SECTION E
FLORIDA HIGHWAYS

As explained in the main Alliance Report, the specific highways determined to comprise the LATTS Strategic Highway System were identified using a series of criteria to help identify a network of highways which had the greatest significance regarding trade with Latin America. The 22,859-mile mainline LATTS Strategic Highway System shown in Exhibit E-1 is the result of this process.

More than 10 percent of the mainline LATTS Strategic Highway System (2,302 miles) is located in Florida (Exhibit E-2). Of the 14 Alliance members, only Texas has a larger LATTS Highway System. The Florida components[1] include the following:

- All of Florida's 1,472 miles of interstate highways, including:
  - I-4 from Tampa to Daytona Beach
  - I-10, a major east-west interstate, linking Texas with New Orleans, Mobile, and Jacksonville
  - I-75, a major north-south interstate linking Cincinnati, Knoxville, Atlanta, Tampa and Miami
  - I-95, the major north-south interstate along the east coast, linking New York and Washington, D.C. with Miami
  - Numerous urban interstates, including routes I-110, I-175, I-195, I-275, I-295, I-375, I-395, and I-595
- 830 miles of non-interstate National Highway System (NHS) facilities
  - U.S. 231 from the Alabama State Line to Panama City, part of Corridor 6 (Mobile to Cincinnati). This highway is all multi-laned, with varying levels of access control.
  - U.S. 19 from the Georgia State Line to Tampa, part of Corridor 20 (Memphis to Tampa). U.S. 19 is all multi-laned, with varying levels of access control.

[1] Mileage, number of lanes, pavement condition and other data reported herein were taken from the HPMS Database, as discussed subsequently, and may differ from information in other databases.

Exhibit E-1
LATTS STRATEGIC HIGHWAY SYSTEM

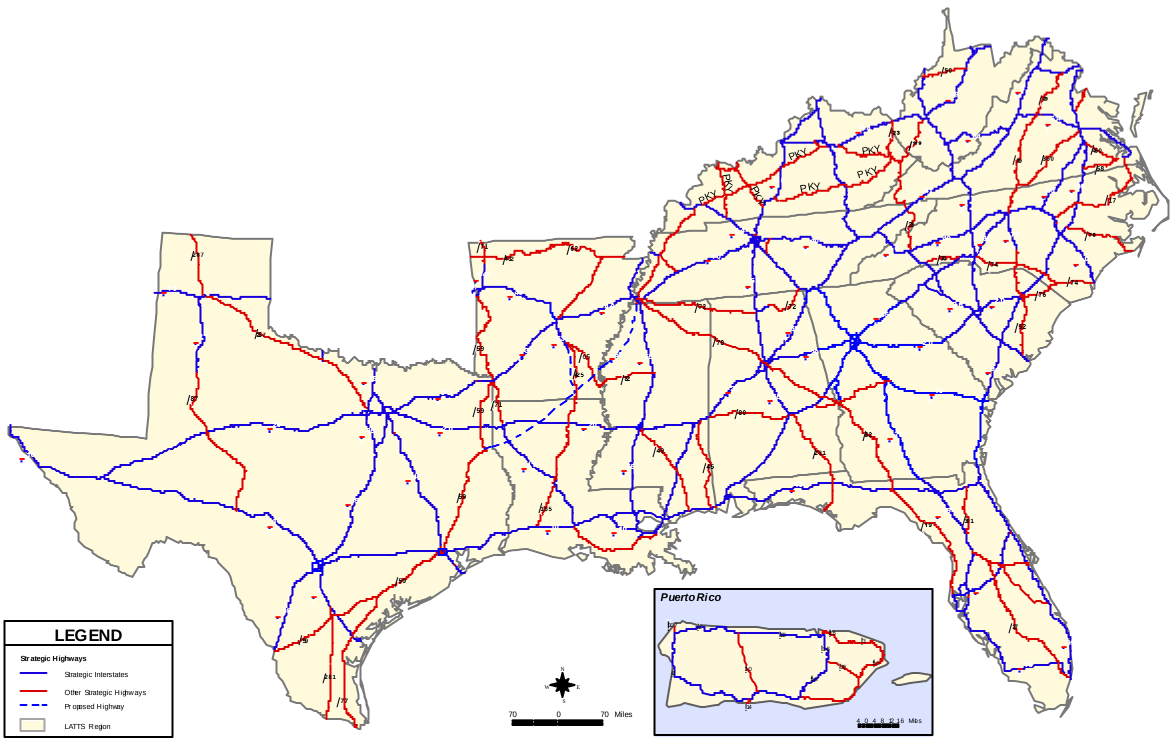
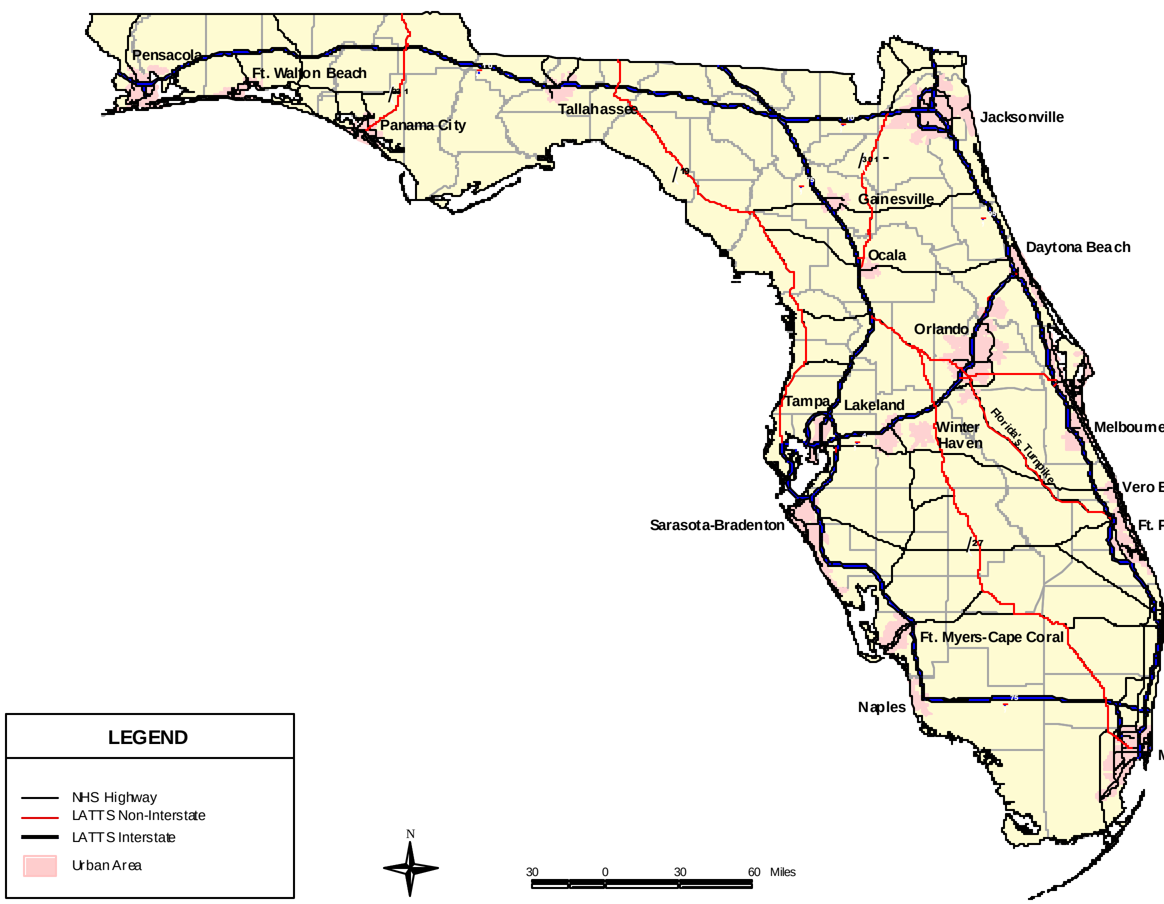


Exhibit E-2
FLORIDA LATTS HIGHWAY SYSTEM

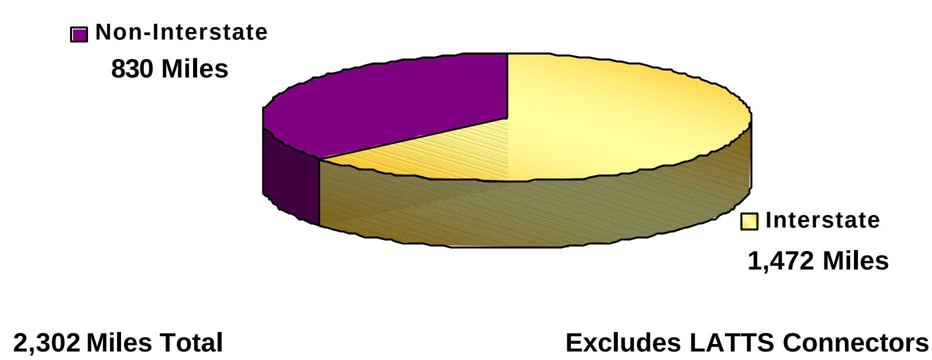


- U.S. 301 from west of Jacksonville to Ocala, State Route 528 (Bee Line Expressway) from south of Orlando to I-95, Florida Turnpike from I-75 to I-95, and U.S. 27 from west of Orlando to Miami, all part of Corridor 5 (South Florida to Illinois). SR 528 and the Turnpike are fully access controlled toll facilities, while the others are mostly four-lane highways with varying levels of access control.

