TRANSPORTATION APPENDIX B

ADDITIONAL TRANSPORTATION DATA

ROADS AND INTERSECTIONS AT FORT MYERS BEACH

Modes of transportation currently used within the Town of Fort Myers Beach include private and rental cars, trucks, trolleys, recreational vehicles, boats, mopeds, bicycles, and walking. Private and rental cars are the primary means of transportation to and on the island.

The existing road network within the town is depicted in Figure 1. Nearly all roads provide a single travel lane in each direction, but they serve many different purposes. The following sections identify those purposes and discuss the conflicts that often occur.

How Roads Are Classified by Their Function

A common means of classifying roads is by the function they serve within the overall road network. Roads are often divided into arterials, collectors, and local roads.

Arterial roads are primarily intended to carry through traffic connecting major activity centers. Access to abutting properties along arterials is usually limited to carefully controlled points in order to reduce traffic conflict points and maintain the capacity of the arterial to carry through traffic.

Collector roads primarily collect traffic from intersecting local streets and neighborhoods and distribute it to the nearest arterial road. A secondary purpose of a collector road is to carry moderate volumes of through traffic. Some access to abutting land uses is often available.

Local streets provide access to adjoining properties, linking these properties to the collector and arterial system. Through traffic causes conflicts with these functions and is discouraged or prohibited by the design of the road network (and can be further discouraged through careful redesign). Local streets also are used for internal neighborhood services such as trash pickup. Access from adjoining properties to local streets is relatively unlimited except for driveway location and design criteria.

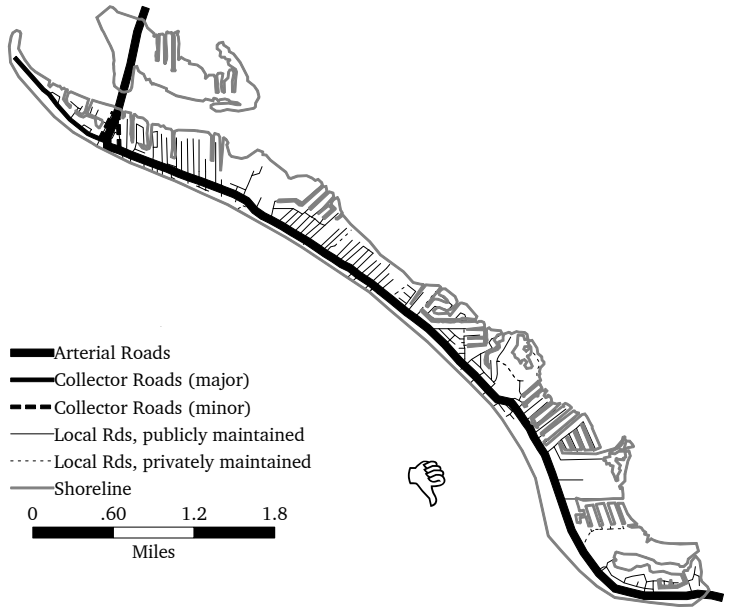

***Figure 1**, Functional classifications of existing roads*

Arterial and collector roads at Fort Myers Beach are also used by trolleys, trucks, buses, mopeds, cyclists, and pedestrians. The conflicts among these other uses limit the ability of the arterial and collectors to serve their typical functions. Because there is almost no ability to convert the present road system to the classical single-use hierarchy described above, arterial and collector roads at Fort Myers Beach will have to continue to be shared by cars, trolleys, trucks, pedestrians, and cyclists, all having to use the available rights-of-way.

Roads and Intersections

Fort Myers Beach's single arterial road is Estero Boulevard from Times Square to Big Carlos Pass. This 6-mile-long road serves through traffic and most commercial uses on the island. Its paved surface is 34 feet in width (except the new 33-foot segment from Times Square to the Lani Kai), with two through lanes its entire length. Estero Boulevard has numerous private and commercial driveways and a significant amount of on-street parking, and is maintained by Lee County.

By the mid-1990s Lee County had resurfaced all of Estero Boulevard, and to improve its traffic-carrying capacity had installed a two-way left turn center lane at many locations (shown in Figure 2). Lee County had also resurfaced most publicly maintained local roads in the early 1990s, which should last up to fifteen years (with even higher life expectancy for the more durable box culverts placed at Matanzas Street and Curlew Street).

There are evacuation routes exiting from each end of Estero Boulevard, via the Matanzas Pass Sky Bridge to San Carlos Boulevard, and via the Big Carlos Pass Bridge to Hickory Boulevard and Bonita Beach Road.

The Matanzas Pass Sky Bridge was built in 1978. It is a two-lane, 40-foot-wide bridge including full breakdown lanes on both sides, plus a 6-foot-wide raised sidewalk on the east side. In

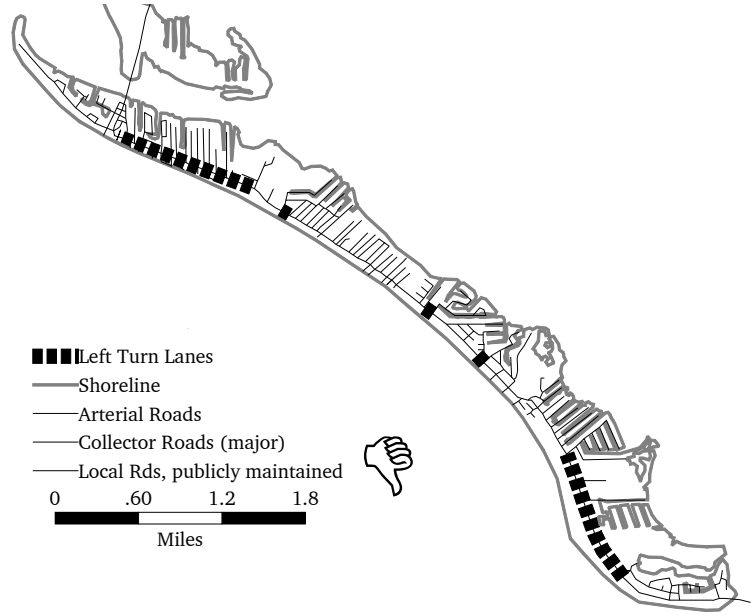

***Figure 2**, Left turn lanes on Estero Boulevard*

1996 San Carlos Boulevard was widened into a five-lane, 60-foot-wide arterial road with the center lane used for two-way left turns. Sidewalks are provided at the curb on each side. Both facilities are maintained by the Florida Dept. of Transportation.

The Big Carlos Pass Bridge is a two-lane, 26-foot-wide bridge. It has two 10-foot travel lanes and 3-foot shoulders; in addition, it has 4-foot-wide raised sidewalks on both sides. It was built in 1965 by Lee County, which still maintains it and both approaching roads.

There are 78 intersections along Estero Boulevard, 53 of which are "T" intersections where the side street does not extend across Estero Boulevard. Gulf beach access is provided from 27 of these intersections (plus another 9 easements). Access is provided to Estero Bay from the ends of 11 local roads. Access to both Estero Bay and Gulf beaches are provided from 4 of these roads. These access points are shown in Figure 3.

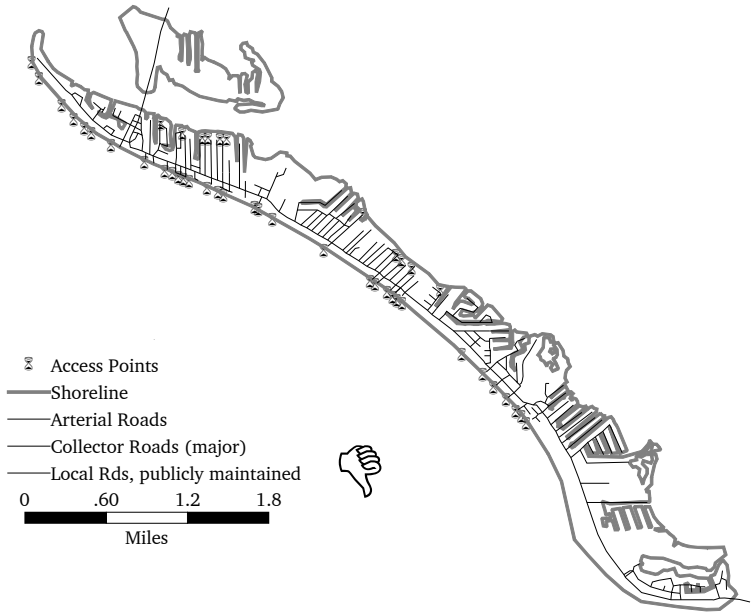

***Figure 3**, Public access to Gulf beaches and Estero Bay*

North of Times Square there are only 7 Gulf access points and 1 Bay access point. Other than at Lynn Hall Park and Bowditch Point, these access points have overhead banners but have not been improved to indicate exactly where the public access is located. The south end of the island completely lacks public access to the waterfront.

A sidewalk runs along the east side of Estero Boulevard from Times Square to Buccaneer Drive except for a gap between Lenell Road and Bay Beach Lane (along the frontage of the Villa Santini Plaza). In addition there is the new paver sidewalk on the beach side from Lynn Hall Park to Lani Kai for about ½ mile. This new sidewalk is 10 feet wide and shaded with coconut palms, continuing the design theme that has revitalized the Times Square area.

The northerly extension of Estero Boulevard is a two-lane collector road with a pavement width of 22 feet. It extends about one mile from Lynn Hall Park to Bowditch Point, serving both parks plus many residential and some commercial uses. A sidewalk runs along this portion of Estero Boulevard on the Bay side from Old San Carlos Boulevard to Carlos Circle and on the Gulf side from across Carlos Circle to Bowditch Point Park.

Old San Carlos and Crescent Street are functionally considered minor collectors due to three factors: their proximity to Estero Boulevard and San Carlos Boulevard, the type and volume of trips generated by adjoining property, and the location of intersecting local roads (First, Second, Third, Fourth, and Fifth Streets).

The public land that makes up the Estero Boulevard right-of-way ranges from 50 feet wide just south of Times Square to 100 feet wide south of Albatross Street (see Table 7-B-1). The drainage system changes from closed (underground drainage pipes) to open (open swales) depending on the availability of right-of-way and the presence of on-street parking. From Flamingo Street to Big Carlos Pass, open drainage is provided where the right-of-way is 80 feet or wider. Figure 4 illustrates where these right-of-way widths occur on Estero Boulevard.

