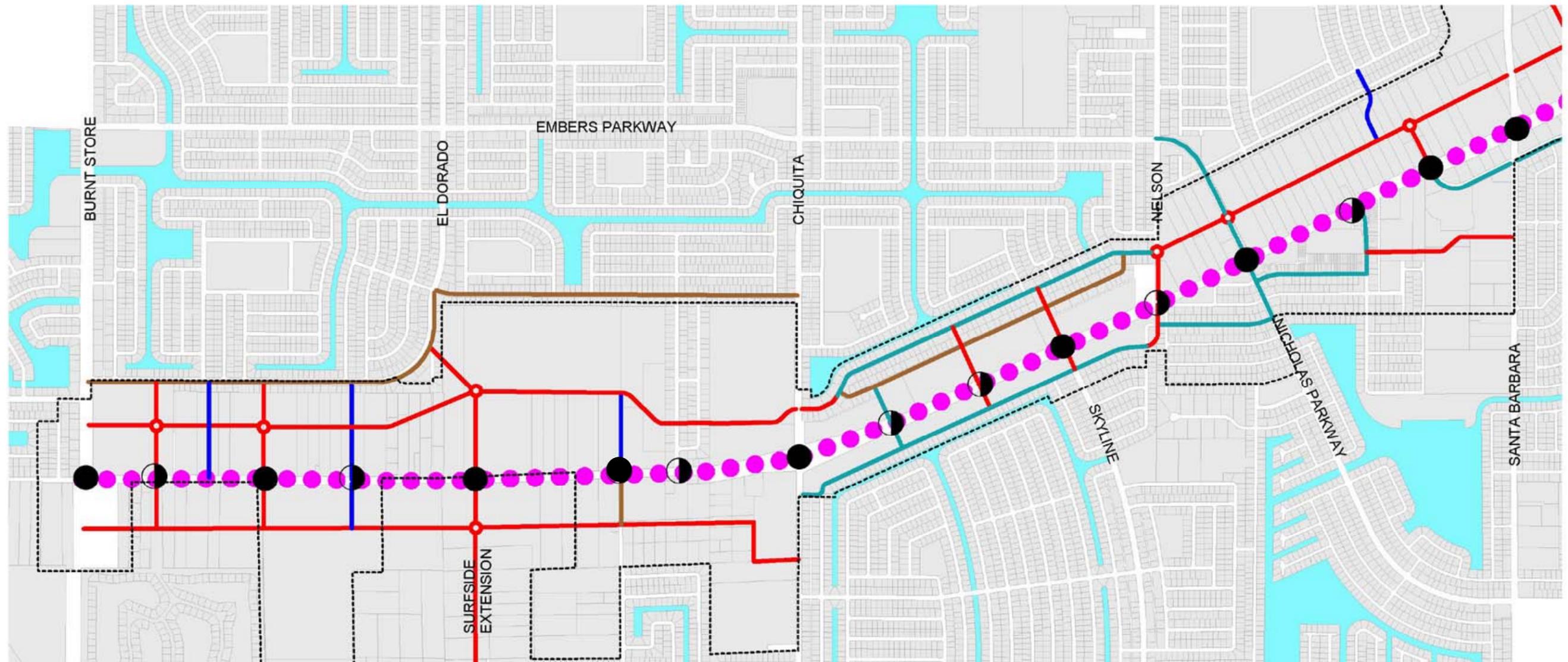


Figure 16a: Transportation Framework

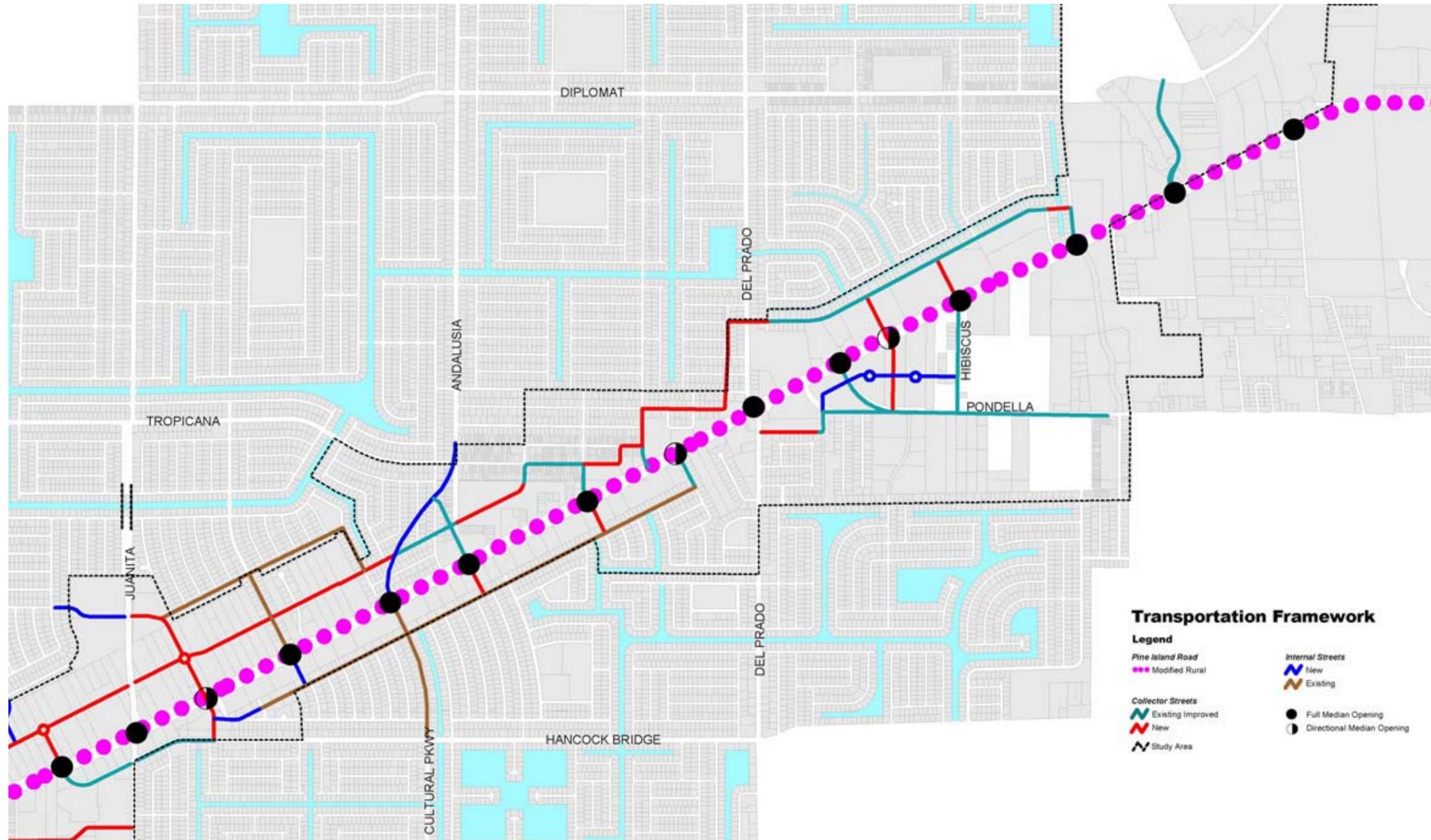


Transportation Framework

Legend

- | | |
|--------------------------|------------------------------|
| <i>Pine Island Road</i> | <i>Internal Streets</i> |
| ● Modified Rural | ▬ New |
| | ▬ Existing |
| <i>Collector Streets</i> | ● Full Median Opening |
| ▬ Existing Improved | ◐ Directional Median Opening |
| ▬ New | |
| ▬ Study Area | |

