SB Approach	C	C

Table 2
Existing Year (2004) Peak Hour Level of Service at Unsignalized Intersections

Intersections	Level of Service	
	AM Peak	***PM Peak***
SR 674 with West Lake Drive		
EB Left Turn	A	A
WB Left Turn	A	A
NB Approach	C	D
SB Approach	C	D
SR 674 with CR 579		
WB Left Turn	A	A
NB Approach	B	C



SR 674 from US 41 to CR 579	**EXISTING YEAR (2004) LEVEL OF SERVICE**	**EXHIBIT 5A**



SR 674 from US 41 to CR 579	**EXISTING YEAR (2004) LEVEL OF SERVICE**	**EXHIBIT 5B**

2.5 Arterial Segment Level of Service Analysis

The existing year (2004) arterial segment LOS analyses for SR 674 (from SR 45 (US 41) to SR 43 (US 301)) roadway segments within the study area were conducted using the estimated existing year (2004) design hour volumes. The LOS analysis was conducted using the HCS 2000. In the analysis, existing geometric conditions and traffic characteristics, with respect to individual road segments were used. The results of the arterial segment LOS analysis for the existing conditions are summarized in **Table 3** and shown on **Exhibits 5A and 5B**. The existing year HCS arterial segment LOS analysis sheets for the existing conditions are included in Appendix B (under separate cover).

Table 3
Existing Year (2004) Peak Hour Level of Service on Arterial Segments

Arterial Segments	Level of Service	
	AM Peak	***PM Peak***
SR 674 Eastbound (West of SR 93 (I-75))	**A**	**A**
SR 45 (US 41) to 21st Street SE	A	A
21st Street SE to 30th Street SE	B	B
SR 674 Westbound (West of SR 93 (I-75))	**A**	**A**
30th Street SE to 21st Street SE	A	A
21st Street SE to SR 45 (US 41)	A	A
SR 674 Eastbound (East of SR 93 (I-75))	**C**	**E**
Cypress Village Boulevard to Cortaro Drive	C	E
Cortaro Drive to Kings Boulevard	D	F
Kings Boulevard to Trinity Lakes Drive	E	E
Trinity Lakes Drive to Pebble Beach Boulevard	E	F
Pebble Beach Boulevard to SR 43 (US 301)	B	B
SR 674 Westbound (East of SR 93 (I-75))	**F**	**D**
SR 43 (US 301) to Pebble Beach Boulevard	B	B
Pebble Beach Boulevard to Trinity Lakes Drive	E	D
Trinity Lakes Drive to Kings Boulevard	F	F
Kings Boulevard to Cortaro Drive	F	B
Cortaro Drive to Cypress Village Boulevard	E	D

2.6 Two-Lane Highway Segment Level of Service Analysis

The existing year (2004) two-lane highway segment LOS analyses for SR 674 (SR 43 (US 301) to CR 579) two-lane roadway segments within the study area were conducted using the estimated existing year (2004) design hour volumes. The LOS analysis was conducted using the HCS 2000. In the analysis, existing geometric conditions and traffic characteristics, with respect to individual road segments were used. The results of the two-lane highway segment LOS analysis for the existing conditions are summarized in **Table 4** and shown on **Exhibits 5A and 5B**. The existing year HCS two-lane highway LOS analysis sheets for the existing conditions are included in Appendix B (under separate cover).

Table 4
Existing Year (2004) Peak Hour Level of Service on Two-Lane Highway Segments

Two-Lane Highway Segments	Level of Service	
	AM Peak	***PM Peak***
SR 674 Eastbound (East of SR 43 (US 301))		
SR 43 (US 301) to West Lake Drive	E	E
West Lake Drive to CR 579	E	E
SR 674 Westbound (East of SR 43 (US 301))		
CR 579 to West Lake Drive	E	E
West Lake Drive to SR 43 (US 301)	E	E

2.7 Transit Considerations

A review of Hillsborough Area Regional Transit Authority (HARTline) service routes indicated that regularly scheduled local public transit service currently exists along the SR 674 corridor. The existing HARTline South County Circulator Route 84 operates between SR 45 (US 41) / Apollo Beach Boulevard shopping center and Wimauma Senior Center along and around the SR 674 Corridor.

3.0 ACCESS MANAGEMENT

Access management balances the access to land uses along the roadway while trying to facilitate the flow of traffic by minimizing conflicts between vehicular movements. The purpose of access management is to provide access to land development in a manner that preserves the safety and efficiency of the transportation system. In order to determine the best balance between access and mobility for each particular roadway, the FDOT has developed an access management classification system that is based on the types and intensity of land uses along the corridor and the desired mobility for that particular facility. Each roadway is assigned a classification that is to be achieved through the appropriate spacing of driveways, traffic signals and median openings as well as the types of median opening treatments (e.g., full versus restrictive). This section evaluates these types of access management criteria based on the classification assigned to the SR 674 corridor within the project limits.

3.1 Access Management Standards

Access management helps a highway facility to operate efficiently and safely by reducing potential vehicle conflict points. The FDOT has developed driveway, median opening, and signalized intersection spacing standards for state highway facilities. The minimum FDOT spacing standards are summarized in **Table 5**. The SR 674 section between SR 45 (US 41) and SR 43 (US 301)is designated as an Access Class 5 facility (as highlighted in **Table 5**).

The SR 674 section east of SR 43 (US 301) is designated as an Access Class 3 facility (as highlighted in **Table 5**), however there is no existing restrictive median or median openings for this section because it currently exists as a two-lane facility.

Table 5
Access Classification and Standards

Access Class	Facility Design Features (Median Treatment and Access Roads)	Minimum Connection Spacing (ft) (> 45mph / ≤ 45mph)	Minimum Median Opening Spacing (ft) (> 45mph / ≤ 45mph)		Minimum Signal Spacing (mi)
			Directional	Full	
2	Restrictive w/ Service Roads	1,320 / 660	1,320	2,640	0.5
3	**Restrictive**	**660 / 440**	**1,320**	**2,640**	**0.5**
4	Non-Restrictive	660 / 440	N/A	N/A	0.5
5	**Restrictive**	**440 / 245**	**660**	**2,640 / 1,320**	**0.5 / 0.25**
6	Non-Restrictive	440 / 245	N/A	N/A	0.25
7	Both	125	330	660	0.25

Source: FDOT Median Handbook

3.2 Median Openings

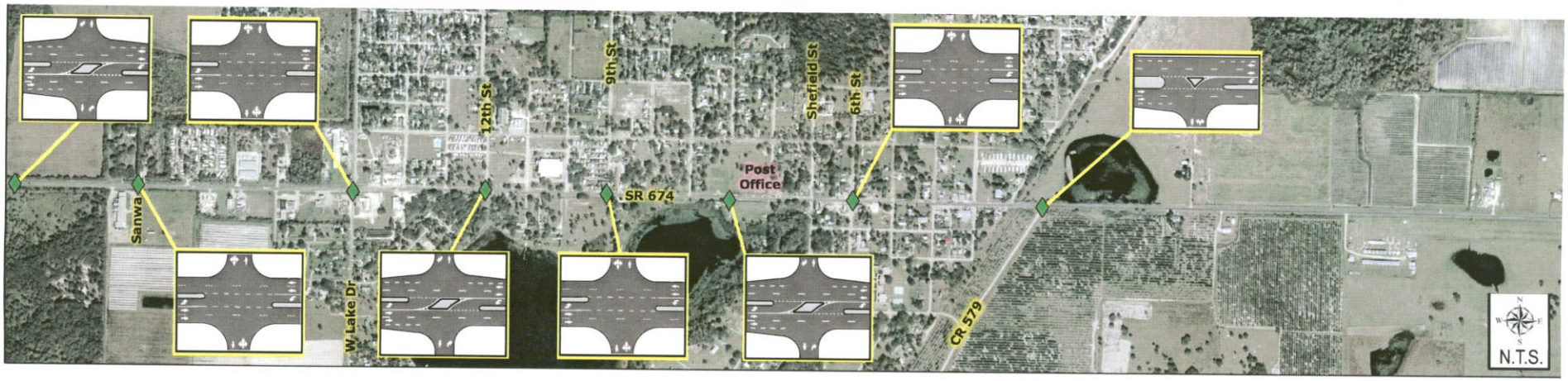
Median openings consist of full median openings and directional median openings. Full median openings allow all turning movements. Directional median openings allow some turning movements and restrict other turning movements. A full median opening can be a signalized or unsignalized intersection. Typically, in a directional median opening, through movements and left-turn movements from the minor cross streets or driveway access to land uses are restricted. But, in some cases certain other movements are restricted in a directional median opening. The existing median opening locations and median spacing information along the SR 674 corridor are summarized in **Table 6**.

The investigation of existing median openings along the SR 674 corridor shows that the FDOT spacing standards are not met for the corridor, according to the access classification standards. To meet the access classification standards for the SR 674 corridor, the future signal locations were identified. Then, all other remaining full median openings were investigated and recommendations were made. In this process, careful consideration was given to the accessibility of various adjacent corridor land uses. The proposed median opening treatments and recommendations were discussed and coordinated with the Department's access management group and were consistent with their plan. The proposed SR 674 corridor median openings are shown on **Exhibit 6A** and **Exhibit 6B** and summarized in **Table 7**.