Table 7-B-1 — Estero Boulevard Right-of-Way

From	*To*	*Width*
Bowditch Point	Vacation Villas	50
Vacation Villas	Lynn Hall Park	60
Lynn Hall Park	Lovers Lane	50
Lovers Lane	Flamingo Street	65
Flamingo Street	Albatross Street	80
Albatross Street	Castle Beach	100
Castle Beach	Big Carlos Pass	80

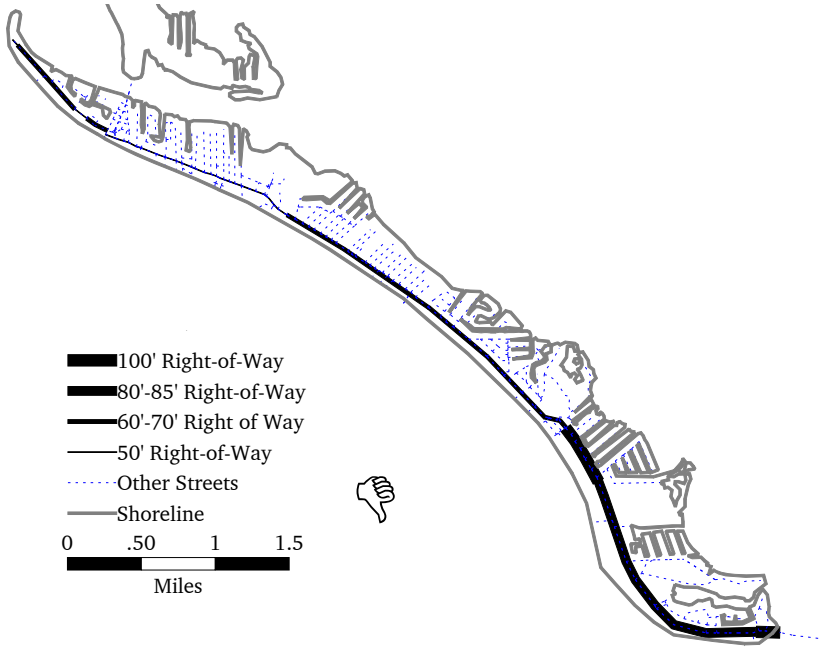

***Figure 4**, Right-of-way along Estero Boulevard*

There are 38 miles of local roads and 1 mile of Estero Boulevard (north of Times Square) that are maintained for the town under a maintenance agreement with the Lee County Department of Transportation at the unit costs shown in Table 7-B-2.

Table 7-B-2 — Road Maintenance Costs

Pothole patching	$255 per ton in place
Road shoulder grading	$3,432 per mile
Roadside machine ditch cleaning	$11,880 per mile
Drop inlet and catch basin – reconstruction	$565 each
Drop inlet and catch basin – machine cleaning	$70 each
Culvert pipe cleaning	$2 per foot

Source: Interlocal agreement on road maintenance, October 1996

Resident requests for road and drainage maintenance are investigated by town representatives and referred to the county when remedial actions are required. The county has agreed to provided specific services to the town at the rates shown in Table 7-B-2 up to a maximum of $247,233.00 until the end of the current interlocal agreement (September 30, 1997).

Some local roads are not the maintenance responsibility of the town. Table 7-B-3 lists private roads based on the information provided by Lee County (this list includes some roads maintained by other governmental agencies, such as School Street inside Bay Oaks Park).

Table 7-B-3 — Privately Maintained Local Roads

Name	*From*	*To*
Gulf Court	Palm Drive	Virginia Avenue
Pearl Street	Estero Boulevard	The Gulf
Seaview Street	Estero Boulevard	The Gulf
School Street	Oak Street	End (inside Bay Oaks)
Gulfview Trailer Pk.	Lovers Lane	southerly
Red Coconut	Donora Boulevard	northerly
Peters Drive	The bend	End
Sanders Drive	Estero Boulevard	End
Hammond Drive	Sanders Drive	End
Glenview Manor	Williams Drive	End
Lazy Way	Avenida Carita	Avenida Pescadora
Rhode Island Place	Lazy Way	End
Moody Tern Drive	The bend	Indian Bayou
Widgeon Terrace	The bend	End
Gloria Circle	Estero Boulevard	End
Bay Beach Lane	Estero Boulevard	End/Fork

Source: Lee County DOT Maintenance Map

There are no sidewalks of significance in any of the privately maintained roads in Table 7-B-3. A few publicly maintained local roads (Old San Carlos, Crescent Street, and First, Second, Third, Fourth, and Fifth Streets) have limited sidewalks and bike lane (on-road) facilities.

There are no limited or controlled access roadways, airports, port facilities, or rail lines in the town.

Intersections on Estero Boulevard

Estero Boulevard is the spine of Estero Island's transportation network. It is one of the most prominent and memorable public spaces at Fort Myers Beach, and also the scene of its worst traffic congestion during parts of the winter tourist season.

Estero Boulevard's ability to carry traffic is greatly reduced by the number of intersecting side streets; by unfamiliar motorists searching for parking spaces; by seemingly random driveways; and by heavy pedestrian usage. This appendix examines each of these subjects as a prelude to formulating strategies for enhancing mobility despite the heavy seasonal congestion.

There are 78 intersections along Estero Boulevard, 53 of which are "T" or three-way intersections (mostly on the Bay side). The remaining 25 are four-way intersections. This pattern evolved incrementally as land was platted and streets were dedicated for public use by individual property owners.

From the viewpoint of safety, "T" intersections are actually safer, provided they are spaced at least 125 feet apart. This safety is a result of a much smaller number of potential collision points where a vehicle must cross the path of another vehicle (thereby increasing the potential for a crash). Figure 5 illustrates some of the potential collision or conflict points in each type of intersection, with 24 points in a typical four-way intersection versus 6 for each "T" intersection. (The actual number of conflict points is determined by the total number of possible opposing vehicular turn and through movements from all sides of an intersection; therefore one-way lanes, bans on left turns, or multiple through lanes will result in a different number of conflict points.)

On Estero Boulevard, only 4 of the 25 four-way intersections have access to both Estero Bay and Gulf beaches. Because of the popularity of water accesses, their high number of conflict points results in dangerous conditions. Complicating matters further, when a driveway is aligned with a "T" intersection, it in effect constitutes the "fourth leg" of that intersection and increases the number of conflict points. Driveways and other access points on Estero Boulevard are inventoried in the next sections.

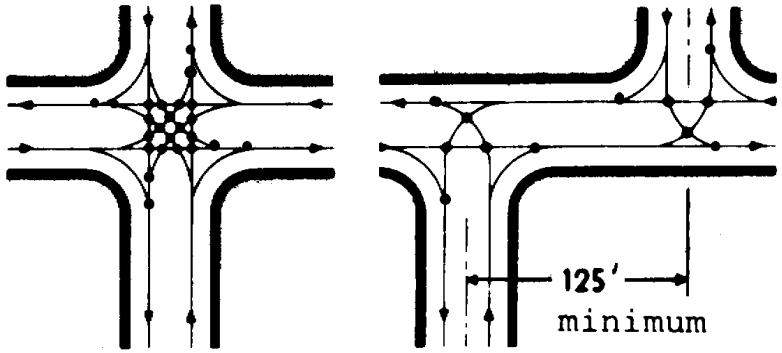

***Figure 5**, 24 collision points versus 6 collision points*

Direct Property Access and On-street Parking

Another reason that Estero Boulevard cannot carry as much traffic as most arterial roads is that it provides the sole access to many properties, often through one or more driveways. In other cases, this access includes a number of parking spaces that require backing out onto Estero Boulevard. Sometimes these parking spaces are located entirely on private property, but more often they are partly on public property as well. Each access point onto Estero Boulevard introduces another uncertainty that reduces the amount of traffic that can be carried.

A visual survey was conducted to quantify the number of access points to private property (see results in Table 7-B-4). On the Gulf side of Estero Boulevard, there are 356 driveways and 138 direct-access parking spaces; on the Bay side, 258 driveways and 97 parking spaces. These access points not only slow the flow of traffic, they introduce conflict points in the same manner as for standard intersections, as discussed earlier.

Although there are far more street intersections on the Bay side of Estero Boulevard, the Gulf side contains more driveways and parking spaces. On the Bay side, the highest number of driveways per mile is located north of Times Square up to Bowditch Point (54) followed by Pescadora Ave. to Flamingo St. (50). On the Gulf side the highest number of driveways per mile appears to be south of Times Square between Gulf Beach Road and St. Peters Drive (63) and north of Times Square to Bowditch Point (61).

Table 7-B-4 — Driveways and On-street Parking

Location	*From:*	*To:*	*Number of Driveways*	*Number of Parking Spaces*
Gulf side of Estero Boulevard:				
	Bowditch Point	Times Square	61	52
	Times Square	Big Carlos Pass	295	86
		TOTAL:	356	138
Bay side of Estero Boulevard:				
	Bowditch Point	Times Square	54	23
	Times Square	Big Carlos Pass	204	74
		TOTAL:	258	97

SEASONAL FLUCTUATIONS IN TRAFFIC

Impacts of Tourism

More than 1.5 million of Florida's 1995 visitors came to Lee County, including nearly 190,000 from Europe and 60,000 from Canada. This number increased to 1.7 million in 1996, and the first quarter of 1997 indicates an increase of 2.5% compared to the previous first quarter's figures for Lee County. The visitors to Lee County spent more than $820 million in 1996, and the first quarter of 1997 has already seen an increase of 5.8% in tourist spending into the county's economy. Out-of-state visitors stayed in Lee County an average of 7 nights, while Floridians averaged about 3½ days.

In 1995, 66.8% traveled by airplane to Lee County and 31.1 % drove their personal cars; 56.3% of those flying rented a car during their stay (usually at the Southwest Florida International Airport). In 1996, airplane travelers increased to 67.8%, with 59.5% renting cars. The use of personal cars by the visitors is continuing to decline, from 29.9% in the first quarter of 1996 to 25.3% for the same period in 1997.

Of all visitors to Lee County, 316,000 or 18% stayed at Fort Myers Beach. This 18% alone spent nearly $150 million.

Since there are data available for 1992 and 1996 for both Lee County and Fort Myers Beach, a comparison is made in Table 7-B-5 to identify common trends. A striking trend is the decrease in the percentage of visitors driving their personal cars, and the corresponding increase in those arriving by airplane and renting a car. It should be noted, however, that these figures only show the mode of travel for visitors who stayed in hotels or rented condominiums, and not those staying in their own seasonal homes or staying with relatives or friends.