- LATTS connectors linking a LATTS Strategic Highway with a LATTS airport or waterport were included in the Strategic Highway System. However, because of database differences, it was not possible to analyze LATTS connectors in the same manner and to the same level of detail as for mainline highways. LATTS connectors are discussed at the conclusion of Section E.

Exhibit E-3 displays the composition of Florida's portion of the LATTS highways by system.

Exhibit E-3
LATTS MAINLINE STRATEGIC HIGHWAY SYSTEM – FLORIDA PORTION

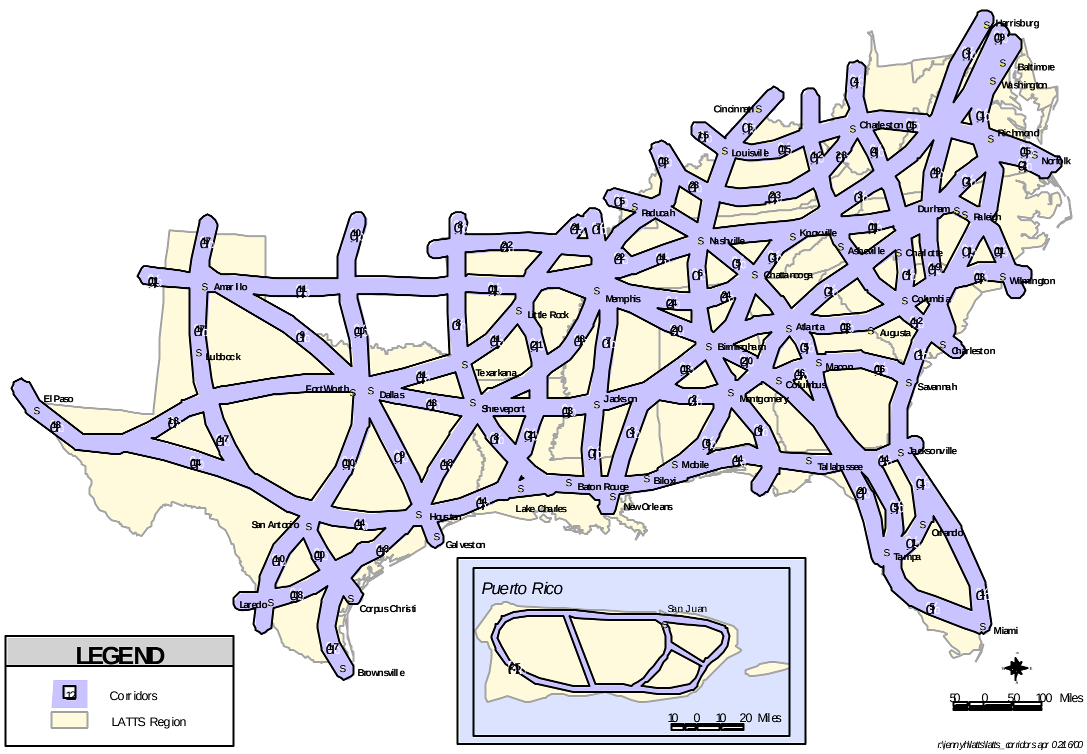


LATTS HIGHWAYS VS. LATTS TRADE CORRIDORS

The 22,859 miles of "mainline" LATTS Strategic Highways were grouped into 25 LATTS Trade Corridors (Exhibit E-4). The Trade Corridors were established using logical origins/destinations and assigning each highway to only one corridor. Each corridor was assigned a number (1-25) and was referred to by the primary highway within the corridor (i.e., I-40). Portions of five LATTS Trade Corridors cross Florida, including:

- Corridor 1 (I-95) – S. Florida to Washington
- Corridor 5 (I-24/75) – South Florida to Illinois
- Corridor 6 (I-65) – Mobile to Cincinnati
- Corridor 14 (I-10) – W. Texas to Jacksonville
- Corridor 20 (U.S. 19/78/220) – Tampa to Memphis

Exhibit E-4
LATTS TRADE CORRIDORS



HIGHWAY DATABASES

Two main sources of data were used for the analysis of highway investment. The first one, the Highway Performance Monitoring System (HPMS), includes information about the characteristics and conditions of public highways. The second source of data was the LATTS estimates of current and forecasts of future Latin America trade flows.

HPMS Database

The HPMS database was selected for the LATTS analyses of highway system investment needs because (1) it covered the entire Alliance Region, (2) it employs a consistent format and data definitions and (3) no additional primary data collection was necessary. Nevertheless, it was recognized that (1) the data is time sensitive (i.e., since the latest available information at the time of these analyses was for 1997, it is expected that improvements and additions will have occurred subsequently) (2) the HPMS database may have minor differences relative to other databases that individual Alliance members might use for their own planning and system management purposes and (3) information is not always available for every segment of the LATTS Strategic Highway System.

For this study, only that portion of the HPMS database corresponding to the selected LATTS Strategic Highway Network was utilized. For Florida, the LATTS HPMS database consisted of 1,985 records describing the 2,302 miles of highway on the LATTS Strategic Highway Network.

Trade Flows

As explained in the main Alliance report, 1996 and expected 2020 trade volumes with Latin America were estimated and the portion of this trade that would be using highway facilities was translated into truck flows. The truck flows were then assigned to specific highway facilities using GIS generated shortest time paths. The LATTS truck traffic assignment was then merged with the LATTS HPMS database for further analysis.

The LATTS procedure for assigning truck flows is appropriate for a macro-scale study such as LATTS. Nevertheless, it should be noted that the procedure produces approximations which may vary slightly from actual conditions. That is, an all-or-nothing assignment on the basis of shortest time paths favors high speed facilities and likely under estimates flows on facilities with lower speeds. In reality, a modest amount of truck flows could choose a lower speed path for a variety of unique reasons. Also, some LATTS trucks undoubtedly will travel on facilities other than those included in the LATTS Strategic Highway System (e.g., a local road to reach a warehouse or plant). Despite these circumstances, the LATTS procedure is deemed to be sufficiently valid for purposes of a regional transportation study.

As a result of this assignment methodology, 1,434 miles of the 2,302 miles on the Strategic Highway Network in Florida were shown to carry LATTS truck traffic. All 1,434 miles are interstate highways.

LATTS TRUCK TRAFFIC IN FLORIDA

The LATTS highway database was used to quantify the LATTS truck traffic in terms of annual Vehicle Miles of Travel (VMT) and to compare LATTS truck traffic to total truck traffic (LATTS and others). Results of this analysis by corridor for 1997 and 2020 are illustrated in Exhibit E-5. More detailed information is presented in Exhibit E-6.

Of the five LATTS corridors crossing Florida, only three were assigned LATTS truck traffic based on study procedures. One of the corridors not assigned LATTS traffic in Florida, Corridor 20 (U.S.19/U.S.78/U.S.280 from Tampa, FL to Memphis, TN), was not assigned any LATTS traffic in any Alliance member. It is comprised mostly of U.S. Routes as opposed to interstates.