Table 6
Existing SR 674 Corridor Median Openings

Cross Streets	Median Type	Median Spacing (ft)	Meets Access Class 5 Criteria	Remarks
SR 45 (US 41)	Signal	655	No	
School Parking	Directional	259	No	Elementary School
2nd Street SE	Signal	655	No	Elementary School
SE 4th Street SE	Full / T-Intersection	755	Yes	Needs Traffic Separator
6th Street SE	Full	871	No	
9th Street SE	Full / T-Intersection	1325	Yes	Needs Traffic Separator
12th Street SE	Full / T-Intersection	1288	Yes	Needs Traffic Separator
15th Street SE	Full	1288	No	
18th Street SE	Full	1309	No	
21st Street SE	Signal	4023	Yes	
24th Street SE	Full	660	No	
Cameron Driggers Drive	Full	660	No	
27th Street SE	Full	660	No	
U-turn	Directional	639	No	
30th Street SE	Signal	4023	Yes	
33rd Street SE	Full	660	No	
SR 93 (I-75) SB Ramp	Directional	1257	Yes	WB Left-in
SR 93 (I-75) NB Ramp	Directional	1632	Yes	NB Left-out
Cypress Village Boulevard	Signal	1906	Yes	
Cortaro Drive	Signal	1906	Yes	
Upper Creek Drive	Full / T-Intersection	544	No	Needs Traffic Separator
East Hospital Entrance	Full / T-Intersection	544	No	Needs Traffic Separator
Del Webb Boulevard W	Full	576	No	
Kings Boulevard	Signal	808	No	Golf Cart Crossing
Trinity Lakes Drive	Signal	808	No	Golf Cart Crossing
Ray Watson Drive	Directional	607	No	
Pebble Beach Boulevard	Signal	1272	No	
Augusta Drive	Emergency Signal	1082	Yes	EB Left-in & SB Left-out NB Left-out only for emergency vehicles
Fire Station	Directional	808	Yes	WB Left-in
El Rancho Drive	Full	1061	No	
Del Webb Boulevard E	Full / T-Intersection	866	Yes	Needs Traffic Separator
SR 43 (US 301)	Signal	5391	Yes	

SR 674 from US 41 to CR 579	**PROPOSED MEDIAN OPENINGS**	**EXHIBIT 6A**



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	PROPOSED MEDIAN OPENINGS	EXHIBIT 6B

Table 7
Proposed SR 674 Corridor Median Openings

Cross Streets	Median Type	Median Spacing (ft)	Meets Access Class Criteria	Remarks
SR 45 (US 41)	Signal	655	No	
School Parking	Directional	259	No	Elementary School
2nd Street SE	Signal	655	No	Elementary School
4th Street SE	Directional	755	Yes	EB Left-in WB Left-in
6th Street SE	Directional	871	Yes	EB Left-in WB Left-in
9th Street SE	Full / Signal	2693	Yes	
12th Street SE	Directional	1288	Yes	EB Left-in WB Left-in
15th Street SE	Full / Signal	2693	Yes	
18th Street SE	Directional	1309	Yes	EB Left-in WB Left-in
21st Street SE	Directional	1309	Yes	EB Left-in WB Left-in
24th Street SE	Signal	2629	Yes	Less than 1% deviation
Cameron Driggers Drive	Directional	660	Yes	EB Left-in SB Left-out
27th Street SE	Directional	660	Yes	EB Left-in WB Left-in
U-turn	Directional	639	No	
30th Street SE	Signal	2629	Yes	Less than 1% deviation
33rd Street SE	Directional	660	Yes	NB Left-out & SB Left-out
SR 93 (I-75) SB Ramp	Directional	1257	Yes	WB Left-in
SR 93 (I-75) NB Ramp	Directional	1632	Yes	NB Left-out
Cypress Village Boulevard	Signal	1906	Yes	
Cortaro Drive	Signal	1473	Yes	
Upper Creek Drive	Full / Signal	1473	Yes	
East Hospital Entrance	Directional	544	No	EB Left-in & SB Left-out
Del Webb Boulevard W	Directional	576	No	EB Left-in WB Left-in
Kings Boulevard	Signal	808	No	Golf Cart Crossing
Trinity Lakes Drive	Signal	808	No	Golf Cart Crossing
Ray Watson Drive	Directional	607	No	EB Left-in WB Left-in
Pebble Beach Boulevard	Signal	1272	No	
Augusta Drive	Directional / Emergency Signal	1082	Yes	EB Left-in & SB Left-out NB Left-out only for emergency vehicles
Fire Station	Directional	808	Yes	WB Left-in
El Rancho Drive	Full / Signal	1927	Yes	
Del Webb Boulevard E	Directional	866	Yes	EB Left-in
SR 43 (US 301)	Signal	1927	Yes	
Mile Post 6.350	Directional	1518	Yes	EB Left-in WB Left-in
Sanwa Property	Full	2200	No	Development & Right-of-Way Constraint

Table 7 (Cont.)
Proposed SR 674 Corridor Median Opening

Cross Streets	Median Type	Median Spacing (ft)	Meets Access Class Criteria	Remarks
West Lake Drive	Full / Signal	2200	No	
12th Street	Directional	1315	Yes	Less than 1% deviation EB Left-in WB Left-in
9th Street	Full	2650	Yes	
Mile Post 7.825	Directional	1325	Yes	
6th Street	Full	2650	Yes	
CR 579	Directional	2038	Yes	WB Left-in & NB Left-out

4.0 DESIGN YEAR (2030) CONDITIONS

In order to accommodate the travel demand produced by the existing and potential future development in the corridor, an analysis was performed to determine what type of improvements will be required to achieve an acceptable level of service throughout the corridor. The following section documents the methodology and results of that analysis.

4.1 Development of Future Traffic

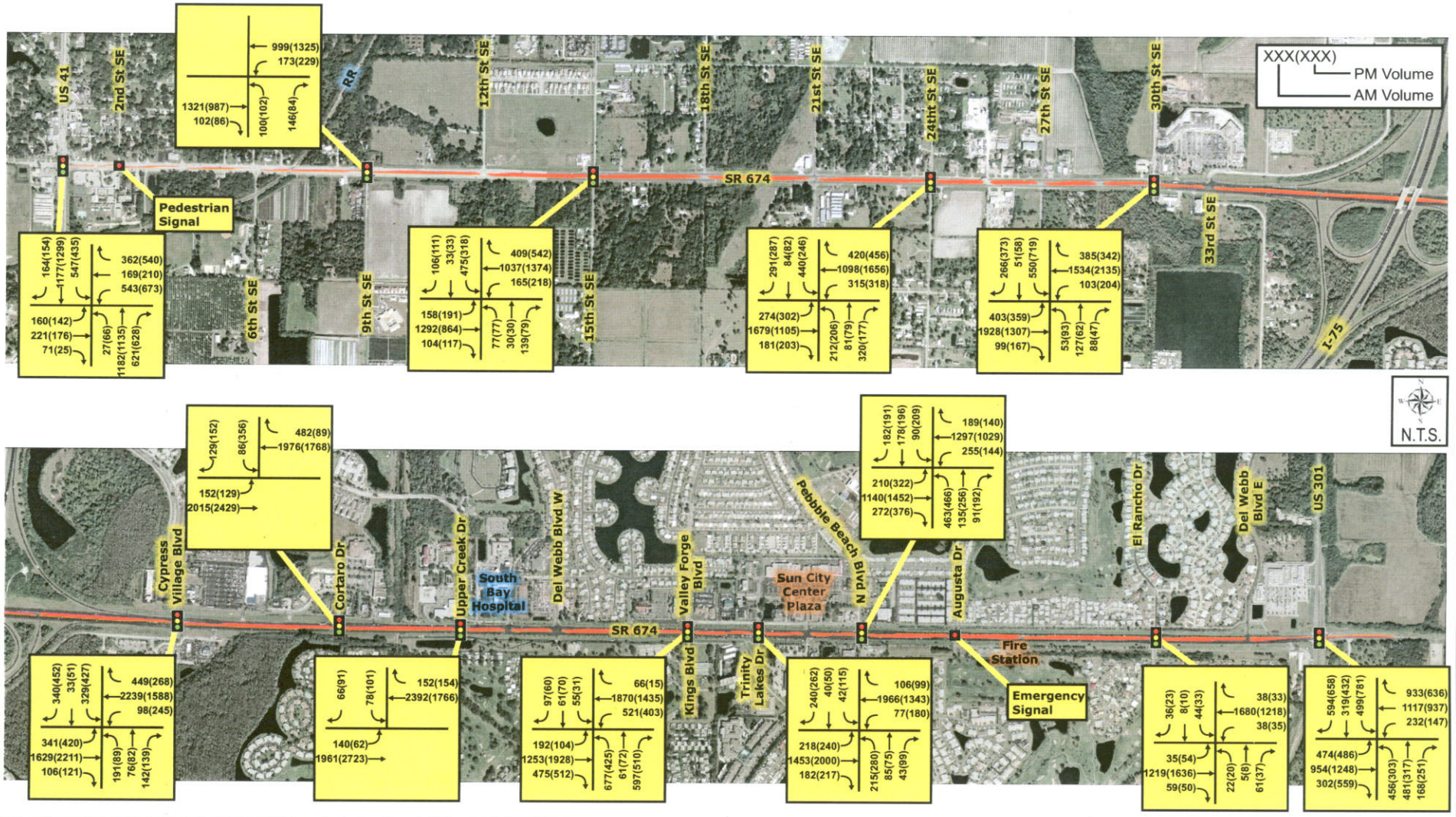
The Tampa Bay Regional Model Version 5.0 was utilized to estimate future year traffic volumes on SR 674 and the intersecting cross streets. The 2030 AADT were developed and provided by the FDOT and are shown on **Exhibits 7A and 7B**.