Table 7-B-5 — Comparative County/Town Travel Mode of Tourists, 1992 & 1996

Travel Mode	*1992*	*1996*	*% Change*
Lee County:			
Airplane	58.5%	67.8%	9.3 %
Personal Cars	38.7%	30.4%	-8.3 %
Rental Cars	46.3%	59.5%	13.2 %
Fort Myers Beach:			
Airplane	54.5%	60.6%	6.1 %
Personal Cars	42.2%	36.2%	-6.0 %
Rental Cars	43.4%	55.9%	12.5 %

Source: Lee County Visitor and Convention Bureau Annual Visitor Profiles

In 1995, 4.7% of the visitors responding to a survey cited traffic congestion as one of their least-liked features of Lee County, followed by 2.8% not favoring roads/signs/highways. In 1996, the percentage of respondents displeased with Lee County's traffic congestion increased to 6.6%, while respondents complaining about roads/signs/highways dropped to 0.6%. Almost 20% of respondents in the first quarter of each year expressed displeasure with congestion, reflecting the peak season congestion problems that local residents experience each winter.

An additional item in the ongoing survey of the Lee County visitors indicates a substantial number of computer and on-line service users. The percentage of this user group has increased from 43% in the first quarter of 1996 to 67% this year. The number of visitors that obtain travel information via the Internet has jumped from 20% during the first quarter of last year to 43% for the first quarter of 1997. This data is relevant because of an

opportunity to use the Internet to advise visitors on opportunities to use alternate means of transportation when visiting Fort Myers Beach (airport shuttles, water taxis, trolleys, bicycles, etc.).

The above information is not available just for visitors to Fort Myers Beach. However, given the large proportion of Lee County visitors who stay at or visit Fort Myers Beach, the county-wide tourism trends are certainly relevant.

Some tourism data is available specifically for Fort Myers Beach. Figure 6 illustrates important data on seasonal visitation patterns, showing average occupancy rates by month for five consecutive years. Figure 7 shows average rates to rent a room or suite for the same period, with the expected correlation between demand and rates. In each case, these patterns reflect the county-wide data on the same subject (see Table 7-B-6), giving additional confidence in using other county-wide tourism data for planning at Fort Myers Beach.

Table 7-B-6 — Lodging Data for Lee County and Fort Myers Beach, 1995

	Winter	*Spring/ Summer*	*Fall*	*Annual*
Occupancy:				
Lee County	86.2%	61.1%	58.2%	68.5%
Fort Myers Beach	88.7%	61.5%	59.5%	67.8%
Average Room Rate:				
Lee County	$94.27	$65.29	$65.53	$75.03
Fort Myers Beach	$97.69	$62.52	$64.62	$71.84

Source: Lee County Visitor and Convention Bureau, 1995 Annual Visitor Profile

The data indicates that the county's tourist-oriented economy generally, and the Town's in particular, continues to grow in spite of legendary peak-season traffic congestion. The transportation issues facing the town, such as parking shortages and road congestion, appear to be viewed by many visitors as the price to be paid for the unique amenities of Fort Myers Beach, at least thus far. If left unchecked, however, they may lead to gridlock and a reversal of current trends, with major impacts on the area's economy and quality of life.

Peak Season Vs. Off-peak Travel Behavior

Travel behavior at Fort Myers Beach is of several different types; their interaction constitutes the core of the traffic congestion issues along Estero Boulevard. Fort Myers Beach is a destination for trips made by Lee County residents; year-round and part time residents on Estero Island; and visitors from around the world.

Tourists who stay in hotels or seasonal condominiums on Estero Island have some of their destinations on the island and some elsewhere in Lee County. During season there are visitors who stay off the island but visit regularly, sometimes on a daily basis. There are many trips made by year-round and part-time residents that start and end on the island. The reputation of Fort Myers Beach as the "playground of Lee County" attracts many visitors looking for popular beaches, waterfront restaurants, and nightlife. Each of these groups has specific travel patterns that must be considered.

In 1992, the CRA commissioned an origin–destination survey of 2,500 motorists traveling on Estero Boulevard at Times Square and Villa Santini Plaza. The motorists were asked where they lived, and where *this particular car trip* began and ended. This survey revealed that, at least in December of 1992, only 23% of trips began and ended on the Island, while 16% had both their origin and destination off the island. The majority of the respondents (61%) had either their origin or their destination off the island. A majority of the respondents were out-of-county visitors who stayed off the island; 46% were not even part-time residents of Lee County. A summary of this data is presented in Table 7-B-7.

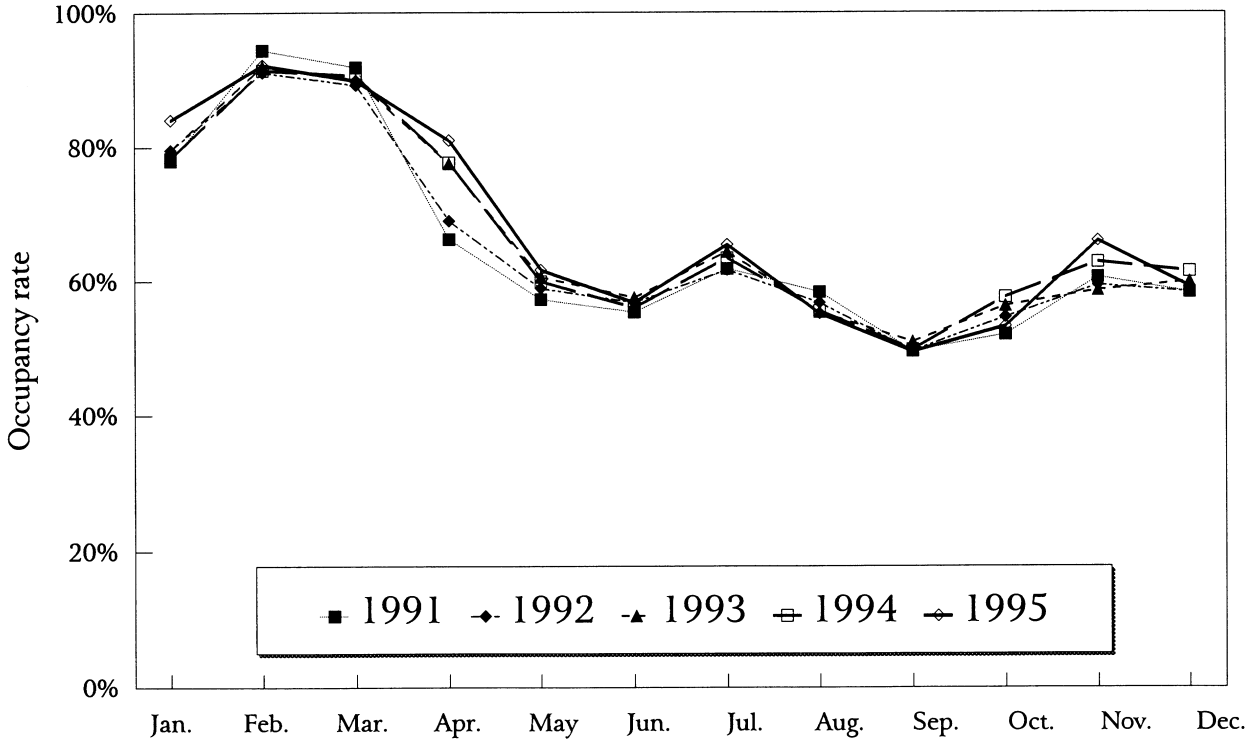

***Figure 6**, Occupancy rate for Fort Myers Beach lodgings*

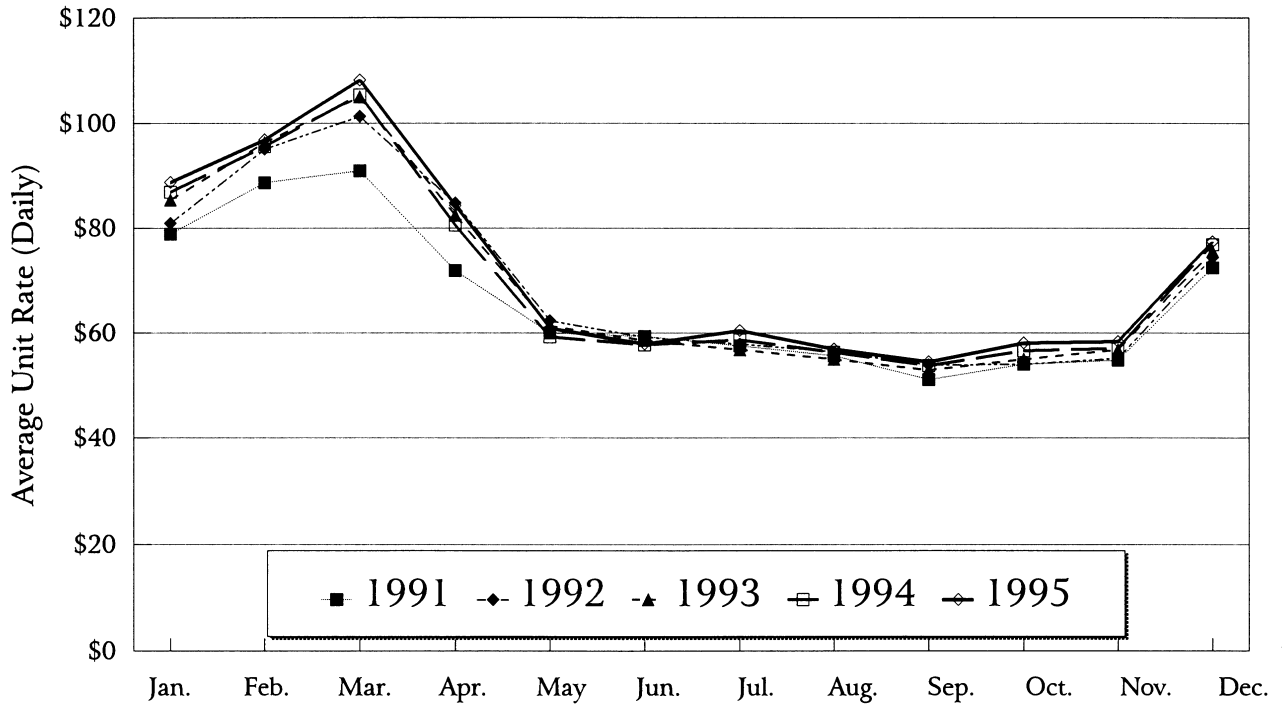

***Figure 7**, Average room rate for Fort Myers Beach lodgings*

Table 7-B-7 — Residency of Motorists and Origin/Destination Pattern, 1992

Residency	*Percentage*
Permanent Fort Myers Beach resident	22%
Part-time Fort Myers Beach resident	12%
Lee County resident	19%
Visitors	46%
Origin-Destination Patterns	
on-island to on-island	23%
on-island to off-island/vice versa	61%
off-island to off-island	16%

Source: Traffic Origin and Destination Survey, Florida Transportation Engineering, Inc., February 1994

Because this survey was taken in December, well before the height of the tourist season, its results may not accurately reflect peak season travel behavior. Nonetheless, this is the most accurate information currently available on the origins and destinations of cars on Estero Boulevard. This type of survey is of great importance in transportation and tourism planning, and should be repeated at various times of the year to provide a better picture of road users at Fort Myers Beach.

