SECTION E
NORTH CAROLINA 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 seven percent of the mainline LATTS Strategic Highway System (1,647 miles) is located in North Carolina (Exhibit E-2). The North Carolina components[1] include the following:

- All of North Carolina's 987 miles of interstate highways, including:
  - I-26 from Asheville south
  - I-40, a major east-west interstate linking Texas with Little Rock, Memphis, Nashville, Winston-Salem, Greensboro, Raleigh, and Wilmington
  - I-73, which is part of a Congressional High Priority Corridor stretching from Michigan to Charleston, SC through North Carolina – only a portion of I-73 is completed in North Carolina
  - I-77, connecting Charleston, WVA with Charlotte and Columbia, SC
  - I-85, linking Montgomery with Atlanta, Charlotte, Greensboro, Durham, and Richmond
  - I-95, a major north-south interstate linking Washington, DC with South Florida
  - Several urban interstates, including I-240, I-277, I-440 and I-540
- 660 miles of non-interstate National Highway System (NHS) facilities
  U.S. 17/64 from Raleigh to the Virginia state line south of Norfolk (160 miles), part of LATTS Corridor 2 (West Alabama to Norfolk) and Congressional High Priority Corridor 13 (Raleigh to Norfolk). This section is a mixture of interstate-

[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

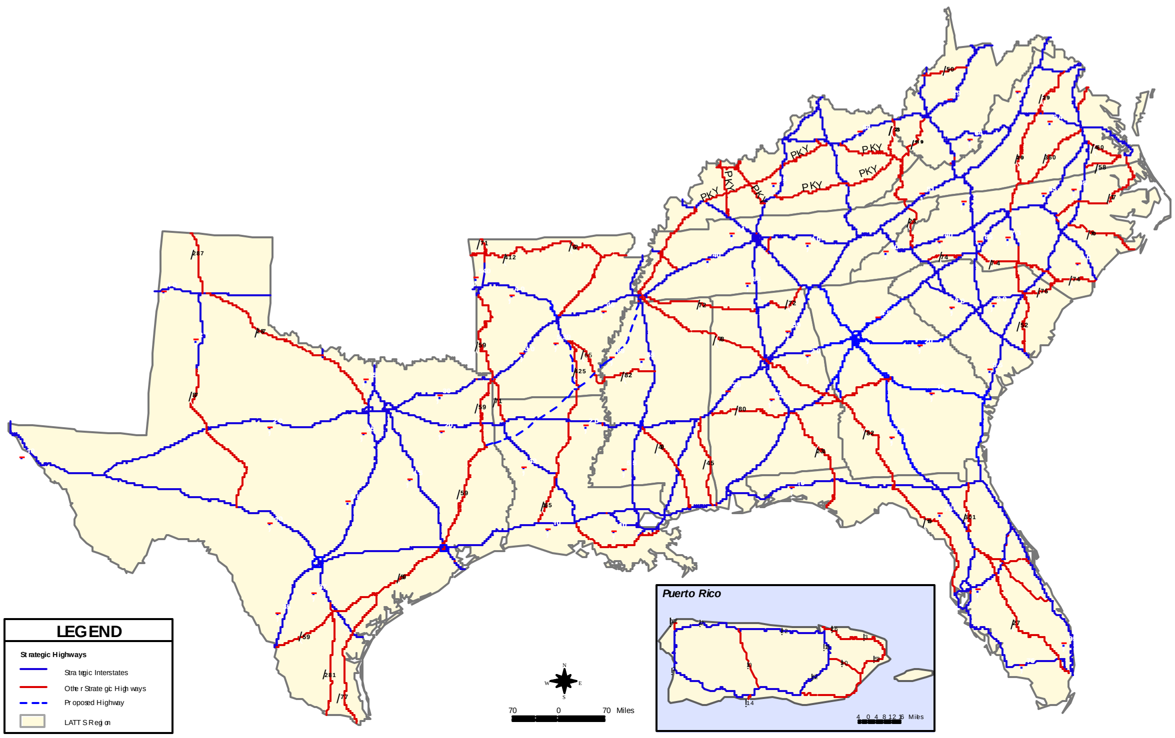
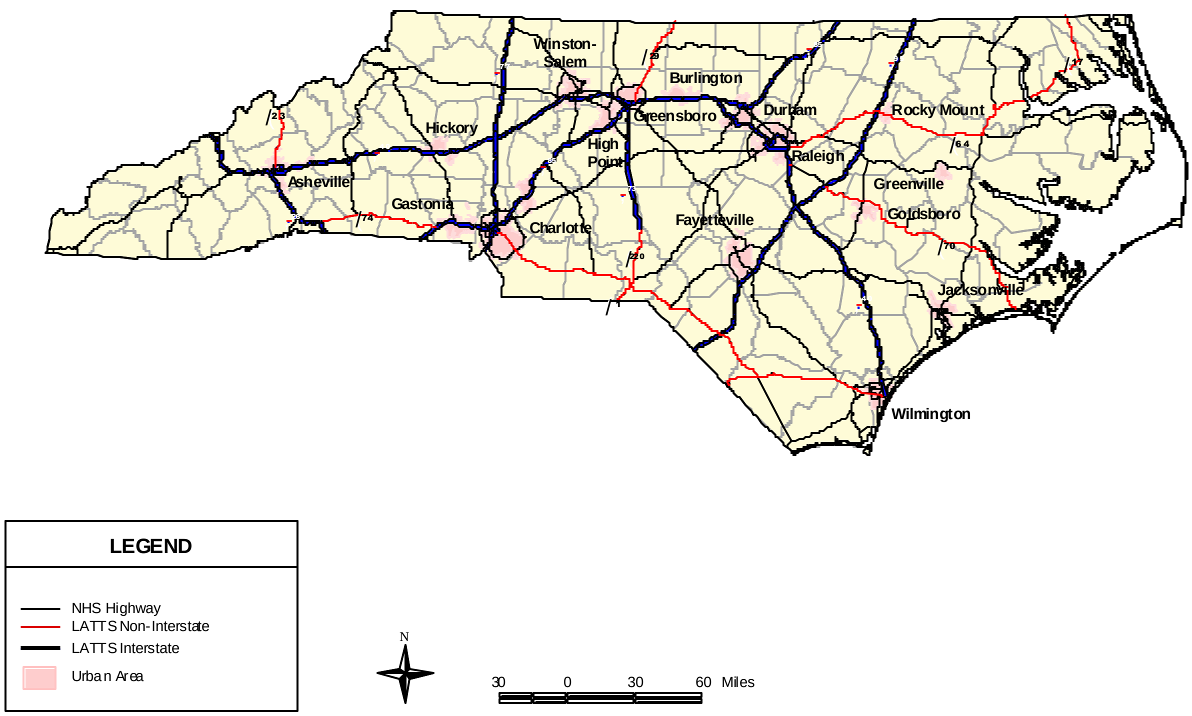


Exhibit E-2
NORTH CAROLINA LATTS HIGHWAY SYSTEM



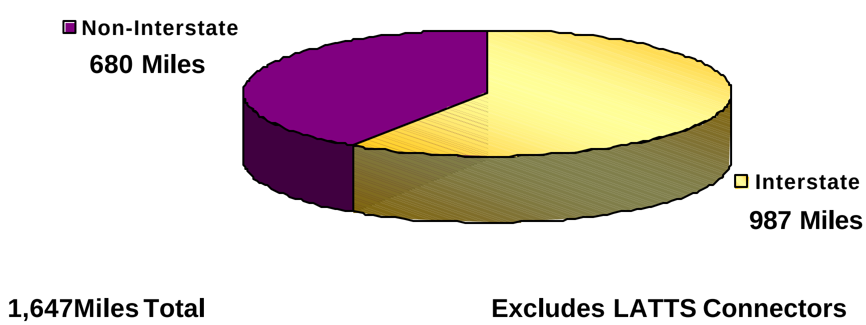
type highway (U.S. 64 from Raleigh to east of Rocky Mount), four-lane with partial access control, and two-lane highway with no access control.