4.2 Development of Design Year (2030) Design Hour Volumes

The design year (2030) directional design hour volumes (DDHV) were obtained by taking AADT volumes and multiply them first by the K_{30} factor of 9.6 percent and then by the D_{30} factor of 57 percent (peak direction). At intersections, the design hour AM and PM intersection turning movement volumes were estimated by multiplying the directional design hour volumes by AM and PM field collected turning movement percentages, respectively and then manually adjusting with respect to the projected traffic growth rate at the intersection approaches. For SR 674 arterial and for cross streets the peak hour traffic peak directions are determined based on the collected field traffic count data. The developed future year (2030), AM and PM turning movement traffic volumes are shown on **Exhibits 8A and 8B**.

SR 674 from US 41 to CR 579	**DESIGN YEAR (2030) AADT**	**EXHIBIT 7A**

SR 674 from US 41 to CR 579	**DESIGN YEAR (2030) AADT**	**EXHIBIT 7B**



SR 674 from US 41 to CR 579	DESIGN YEAR (2030) DESIGN HOUR VOLUMES	EXHIBIT 8A

SR 674 from US 41 to CR 579	**DESIGN YEAR (2030) DESIGN HOUR VOLUMES**	**EXHIBIT 8B**

4.3 Intersection Level of Service Analysis

Using the 2030 design hour volumes discussed in Section 4.2 of this report, LOS analyses were conducted for the SR 674 signalized intersections using the HCS software. First, intersection LOS analysis was conducted with the assumption that no corridor or intersection improvements would be implemented before the year 2030 (No-Build Condition). The existing year (2004) geometric conditions at the intersections were considered for the analysis. The design year 2030 analysis results without any intersection improvements for signalized intersections and major streets (East of SR 43 (US 301)) unsignalized intersections are summarized in **Table 8** and **Table 9**, respectively and shown on **Exhibits 9A and 9B**. As summarized in **Table 8**, for the year 2030 scenario the signalized intersections along the SR 674 corridor would operate with significantly higher intersection delay. The design year 2030 HCS intersection analysis sheets are included in Appendix C (under separate cover).

Table 8
Design Year (2030) Peak Hour Level of Service
at Signalized Intersections (No-Build)

Intersections	Level of Service (Delay sec/veh)	
	AM Peak	***PM Peak***
SR 674 with SR 45 (US 41)	**F (176.7 sec)**	**F (181.3 sec)**
EB Approach	C	C
WB Approach	F	F
NB Approach	F	F
SB Approach	F	F
SR 674 with 9th Street SE	**B (18.7 sec)**	**B (13.5 sec)**
EB Approach	C	B
WB Approach	A	A
NB Approach	C	C
SR 674 with 15th Street SE	**F (181.6 sec)**	**F (158.9 sec)**
EB Approach	F	D
WB Approach	D	F
NB Approach	F	E
SB Approach	F	F

Table 8 (Cont.)
Design Year (2030) Peak Hour Level of Service
at Signalized Intersections (No-Build)

Intersections	Level of Service (Delay sec/veh)	
	AM Peak	***PM Peak***
SR 674 with 24th Street SE	**F (402.2 sec)**	**F (285.5 sec)**
EB Approach	F	F
WB Approach	F	F
NB Approach	F	F
SB Approach	F	F
SR 674 with 30th Street SE	**F (279.8 sec)**	**F (387.6 sec)**
EB Approach	F	F
WB Approach	F	F
NB Approach	F	E
SB Approach	F	F
SR 674 with Cypress Village Boulevard	**F (94.2 sec)**	**F (122.0 sec)**
EB Approach	D	E
WB Approach	E	D
NB Approach	D	D
SB Approach	F	F
SR 674 with Cortaro Drive	**D (36.2 sec)**	**E (78.0 sec)**
EB Approach	B	E
WB Approach	E	D
SB Approach	D	F
SR 674 with Upper Creek Drive	**F (89.9 sec)**	**E (76.6 sec)**
EB Approach	B	F
WB Approach	F	C
SB Approach	E	F
SR 674 with Kings Boulevard / Valley Forge Boulevard	**F (366.6 sec)**	**F (326.7 sec)**
EB Approach	F	F
WB Approach	F	F
NB Approach	F	F
SB Approach	E	D
SR 674 with Trinity Lakes Drive	**F (127.9 sec)**	**F (179.9 sec)**
EB Approach	B	F
WB Approach	F	C
NB Approach	F	F
SB Approach	F	F
SR 674 with Pebble Beach Boulevard	**F (101.6 sec)**	**F (135.6 sec)**
EB Approach	E	F
WB Approach	F	D
NB Approach	F	F
SB Approach	D	D

Table 8 (Cont.)
Design Year (2030) Peak Hour Level of Service
at Signalized Intersections (No-Build)

Intersections	Level of Service (Delay sec/veh)	
	AM Peak	***PM Peak***
SR 674 with El Rancho Drive	**B (11.5 sec)**	**B (10.7 sec)**
EB Approach	A	B
WB Approach	B	A
NB Approach	C	C
SB Approach	C	C
SR 674 with SR 43 (US 301)	**F (344.8 sec)**	**F (350.3 sec)**
EB Approach	F	F
WB Approach	F	F
NB Approach	F	D
SB Approach	F	F

Table 9
Design Year (2030) Peak Hour Level of Service
at Unsignalized Intersections (No-Build)

Intersections	Level of Service	
	AM Peak	***PM Peak***
SR 674 with West Lake Drive		
EB Left Turn	B	B
WB Left Turn	B	C
NB Approach	F	F
SB Approach	F	F
SR 674 with CR 579		
WB Left Turn	A	B
NB Approach	E	F

SR 674 from US 41 to CR 579	**DESIGN YEAR (2030 NO-BUILD) LEVEL OF SERVICE**	**EXHIBIT 9A**

SR 674 from US 41 to CR 579	**DESIGN YEAR (2030 NO-BUILD) LEVEL OF SERVICE**	**EXHIBIT 9B**

4.4 Arterial Segment Level of Service Analysis

The design year (2030) arterial segment LOS analyses for SR 674 roadway segments of the study area were conducted using the projected design year (2030) design hour volumes. The LOS analysis was conducted using the HCS software. For the no intersection improvements (No-Build) scenario, SR 674 remained as an arterial facility with the existing year (2004) lane geometry. The results of the arterial segment LOS analysis are summarized in **Table 10** and are shown on **Exhibits 9A and 9B**. The design year 2030 HCS arterial segment LOS analysis sheets are included in Appendix D (under separate cover).

Table 10
Design Year (2030) Peak Hour Level of Service
on Arterial Segments (No-Build)

Arterial Segments	Level of Service	
	AM Peak	***PM Peak***
SR 674 Eastbound (West of SR 93 (I-75))	**F**	**D**
SR 45 (US 41) to 9th Street SE	C	B
9th Street SE to 15th Street SE	F	D
15th Street SE to 24th Street SE	F	E
24th Street SE to 30th Street SE	F	E
SR 674 Westbound (West of SR 93 (I-75))	**D**	**F**
30th Street SE to 24th Street SE	F	F
24th Street SE to 15th Street SE	D	F
15th Street SE to 9th Street SE	B	B
9th Street SE to SR 45 (US 41)	C	C
SR 674 Eastbound (East of SR 93 (I-75))	**F**	**F**
Cypress Village Boulevard to Cortaro Drive	C	F
Cortaro Drive to Upper Creek Drive	D	F
Upper Creek Drive to Kings Boulevard	F	F
Kings Boulevard to Trinity Lakes Drive	F	F
Trinity Lakes Drive to Pebble Beach Boulevard	F	F
Pebble Beach Boulevard to El Rancho Drive	B	B
El Rancho Drive to SR 43 (US 301)	F	F

Table 10 (Cont.)
Design Year (2030) Peak Hour Level of Service
on Arterial Segments (No-Build)

Arterial Segments	Level of Service	
	AM Peak	*PM Peak*
SR 674 Westbound (East of SR 93 (I-75))	**F**	**F**
SR 43 (US 301) to El Rancho Drive	C	C
El Rancho Drive to Pebble Beach Boulevard	F	D
Pebble Beach Boulevard to Trinity Lakes Drive	F	E
Trinity Lakes Drive to Kings Boulevard	F	F
Kings Boulevard to Upper Creek Drive	F	D
Upper Creek Drive to Cortaro Drive	F	F
Cortaro Drive to Cypress Village Boulevard	F	E

4.5 Two-Lane Highway Segment Level of Service Analysis

The design year (2030) two-lane highway LOS analyses for SR 674 two-lane roadway segments of the study area were conducted using the projected design year (2030) design hour volumes. The LOS analysis was conducted using the HCS software. For the no improvements (No-Build) scenario, SR 674 two-lane highway segments east of SR 43 (US 301), remained with the existing year (2004) lane geometry. The results of the two-lane highway segment LOS analysis are summarized in **Table 11** and are shown on **Exhibits 9A and 9B**. The design year 2030 HCS two-lane highway segment LOS analysis sheets are included in Appendix D (under separate cover).