Travel behavior during the winter peak season and the rest of the year differs greatly in resort communities. Part of the difference is simply the number of motorists on the road, but others stem from trip purposes, the means by which the trip is made, and the length and place of visitors' stay. Some observations about Fort Myers Beach include:

- Fort Myers Beach residents and visitors did not have access to useful public transportation until about 1987 when four trolleys began serving Estero Boulevard. The trolley system has been heavily used since then, although major drops in ridership occur when service was reduced and fares increased.
- More than 80% of school children within a two-mile radius of Beach Elementary School ride the school bus or their parents' car, rather than walking or bicycling to school. When school buses pick up children, they stop traffic in both directions, in effect serving as a moving traffic light on Estero Boulevard. This isn't a major problem in the morning hours in the off-season, but it adds to the existing traffic congestion during other periods.
- Tourists here for short stays report little concern about the traffic congestion. They may simply use the roads less than residents, or merely accept the congestion as the price of an attractive vacation spot with many amenities.
- Most businesses do well despite the congestion (or in part because of the large number of visitors looking for places to stay, eat, or play).
- Residents without business interests seem to suffer most, since the pay the price of inconvenience without receiving any compensating benefits.
- Part-time residents who stay at Fort Myers Beach only during the peak winter season seem to complain most about congestion, probably because they don't get to experience the acceptable road conditions during most months of the year.
- Some visitors fly to Fort Myers and use a taxi or shuttle to reach Fort Myers Beach. They experience little of the congestion, and contribute almost nothing to it.

It is clear that peoples' tolerance of traffic congestion differs greatly depending on their situation and on other personal factors. However, traffic congestion is severe enough that it causes major behavioral changes each year. Many Lee County residents do not visit Fort Myers Beach (or Sanibel or Captiva) at all during the peak season, just because of the traffic. Many Fort Myers Beach residents organize their lives around low-traffic periods of the day each winter (such as first thing each morning). Clearly, though, there is a demand for improved mobility, especially during the winter. Alternate means of moving around the island will be patronized if they are more pleasant or convenient than waiting in traffic.

MEASURING TRAFFIC CONGESTION

Traffic Counts

Levels of roadway usage and congestion are quantified based on machine counts of actual traffic. Three types of counters are used: (1) permanent count stations; (2) periodic count stations; and (3) traffic counts done for special studies.

Permanent count stations have "inductive loops" embedded in the pavement (these are similar to the loops that control the timing of traffic signals); monitoring devices are placed in permanent control boxes mounted nearby on the side of the road. Most periodic counts use rubber tubes which are laid across the road for several days on a repeating schedule. The counts performed for special studies generally use stand-alone flat metal boxes that are taped to the pavement. These boxes act as signal transmitters (one popular type is the Hi-Star Traffic Analyzer). Vehicles do not have to drive directly over the flat box to be counted, as they do over the rubber tubes (for periodic counts) or inductive loops (at permanent stations). Metal in vehicles triggers the mechanism for the traffic counts, as well as classifying vehicles by type and speed.

Traffic volumes are tabulated and published each year using data from the permanent and periodic stations by the Lee County Department of Transportation (LCDOT) and Florida Department of Transportation (FDOT). Special studies are generally done by consulting firms (and sometimes by LCDOT and FDOT) for specific purposes such as traffic impact statements for proposed developments.

In late 1995 a permanent count station replaced the periodic counters north of Donora Boulevard to continuously measure traffic along Estero Boulevard. The detailed year-round data from this station can be used to adjust the occasional counts from periodic and special-study stations to reflect typical hourly and seasonal fluctuations and to arrive at the estimated number of "annual average daily trips" (AADT) for specific locations.

Table 7-B-8 contains historic traffic volumes from LCDOT's annual traffic count report from four periodic count stations. Figure 8 illustrates these volumes on a map of Fort Myers Beach, and shows the location of all count stations.

Table 7-B-8 — Traffic Counts from Periodic Count Stations in Annual Average Daily Trips, 1991/96

Location	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*
Matanzas Pass Sky Bridge	22,700	23,500	21,800	22,500	15,600	23,000
Donora Blvd.	16,800	18,500	16,500	17,000	17,500	*16,900
Pescadora Avenue	14,100	15,000	13,200	14,400	14,700	13,500
Big Carlos Pass	6,200	6,700	6,400	7,100	7,600	6,400

** converted to a permanent count station in 1996*

Source: Lee County Department of Transportation, annual traffic count reports

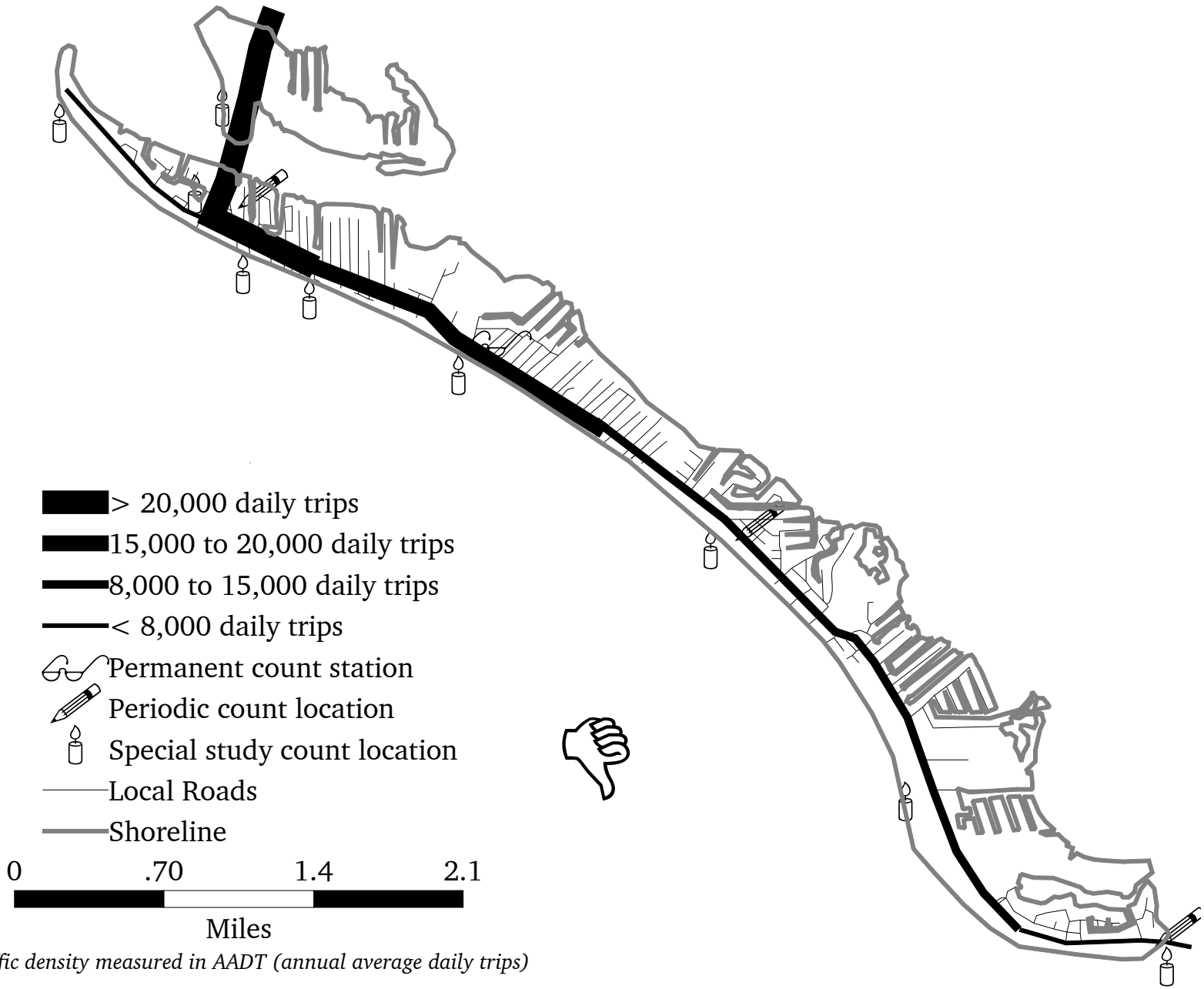

***Figure 8**, Traffic density on arterial roads*

Figure 9 illustrates hourly traffic data from the new Donora permanent count station (based on the *percentage* of daily traffic during each hour, not on absolute volumes). This chart shows a pattern of rising traffic volumes during the morning hours fol lowed by roughly level volumes throughout the day, with traffic beginning to fall after 6:00 P.M. This pattern is typical of beach resorts but very unusual at most other locations, which are typically dominated by peak "rush hours" during morning and late afternoon commuting periods. Table 7-B-9 shows additional daily and seasonal data from the new Donora count station.

These hourly, daily, and monthly percentages can be used to "adjust" occasional total traffic counts at other locations to depict their actual traffic conditions without the expense of adding more permanent count stations. Without this data, these adjustments would have to be made using hourly and seasonal data from locations further from Fort Myers Beach, resulting in less accurate assessments of local traffic. (Note, however, that these are *actual* traffic volumes, not the traffic demand that could be met if Estero Boulevard were widened to accommodate all potential peak season traffic.)

Times Square is the only location in Fort Myers Beach where substantial vehicular turn movements have been collected in recent years. The Lee County Department of Transportation conducted hourly counts in April 1997 (see Figure 10). Those counts show heavy movements onto the Matanzas Pass Sky Bridge from Estero Boulevard (600) and turning right from Fifth Street (360). During this count, inbound traffic from the Bridge split evenly into through traffic onto Estero Boulevard and right turns onto Fifth Street. The only significant left turn movement was northbound onto Fifth Street from Times Square (90) in the afternoon peak between 4:00 & 5:00 P.M. (during which time 570 pedestrians crossed at this point).