- U.S. 70 from I-95 to Morehead City (113 miles) and U.S. 74 from I-26 to Wilmington (215 miles), part of Corridor 11 (I-40). Both facilities are mostly multi-laned, with varying levels of access control.
- U.S. 19/23 from the Tennessee state line to I-40 at Asheville (33 miles), part of Corridor 12 (I-26, U.S. 23) between Ohio and Charleston, SC. These highways are a mix of four-lane (full and partial access control), and two-lane with no access control.
- U.S. 76 from the South Carolina state line to U.S. 74 (16 miles), part of Corridor 13, which is a two-lane facility.
- U.S. 1/29/220 from the Virginia state line to the South Carolina state line (123 miles), part of Corridor 19 (Maryland to Charleston, SC). This is the non-interstate portion of the I-73 corridor, and is mostly four-laned 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 North Carolina's portion of the LATTS highways by system.

Exhibit E-3
LATTS MAINLINE STRATEGIC HIGHWAY SYSTEM – NORTH CAROLINA 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 seven LATTS Trade Corridors cross North Carolina, including:

▶ Corridor 1 (I-95) – South Florida to Washington, D.C.
▶ Corridor 2 (I-85) – West Alabama to Norfolk

- Corridor 4 (I-77/79) – Columbia, SC to Ohio and Pennsylvania
- Corridor 11 (I-40) – North Texas to Wilmington
- Corridor 12 (I-26, U.S. 23) – Ohio to Charleston, SC
- Corridor 13 (I-20, U.S. 76) – El Paso to Wilmington
- Corridor 19 (I-73, U.S. 52/29) – Maryland to Charleston, SC

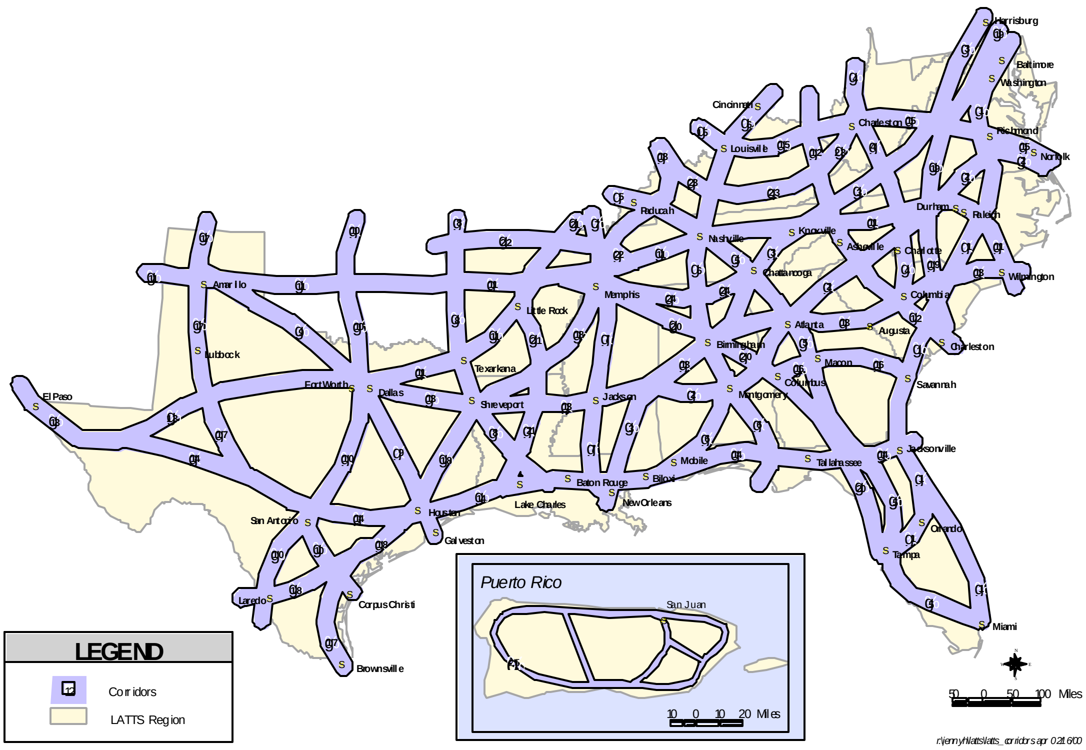
HIGHWAY DATABASES

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.

Exhibit E-4
LATTS TRADE CORRIDORS



For this study, only that portion of the HPMS database corresponding to the selected LATTS Strategic Highway Network was utilized. For North Carolina, the LATTS HPMS database consisted of 1,179 records describing 1,520 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, 1,022 miles of the Strategic Highway Network in North Carolina were shown to carry LATTS truck traffic. All but 86 miles are interstate highways.

LATTS TRUCK TRAFFIC IN NORTH CAROLINA

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 seven LATTS corridors crossing North Carolina, only five were assigned LATTS truck traffic based upon study procedures. Corridor 13 (I-20/U.S.76 from El Paso, TX to Wilmington, NC) includes only 16 miles in North Carolina and was assigned no significant LATTS traffic in this state. Corridor 19 (I-73/U.S.52/U.S.29 from Charleston, SC to Maryland), which is comprised mostly of U.S. Routes, was assigned only a very small amount of LATTS traffic.