Figure 16b: Transportation Framework



Land Use Framework

The specific Land Use Framework (**Figure 17**) for the corridor is organized in the previously mentioned categories of *Village* and *Corridor Districts*. The following is a general listing of the permitted use for each District. **Appendix B** lists the recommended permitted use for the **Village** and **Corridor Districts** derived from selecting applicable permitted uses from the residential, commercial, office and industrial zoning classifications in the City of Cape Coral.

Village District:

- Retail food and grocery (less than 50,000 SF no outdoor storage)
- Retail drug store (less than 50,000 SF no outdoor storage)
- Retail hardware, etc. (less than 50,000 SF no outdoor storage)
- Retail department, apparel and accessory stores (less than 50,000 SF)
- Retail package liquors (less than 50,000 SF no outdoor storage)
- Retail specialties: toys, sewing, equipment, camera, TV, music, video, gifts, stationary, books, luggage, etc. (less than 50,000 SF no outdoor storage)
- Retail newsstand, books (less than 50,000 SF no outdoor storage)
- Retail pet stores, in a completely enclosed structure (less than 50,000 SF no outdoor storage)
- Restaurants and delicatessens including outdoor cafes (less than 50,000 SF no outdoor storage)
- Cocktail lounges and bars
- Indoor amusements (bowling, pool, billiards, and similar uses) (less than 40,000 SF)
- Banks and other financial institutions with a maximum of 3 drive thru windows
- Pet store (less than 50,000 SF no outdoor storage)
- Theaters movie and drama
- Personal services (barber shops, fitness clubs, etc.)
- Non-medical offices and services, including business and government offices.
- Medical and dental offices, services, laboratories, clinics
- Day care facilities
- Repair services – small items (shoes, apparel, TV and radio, business machines, and similar uses)
- Social, fraternal and recreational clubs and lodges.
- Places of Worship
- Laundromats, laundry and dry cleaning pick-up stations.
- Automotive service station limited with convenience store (by special exception)
- Passive recreation (civic space)
- Libraries, police sub-stations
- Light infrastructure (water wells, water tanks, sewage pump stations, electric substations, etc.)
- Multi-family residential uses including residential above office and/or retail uses.
- Assisted Living Facility
- Hotel/Motel and Resort

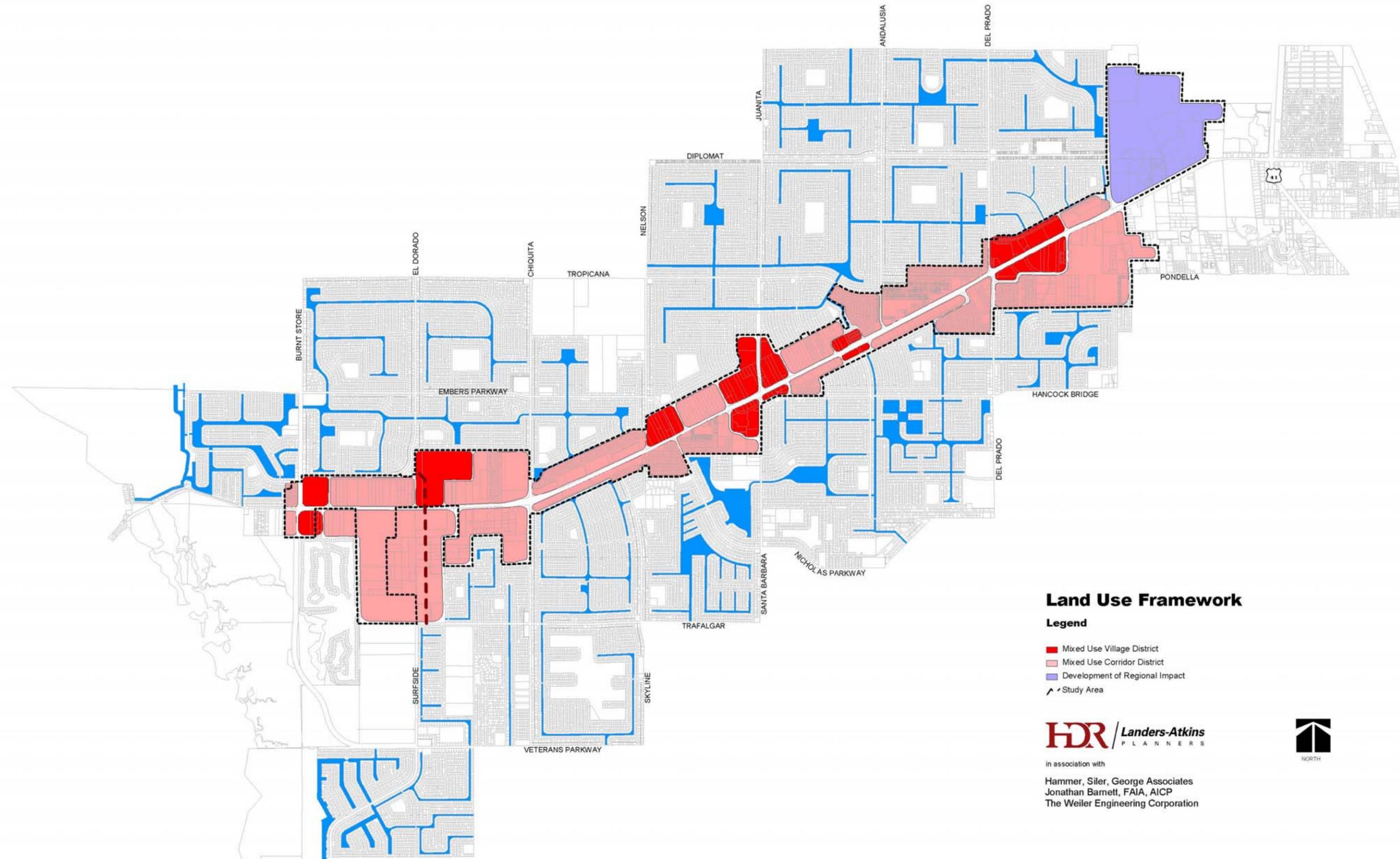
Corridor District:

- Retail food and grocery.
- Retail drug store
- Retail building materials, hardware, etc. (outdoor storage by special exception)
- Retail department, apparel and accessory stores

- Retail package liquors
- Motion picture theater
- Retail specialties: toys, sewing, equipment, camera, TV, music, video, gifts, stationary, books, luggage, etc.
- Retail newsstand, books
- Retail pet stores, in a completely enclosed structure.
- Restaurants and delicatessens
- Cocktail lounges and bars
- Indoor amusements (bowling, pool, billiards, and similar uses)
- Banks and other financial institutions with drive-thru facilities
- Veterinary hospitals
- Personal services (barber shops, fitness clubs, etc.)
- Offices and services, including medical, business and government offices and services
- Day care facilities
- Repair services – small items (shoes, apparel, TV and radio, business machines, and similar uses)
- Social, fraternal and recreational clubs and lodges, including assembly halls
- Laundromats, laundry and dry cleaning pick-up stations.
- Automotive service and repair, including car wash without major mechanical repair
- Active and passive recreation
- Light infrastructure related to the permitted principal uses (water wells, water tanks, sewage pump stations, electric substations, etc.)
- Hotel/Motel.
- Warehouse
- Schools
- Light industrial manufacturing
- Single-family, Duplex and Multi-family residential (not less than 100 units subdivision or combined)
- Golf Courses
- Chemical and Allied Product Manufacturing, Group I *Promenade Westlake Village California*



Figure 17: Land Use Framework



Transportation Framework

An assessment of the corridor development potential was completed based on the amount of roadway capacity remaining on SR 78 and its intersecting streets. The Lee County travel demand model was used to project 2010 daily roadway volumes along the corridor, which were then compared to the roadway daily capacities using the FDOT generalized tables. The roadway network used in the model included existing thoroughfare roadways and those roadway projects committed for construction as shown in **Figure 18**. **Table 7** summarizes the committed roadway improvements for the area that are included in the County's Existed and Committed (E+C) model.

The SR 78 corridor was separated into three planning districts to account for different trip distribution patterns along the 9-mile corridor. These districts are based upon the traffic analysis zone (TAZ) boundaries adjacent to the corridor as shown in **Figure 19**. To project background traffic within the corridor, the population and employment data within the model was interpolated to reflect year 2010 conditions from the current MPO 1990 and 2020 data sets. Interpolating the zonal data for the model to year 2010 implicitly assumes that all development within the Lee County model grows linearly between the 1990 and 2020 levels. Since one objective of the study is to refine land uses along the corridor, the data for the TAZs that make up the corridor (highlighted zones) were interpolated only to year 2000 so as to approximate the existing development conditions in this area. This scenario is considered the "no-build" condition since it assumes no new corridor development through year 2010. The purpose of analyzing the network with composite 2000 (for the corridor) and 2010 (background) data sets is to determine how much additional development can be absorbed by the corridor within the capacity constraints of SR 78.