Table 11
Design Year (2030) Peak Hour Level of Service on
Two-Lane Highway Segments (No-Build)

Two-Lane Highway Segments	Level of Service	
	AM Peak	***PM Peak***
SR 674 Eastbound (East of SR 43 (US 301))		
East of SR 43 (US 301)	F	F
West of West Lake Drive	F	F
West Lake Drive to CR 579	E	E
SR 674 Westbound (East of SR 43 (US 301))		
CR 579 to West Lake Drive	E	E
West of West Lake Drive	F	F
East of SR 43 (US 301)	F	F

4.6 Design Year (2030) Intersection and Mainline Improvements

Build alternative intersection and arterial LOS analysis were conducted with recommended intersection and mainline improvements. The recommended improvements and the expected signalized intersection, unsignalized intersection, arterial segment and multilane highway segment LOS are summarized in **Table 12**, **Table 13, Table 14** and **Table 15**, respectively and shown on **Exhibits 10A and 10B**. The HCS intersection, arterial and multilane highway analysis sheets for the recommended improvements are included in Appendix E (under separate cover).

Table 12
Design Year (2030) Peak Hour Level of Service at Signalized Intersections with Recommended Intersection Improvements (Build)

Intersections	Level of Service (Delay sec/veh)	
	AM Peak	***PM Peak***
SR 674 with SR 45 (US 41)	**F (153.0 sec)**	**F (136.8 sec)**
EB Approach	F	F
WB Approach	F	F
NB Approach – ***Add 3rd THROUGH Lane***	E	E
SB Approach – ***Add 3rd THROUGH Lane & 2nd LT Lane***	F	F
SR 674 with 9th Street SE	**B (18.2 sec)**	**B (12.4 sec)**
EB Approach	C	B
WB Approach – ***Add 3rd THROUGH Lane***	A	A
NB Approach	C	C
SR 674 with 15th Street SE	**F (87.8 sec)**	**E (61.1 sec)**
EB Approach – ***Add 3rd THROUGH Lane***	D	C
WB Approach – ***Add 3rd THROUGH Lane***	D	E
NB Approach	F	E
SB Approach – ***Add Exclusive LT Lane***	F	F
SR 674 with 24th Street SE	**F (121 sec)**	**F (87.3 sec)**
EB Approach – ***Add 3rd THROUGH Lane***	F	D
WB Approach – ***Add 3rd THROUGH Lane***	D	F
NB Approach – ***Add Exclusive RT Lane***	F	F
SB Approach – ***Add 2nd LT Lane & Exclusive RT Lane***	F	F
SR 674 with 30th Street	**F (153.4 sec)**	**F (194.5 sec)**
EB Approach – ***Add 2nd LT Lane***	F	E
WB Approach – ***Add 3rd THROUGH Lane***	F	F
NB Approach	F	E
SB Approach – ***Add 2nd LT Lane & Shared RT Lane***	F	F
SR 674 with Cypress Village Boulevard	**F (91.1 sec)**	**F (125.3 sec)**
EB Approach – ***Add 2nd LT Lane***	C	E
WB Approach	E	D
NB Approach	D	D
SB Approach	F	F
SR 674 with Cortaro Drive	**B (11.1 sec)**	**D (38.8 sec)**
EB Approach – ***Add 3rd THROUGH Lane***	A	A
WB Approach – ***Add 3rd THROUGH Lane***	B	B
SB Approach	D	F

Table 12 (Cont.)
Design Year (2030) Peak Hour Level of Service at Signalized Intersections with Recommended Improvements (Build)

Intersections	Level of Service (Delay sec/veh)	
	AM Peak	***PM Peak***
SR 674 with Upper Creek Drive	**B (14.9 sec)**	**B (14.7 sec)**
EB Approach – ***Add 3rd THROUGH Lane***	A	B
WB Approach – ***Add 3rd THROUGH Lane***	B	B
SB Approach	E	D
SR 674 with Kings Boulevard / Valley Forge Boulevard	**F (217.5 sec)**	**F (166.3 sec)**
EB Approach – ***Add 3rd THROUGH Lane***	D	F
WB Approach – ***Add 3rd THROUGH Lane & 2nd LT Lane***	F	D
NB Approach	F	F
SB Approach	E	D
SR 674 with Trinity Lake Drive	**C (29.8 sec)**	**D (51.3 sec)**
EB Approach – ***Add 3rd THROUGH Lane***	B	C
WB Approach – ***Add 3rd THROUGH Lane***	C	B
NB Approach	F	F
SB Approach – ***Shared LT Lane & Exclusive RT Lane***	E	F
SR 674 with Pebble Beach Boulevard	**D (43.5 sec)**	**D (53.1 sec)**
EB Approach – ***Add 3rd THROUGH Lane & 2nd LT Lane***	C	D
WB Approach – ***Add 3rd THROUGH Lane & 2nd LT Lane***	C	C
NB Approach – ***Add 2nd LT Lane***	F	F
SB Approach	E	E
SR 674 with El Rancho Drive	**A (7.7 sec)**	**A (7.4 sec)**
EB Approach – ***Add 3rd THROUGH Lane***	A	A
WB Approach – ***Add 3rd THROUGH Lane***	A	A
NB Approach	C	C
SB Approach	C	C
SR 674 with SR 43 (US 301)	**F (235.8 sec)**	**F (238.7 sec)**
EB Approach – ***Add 3rd THROUGH Lane & 2nd LT Lane***	F	F
WB Approach – ***Add 3rd THROUGH Lane & 2nd LT Lane***	F	F
NB Approach – ***Add 3rd THROUGH Lane & 2nd LT Lane***	E	D
SB Approach – ***Add 3rd THROUGH Lane & 2nd LT Lane***	F	F
SR 674 with West Lake Drive (If Signal Warranted)	**C (30.5 sec)**	**C (30.3 sec)**
EB Approach – ***Add 2nd THROUGH Lane***	C	C
WB Approach – ***Add 2nd THROUGH Lane***	C	B
NB Approach	C	D
SB Approach – ***Add Exclusive RT Lane***	C	C

Table 13
Design Year (2030) Peak Hour Level of Service at Unsignalized Intersections with Recommended Intersection Improvements (Build)

Intersections	Level of Service	
	AM Peak	***PM Peak***
SR 674 with CR 579 – *Add 2nd THROUGH Lane (EB & WB)*		
WB Left Turn	A	B
NB Approach – *Add Exclusive LT Lane*	D	F

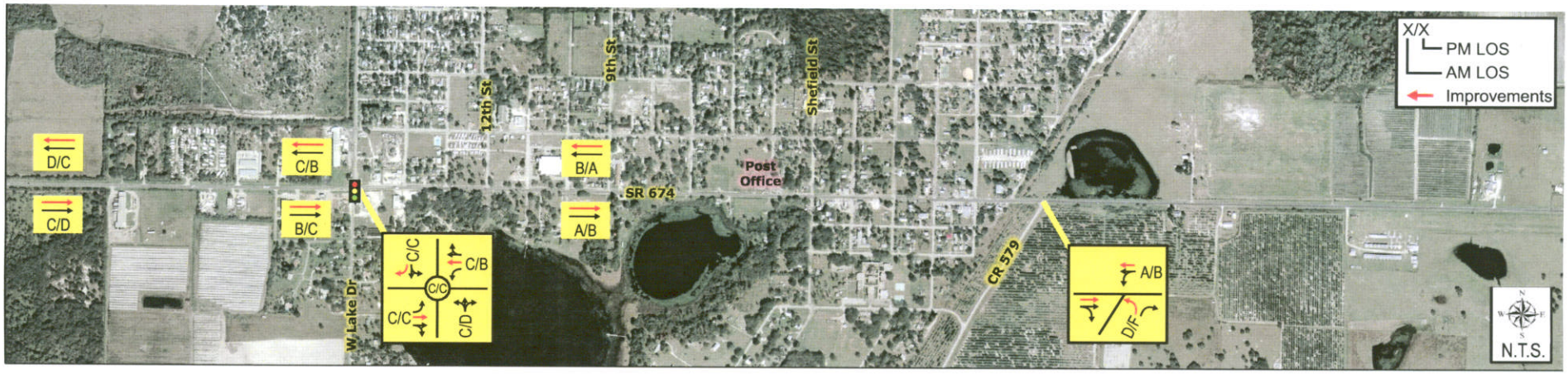
Table 14
Design Year (2030) Peak Hour Level of Service on Arterial Segments with Recommended Intersection Improvements (Build)