Exhibit E-5
LATTS ANNUAL TRUCK VMT IN FLORIDA

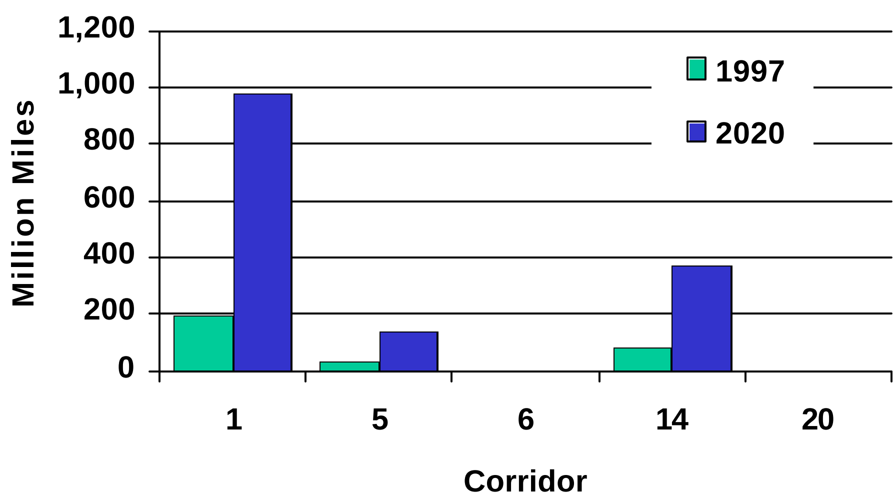


Exhibit E-6
FLORIDA LATTS TRUCK TRAFFIC

Corridor/ Functional Class	Length (Miles)	1997 Annual Truck VMT (Million Miles) All Trucks Full Network	1997 All Trucks Part. Network(1)	1997 LATTS Trucks Only	1997 LATTS Percent (2)	2020 Annual Truck VMT (Million Miles) All Trucks Full Network	2020 All Trucks Part. Network(1)	2020 LATTS Trucks Only	2020 LATTS Percent (2)
1	**I-95, I-4**		**South Florida to Washington, DC**						
R.Interstate	251.71	629.88	629.88	104.88	16.7%	1,543.85	1,543.85	530.71	34.4%
U.Interstate	316.82	1,180.03	1,167.30	89.40	7.7%	2,212.90	2,194.67	452.84	20.6%
TOTAL	568.53	1,809.91	1,797.17	194.27	10.8%	3,756.75	3,738.52	983.55	26.3%
5	**I-75, I-24**		**South Florida to Illinois**						
R.Interstate	389.23	945.84	922.30	25.29	2.7%	1,647.92	1,612.55	112.81	7.0%
R.Other PA	417.60	363.43	-	-	0.0%	571.89	-	-	0.0%
U.Interstate	145.10	415.47	384.35	7.14	1.9%	623.76	580.55	30.72	5.3%
U.Other Fwy.	31.04	34.45	-	-	0.0%	60.10	-	-	0.0%
U.Other PA	66.01	89.55	-	-	0.0%	145.90	-	-	0.0%
TOTAL	1,048.98	1,848.74	1,306.65	32.43	2.5%	3,049.57	2,193.09	143.53	6.5%
6	**I-65**		**Mobile, AL to Cincinnati, OH**						
R.Other PA	50.81	20.33	-	-	0.0%	32.37	-	-	0.0%
U.Other PA	11.10	5.98	-	-	0.0%	8.26	-	-	0.0%
TOTAL	61.91	26.31	-	-	0.0%	40.63	-	-	0.0%
14	**I-10**		**West Texas to Jacksonville, FL**						
R.Interstate	313.19	458.94	458.94	68.53	14.9%	1,040.09	1,040.09	318.39	30.6%
U.Interstate	56.02	127.41	127.41	11.05	8.7%	238.56	238.56	52.26	21.9%
TOTAL	369.22	586.35	586.35	79.58	13.6%	1,278.66	1,278.66	370.65	29.0%
20	**US 19, US 78, US 280**		**Tampa, FL to Memphis, TN**						
R.Other PA	216.19	63.64	-	-	0.0%	102.52	-	-	0.0%
U.Other PA	37.41	50.14	-	-	0.0%	82.64	-	-	0.0%
TOTAL	253.60	113.78	-	-	0.0%	185.16	-	-	0.0%
ALL CORRIDORS									
R.Interstate	954.13	2,034.66	2,011.12	198.70	9.9%	4,231.87	4,196.49	961.91	22.9%
R.Other PA	684.60	447.40	-	-	0.0%	706.78	-	-	0.0%
U.Interstate	517.95	1,722.90	1,679.06	107.58	6.4%	3,075.22	3,013.78	535.82	17.8%
U.Other Fwy.	31.04	34.45	-	-	0.0%	60.10	-	-	0.0%
U.Other PA	114.52	145.67	-	-	0.0%	236.80	-	-	0.0%
TOTAL	2,302.24	4,385.08	3,690.17	306.28	8.3%	8,310.76	7,210.27	1,497.73	20.8%

Notes: (1) Total truck VMT for highways carrying LATTS traffic only.
(2) Percentage calculated based on Partial Network.

With a LATTS VMT close to 984 million miles in 2020, Corridor 1 (I-95/I-4 from South Florida to Washington D.C.) carries more than 65 percent of the LATTS traffic in Florida. It also has the highest average LATTS volume, 4,740 average annual daily LATTS trucks in 2020. Corridor 14 (I-10 from West Texas to Jacksonville, FL) is expected to carry another 25 percent of the LATTS traffic or 371 million miles in 2020.

Of LATTS truck traffic in Florida, approximately two-thirds is on the rural interstate system and one-third is on the urban interstate system. The percentage of LATTS trucks relative to total trucks is expected to grow from 8 percent in 1997 to 21 percent in 2020 on those highways carrying LATTS traffic (from 7 to 18 percent for the entire LATTS strategic network). This growth in LATTS' share of total truck traffic is due to the fact that LATTS truck traffic is expected to increase 4.9 fold between 1997 and 2020 while overall truck traffic would increase by 1.6 fold only without LATTS trucks and 1.9 fold with LATTS trucks. The LATTS truck share of total trucks varies from 29 percent on Corridor 14 to 26 percent on Corridor 1and 6.5 percent on Corridor 5 (I-75/I-24 from South Florida to Illinois).

IMPACT MEASURES

The purpose of the highway analysis portion of this study was to quantify the LATTS Strategic Network total investment needs and the incremental investment needs that could be attributed to LATTS truck traffic specifically. Because of the macro-scale nature of this study, the investment needs analysis focused on capacity and pavement resurfacing needs.

In order to identify needs due to expected traffic (cars and trucks) other than LATTS and needs specifically attributable to LATTS traffic, two sets of capacity and pavement needs were estimated. First, future needs were estimated based on the "normal" traffic as defined by the HPMS database which includes AADT, truck percentages, and growth rate. Future needs were estimated a second time with the same HPMS traffic plus the "additional" LATTS truck traffic above and beyond the traffic that would be estimated using the "normal" growth. The difference in needs between the two was considered the incremental needs due to growth in LATTS traffic.

Minimum tolerable conditions (MTCs) for both congestion (capacity) and pavement conditions were applied uniformly to all segments of the LATTS Strategic Highway System. These MTCs are described in more detail in the main Alliance report and are summarized below.

- Capacity needs were based on Level of Service (LOS) not exceeding:
  - LOS C for rural highways
  - LOS D for urban highways

- Pavement resurfacing needs were based on the following minimum pavement condition rating:
  - Interstate type facilities: PSR 3.0
  - Other facilities: PSR 2.5

The LATTS minimum tolerable conditions are in no way intended to replicate or replace values that individual members of the Alliance might consider to be more appropriate for their circumstances. The LATTS MTCs were established for this study so as to be consistent for all the Alliance members.

To price the identified capacity or pavement needs, the same unit costs were used consistently throughout the Alliance Region. These unit costs were provided by the FHWA and correspond to 1997 national averages. To maintain consistency throughout the Region, no attempt was made to tailor these unit costs to each state beyond the stratification provided by the FHWA.

CAPACITY NEEDS

A needs analysis model was developed to analyze capacity needs for 1997 and 2020. For the year 2020, capacity needs with and without the "additional" LATTS traffic were estimated. The model was then applied to every one of the HPMS records comprising the Florida LATTS highway database and the results were summarized. This model applied the same methodology, outlined in the main Alliance report, and found in the HPMS Analytical Package, to calculate capacity needs. The results reflect the information contained in the HPMS database and do not consider any improvements that may have occurred subsequently or any planned improvements.

Detailed results for Florida are presented in Exhibit E-7. The total number of Florida LATTS Strategic Highway Network road miles with capacity deficiencies in 1997 and 2020 are shown in columns 4 through 6. For 2020, the amount of capacity deficiencies with and without the "additional" LATTS traffic is shown.

These analyses indicate that 245 of the LATTS roadway miles in Florida, or 10.7 percent of the Florida portion of the Strategic Network, have existing capacity problems. The analyses also show that the majority of the capacity deficiencies will occur in the next 20 years unless capacity is added.

Exhibit E-7
FLORIDA CAPACITY INVESTMENT NEEDS

			Capacity Analysis							
Corridor/		Existing	Deficient Mileage			2020 Needed Lane Miles		2020 Cost in $Million		
Functional Class	Length (Miles)	Lane Miles	1997	2020 W/O LATTS Added Traffic	2020 With LATTS Added Traffic	Base	With LATTS Added Traffic	Base	With LATTS Added Traffic	% Increase Due to LATTS
1	I-95, I-4		South Florida to Washington, DC							
R.Interstate	251.71	1,054.03	32.10	187.38	222.92	486.92	630.48	441	542	22.8%
U.Interstate	316.82	1,789.92	148.75	254.95	264.91	1,219.17	1,293.80	4,232	4,491	6.1%
TOTAL	568.53	2,843.94	180.84	442.33	487.83	1,706.09	1,924.28	4,673	5,032	7.7%
5	I-75, I-24		South Florida to Illinois							
R.Interstate	389.23	1,828.38	26.27	192.57	212.91	548.96	589.64	507	562	10.7%
R.Other PA	417.60	1,670.79	15.23	22.33	22.33	74.08	74.08	58	58	0.0%
U.Interstate	145.10	848.77	13.25	56.67	57.69	175.83	178.44	610	619	1.5%
U.Other Fwy.	31.04	128.15	-	8.28	8.28	16.57	16.57	58	58	0.0%
U.Other PA	66.01	278.68	0.23	9.20	9.20	19.00	19.00	39	39	0.0%
TOTAL	1,048.98	4,754.77	54.97	289.06	310.42	834.44	877.73	1,272	1,336	5.0%
6	I-65		Mobile, AL to Cincinnati, OH							
R.Other PA	50.81	200.66	1.05	1.29	1.29	2.57	2.57	2	2	0.0%
U.Other PA	11.10	44.41	-	-	-	-	-	-	-	0.0%
TOTAL	61.91	245.07	1.05	1.29	1.29	2.57	2.57	2	2	0.0%
14	I-10		West Texas to Jacksonville, FL							
R.Interstate	313.19	1,252.77	-	5.16	13.80	10.33	37.59	11	32	199.4%
U.Interstate	56.02	237.90	6.65	25.83	28.79	72.41	84.04	251	292	16.1%
TOTAL	369.22	1,490.67	6.65	30.99	42.59	82.74	121.63	262	324	23.6%
20	US 19, US 78, US 280		Tampa, FL to Memphis, TN							
R.Other PA	216.19	808.47	1.76	29.70	29.70	59.40	59.40	50	50	0.0%
U.Other PA	37.41	198.85	-	12.67	12.67	25.34	25.34	55	55	0.0%
TOTAL	253.60	1,007.32	1.76	42.37	42.37	84.74	84.74	105	105	0.0%
ALL CORRIDORS										
R.Interstate	954.13	4,135.18	58.36	385.12	449.63	1,046.21	1,257.71	959	1,136	18.4%
R.Other PA	684.60	2,679.91	18.04	53.32	53.32	136.05	136.05	110	110	0.0%
U.Interstate	517.95	2,876.59	168.65	337.44	351.39	1,467.42	1,556.28	5,093	5,402	6.1%
U.Other Fwy.	31.04	128.15	-	8.28	8.28	16.57	16.57	58	58	0.0%
U.Other PA	114.52	521.94	0.23	21.88	21.88	44.34	44.34	94	94	0.0%
TOTAL	2,302.24	10,341.78	245.28	806.04	884.50	2,710.59	3,010.96	6,315	6,800	7.7%

