SECTION 3
AFFECTED ENVIRONMENT

3.1 SOCIAL AND ECONOMIC CHARACTERISTICS

This section details socio-economic conditions including population, housing, employment, and income characteristics.

3.1.1 Population Characteristics

The study area for the Florida High Speed Rail (FHSR) project extends from downtown Tampa in Hillsborough County (Corridor A), through Polk and Osceola counties, and terminates in the city of Orlando in Orange County (Corridor E) (Section 2, Figure 2-1). The counties in this central Florida region are experiencing tremendous growth and are projected to continue this growth pattern in the short-term and long-term future. In each county, a majority of the population resides in unincorporated regions and this trend is projected to continue into the short-term and long-term future.

Table 3-1 illustrates county population growth that occurred between the years 1980, 1990, and 2000; population projections for the years 2010 and 2020; and the population percentage change by county and state between the years 1980-1990, 1990-2000, and 2000-2020.

Table 3-1
Population Statistics by County and in Florida
1980, 1990, 2000, 2010, and 2020

	1980	1990	Percent 1980-1990	2000	Percent Change 1990-2000	2010	2020	Percent Change 2000-2020
Florida	9,746,961	12,938,071	32.7	15,982,378	23.5	18,776,000	21,683,300	35.7
Hillsborough	646,939	834,054	28.9	998,948	19.8	1,153,100	1,314,100	31.5
Polk	321,652	405,382	26.0	483,924	19.4	554,900	628,200	29.8
Osceola	49,287	107,728	118.6	172,493	60.1	231,500	294,300	70.6
Orange	470,865	677,491	43.9	896,344	32.3	1,112,200	1,338,300	49.3

Source: Florida Statistical Abstract, 2001
Note: Projections are medium projections and rounded to (1,000's).

Population characteristics of the study area are described by corridor in the following paragraphs (see Section 2 for corridor definition).

Corridors A through C

Hillsborough County is located along Tampa Bay on the west coast of Florida, adjacent to the Gulf of Mexico. The county ranks fourth in population in the state of Florida and is made up of three municipalities. Tampa, the county seat, is the largest municipality in Hillsborough County with a year 2000 population of 303,447. Hillsborough County is anticipated to grow approximately 32 percent by 2020.

Corridor D

The population patterns of Polk County, which ranks eighth in the state for population, differ significantly from Hillsborough County. Polk County is composed of 17 different municipalities. Lakeland is the most populated municipality in the county, with a population of 78,452 in 2000. Polk County population is expected to increase by approximately 30 percent by 2020.

Osceola County, which contains both Corridors D and E, is the least populated county included in the study area, ranking twenty-third in the state, but is rapidly increasing in number of residents. While the county is primarily rural, the population is projected to increase more than 70 percent by 2020.

Corridor E

Orange County ranks sixth in population in the state. The population of Orange County is disbursed into 13 incorporated municipalities, the largest of which is Orlando. Year 2020 projected growth is expected to increase approximately 50 percent.

Age and Racial Composition

Age data is presented in Table 3-2. The data indicates that three of the four counties have a much younger median age than the state as a whole. Only Polk County has a median age comparable to Florida as a whole.

Table 3-2
Age Characteristics by County and in Florida
Year 2000

	Total	0-14	15-24	25-44	45-64	65 and Over	Median Age
Florida	15,982,378	3,034,565	1,942,377	4,569,347	3,628,492	2,807,597	38.7
Hillsborough	998,948	212,554	133,655	316,603	216,463	119,673	35.1
Polk	483,924	98,223	59,912	127,929	109,122	88,738	38.6
Osceola	172,493	38,375	23,806	53,403	37,200	19,709	34.6
Orange	896,344	190,288	134,105	302,676	179,316	89,959	33.3

Source: Florida Statistical Abstract, 2001

As Table 3-3 indicates the state of Florida has increased in non-white population approximately 5 percent between 1990 and 2000. All four counties have also experienced increases in non-white population, with Osceola and Orange counties increasing more than 10 percent from 1990 to 2000.

Table 3-3
Racial Composition by County and in Florida
Years 1980-2000

	1990			2000		
	Total Population	White (%)	Non-White (%)	Total Population	White (%)	Non-White (%)
Florida	12,938,071	83.1	16.9	15,982,378	78.0	22.0
Hillsborough	834,054	82.9	17.1	998,948	75.2	24.8
Polk	405,382	84.4	15.6	483,924	79.6	20.4
Osceola	107,728	89.3	10.7	172,493	77.2	22.8
Orange	677,491	79.5	20.5	896,344	68.6	31.4

Sources: Florida Statistical Abstract, 2001; Hillsborough County City-County Planning Commission, Socioeconomic Data Report, August 2001.

Table 3-4 illustrates the total households and persons per household for 1990 and 2000. Persons per household figures in every county were higher than the state average in 1990 and 2000. Both Orange and Osceola counties show significant differences between 1990 and 2000 with an increase of 81,109 households in Orange County and increase of 18,666 in Osceola.

Table 3-4
Total Households and Persons per Household by County and in Florida
Years 1990 and 2000

	1990			2000		
	Total Population	Number of Households	Persons per Household	Total Population	Number of Households	Persons per Household
Florida	12,938,071	5,138,360	2.50	15,982,378	6,337,929	2.46
Hillsborough	834,054	325,238	2.51	998,948	391,357	2.51
Polk	321,652	155,870	2.53	483,924	187,233	2.52
Osceola	49,287	39,228	2.69	172,493	60,977	2.79
Orange	470,865	255,177	2.57	896,344	336,286	2.61

Source: Florida Statistical Abstract, 2001.

3.1.2 Employment and Economic Characteristics

Distinct economic forces drive the economic growth of each county. Table 3-5 contains a comparison of the labor force, total of unemployed persons, and percent unemployment for each county and Florida for the years 1999 and 2000. From 1999 to 2000, each county experienced an increase in the number of workers contributing to the labor force. This growth ranged from an increase of 1,707 in Osceola County to an increase of 15,767 in the labor force in

Hillsborough County. The percent of unemployed persons in each county remained within two tenths of a percentage point of their corresponding 1999 figures.

Table 3-5
Labor Force and Unemployment by County and in Florida
Years 1999 and 2000

	1999			2000		
	Labor Force 1999	Unemployed Persons	Percent Unemployment 1999	Labor Force 2000	Unemployed Persons	Percent Unemployment 2000
Florida	7,361,000	284,000	3.9	7,490,000	269,000	3.6
Hillsborough	549,091	14,302	2.6	564,858	14,626	2.6
Polk	200,224	9,695	4.8	204,355	9,660	4.7
Osceola	84,514	2,267	2.7	86,221	2,375	2.8
Orange	488,182	13,367	2.7	496,692	12,644	2.5

Source: Florida Statistical Abstract, 2001.

Table 3-6 contains information on employment by industry group and county compared to Florida in 2000. The services industry contains the majority of employment in each county, as well as Florida.

Table 3-6
Employment by Industry Group by County and in Florida
Year 2000

Category	Hillsborough County	Polk County	Osceola County	Orange County	Florida
Agriculture/Forestry/Fishing	12,035	8,302	827	9,085	155,187
Mining	25	2,324	(N/A)	40	6,214
Construction	27,425	10,043	2,740	28,550	366,724
Finance/Insurance/Real Estate	46,870	8,676	2,758	33,123	439,249
Services	222,854	46,233	15,572	271,916	2,330,537
Manufacturing	37,429	19,672	1,710	37,111	487,962
Transportation/Communication Public Utilities	31,760	9,111	708	33,980	340,643
Wholesale/Retail Trade	34,701	9,285	2,019	32,938	364,669

Sources: Florida Statistical Abstract, 2001; Hillsborough County City-County Planning Commission, Socioeconomic Data Report, August 2001

As Table 3-7 illustrates, every county and the state of Florida had more than 20 percent of the population living below the poverty level in 1997. Three of the four counties had median household incomes similar to the state. Only Orange County was significantly higher with a median of $36,979.

Table 3-7
Percent Below the Poverty Level and Median Household Income and Number of Households

	Median Household Income 2000 (In Dollars)	Percent Below the Poverty Level -- 1997
Florida	32,877	21.8
Hillsborough	35,994	22.0
Polk	31,030	25.4
Osceola	32,552	21.8
Orange	36,979	20.2

Sources: Florida Statistical Abstract, 1998 & 2001.

Corridors A through C

Hillsborough County

In recent years, Hillsborough County has evolved from an economy supported primarily through agriculture, construction, and retirement into an economy increasingly supported by retail/wholesale services, light manufacturing, major wholesale distribution, and corporate offices. The service sector represents the highest concentration of employment in Hillsborough County, as it does in the state, generating nearly 40 percent of the employment in the county. Educational institutions provide a significant portion of the employment base. The School District of Hillsborough County and the University of South Florida (USF) provide nearly 30,000 jobs combined. Other important employers include federal, state, and local government entities, such as Hillsborough County Government, the City of Tampa, MacDill Air Force Base, and Tampa International Airport. Tampa International Airport directly or indirectly provides approximately 18,000 jobs.

Corridor D

Polk County

Polk County's largest employers in 2000 included the Polk County School Board (9,500 employees) and Publix Supermarkets (7,500 employees). Other top county employers are local, federal, and state government, medical services, insurance companies, and IMC-Agrico. The largest employment category is the services category with 46,233 employees.

Osceola County

Osceola County, in which contains both Corridors D and E, also has a large percentage of employees working in the services category with 15,572 people in 2000. Walt Disney World Resort and Sea World theme parks are located just outside of Kissimmee-St. Cloud and are major economic contributors to the economy of the county through the tourism industry.

Corridor E

Orange County

In Orange County, the service industry represents the highest portion of the economy. In addition, approximately 42.2 percent of the employed population works in the Orlando metropolitan area. Service industry employment can be attributed to the concentration of theme parks and resorts located within close proximity to Orange and Osceola counties. The economy of Orange County is fueled heavily by the tourism industry. The top private employer in the Orlando metropolitan area is Walt Disney World, with 55,900 employees in 2000, approximately 37,100 more employees than Adventist Health System, the private company ranking second on the list.

3.2. EXISTING LAND USE

3.2.1 CORRIDOR A: East of the Hillsborough River to U.S. 41 in Tampa and Corridor B: U.S. 41 to the Bypass Canal in Hillsborough County

Figure 3-1 shows the Existing Land Use for Corridors A and B within the City of Tampa. The existing land use map is generalized; however, three categories predominate: Single Family Residential, Industrial, and Public. The residential areas are primarily located north and west of Interstate 275 (I-275) and Interstate 4 (I-4). The industrial uses occur around the Port of Tampa, along U.S. 41 and the Lee Roy Selmon Expressway. Public land is located primarily in Ybor City, the Port of Tampa, and along the Hillsborough River.