Exhibit E-5
LATTS ANNUAL TRUCK VMT IN NORTH CAROLINA

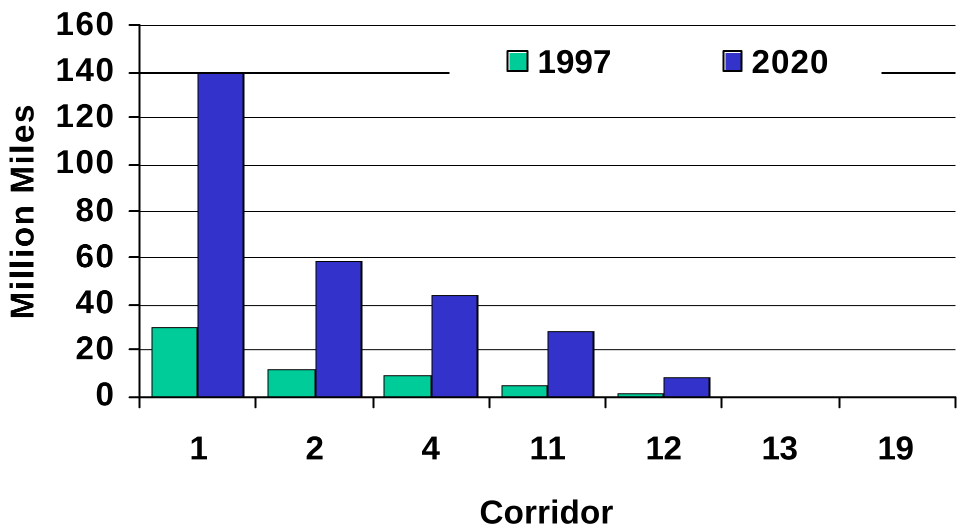


Exhibit E-6
NORTH CAROLINA LATTS TRUCK TRAFFIC

Corridor/		1997 Annual Truck VMT (Million Miles)				2020 Annual Truck VMT (Million Miles)			
Functional Class	Length (Miles)	All Trucks Full Network	All Trucks Part. Network(1)	LATTS Trucks Only	LATTS Percent (2)	All Trucks Full Network	All Trucks Part. Network(1)	LATTS Trucks Only	LATTS Percent (2)
1	**I-95, I-4**		**South Florida to Washington, DC**						
R.Interstate	154.15	445.46	431.57	25.38	5.9%	1,159.01	1,126.37	118.32	10.5%
U.Interstate	27.24	78.76	78.76	4.62	5.9%	200.14	200.14	21.56	10.8%
TOTAL	181.39	524.22	510.33	30.00	5.9%	1,359.15	1,326.51	139.88	10.5%
2	**I-85**		**Montgomery, AL to Norfolk, VA**						
R.Interstate	110.50	424.66	424.66	5.19	1.2%	830.58	830.58	23.89	2.9%
R.Other PA	138.50	87.29	-	-	0.0%	152.43	-	-	0.0%
U.Interstate	122.90	699.47	699.47	7.00	1.0%	1,402.81	1,402.81	34.82	2.5%
U.Other Fwy.	12.85	6.22	-	-	0.0%	10.87	-	-	0.0%
U.Other PA	8.19	9.44	-	-	0.0%	24.22	-	-	0.0%
TOTAL	392.94	1,227.07	1,124.13	12.18	1.1%	2,420.92	2,233.39	58.71	2.6%
4	**I-77, I-79**		**Columbia, SC to Ohio and Pennsylvania**						
R.Interstate	82.36	250.03	250.03	6.64	2.7%	474.47	474.47	31.58	6.7%
U.Interstate	27.42	163.57	151.45	2.44	1.6%	200.33	170.62	11.81	6.9%
TOTAL	109.78	413.60	401.49	9.08	2.3%	674.80	645.10	43.39	6.7%
11	**I-40**		**North Texas to Wilmington, NC**						
R.Interstate	256.68	390.52	390.52	2.60	0.7%	786.68	786.68	13.80	1.8%
R.Other PA	182.03	86.04	30.52	2.25	7.4%	146.60	57.19	10.59	18.5%
U.Interstate	153.46	556.61	454.61	0.67	0.1%	1,124.35	861.70	3.72	0.4%
U.Other Fwy.	15.85	12.91	-	-	0.0%	22.84	-	-	0.0%
U.Other PA	17.24	16.72	0.37	0.02	5.1%	37.57	0.70	0.09	12.6%
TOTAL	625.26	1,062.80	876.02	5.53	0.6%	2,118.04	1,706.27	28.19	1.7%
12	**I-26, US 23**		**Charleston, SC to Ohio**						
R.Interstate	22.71	38.64	38.64	0.92	2.4%	69.63	69.63	4.95	7.1%
R.Other PA	8.90	4.78	-	-	0.0%	7.40	-	-	0.0%
U.Interstate	17.24	50.42	50.42	0.70	1.4%	78.28	78.28	3.76	4.8%
U.Other Fwy.	9.63	6.10	-	-	0.0%	12.35	-	-	0.0%
TOTAL	58.48	99.94	89.07	1.62	1.8%	167.66	147.91	8.71	5.9%
13	**I-20, US 76**		**El Paso, TX to Wilmington, NC**						
R.Other PA	16.47	1.39	-	-	0.0%	2.48	-	-	0.0%
TOTAL	16.47	1.39	-	-	0.0%	2.48	-	-	0.0%
19	**I-73, US 52, US 29**		**Charleston, SC to Maryland**						
R.Interstate	11.97	8.50	-	-	0.0%	12.24	-	-	0.0%
R.Other PA	91.55	61.05	-	-	0.0%	103.26	-	-	0.0%
U.Interstate	0.26	0.02	-	-	0.0%	0.02	-	-	0.0%
U.Other Fwy.	30.08	41.85	2.17	0.03	1.5%	72.75	4.76	0.19	3.9%
U.Other PA	1.35	0.06	-	-	0.0%	0.23	-	-	0.0%
TOTAL	135.21	111.47	2.17	0.03	1.5%	188.50	4.76	0.19	3.9%
ALL CORRIDORS									
R.Interstate	638.37	1,557.81	1,535.43	40.72	2.7%	3,332.61	3,287.73	192.53	5.9%
R.Other PA	437.45	240.55	30.52	2.25	7.4%	412.17	57.19	10.59	18.5%
U.Interstate	348.52	1,548.85	1,434.71	15.42	1.1%	3,005.92	2,713.55	75.67	2.8%
U.Other Fwy.	68.41	67.08	2.17	0.03	1.5%	118.82	4.76	0.19	3.9%
U.Other PA	26.78	26.21	0.37	0.02	5.1%	62.02	0.70	0.09	12.6%
TOTAL	1,519.53	3,440.50	3,003.20	58.45	1.9%	6,931.55	6,063.93	279.06	4.6%

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

Corridor 1 (I-95/I-4 from South Florida to Washington, DC) carries the most LATTS traffic in terms of annual VMT and average daily volume of LATTS trucks, 2,113 trucks per day in 2020.

Of LATTS truck traffic in North Carolina more than two-thirds use or will be using the rural interstate system and more than one-fourth the urban interstate system. The percentage of LATTS trucks to total trucks is expected to grow from 2 percent in 1997 to 5 percent in 2020 on those highways carrying LATTS traffic (from 2 to 4 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 4.8 fold between 1997 and 2020 while overall truck traffic would increase by 2 fold only. LATTS truck share of total trucks varies from corridor to corridor. The highest share in North Carolina is 10.5 percent on Corridor 1 (I-95/I-4 from South Florida to Washington, DC)

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 North Carolina 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 North Carolina are presented in Exhibit E-7. The total number of North Carolina 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 324 of the LATTS roadway miles in North Carolina, or 21.3 percent of the North Carolina portion of the LATTS 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.