With the expected "normal" growth (as defined by the HPMS database), a total of 806 road miles or 35 percent of the LATTS network will have congestion problems by 2020. The "additional" LATTS trucks are expected to increase the total to 884 miles or 38 percent of total mileage as noted in Exhibit E-8. In other words, LATTS truck will increase congested miles of roadway by about 9.7 percent and the number of needed lane miles by 11.1 percent. These percentages are significant but they also indicate that the majority of the congestion problems in Florida are not due solely to LATTS traffic but expected overall growth in total traffic. However, unless these capacity needs are met, LATTS truck traffic will be affected by these capacity deficiencies regardless of the source of traffic. As congestion increases, LATTS trucks like other traffic, will experience lower operating speeds, frequent speed changes, lower reliability, and increased operating costs.

Exhibit E-8
FLORIDA 2020 CAPACITY NEEDS
LATTS Strategic Network

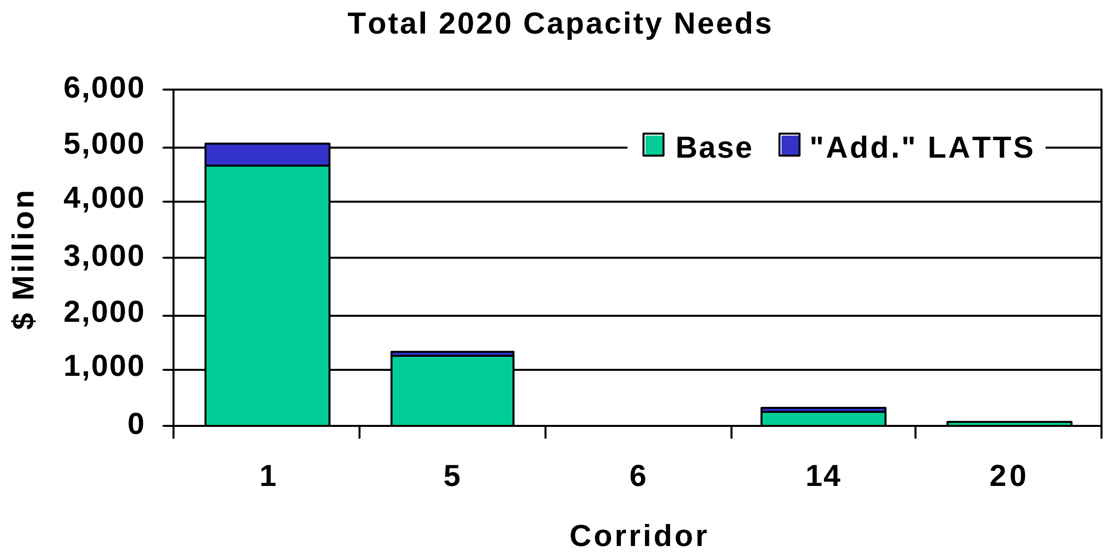
	Deficient Miles	% of Total Miles	Needs (Billion)
"Normal" Growth	806	35%	$6.3
"Additional"LATTS Traffic	78	3%	$0.5
Total	884	38%	$6.8

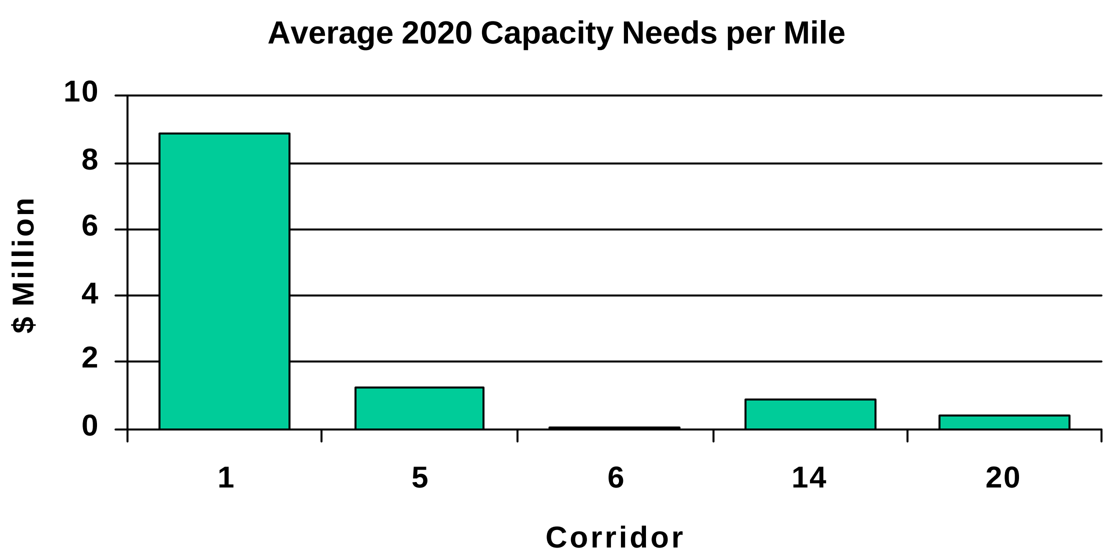
Based on the HPMS expected growth in traffic, nearly $6.3 billion will be required in the next 20 years to address congestion problems on the Florida portion of the LATTS Strategic Network. The "additional" LATTS traffic will bring that total to $ 6.8 billion, a 7.7 percent increase. The dollar increase in capacity needs due to LATTS traffic is lower than the corresponding increase in terms of needed lane miles because a majority of LATTS truck traffic occurs on rural highways which are less expensive to improve than urban highways.

Capacity needs by corridor are illustrated in Exhibit E-9. Capacity needs for Corridor 1 (I-95/I-64 from South Florida to Washington D.C.), $ 5 billion by 2020, represent 74 percent of all capacity needs on the Florida strategic network. It is equivalent to an average capacity needs per roadway mile of $ 8.9 million.

It should be noted that by 2020, 86 percent of Corridor 1 is expected to require capacity improvements. The capacity needs as calculated and described in this study are unlikely to be met in Florida simply by adding more lanes as assumed. The number of additional lanes needed on some highway segments, especially on Corridor 1 are probably unrealistic. The projected growth in traffic for both the base case (HPMS database) and for LATTS trucks will be difficult to accommodate in this corridor.

Exhibit E-9
FLORIDA STRATEGIC HIGHWAY NETWORK
Capacity Needs by Corridor





PAVEMENT NEEDS

For purposes of this study, average annual pavement needs in 2020 were estimated. The number of years it would take for the pavement to deteriorate from new in 2020 to a deficient PSR rating (as defined by the minimum tolerable conditions presented earlier) was calculated for each highway segment. As an indicator of the existing condition of the network, pavement deficiencies were identified for 1997.

Pavements typically are designed to last for a fairly long time. However, as they age and are subjected to traffic loads, they deteriorate. The pavement life measure used in these analyses is dependent on the amount of traffic using the highway and, more specifically, truck traffic (car traffic is a factor in the pavement deterioration rate but it has far less impact). The type of pavement (for example high flexible versus high rigid) is also an important factor affecting pavement deterioration rates. The pavement type on each highway segment, as indicated by the 1997 HPMS database, was used in the estimation of the deterioration rates. The number of lanes indicated for 1997 was used in the calculation of pavement deterioration rate and resurfacing costs. No attempt was made to measure the impact on pavement needs of adding lanes to address the congestion problems identified earlier. Finally, the HPMS-AP methodology for deteriorating pavement was applied in this study. It is based on the concept of 18Kip Equivalent Single Axle Loads. Weather condition or type of subsoil can also influence pavement deterioration rates but, for this study, no other factors beyond traffic and pavement type were used to differentiate pavement deterioration rates between sections.