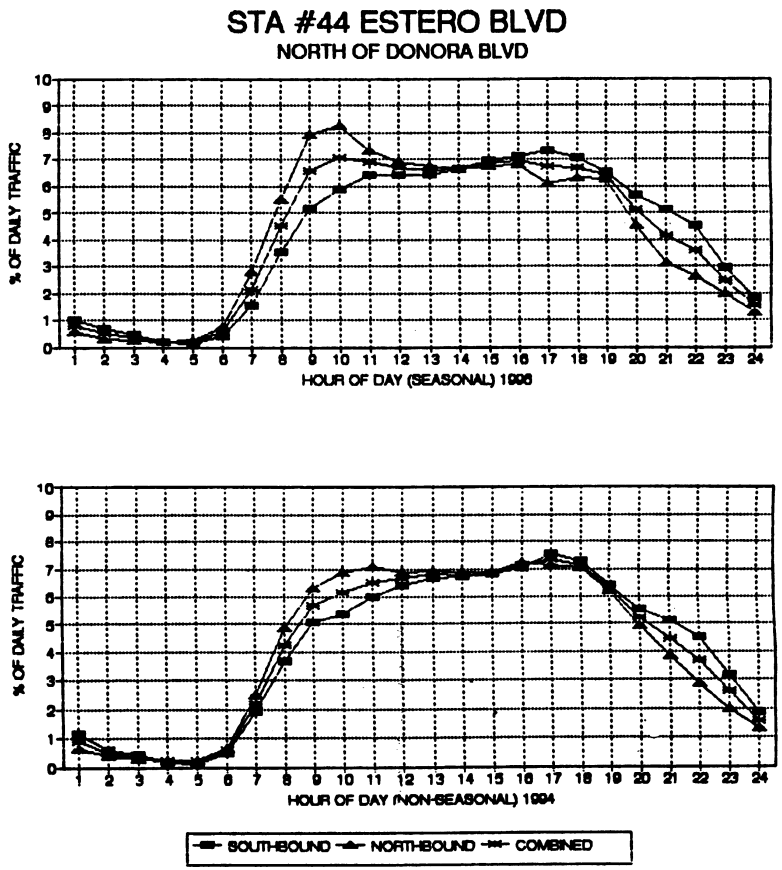

***Figure 9**, Hourly traffic patterns at the Estero/Donora count station*

Table 7-B-9 — Traffic Data from the Estero/Donora Count Station, 1995/96

Monthly ADT as % of Annual ADT		*Day of Week ADT as % of Annual ADT*		*Peak Flow Characteristics*		
					Non-Season	*Season*
October	93	Monday	97	*Peak flow between 7:00 A.M. and 9:00 A.M.*		
November	105	Tuesday	99	as a % of weekday traffic:	5%	6%
December	100	Wednesday	101	directional split:	43% SB	40% SB
January	107	Thursday	100		57% NB	60% NB
February	114	Friday	107			
March	116	Saturday	103	*Peak flow between 4:00 P.M. and 6:00 P.M.*		
April	114	Sunday	93	as a % of weekday traffic:	7%	7%
May	98			directional split:	51% SB	54% SB
June	91				49% NB	46% NB
July	91					
August	90					
September	81	*ADT=average daily traffic; SB=southbound; NB=northbound*				

Source: Lee County Department of Transportation annual traffic count report

Other than at Times Square there have not been any pedestrian counts in the Island. The most comprehensive counts to date were conducted in 1989 by Harland Bartholomew & Associates as part of their Pedestrian Mall Study. Counts were conducted in four different locations: at Times Square; San Carlos Boulevard and Fifth, Old San Carlos and Fifth; and Estero Boulevard at Crescent Street. The respective peak afternoon counts were 144, 85, 369, and 192 persons crossing the road in both directions.

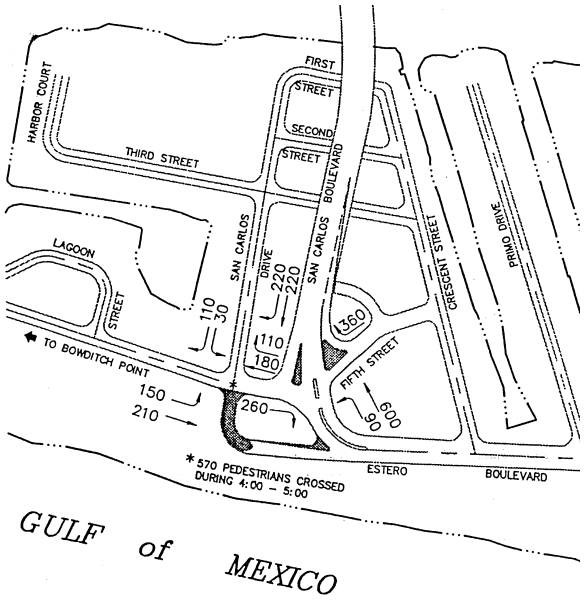

***Figure 10**, Peak-hour turn movement counts at Times Square, 1997*

Quantifying the "Level of Service" for Traffic on Estero Boulevard

Road systems are graded on their ability to meet a community's total desire for vehicular travel. The most common grading systems are fairly crude, given the typical need to evaluate hundreds of major road segments during peak-season and off-season, and rush-hour vs. off-hour. Common grading systems are described below, followed by a more thorough evaluation of congestion levels on Estero Boulevard.

***Figure 11**, Estero Boulevard, with crosswalk and sidewalk on Bay side*

A grade from A to F is typically assigned to all major road segments. Prior to 1985, levels of service were usually based on the ratio of actual "traffic volume" to a theoretical computation of the road's "capacity" (known as the volume-to-capacity ratio). If the actual traffic volume was equal to the road's capacity, the ratio was expressed as 1.0, which was defined as level-of-service (LOS) E. If the actual traffic was *less* than capacity, then the ratio was lower than 1.0 and a better grade was assigned to the road. Table 7-B-10 describes typical driving conditions under levels A through F, and equates them to volume-to-capacity (v/c) ratios using 1965 methods.

Table 7-B-10 — Generalized Levels of Service

Service Level	*Description of Traffic Conditions*	*Volume-to-Capacity Ratio*	*Average Travel Speed*
A	**Free flow** with individual users virtually unaffected by the presence of others in the traffic stream.	< 0.60	> 30 mph
B	**Stable flow** with a high degree of freedom to select speed and operating conditions but with some influence from other users.	0.61 to 0.70	24 to 29 mph
C	**Restricted flow** which remains stable but with significant interactions with others in the traffic stream; the general level of comfort and convenience declines noticeably at this level.	0.71 to 0.80	18 to 23 mph
D	**High-density flow** in which speed and freedom to maneuver are severely restricted and comfort and convenience have declined even though flow remains stable.	0.81 to 0.90	14 to 17 mph
E	**Unstable flow** at or near capacity levels with poor levels of comfort and convenience.	0.91 to 1.00	10 to 13 mph
F	**Forced flow** in which the amount of traffic approaching a point exceeds the amount that can be served, and lines form, characterized by stop-and-go waves, poor travel times, low comfort and convenience, and increased accident exposure.	> 1.00	< 10 mph

Source: Service level descriptions from ITE's Transportation Planning Handbook, 1992; volume-to-capacity ratios from the Sanibel Comprehensive Plan; average travel speeds for "Class II" arterial roads from Florida's Level of Service Standards and Guidelines Manual for Planning, April 1992.

With the revision of the influential *Highway Capacity Manual* in 1985, traffic engineers began to determine levels of service using methods that tried to simulate the experience of a entire trip, rather than evaluating the capacity of each short road segment. Since traffic congestion is usually noticeable as delays, particularly at intersections, the newer methodologies try to approximate the *average travel speeds* of motorists. Rather than measuring speeds directly, most of the new methodologies measure the number of traffic signals, or the average "stopped time" at traffic signals; unfortunately these methods are of little value at Fort Myers Beach where there is only one traffic signal. More suitable methodologies adjust the capacity based on the amount of on-street parking and pedestrian crossings. The last column in Table 7-B-11 shows one method of correlating average travel speeds with levels of service. These are average speeds for a trip of at least 1 to 2 miles and they include the time spent stopped for traffic signals; they are *not* the fastest speed on the least congested segment of the trip.

Discussions of "levels of service" on roads used to be the sole province of traffic planners and engineers. However, in 1985, when the state of Florida established the current framework for local government comprehensive plans, service levels moved into the mainstream of public policy debates. The new planning law requires all comprehensive plans to formally adopt levels of service for roads, and to declare a policy of refusing to issue any building permits or other approvals if those levels would not be met when the new construction would be completed. This requirement came to be known as "concurrency."

Almost overnight, service levels were transformed from useful generalizations into legislative mandates. Concurrency, elegant in the simplicity of its basic concept, has turned out to be extremely complex in practice, even for transportation professionals. The following sections will illustrate the difficulties in determining the LOS on Estero Boulevard, especially the most congested segment from Crescent to School Streets.

A complicating factor is caused by the resort character of Fort Myers Beach. Traffic flows don't have the typical "peaks" and "valleys" caused by commuter rush hours. Instead of a morning rush hour, traffic levels continue to rise until about 10:00 A.M. in the busiest season, or early afternoon in the off-season. Traffic levels then remain fairly constant until about 5:00 or 6:00 P.M. This condition appears as a "plateau" in a graph (see Figures 9, 12, and 13). This situation complicates an LOS analysis, which is usually based on "peak hour" conditions (normally defined as the afternoon commuter rush hour).

An analysis of traffic at Fort Myers Beach was conducted by consultants to the Lee County CRA in 1993 (*Traffic Volume and Capacity on Estero Island*, Florida Transportation Engineering, Inc., March 1993). They counted traffic across the Matanzas Pass Sky Bridge in December 1992 at 30,318 vehicles per day (in both directions). This total was adjusted to estimate the typical traffic volume during the peak season (36,005 vehicles per day, and 2,628 in the peak hour). The peak-hour count was divided by a road capacity of 2,610 for the Sky Bridge, for a volume-to-capacity ratio of 1.01 (which was reported without explanation as LOS E rather than LOS F).

However, this LOS computation is for the bridge itself. Although traffic is often at a standstill on the bridge during overloaded conditions, there is little evidence that those conditions result from any inadequacy of the bridge itself. In fact, the road capacity assigned to the bridge is much higher than the capacity of Estero Boulevard, even though both have the same number of lanes. The capacity is so high because there is no interference from intersecting streets, parking spaces, or pedestrians crossing the street. It is the congested conditions *beyond* the bridge that cause traffic to back up. Unfortunately, the 1993 study does not provide useful data for understanding the causes of traffic congestion at Fort Myers Beach.

Traffic volumes collected for the entire county are tabulated and published each year by Lee County DOT in a *Traffic Count Report*. (These traffic volumes are often used to select the "adjustment factors" for special studies.) The *Traffic Count Report* is also used to determine the LOS of all major roads in Lee County, which are published in another annual Lee County report entitled *Concurrency Management Inventory and Projections*.