3.2.2 CORRIDOR B U.S. 41 in Tampa to East of I-75, Hillsborough County and CORRIDOR C: East of I-75, Hillsborough County, to West Entry of the Polk Parkway, Polk County

Figure 3-2 shows the Existing Land Use for Hillsborough County. The generalized existing land use for the corridor indicates Industrial and Public Land uses predominate west of Interstate 75 (I-75). East of I-75 and within Corridor C, Single Family Residential and Agricultural land uses predominate. The map also indicates that Single Family Residential is expanding into the rural areas on the north and east portion of Hillsborough County.

Figure 3-3 shows the Existing Land Use for Plant City. The land use map displays a typical pattern of land use for a small city with Single Family being the primary land use and a mixture of Commercial and Industrial uses along the major roadways, I-4, and U.S. 92.

3.2.3 CORRIDOR D: West Entry of Polk Parkway, Polk County, to Celebration Area, Osceola County

Figure 3-4 shows the Existing Land Use for Polk County and the City of Lakeland. The northern portion of the corridor contains predominantly Rural and Low-Density Residential uses adjacent to Passive Agricultural uses. Active Agricultural uses are dispersed throughout the corridor. There are large amounts of existing Vacant Land and Water Bodies. From west to east, the

corridor contains primarily residential uses within the following urban areas: cities of Lakeland, Auburndale, Winter Haven, Haines City, and Davenport.

Figure 3-5 shows the Existing Land Use for Corridor D within Osceola County. The current land use is a combination of Residential, Vacant Land, Agriculture, and Recreation and Open Space uses. Commercial land use within this corridor occurs north of I-4 on U.S. 192.

3.2.4 CORRIDOR E: Celebration Area, Osceola County, to Orlando International Airport, Orange County

Figure 3-5 also shows the Existing Land Use for Osceola County within Corridor E. Within Osceola County north of U.S. 17, existing land uses are Agricultural and Recreation and Open Space. North and south of I-4 are Commercial uses and the new town community of Celebration.

Figure 3-6 shows the Exiting Land Use of Orange County. Commercial and Conservation land use exists west of I-4 in the vicinity of Disney World. This area also contains a number of Water Bodies. Both north and south of the Central Florida Greeneway (S.R. 417), Conservation, Rural/Agriculture, and Low Density Residential uses exist. The residential area east and west of the Florida Turnpike contains the Hunter's Creek neighborhood. At the intersection of I-4 and the Bee Line Expressway are Institutional and Commercial uses including the Orange County Convention Center (OCCC) and International Drive. Clusters of Industrial uses occur near the intersection of the Bee Line Expressway (S.R. 528) and the Florida Turnpike. To the east of this area is the Orlando International Airport.

3.3 FUTURE LAND USE PLANS

Local government comprehensive plans are developed to provide guidance for new development, as well as redevelopment of land uses in the future. In Florida, all comprehensive plans also contain transportation plans or elements. Comprehensive plans generally specify future land uses based on an aggregation of existing uses in the developed areas, and desirable future land uses in vacant and agricultural areas. A discussion of future land uses is presented for each corridor.

3.3.1 Corridor A: East of the Hillsborough River to U.S. 41 in Tampa and Corridor B: U.S. 41 in Tampa to East of I-75, Hillsborough County

Figure 3-7 shows the Future Land Use Categories for the City of Tampa, which differ from existing land use patterns. The plans:

- Increase residential density along I-4.
- Promote redevelopment in Tampa Heights and Ybor City through use of Community and Regional Mixed Use categories.
- Develop the Central Business District (CBD) with Mixed and High Density Residential uses.
- Change designation of the area east of Ybor City (including the Port of Tampa) between the Lee Roy Selmon Expressway and the CSX tracks to Heavy Industrial use.

- Encourage redevelopment in Ybor City and Channelside through the Regional Mixed use designation.

Figure 3-8 shows the Future Land Use Categories for Hillsborough County for Corridor B, which differ from existing land use patterns. Changes include:

- Establish an Urban Mixed use area along I-75.
- Continue the existing mixture of uses north and south of I-4 by utilizing the Community Mixed Use designation.

The Mixed Use designations allow for existing single family densities and service commercial uses to coexist with higher residential densities and office uses which encourage redevelopment.

3.3.2 CORRIDOR C: East of I-75, Hillsborough County to the West Entry of the Polk Parkway, Polk County

Figure 3-8 shows the Future Land Use for Hillsborough County for Corridor C, which differs from existing land use patterns. The plans:

- Encourage rural residential use north of I-4 and west of Brandon by utilizing Residential-1, Residential Planned-1, and Agricultural Estate designations.
- Continue single family and low density multi-family residential development in the Brandon area by utilizing Residential-4 and Residential-6 categories.

Figure 3-9 shows the Future Land Use for Plant City, which differs from existing land use patterns. The changes include:

- Increase residential densities to Residential-6, Residential-9, and Residential-20 designation.
- Change the Mining designation east of Plant City to Heavy Industrial and the mixture of uses east of Plant City along U.S. 92 to Heavy Industrial.
- Provide for Office/Commercial uses around the CBD and along major roadways.

3.3.3 CORRIDOR D: West Entry of Polk Parkway, Polk County to Celebration Area, Osceola County

Figure 3-10 shows the Future Land Use for Polk County, the City of Lakeland, and other cities, which differs from existing land use patterns. These plans:

- Change designations northwest of I-4 from Passive Agriculture to Residential Suburban.
- Change from Vacant and Passive Agriculture northeast of I-4.
- Maintain the small city character in Lakeland, Auburndale, Winter Haven, Haines City, and Davenport through Residential Density Low designation.

Figure 3-11 shows the Future Land Use for Osceola County within Corridor D. The future development plans for Osceola County differ from existing land use patterns. The changes include:

- Expand the Destination New Town designation from the Recreation and Open Space designation in and around the Celebration area.
- Increase commercial areas significantly on both sides of I-4 and north up to U.S. 192.

3.3.4 CORRIDOR E: Celebration Area, Osceola County to Orlando International Airport, Orange County

Figure 3-11 shows the Future Land Use for Osceola County with Corridor E. The future development plans for Osceola County intensifies existing land use patterns. This includes:

- Expand the Destination New Town designation from the Recreation and Open Space designation in and around the Celebration area.
- Increase commercial areas significantly on I-4, U.S. 192, and Central Florida Greeneway (S.R. 417).

Figure 3-12 shows the Future Land Use for Orange County, which differs from existing land use patterns. The plans:

- Change designations from Rural/Agriculture to Low Density, Low-Median Density, and Medium Density Residential along both sides of the Central Florida Greeneway (S.R. 417).
- Add Industrial land use designation to the intersection of the Central Florida Greeneway (S.R. 417), S.R. 527, and the Florida Turnpike.
- Increase development along I-4 through the Activity Center Mixed Use category.

3.4 FUTURE TRANSPORTATION PLANS

3.4.1 Long Range Transportation Plans

Three agencies are responsible for long-range transportation planning within the FHSR study corridors. They are: the Hillsborough County Metropolitan Planning Organization (MPO), the Polk County Transportation Planning Organization (TPO), and METROPLAN Orlando. These agencies are authorized under federal and state statutes for multi-jurisdictional and multi-modal transportation planning.

Table 3-8 provides the status of the long-range transportation plans and actions needed by the four counties within Corridors A through E in reference to FHSR. The Hillsborough County MPO adopted its 2025 Long Range Transportation Plan[1] (LRTP), with the appropriate FHSR references, in November 2001. The TPO for Polk County adopted its 2025 Long Range Transportation Plan[2] in December 2000. The Polk County LRTP was amended in December 2002 to include two policies addressing FHSR and adding Corridor D to a LRTP map.

The METROPLAN Orlando guides multi-modal transportation planning in Orange, Seminole, and Osceola counties, including sixteen municipalities. METROPLAN adopted its 2020 Long Range Transportation Plan[3] in December 1995. METROPLAN Orlando is presently preparing a 2025 LRTP. High speed rail policies and a map showing both retained alignments (Alignments E1 and E2) in Orange County have been included in METROPLAN's Transit and Visions Concept Plan.

3.4.2 Local Government Transportation Planning

There are 13 local governments including counties and cities, as well as an improvement district within Corridors A through E. These local governments maintain comprehensive plans in compliance with *Florida Statutes, Chapter 163*. By rule, these plans contain multi-modal transportation elements. These elements must be consistent with the LRTPs of the MPO.

Table 3-9 shows the actions needed prior to construction for each transportation element within the FHSR corridors. Not all communities have incorporated the FHSR into their comprehensive plans, most notably Orange County and Osceola County.

Table 3-8
High Speed Rail Study Area
LRTPs

Document	Applicable Corridors	LRTP Adoption Date	Reference to High Speed Rail	Actions Needed
Hillsborough County				
Hillsborough County 2025 LRTP	A, B, C	Adopted: November 13, 2001	Yes – Chapter 4, Regional Transportation Planning; Chapter 6, Needs Assessment; 2025 Cost Affordable Transit Network Map	None
Polk County				
Polk County 2025 LRTP	D	Adopted: December 7, 2000 Amended: December 2002	Yes – Policies 5.8 and 5.9; Map	None
Orange and Osceola Counties				
METROPLAN Orlando 2020 LRTP	D, E	Adopted: December 1995 Refined: December 2002	Yes – Transit and Concepts Vision Plan	Written opinion of consistency between FHSR alignments and LRTP has been requested

Table 3-9
High Speed Rail Study Area
Transportation Elements

Document	Applicable Corridors	Adoption Date	Reference to High Speed Rail	Actions Needed
Hillsborough County				
Hillsborough County Transportation Element	A, B, C	Adopted: March 2001	Yes - Policy 6.1.4, Future Transit Corridor Map	None
City of Tampa Transportation Element	A, B	Adopted: April 2004	Yes - Intermodal Analysis, Policy 4.4.1, Policy 9.1.3, 2025 Highway Needs Plan	None
City of Plant City Transportation Element	C	Adopted: May 13, 1999	No	None
Polk County				
City of Lakeland Transportation Element	D	Adopted: December 27, 2001 Refined: January 2003	Yes - Mass Transit Section, Rail Section, Policy 7D; Map of Corridor	None
Polk County Transportation Element	D	Adopted: December 19, 2001 Refined: January 2003	Yes - Policy 3.302-A4, Support Data - Railroad Operations; Corridor Map	None
Osceola County				
Osceola County Transportation Element	D	Adopted: April 22, 1991	No	Policies included in amendment cycle (Adoption Summer/Fall 2004)- Map of proposed corridor and intermodal policy amendments
Reedy Creek Improvement District	D, E	January, 1997	No	Map of proposed corridor and intermodal policy amendments
Orange County				
Orange County Transportation Element	E	Adopted: December 5, 2000	No	Map of proposed corridor and intermodal policy amendments
City of Orlando Transportation Element	E	Adopted: January 26, 1998	Yes - Objective 1.16, Policies 1.16.1 to 1.16.4, Support Data Reference	Map of proposed corridor

3.5 COMMUNITY SERVICES

Community service facilities provide a focal point for adjacent neighborhoods and communities, as well as serve the needs of the surrounding areas. For the purpose of this study, community service facilities are separated into five categories: schools, community facilities, parks and recreation facilities, cemeteries, and churches. The community facilities category includes libraries, police and fire stations, hospitals, water and wastewater plants, and other public services facilities.