Each highway segment pavement life was calculated twice. An initial calculation was made using the “base” car and truck traffic from the Florida HPMS database. The second calculation was made with the “additional” LATTS traffic added to it. The difference in the two pavement lives is a measure of the impact of LATTS traffic.

Results of Florida pavement needs for the LATTS Strategic Highway Network are presented in Exhibit E-10. Only 3 percent or 71 miles of the Florida overall LATTS Strategic Highway Network have existing (1997) pavement deficiencies.

Exhibit E-10
FLORIDA PAVEMENT RESURFACING INVESTMENT NEEDS

Corridor/ Functional Class	Length (Miles)	Existing Lane Miles	Pavement Analysis					
			1997 Deficient Mileage	2020 Pavement Life (Years)		2020 Average Annual Cost ($1,000)		
				W/O LATTS Added Traffic	With LATTS Added Traffic	W/O LATTS Added Traffic	With LATTS Added Traffic	% Increase Due to LATTS
1	**I-95, I-4**		**South Florida to Washington, DC**					
R.Interstate	251.71	1,054.03	2.20	4.1	3.8	28,718	30,205	5.2%
U.Interstate	316.82	1,789.92	-	3.7	3.6	97,931	99,582	1.7%
TOTAL	568.53	2,843.94	2.20	3.9	3.7	126,649	129,788	2.5%
5	**I-75, I-24**		**South Florida to Illinois**					
R.Interstate	389.23	1,828.38	23.28	4.8	4.7	45,287	46,113	1.8%
R.Other PA	417.60	1,670.79	10.02	5.3	5.3	22,757	22,757	0.0%
U.Interstate	145.10	848.77	5.44	4.5	4.4	42,296	42,441	0.3%
U.Other Fwy.	31.04	128.15	-	4.0	4.0	6,461	6,461	0.0%
U.Other PA	66.01	278.68	-	5.7	5.7	6,689	6,689	0.0%
TOTAL	1,048.98	4,754.77	38.74	4.9	4.9	123,489	124,460	0.8%
6	**I-65**		**Mobile, AL to Cincinnati, OH**					
R.Other PA	50.81	200.66	-	6.4	6.4	2,239	2,239	0.0%
U.Other PA	11.10	44.41	-	7.9	7.9	824	824	0.0%
TOTAL	61.91	245.07	-	6.6	6.6	3,063	3,063	0.0%
14	**I-10**		**West Texas to Jacksonville, FL**					
R.Interstate	313.19	1,252.77	9.81	5.1	4.5	29,369	32,757	11.5%
U.Interstate	56.02	237.90	9.98	5.0	4.5	11,150	11,853	6.3%
TOTAL	369.22	1,490.67	19.79	5.1	4.5	40,519	44,610	10.1%
20	**US 19, US 78, US 280**		**Tampa, FL to Memphis, TN**					
R.Other PA	216.19	808.47	9.88	9.4	9.4	6,594	6,594	0.0%
U.Other PA	37.41	198.85	-	5.9	5.9	4,678	4,678	0.0%
TOTAL	253.60	1,007.32	9.88	8.7	8.7	11,272	11,272	0.0%
ALL CORRIDORS								
R.Interstate	954.13	4,135.18	35.29	4.7	4.4	103,374	109,076	5.5%
R.Other PA	684.60	2,679.91	19.91	6.6	6.6	31,590	31,590	0.0%
U.Interstate	517.95	2,876.59	15.42	4.0	3.9	151,377	153,876	1.7%
U.Other Fwy.	31.04	128.15	-	4.0	4.0	6,461	6,461	0.0%
U.Other PA	114.52	521.94	-	6.0	6.0	12,190	12,190	0.0%
TOTAL	2,302.24	10,341.78	70.62	5.1	4.9	304,991	313,193	2.7%

One would expect that the corridors with the highest concentration of LATTS truck traffic would show the largest impact from LATTS. However, as shown in Exhibit E-10, it is not Corridor 1 (I-95/I-4 from South Florida to Washington D.C.) which showed the highest incremental pavement resurfacing needs due to LATTS trucks but Corridor 14 (I-10 from West Texas to Jacksonville, FL). This is probably due to the fact that there is so much traffic on Corridor 1 (average 1997 AADT was 76,106 on Corridor 1 versus 21,437 on Corridor 14) that LATTS trucks represent a smaller portion of total traffic than on other corridors.

Future (2020) pavement needs are summarized in Exhibit E-11. Pavement life for the Florida portion of the LATTS Strategic Highway Network will average 5.1 years in 2020 without the "additional" LATTS truck traffic and 4.9 years with it. The annual resurfacing costs for the Florida portion of the LATTS Strategic Highway Network is estimated to reach $305 million without LATTS "additional" truck traffic and $313 millions with it, a 2.7 percent increase.

Exhibit E-11
FLORIDA 2020 PAVEMENT NEEDS
LATTS Strategic Network

	Pavement Life (Years)	Annual Resurfacing Cost ($Million)
"Normal" Growth	5.1	$305
With "Additional" LATTS Traffic	4.9	$313

OPERATING SPEEDS

Truck operating speed was chosen as a key study performance measure for the LATTS Strategic Highway Network. Truck operating speeds were estimated for each LATTS roadway segment based on the conditions of the roadway, including roadway geometry and alignment, pavement condition, speed limit and traffic volumes. The operating speed calculation for each sample segment or link was based on the methodology of the HPMS Analytical Package used by FHWA to estimate highway needs.

Two types of operating speeds were calculated. One was the average daily operating speed and the other was the peak hour operating speed as defined by the peak hour factor or "K" factor for each road segment. Because it is not known when a truck would travel over a specific highway section during the peak hour, the peak hour operating speed assumed that every section was traveled during peak hour. As a result, the calculated peak hour speed and travel time for an entire corridor is probably somewhat overstated, as it is unlikely that a truck would travel every section during peak hour conditions.

Truck operating speeds were calculated for each LATTS roadway section. Operating speeds over a combination of segments were then calculated by adding travel time and distance for each segment and calculating the new speed.

Truck operating speeds on the Florida portion of the LATTS Strategic Highway Network are presented on Exhibit E-12. In this exhibit, Florida truck operating speeds estimates are presented by functional class. The total lengths of all the segments, which were used in the analysis of the corridor, are listed first. This is followed by items describing the characteristics of the segments, including average number of lanes, speed limit, and AADT. The purpose of listing these items is to facilitate better understanding of the calculated operating speeds. For example, two/three-lane highways have lower operating speeds than equivalent four-lane highways because of passing difficulties. Similarly, low speed limits will result in low operating speeds on facilities no matter what the road conditions are.

Average daily and peak period speeds/travel times for trucks also are presented for the base year (1997). Further, truck operating speeds are listed twice for year 2020. The first time, truck operating speeds were calculated assuming the base growth rate, i.e. the growth rate indicated by the HPMS database. The second time, truck operating speeds were calculated with the LATTS "additional" traffic. Overall results for the entire corridor within Florida are then listed, as well as the overall time required to travel the entire corridor. By comparing these speed and travel time values (based on present conditions), it is possible to determine which facilities are most efficient today, which facilities are going to experience deteriorating conditions due to traffic growth regardless of LATTS impact, and finally which facilities are going to be most affected by LATTS traffic.

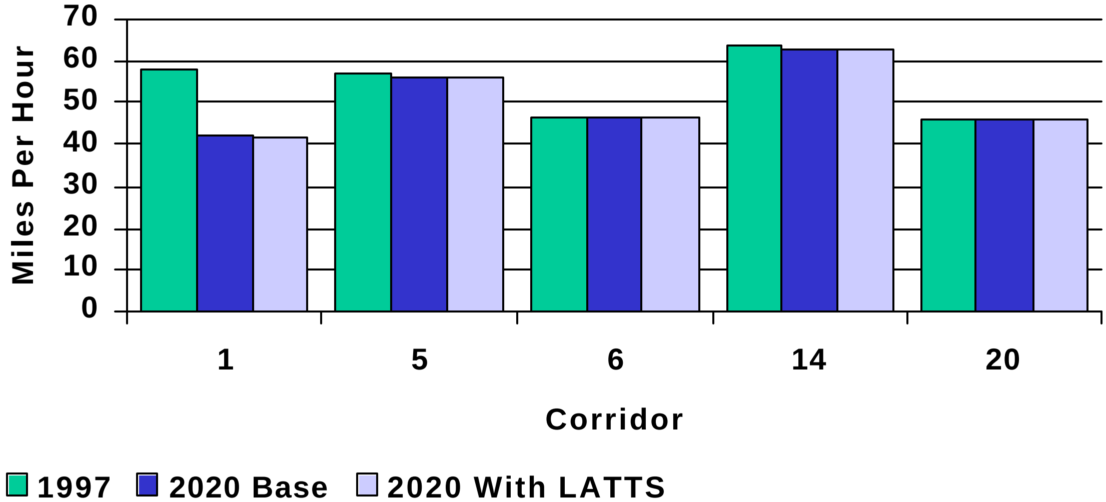
Exhibit E-12
FLORIDA TRUCK OPERATING SPEEDS