These annual LOS tabulations illustrate some of the inherent problems with assigning service levels to every major road in a county. Even with Lee County's customized capacity levels for various types of roads, the LOS calculations vary widely (see a summary in Table 7-B-4). Causes include quirks in the annual counting process; the many conversions required to obtain peak-hour traffic counts; and changes in methodology. Between 1992 and 1996, Estero Boulevard north of School Street was rated first at LOS E, then B, then A, then F. For the first three years, the traffic volumes (after conversion to presumed peak-hour counts) were *below* the rated capacity of a two-lane arterial road in a beach area. In 1995, the capacity was reduced dramatically, resulting in LOS F conditions. Actual travel conditions on Estero Boulevard bore no similarity to the corresponding LOS descriptions in Table 7-B-11 until the capacity was reduced in 1995.

Table 7-B-11 — Summary of Concurrency Analysis for Estero Boulevard Between School and Center Streets

Year:	*Estimated Traffic Volume*	*Stated Road Capacity*	*v/c ratio*	*Level of Service*
1992	1,850	1,880	0.98	E
1993	1,588	1,880	0.84	B
1994	1,441	1,880	0.77	A
1995	1,826	1,316	1.39	F
1996	1,952	1,316	1.48	F

Source: Lee County Concurrency Management -- Inventory and Projections (annual reports by the Lee County Department of Community Development)

In response to the obvious inadequacy of these computations for Estero Boulevard, Lee County DOT commissioned a more thorough examination. Additional traffic counts made during March 1995 at Pescadora, Donora, Crescent, and at the Sky Bridge. These counts were compared to special DOT counts in January 1995 at Pescadora and Donora and to the ongoing DOT count program; all of the counts showed a consistent pattern of increasing volumes from Pescadora to the Sky Bridge.

Before converting the traffic volumes to LOS, the 1995 study made two adjustments. The first was the required step of converting the daily trip total into a peak-hour estimate. The second was to determine the actual the "capacity" of Estero Boulevard. The capacity of a typical two-lane undivided arterial road is about 2,000 cars per hour (total in both directions). Lee County has determined that the typical two-lane undivided arterial in beach areas has a capacity of 1,780 vehicles per hour (and 1,880 vehicles per hour for a divided arterial, which this study used for Estero Boulevard from Crescent Street north). However, the actual capacity of Estero Boulevard is restricted by many special factors as discussed early (such as parking and intersections). The study concluded that the Lee County capacities should be adjusted to 80% and 70% of those typical levels,

respectively. Table 7-B-12 reports this data and the resulting volume-to-capacity ratios. (Volume-to-capacity ratios of 1.02 and 1.39 were again reported as LOS E rather than F, without explanation.)

The most recent special study of Estero Boulevard was conducted by Lee County DOT during the recent debate over a potential swap of public and private lands. New traffic data was collected along Estero Boulevard during the first week of April 1997. The morning traffic peak occurred between 9:00 and 10:00 A.M. that week. The study reported:

> *During the afternoon hours, traffic flow breaks down to a forced flow condition. The demand for use of Estero Boulevard may be higher during the afternoon; however, there is no excess capacity. During the morning, there are fewer interruptions to traffic, such as pedestrian crossings and parking maneuvers, so the capacity of Estero Boulevard is higher.*

The 1997 study assigned a capacity of 1,240 vehicles per hour to Estero Boulevard. The traffic volumes and LOS calculations are summarized in Table 7-B-13.

Table 7-B-12 — Summary of Special LOS Analysis for Estero Boulevard, 1995

Location	1995 Peak-Hour Traffic Volume	Lee County Road Capacity	Adjustment Factor	Estero Blvd. Capacity	v/c ratio
N. of Pescadora	1,213	1,780	80%	1,424	0.85
S. of Donora	1,451	1,780	80%	1,424	1.02
S. of Crescent	1,824	1,880	70%	1,316	1.39

Source: Estero Boulevard Corridor Study, prepared by Florida Transportation Engineering Inc., as revised through July 1995

Table 7-B-13 — Summary of Traffic Volume Data Collected in April 1997

Location	Daily Volume	Peak Direction	Directional Split	Peak-hour Volume	Generalized Capacity	v/c ratio	Level of Service
N. of Donora	19,000	north	55%	1,400	1,240	1.13	F
N. of Virginia	23,100	even	55%	1,550	1,240	1.25	F
S. of Crescent	26,600	even	50%	1,650	1,240	1.33	F
N. of San Carlos	5,400	east	50%	360	1,240	0.29	C
S. of Bowditch	1,700	west	55%	150	1,240	0.12	C
Matanzas Bridge	-	-	-	2,000	2,610	0.77	B

Notes: *"LOS C is best level of service available for a two lane undivided street"*
"Estero Boulevard is treated as a 2 lane undivided collector due to large number of road side activities such as parking and side street intersections."
Source: *Virginia Avenue Beach -- Bowditch Point Traffic Impact Comparison, Lee County DOT, April 1997*

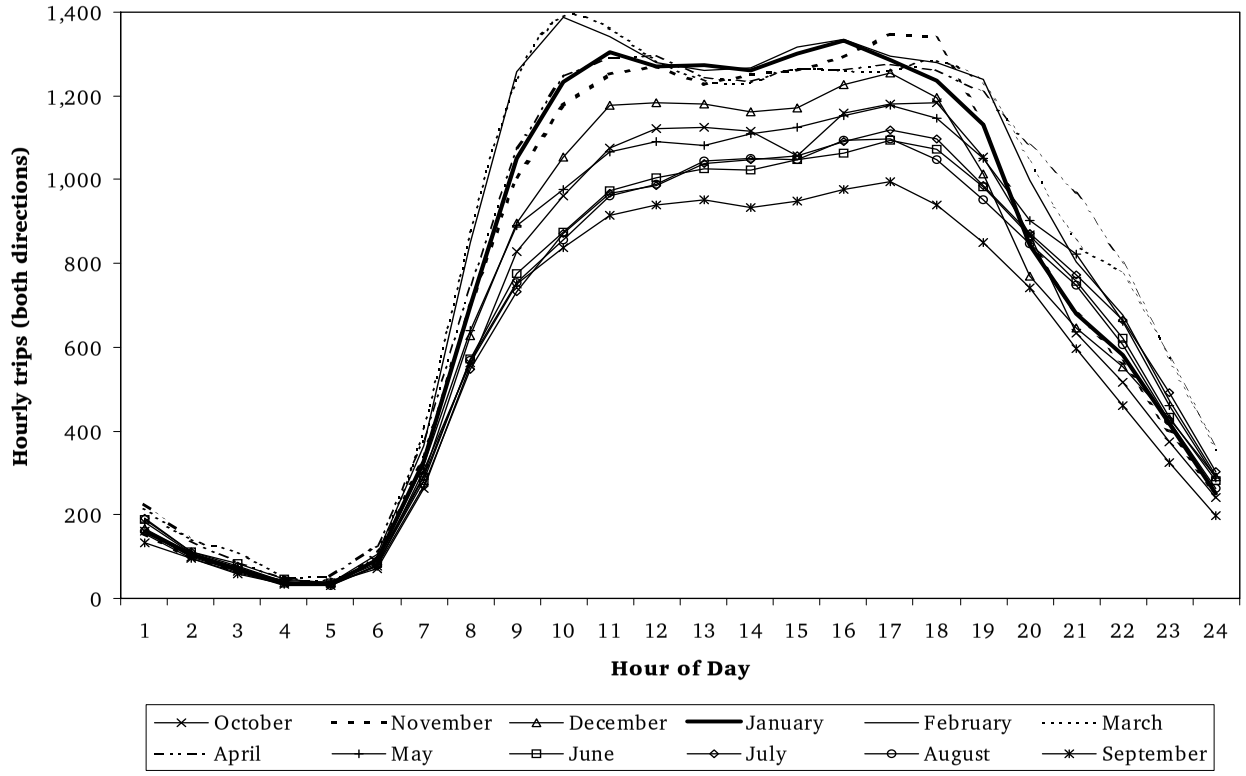

***Figure 12**, Hourly vehicle counts on Estero Boulevard at Donora from October 1995 through September 1996*

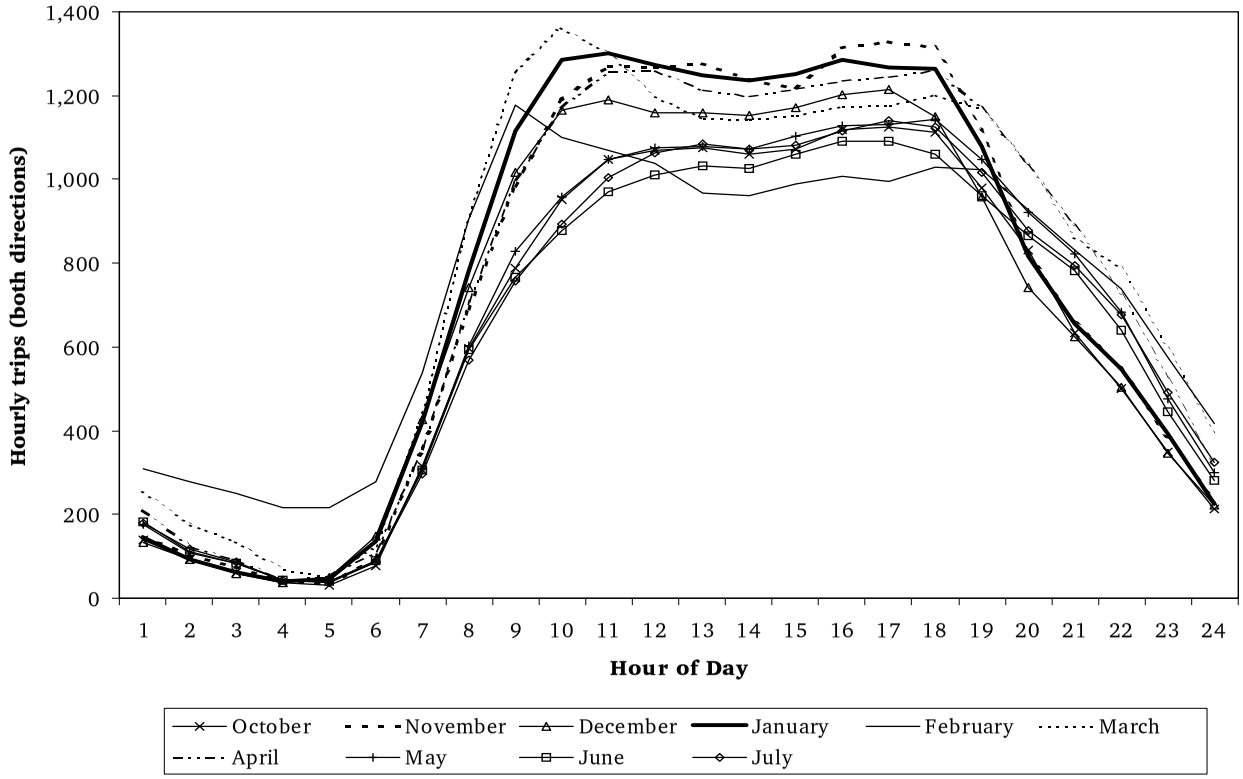

***Figure 13**, Hourly vehicle counts on Estero Boulevard at Donora from October 1996 through July 1997*

The counts used in this study are the most up-to-date available around Times Square following the completion of the CRA improvements there. However, the counts were taken for only one week, and after the end of the locally observed periods of heaviest congestion. Although the counts were adjusted in accordance with standard practice, they may not accurately reflect conditions at various times during the peak season.