Figure 18: Lee County Long MPO Long Range Transportation Plan

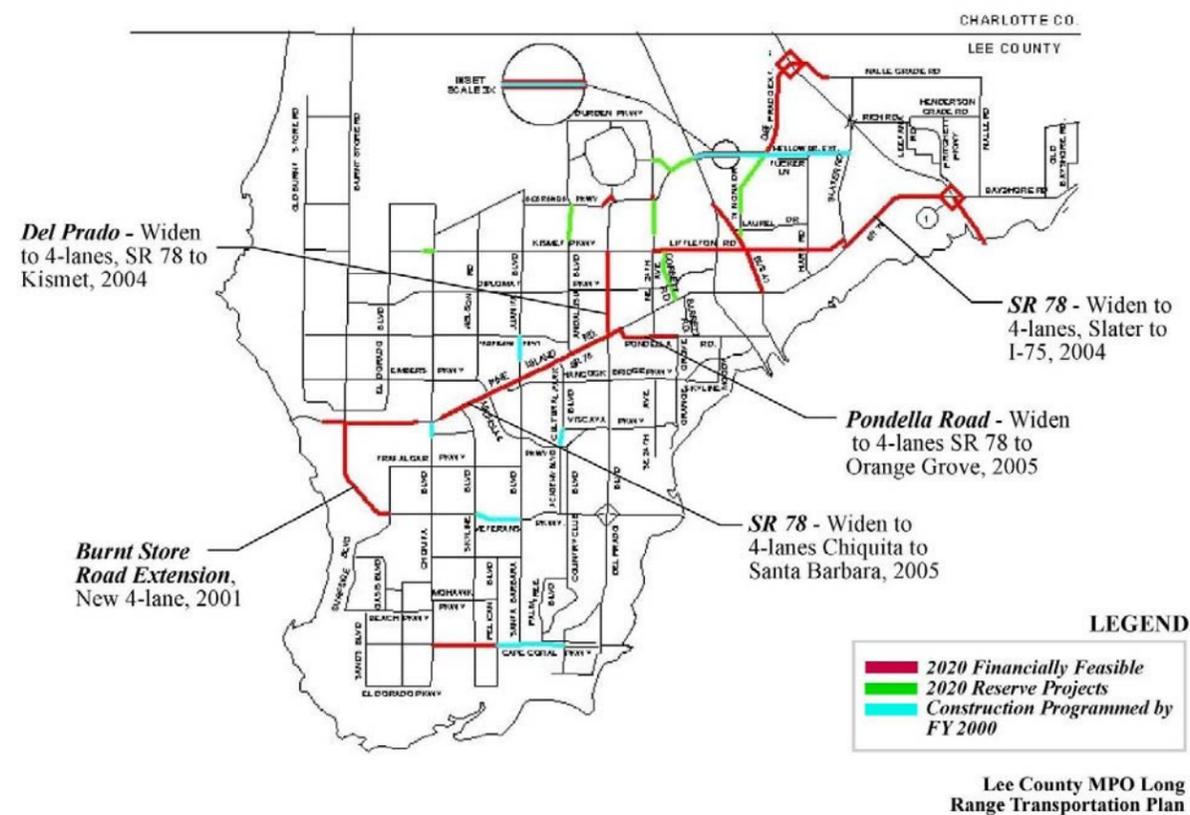


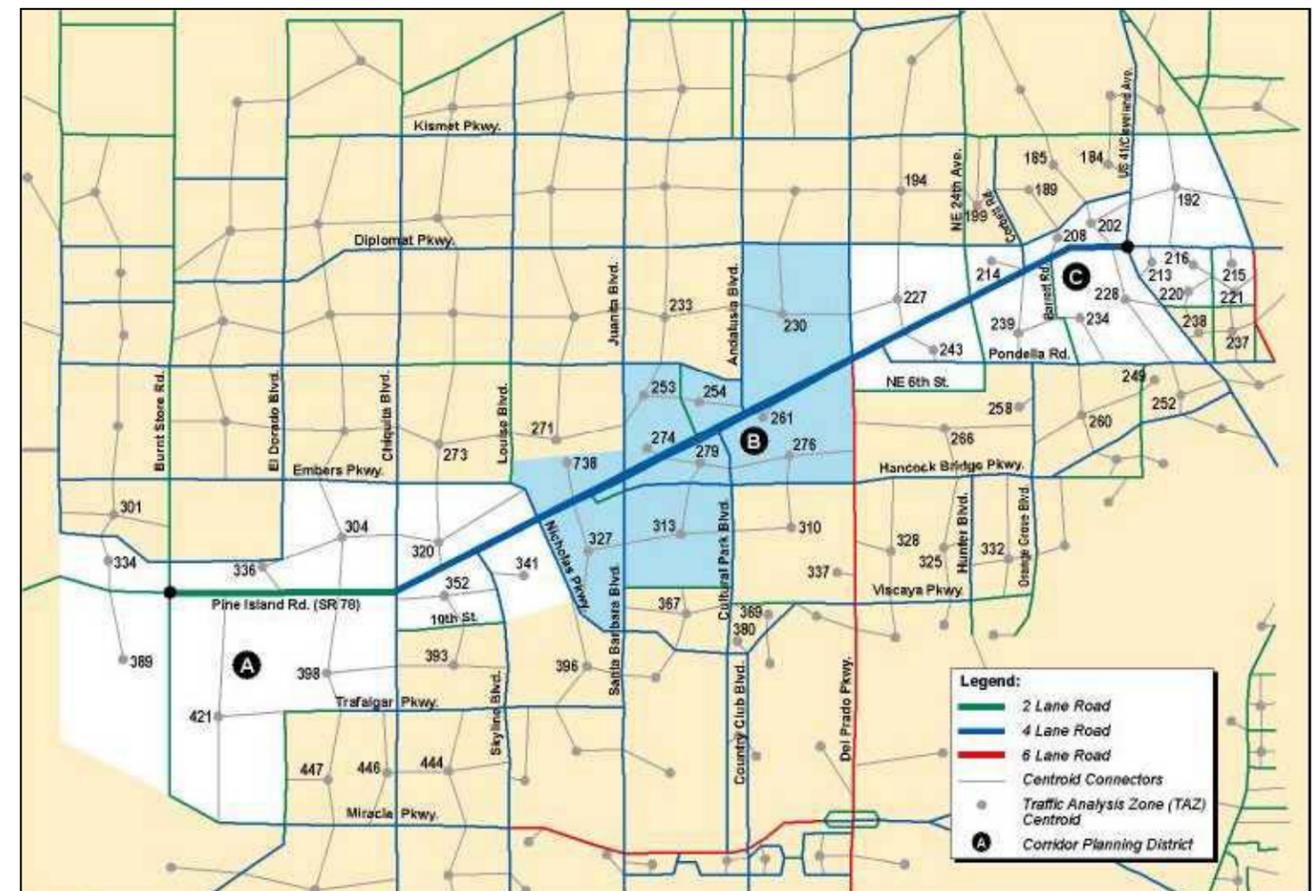
TABLE 7 – Committed Roadway Improvements in Lee County E+C Model

Facility	Limits	Description	Expected Year of Completion
SR 78	E. of Chiquita Blvd to W. of Santa Barbara Blvd.	Widen to 4 lanes	2005
SR 78	Slater Road to I-75	Widen to 4 lanes	2004
Pondella Road	E. of SR 78 to W. of Orange Grove	Widen to 4 lanes	2001
Cape Coral Parkway	Coronado Parkway to Chiquita Blvd	Widen to 6 lanes	2002
Del Prado Boulevard	SR 78 to Kismet Parkway	Widen to 4 lanes	2004
Burnt Store Road Ext.	SR 78 to Veterans Pkwy	New 4 Lane Road	2001

Source:

Lee County MPO, Transportation Improvement Program, Fiscal Year 2000-2001 Through 2004-2005, Adopted 6/16/00.

Figure 19: Traffic Planning Districts



Each of the three corridor districts were evaluated separately within the model to determine their unique trip generation and trip distribution patterns. This process identified the critical roadway links along the corridor and was used to determine which district(s) have the most development potential from a road capacity standpoint using land use type, intensity and location as sensitivity variables.

Table 8 summarizes the 2010 daily traffic analysis for the corridor "no-build" condition and shows the number of trips remaining for each roadway segment until it reaches its capacity in year 2010. The number of trips for critical segments are shown in bold. The relationship between roadway capacity and the traffic distribution patterns of each of the corridor districts was used as a guide in determining the preferred locations for new development activity.

The "no-build" capacity analysis of the corridor was completed using the composite 2000 and 2010 land use data previously discussed. The results of the analysis determined that only the sections of SR 78 from west of Burnt Store Road to SW 20th Avenue are projected over capacity in 2010, however, it should be noted that traffic is projected to significantly increase on Pine Island Road without any new corridor development added. This trend attests to the fact that the roadway is a critical component in the City's regional transportation network, that a very high percentage of the traffic is pass-through traffic not associated with land uses and development along the corridor, and that the addition of new development in the corridor could trigger the need for improvements by 2010.

Transportation Model Data Review

The Lee County MPO Long Range Transportation Plan model was used for the purposes of forecasting traffic under the various market plan alternatives. The current model (Draft 2020 model at the time of this study) consists of two primary socio-economic data sets that describe the population and employment for the incorporated and unincorporated areas of Lee County. This data is summarized for 1990 and 2020 for each of the traffic analysis zones within the transportation model. A review of the model's socio-economic data revealed that the 2020 Long Range Transportation Plan for the City of Cape Coral is based upon a City population forecast projection of approximately 172,500 residents. The interpolated socio-economic data from the 1990 and 2020 data is summarized in **Table 9** for the 2000, 2010 and 2020 timeframes.