Corridor/ Functional Class	Length (Miles)	Average No. Lane	Speed Limit (MPH)	Average 1997 AADT	1997 Truck Speed (MPH)		2020 Truck Speed (MPH) W/O Added LATTS Traffic		2020 Truck Speed (MPH) With Added LATTS Traffic	
					Daily Average	Peak Hour	Daily Average	Peak Hour	Daily Average	Peak Hour
1	**I-95, I-4**		**South Florida to Washington, DC**							
R.Interstate	251.70	4.2	68.8	41,682	64.7	57.3	60.0	37.0	59.1	34.6
U.Interstate	316.80	5.6	63.4	103,455	53.7	23.3	34.4	18.0	33.8	17.8
TOTAL	**568.50**	**5.0**	**65.7**	**76,106**	**58.0**	**31.6**	**42.4**	**23.3**	**41.7**	**22.7**
Time (HR)					**9.8**	**18.0**	**13.4**	**24.4**	**13.6**	**25.0**
5	**I-75, I-24**		**South Florida to Illinois**							
R.Interstate	389.20	4.7	69.9	33,968	64.8	63.1	63.8	45.2	63.7	44.4
R.Other PA	417.60	4.0	64.1	15,810	57.8	57.5	57.7	54.2	57.7	54.2
U.Interstate	145.10	5.8	64.0	67,614	57.6	39.1	52.3	24.4	52.2	24.0
U.Other Fwy.	31.00	4.1	70.0	28,759	61.2	60.0	60.8	32.7	60.8	32.7
U.Other PA	66.00	4.2	49.3	28,182	30.2	30.0	30.2	24.6	30.2	24.6
TOTAL	**1,049.00**	**4.5**	**65.0**	**30,875**	**56.9**	**52.8**	**55.8**	**40.5**	**55.7**	**40.1**
Time (HR)					**18.4**	**19.9**	**18.8**	**25.9**	**18.8**	**26.1**
6	**I-65**		**Mobile, AL to Cincinnati, OH**							
R.Other PA	50.80	3.9	56.8	9,239	53.4	53.2	53.4	53.2	53.4	53.2
U.Other PA	11.10	4.0	45.0	20,661	28.9	28.9	28.9	28.9	28.9	28.9
TOTAL	**61.90**	**4.0**	**54.3**	**11,287**	**46.4**	**46.2**	**46.3**	**46.2**	**46.3**	**46.2**
Time (HR)					**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
14	**I-10**		**West Texas to Jacksonville, FL**							
R.Interstate	313.20	4.0	70.0	17,764	64.3	64.2	64.3	62.4	64.3	62.1
U.Interstate	56.00	4.2	61.4	41,972	59.5	43.3	57.2	27.2	56.9	23.5
TOTAL	**369.20**	**4.0**	**68.5**	**21,437**	**63.5**	**59.9**	**63.1**	**52.2**	**63.0**	**49.7**
Time (HR)					**5.8**	**6.2**	**5.9**	**7.1**	**5.9**	**7.4**
20	**US 19, US 78, US 280**		**Tampa, FL to Memphis, TN**							
R.Other PA	216.20	3.7	60.8	7,521	51.0	50.2	50.8	48.8	50.8	48.8
U.Other PA	37.40	5.3	48.7	38,357	29.9	29.6	29.9	19.6	29.9	19.6
TOTAL	**253.60**	**4.0**	**58.7**	**12,069**	**46.2**	**45.6**	**46.0**	**40.0**	**46.0**	**40.0**
Time (HR)					**5.5**	**5.6**	**5.5**	**6.3**	**5.5**	**6.3**

Average daily truck operating speeds on Florida LATTS corridors are summarized in Exhibit E-13. All corridors with a majority of interstate facilities (Corridors 1, 5 and 14) have average daily operating speeds above 55 MPH in 1997. Corridors 6 and 20 have lower average daily speeds around 45 MPH because they are comprised of lower type facilities.

Corridor 1 (I-95/I-4 from South Florida to Washington D.C.) is the only corridor where the projected growth in traffic between 1997 and 2020 will affect this measure of performance significantly. Unless additional capacity is provided, the average daily speed on Corridor 1 in Florida will be reduced by more than 15 MPH.

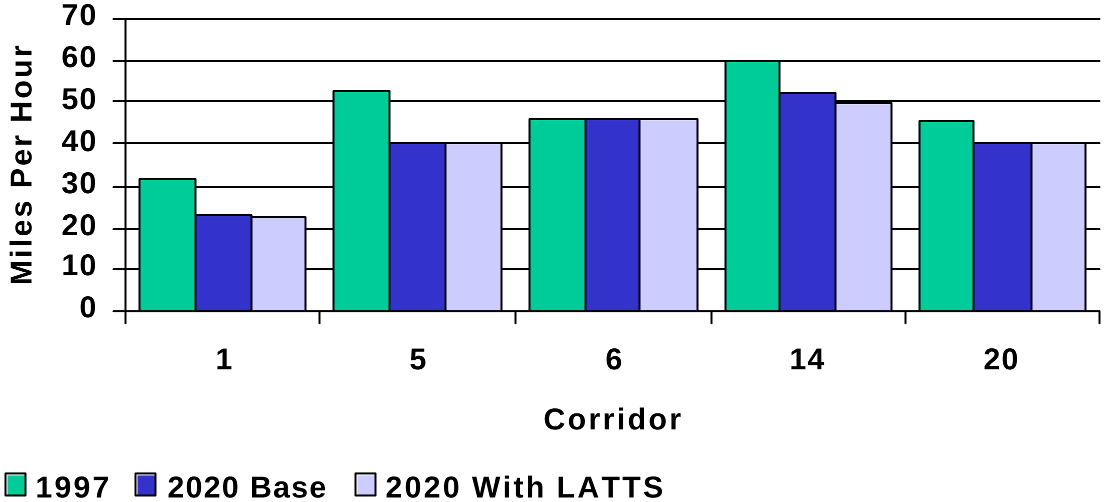
Exhibit E-13
FLORIDA STRATEGIC HIGHWAY NETWORK
Average Daily Truck Operating Speeds



The impact of the "additional" LATTS traffic on average daily truck travel speed appears minimal, at less than 1 MPH even on Corridor 1. One may wonder why there would be such an apparent small impact on average speeds when the impact of LATTS traffic on capacity appeared much more significant. The reason for this is due to the selected minimum tolerable standards used to identify capacity needs. The capacity needs are based on not exceeding LOS C on rural highways and LOS D on urban highways during peak hour. However, traveling speeds are most affected (change rapidly) when the LOS reaches E and F. In other words, capacity needs are based on explicit standards that are higher than those used implicitly in the LATTS speed calculation.

As noted in Exhibit E-14, the expected traffic growth in Florida LATTS corridor will affect "peak hour" speeds on Corridor 5 (I-75/I-24 from South Florida to Illinois) and Corridor 14 (I-10 from West Texas to Jacksonville, FL) more significantly than it will average daily speeds. Corridor 1 is already so congested in 1997 during "peak hour" that the forecast traffic growth cannot make it much worse. The impact of LATTS "additional traffic" on "peak hour" speeds is minimal.

Exhibit E-14
FLORIDA STRATEGIC HIGHWAY NETWORK
"Peak-Hour" Truck Operating Speeds



CONCLUSIONS FOR LATTS MAINLINE HIGHWAYS

(1) LATTS truck traffic in Florida is expected to grow at a much higher rate than the rest of the traffic in the state. From 1997 to 2020, LATTS truck traffic is expected to increase by 389 percent while all other traffic is expected to increase by 58 percent only.

(2) About 38 percent of the LATTS Strategic Highway Network in Florida will require additional capacity by 2020 at a cost of $ 6.8 billion. About 74 percent of these capacity needs are for Corridor 1 (I-95/I-4 from South Florida to Washington D.C.). The majority of these needs are due to expected growth in total traffic and not to LATTS trucks only.

(3) LATTS truck traffic will have a moderate impact on the state highway investment needs for the Strategic Highway Network. By 2020, LATTS "additional" truck traffic will have resulted in:

- 9.7% more highway miles needing capacity improvements.
- 7.7% additional costs to address these capacity needs.
- 2.7% increase in annual pavement resurfacing costs.

(4) In Florida, Corridor 1 (I-95/I-4 from South Florida to Washington D.C.) and Corridor 14 (I-10 from West Texas to Jacksonville, FL) will be proportionally most affected by LATTS trucks because of the higher volume of LATTS trucks using these corridors.

(5) If these investment needs are not met, the Florida portion of the LATTS Strategic Highway Network and more specifically Corridor 1 (I-95/I-4 from South Florida to Washington, DC) will continue to experience significant deterioration in operating speeds.

WATERPORT AND AIRPORT INTERMODAL CONNECTORS

The focus of the highway analysis was, appropriately, on the mainline portion of the LATTS Strategic Highway System. This is the portion of the highway network carrying the vast majority of truck travel (vehicle miles) and has “needs” that could be quantified using existing databases. Additionally, the portion of the highway system connecting the LATTS mainline system with the LATTS waterports and airports also were assessed. While these highway intermodal connectors sometimes are overlooked, their deficiencies can significantly impact the efficient movement of vehicles, especially large trucks.