An excellent source of data for analyzing actual travel conditions on Estero Boulevard is available from the new permanent count station near Donora Boulevard. Although these counts are just outside the area of heaviest congestion, they provide detailed counts taken every hour of every day during the year, in both directions. Thus no adjustments are required to convert "average daily" counts into the more useful peak-hour counts. Some hourly data from this station was reported in the most recent *Traffic Count Report* (as shown earlier in Figure 9). Additional hourly data was obtained from Lee County DOT and is reported below in a similar format (see Figure 12). This graph shows hourly travel patterns by month from October 1995 through September 1996. Although the actual volumes near Crescent Street might be about 25% to 30% higher (based on the DOT study cited above), the hourly and monthly patterns would be very similar.

September had the least traffic, averaging 950 vehicles per hour during the day (10:00 A.M. to 5:00 P.M.). The busiest months were January through April, which averaged 1285 vehicles per hour during the same period.

The months of February and March deserve particular attention because that is when traffic flow breaks down on an almost daily basis. The actual number of cars traveling through the congested portion of Estero Boulevard is about the same as for January and April; but actual conditions on the road can be dramatically different.

Travel patterns in February and March 1996 differed in that more cars traveled during the peak hour than any other months, and this peak hour occurred slightly earlier (before 10:00 A.M.). Flows during these peak hours reached 1,390 vehicles in 1996. When traffic flows reached these levels at Donora Boulevard, continuous vehicular travel became impossible due to congestion along Estero Boulevard between Times Square and the public library. "Forced flow" conditions then allowed less traffic to flow; lines of cars back up because more motorists wish to travel on Estero Boulevard than the road can handle.

It is not clear whether the number of cars wishing to use Estero Boulevard is simply higher in February and March, or whether the road's capacity is lower during those months because of exceptionally high levels of pedestrian activity, or motorists searching for parking, or some combination of reasons. Of interest, though, is that this level is close to the maximum peak hour traffic that Estero Boulevard could handle without excessive congestion according to the most recent Lee County DOT studies (1,316 or 1,424 vehicles per hour from Table 7-B-12, or 1,240 vehicles per hour from Table 7-B-13).

Complete traffic counts are not yet available for the 1996/97 season, but the comparable data is shown in Figure 13 (through July 1997). The patterns are quite similar to the previous year, with winter traffic volumes peaking around 10:00 A.M. However, in February 1997, traffic volumes fell considerably after that hour, with Estero Boulevard actually carrying less traffic throughout the day than it easily handles during the summer. Road work for the Times Square improvements was underway intermittently throughout the winter season, which may account for this poor performance. Further research into the conditions that cause the breakdown of traffic flow would help in assessing measures that might maintain reasonable flow, or in providing alternate mobility options.

ADEQUACY OF EVACUATION ROUTES

The Town of Fort Myers Beach has serious evacuation problems, being densely developed and located entirely on a bridged barrier island. Estero Island can be easily overtopped by tropical storm wash and by passing Gulf hurricanes. The last time the town was directly struck by a hurricane was in 1960 (Hurricane Donna). But even common tropical storms, such as Tropical Storm Keith in 1988, can block the flow of traffic on parts of Fort Myers Beach.

Southwest Florida is considered to be the second most hurricane vulnerable region in the country. This vulnerability results in part from the shallow off-shore waters which will allow extremely high tidal surges to develop under certain conditions. These surges can inundate the entire island and block evacuation routes. The Coastal Management Element of this plan examines the threat of hurricanes in more detail, including the location of emergency shelters and the problems created by so many other people trying to use the few available evacuation routes. The following discussion highlights the likely evacuation impacts on Estero Boulevard.

The expected population on Fort Myers Beach during the hurricane season is estimated to be about 10,100 people now, and 11,600 people at full build-out. Both totals include overnight guests in motels. Assuming that each two people evacuate in one vehicle, an evacuation would involve 5,050 cars (or 5,800 at build-out).

All evacuating vehicles must use Estero Boulevard. The Southwest Florida Regional Planning Council estimates its capacity during an evacuation at 943 vehicles per hour in the primary direction, or 1,660 per hour for both lanes with two-way traffic (830 per lane). Evacuating traffic can go south (exiting via Bonita Beach Road) or north to the mainland across San Carlos Island. At present, evacuation signs at Washington Avenue direct drivers to the south, and signs at Donora Boulevard direct drivers to the north. Figure 14 shows these points and the expected direction of evacuating traffic.

Once residents are ready to go, the quickest time to evacuate the island can be estimated by dividing the number of vehicles by the road capacity. For a one-way evacuation, the result would be 5.4 hours (5,050 / 943 = 5.4 hours). Using the two-way option, the time could drop as low as 3.1 hours.

The recent widening of San Carlos Boulevard to five lanes has improved that route for evacuation purposes. The widening of Bonita Beach Road that is nearing completion will also aid in an

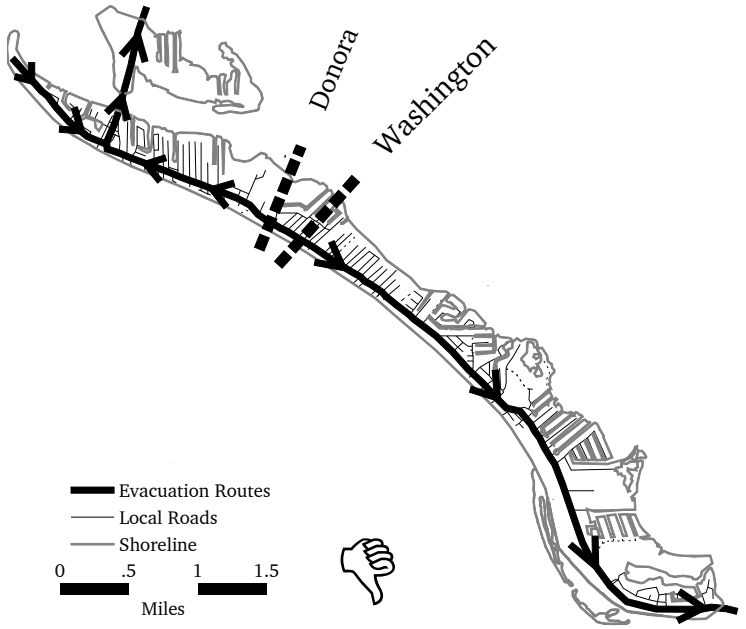

***Figure 14**, Direction of evacuation*

evacuation. Unfortunately, evacuation problems get even worse off the island because there will be significant traffic from other low-lying areas added to traffic from Fort Myers Beach. (See the Coastal Management Element for details.)

There are other evacuation problems that are unrelated to the theoretical capacity of the roads themselves. One is low-lying areas, especially in the south end of the island and along Hickory Boulevard, where early flooding may create "choke points" that would prematurely end an evacuation in that direction. This could be caused by inadequate drainage, where early rains would flood the road and make it impassable. Or it could be caused by the road being overtopped by an early storm surge. Roadway elevations and configurations should be evaluated, and remedial measures taken, to offset these threats. Remedial measures could include simple drainage improvements, or increasing the height of the road surface, depending on the problem and the location of nearby buildings. A detailed engineering analysis would be required to determine the complexity and cost of such improvements, since elevating the road surface even a small amount may require extensive changes to the swale system.

Several low points on evacuation routes have been identified from elevation contour maps for the barrier islands and from design drawings for the recent improvements to Bonita Beach Road. Estero Boulevard is low the entire distance from Lynn Hall Park to Bowditch Point, and also low at the following points: from the curve at Times Square to Crescent Street; between Mandalay Road and Gulf Island Drive; between Madera Road and Glenview Manor Drive; and between Albatross and Flamingo Streets. In each of these areas, the road surface appears to be less than 5 feet above sea level.

After Estero Boulevard crosses Big Carlos Pass to the south, there are no points where the road is less than 5 feet above sea level. Most of Hickory Boulevard is at least 6 feet high, although a few points are as low as 5.2 feet (near the entrance to Carl Johnson Park, and one point on Bonita Beach). Bonita Beach Road itself, after the recent reconstruction, rises slightly, with its lowest points at 6.25 feet. It rises rapidly beyond Imperial Shores Boulevard, with any flooding beyond that point more likely to be caused by heavy rainfall rather than a storm surge.

The elevation of San Carlos Boulevard cannot be determined from the elevation contour maps because of its recent total reconstruction. The Florida DOT has agreed to provide plans for the reconstruction which will allow a precise determination of its low points.

SCHOOL BUSES

In addition to Lee Tran trolleys and buses, Lee County School District buses also operate along Estero Boulevard. Despite their limited hours of operation, school buses can have a substantial impact on traffic flow on Estero Boulevard when they create a barrier to traffic flow in both directions at every school bus stop. (Florida law requires traffic in the opposite direction to also come to a full stop unless there is a 5-foot-wide median strip.)

Existing School Bus Patterns

School buses pick up and drop off students from kindergarten through 12th grade in three different shifts: 9th through 12th first, K through 5th next, and 6th through 8th graders last (see Table 7-B-14 for details). Fort Myers Beach Elementary School accommodates most K through 5th graders (presently 115 students); middle and high school students are transported off the island for classes. There is a total of 256 students (K-12) living at Fort Myers Beach and attending public schools.

The school system operates six buses, in pairs, to pick up students at all grade levels. These buses operate in the morning between 6:33 A.M. and 9:04 A.M., which does not coincide with high traffic volumes in the off-season (only 100 to 800 trips per hour, as shown earlier in Figure 9). During peak season, however, the late morning buses coincide with fairly heavy traffic (800 to 1,200 trips per hour between 8:00 A.M. and 9:00 A.M.).