With the expected "normal" growth (as defined by the HPMS database), a total of 932 road miles or 61 percent of the LATTS network will have congestion problems by 2020. The "additional" LATTS trucks are expected to increase the total very slightly to 941 miles or 62 percent of total mileage. In other words, LATTS truck will increase congested miles of roadway by a very small amount. However, it will increase the number of additional lane miles needed by about 3 percent since LATTS trucks use many corridors which are already congested. This analysis indicates that the majority of the congestion problems in North Carolina are not due solely to LATTS traffic but to expected overall growth in total traffic. However, unless these capacity needs are met, LATTS truck traffic will be affected by all the 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-7
NORTH CAROLINA CAPACITY INVESTMENT NEEDS

Corridor/ Functional Class	Length (Miles)	Existing Lane Miles	Capacity Analysis: Deficient Mileage 1997	Deficient Mileage 2020 W/O LATTS Added Traffic	Deficient Mileage 2020 With LATTS Added Traffic	2020 Needed Lane Miles Base	2020 Needed Lane Miles With LATTS Added Traffic	2020 Cost in $Million Base	2020 Cost in $Million With LATTS Added Traffic	% Increase Due to LATTS
1	**I-95, I-4**		**South Florida to Washington, DC**							
R.Interstate	154.15	616.60	8.08	154.15	154.15	732.28	767.90	485	498	2.6%
U.Interstate	27.24	108.96	-	27.24	27.24	82.42	102.80	286	357	24.7%
TOTAL	181.39	725.56	8.08	181.39	181.39	814.70	870.70	771	854	10.8%
2	**I-85**		**West Alabama to Norfolk, VA**							
R.Interstate	110.50	530.48	22.51	93.22	93.22	357.44	357.44	293	293	0.0%
R.Other PA	138.50	455.56	38.82	60.45	60.45	138.70	138.70	108	108	0.0%
U.Interstate	122.90	703.96	34.59	75.21	75.21	465.14	470.60	1,615	1,633	1.2%
U.Other Fwy.	12.85	51.40	0.40	2.42	2.42	4.84	4.84	17	17	0.0%
U.Other PA	8.19	32.81	3.38	5.60	5.60	32.77	32.77	70	70	0.0%
TOTAL	392.94	1,774.21	99.70	236.90	236.90	998.89	1,004.35	2,103	2,121	0.9%
4	**I-77, I-79**		**Columbia, SC to Ohio and Pennsylvania**							
R.Interstate	82.36	329.44	29.78	56.74	62.45	226.36	254.32	170	189	11.2%
U.Interstate	27.42	146.30	16.91	20.92	20.80	77.64	81.88	269	284	5.5%
TOTAL	109.78	475.74	46.69	77.66	83.25	304.00	336.20	439	473	7.7%
11	**I-40**		**North Texas to Wilmington, NC**							
R.Interstate	256.68	1,038.34	35.04	134.74	137.86	410.59	416.83	366	376	2.5%
R.Other PA	182.03	608.74	59.06	62.53	62.53	159.38	159.38	112	112	0.0%
U.Interstate	153.46	747.04	37.09	120.48	120.48	597.30	597.30	2,073	2,073	0.0%
U.Other Fwy.	15.85	70.56	3.58	5.23	5.23	15.36	15.36	53	53	0.0%
U.Other PA	17.24	69.63	8.44	12.53	12.53	58.25	58.25	127	127	0.0%
TOTAL	625.26	2,534.31	143.21	335.51	338.63	1,240.88	1,247.12	2,732	2,741	0.3%
12	**I-26, US 23**		**Charleston, SC to Ohio**							
R.Interstate	22.71	90.84	-	6.00	6.00	15.06	24.00	15	18	22.9%
R.Other PA	8.90	35.60	-	-	-	-	-	-	-	0.0%
U.Interstate	17.24	68.96	0.80	17.02	17.02	35.64	36.82	124	128	3.3%
U.Other Fwy.	9.63	38.52	-	5.85	5.85	11.70	11.70	41	41	0.0%
TOTAL	58.48	233.92	0.80	28.87	28.87	62.40	72.52	179	186	4.2%
13	**I-20, US 76**		**El Paso, TX to Wilmington, NC**							
R.Other PA	16.47	32.94	-	14.97	14.97	29.94	29.94	22	22	0.0%
TOTAL	16.47	32.94	-	14.97	14.97	29.94	29.94	22	22	0.0%
19	**I-73, US 52, US 29**		**Charleston, SC to Maryland**							
R.Interstate	11.97	47.88	-	-	-	-	-	-	-	
R.Other PA	91.55	289.28	19.34	38.48	38.48	87.06	87.06	72	72	0.0%
U.Interstate	0.26	1.04	-	-	-	-	-	-	-	0.0%
U.Other Fwy.	30.08	120.32	6.19	17.10	17.10	39.92	39.92	139	139	0.0%
U.Other PA	1.35	2.74	-	1.34	1.34	2.68	2.68	4	4	0.0%
TOTAL	135.21	461.26	25.53	56.92	56.92	129.66	129.66	215	215	0.0%
ALL CORRIDORS										
R.Interstate	638.37	2,653.58	95.41	444.85	453.68	1,741.73	1,820.49	1,329	1,373	3.3%
R.Other PA	437.45	1,422.12	117.22	176.43	176.43	415.08	415.08	314	314	0.0%
U.Interstate	348.52	1,776.26	89.39	260.87	260.75	1,258.14	1,289.40	4,367	4,476	2.5%
U.Other Fwy.	68.41	280.80	10.17	30.60	30.60	71.82	71.82	249	249	0.0%
U.Other PA	26.78	105.18	11.82	19.47	19.47	93.70	93.70	201	201	0.0%
TOTAL	1,519.53	6,237.94	324.01	932.22	940.93	3,580.47	3,690.49	6,460	6,613	2.4%

Based on the HPMS expected growth in traffic, nearly $6.5 billion will be required in the next 20 years to address congestion problems on the North Carolina portion of the LATTS Strategic Network. As noted in Exhibit E-8, the "additional" LATTS traffic will bring that total to $6.6 billion, a 2.4 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.

Exhibit E-8
NORTH CAROLINA 2020 CAPACITY NEEDS
LATTS Strategic Network

	Deficient Miles	% of Total Miles	Needs (Billion)
"Normal" Growth	932	61%	$6.5
"Additional" LATTS Traffic	9	0.6%	$0.1
Total	941	62%	$6.6

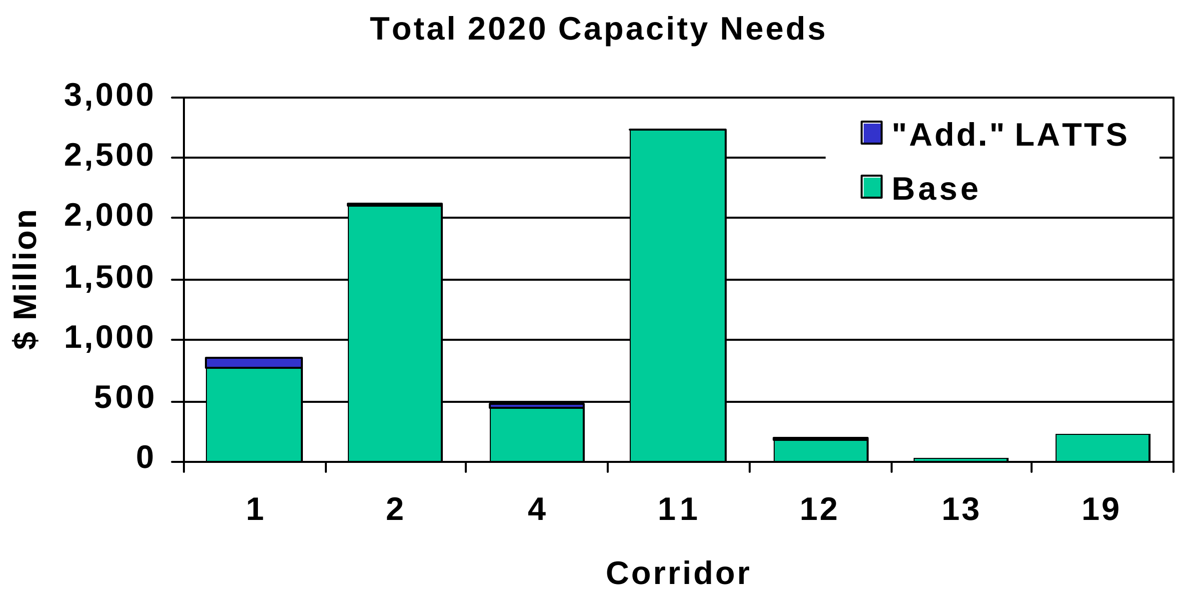
Capacity needs by corridor are illustrated in Exhibit E-9. Total capacity needs by corridor are often related to the total length of the corridor: the longer the corridor, the higher the needs. Corridor 11 (I-40 from North Texas to Wilmington, NC), which is the longest in North Carolina, has the highest capacity needs ($2.7 billion by 2020). However, in terms of average capacity needs per roadway mile, Corridor 2 (I-85 from Montgomery, AL to Norfolk, VA) and Corridor 1 (I-95/I-4 from South Florida to Washington, D.C.) have proportionally higher capacity needs: $ 5.4 and $4.7 million per roadway mile versus $ 4.4 million average for the state.