TABLE 8 – 2010 "No-Build" Daily Levels of Service and Remaining Capacity City Population: 145,000¹

Roadway Segment	E+C Number of Lanes	Adopted LOS Standard	Max Service Volume	2010 AADT	2010 LOS w/o Impr	Remaining Capacity w/o Impr
SR 78/Pine Island Rd						
W. of Burnt Store Rd	2L	C	15,600	21,100	F	0
Burnt Store Rd to SW 20th Ave	2L	C	15,600	16,200	D	0
SW 20th Ave to Chiquita Blvd	2L	C	15,600	15,600	C	0
Chiquita Blvd to Skykine Blvd	4L	C	33,200	23,100	B	10,100
Skyline Blvd to Nicholas Pkwy	4L	C	33,200	26,600	C	6,600
Nicholas Pkwy to Hancock Bridge Pkwy	4L	C	33,200	28,800	C	4,400
Hancock Bridge Pkwy to Santa Barbara Blvd	4L	C	33,200	23,500	B	9,700
Santa Barbara Blvd to Cultural Park Blvd	4L	C	33,200	26,200	C	7,000
Cultural Park Blvd to Andalusia Blvd	4L	C	33,200	27,800	C	5,400
Andalusia Blvd to Del Prado Blvd	4L	C	33,200	26,400	C	6,800
Del Prado Blvd to Pondella Rd	4L	D	35,000	32,400	C	2,600
Pondella Rd to NE 24th Ave	4L	D	35,000	26,000	C	9,000
NE 24th Ave to US 41/Cleveland Ave	4L	D	35,000	24,100	C	10,900
E. of US 41/Cleveland Ave	4L	D	35,000	19,400	B	15,600

¹ 2010 City population determined from interpolated 1990 and 2020 Lee County MPO zonal data for all traffic analysis zones within the City of Cape Coral (total of 182 zones).

Bold segment denotes critical segment limiting corridor growth.
(E+C = existing plus committed)

TABLE 9 – Lee County Model Socio-Economic Data Summary (Updated based on Draft Lee County 2020 Model)

Area	# of TAZ	Single Family		Multi-Family	Hotel	Employment Area (converted from employees)					Enrollment	
		Article II. U	Article III. op	Article IV. U		Pop	Pop	Industrial	Commercial	Service		Total
SR 78 Corridor	33	4,509	11,641	2,918	5,384	115	205	513,228	761,600	649,250	1,924,078	656
City of Cape Coral	182	38,252	94,698	14,712	23,563	766	1,222	2,416,402	2,617,600	3,420,500	8,454,502	15,299
Lee County Model	1127	199,955	464,735	205,536	271,050	16,619	34,049	35,964,550	38,240,800	37,443,500	111,648,850	109,582
SR 78 % of City	18%	12%	12%	20%	23%	15%	17%	21%	29%	19%	23%	4%
SR 78 % of County	3%	2%	3%	1%	2%	1%	1%	1%	2%	2%	2%	1%
City % of County	16%	19%	20%	7%	9%	5%	4%	7%	7%	9%	8%	14%
SR 78 Corridor	33	5,938	12,760	4,133	6,044	190	327	668,783	1,276,800	1,111,000	3,056,583	677
City of Cape Coral	182	51,339	112,377	19,109	32,849	947	1,661	2,765,608	3,115,200	4,734,750	10,615,558	18,193
Lee County Model	1127	270,808	573,074	259,514	338,495	20,984	42,636	48,028,571	51,518,000	52,451,750	151,998,321	144,773
SR 78 % of City	18%	12%	11%	22%	18%	20%	20%	24%	41%	23%	29%	4%
SR 78 % of County	3%	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%	0%
City % of County	16%	19%	20%	7%	10%	5%	4%	6%	6%	9%	7%	13%
SR 78 Corridor	33	6,949	14,924	4,932	7,012	262	450	759,788	1,758,400	1,552,750	4,070,938	698
City of Cape Coral	182	61,987	135,858	21,144	36,584	1,126	1,969	3,116,931	3,604,800	6,038,750	12,760,481	20,078
Lee County Model	1127	334,318	710,868	301,213	391,164	23,921	48,079	51,328,042	58,755,200	62,362,000	172,445,242	170,047
SR 78 % of City	18%	11%	11%	23%	19%	23%	23%	24%	49%	26%	32%	3%
SR 78 % of County	3%	2%	2%	2%	2%	1%	1%	1%	3%	2%	2%	0%
City % of County	16%	19%	19%	7%	9%	5%	4%	6%	6%	10%	7%	12%

Allocations of population and employment relative to these areas are summarized for comparison. For example, 19% of the County's single-family population is expected to reside within the City of Cape Coral in 2020. By comparison, only 6% of the County's commercial floor-area is expected within the City in 2020.

Discussion of these trends with City staff resulted in a re-evaluation of the existing population growth rates and trends within the City. These trends, reviewed by staff, indicated that the City has realized a more aggressive growth rate over the past decade than what is projected in the MPO model. Consequently, a new ten-year target population projection was established for the study from which the Market Study projected the demand for new non-residential development in the corridor.

Forecast Scenarios

Considering the input and trend projections from City staff, a new City population of 156,000 residents was established for the Market Study. The study produced the following demand for new non-residential and new high-density residential development along the Pine Island Road corridor. The total average daily traffic for these uses was estimated using the rates and equations referenced in the *ITE Trip Generation Manual, 6th Edition*.

TABLE 10 – Corridor Market Forecast City Population: 156,000

Land Uses	Square Feet	Units	Daily Traffic ¹
Retail	1,579,700		76,515
Office	67,000		976
Flex Space	139,500		1,356
Apartments		215	1,557
Hotel		230	2,052
TOTAL AVERAGE DAILY TRAFFIC			82,455

¹Summary daily trip generation from individual village calculations.

The daily traffic projection for the 2010 market plan is 82,455 vehicles per day. However, not all this traffic will impact Pine Island Road. A significant portion of the retail trips will be satisfied by traffic already using Pine Island Road (pass-by trips) that will shop at the retail villages as an intermediate stop during another primary trip purpose, such as driving from work to home. Another portion of the projected traffic will be satisfied internally where complementary land uses (such as offices and restaurants) are connected by internal frontage roads or are within convenient walking distance of each other. The effect of the internal capture and reduced trip generation for pass-by traffic is reflected in the traffic projections developed with the 2010 model that was revised with the corridor market plan and associated City population.

In order to properly model the impact of the 2010 market plan, the corridor land uses described in **Table 10** were more specifically entered into the model at the location where the development is recommended to take place. **Table 11** summarizes the breakdown of the 2010 market forecast into the corridor traffic analysis zones. As can be seen, the transportation model for the 2010 program is based upon a nodal development pattern that concentrates the higher density development at the major intersections of the corridor. Locating development at the major intersections where traffic is accessible to the site from several directions is an important strategy towards minimizing the traffic impacts to SR 78. Development away from the nodes has less accessibility from the side streets and causes north and south orientated traffic to unnecessarily impact SR 78.

The corridor and the surrounding roadway network were examined using the 2010 traffic model with the market program described in **Table 11** and the City population increased to 156,000 residents. The results of this analysis are summarized in **Table 12**, which presents the 2010 daily traffic and levels of service. The study area for this 2010 analysis has been expanded out to include the intersecting north-south streets as well as parallel facilities that may provide relief to Pine Island Road. This larger study area provides a more comprehensive review of traffic circulation and facility needs to support the proposed plans and the 2010 population growth.