Each afternoon, the same buses operate between 2:15 P.M. to 4:26 P.M. This period unfortunately conflicts with some of the heaviest traffic during and after the peak season (ranging from 900 to 1200 vehicles per hour during the earliest drop-offs and 1,000 to 1,300 toward the end).

Table 7-B-14 — School Trips, 1996/1997 School Year

Grade	*Number of Students*	*Bus Riders*	*Other Transportation*	*Bus Time*
K to 5:	125	99	26	7:26 - 7:45 A.M.
		51	74	2:15 - 2:33 P.M.
6 to 8:	60	35	25	8:43 - 9:04 A.M.
		29	31	4:10 - 4:26 P.M.
9 to 12:	71	68	3	6:33 - 6:50 A.M.
		0	71	2:29 - 2:39 P.M.

Source: Lee County School District, Transportation Department

The students' mode of transportation, as well as their pickup and drop-off time and location, contributes to transportation issues in the island. Currently there are 30 different school bus stops, each served by two buses on each route (illustrated in Figure 15). Although some of the school bus stops serve more than one grade level at different time of the day, there is only one location that is a pickup and drop-off point for all three grades (Estero Boulevard at Dakota Avenue). There are seven common stops between elementary school and high school buses, and six common stops between middle school and high school buses.

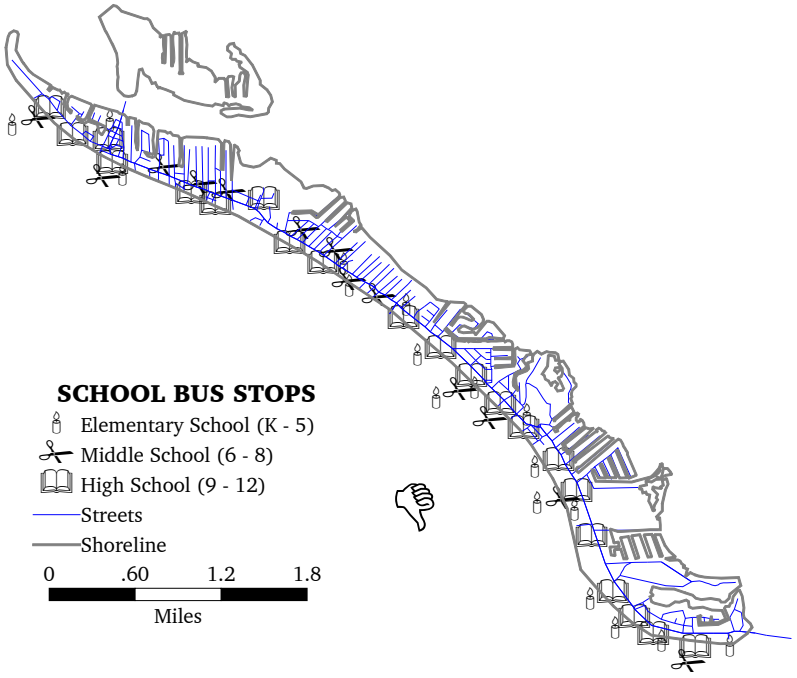

***Figure 15**, School bus stops*

Transportation Impacts of School Buses

From a traffic standpoint, students traveling considerable distances to school are better accommodated in school buses than in their parents' car (or their own). But some *negative* effects of school buses on traffic flow come from two sources:

- During pick-ups or drop-offs, school buses serve as moving traffic lights, hampering the flow of traffic. The current pattern is to have very frequent bus stops, rather than widely spaced stops, which worsens the problem.
- The Beach Elementary School is located in the area of highest traffic congestion. More than 80% of school children within a two-mile radius of this school ride school buses or their parents' car, rather than walking or bicycling to school. Traffic congestion is worsened by frequent bus stops along Estero Boulevard to pick up children who live this close. By making sidewalks and bike paths safer and more inviting, the number of extra stops can be reduced.

Similarly, parent-initiated car pools to off-island middle and high schools would be preferred over individual trips to and from school. There may also be some opportunity for a water shuttle system to transport some students. The only local precedent for water transportation is for students who live on Useppa Island, who use private boats plus a short walk to reach a school bus that takes them to Pine Island Elementary School.

HOW RESIDENTS TRAVEL TO WORK

Some data on how island residents travel to work is available from the 1990 Census. This data is called the "modal split," which is simply the division of trips based on the means of transportation chosen by island residents to their work destination. This data, based on a sample of every sixth household, is presented in Table 7-B-15.

Table 7-B-15 indicates that public transit was not used for work trips in 1990. With the trolley service now in place, some work trips are certainly being made by public transit, which will increase the "capture rate" in future surveys. Capture rate is a measure to assess how many single-occupant-vehicle (SOV) auto trips have been "captured" by public transit, reducing congestion or freeing up road capacity for another vehicle. Lee Tran has had substantial success in accommodating non-resident trips *to* Fort Myers Beach, and may be able to serve many work trips originating on Fort Myers Beach as well.

Only 30% of the island's permanent residents were reported as part of the work force in 1990, reflecting the sizable retiree population. The travel patterns of non-working residents and of non-residents contribute to the extreme seasonal fluctuations in traffic, as the make-up of the population at any given month affects the transportation choices that are made. Due to the importance of tourism in the economy and the impact of their means of transportation on the road network, the following section presents tourism data from in-depth surveys of visitors to Lee County.

Table 7-B-15 — Residents' Means of Getting to Work, 1990

Census Tract	*Description*	*Single-Occupant Vehicle*	*Car Pool*	*Public Transit*	*Walk*	*Other*
601	San Carlos Island & Estero Is. NW of Bayview Avenue	898	244	0	173	64
602	Estero Is. SE of Bayview Avenue	843	104	0	70	69

Source: 1990 U.S. Census, STF-3A Table P49

TRAFFIC CRASHES

Table 7-B-16 summarizes traffic crash data reported to LCDOT for the past three years. In 1996 Estero Boulevard was one of the top ten corridors in the county with the highest number of crashes per 1,000,000 vehicle miles traveled. Moped crash reports are listed separately beginning in 1996 to monitor their operation and safety on Estero Boulevard. The data indicates an increase in the number of injuries and fatalities compared to the previous years, with a noticeable decrease in the number of crashes involving bicycles.

Additional information is available in which traffic crash is referenced to a nearby intersection. This information is general due to the manner by which the data is compiled and entered into the County's database. Table 7-B-17 reports the locations with the highest number of reported crashes for comparison to previous years. These locations are mapped in Figure 16.

In-depth study would be required to investigate specific trends or patterns of crashes at these locations (such as type of vehicle involved, or type and severity of crash). This listing of problematic intersections emphasizes the importance of safety as a prerequisite for mobility and cost-efficient use of the transportation network.

Table 7-B-16 — Estero Boulevard Crash Data, 1994 to 1996

Year	*Auto*	*Bike*	*Pedestrian*	*Moped*	*Total*	*Injuries*	*Deaths*
1994	150	12	7	N/A	169	54	3
1995	107	6	6	N/A	119	33	6
1996	136	5	6	1	151	87	7

Source: LCDOT Crash Summaries

Table 7-B-17 — Estero Boulevard High Crash Locations, 1994 to 1996

Location	*1994*	*1995*	*1996*
Crescent/Estero	16	5	4
Palermo/Estero	10	2	9
Carolina/Estero	5	8	5
Mango/Estero	2	3	4

Source: LCDOT Crash Summaries

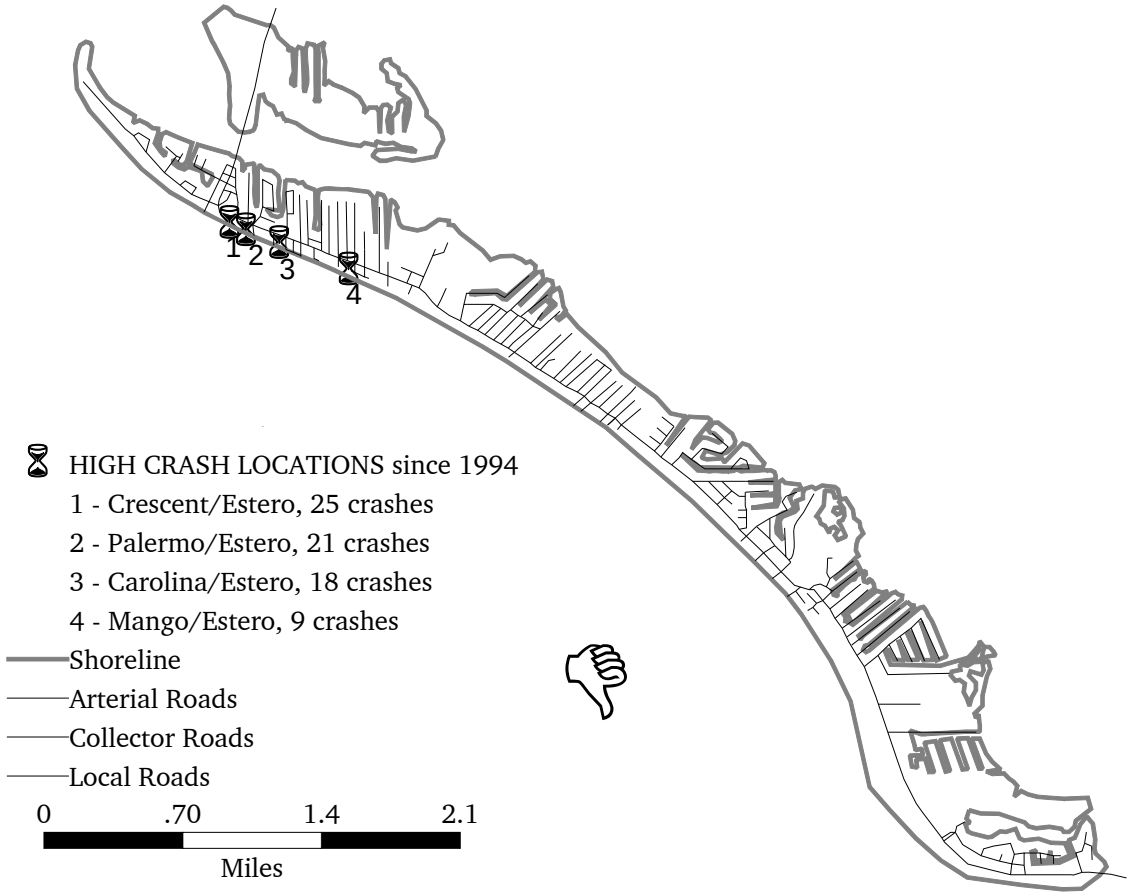

***Figure 16**, High crash locations*

TRANSPORTATION APPENDIX B

ADDITIONAL TRANSPORTATION DATA