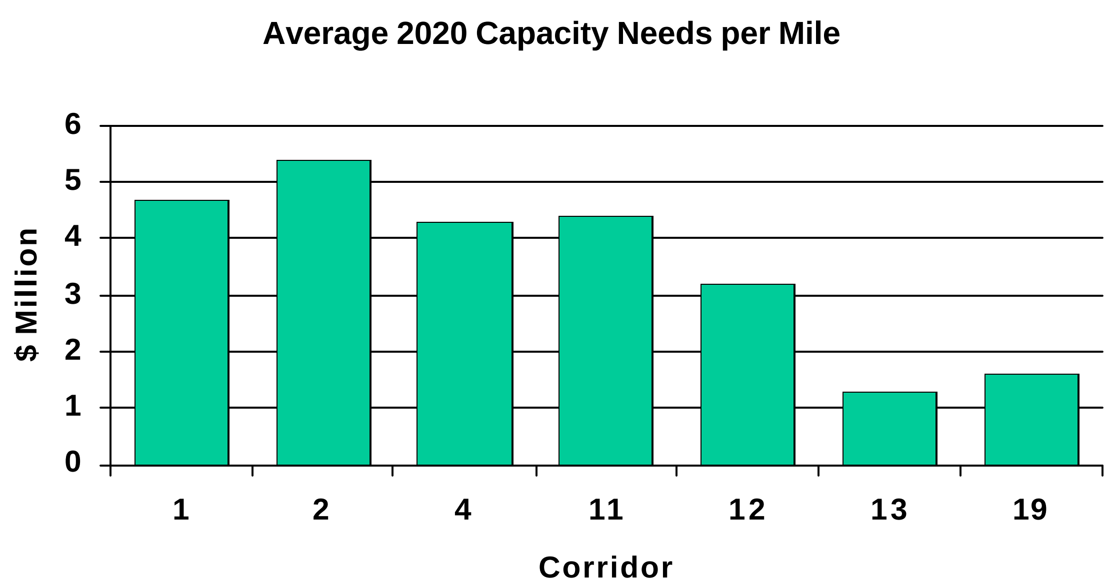
It should be noted that by 2020, 100 percent of Corridor 1 in North Carolina will require capacity improvements. This corridor will also experience the highest incremental needs due to LATTS "additional" traffic, 11 percent by 2020. This is in line with the volume of LATTS trucks on this corridor as described in the previous section.

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.

Exhibit E-9
NORTH CAROLINA STRATEGIC HIGHWAY NETWORK
Capacity Needs by Corridor





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 North Carolina 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 North Carolina pavement needs for the LATTS Strategic Highway Network are presented in Exhibit E-10. Based on the HPMS data, close to 15 percent, or 225 miles, of the North Carolina portion of the LATTS System had existing (1997) pavement deficiencies. With more than 26 percent of their length being deficient, urban interstates had the highest percentage of existing pavement deficiencies.

One would expect that the corridors with the highest concentration of LATTS truck traffic would show the largest impact from LATTS. Exhibit E-10 confirms this expectation. Corridor 1 (I-95/I-4 from South Florida to Washington, D.C.) has the highest concentration of LATTS trucks in terms of daily traffic and the highest reduction in pavement life from 5.9 years to 5.6 years.

Exhibit E-10
NORTH CAROLINA PAVEMENT RESURFACING INVESTMENT NEEDS

Corridor/ Functional Class	Length (Miles)	Existing Lane Miles	1997 Deficient Mileage	Pavement Analysis: 2020 Pavement Life (Years) W/O LATTS Added Traffic	2020 Pavement Life (Years) With LATTS Added Traffic	2020 Average Annual Cost ($1,000) W/O LATTS Added Traffic	2020 Average Annual Cost ($1,000) With LATTS Added Traffic	% Increase Due to LATTS
1	**I-95, I-4**		**South Florida to Washington, DC**					
R.Interstate	154.15	616.60	-	6.3	5.9	11,741	12,485	6.3%
U.Interstate	27.24	108.96	2.72	3.8	3.8	5,787	5,854	1.2%
TOTAL	181.39	725.56	2.72	5.9	5.6	17,528	18,339	4.6%
2	**I-85**		**West Alabama to Norfolk, VA**					
R.Interstate	110.50	530.48	29.92	5.4	5.4	11,329	11,455	1.1%
R.Other PA	138.50	455.56	-	9.3	9.3	4,072	4,072	0.0%
U.Interstate	122.90	703.96	19.92	4.4	4.4	34,790	35,019	0.7%
U.Other Fwy.	12.85	51.40	6.04	4.6	4.6	2,316	2,316	0.0%
U.Other PA	8.19	32.81	1.45	11.6	11.6	431	431	0.0%
TOTAL	392.94	1,774.21	57.33	6.1	6.1	52,939	53,294	0.7%
4	**I-77, I-79**		**Columbia, SC to Ohio and Pennsylvania**					
R.Interstate	82.36	329.44	17.93	5.7	5.5	6,959	7,279	4.6%
U.Interstate	27.42	146.30	4.41	4.8	4.7	6,736	6,863	1.9%
TOTAL	109.78	475.74	22.34	5.4	5.3	13,695	14,142	3.3%
11	**I-40**		**North Texas to Wilmington, NC**					
R.Interstate	256.68	1,038.34	46.31	8.7	8.6	15,325	15,400	0.5%
R.Other PA	182.03	608.74	13.22	11.2	11.1	4,138	4,178	1.0%
U.Interstate	153.46	747.04	58.05	4.6	4.6	36,335	36,350	0.0%
U.Other Fwy.	15.85	70.56	2.34	4.8	4.8	3,161	3,161	0.0%
U.Other PA	17.24	69.63	-	11.8	11.8	848	848	0.0%
TOTAL	625.26	2,534.31	119.92	8.1	8.0	59,807	59,937	0.2%
12	**I-26, US 23**		**Charleston, SC to Ohio**					
R.Interstate	22.71	90.84	6.00	5.5	5.4	1,913	1,935	1.2%
R.Other PA	8.90	35.60	-	8.0	8.0	530	530	0.0%
U.Interstate	17.24	68.96	6.99	4.7	4.6	3,157	3,201	1.4%
U.Other Fwy.	9.63	38.52	1.63	4.3	4.3	1,862	1,862	0.0%
TOTAL	58.48	233.92	14.62	5.4	5.4	7,463	7,529	0.9%
13	**I-20, US 76**		**El Paso, TX to Wilmington, NC**					
R.Other PA	16.47	32.94	-	13.5	13.5	172	172	0.0%
TOTAL	16.47	32.94	-	13.5	13.5	172	172	0.0%
19	**I-73, US 52, US 29**		**Charleston, SC to Maryland**					
R.Interstate	11.97	47.88	-	11.0	11.0	460	460	
R.Other PA	91.55	289.28	6.69	8.1	8.1	2,852	2,852	0.0%
U.Interstate	0.26	1.04	-	11.4	11.4	18	18	0.0%
U.Other Fwy.	30.08	120.32	1.02	4.1	4.1	6,016	6,016	0.0%
U.Other PA	1.35	2.74	-	9.9	9.9	43	43	0.0%
TOTAL	135.21	461.26	7.71	7.4	7.4	9,389	9,389	0.0%
ALL CORRIDORS								
R.Interstate	638.37	2,653.58	100.16	7.0	6.9	47,728	49,014	2.7%
R.Other PA	437.45	1,422.12	19.91	9.9	9.9	11,764	11,804	0.3%
U.Interstate	348.52	1,776.26	92.09	4.5	4.5	86,823	87,306	0.6%
U.Other Fwy.	68.41	280.80	11.03	4.4	4.4	13,355	13,355	0.0%
U.Other PA	26.78	105.18	1.45	11.7	11.7	1,322	1,322	0.0%
TOTAL	1,519.53	6,237.94	224.64	6.9	6.9	160,992	162,801	1.1%