The community service facilities within the study corridor are shown in Figure 3-13 through Figure 3-17 and span from Corridor A in Hillsborough County through Corridor E in Orange County. The facilities include those located within a 1/4 mile (mi.) (1,320 ft.) of each side of the right-of-way (ROW) centerline of the studied alignments. Community service facilities are listed by corridor from west to east and north to south and are numerically referenced on Figures 3-13 through 3-17. Names of the community service facilities provided in the tables of this section are numbered to coincide with the numerical references.

3.5.1 Schools

The schools within the ¼-mi. wide study area include public and private education facilities ranging from early childhood educational centers to colleges and universities. The 28 schools are listed in Table 3-10 by map identification number, name, and corridor designation. Eleven schools are located in Corridor A. The Stetson Law School Complex is located just north of I-275 in downtown Tampa. Hillsborough Community College has a campus located in Ybor City, south of I-4. One school is located in Corridor B, two in Corridor C, three in Corridor D, and eleven in Corridor E.

Table 3-10
Potentially Affected Schools

Map Identification Number	School Name	Corridor
1	Just Elementary School	A
2	Stewart Middle School (Magnet)	A
3	Blake High School (Magnet)	A
4	Stetson Law School Complex (Proposed)	A
5	Lee Elementary School (Magnet)	A
6	B.T. Washington Middle School (Magnet)	A
7	HCC (Ybor Campus)	A
8	Shore Elementary School (Magnet)	A
9	Gary Adult Center	A
10	Franklin Middle School	A
11	Oak Park Elementary School	A
13	Armwood High School	C

Table 3-10 (cont.)
Potentially Affected Schools

Map Identification Number	School Name	Corridor
14	Gordon Burnett Middle School	C
19	Winston Elementary School	D
25	Watson Elementary School	D
33	Celebration School	D
34	New Vistas Elementary School (Proposed)	E
35	Primrose K-6 Private School	E
36	Hunters Creek Middle School	E
37	Hunters Creek Elementary School	E
38	Endeavor Elementary School	E
39	Southwood Elementary School	E
40	Cypress Creek High School (Magnet)	E
41	Meadow Woods Elementary School	E
42	Meadow Woods Middle School	E
43	Durrance Elementary School	E
44	Florida Southern College (Orlando/Ocala Program)	E
45	Mary Help of Christians School for Boys	B

3.5.2 Community Facilities

For the purpose of this study, community facilities are classified as libraries, police and fire stations, hospitals, water and wastewater plants, and other public services facilities. Nineteen community facilities were identified within the study area and are listed by map identification number, name, and corridor designation in Table 3-11. Corridors A through E and are also shown on Figures 3-13 through 3-17. Corridor A contains five community facilities, three in Corridor B, five in Corridor C, two in Corridor D, and four in Corridor E.

Table 3-11
Potentially Affected Community Facilities

Map Identification Number	Community Facility Name	Corridor
1	John F. German Library	A
2	Hillsborough County Jail	A
3	Ybor Branch Library	A
4	Post Office, Tampa	A
5	Hillsborough County Sheriff's Operations Center	A
6	Seminole Indian Reservation	B
7	Florida State Fairgrounds	B
8	Mango Civic Center	B
9	Hillsborough County Fire Station	C
11	Hillsborough County Sanitary Landfill	C
17	Lake Thonotosassa Conservation Area	C
18	Wastewater Treatment Plant	C
24	Hillsborough County Fire Station	C
28	Lakeland Municipal Water Plant	D
43	Polk County Wastewater Treatment Plant	D
46	Orange County Convention Center	E
47	Orange County Fire Station Number 53	E
48	Orange County Fire Station Number 73	E
49	Water Treatment Plant	E

3.5.3 Parks and Recreation

There are 25 park and recreation facilities in the study area. Of these 25 facilities, 19 are located in Hillsborough County, 2 in Polk County, and 4 in Orange County. The parks are identified in Table 3-12 by map identification number, park name, and corridor designation.

Table 3-12
Potentially Affected Parks

Map Identification Number	Park Name	Corridor
1	Riverfront Park, Tampa	A
2	Phil Bouraquarez Park, Tampa	A
3	Curtis Hixon Park, Tampa	A
4	Morgan Street Park, Tampa	A
5	Robles Park Playground, Tampa	A
6	Perry Harvey Sr. Park, Tampa	A
7	Tampa Park Plaza, Tampa	A
8	Nuccio Parkway Linear Park, Tampa	A
9	Marti Park, Tampa	A
10	Cuscaden Park, Tampa	A
11	Ybor Centennial Park, Tampa	A
13	Highland Pines Playground, Tampa	A
14	Grant Park, Tampa	B
15	Kings Forest Park, Hillsborough County	B
16	Oak Park, Tampa	B
17	Williams/Tanner Road Park, Hillsborough County	B
18	Evans Neighborhood Park, Hillsborough County	C
27	Sansone Community Park, Plant City	C
28	Otis M. Andrews Sports Complex, Plant City	C
32	Lake Gibson Park, Lakeland	D
39	Van Fleet Trail Extension (Proposed), Polk County	D
51	Shingle Creek Greenway, South Florida Water Management District (SFWMD)	E
52	Shingle Creek Greenway, SFWMD	E
53	Bear Creek Recreation Complex, Orange County	E
54	South Orange Sports Complex, Orange County	E

3.5.4 Cemeteries

There are seven cemeteries within the study area. There are five cemeteries in Hillsborough County, one in Polk County, and one in Osceola County. The cemeteries are listed by map identification, name, and corridor designation in Table 3-13. Oaklawn Cemetery is located in downtown Tampa along I-275. There are no cemeteries within Corridors B or E.

Table 3-13
Potentially Affected Cemeteries

Map Identification Number	Cemetary Name	Corridor
1	Fortune Street Cemetery	A
4	Memorial Park Cemetery	C
5	Garden of Peace Cemetery	C
6	Oak Lawn Cemetery	C
7	Unnamed Cemetery	C
8	New Home Cemetery	D
15	Oak Hill Cemetery	D

3.5.5 Churches

There are 37 churches within the study area. There are 30 churches in Hillsborough County, 2 in Polk County, one in Osceola County, and four in Orange County. The churches are listed in Table 3-14 by map identification number, name, and corridor designation.

Table 3-14
Potentially Affected Churchs

Map Identification Number	Church Name	Corridor
1	Bethel African Methodist Episcopal (AME) Church	A
2	Miami Latin Church of God	A
3	Palm Avenue Baptist Church	A
4	Grace Evangelical Church	A
5	Greater Bethel Baptist Church	A
6	Followers of Jesus Christ	A
7	Good News Baptist Church	A
8	Pentecostal Church of God	A
9	St. James House of Prayer	A
10	Faith Temple Baptist Church	A
11	Friendly Missionary Baptist Church	A
12	Paradise Missionary Baptist Church	A
13	Ebenezer Baptist Church	A
14	Mt. Sinai AME Church	A
15	Faith Tabernacle of Tampa	A
16	New Salem Primitive Baptist Church	A
17	New Life Holiness Church	B
18	Trinity Chapel	B
19	New Mt. Silla Missionary Baptist Church	B

Table 3-14
Potentially Affected Churchs

Map Identification Number	Church Name	Corridor
20	Living Water Church	B
21	Christian Fellowship	B
22	First Apostolic Church	B
23	Mt. Calvary Baptist Church	B
26	Apostles Foundation Church	C
40	Nazarene Christian Church	C
42	Mt. Zion Assembly of God	C
43	Mt. Zion Assembly of God	C
48	Jehovah's Witnesses Assembly Hall	C
49	Faith Temple Assembly of God	C
54	Victory Assembly of God	D
57	Lake Gibson Church of God	D
105	Oak Hill Baptist Church	D
106	Fountain of Living Water Church	E
107	Peace United Methodist Church	E
108	Taft Missionary Baptist Church	E
109	Iglesia De Dios Pentecostal Church	E
110	St. Paul AME Church	A

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3.6 ARCHAEOLOGICAL AND HISTORIC RESOURCES

This section describes the archaeological and historic resources that have been listed on or determined eligible for the National Register of Historic Places[4] (NRHP) and are located in the vicinity of the proposed FHSR alignments evaluated in the Final EIS.

A desktop literature search of known NRHP-listed and -eligible cultural resources was conducted early in the Project Development and Environment Study to assist with the screening of preliminary alignments. A project cultural resource assessment survey (CRAS) methodology and Area of Potential Effect (APE) were prepared in order to comply with the requirements of the *National Historic Preservation Act*, as implemented in *36 CFR 800.4* (*Identification of Historic Properties*). A letter of concurrence, outlining the methodology and APE, was signed by FHSRA, cooperating federal agencies, and the State Historic Preservation Officer (SHPO) in February and March 2003 (see Appendix B).

The APE for the FHSR project was determined by evaluating the improvements under consideration and the possible effects improvements could have on cultural resources, such as visual, noise, access, use, and vibration. The APE for the archaeological survey is designated as

the ROW for each of the proposed alternatives and the footprint of each proposed station and maintenance facility. The APE for the historical survey is designated as 500 ft. (or two blocks) to either side of the centerline of the alternatives west of I-75. Areas of the APE that are obscured from the FHSR by both lanes of I-4 and/or a noise wall were not surveyed unless the FHSR is elevated above I-4. East of I-75, the APE includes the areas within the ROW and immediately adjacent. The APE for station and maintenance facility locations includes the proposed site, as well as properties immediately adjacent.

A Cultural Resource Assessment Corridor Level Analysis Report[5] (February 2003, revised March 2003) was prepared first to provide preliminary cultural resource information to assist in the avoidance of resources listed in, determined eligible for listing in, or potentially eligible for listing in the NRHP, as well as National Historic Landmark (NHL) properties. The Cultural Resource Assessment Corridor Level Analysis Report was submitted to the SHPO, Federal Highway Administration (FHWA), U.S. Army Corps of Engineers (USACE), and Advisory Council for Historic Preservation (ACHP). A concurrence letter dated April 15, 2003, was received from the SHPO (see Appendix B).