Arterial Segments	Level of Service	
	AM Peak	***PM Peak***
SR 674 Eastbound (West of SR 93 (I-75))	**E**	**D**
SR 45 (US 41) to 9th Street SE	C	B
9th Street SE to 15th Street SE	D	D
15th Street SE to 24th Street SE	F	C
24th Street SE to 30th Street SE	F	F
SR 674 Westbound (West of SR 93 (I-75))	**C**	**D**
30th Street SE to 24th Street SE	D	F
24th Street SE to 15th Street SE	C	D
15th Street SE to 9th Street SE	B	B
9th Street SE to SR 45 (US 41)	C	C
SR 674 Eastbound (East of SR 93 (I-75))	**D**	**F**
Cypress Village Boulevard to Cortaro Drive	B	C
Cortaro Drive to Upper Creek Drive	C	D
Upper Creek Drive to Kings Boulevard	D	F
Kings Boulevard to Trinity Lakes Drive	E	F
Trinity Lakes Drive to Pebble Beach Boulevard	E	F
Pebble Beach Boulevard to El Rancho Drive	A	B
El Rancho Drive to SR 43 (US 301)	F	F
SR 674 Westbound (East of SR 93 (I-75))	**E**	**D**
SR 43 (US 301) to El Rancho Drive	C	C
El Rancho Drive to Pebble Beach Boulevard	C	C
Pebble Beach Boulevard to Trinity Lakes Drive	E	E
Trinity Lakes Drive to Kings Boulevard	F	F
Kings Boulevard to Upper Creek Drive	C	B
Upper Creek Drive to Cortaro Drive	D	D
Cortaro Drive to Cypress Village Boulevard	F	D

Table 15
Design Year (2030) Peak Hour Level of Service on
Recommended Four-Lane Highway Segments (Build)

Four-Lane Highway Segments	Level of Service	
	AM Peak	***PM Peak***
SR 674 Eastbound (East of SR 43 (US 301))		
East of SR 43 (US 301)	C	D
West of West Lake Drive	B	C
From West Lake Drive To CR 579	A	B
SR 674 Westbound (East of SR 43 (US 301))		
From CR 579 To West Lake Drive	B	A
West of West Lake Drive	C	B
East of SR 43 (US 301)	D	C

SR 674 from US 41 to CR 579	**DESIGN YEAR (2030 BUILD) LEVEL OF SERVICE WITH RECOMMENDED IMPROVEMENTS**	**EXHIBIT 10A**



SR 674 from US 41 to CR 579	**DESIGN YEAR (2030 BUILD) LEVEL OF SERVICE WITH RECOMMENDED IMPROVEMENTS**	**EXHIBIT 10B**

4.7 Determination of Storage Lengths

The required storage lengths for turn lanes along SR 674 were estimated using the results of the signalized intersection HCS analysis. The HCS analysis results for AM and PM peak hours are compared for each turning movement and the maximum 95th percentile queue length is selected. Since it is possible that through lane queuing can sometimes block access to left turn lanes, left turn lane storage (queue length + deceleration length) requirements were also reviewed against anticipated queue lengths in the through lanes. The required deceleration length was determined based on FDOT Design Standards Index No. 301, 240 feet for SR 674, SR 45 (US 41) and SR 43 (US 301) and 155 feet for other minor cross streets. The required turn lane lengths including deceleration length, for the SR 674 intersections, during the year 2030 design hour are summarized by individual turn lane in **Table 16**. The required turn lane length is very long for left-turn movements at certain intersections because of the longer through movement queue lengths projected in the HCS analysis. However, if the left-turn volumes are significantly lower compared to the through movement volumes then providing longer left-turn storage lane may not be cost efficient. In these cases, improving intersection capacity for through movements should be considered.

Table 16
Design Year (2030) Required Turn Lane Lengths
Based on HCS Analyses

SR 674 Intersections	Turn Lane	Available Turn Lane Length (ft)	2030 Turn Lane Length (ft)	
			Without Intersection Improvements	With Recommended Intersection Improvements
SR 45 (US 41)	Eastbound Left	275	465	440
	Westbound Left	Continuous, 325	1490	1225
	Westbound Right	Continuous	1315	1215
	Northbound Left	225	340	340
	Northbound Right	275	1915	1615
	Southbound Left	275	2165	1590
9th Street SE	Westbound Left	200	525	325

Table 16 (Cont.)
Design Year (2030) Required Turn Lane Lengths
Based on HCS Analyses

SR 674 Intersections	Turn Lane	Available Turn Lane Length (ft)	2030 Turn Lane Length (ft)	
			Without Intersection Improvements	With Recommended Intersection Improvements
15th Street SE	Eastbound Left	150	1800	875
	Eastbound Right	250	390	390
	Westbound Left	150	2225	1050
	Westbound Right	250	1215	1215
	Southbound Left	NA	NA	2005
24th Street SE	Eastbound Left	150	3225	1600
	Eastbound Right	225	515	515
	Westbound Left	150	3150	1550
	Westbound Right	225	965	965
	Northbound Right	NA	NA	955
	Southbound Left	NA	NA	1880
	Southbound Right	NA	NA	805
30th Street SE	Eastbound Left	175	2050	2025
	Westbound Left	350	4800	2600
	Westbound Right	350	840	840
	Southbound Left	NA	NA	1800
	Southbound Right	75	1230	NA
Cypress Village	Eastbound Left	300	1600	1600
	Eastbound Right	125	390	390
	Westbound Left	350	1750	1750
	Westbound Right	325	865	865
	Northbound Left	125	505	505
	Southbound Left	Continuous	2205	2205
	Southbound Right	Continuous	1105	1355
Cortaro Drive	Eastbound Left	350	2000	725
	Westbound Right	100	540	540
	Southbound Left	175	1355	1355
	Southbound Right	Continuous	355	355
Upper Creek Boulevard	Eastbound Left	250	2650	1000
	Westbound Right	150	340	340
Kings Boulevard	Eastbound Left	450	3950	2075
	Eastbound Right	350	940	940
	Westbound Left	450	3425	1650
	Westbound Right	100	315	315
	Northbound Left	Continuous	3230	3230
	Northbound Right	Continuous	2005	2005
	Southbound Right	375	305	305

Table 16 (Cont.)
Design Year (2030) Required Turn Lane Lengths
Based on HCS Analyses

SR 674 Intersections	Turn Lane	Available Turn Lane Length (ft)	2030 Turn Lane Length (ft)	
			Without Intersection Improvements	With Recommended Intersection Improvements
Trinity Lakes Drive	Eastbound Left	300	2700	1100
	Eastbound Right	550	465	465
	Westbound Left	325	2600	1100
	Westbound Right	75	340	340
	Northbound Left	Continuous	1680	1205
	Southbound Left	Continuous	850	NA
	Southbound Right	Continuous	NA	730
Pebble Beach Blvd	Eastbound Left	325	2025	900
	Eastbound Right	175	690	690
	Westbound Left	325	1500	725
	Westbound Right	325	465	465
	Northbound Left	150	1580	705
	Northbound Right	Continuous	455	455
	Southbound Left	225	430	580
	Southbound Right	Continuous	455	455
EL Rancho Boulevard	Eastbound Left	200	750	425
	Eastbound Right	100	265	265
	Westbound Left	200	775	425
	Westbound Right	100	265	265
SR 43 (US 301)	Eastbound Left	325	2600	1425
	Eastbound Right	275	1965	1965
	Westbound Left	300	2225	1175
	Westbound Right	400	3990	3990
	Northbound Left	200	1140	740
	Northbound Right	300	465	590
	Southbound Left	250	2965	1715
	Southbound Right	400	2440	2440

The required turn lane lengths at signalized intersections were also estimated using Red Time Formula method and shown in **Table 17** and **Table 18** for 2030 design year AM and PM peak hour conditions. In Red Time Formula Method the queue length is estimated using the following equation.

Queue Length (ft) =

(DHV)*(1 + truck %)*(Arrival Factor)*(Cycle Length)*(25) / 3600*(# of Lanes)

The Arrival Factor was estimated using the methodology described in "Traffic System Analysis for Engineers and Planners" handbook.

Table 17
Design Year (2030) AM Peak Hour
Required Turn Lane Lengths with Recommended Intersection Improvements based on Red Time Formula Method