Total resurfacing costs are a function of the average pavement life and the length of the highways. Corridor 11 (I-40 from North Texas to Wilmington, NC), the longest corridor in North Carolina, has the highest average annual resurfacing needs, nearly $ 60 million with LATTS traffic. With the largest reduction in average pavement life due to LATTS, Corridor 1 (I-95/I-4 from South Florida to Washington, D.C.) has the largest incremental resurfacing needs due to LATTS trucks, $ 0.8 million annually or 4.6 percent.

Future (2020) pavement needs are summarized in Exhibit E-11. Pavement life for the North Carolina portion of the LATTS Strategic Highway Network will average 6.9 years in 2020 with and without the “additional” LATTS truck traffic. The annual resurfacing costs for the North Carolina portion of the LATTS Strategic Highway Network is estimated to exceed $161 million without LATTS “additional” truck traffic and $163 million with it, an increase of 1.1 percent. From this it is apparent that LATTS truck traffic will have only a minimal impact on North Carolina’s resurfacing needs.

Exhibit E-11
NORTH CAROLINA 2020 PAVEMENT NEEDS
LATTS Strategic Network

	Pavement Life (Years)	Annual Resurfacing Cost ($Million)
“Normal” Growth	6.9	$161
With “Additional” LATTS Traffic	6.9	$163

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 North Carolina portion of the LATTS Strategic Highway Network are presented on Exhibit E-12. In this exhibit, North Carolina 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.

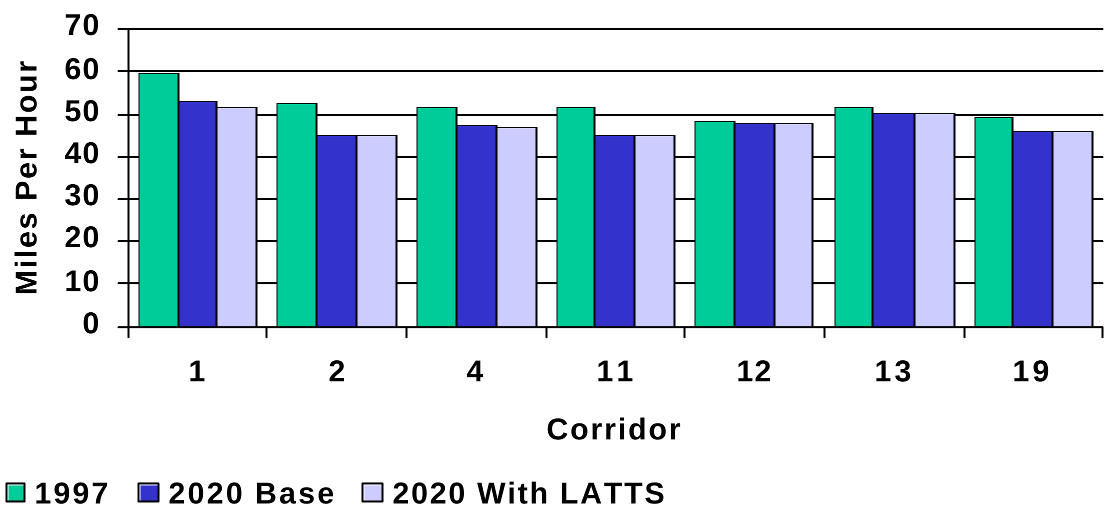
Average daily and peak period speeds/travel times for trucks also are presented for the base year (1997). Further, truck operating speeds are listed twice for year 2020. The first time, truck operating speeds were calculated assuming the base growth rate, i.e. the growth rate indicated by the HPMS database. The second time, truck operating speeds were calculated with the LATTS "additional" traffic. Overall results for the entire corridor within North Carolina 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
NORTH CAROLINA TRUCK OPERATING SPEEDS