In the meantime, a comprehensive CRAS Report was prepared for the alternatives being evaluated in the EIS. The purpose of the CRAS was to locate, identify, and bind any cultural resources within the project's APE, and to assess their significance in terms of eligibility for listing in the NRHP. The CRAS Report (July 2003) was submitted to the SHPO, FHWA, and USACOE on July 28, 2003. The results are described in the following section.

3.6.1 Inventory of Archaeological and Historic Resources

Background research included a search of the Florida Master Site File[6] (FMSF) and NRHP listings to determine previously recorded historic structures and archaeological sites within and adjacent to the project corridor. Background research conducted as part of the previously prepared Cultural Resources Technical Study, Florida High Speed Rail, Internal Working Draft[7] (February 26, 1999) was also utilized as part of this project.

The CRAS fieldwork was conducted in February and March 2003. As a result, all known NRHP-listed or NRHP-eligible, plus all potentially eligible cultural resources were identified and are listed in Table 3-15. The historic district boundaries and individual resources are shown on Figure 3-18. A brief description of these resources follows the table.

Table 3-15
NRHP-Listed and NRHP-Eligible Cultural Resource

Corridor	Figure ID No.	FMSF No.	Site Name	Address	City/ Community	NRHP or NHL Status
A	1	8HI8536	North Franklin Street Historic District	North Franklin Street, between E. Harrison and E. Fortune Streets	Tampa	NRHP-Listed
A	13	8HI741	Floridian Hotel	905 N. Florida Avenue	Tampa	NRHP-Listed, City of Tampa Landmark
A	14	8HI753	J.J. Newberry Building	815-819 N. Franklin Street	Tampa	NRHP-Eligible
A	15	8HI752	Kress Building	811 N. Franklin Street	Tampa	NRHP-Listed
A	16	8HI751	Woolworth Building	801 N. Franklin Street	Tampa	NRHP-Eligible
A	12	8HI8744	First United Methodist Church's Thomas Henderson Memorial Chapel	1001 N. Florida Avenue	Tampa	Potentially NRHP-Eligible
A	2	8HI155	St. Paul AME Church	506 E. Harrison Street	Tampa	NRHP-Eligible, City of Tampa Landmark
A	3	8HI5595	Oaklawn Cemetery	606 E. Harrison Street	Tampa	NRHP-Eligible
A	4	8HI3282	Greater Bethel Baptist Church	1206 N. Jefferson Street	Tampa	NRHP-Eligible
A	17	8HI124	Fire Station No. 1/ Tampa Firefighters Museum	720 E. Zack Street	Tampa	NRHP-Eligible, City of Tampa Landmark
A	5	8HI8574	St. James Episcopal Church	1001 India Street/1202 N. Governor Street	Tampa	Potentially NRHP-Eligible
A	6	8HI3688, 8HI8575	Allen Temple AME Church and Parsonage	1112-1116 E. Scott Street (Located within Central Park Village	Tampa	Potentially NRHP-Eligible
A	7	8HI3659	St. Peter Claver Catholic School	1401 N. Governor Street	Tampa	Potentially NRHP-Eligible
A	18	8HI906	Jackson Hotel	851 E. Zack Street	Tampa	NRHP-Eligible

Table 3-15
NRHP-Listed and NRHP-Eligible Cultural Resource

Corridor	Figure ID No.	FMSF No.	Site Name	Address	City/ Community	NRHP or NHL Status
A	19	8HI6939	Union Depot Hotel	858-864 E. Zack Street	Tampa	NRHP-Listed, City of Tampa Landmark
A	20	8HI298	Tampa Union Station	601 N. Nebraska Avenue	Tampa	NRHP-Listed, City of Tampa Landmark
A	8	8HI313	Ybor City National Historic Landmark District (NHLD)	Varies	Tampa	NHLD, Locally Listed Historic District (different boundaries)
A	10	8HI142	German American Club	2105 N. Nebraska Avenue	Tampa	NRHP-Eligible, Contributing Resource within the Ybor City NHLD
A	9	8HI835	Centro Asturiano	1913 N. Nebraska Avenue	Tampa	NRHP-Listed, Contributing Resource within the Ybor City NHLD
A	11	8HI4415	I-Type House	2210 N. 31st Street	Tampa	NRHP-Eligible

North Franklin Street Historic District
Listed in the NRHP in 2002, the North Franklin Street Historic District (8HI8536) includes nine buildings along Franklin Street, between E. Harrison and E. Fortune Streets in downtown Tampa. The commercial buildings that comprise the small historic district are significant due to their association with the historical and commercial development of the northern part of downtown Tampa. This portion of the downtown district was historically home to more modest commercial businesses, such as automobile dealerships, small restaurants, and family-owned businesses. Additionally, this historic district maintains architectural significance based on the concentration of Masonry Vernacular buildings located within its boundaries. The Masonry Vernacular buildings in the district range from early-twentieth century brick edifices exhibiting arched windows and brick detailing to mid-twentieth century buildings with plain stucco-covered exterior walls and fixed glass storefront windows.

Floridan Hotel/905 N. Florida Avenue
The Floridan Hotel (8HI741) was listed in the NRHP in 1996 for its architectural and commercial importance. It is also listed as a City of Tampa Landmark. Completed in 1926, the Floridan Hotel was designed by the firm Francis J. Kennard and Son, and constructed by G. A. Miller. The 18-story building features a prominent four-story base, which supports the

14 brick-faced upper stories. Fenestration consisting of wood frame, double-hung sash windows is a characteristic feature. The building is architecturally significant for its Renaissance Revival elements and form based on traditional early skyscraper design. When the Floridan Hotel was constructed, it was the tallest structure in Tampa. It is the only historic skyscraper remaining in the city. Its commercial significance is based on its association with the real estate development in Tampa at the close of the Florida Land Boom era. The Floridan Hotel was constructed through local enterprise and effort in direct response to the need for a hotel.

J. J. Newberry Building/815–819 N. Franklin Street

The J. J. Newberry Building (8HI753) is the finest early example of the sleek lines of the International style in downtown Tampa. It was built in 1940 on the site of the former five-story Central Office Building. The two-story retail building epitomizes the sleek International mode with its absence of applied decoration, smooth brick walls, ribbon windows, and rounded corners. Elongated vertical windows glazed with glass block are set over the entrances and provide some verticality to the overall horizontal composition. This building features a structural system consisting of steel trusses supported by steel columns, with the entire second floor suspended from the exposed truss system above. This leaves the entire first floor clear of columns. This was an innovative approach that allowed for flexibility in retail display. During the CRAS of the Tampa Rail Project in 2002, this building was determined individually eligible for listing in the NRHP as part of the proposed Historic Resources of Downtown Tampa Multiple Property Submission (MPS).

Kress Building/811 N. Franklin Street

The S. H. Kress & Co. Building (8HI752) was listed in the NRHP in 1983 for its architectural and commercial significance. The Kress chain was noted throughout the country for its architecturally distinguished buildings, and the downtown Tampa building is no exception. The Renaissance Revival building, located in the heart of downtown Tampa's historic retail district, is the most architecturally illustrious commercial structure in the CBD dating from the years following the Florida Land Boom. The structure was designed by G. E. Mackay, a New York City architect, in 1929 and built the same year for S. H. Kress & Company. The four-story, block-deep commercial building is executed in polychromatic terra cotta set against soft beige and pink ashlar walls. The Kress store was one of the most popular and long-lived retail establishments in downtown Tampa, and it flourished throughout the 1930s, 1940s, and early 1950s, and eventually closed in 1980.

Woolworth Building/801 N. Franklin Street

Constructed in 1916 and remodeled in the 1940s, the Woolworth Building (8HI751) is a fine example of the Art Deco style. The façade is treated with colorful glazed tan and bronze blocks with contrasting blue glazed geometric trim. The storefront windows are set over black marble spandrels. The original suspended awning has been removed. In the 1910s, Woolworth expanded into the adjacent two-story commercial building to the east. In the 1960s, Woolworth was the site of Civil Rights-era lunch counter sit-ins by the National Association for the Advancement of Colored People's (NAACP) Youth Council. This historic resource remains in good condition. During the CRAS of the Tampa Rail Project, prepared in 2002, this building was determined

individually eligible for listing in the NRHP as part of the proposed Historic Resources of Downtown Tampa MPS. Its significance is in the areas of commerce and African-American history.

First United Methodist Church's Thomas Henderson Memorial Chapel/1001 N. Florida Avenue
The congregation of First United Methodist Church constructed the Tom Henderson Memorial Chapel (8HI8744) at 1001 N. Florida Avenue, situated in the center of the 1000 block of N. Florida Avenue, in 1948. This small building serves as a wedding and funeral chapel for the First United Methodist Church in downtown Tampa and is considered potentially eligible for listing in the NRHP. The First United Methodist Church's circa-1968 main building is located immediately south of the chapel at 410 E. Tyler Street, while the circa-1958 Branscomb Hall is situated on the same block north of the chapel. Designed by Leslie Iredell, the chapel is a well-preserved example of the Late Gothic Revival style found in the downtown area of Tampa. The masonry building is one-and-one-half stories and is one bay wide by four bays long. Decorative elements include buttresses, quoining, Gothic arches, a simplified cross, and two oculus openings which feature stained glass rose windows. The Thomas Henderson Memorial Chapel is a symbol of the growth and development of the First United Methodist Church, the oldest religious organization in Tampa. The building is an excellent example of the Late Gothic Revival style. Although typical of 1940s-era construction with the use of modest materials and minimal details, it is significant that the design retained the details and decorative elements that make this structure a fine example of the style.

St. Paul African Methodist Episcopal (AME) Church/506 E. Harrison Street
The St. Paul AME Church (8HI155) was determined eligible for listing in the NRHP in 1999, and is listed as a City of Tampa Landmark. From 1906 to 1917, the congregation of St. Paul AME Church constructed the building located at 506 E. Harrison Street, on the northeast corner of Harrison and Marion Streets. It is a two-and-one-half-story masonry building with Late Gothic Revival detailing. The main façade fronts Harrison Street, and the main entrance is accessed through an arcaded porch. This arcaded porch is located between corner towers. Other notable Late Gothic Revival details include the brick exterior, stone buttresses, brick corbelling, and cornice with dentils. It is architecturally important, as it is an excellent example of the Late Gothic Revival style found within the city of Tampa. St. Paul AME Church is considered to be exceptionally significant at a local level based on its associations with the historical development of the African-American community in Tampa. This is one of the oldest churches and is the largest African-American-owned building in the city.