LATTS intermodal connectors are the highways that link the mainline LATTS Strategic System with LATTS intermodal facilities (waterports and airports). To avoid costly new data collection activities, a recently compiled database was used to conduct the connectors analysis. This database, the *NHS Connectors*, was populated by the state DOTs and compiled by the Federal Highway Administration. It includes a high quality sample of the LATTS intermodal connectors. However, it does not contain information for every LATTS intermodal connector. These analyses utilized information for those LATTS intermodal connectors for which information was available in the NHS connectors database at the time the analyzes were performed.

As noted in Exhibit E-15, Florida has 15 intermodal connectors for which information was available in the *NHS Inventory Database.* Thirteen of these connectors (86%) are under the sole or partial jurisdiction of the State. The number of Florida connectors under state jurisdiction stands in contrast to the Alliance average of about 50%.

Exhibit E-15
LATTS INTERMODAL CONNECTORS

FACILITY ID	FACILITY NAME	INK MILES	RURAL/URBAN DESIGNATION	OWNERSHIP	AGENCY
FL12A	Orlando International Airport	0.9	Urbanized (>200k)	Municipal Highway	Orlando Urban Area MPO
FL15P	Port Canaveral	1.7	Urbanized (>200k)	State Highway-County Highway	Brevard County
FL17A	Miami Intl Airport	1.7	Urbanized (>200k)	State Highway-Municipal Highway	Miami Urbanized Area MPO
FL17A	Miami Intl Airport	0.6	Urbanized (>200k)	Municipal Highway	Miami Urbanized Area MPO
FL18P	Port of Miami	1.3	Urbanized (>200k)	State Highway	Miami Urbanized Area MPO
FL26A	Jacksonville Intl Airport	0.9	Urbanized (>200k)	State Highway	Jacksonville MPO
FL28P	Jacksonville Port Authority	1.2	Urbanized (>200k)	State Highway-Municipal Highway	Jacksonville MPO
FL2P	Pensacola Seaport	0.6	Urbanized (>200k)	State Highway-Municipal Highway	Pensacola MPO
FL33P	Port of Tampa	1.7	Urbanized (>200k)	State Highway-Municipal Highway	Hillsborough County
FL37A	Tampa International Airport	1	Urbanized (>200k)	State Highway	Hillsborough County
FL39A	Ft. Lauderdale International Airport	2.6	Urbanized (>200k)	State Highway	Broward County
FL49P	Port of Panama City	3	Urbanized (50k to 200k)	State Highway	Panama City Urban Area Transportation Study
FL50P	Port of Key West	1	Small Urban (5k to 49k)	State Highway	Florida DOT
FL5P	Port Everglades - Fort Lauderdale	0.9	Urbanized (>200k)	Municipal Highway	Ft Lauderdale Urbanized Area
FL6P	Port of Palm Beach	3.7	Urbanized (>200k)	County Highway-State Highway	Palm Beach County - Blue Heron
FL7P	Port Manatee	3.8	Urbanized (>200k)	Municipal Highway-State Highway	Sarasota/Manatee MPO

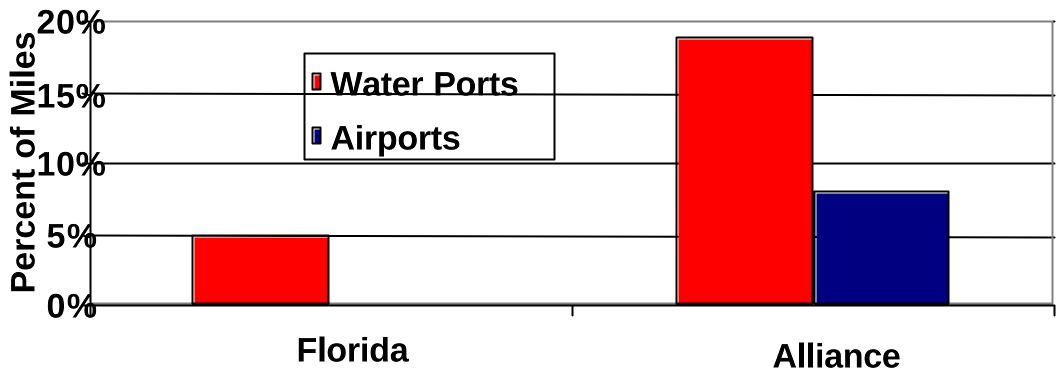
The following are the Florida facilities that have connectors for which information was not available in the inventory database:

- Daytona Beach International; FL13A
- Orlando Sanford International; FL51A
- Southwest Florida International; FL8A
- Panama City/Bay County International; FL1A
- Pensacola Regional; Fl3A

Pavement Problems

The Port of Palm Beach connector FL6P is the only Florida connector reported to have a serious pavement deficiency (25% of the connector's length). The pavement conditions of Florida's connectors are significantly better than the Alliance average. (Exhibit E-16)

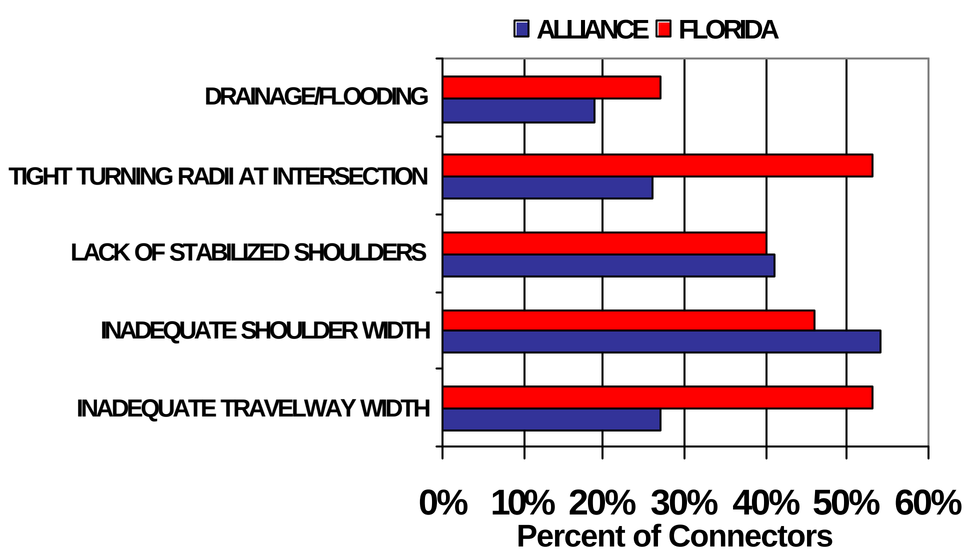
Exhibit E-16
CONNECTORS WITH PAVEMENT PROBLEMS



Geometric/Physical Problems

Exhibit E-17 shows Florida's connectors follow Alliance trends of shoulder deficiencies. Florida did report a higher percentage of constraints with turning radii, drainage, and travel way width. The connectors for the facilities in the Miami area have a noticeable list of geometric and physical constraints; all have problems with travel way width, shoulders, and turning radii.

Exhibit E-17
GEOMETRIC/PHYSICAL PROBLEMS



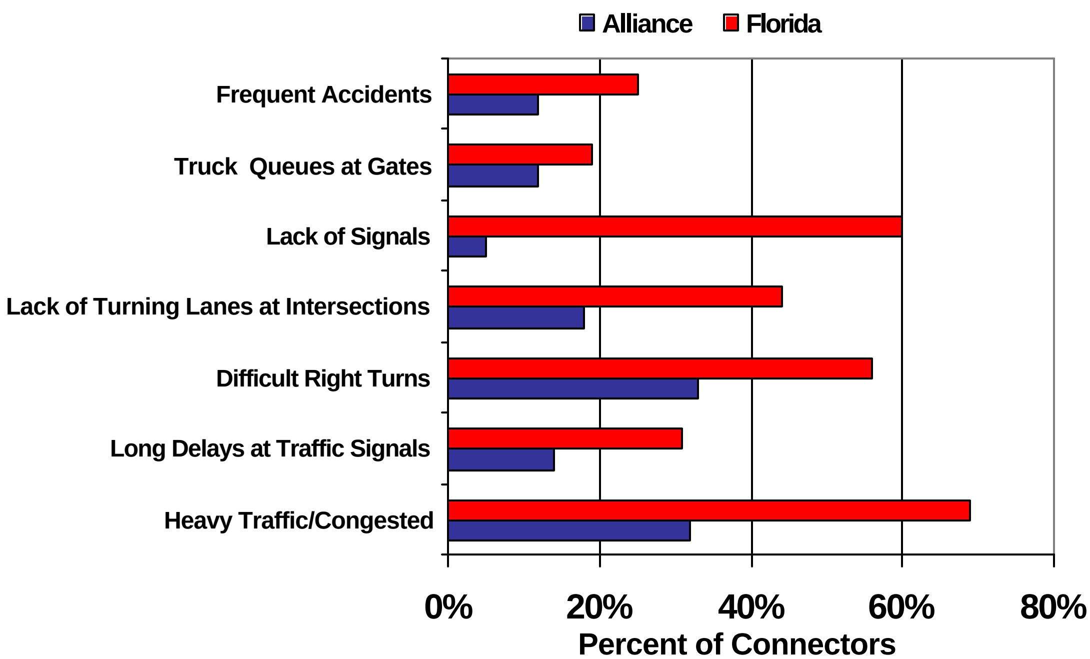
At-Grade Railroad Crossing Problems

Six of Florida's intermodal facilities account for 11 at-grade railroad crossings. Three crossings reported a deficiency in this category: FL17A at Miami International Airport (delays); Port of Tampa, FL33P (rough crossing); Port of Palm Beach's FL6P has delays and a rough crossing.