Corridor/ Functional Class	Length (Miles)	Average No. Lane	Speed Limit (MPH)	Average 1997 AADT	1997 Truck Speed (MPH) Daily Average	1997 Truck Speed (MPH) Peak Hour	2020 Truck Speed (MPH) W/O Added LATTS Traffic Daily Average	2020 Truck Speed (MPH) W/O Added LATTS Traffic Peak Hour	2020 Truck Speed (MPH) With Added LATTS Traffic Daily Average	2020 Truck Speed (MPH) With Added LATTS Traffic Peak Hour
1	**I-95, I-4**		**South Florida to Washington, DC**							
R.Interstate	154.20	4.0	67.1	36,076	59.5	58.1	53.7	22.1	52.1	22.1
U.Interstate	27.20	4.0	63.4	37,431	60.5	59.3	49.9	15.6	48.4	15.6
TOTAL	**181.40**	**4.0**	**66.5**	**36,280**	**59.7**	**58.3**	**53.1**	**20.8**	**51.5**	**20.8**
Time (HR)					**3.0**	**3.1**	**3.4**	**8.7**	**3.5**	**8.7**
2	**I-85**		**Montgomery, AL to Norfolk, VA**							
R.Interstate	110.50	4.8	63.9	42,288	56.5	49.3	51.6	28.7	51.3	28.7
R.Other PA	138.50	3.3	53.5	12,541	51.1	46.4	48.9	39.1	48.9	39.1
U.Interstate	122.90	5.7	59.7	66,048	53.5	30.4	40.6	19.0	40.4	18.8
U.Other Fwy.	12.90	4.0	54.4	18,661	52.6	49.1	44.2	36.2	44.2	36.2
U.Other PA	8.20	4.0	47.6	34,143	26.6	17.5	20.7	14.4	20.7	14.4
TOTAL	**392.90**	**4.5**	**57.9**	**38,292**	**52.3**	**39.3**	**45.2**	**26.6**	**45.1**	**26.5**
Time (HR)					**7.5**	**10.0**	**8.7**	**14.8**	**8.7**	**14.8**
4	**I-77, I-79**		**Columbia, SC to Ohio and Pennsylvania**							
R.Interstate	82.40	4.0	68.6	37,296	52.5	44.1	48.4	32.5	48.4	32.1
U.Interstate	27.40	5.3	56.3	98,016	49.6	19.9	43.9	16.5	43.7	16.5
TOTAL	**109.80**	**4.3**	**65.1**	**52,462**	**51.7**	**33.9**	**47.2**	**26.2**	**47.1**	**26.0**
Time (HR)					**2.1**	**3.2**	**2.3**	**4.2**	**2.3**	**4.2**
11	**I-40**		**North Texas to Wilmington, NC**							
R.Interstate	256.70	4.0	66.5	24,911	57.6	54.7	55.9	35.7	55.9	35.7
R.Other PA	182.00	3.3	54.9	11,506	50.9	47.5	49.7	40.0	49.7	39.9
U.Interstate	153.50	4.9	59.7	58,416	49.3	30.4	34.3	18.0	34.3	18.0
U.Other Fwy.	15.80	4.5	49.3	21,786	39.2	29.9	35.8	26.2	35.8	26.2
U.Other PA	17.20	4.0	52.5	31,606	31.9	18.6	23.1	15.2	23.1	15.2
TOTAL	**625.30**	**4.1**	**60.1**	**29,337**	**51.7**	**41.6**	**44.9**	**28.4**	**44.9**	**28.4**
Time (HR)					**12.1**	**15.0**	**13.9**	**22.0**	**13.9**	**22.0**
12	**I-26, US 23**		**Charleston, SC to Ohio**							
R.Interstate	22.70	4.0	60.2	26,325	47.2	47.2	47.2	37.9	47.2	37.9
R.Other PA	8.90	4.0	55.0	20,974	49.6	49.6	49.6	49.6	49.6	49.6
U.Interstate	17.20	4.0	55.0	47,381	49.4	44.0	48.0	15.5	48.0	15.5
U.Other Fwy.	9.60	4.0	55.0	30,058	46.8	46.7	46.8	21.9	46.8	21.9
TOTAL	**58.50**	**4.0**	**56.9**	**32,333**	**48.1**	**46.5**	**47.7**	**25.1**	**47.7**	**25.1**
Time (HR)					**1.2**	**1.3**	**1.2**	**2.3**	**1.2**	**2.3**
13	**I-20, US 76**		**El Paso, TX to Wilmington, NC**							
R.Other PA	16.50	2.0	54.7	3,298	51.9	46.4	50.3	45.2	50.3	45.2
TOTAL	**16.50**	**2.0**	**54.7**	**3,298**	**51.9**	**46.4**	**50.3**	**45.2**	**50.3**	**45.2**
Time (HR)					**0.3**	**0.4**	**0.3**	**0.4**	**0.3**	**0.4**
19	**I-73, US 52, US 29**		**Charleston, SC to Maryland**							
R.Interstate	12.00	4.0	70.0	17,678	66.4	66.4	66.4	65.1	66.4	65.1
R.Other PA	91.50	3.2	54.0	11,996	47.2	44.7	45.5	40.0	45.5	40.0
U.Interstate	0.30	4.0	55.0	19,110	52.0	52.0	52.0	52.0	52.0	52.0
U.Other Fwy.	30.10	4.0	54.5	27,590	52.0	35.3	43.6	23.0	43.6	23.0
U.Other PA	1.40	2.0	55.0	3,463	25.6	25.1	25.1	19.4	25.1	19.4
TOTAL	**135.20**	**3.4**	**55.3**	**15,897**	**49.1**	**43.1**	**46.0**	**35.0**	**46.0**	**35.0**
Time (HR)					**2.8**	**3.1**	**2.9**	**3.9**	**2.9**	**3.9**

As depicted in Exhibit E-13, most corridors have average daily operating speeds above 50 MPH in 1997. Corridor 12 (I-26/U.S.23 from Charleston, SC to Ohio) and Corridor 19 (I-73/U.S.52/U.S.29 from Charleston, SC to Maryland) have slightly lower average daily speeds.

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

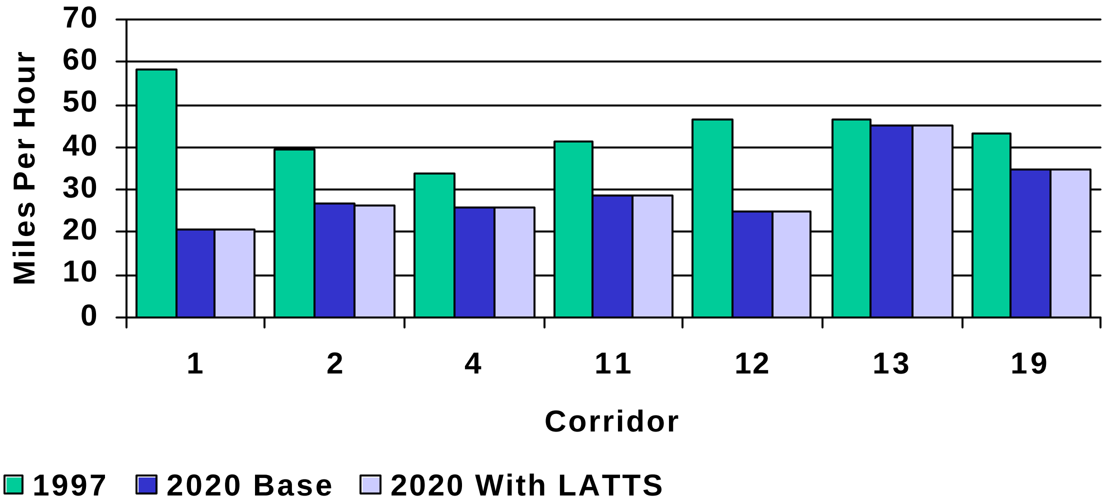


The projected growth in traffic between 1997 and 2020 will affect this measure of performance significantly. Unless additional capacity is provided, the average daily speed in several of North Carolina LATTS corridors will be reduced by 5 MPH or more including Corridor 1 (I-95/I-4 from South Florida to Washington, D.C.), Corridor 2 (I-85 from Montgomery, AL to Norfolk, VA) and Corridor 11 (I-40 from North Texas to Wilmington, NC).

Compared to the impact of the expected traffic growth between 1997 and 2020, the impact of the "additional" LATTS traffic on average daily truck travel speed appears minor. Only Corridor 1 (I-95/I-4 from South Florida to Washington, D.C.) will experience a noticeable reduction in average daily speed of about 1.6 MPH.

As noted in Exhibit E-14, the expected traffic growth in North Carolina LATTS corridor will affect "peak hour" speeds more significantly, up to 37 MPH, for Corridor 1 (I-95/I-4 from South Florida to Washington, D.C.).

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



The impact of LATTS "additional traffic" on "peak hour" speeds is very small compared to the impact of overall growth in total traffic. As mentioned earlier, these travel speeds are estimated assuming no change in capacity on any section of the LATTS highway network and traffic peaking patterns the same as they are today.