Oaklawn Cemetery/606 E. Harrison Street
Oaklawn Cemetery (8HI5595) was determined eligible for listing in the NRHP in 1999. This cemetery is bounded by Harrison Street on the south, Jefferson Street on the east, Laurel Street on the north, and Morgan Street on the west. Although technically two separate cemeteries, Oaklawn Cemetery and St. Louis Cemetery, the two now appear as one cemetery with a common entrance and one boundary wall that encloses both cemeteries. It is approximately 3 acres (ac.) and contains an estimated 1,080 graves. The majority of the gravestones date to between 1850 and 1930. Two historic buildings are also located in the cemetery. This cemetery reflects both

the city's early settlement pattern and its effort to plan for growth. Oaklawn Cemetery displays the area's social history and developmental patterns through the variety of ethnic backgrounds it represents. It is also notable for its mortuary art forms and architecture, which exhibit the sensibilities of the late nineteenth and early twentieth centuries. The cemetery is important for understanding the living conditions and burial practices of various ethnic groups, including Tampa's African-American, Hispanic, and Italian communities.

Greater Bethel Baptist Church/1206 N. Jefferson Street
This church building was documented in 1990 as part of the Tampa Interstate Study,[8] and was determined eligible for listing in the NRHP. The Greater Bethel Baptist Church (8HI3282) was built around 1940. The Reverend Jacob Wesley Rhodes constructed the present building, which replaced an earlier wood frame church on the site. This church, which fronts west onto Jefferson Street, has a rectangular basilica-type plan. The church is constructed of brick and has a continuous masonry foundation. Pointed arch windows with contrasting limestone keystones and sills are located in each bay. The building has a steeply gabled roof covered with composition shingles. The front (west) façade features two towers at either end. The Greater Bethel Baptist Church is significant as an exemplary example of the Late Gothic Revival style. It exhibits many characteristics of the style including pointed arch windows, buttresses, towers, and brick exterior walls. The church is also important to Tampa's African-American heritage, as it served as a notable social institution within the community.

Fire Station No. 1 or the Tampa Firefighters Museum/720 Zack Street
Built in 1911, Fire Station No. 1 (8HI124) served as Tampa's Fire Department Headquarters from 1911 until 1978. The citizens of Tampa organized one of Florida's first volunteer fire departments in 1860. The red brick building is simply ornamented with a cornice of buff-colored corbelled brick, topped by a red brick parapet, which steps up at the primary corner facing Zack and Jefferson Streets. The interior of the first floor retains its original appearance. This building is considered to be significant due to its associations with social history, community planning and development, and government, and the basic integrity of the original architecture. During the CRAS of the Tampa Rail Project prepared in 2002, the building was determined individually eligible for listing in the NRHP as part of the proposed Historic Resources of Downtown Tampa MPS. This building is also a City of Tampa Landmark.

St. James Episcopal Church/1001 India Street/1202 N. Governor Street
St. James Episcopal Church (8HI8574), constructed around 1921 at 1001 India Street/1202 N. Governor Street, on the northeast corner of India Street (historically Lamar Avenue) and Nelson Court within the Central Park Village public housing project, is considered potentially eligible for listing in the NRHP. The congregation occupied the building until 1985. Subsequently, the church served as offices for the Head Start Program and as a clinic, but is presently vacant. The church is an excellent example of the Romanesque Revival style, unique to this area of Tampa. The masonry building is constructed of masonry framing and surfaced with red brick and a reddish mortar to match. The three-story belfry tower further distinguishes the main entrance to the building. Constructed in the African-American area historically known as "The Scrub," this church is culturally important as a symbol of the strength, unity, and growth of the African-

American community in Tampa. This building is completely surrounded by the Central Park Village public housing complex, constructed in 1955, and is one of very few remaining historic structures in this area. The building is an excellent example of the Romanesque Revival style expressed in the red brick and mortar, paired arch windows, and decorative arch features throughout the building.

Allen Temple AME Church and Parsonage/1112–1116 E. Scott Street
The Allen Temple AME Church (8HI3688), now the Paradise Missionary Baptist Church, was constructed between 1910 and 1914 at 1116 E. Scott Street on the northwest corner of E. Scott Street and N. Governor Street. The International-style Allen Temple AME Parsonage (8HI8575) was built ca. 1953 and is situated immediately west of the church at 1112 E. Scott Street. These buildings are considered potentially eligible for listing in the NRHP. The Allen Temple AME Church occupied the property until 1990, when the congregation relocated to its new facility on Palm Avenue. The Paradise Missionary Baptist Church has inhabited the church building since 2000. The church is an excellent example of the Late Gothic Revival style found in Tampa. The church is culturally important as a symbol of the strength, unity, and growth of the African-American community in Tampa. As the original home to one of the oldest African-American congregations in Tampa, the church building represents the strong Christian beliefs of the community and the importance of the people's faith. The Parsonage represents a history of growth, as it replaced an earlier parsonage that was located on the same site.

St. Peter Claver Catholic School/1401 N. Governor Street
The parish of St. Peter Claver Catholic School (8HI3659), along with Father Tyrrell, pastor of St. Louis' Catholic Church, constructed the building at 1401 N. Governor Street on the northeast corner of E. Scott Street and N. Governor Street in 1929, which is considered eligible for listing in the NRHP. The annex to the east was constructed when the school expanded in 1952. The Masonry Vernacular school building is two stories and one bay wide by three bays long. The walls are constructed of wood and masonry framing with a masonry band course dividing the first and second floor. The annex is composed of masonry framing, surfaced in matching brick with a decorative pierced brick pattern on the south elevation. The school is culturally important as a symbol of strength, unity, and growth of the African-American community in Tampa. As the oldest African-American school still in operation in Hillsborough County, the building represents the strong beliefs of the parish and community and the importance of education. Although the building does not display the use of the more expensive materials due to financial constraints, it is significant in depicting the growth and development of the school and as an example of twentieth century educational buildings.

Jackson Hotel/851 Zack Street
As part of the CRAS of the Tampa Rail Project prepared in 2002, the Jackson Hotel (8HI906) was determined eligible for listing in the NRHP for its significance in the areas of ethnic heritage, architecture, and social history. Built around 1905, the Jackson Hotel is a two-story Frame Vernacular building, which also exhibits Colonial Revival and Bahamian influences. This house is one of the last remaining examples of domestic dwellings in the area once called "The Scrub." This building has a mostly rectangular plan and features a wood frame structural system

that rests on a brick pier foundation. The large Frame Vernacular house is six bays deep by three bays wide, and is currently being utilized as apartments. It is an important building that historically typified the African-American community in the early part of the twentieth century. Architecturally, this vernacular building reflects influences of the area's residents and trends of the period.

Union Depot Hotel/856–860 Zack Street
The Union Depot Hotel (8HI6939) was listed in the NRHP in the year 2000 and also is considered a City of Tampa Landmark. The Masonry Vernacular style commercial building was constructed in 1912. The vacant two-story former hotel is six-sided and constructed of red brick. Notable features include arched windows, the use of red brick with blond brick details, and cast iron framed storefronts. A sign that reads "JJ Stevens-1912" is located on the parapet. Most of the windows found throughout the building have been covered with boards. The Union Depot Hotel maintains significance as a turn-of-the-century commercial building with Italianate features and for its historical associations with the nearby Tampa Union Station. It was constructed to serve as satellite lodging and a commercial venue for the nearby Tampa Union Station.

Tampa Union Station /601 Nebraska Avenue
The Tampa Union Station (8HI298) passenger building was designed by J. F. Leitner, a prominent local architect, and built ca. 1912 in the Italian Renaissance Revival style. Located in the predominantly industrial area between downtown Tampa and the port activities in the Ybor Channel area, the building was ideally situated to serve both the needs of freight and passenger service. A two-story brick passenger station and adjoining one-story brick freight depot, connected by a metal shed canopy, along with the original open gabled passenger canopies, form the historic complex. Because of its significance in the areas of community planning and development, transportation, and architecture, it was listed in the NRHP in 1973. It is also a City of Tampa Landmark. Although this building was not mentioned in the 1973 report, the Tampa Union Station Baggage Building is potentially eligible for listing in the Tampa Union Station NRHP designation.

Ybor City National Historic Landmark District
The Ybor City NHLD (8HI313) is located within or adjacent to several alternative segments in the city of Tampa, Hillsborough County. Designated by the National Park Service on December 14, 1990, the Ybor City NHLD constitutes one of the most outstanding collections of resources associated with late-nineteenth and early-twentieth century Cuban and Spanish settlement in the United States. With strong Cuban, Italian, and other ethnic associations, the district contains buildings that illustrate the key aspects of the experiences of those immigrant groups. The NHLD includes an impressive array of cigar factories, the largest such collection in the United States, and related industrial structures; a major collection of commercial and commercial-residential structures; a group of ethnic clubhouses; and historic worker housing.

Ybor City was established in October 1885 as a planned "company" town. Vicente Martinez Ybor served as president of the Ybor City Land & Development Company, which offered land,

buildings, and other incentives to entice cigar makers from Key West, Florida and Havana, Cuba to relocate to this new city. Cigar factories were generally built first with worker's houses built around them. New blocks or sections were added as new factories were built. The original settlement centered on 7th Avenue, which became the main commercial street. A large fire devastated much of Ybor City in March 1908.

The Ybor City National Register District was initially listed in the NRHP in 1974 and focused along 7th Avenue between 13th Street and 22nd Street. In some areas, the district extended as far north as Palm Avenue and as far south as 5th Avenue. In 1975, a local historic district with large rectangular-shaped boundaries, the Barrio Latino District, was established. The Barrio Latino District boundaries were recently expanded to the east and south in December 2002 to include a larger area. The current boundaries are primarily Nebraska Avenue on the west, Columbus Drive and I-4 on the north, 26th and 28th Streets on the east, and 4th Avenue and Adamo Drive on the south. In December 1990, Ybor City was designated as a NHLD with larger boundaries than the NRHP District. The approximate boundaries are Nebraska Avenue on the west, 21st Street on the north, 26th Street on the east, and 1st Avenue on the south. In 1991, a total of 948 historic structures were considered contributing to the Ybor City NHLD.

German American Club/2105 N. Nebraska Avenue

The German American Club (8HI142), also known as Los Caballeros de la Luz, is a contributing resource within the Ybor City NHLD and is considered to be individually eligible for listing in the NRHP. Built in 1909 and remodeled several times, this three-story building occupies the northeast corner of Nebraska Avenue and 11th Street. Faced with concrete block covered with applied stucco and molded to form the appearance of tooled stone masonry, the building exhibits Classical details and proportions. Originally, the building housed a club for Ybor City's German residents, until it was sold in 1919 during a period of anti-German sentiment following World War I. The Young Men's Hebrew Association occupied it from 1925 until 1944. Los Caballeros de la Luz, a Hispanic group, acquired it in 1962. The City of Tampa currently owns the building and several city agencies occupy it at this time.