SR 674 Intersections	Turn Lane	Cycle Length (sec)	1+%Truck	Volume (vph)	Number of Lanes	Per-Lane Volume (vphpl)	Arrival Factors	g/C	1-g/C	Queue Length (ft)	Deceleration Length (ft) OR 50 ft. (THRU)	Total Length (ft) AM / PM
SR 45 (US 41)	Eastbound Left	104	1.04	160	1	160	1.74	0.07	0.93	194	240	434
	Eastbound Through	104	1.04	292	2	146	1.76	0.26	0.74	143	50	193
	Westbound Left	104	1.04	543	2	271	1.57	0.14	0.86	275	240	515
	Westbound Through	104	1.04	169	1	169	1.57	0.34	0.66	132	50	182
	Westbound Right	104	1.04	362	1	362	1.50	0.34	0.66	269	240	509
	Northbound Left	104	1.04	27	1	27	2.27	0.07	0.93	43	240	283
	Northbound Through	104	1.04	1182	3	394	1.48	0.34	0.66	289	50	339
	Northbound Right	104	1.04	621	1	621	1.38	0.34	0.66	425	240	665
	Southbound Left	104	1.04	547	2	273	1.57	0.07	0.93	300	240	540
	Southbound Through	104	1.04	1341	3	447	1.45	0.34	0.66	321	50	371
9th Street SE	Westbound Left	60	1.04	173	1	173	1.89	0.56	0.44	62	240	302
	Westbound Through	60	1.04	999	3	333	1.67	0.56	0.44	106	50	156
15th Street SE	Eastbound Left	118.5	1.04	158	1	158	1.69	0.5	0.5	114	240	354
	Eastbound Through	118.5	1.04	1292	3	430	1.42	0.34	0.66	345	50	395
	Eastbound Right	118.5	1.04	104	1	104	1.83	0.34	0.66	108	241	349
	Westbound Left	118.5	1.04	165	1	165	1.67	0.5	0.5	118	240	358
	Westbound Through	118.5	1.04	1037	3	345	1.46	0.34	0.66	285	50	335
	Westbound Right	118.5	1.04	409	1	409	1.43	0.34	0.66	330	240	570
	Southbound Left	118.5	1.04	475	1	475	1.40	0.17	0.83	472	155	627
	Southbound Through	118.5	1.04	139	1	139	1.73	0.17	0.83	171	50	221
24th Street SE	Eastbound Left	124.5	1.04	302	1	302	1.49	0.52	0.48	194	240	434
	Eastbound Through	124.5	1.04	1105	3	368	1.45	0.32	0.68	327	50	377
	Eastbound Right	124.5	1.04	203	1	203	1.60	0.32	0.68	199	240	439
	Westbound Left	124.5	1.04	318	1	318	1.49	0.52	0.48	205	240	445
	Westbound Through	124.5	1.04	1656	3	552	1.37	0.32	0.68	462	50	512
	Westbound Right	124.5	1.04	456	1	456	1.40	0.32	0.68	390	240	630
	Northbound Through	124.5	1.04	285	1	285	1.49	0.16	0.84	321	50	371
	Northbound Right	124.5	1.04	177	1	177	1.64	0.16	0.84	219	155	374
	Southbound Left	124.5	1.04	164	1	164	1.64	0.16	0.84	203	155	358
	Southbound Through	124.5	1.04	164	1	164	1.67	0.16	0.84	207	50	257
	Southbound Right	124.5	1.04	287	1	287	1.49	0.16	0.84	323	155	478
30th Street SE	Eastbound Left	113	1.04	403	2	201.	1.63	0.18	0.82	220	240	460
	Eastbound Through	113	1.04	2027	3	675	1.35	0.35	0.65	484	50	534
	Westbound Left	113	1.04	103	1	103	1.88	0.08	0.92	145	240	385
	Westbound Through	113	1.04	1534	3	511	1.41	0.25	0.75	441	50	491
	Westbound Right	113	1.04	385	1	385	1.45	0.25	0.75	342	240	582
	Southbound Left	113	1.04	550	2	275	1.54	0.18	0.82	283	155	438
	Southbound Through	113	1.04	317	1	317	1.51	0.18	0.82	320	50	370

Table 17 (Cont.)
Design Year (2030) AM Peak Hour
Required Turn Lane Lengths with Recommended Intersection Improvements based on Red Time Formula Method

SR 674 Intersections	Turn Lane	Cycle Length (sec)	1+%Truck	Volume (vph)	Number of Lanes	Per-Lane Volume (vphpl)	Arrival Factors	g/C	1-g/C	Queue Length (ft)	Deceleration Length (ft) OR 50 ft. (THRU)	Total Length (ft) AM / PM
Cypress Village	Eastbound Left	111.2	1.03	341	2	170.5	1.68	0.16	0.84	191	240	431
	Eastbound Through	111.2	1.03	1629	3	543	1.39	0.45	0.55	330	50	380
	Eastbound Right	111.2	1.03	106	1	106	1.88	0.45	0.55	87	240	327
	Westbound Left	111.2	1.03	98	1	98	1.88	0.16	0.84	123	240	363
	Westbound Through	111.2	1.03	2239	3	746	1.34	0.45	0.55	438	50	488
	Westbound Right	111.2	1.03	449	1	449	1.43	0.45	0.55	281	240	521
	Northbound Left	111.2	1.03	191	1	191	1.63	0.2	0.8	198	155	353
	Northbound Through	111.2	1.03	218	1	218	1.60	0.2	0.8	222	50	272
	Southbound Left	111.2	1.03	329	1	329	1.50	0.2	0.8	314	155	469
	Southbound Through	111.2	1.03	33	1	33	2.12	0.2	0.8	45	50	95
	Southbound Right	111.2	1.03	340	1	340	1.49	0.2	0.8	322	155	477
Cortaro Drive	Eastbound Left	70	1.03	152	1	152	1.91	0.71	0.29	42	240	282
	Eastbound Through	70	1.03	2015	3	671	1.44	0.71	0.29	140	50	190
	Westbound Through	70	1.03	1976	3	658	1.44	0.57	0.43	204	50	254
	Westbound Right	70	1.03	482	1	482	1.51	0.57	0.43	157	240	397
	Southbound Left	70	1.03	86	1	86	2.13	0.11	0.89	82	155	237
	Southbound Right	70	1.03	129	1	129	1.97	0.11	0.89	113	155	268
Upper Creek Boulevard	Eastbound Left	70	1.03	140	1	140	1.94	0.71	0.29	39	240	279
	Eastbound Through	70	1.03	1961	3	653	1.45	0.71	0.29	138	50	188
	Westbound Through	70	1.03	2392	3	797	1.40	0.57	0.43	240	50	290
	Westbound Right	70	1.03	152	1	152	1.91	0.57	0.43	63	240	303
Kings Boulevard	Eastbound Left	100	1.03	192	1	192	1.66	0.14	0.86	196	240	436
	Eastbound Through	100	1.03	1253	3	417	1.47	0.3	0.7	307	50	357
	Eastbound Right	100	1.03	475	1	475	1.44	0.3	0.7	342	240	582
	Westbound Left	100	1.03	521	2	260	1.58	0.16	0.84	247	240	487
	Westbound Through	100	1.03	1870	3	623	1.38	0.34	0.66	406	50	456
	Westbound Right	100	1.03	66	1	66	2.06	0.34	0.66	64	240	304
	Northbound Left	100	1.03	369	1	369	1.50	0.16	0.84	333	155	488
	Northbound Through	100	1.03	369	1	369	1.50	0.16	0.84	333	50	383
	Northbound Right	100	1.03	597	1	597	1.39	0.16	0.84	499	155	654
	Southbound Through	100	1.03	116	1	116	1.87	0.09	0.91	141	50	191
	Southbound Right	100	1.03	97	1	97	1.92	0.09	0.91	121	155	276

Table 17 (Cont.)
Design Year (2030) AM Peak Hour
Required Turn Lane Lengths with Recommended Intersection Improvements based on Red Time Formula Method

SR 674 Intersections	Turn Lane	Cycle Length (sec)	1+%Truck	Volume (vph)	Number of Lanes	Per-Lane Volume (vphpl)	Arrival Factors	g/C	1-g/C	Queue Length (ft)	Deceleration Length (ft) OR 50 ft. (THRU)	Total Length (ft) AM / PM
Trinity Lakes Drive	Eastbound Left	100	1.03	218	1	218	1.63	0.68	0.32	81	240	321
	Eastbound Through	100	1.03	1453	3	484	1.44	0.58	0.42	210	50	260
	Eastbound Right	100	1.03	182	1	182	1.44	0.58	0.42	79	240	319
	Westbound Left	100	1.03	77	1	77	2.04	0.53	0.47	53	240	293
	Westbound Through	100	1.03	1966	3	655	1.37	0.48	0.52	334	50	384
	Westbound Right	100	1.03	106	1	106	1.92	0.48	0.52	76	240	316
	Northbound Left	100	1.03	215	1	215	1.64	0.18	0.82	207	155	362
	Northbound Through	100	1.03	128	1	128	1.84	0.18	0.82	138	50	188
	Southbound Through	100	1.03	82	1	82	2.01	0.18	0.82	97	50	147
	Southbound Right	100	1.03	240	1	240	1.60	0.18	0.82	225	155	380
Pebble Beach Boulevard	Eastbound Left	100	1.03	210	2	105	1.92	0.12	0.88	127	240	367
	Eastbound Through	100	1.03	1140	3	380	1.49	0.35	0.65	263	50	313
	Eastbound Right	100	1.03	272	1	272	1.57	0.35	0.65	199	240	439
	Westbound Left	100	1.03	255	2	127	1.84	0.14	0.86	144	240	384
	Westbound Through	100	1.03	1297	3	432	1.46	0.36	0.64	289	50	339
	Westbound Right	100	1.03	189	1	189	1.68	0.36	0.64	145	240	385
	Northbound Left	100	1.03	463	2	231.5	1.62	0.14	0.86	231	155	386
	Northbound Through	100	1.03	135	1	135	1.81	0.22	0.78	136	50	186
	Northbound Right	100	1.03	91	1	91	1.96	0.22	0.78	100	155	255
	Southbound Left	100	1.03	90	1	90	1.96	0.06	0.94	119	155	274
	Southbound Through	100	1.03	178	1	178	1.71	0.14	0.86	187	50	237
	Southbound Right	100	1.03	182	1	182	1.70	0.14	0.86	190	155	345
EL Rancho Boulevard	Eastbound Left	60	1.03	35	1	35	2.49	0.62	0.38	14	240	254
	Eastbound Through	60	1.03	1219	3	406	1.61	0.62	0.38	107	50	157
	Eastbound Right	60	1.03	59	1	59	2.38	0.62	0.38	23	240	263
	Westbound Left	60	1.03	38	1	38	2.49	0.62	0.38	15	240	255
	Westbound Through	60	1.03	1680	3	560	1.52	0.62	0.38	139	50	189
	Westbound Right	60	1.03	38	1	38	2.49	0.62	0.38	15	240	255