CONCLUSIONS FOR LATTS MAINLINE HIGHWAYS

(1) LATTS truck traffic in North Carolina 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 will increase by 377 percent while all other traffic is expected to increase by 95 percent.

(2) About 62 percent of the LATTS Strategic Highway Network in North Carolina will require additional capacity by 2020 at a cost of $ 6.6 billion. More than 88 percent of these capacity needs are for the interstate system (68 percent for the urban interstate system alone). 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 relatively small impact on the state highway investment needs for the Strategic Highway Network. By 2020, LATTS "additional" truck traffic will have resulted in:

- 1% more highway miles needing capacity improvements.
- 3% additional costs to address these capacity needs.
- 1% increase in annual pavement resurfacing costs.

(4) In North Carolina, Corridor 1 (I-95/I-4 from South Florida to Washington, D.C.) will be proportionally most affected by LATTS trucks because of the higher volume of LATTS trucks using this corridor.

(5) If these investment needs are not met, the North Carolina portion of the LATTS Strategic Highway Network will experience significant deterioration in operating speeds especially during “peak hour.”

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, North Carolina owns three of the LATTS connectors for which information was available in the inventory database.

Exhibit E-15
LATTS INTERMODAL CONNECTORS

FACILTY ID	FACILITY NAME	INK MILES	RURAL/URBAN DESIGNATION	OWNER SHIP	AGENCY
NC11A	Piedmont Triad Intl Airport – Greensboro	.8	Urbanized (50k to 200k)	State Highway	Greensboro
NC15A	Raleigh-Durham International Airport	.2	Urbanized (>200k)	State Highway	Capital Area (Raleigh)
NC4A	Charlotte/Douglas International Airport	.7	Urbanized (>200k)	State Highway	Mecklenburg/Union

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

- Global Transpark; NC22A
- Laurinburg-Maxton Airport
- Morehead City; NC23P
- Wilmington; NC24P

Pavement Problems

North Carolina reported no pavement deficiencies.

Geometric/Physical Problems

North Carolina reported no geometric/physical deficiencies.

At-Grade Railroad Crossing Problems

Charlotte Douglas International, NC4A, reported deficiencies with long delays at signals, turning movements, and frequent accidents. Piedmont Triad, NC11A, reported deficiencies with turning movements.

Traffic Operations and Safety Problems

Charlotte Douglas International, NC4A, reported deficiencies with long delays at signals, turning movements, and frequent accidents. Piedmont Triad, NC11A, reported deficiencies with turning movements.

State Summary

Based on the information available for these analyses, North Carolina connectors are in good overall condition.

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.

North Carolina ITS/CVO Plan

North Carolina is currently working under the guidance of three ITS related documents. The first, *North Carolina ITS/CVO Business Plan*, was completed during November of 1997 and the second by the same name during September of 1998. These documents summarize all of the ITS/CVO plans for the state. The third, *CVISN, North Carolina Project Plan, 1999-2002,* was completed in September 2000. This document further outlines North Carolina's steps toward CVISN deployment and gives a more accurate picture of how these projects will be implemented. The three documents contain information relating to ITS/CVO projects. Each document is an update of the previous document. More specific implementation and project information is provided in the latter document. Currently, North Carolina has made more advancements toward the implementation of CVISN than with any of it's other ITS/CVO programs.

The *CVISN, North Carolina Project Plan* was developed by the North Carolina Department of Transportation (NCDOT). Other agencies offered their guidance, but the plan was developed primarily by NCDOT. The CVISN plan is an aid for the DOT to decrease delays at weigh stations, reduce administrative burden placed on both the motor carrier industry and the state agencies, and improve overall safety for motor carriers. There are many projects outlined within the plan that will aid in the achievement of these objectives. Exhibit E-16 shows the critical milestones that North Carolina must reach in order to obtain full CVISN Level 1 deployment by the target date of 2002.

Exhibit E-16
NORTH CAROLINA CRITICAL MILESTONES[1]

Planned Date	Accomplishment
12 / 99	Membership in Norpass
01 / 00	Sign up for IRP Clearinghouse when released
06 / 00	Approved Program Plan
06 / 00	Approved Budget
10 / 00	Obtain CVIEW from John Hopkins University
02 / 01	Obtain ASPEN 32-bit release
04 / 01	Report Inspections on ASPEN 32
06 / 01	Hillsborough Weigh Station fully Compliant CVISN Level 1 Electronic Screening Capability
06 / 02	Conform to CVISN Level 1 Requirements for Safety, Credentials, and Electronic Screening

[1] *CVISN, North Carolina Project Plan*, 1999-2002, North Carolina Department of Transportation Division of Motor Vehicles, September 1, 2000.

The projects necessary to implement CVISN within the State of North Carolina can be summarized into three areas that closely follow the national goals:

- Electronic Screening - Projects include Roadside Citation System, Screening Systems, and CVIEW.
- Credentials - IRP System, Motor Carrier Systems (SSRS, Interstate and Intrastate Exempt, and Intrastate Regulated).
- Safety - Projects include ASPEN, CAPRI (Interstate and Intrastate Carrier Compliance Reviews, and Intrastate Carrier Identifications (NC-USDOT#).

Within each of these areas are a variety of programs designed to facilitate the implementation of CVISN. These programs are summarized below.

- North Carolina Electronic Screening Project - This project will improve at least one fixed weigh station to include electronic screening of commercial vehicles. It is anticipated that one fixed site will be completed by June of 2001.
- North Carolina Credentials System Project - This project will allow motor carriers to securely complete registration transactions via the Internet, alleviating the need for the applicant to come into the DMV office.
- North Carolina Safety Systems Project - Utilizing ASPEN and SAFER software, this project will enable motor vehicle enforcement officers, using roadside portable computers, to collect safety information related to individual vehicles online.
- North Carolina Overweight Citation Issuance Project - Phase I of this project allows fixed weigh stations to issue citations. Phase II will enable enforcement officers to also issue citations from their vehicles.

- North Carolina Commercial Vehicle Information Exchange Window (CVIEW) Project - Currently the North Carolina Department of Transportation, Information Systems Technology (IST) in conjunction with the DMV Enforcement and Credential Administration agencies are researching and developing a CVIEW project. CVIEW 2.x is currently under testing and, upon release, North Carolina hopes to use this version in its Level I deployment.
- North Carolina Electronic Based Exchange Project - Currently the NCDOT, Information Systems Technology (IST) in conjunction with the DMV are researching the possibilities of developing e-commerce to allow all participating motor carriers freedom to move from state to state utilizing the same transponder system. This would enable motor carries to, theoretically, move freely around the country.

In addition to the extensive ongoing activities in the administration category, there are limited activities planned for the credential administration and electronic screening categories. These activities rely on implementation of the above listed administration activities. In electronic screening, activities are planned for development of weigh stations and mobile weigh scales that include Electronic Screening systems. These stations would facilitate electronic communication of activity reports, citations, etc. CVISN concepts for these various roadside facilities include integration of a Roadside Operations Computer (ROC) and the ASPEN software being developed.

In the category of credential administration, activities are underway to develop a single Credentialing Interface (CI) that would interconnect all carriers, agencies, and local credentialing offices with the central credentialing office and computer systems. The CI would support all electronic interchanges between these offices.