Traffic Operations and Safety Problems

The percentage of Florida connectors reported to have deficiencies in this category is significantly higher than that of the Alliance. Florida averaged more than eight deficiencies per connector, compared to just over four deficiencies per connector for the Alliance. The connectors for Port of Miami, Miami International Airport, Jacksonville Port Authority, Pensacola Seaport, and Port Everglades report 12 or more deficiencies each.

Exhibit E-18
OPERATIONS AND SAFETY PROBLEMS



State Summary

While the connectors in Florida fared well in the survey for pavement conditions and at-grade railroad crossing problems, there are areas where significant deficiencies were reported. Florida had a large number of deficiencies relating to safety and geometric/physical constraints.

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

While it is clear that improvements in highway infrastructure are required to achieve an economically efficient transportation system, truck operations also can be improved by the implementation of ITS. Transportation technologies help freight transport become more productive and more responsive to the needs of business enterprises, including those which are engaged in Latin American trade. Fortunately, a large portion of current work in the ITS arena is with commercial vehicle operations (CVO). Of significant relevance to LATTS is the Commercial Vehicle Information Systems and Networks (CVISN) that embodies a collection of information systems and communications networks that provide support to CVO.

The national ITS/CVO program encompasses numerous projects undertaken by the individual states. The national program is designed to encourage the development and implementation of technology to enhance the safe movement of commercial vehicles across the United States. There are four main areas within the national program and each of the individual states are striving to meet these goals:

- Safety Assurance – Programs and projects that are designed to assure the safety of commercial drivers, vehicles, and cargo.
- Credentials Administration – Programs and projects that are designed to improve the procedures and systems for managing motor carrier regulation.
- Electronic Screening – Programs and projects that are designed to facilitate the verification of size, weight, safety, and credentials information.
- Carrier Operations – Programs and projects that are designed to reduce congestion and manage the flow of commercial vehicle traffic.

Most of the Alliance member states have completed some type of ITS/CVO Business Plan. Many of these documents are living documents and are continually being updated and revised. Since state's ITS/CVO plans are changing frequently, the information contained below is only a snapshot of ITS information available in early 2001.

Florida's ITS/CVO Plan

Florida has two ITS related documents. The first, *Florida's Intelligent Transportation System Strategic Plan*, was completed during August of 1999. This document summarizes all of the ITS plans for the state. The second, *Florida CVISN Business Plan*, was completed in August 2000 and this document outlines Florida's steps toward CVISN deployment. Since Florida is currently concentrating on CVISN deployment, the second document was used as the primary source for information concerning Florida's current and planned implementation of ITS/CVO.

The *Florida CVISN Business Plan* was developed with the aid of a number of different representatives that formed the task team. These representatives provided input for plan development and will continue to provide information as needed. The representatives were from the Florida DOT, Departments of Highway Safety and Motor Vehicles, Revenue, and Agriculture and Consumer Services, Federal Motor Carrier Safety Administration, Federal Highway Administration and the motor carriers.

The goals that were developed by the task team are closely related to the CVISN national goals. Florida's plan strives to 1) improve the State's CVO regulatory environment, 2) ensure motor carrier safety without causing undue costs to the industry, 3) implement adopted CVISN projects in an efficient and cost effective manner, and 4) ensure the safe and efficient movement of people and goods through the state[2].

At the time of this review, Florida was just beginning the process of planning and development for the proposed CVISN development. However, Florida has already implemented several other ITS/CVO technologies. The following outlines the projects in which the state is currently pursuing ITS/CVO activities.

- Electronic Pre-Clearance (PrePass) - Florida is committed to completing a total of 19 weigh stations equipped with PrePass. Eight of these stations are completed and fully operational and ten more are in various stages of construction.
- Cellular Digital Packet Data (CDPD) - This project provides a way in which enforcement officers will be able to access inspection reports from the ASPEN software package.
- SAFETYNET – This is a statewide system that maintains safety data and transfers this data to the Motor Carrier Management Information Systems (MCMIS).
- Commercial Driver License Information System (CDLIS) - This project ensures that each of the commercial vehicle operators carry only one commercial drivers license and that any convictions that a driver receives are made part of his/her permanent driving record within the registered state.
- Agricultural Vehicle Inspections - Agricultural inspections take place along roadside stations. Vehicles must be certified to be pest free. The certification documents are scanned roadside and forwarded to the proper state agencies for processing and follow-up.
- Bills of Lading - There are two ways that bills of lading are scanned into the computer system. First, a participating carrier already has the bill scanned into the system and is given a display card. This card signifies that the bill of lading has already been scanned and the vehicle does not need to be inspected. Second, the bill of lading is scanned into the system at roadside and the information is forwarded to the appropriate state agencies for processing and follow-up.
- International Registration Plan (IRP) - This project allows motor carriers to register in a home/base state. The motor carrier then pays the necessary taxes and the home/base state is responsible for paying the participating states.
- International Fuel Tax Agreement (IFTA) - This project has been implemented by many states within the LATTS Region. It allows for motor carriers to register in a home/base state. The home/base state is responsible for collecting the necessary taxes and then dispersing them to the participating states.
- Laptop Computer and ASPEN Software - This program allows mobile units to access the ASPEN software program through laptop computers. This program is being implemented mainly at roadside and mobile stations.
- Intrastate Carrier Registration - This project allows for the assignment of ID numbers to intrastate motor carriers. This ID number is utilized to obtain safety and compliance information on the carrier.
- CAPRI - This software allows for the automation of the collection of safety and compliance information during inspections.

[2] *Draft Florida CVISN Business Plan* , Cambridge Systematics, Inc., August 2000

- Weigh-in-Motion (WIM) Technology - This technology is being utilized at many ramp locations. Motor carriers are weighed and then given clearance to pass or are signaled to come into the station.
- Traveler Information Projects
- Electronic Toll Collection Systems - Tolls are collected via toll tags attached to the motor carrier. The toll is automatically deducted from the motor carriers account.

The state is in the process of outlining the necessary steps in order to deploy CVISN. The initial group of projects is anticipated to be completed within two and one- half years and is primarily concerned with Credentials Administration. Exhibit E-19 displays the timetable for each of the projects. The various projects that are recommended for the State's ITS/CVO and CVISN program within the Florida Plan are outlined below.

- Feasibility Study of Electronic Credentialing Needs - This project will be under the guidance of the Department of Highway Safety and Department of Motor Vehicles. The project will be completed in nine months and an assessment of the requirements to support on-line application for and receipt of CVO credentials will be completed.
- Electronic Credentialing Software Design and Development – The program will develop of software that will allow PC, Web-user, credentialing, and legacy systems to interface so as to facilitate the electronic communications among various agencies and carriers. The Department of Highway Safety in conjunction with the Department of Motor Vehicles will develop this system and completion is expected within 24 months from the start date.
- Automated Routing and Permitting Software Design and Development – This project will develop of commercial off-the-shelf (COTS) software that will allow the processing and issuance of oversize and overweight permits. This product will be developed by the Department of Transportation and it is expected to be completed within 12 months from the start date.
- Information Systems Inventory - Over the course of 3 months, the Department of Transportation will conduct an inventory of the existing CVO related hardware and software.

Exhibit E-19

SCHEDULE OF ITS/CVO EVENTS FOR THE STATE OF FLORIDA[1]

1 *Draft Florida CVISN Business Plan*, Cambridge Systematics, Inc., August 2000.

- Networked Information Systems Design and Developed – This project will provide for the implementation of a system that links all CVO-related systems (deskside, roadside, and agency) together and enables electronic transfer of information. This system is under the guidance of the Department of Transportation and is expected to be completed within 12 months from the start date.
- Electronic Payment Options - An examination of the possibility of electronic payments will be completed by the Department of Highway Safety and Department of Motor Vehicles within three months.
- Compliance Help Desk / Service Representative - The Department of Transportation will develop a group of staff members who will serve as a single point of contact for regulatory information. This project is anticipated to take a total of 12 months to organize and train staff.

There are also two recommended projects that are within the electronic screening category. They are Electronic Screening at Weigh Stations, under the guidance of the Department of Transportation, and Electronic Screening at Agricultural Inspections Stations, under the guidance of the Department of Agriculture and Consumer Services. Both projects will allow those carriers that have safe histories and are properly credentialed to by-pass the weigh stations. The weigh station screening includes the installation of the PrePass electronic pre-clearance system. The projects will target those carriers that are high-risk and/or have a history of problems. Once the projects start, the anticipated completion date is 12 months.