Centro Asturiano/1913 N. Nebraska Avenue

Centro Asturiano (8HI835) is both individually listed in the NRHP and is a contributing resource within the Ybor City NHLD. The prominent architectural firm of Bonfoey and Elliot designed the building, and construction was completed between 1913 and 1914. Located on the southeast corner of Palm Street and Nebraska Avenue, this three-story yellow brick and stone building features an elaborate front façade with Beaux Arts characteristics. Centro Asturiano maintains architectural and historical significance. Architecturally, it is an excellent example of Beaux Arts Classicism, while exhibiting influences from a number of other architectural styles. The building's historical importance is based on its associations with the Spanish immigrants who established homes in the Tampa/Ybor City area starting in the late 1880s.

I-Type House/2210 N. 31st Street

The I-Type House (8HI4415) was documented in 1990 as part of the Tampa Interstate Study, and was determined eligible for listing in the NRHP. It is located on the southwest corner of N. 31st

Street and E. 12th Avenue in a residential neighborhood on the eastern edge of Ybor City. The two-story house is a wood frame structure clad in drop siding set on a concrete pier foundation. The front (east) façade has a two-story wooden porch of three bays that extends across almost the entire length of the façade. The I-Type House is significant to the architectural history of Tampa as a rare surviving example of a Frame Vernacular "I-Type" single-family house. Although the house dates from the turn of the twentieth century, it represents the survival of an eighteenth century, mid-Atlantic coastal housing type which, during the nineteenth century, became popular throughout the southeast.

Corridor A

Archaeological Resources

There are no NRHP-listed archaeological resources within Corridor A. One NRHP-eligible archaeological resource was previously recorded along alignments within Corridor A. Based on field reconnaissance, the Columbus Drive Site (8HI83) appears to have been destroyed by urban development and is no longer NRHP-eligible.

Historic Resources

Twenty significant historic resources identified within Corridor A, including three historic districts, are located in the city of Tampa, Hillsborough County (See Table 3-15). These resources were primarily constructed during the first half of the twentieth century, and they exhibit the patterns and physical characteristics of the city's built environment during these years. They also represent the commerce, planning and development, ethnic history, and social history of Tampa. The NRHP-listed and locally landmarked Tampa Heights Historic District is located north and west of I-275. It is situated outside of the FHSR project APE, however, since all of the alignments being evaluated are located south of I-275 and therefore would not cause any direct (actual land acquisition) or secondary (visual, noise, use, etc.) impacts to the Tampa Heights Historic District. For this reason, the Tampa Heights Historic District is not included in the CRAS or in Table 3-15.

Corridor B

Archaeological Resources

There are no NRHP-listed archaeological resources within Corridor B. One NRHP-eligible archaeological resource was previously recorded along alignments being evaluated within Corridor B. The Diamond Dairy Site (8HI476), originally recorded within the proposed ROW of I-75, was previously subjected to Phase III mitigative excavation, and subsequently destroyed by construction of the interstate highway.

Historic Resources

No NRHP-listed or NRHP-eligible historic resources are recorded along alignments within Corridor B.

Corridor C

Archaeological Resources
No NRHP-listed or NRHP-eligible archaeological resources are recorded along alignments within Corridor C.

Historic Resources
No NRHP-listed or NRHP-eligible historic resources are recorded along alignments being evaluated within Corridor C.

Corridor D

Archaeological Resources
No NRHP-listed or NRHP-eligible archaeological resources are recorded along alignments within Corridor D.

Historic Resources
No NRHP-listed or NRHP-eligible historic resources are recorded along alignments within Corridor D.

Corridor E

Archaeological Resources
No NRHP-listed or NRHP-eligible archaeological resources are recorded along alignments within Corridor E.

Historic Resources
No NRHP-listed or NRHP-eligible historic resources are recorded along alignments within Corridor E.

3.7 PHYSICAL ENVIRONMENT

3.7.1 Air Quality

Transportation sources that utilize fossil fuels for power produce pollutants. The primary mode of transportation within the FHSR project area is the motor vehicle. A project that affects the vehicle miles traveled (VMT) by motor vehicle will also affect fuel use and the amount of pollutants emitted.

National Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants including carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), lead, particulate matter, and sulfur dioxide (SO_2). The NAAQS are summarized in Table 3-16. Primary standards set limits to protect public health, and secondary

standards set limits to protect public welfare. The State of Florida has adopted NAAQS [Florida Department of Environmental Protection (FDEP), Rule 62, Chapter 62-204 Air Pollution Control-General Provisions]. With the exception of SO_2, which has a stricter state standard, the standards are the same as the NAAQS.

Table 3-16
National Ambient Air Quality Standards

Pollutant	Averaging Time	Standard Value [1]	Standard Type
Carbon Monoxide	8-Hour	9 ppm (10 mg/m^3)	Primary
	1-Hour	35 ppm (40 mg/m^3)	Primary
Nitrogen Dioxide	Annual Arithmetic Mean	0.053 ppm (100 ug/m^3)	Primary & Secondary
Ozone	1-Hour	0.12 ppm (235 ug/m^3)	Primary & Secondary
	8-Hour	0.08 ppm (157 ug/m^3)	Primary & Secondary
Lead	Quarterly Average	1.5 ug/m^3	Primary & Secondary
Particulate (PM 10) [2]	Annual Arithmetic Mean	50 ug/m^3	Primary & Secondary
	24-Hour	150 ug/m^3	Primary & Secondary
Particulate (PM 2.5) [3]	Annual Arithmetic Mean	15 ug/m^3	Primary & Secondary
	24-Hour	65 ug/m^3	Primary & Secondary
Sulfur Dioxide	Annual Arithmetic Mean	0.030 ppm (80 ug/m^3)	Primary
	24-Hour	0.14 ppm (365 ug/m^3)	Primary
	3-Hour	0.50 ppm (1300 ug/m^3)	Secondary

[1] ppm = parts per million, mg = milligrams, ug = micrograms, m^3 = cubic meters
[2] PM 10 standard is for particles with diameters of 10 micrometers or less
[3] PM 2.5 standard is for particles with diameters of 2.5 micrometers or less
Source: EPA, 1990

Transportation sources, particularly motor vehicles, are the primary source of CO, oxides of nitrogen (NO_x), and hydrocarbons (also referred to as volatile organic compounds or VOC). In the presence of heat and sunlight, NO_x and VOC chemically react to form O_3. Particulate matter and SO_2 are primarily emitted from stationary sources that burn fossil fuels (e.g., power plants, industrial processes). Historically, motor vehicles were the major source of lead. However, the phase-out of leaded gasoline has virtually eliminated motor vehicles as a source of lead emissions.

Attainment Status

All areas of the United States have been assigned a designation to comply with the NAAQS. Based on air quality monitoring data, an area that has not shown a violation of the NAAQS is designated as "in attainment." An area that has shown a violation of the NAAQS may be designated as "non-attainment." Areas that were designated non-attainment subsequent to the *Clean Air Act Amendments of 1990* (CAAA), but have since been re-designated as in attainment by EPA, are referred to as "maintenance areas."

All four counties within Corridors A through E are currently designated as in attainment of the NAAQS for all pollutants. However, Hillsborough County, within Corridor A, was designated as in attainment of the NAAQS for O_3 subsequent to the CAAA, and, therefore, is classified as a maintenance area. As required by the maintenance area designation, an air quality maintenance plan was developed for the Tampa Bay area, which includes Hillsborough County. The most current version of the plan, Air Quality Maintenance Plan (2005-2015) Hillsborough and Pinellas Counties[9] (FDEP 2002), was developed as an element of the State Implementation Plan (SIP).

As documented in the maintenance plan for Hillsborough County, the area has continued to comply with the NAAQS for O_3. Trends from O_3 monitoring show continued progress in lowering the maximum one-hour O_3 levels. Based on projections for future years, emissions of VOC and NO_x are expected to remain below attainment year levels throughout the 10-year maintenance plan period. The most recent update to the maintenance plan did not require any substantial change in commitments from the previous plan.

Conformity Determination

After passage of the 1990 CAAA, regulations were established requiring that federal actions conform to any SIP. Two conformity regulations were developed:

- 40 Code of Federal Regulations (CFR) Part 93 Subpart A (commonly referred to as the Transportation Conformity Rule) requires a conformity determination for federal actions related to transportation plans, programs, and projects that are developed, funded, or approved by the U.S. Department of Transportation and by MPOs or other recipients of funds under Title 23, United States Code (USC) or the Federal Transit Laws (49 USC Chapter 53).
- 40 CFR Part 93 Subpart B (commonly referred to as the General Conformity Rule) applies to federal actions not covered by the Transportation Conformity Rule.

The conformity regulations are applicable to the portion of the FHSR project traversing Hillsborough County, within Corridors A, B, and C, because the county area is classified as a maintenance area for O_3. Polk, Osceola, and Orange counties, where Corridors C through E are located, are all designated as in attainment of all the NAAQS prior to the 1990 CAAA. Therefore, the conformity regulations are not applicable to these three counties.

Monitoring Data

Air quality monitors are maintained throughout the project area. The Monitor Summary Report prepared by EPA was reviewed for the year 2002 and is summarized in Table 3-17 for the four counties within Corridors A through E. There were no reported violations of the NAAQS for any of the pollutants monitored.

The Pollutant Standard Index (PSI) is an approximate indicator of overall air quality within a county. As indicated in Table 3-17, some counties have monitor stations for some, but not all, of the pollutants. PSI values consider all of the available measurements in each county.

The Monitor PSI Report maintained by EPA was reviewed for 2001, the most recent year available. For Hillsborough County, within Corridors A, B, and C, air quality was rated good for 62 percent, moderate for 37 percent, and unhealthy for 1 percent of the 274 days that a PSI was developed. For Polk County, within Corridors C and D, air quality was rated good for 74 percent and moderate for 26 percent of the 273 days that a PSI was developed. For Osceola County, within Corridors D and E, air quality was rated good for 82 percent and moderate for 18 percent of the 273 days that a PSI was developed. For Orange County, Corridor E, air quality was rated good for 76 percent and moderate for 24 percent of the 274 days that a PSI was developed.

Table 3-17
Monitor Summary Data

County	Carbon Monoxide (ppm) [1]		Nitrogen Dioxide (ppm) [1]	Sulfur Dioxide (ppm) [1]		Ozone (ppm) [1]	Pm 10 (Ug/M^3) [2]		Lead (Ug/M^3) [2]
	2nd Max 1-Hour	2nd Max 8-Hour	Annual Mean	2nd Max 24-Hour	Annual Mean	2nd Max 1-Hour	2nd Max 24-Hour	Annual Mean	Quarterly Mean
Hillsborough	5.3	3.8	0.011	0.047	0.007	0.094	56	27.0	1.27
Polk	NA[3]	NA[3]	NA[3]	0.010	0.004	0.092	78	21.0	NA[3]
Osceola	NA[3]	NA[3]	NA[3]	NA[3]	NA[3]	0.094	NA[3]	NA[3]	NA[3]
Orange	4.4	2.5	0.011	0.005	0.001	0.102	38	23.0	NA[3]

[1] ppm = parts per million
[2] ug/m^3 = micrograms per cubic meter
[3] Pollutant not monitored in the county
Source: EPA, 2002.