The results of the analysis indicate that the model projected deficiencies under the 2010 market plan are expected to primarily occur on Pine Island Road. However, it is noted that some of these are projected to be marginally over the stated roadway capacity and may continue to operate acceptably within the 2010 timeframe. Given the conservative basis on which the daily roadway capacities are based and the margin of error allowed in the model, these segments should be closely monitored for improvement as development occurs. Additional verification of roadway system deficiencies is provided in the 2010 intersection capacity analysis. The 2010 projected roadway deficiencies are:

- SR 78 – West of Burnt Store Road – widen to 4 lanes (constrained)³
- SR 78 – Burnt Store Road to SW 20th Avenue – widen to 4 lanes
- SR 78 – SW 20th Avenue to Chiquita Boulevard - widen to 4 lanes
- SR 78 – Nicholas Parkway to Hancock Bridge Parkway (marginal deficiency)
- SR 78 – Cultural Park Blvd. to Pondella Road (marginal deficiency)
- NE 24th Avenue – Diplomat Parkway to SR 78 (marginal deficiency)

TABLE 11 – Land Use Allocations by Traffic Analysis Zone City Population: 156,000

Nodal Location	TAZs Zones	Retail S.F.	Office S.F.	Industrial S.F.	Multi-Family Dwellings	Hotel Rooms
Del Prado	227	200,000		14,500		115
	243	200,000		50,000	115	
Cultural Parkway	254	60,000				
	274	40,000				
Santa Barbara	327	75,000		75,000		115
	738	175,000	67,000		100	
Nicholas Parkway	320	75,000				
	738	50,000				
Chiquita	304	150,000				
	320	25,000				
	352	10,000				
Saddlewood	336	50,000				
Burnt Store	336	400,000				
	421	69,700				
Development Program		1,579,700	67,000	139,500	215	230

Figure 20: Traffic Zone Analysis 156,000 Population



³ The section of Pine Island Road through the Matlacha Pass is constrained from additional widening.

TABLE 12 - 2010 "Build" Daily Levels of Service and Potential Improvements City Population:156,000⁴

Roadway Segment	Number of Lanes	LOS Standard	Service Volume	2010 AADT	LOS w/o Impr	Potential Impr.
SR 78/Pine Island Rd						
W. of Burnt Store Rd	2L	C	15,600	21,800	F	Widen 4L
Burnt Store Rd to SW 20th Ave	2L	C	15,600	20,200	F	Widen 4L
SW 20th Ave to Chiquita Blvd	2L	C	15,600	22,900	F	Widen 4L
Chiquita Blvd to Skyline Blvd	4L	C	33,200	29,400	C	
Skyline Blvd to Nicholas Pkwy	4L	C	33,200	32,700	C	
Nicholas Pkwy to Hancock Bridge Pkwy	4L	C	33,200	34,600	D	Widen 6L*
Hancock Bridge Pkwy to Santa Barbara Blvd	4L	C	33,200	29,000	B	
Santa Barbara Blvd to Cultural Park Blvd	4L	C	33,200	31,600	C	
Cultural Park Blvd to Andalusia Blvd	4L	C	na	na	na	Realign Int.**
Andalusia Blvd to Del Prado Blvd	4L	C	33,200	33,400	D	Widen 6L*
Del Prado Blvd to Pondella Rd	4L	D	35,000	35,900	F	Widen 6L*
Pondella Rd to NE 24th Ave	4L	D	35,000	29,100	C	
NE 24th Ave to US 41/Cleveland Ave	4L	D	35,000	27,100	C	
E. of US 41/Cleveland Ave	4L	D	35,000	21,300	B	
Burnt Store Rd						
Embers Pkwy to SR 78/Pine Island Rd	2L	D	16,600	10,300	B	
SR 78/Pine Island Rd to Miracle Pkwy	2L	D	16,600	14,200	C	
Chiquita Blvd						
Tropicana Pkwy to Embers Pkwy	4L	D	31,700	2,100	C	
Embers Pkwy to SR 78/Pine Island Rd	4L	D	31,700	5,300	C	
SR 78/Pine Island Rd to Trafalgar Pkwy	4L	D	35,000	20,800	B	
Trafalgar Pkwy to Miracle Pkwy	4L	D	35,000	17,300	B	
Skyline Blvd						
SR 78/Pine Island Rd to Trafalgar Pkwy	4L	D	31,700	10,500	C	
Trafalgar Pkwy to Miracle Pkwy	4L	D	31,700	12,600	C	
Nicholas Pkwy						
Nelson Rd to SR 78/Pine Island Rd	4L	D	31,700	11,400	C	
SR 78/Pine Island Rd to Santa Barbara Rd	4L	D	31,700	10,700	C	
Hancock Bridge Pkwy						
SR 78/Pine Island Rd to Santa Barbara Rd	2L	E	11,900	10,100	D	
Santa Barbara Blvd to Cultural Park Blvd	4L	E	33,900	15,800	C	
Juanita Blvd						
Diplomat Pkwy to Tropicana Pkwy	4L	D	23,800	2,000	C	
Tropicana Pkwy to SR 78/Pine Island Rd	4L	D	23,800	2,600	C	
Santa Barbara Blvd						
SR 78/Pine Island Rd to Nicholas Pkwy	4L	D	35,000	13,600	B	
Nicholas Pkwy to Trafalgar Pkwy	4L	D	35,000	19,900	B	
Trafalgar Pkwy to Miracle Pkwy	4L	D	35,000	13,900	B	

Roadway Segment	Number of Lanes	LOS Standard	Service Volume	2010 AADT	LOS w/o Impr	Potential Impr.
Cultural Park Blvd						
SR 78/Pine Island Rd to Hancock Bridge Pkwy	4L	D	23,800	8,700	C	
Hancock Bridge Pkwy to SE 8th St	4L	D	23,800	9,500	C	
SE 8th St to Nicholas Pkwy	4L	D	23,800	8,300	C	
Nicholas Pkwy to Miracle Pkwy	4L	D	31,700	7,700	C	
Andalusia Blvd						
Diplomat Pkwy to Tropicana Pkwy	4L	D	23,800	5,500	C	
Tropicana Pkwy to SR 78/Pine Island Rd	4L	D	23,800	9,000	C	
Del Prado Blvd						
Kismet Pkwy to Diplomat Pkwy	4L	C	19,800	20,600	D	Improve***
Diplomat Pkwy to SR 78/Pine Island Rd	4L	C	19,800	23,700	D	Improve***
SR 78/Pine Island Rd to Hancock Bridge Pkwy	6L	E	52,500	33,600	B	
Hancock Bridge Pkwy to Viscaya Pkwy	6L	E	52,500	47,700	C	
Viscaya Pkwy to Miracle Pkwy	6L	E	52,500	46,400	C	
Pondella Rd						
SR 78/Pine Island Rd to NE 24th Ave	4L	E	35,000	12,500	B	
NE 24th Ave to Orange Grove Blvd	4L	E	35,000	18,600	B	
NE 24th Ave						
Kismet Pkwy to Diplomat Pkwy	2L	D	10,900	10,600	D	
Diplomat Pkwy to SR 78/Pine Island Rd	2L	D	10,900	11,700	E	Widen 4L*
SR 78/Pine Island Rd to Pondella Rd	2L	D	10,900	6,500	D	
US 41/Cleveland Ave						
Littleton Rd to Diplomat Pkwy	4L	D	35,000	25,300	C	
Diplomat Pkwy to SR 78/Pine Island Rd	4L	D	35,000	24,600	C	
SR 78/Pine Island Rd to Pondella Rd	4L	D	35,000	21,100	B	