Table 17 (Cont.)
Design Year (2030) AM Peak Hour
Required Turn Lane Lengths with Recommended Intersection Improvements based on Red Time Formula Method

SR 674 Intersections	Turn Lane	Cycle Length (sec)	1+%Truck	Volume (vph)	Number of Lanes	Per-Lane Volume (vphpl)	Arrival Factors	g/C	1-g/C	Queue Length (ft)	Deceleration Length (ft) OR 50 ft. (THRU)	Total Length (ft) AM / PM
SR 43 (US 301)	Eastbound Left	102	1.03	474	2	237	1.61	0.15	0.85	237	240	477
	Eastbound Through	102	1.03	954	3	318	1.53	0.2	0.8	284	50	334
	Eastbound Right	102	1.03	302	1	302	1.54	0.2	0.8	271	240	511
	Westbound Left	102	1.06	232	2	116	1.87	0.15	0.85	138	240	378
	Westbound Through	102	1.06	1117	3	372	1.50	0.2	0.8	335	50	385
	Westbound Right	102	1.06	933	1	933	1.31	0.2	0.8	734	240	974
	Northbound Left	102	1.03	456	2	228	1.63	0.15	0.85	230	240	470
	Northbound Through	102	1.03	481	3	160	1.74	0.2	0.8	163	50	213
	Northbound Right	102	1.03	168	1	168	1.72	0.2	0.8	169	240	409
	Southbound Left	102	1.03	499	2	249	1.59	0.15	0.85	246	240	486
	Southbound Through	102	1.03	319	3	106	1.90	0.2	0.8	118	50	168
	Southbound Right	102	1.03	594	1	594	1.39	0.2	0.8	482	240	722

Table 18
Design Year (2030) PM Peak Hour
Required Turn Lane Lengths with Recommended Intersection Improvements based on Red Time Formula Method

SR 674 Intersections	Turn Lane	Cycle Length (sec)	1+%Truck	Volume (vph)	Number of Lanes	Per-Lane Volume (vphpl)	Arrival Factors	g/C	1-g/C	Queue Length (ft)	Deceleration Length (ft) OR 50 ft. (THRU)	Total Length (ft)
SR 45 (US 41)	Eastbound Left	104	1.04	142	1	142	1.76	0.07	0.93	175	240	415
	Eastbound Through	104	1.04	201	2	100.5	1.92	0.26	0.74	107	50	157
	Westbound Left	104	1.04	673	2	336.5	1.52	0.14	0.86	330	240	570
	Westbound Through	104	1.04	210	1	210	1.65	0.34	0.66	172	50	222
	Westbound Right	104	1.04	540	1	540	1.41	0.34	0.66	377	240	617
	Northbound Left	104	1.04	66	1	66	2.08	0.07	0.93	96	240	336
	Northbound Through	104	1.04	1135	3	378	1.49	0.34	0.66	279	50	329
	Northbound Right	104	1.04	628	1	628	1.38	0.34	0.66	430	240	670
	Southbound Left	104	1.04	435	2	217	1.65	0.07	0.93	251	240	491
	Southbound Through	104	1.04	1453	3	484	1.44	0.34	0.66	346	50	396
9th Street SE	Westbound Left	60	1.04	229	1	229	1.79	0.61	0.39	69	240	309
	Westbound Through	60	1.04	1325	3	441	1.54	0.61	0.39	115	50	165
15th Street SE	Eastbound Left	123.5	1.04	191	1	191	1.60	0.52	0.48	131	240	371
	Eastbound Through	123.5	1.04	864	3	288	1.49	0.32	0.68	260	50	310
	Eastbound Right	123.5	1.04	117	1	117	1.81	0.32	0.68	128	241	369
	Westbound Left	123.5	1.04	218	1	218	1.60	0.52	0.48	149	240	389
	Westbound Through	123.5	1.04	1374	3	458	1.40	0.32	0.68	389	50	439
	Westbound Right	123.5	1.04	542	1	542	1.37	0.32	0.68	450	240	690
	Southbound Left	123.5	1.04	318	1	318	1.49	0.16	0.84	355	155	510
	Southbound Through	123.5	1.04	144	1	144	1.68	0.16	0.84	181	50	231
24th Street SE	Eastbound Left	124.5	1.04	274	1	274	1.51	0.52	0.48	179	240	419
	Eastbound Through	124.5	1.04	1679	3	559	1.37	0.32	0.68	469	50	519
	Eastbound Right	124.5	1.04	181	1	181	1.60	0.32	0.68	177	240	417
	Westbound Left	124.5	1.04	315	1	315	1.49	0.52	0.48	203	240	443
	Westbound Through	124.5	1.04	1098	3	366	1.45	0.32	0.68	324	50	374
	Westbound Right	124.5	1.04	420	1	420	1.41	0.32	0.68	362	240	602
	Northbound Through	124.5	1.04	293	1	293	1.49	0.16	0.84	330	50	380
	Northbound Right	124.5	1.04	320	1	320	1.49	0.16	0.84	360	155	515
	Southbound Left	124.5	1.04	262	1	262	1.51	0.16	0.84	299	155	454
	Southbound Through	124.5	1.04	262	1	262	1.51	0.16	0.84	299	50	349
	Southbound Right	124.5	1.04	291	1	291	1.49	0.16	0.84	327	155	482
30th Street SE	Eastbound Left	124.5	1.04	359	2	179	1.60	0.16	0.84	217	240	457
	Eastbound Through	124.5	1.04	1474	3	491	1.40	0.32	0.68	421	50	471
	Westbound Left	124.5	1.04	204	1	204	1.60	0.16	0.84	247	240	487
	Westbound Through	124.5	1.04	2135	3	711	1.32	0.32	0.68	574	50	624
	Westbound Right	124.5	1.04	342	1	342	1.45	0.32	0.68	303	240	543
	Southbound Left	124.5	1.04	719	2	359.5	1.45	0.16	0.84	394	155	549
	Southbound Through	124.5	1.04	431	1	431	1.41	0.16	0.84	459	50	509

Table 18 (Cont.)
Design Year (2030) PM Peak Hour
Required Turn Lane Lengths with Recommended Intersection Improvements based on Red Time Formula Method

SR 674 Intersections	Turn Lane	Cycle Length (sec)	1+%Truck	Volume (vph)	Number of Lanes	Per-Lane Volume (vphpl)	Arrival Factors	g/C	1-g/C	Queue Length (ft)	Deceleration Length (ft) OR 50 ft. (THRU)	Total Length (ft)
Cypress Village	Eastbound Left	108.2	1.03	420	2	210	1.66	0.14	0.86	232	240	472
	Eastbound Through	108.2	1.03	2211	3	737	1.35	0.46	0.54	416	50	466
	Eastbound Right	108.2	1.03	121	1	121	1.84	0.46	0.54	93	240	333
	Westbound Left	108.2	1.03	245	1	245	1.59	0.14	0.86	259	240	499
	Westbound Through	108.2	1.03	1588	3	529	1.42	0.46	0.54	314	50	364
	Westbound Right	108.2	1.03	268	1	268	1.58	0.46	0.54	177	240	417
	Northbound Left	108.2	1.03	89	1	89	1.98	0.2	0.8	109	155	264
	Northbound Through	108.2	1.03	221	1	221	1.62	0.2	0.8	222	50	272
	Southbound Left	108.2	1.03	427	1	427	1.46	0.2	0.8	386	155	541
	Southbound Through	108.2	1.03	51	1	51	2.16	0.2	0.8	68	50	118
	Southbound Right	108.2	1.03	452	1	452	1.45	0.2	0.8	406	155	561
Cortaro Drive	Eastbound Left	70	1.03	129	1	129	1.97	0.69	0.31	39	240	279
	Eastbound Through	70	1.03	2429	3	809	1.40	0.69	0.31	176	50	226
	Westbound Through	70	1.03	1768	3	589	1.46	0.55	0.45	194	50	244
	Westbound Right	70	1.03	89	1	89	2.13	0.55	0.45	43	240	283
	Southbound Left	70	1.03	356	1	356	1.60	0.13	0.87	248	155	403
	Southbound Right	70	1.03	152	1	152	1.91	0.13	0.87	126	155	281
Upper Creek Boulevard	Eastbound Left	70	1.03	62	1	62	2.31	0.67	0.33	24	240	264
	Eastbound Through	70	1.03	2723	3	907	1.38	0.67	0.33	207	50	257
	Westbound Through	70	1.03	1766	3	588	1.47	0.53	0.47	204	50	254
	Westbound Right	70	1.03	154	1	154	1.91	0.53	0.47	69	240	309
Kings Boulevard	Eastbound Left	100	1.03	104	1	104	1.92	0.14	0.86	123	240	363
	Eastbound Through	100	1.03	1928	3	642	1.38	0.3	0.7	444	50	494
	Eastbound Right	100	1.03	512	1	512	1.43	0.3	0.7	367	240	607
	Westbound Left	100	1.03	403	2	201	1.66	0.16	0.84	201	240	441
	Westbound Through	100	1.03	1435	3	478	1.44	0.34	0.66	325	50	375
	Westbound Right	100	1.03	15	1	15	2.33	0.34	0.66	16	240	256
	Northbound Left	100	1.03	249	1	249	1.59	0.16	0.84	238	155	393
	Northbound Through	100	1.03	249	1	249	1.59	0.16	0.84	238	50	288
	Northbound Right	100	1.03	510	1	510	1.43	0.16	0.84	438	155	593
	Southbound Through	100	1.03	101	1	101	1.92	0.09	0.91	126	50	176
	Southbound Right	100	1.03	60	1	60	2.11	0.09	0.91	82	155	237