3.7.2 Noise

Noise is typically defined as unwanted or undesirable sound, where sound is characterized by small air pressure fluctuations above and below the atmospheric pressure. The basic parameters of environmental noise that affect human subjective response are: (1) intensity or level; (2) frequency content; and (3) variation with time. The first parameter is determined by how greatly the sound pressure fluctuates above and below the atmospheric pressure, and is expressed on a compressed scale in units of decibels. By using this scale, the range of normally encountered sound can be expressed by values between 0 and 120 decibels. On a relative basis, a 3-decibel change in sound level generally represents a barely-noticeable change outside the laboratory, whereas a 10-decibel change in sound level would typically be perceived as a doubling (or halving) in the loudness of a sound.

The frequency content of noise is related to the tone or pitch of the sound, and is expressed based on the rate of the air pressure fluctuation in terms of cycles per second (called Hertz and abbreviated as Hz). The human ear can detect a wide range of frequencies from about 20 Hz to 17,000 Hz. However, because the sensitivity of human hearing varies with frequency, the A-weighting system is commonly used when measuring environmental noise to provide a single number descriptor that correlates with human subjective response. Sound levels measured using this weighting system are called "A-weighted" sound levels, and are expressed in decibel notation as "dBA." The A-weighted sound level is widely accepted by acousticians as a proper unit for describing environmental noise.

Because environmental noise fluctuates from moment to moment, it is common practice to condense all of this information into a single number, called the "equivalent" sound level (Leq). Leq can be thought of as the steady sound level that represents the same sound energy as the varying sound levels over a specified time period (typically 1 hour or 24 hours). Often the Leq values over a 24-hour period are used to calculate cumulative noise exposure in terms of the Day-Night Sound Level (Ldn). Ldn is the A-weighed Leq for a 24-hour period with an added 10-decibel penalty imposed on noise that occurs during the nighttime hours (between 10 PM and 7 AM). Many surveys have shown that Ldn is well correlated with human annoyance, and, therefore, this descriptor is widely used for environmental noise impact assessment. Figure 3-19 provides examples of typical noise environments and criteria in terms of Ldn. While the extremes of Ldn are shown to range from 35 dBA in a wilderness environment to 85 dBA in noisy urban environments, Ldn is generally found to range between 55 dBA and 75 dBA in most communities. As shown in Figure 3-19, this spans the range between an "ideal" residential environment and the threshold for an unacceptable residential environment according to federal agency criteria.

High Speed Rail Noise Criteria

Noise impact for this project is based on the criteria defined in the FRA guidance manual, High-Speed Ground Transportation Noise and Vibration Impact Assessment[10] (Final Draft, December 1998). The FRA noise impact criteria are founded on well-documented research on community

reaction to noise and are based on change in noise exposure using a sliding scale. Although higher levels of train noise are allowed in neighborhoods with high levels of existing noise, smaller increases in total noise exposure are allowed with increasing levels of existing noise.

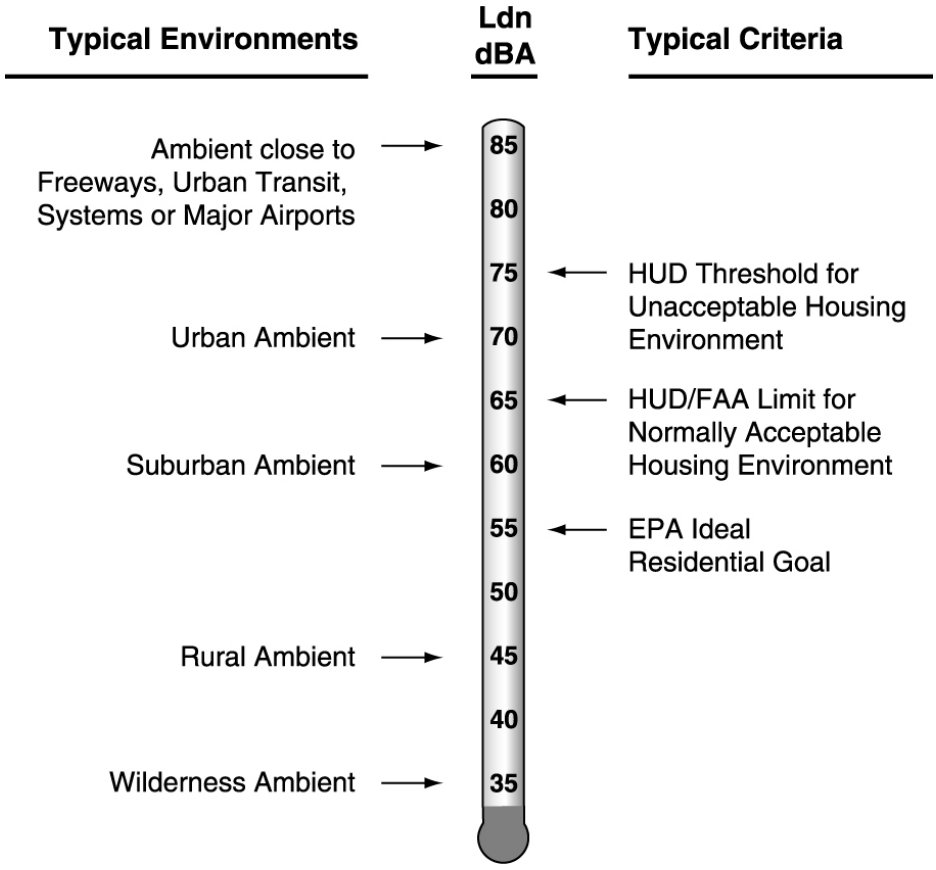
The FRA Noise Impact Criteria group noise sensitive land uses into the following three categories:

Category 1: Buildings or parks where quiet is an essential element of their purpose.

Category 2: Residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.

Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, churches and active parks.

Figure 3-19
Examples of Typical Outdoor Noise Exposure



Ldn is used to characterize noise exposure for residential areas (Category 2). For other noise sensitive land uses, such as outdoor amphitheaters and school buildings (Categories 1 and 3), the maximum 1-hour Leq during the facility's operating period is used.

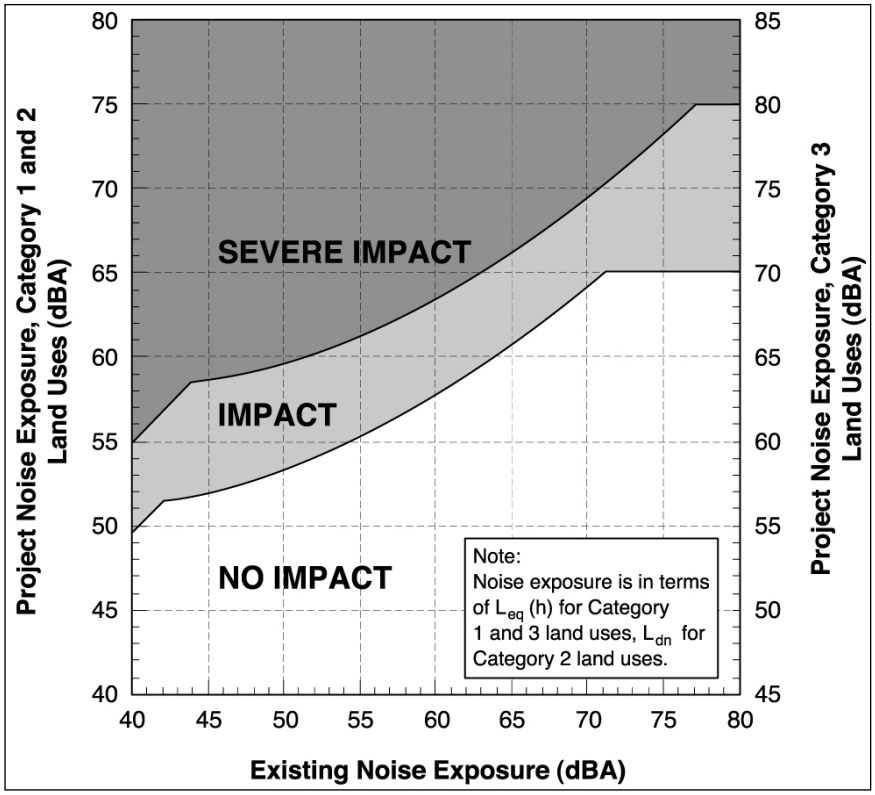
There are two levels of impact included in the FRA criteria. The interpretation of these two levels of impact is summarized below:

Severe: Severe noise impacts are considered "significant" as this term is used in the *National Environmental Policy Act of 1969* (NEPA) and implementing regulations. Noise mitigation will normally be specified for severe impact areas unless there is no practical method of mitigating the noise.

Impact: In this range of noise impact, sometimes referred to as moderate impact, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation. These other factors can include the predicted increase over existing noise levels, the types and number of noise-sensitive land uses affected, existing outdoor-indoor sound insulation, and the cost effectiveness of mitigating noise to more acceptable levels.

The noise impact criteria are summarized in Table 3-18. The first column shows the existing noise exposure and the remaining columns show the project noise exposure thresholds that would cause either moderate or severe impact. The future noise exposure would be the combination of the existing noise exposure and the additional noise exposure caused by the project.

Table 3-18
FRA Noise Impact Criteria



Source: Federal Railroad Administration, December 1998

Existing Noise Conditions

Noise-sensitive land uses along the project corridor were first identified based on drawings within Corridors A through E, aerial photographs, visual surveys, and land use information. Based on this review, summary descriptions of noise-sensitive land uses and existing noise sources along the FHSR corridor alignments defined in Section 2, from west to east, are as follows:

- Alignment A1 (Corridor A). Noise-sensitive land uses along this alignment include single-family residences, apartment complexes, and hotels. In addition, there are areas of commercial use, as well as churches and schools, on both sides of the alignment. Existing noise is dominated by traffic on I-275, I-4, and local roadways.

- Alignment A2 (Corridor A). Noise-sensitive land uses along this alignment include single-family residences, apartment complexes, and hotels. In addition, there are areas of commercial use, as well as churches and schools, on both sides of the alignment. Existing noise is dominated by traffic on I-275 and local vehicular traffic.

- Alignment B1 (Corridor B). Single and multi-family residences, mobile homes, churches, and schools are the noise-sensitive land uses along this alignment. Commercial buildings are interspersed throughout this area on both sides of the alignment. Existing noise sources along this alignment include traffic on local roads, as well as traffic on I-4 and I-75.