⁴City population of 156,000 persons projected by Paul Van Buskirk based on recent and historic trends.

* Model results show marginal capacity deficiency for 2010 for certain segments. Continue to monitor through CMS.

** Analysis includes realignment of Andalusia Blvd. to create single intersection at Cultural Park Boulevard.

*** Del Prado Boulevard to be improved to 4-Lane FIHS arterial roadway standards.

As previously stated, many of the noted daily capacity deficiencies are marginally over the generalized daily service levels for the roadway segment and therefore may not actually require improvements within 2010 timeframe as the model predicts. However, it is important to note from the urban framework plan, that these results are based upon a plan that incorporates the frontage roadway concepts along SR 78 to provide access between the nodes and that the number of highway connections have been minimized to conform with the approved corridor access management plan. To simulate this plan, the traffic analysis zones, (model centroids), have been coded to allow circulation between intersecting north-south roadways without having to load traffic onto SR 78.

A planning level a.m. and p.m. peak hour intersection analysis was also completed to verify the previously stated 2010 capacity deficiencies. In an arterial network, the signalized intersections control the actual levels of service of the major roadway and therefore provide a more accurate assessment of the service levels that are achieved under peak demand. **Table 13** summarizes the projected 2010 a.m. and p.m. peak hour intersection performance along SR 78. This analysis was completed using the HCS 2000 Planning analysis for signalized intersections. This procedure provides an indication of intersection operating conditions as being below capacity, near capacity, at capacity or over capacity. Intersection improvements were tested for intersections projected to operate at or over capacity.

Table 13 - 2010 Signalized Intersection Planning Analysis and Potential Improvements

Intersection	AM Peak Hour		PM Peak Hour		Potential Improvements
	v/c	Status	v/c	Status	
SR 78/Burnt Store Rd	0.97	At capacity	1.12	Over capacity	Widen SR 78 to 4 lanes
SR 78/Chiquita Blvd	0.80	Under capacity	0.67	Under capacity	
SR 78/Nicholas Pkwy	0.93	Near capacity	0.93	Near capacity	
SR 78/Santa Barbara Blvd	1.00	At capacity	0.97	At capacity	WB SR 78 double left turn lane
SR 78/Del Prado Pkwy	1.66	Over capacity	1.12	Over capacity	Double left turn lanes on all approaches; widen SR 78 to 6 lanes
SR 78/Pondella Rd	0.89	Near capacity	0.87	Near capacity	
SR 78/US 41	0.83	Under capacity	0.77	Under capacity	

Table 13 indicates the types of intersection improvements needed to restore minimum service conditions to the overall intersection. Where additional through lanes are needed, a widening of the roadway to accommodate the through lanes is recommended. The package of 2010 corridor roadway

and intersection improvements projected to support the corridor development plan are shown graphically in **Figure 21**.

Figure 21: Potential Road Improvements 2010



Figure 21 also indicates the location of potential traffic signals anticipated as part of the future conditions analysis. It should be noted that the plan anticipates the future realignment of Andalusia Boulevard with Cultural Park Boulevard. This realignment consolidates the signalization requirements to a single intersection location and improves the capacity of the otherwise short segment of SR 78 between intersecting roadways. The 2010 modeling assignment with the realignment projects improved usage of Andalusia Boulevard and Cultural Park Boulevard for north-south movements across SR 78.

Study Findings

The transportation analysis for the SR 78 - Pine Island Corridor Master Plan focused on determining the corridor improvements necessary to maintain adopted level of service standards supporting the development of the corridor over the next 10 years. The Corridor Market Plan is based upon a City of Cape Coral population of 156,000 persons. This population is expected to occur by 2011, however, for purposes of the transportation study, the population forecast was advanced to year 2010 in order to maintain horizon consistency with other regional transportation studies such as the MPO Long Range Plan. Population comparisons to the current 2010 forecast data in the MPO Long Range Plan found only 145,000 City population by 2010 in the MPO's model indicating that current regional long range planning projections may underestimate actual need due to low population projections.

2010 Transportation Analysis

- The 2010 analysis identifies the following improvements based upon corridor deficiencies resulting from land use and population increases:
 - SR 78 – West of Burnt Store Road – Widen 4-lanes (constrained)
 - SR 78 – Burnt Store Road to Chiquita Boulevard – Widen 4-lanes
 - SR 78 – Chiquita Boulevard to Pondella Road – Widen 6-lanes (marginal)*
 - NE 24th Avenue – Diplomat Parkway to SR 78 – Widen 4-lanes (marginal)*
 - Andalusia Boulevard and Cultural Park Boulevard – New 4 lane Realignment
 - Del Prado Boulevard – SR 78 to Kismet Parkway – Widen existing 4 lane
 - Double left turn lanes at Del Prado Boulevard and SR 78 on all intersection approaches.
 - Double left turn lanes on westbound SR 78 at Santa Barbara Boulevard.

* The MPO Long Range Transportation Plan currently anticipates *4-lane widening* of SR 78 between Chiquita Boulevard and Santa Barbara Boulevard. The 2010 analysis shows the segments noted as “marginal” to exhibit traffic projections over the stated daily roadway capacity. These improvement needs will be corridor development driven and should continue to be monitored through the City's Concurrency Management System.

- Preliminary improvement costs for the above improvements are estimated at \$23,160,000⁶ (excluding ROW, signal modifications, utility costs and landscaping). Cost does not include the constrained section of Pine Island Road west of Burnt Store Road.
- These limited corridor improvements are based upon an urban nodal development plan that provides parallel access to the corridor with access from the intersecting north-south streets.

Recommendations

The improvements and strategies to maintain service levels through the build-out of the corridor involve a comprehensive, multi-tiered process. Some of the most important elements are already in place but require continual maintenance and monitoring to be effective. Other techniques will require additional investigation as the corridor begins to take shape to determine their applicability.