Table 18 (Cont.)
Design Year (2030) PM Peak Hour
Required Turn Lane Lengths with Recommended Intersection Improvements based on Red Time Formula Method

SR 674 Intersections	Turn Lane	Cycle Length (sec)	1+%Truck	Volume (vph)	Number of Lanes	Per-Lane Volume (vphpl)	Arrival Factors	g/C	1-g/C	Queue Length (ft)	Deceleration Length (ft) OR 50 ft. (THRU)	Total Length (ft)
Trinity Lakes Drive	Eastbound Left	100	1.03	240	1	240	1.60	0.68	0.32	88	240	328
	Eastbound Through	100	1.03	2000	3	666	1.37	0.49	0.51	333	50	383
	Eastbound Right	100	1.03	217	1	217	1.64	0.49	0.51	130	240	370
	Westbound Left	100	1.03	180	1	180	1.70	0.68	0.32	70	240	310
	Westbound Through	100	1.03	1343	3	447	1.45	0.49	0.51	237	50	287
	Westbound Right	100	1.03	99	1	99	1.92	0.49	0.51	69	240	309
	Northbound Left	100	1.03	280	1	280	1.56	0.18	0.82	256	155	411
	Northbound Through	100	1.03	174	1	174	1.70	0.18	0.82	173	50	223
	Southbound Through	100	1.03	165	1	165	1.73	0.18	0.82	167	50	217
	Southbound Right	100	1.03	262	1	262	1.56	0.18	0.82	240	155	395
Pebble Beach Boulevard	Eastbound Left	100	1.03	322	2	161	1.73	0.12	0.88	175	240	415
	Eastbound Through	100	1.03	1452	3	484	1.44	0.35	0.65	324	50	374
	Eastbound Right	100	1.03	376	1	376	1.49	0.35	0.65	260	240	500
	Westbound Left	100	1.03	144	2	72	2.04	0.14	0.86	90	240	330
	Westbound Through	100	1.03	1029	3	343	1.51	0.36	0.64	237	50	287
	Westbound Right	100	1.03	140	1	140	1.79	0.36	0.64	115	240	355
	Northbound Left	100	1.03	466	2	233	1.61	0.14	0.86	231	155	386
	Northbound Through	100	1.03	256	1	256	1.59	0.14	0.86	250	50	300
	Northbound Right	100	1.03	192	1	192	1.68	0.14	0.86	198	155	353
	Southbound Left	100	1.03	209	1	209	1.65	0.14	0.86	212	155	367
	Southbound Through	100	1.03	196	1	196	1.66	0.14	0.86	200	50	250
	Southbound Right	100	1.03	191	1	191	1.66	0.14	0.86	195	155	350
EL Rancho Boulevard	Eastbound Left	60	1.03	54	1	54	2.40	0.62	0.38	21	240	261
	Eastbound Through	60	1.03	1636	3	545	1.52	0.62	0.38	135	50	185
	Eastbound Right	60	1.03	50	1	50	2.40	0.62	0.38	20	240	260
	Westbound Left	60	1.03	35	1	35	2.49	0.62	0.38	14	240	254
	Westbound Through	60	1.03	1218	3	406	1.61	0.62	0.38	107	50	157
	Westbound Right	60	1.03	33	1	33	2.49	0.62	0.38	13	240	253
SR 43 (US 301)	Eastbound Left	102	1.03	486	2	243	1.76	0.15	0.85	265	240	505
	Eastbound Through	102	1.03	1248	3	416	1.60	0.2	0.8	388	50	438
	Eastbound Right	102	1.03	559	1	559	1.52	0.2	0.8	496	240	736
	Westbound Left	102	1.06	147	2	73.5	2.30	0.15	0.85	108	240	348
	Westbound Through	102	1.06	937	3	312	1.69	0.2	0.8	317	50	367
	Westbound Right	102	1.06	636	1	636	1.49	0.2	0.8	569	240	809
	Northbound Left	102	1.03	303	2	151	1.95	0.15	0.85	183	240	423
	Northbound Through	102	1.03	317	3	105	2.18	0.2	0.8	134	50	184
	Northbound Right	102	1.03	251	1	251	1.76	0.2	0.8	258	240	498
	Southbound Left	102	1.03	781	2	390	1.62	0.15	0.85	392	240	632
	Southbound Through	102	1.03	432	3	144	1.98	0.2	0.8	166	50	216
	Southbound Right	102	1.03	658	1	658	1.48	0.2	0.8	568	240	808

5.0 SUMMARY AND CONCLUSIONS

The existing year (2004) signalized intersection analysis indicates that all of the SR 674 signalized intersections operate at an acceptable LOS D or better with the exception of the Kings Boulevard intersection. The existing year (2004) arterial analysis indicates that the SR 674 west of the SR 93 (I-75) interchange operates at LOS A, but the SR 674 east of the SR 93 (I-75) interchange operates at LOS E for the peak hour, peak direction. LOS E is not acceptable according to the state highway LOS standards. The segments in the vicinity of Kings Boulevard operate at LOS F during the existing year (2004) peak hours.

The existing year (2004) unsignalized intersections located east of SR 43 (US 301) operate at an acceptable LOS D or better for all the intersection approaches. However, the two-lane highway segments between SR 43 (US 301) and CR 579 operate at LOS E for the peak hour, peak direction.

For the design year (2030) design hour traffic conditions (No-Build), all of the existing and proposed signalized intersections, except the intersections at 9th Street SE, Cortaro Drive and El Rancho Drive are projected to operate at LOS F. SR 674 both east and west of the SR 93 (I-75) interchange is also projected to operate at LOS F during the design year (2030) design hour (No-Build).

For the design year (2030) design hour traffic conditions (No-Build), the stop controlled approaches of the unsignalized intersections, located east of SR 43 (US 301) operate at LOS E or LOS F. The two-lane highway segments between SR 43 (US 301) and West Lake Drive operate at LOS F and the two-lane segment between West Lake Drive and CR 579 operates at LOS E.

To improve the intersection operations along the SR 674 corridor, various intersection improvements were proposed and operational analyses were performed. With the recommended intersection improvements the delay at the SR 674 corridor intersections would be significantly lower compared to the 2030 (No-Build) scenario. However, the

recommended intersection improvements do not achieve acceptable LOS for the (2030) design year traffic conditions. Major capacity improvements such as widening SR 674 to a six-lane facility, grade separations at SR 45 (US 41) and SR 43 (US 301) intersections, building frontage road facilities and improved transit operations / facilities need to be considered to achieve acceptable LOS standards.

In addition to the proposed intersection improvements, the two-lane highway segments between SR 43 (US 301) and CR 579 need to be widen to four lanes to achieve an acceptable LOS. However, based on the signalized intersection analysis of SR 43 (US 301) and SR 674, it is recommended to build three through lanes for the SR 674 eastbound and westbound approaches. Hence, it is recommended to widen the SR 674 highway segment between SR 43 (US 301) and West Lake Drive to six lanes and between West Lake Drive and CR 579 to four lanes for the 2030 design year.

With the proposed developments DG Farms, DG East, the SANWA property (Centex homes) and Sunshine Village (Lennar Homes) to be built within the next few years along SR 674 between SR 43 (US 301) and West Lake Drive, it is recommended that a four lane typical section expandable to six lanes is required between SR 43 (US 301) and West Lake Drive to accommodate these proposed developments. A typical section has been developed and approved by the Department reflecting this typical section configuration. The typical section is contained in Appendix I.

The SR 674 arterial facility between SR 45 (US 41) and SR 43 (US 301) is classified as Access Class 5. In this Corridor Management Study, the type and locations of median openings are proposed to provide safe and efficient access to the SR 674 corridor land uses, while providing mobility to the through traffic. The proposed access management median modifications contained in this report between SR 45 (US 41) and SR 43 (US 301) have been coordinated and approved by the Department's access management staff and are consistent with their access management plan for the corridor. The proposed driveway accesses and median treatments for the aforementioned developments between SR 43 (US 301) and West Lake Drive are currently under review by the Department.

APPENDICES (Under Separate Cover)

Appendix A:	**Level of Service of Intersections for the Existing Year (2004) Conditions**
Appendix B:	**Level of Service of Arterial and Two-Lane Highway Segments for the Existing Year (2004) Conditions**
Appendix C:	**Level of Service of Intersections for the Design Year (2030 No-Build) Conditions**
Appendix D:	**Level of Service of Arterial and Two-Lane Highway Segments for the Design Year (2030 No-Build) Conditions**
Appendix E:	**Level of Service of Intersections, Arterial and Highway Segments for the Design Year (2030 Build) Recommended Improvements**
Appendix F:	**Field Traffic Counts**
Appendix G:	**Projected SR 674 Corridor AADT**
Appendix H:	**Intersection Signal Timing Information**
Appendix I:	**Proposed SR 674 Typical Section from SR 43 (US 301) to West Lake Drive**