⁶ Cost based upon 1999 FDOT Transportation Costs for 4 lane and 6 lane State Road widening. For City streets, a planning cost of \$200/LF for rural widening and \$375/LF for urban widening has been used. These costs do not include ROW, utilities, intersection signal improvements or landscaping.

Existing Elements

- Access Management - A corridor access management plan is in place to follow. The City's role is to incorporate this plan into Development Review. The necessary elements of this review include⁷:
 - Administrative procedures and time periods for evaluating impacts and deciding on development requests.
 - Minimum contents of site plans including access features and any mapped right-of-way in the vicinity of the project.
 - Traffic Impact Analysis requirements to assist the City with access management decisions. Determine development contributions to major roadway improvements.
 - Conditions for allowing special exceptions, waivers, and variances from the Access Management Plan.
 - Procedures for notifying the FDOT of development proposals in the corridor.
 - A combined review process for coordinating the state and City reviews of projects requiring access to SR 78.
 - Relevant questions in site review: Is highway connection to SR 78 necessary to provide reasonable access to the property? Does the project plan provide connections to adjoining properties, consistent with the parallel street system in the urban framework plan? Is the parallel roadway separated as a facility from the site and not part of the internal site circulation (such as a continuous parking).
- Implement Ordinance 98, Amendment to the City of Cape Coral Land Use and Development Regulations - Parallel Access Street System. Review the existing proposed ordinance and amend as needed to reflect the proposed Master Concept Plan. Parallel street system should include sidewalks and bicycle lanes to further meet the plan objectives.

Future Elements

- Connectivity to adjoining Neighborhoods (back of lot) - Residents involved in the public meetings were generally in favor of internal connections on a limited basis to provide internalization of traffic. Criteria for their determination should be based upon localization of traffic (connection does not promote cut-through traffic) and compatibility with the neighboring use (logical trip interaction, i.e. shopping not industrial). Residents were in favor of traffic calming techniques at these locations where opportunities exist to reduce through traffic.
- Growth Management - Maintaining the minimum level of service standards on SR 78 through the development of the corridor is a serious challenge. The minimum LOS "C" on SR 78 west of Del Prado Boulevard is due to the FIHS designation related to hurricane evacuation and should not be compromised. Techniques to consider for concurrency regulation should include:
 - Independent Capacity Calculations - The peak hour and daily capacity of the corridor should be updated annually as part of the concurrency management system. Initial methods should include ART-TAB calculations using the FDOT approved software that considers the actual % turns exclusive and actual weighted g/C. Initial indicators such as travel speeds suggest that actual capacity is greater than the FDOT Generalized Tables allow.
 - Arterial Travel Speed Calculations - A more accurate assessment of actual corridor capacity can be obtained by travel time and delay studies. Some municipalities use

⁷ Center for Urban Transportation Research, *Managing Corridor Development – A Municipal Handbook*, pp. 19-20.

this measure to maintain concurrency but, this process is difficult to manage from a concurrency perspective since trips from new development cannot be directly deducted from the roadway capacity. Arterial speed studies are required with each cumulative development application and require validation against actual speeds on an annual basis.

- Concurrency Exception Credit - The City may also consider a higher roadway capacity standard for land uses that do not impact the hurricane evacuation capacity of SR 78. This would allow an additional 6% capacity degradation to the roadway based upon the difference of the LOS "C" and LOS "D" standard. The basis of this credit is that certain non-residential uses will have a negligible impact on the hurricane evacuation capacity and evacuation time of SR 78. For example, this credit would not apply to new residential uses in the corridor. One counter argument to this credit may be that locating residential uses on corridor will improve evacuation time for those persons. However, residences create a source generation at the SR 78 access points during an evacuation event that will worsen evacuation capacity due to turn movements at those points. Presumably, a closed business will not cause this type of conflict in an evacuation event. The types of uses that would be eligible for this credit should be examined on a case by case basis.

- Corridor Right-of-way Preservation - The buildout plan forecast presents a future condition with numerous roadways seriously over capacity. The long-term solution may involve expansion or upgrading of existing roadways to add lanes or improve capacity with access controls and may include new roadway corridors. The limitations of the existing model prevent the initial identification of the future improvements and corridors but implies that additional capacity is needed. The City should continue refining the buildout model under alternative population and development frameworks to identify these future corridors for the entire City. This process should result in the following:
 - Thoroughfare Protection Map - A map depicting general location and right-of-way widths of future collector, arterial and limited access roadways within the City. This is the official listing of road rights-of-way to be reserved.
 - Future Right-of-Way Needs Map - This map is currently not contained in the City's Comprehensive Plan Transportation Element. The Comprehensive Plan may be updated twice per year to amend this map, at which time the community may change or update right-of-way needs as the plans evolve.
 - Setback Requirements⁸ - May be amended based upon defined future right of way to reduce encroachment.
 - Interim Uses - Uses that may need to be relocated or discontinued if right-of-way for a future corridor is acquired. Allowances for interim uses assure that property owners have some economic use of property with agreement to relocate or discontinue use in accordance with the terms and conditions of the agreement.

- Transit Oriented Design Requirements. Transit nodes within a transit corridor provide the best opportunity for success. This success depends on medium to high densities within a 1/4 mile of transit stops. Land use plans and regulations should be amended, (potentially for a corridor district overlay), that specify transit oriented design guidelines for site access. Buses should be equipped with bicycle carriers to be most effective together with site design that makes provisions for bicycle storage, preferably in a sheltered, secure area.

- Publicly provided internal minibus circulation may be effective towards buildout but would be costly to operate due to driver expenses. The need for such services can be overcome by co-location of uses within development nodes.
- If an entertainment type shopping district becomes viable, the City may consider a Corridor bicycle program, such as the Copenhagen City Bike Program. Fleets of bicycles could be provided as a public/private partnership at designated areas. In Europe, the bicycles are subsidized with advertising on the bicycle. Wider off-road bicycle pedestrian paths will be needed to accommodate cyclists and pedestrians between nodal villages with close sheltered bicycle parking next to cafés, shopping and entertainment areas. This program has been successful in reducing internal traffic circulation and the need for close-in parking.⁹

⁸ Ibid

⁹ At City buildout, simple-creative solutions may prove to help minimize vehicular traffic circulation and congestion along the corridor. On May 30, 1995, the City Bike Program, or "Bycyklen" in Danish (pronounced BU'-su-klen), was launched. This public/private partnership placed 1,100 specially-designed bicycles throughout downtown Copenhagen, Denmark for public use. The City Bike program is a remarkable example of a successful, sustainable venture that is helping to solve many urban problems, such as vehicular pollution, traffic congestion, and bicycle theft, while providing an efficient means of transportation around the old city, decreasing the need for parking, and making the city a safer place to work and live.