- Alignment B2 (Corridor B). Along this alignment, the noise-sensitive land uses consist of single-family residences, mobile homes, schools, and churches. Commercial buildings are also interspersed throughout the alignment. The dominant noise sources in this area are local vehicular traffic, in addition to traffic on I-75 and I-4.

- Alignment C1 (Corridor C). The noise-sensitive land uses along this alignment consist of single-family residences, mobile homes, hotels, apartments, schools, and churches. A few commercial building are interspersed throughout the alignment. The dominant noise source is the traffic along I-4.

- Alignment D1 (Corridor D). Along the eastern section of this alignment, noise-sensitive land uses consist of single-family homes, mobile homes, hotels, churches, and schools. Along the western section of this alignment, noise-sensitive land uses include hotels and apartments. In between the eastern and western sections is mostly vacant land. Churches and schools, as well as commercial buildings, are interspersed along the eastern section. The dominant noise source throughout this alignment is traffic on I-4.

- Alignment E1 (Corridor E). The noise-sensitive land uses in this area consist of hotels (concentrated in the eastern section of this alignment), single-family residences, churches, and mobile homes. Commercial buildings are interspersed on both sides of the alignment. The dominant noise sources along this alignment are the local traffic and the traffic on I-4 and the Bee Line Expressway (S.R. 528).
    - Alignment E2 (Corridor E). The noise-sensitive land uses along this alignment include apartments, single and multi-family residences, schools, churches, and hotels. A few commercial buildings are interspersed throughout the area. The dominant noise sources along this alignment are the traffic from I-4 and from the Central Florida Greeneway (S.R. 417).

Existing ambient noise levels in the previously listed areas were characterized through direct measurements at selected sites along the corridors during the period from January 20 through January 29, 2003. Estimating existing noise exposure is an important step in the noise impact assessment since, as indicated previously in this report, the thresholds for noise impact are based on the existing levels of noise exposure. The measurements included both long-term (typically 24-hour) and short-term (30 to 60 minute) monitoring of the A-weighted sound level at representative noise-sensitive locations.

All of the measurement sites were located in noise-sensitive areas, and were selected to represent a range of existing noise conditions along the corridors. Figure 3-20 shows the general location of the 18 long-term monitoring sites (LT-1 through LT-18) and 25 short-term monitoring sites

(ST-1 through ST-25). At each site, the measurement microphone was positioned to characterize the exposure of the site to the dominant noise sources in the area. For example, microphones were located at the approximate setback lines of the receptors from adjacent roads or rail lines, and were positioned to avoid acoustic shielding by landscaping, fences or other obstructions.

The results of the existing ambient noise measurements, summarized in Table 3-19, were used as a basis for determining the existing noise conditions at all noise-sensitive receptors along the FHSR corridor. Because the existing ambient noise is dominated by highway traffic in most locations along the project corridor, the measured Ldn values were typically normalized to a distance of 100 ft. from the highway to characterize the existing noise for each area. In some areas, the Ldn was estimated from short-term Leq data using the method recommended by the FRA. More commonly, the short-term Leq data were used to characterize the existing noise levels at specific institutional receptors. The resulting characterization of existing ambient noise conditions is summarized in the following section.

Table 3-19
Summary of Existing Ambient Noise Measurement Results

Alignment No.	Site No.	Measurement Location Description	Start of Measurement		Meas. Time (Hrs)	Noise Exposure (dBA)	
			Date	Time		Ldn	Leq
A1	LT-1	S.F. Res. @ 1706 12th Avenue	1-20-03	12:00	24	69	--
B1	LT-2	S.F. Res @ 2360 12th Avenue	1-20-03	13:00	24	69	--
B1	LT-3	S.F. Res. @ 3411 N. 56th Street	1-20-03	15:00	24	76	--
B1	LT-4	S.F. Res. @ 7214 Kingsbury Circle	1-21-03	16:00	24	66	--
B2	LT-5	Mobile Home Park off of Falkenburg Rd	1-21-03	16:00	24	77	--
C1	LT-6	S.F. Res. @ 13120 Gore Rd	1-21-03	16:00	24	68	--
C1	LT-7	S.F. Res. @ 5650 Harvey Tew Road	1-21-03	16:00	24	64	--
C1	LT-8	S.F. Res. @ 910 King Street	1-22-03	10:00	24	72	--
C1	LT-9	S.F. Res. @ 2502 Northside Frontage Road	1-22-03	17:00	24	72	--
D1	LT-10	Cambridge Cove Apartments	1-23-03	10:00	24	64	--
D1	LT-11	S.F. Res. @ 1703 Canary Circle	1-23-03	14:00	24	74	--
D1	LT-12	S.F. Res. @ 5563 Citrus Hill Drive	1-23-03	17:00	24	62	--
D1, E1	LT-13	Parkway Apartments - Bldg. 3028	1-27-03	10:00	24	67	--
E1	LT-14	S.F. Res. @ End of 3rd Avenue	1-27-03	11:00	24	68	--
E2	LT-15	S.F. Res. @ 13476 Texas Woods Circle	1-27-03	12:00	24	61	--
E2	LT-16	S.F. Res. @ 1234 Epson Oaks Way	1-28-03	9:00	24	63	--
E2	LT-17	S.F. Res. @ 13172 Heather Moss Drive	1-28-03	13:00	24	67	--
E2	LT-18	S.F. Res. @ 14444 Estrella	1-28-03	17:00	24	62	--
A1	ST-1	S.F. Res. @ East 7th Avenue	1-20-03	11:47	1	--	69
*	ST-2	S.F. Res. @ 15th Avenue and 20th Street	1-20-03	15:06	1	--	63
C1	ST-3	Landmark Baptist Church	1-20-03	15:05	1	--	64
C1	ST-4	Armwood High School	1-21-03	9:13	1	--	69
C1	ST-5	Assembly Hall of Jehovah's Witnesses	1-21-03	9:14	1	--	62
C1	ST-6	Evans Park	1-21-03	10:35	1	--	66
C1	ST-7	Cedars of Lebanon Missionary Baptist Church	1-21-03	10:37	1	--	64

Table 3-19 (cont.)
Summary of Existing Ambient Noise Measurement Results

Alignment No.	Site No.	Measurement Location Description	Start of Measurement		Meas. Time (Hrs)	Noise Exposure (dBA)	
			Date	Time		Ldn	Leq
C1	ST-8	Townsgate Apartments, #1210	1-21-03	12:08	1	--	63
A2	ST-9	Corner of East 2nd Avenue and North 23rd Street	1-22-03	9:02	1	--	64
B2	ST-10	World Revival Church	1-22-03	11:10	1	--	66
D1	ST-11	S.F. Res. @ West 10th Street, #2	1-22-03	11:30	1	--	67
B2	ST-12	Tanner Road Park	1-22-03	13:28	1	--	70
D1	ST-13	Victory Church	1-23-03	9:38	¾	--	59
C1	ST-14	Faith Temple Assembly of God	1-24-03	9:39	1	--	64
D1	ST-15	1123 Walt Williams Road, near homes 143/144	1-24-03	10:00	1	--	63
D1	ST-16	S.F. Res. @ 513 Union Drive	1-24-03	11:48	1	--	67
D1	ST-17	Wendell Watson Elementary School	1-24-03	12:45	1	--	60
D1	ST-18	Hampton Inn – Celebration, FL	1-27-03	9:09	1	--	69
*	ST-19	Apartments at 10555 Willow Drive – Orlando, FL	1-27-03	11:00	1	--	69
*	ST-20	Hotels North of Interstate-4 – Orlando, FL	1-27-03	11:14	1	--	70
E2	ST-21	Meadowwood Elementary School	1-27-03	14:07	1	--	55
E2	ST-22	Hunters Creek Middle School	1-27-03	14:46	½	--	53
*	ST-23	Spring Hill Suites – Buena Vista, FL	1-28-03	14:38	½	--	68
E2	ST-24	Holiday Inn – Orlando, FL	1-28-03	15:44	½	--	65
E1	ST-25	S.F. Res. @ end of Marco Polo Drive	3-27-03	9:00	1	--	63

Source: Harris Miller Miller & Hanson Inc., 2003

* Extra measurement

Due to the large area that some corridors encompass, ranges of noise levels were used to describe the ambient noise levels, rather than a single noise level. The range of noise levels was taken from multiple measurement locations within a single alignment.

- Alignment A1 (Corridor A). The Ldn in this area is estimated to range between 77 dBA and 79 dBA at 100 ft. from I-275/I-4, based on 1-hour and 24-hour measurements (ST-1 and LT-1). The existing daytime Leq for the parks, churches, and schools in this area is taken to be 69 dBA, based on the actual measurement at site ST-1, which best represents the churches and schools.

- Alignment A2 (Corridor A). The existing Ldn for this area is estimated to be 72 dBA at 100 ft. from Adamo Drive based on the 1-hour measurement at site ST-9. The parks, churches, and schools in this area have an estimated daytime Leq of 64 dBA based on the measurement at site ST-9.

-

Alignment B1 (Corridor B). The Ldn for this area is estimated to range between 74 and 78 dBA at 100 ft. from I-4 based on 24-hour measurements (LT-3 and LT-4). The western most area of this alignment has an estimated Ldn of 81 dBA at 100 ft. from I-4 based on the measurements at site LT-5. The higher Ldn for this area is due to the intersection of I-75 and I-4. The daytime Leq within this area is estimated to be 69 dBA based on a 24-hour measurement (LT-4).

- Alignment B2 (Corridor B). The existing Ldn along this alignment is estimated to range between 76 and 77 dBA at 100 ft. from I-75 based on 1-hour measurements (ST-10 and ST-12). The northern area of this alignment (the same as the eastern area of Alignment B1) has an estimated Ldn of 81 dBA at 100 ft. from I-75 based on the 24-hour measurement LT-5. As previously discussed, this higher level is due to the intersection of I-4 and I-75. The daytime Leq in Alignment B2 is estimated to range from 66 dBA to 70 dBA based on measurements at ST-10 and ST-12.

- Alignment C1 (Corridor C). The Ldn in this area is estimated to be between 76 and 77 dBA at 100 ft. from I-4 based on 24-hour measurements (LT-6, LT-7, LT-8, and LT-9). The existing daytime Leq for the schools, parks, and churches within this alignment is estimated to range between 62 and 69 dBA based on the 1-hour measurements at ST-3, ST-4, ST-5, ST-6, ST-7, ST-8, and ST-14.

- Alignment D1 (Corridor D). The Ldn in the Lakeland area of this alignment is estimated to be in the range of 75 dBA to 79 dBA at 100 ft. from I-4 based on 24-hour measurements (LT-10 and LT-11). The majority of this alignment is estimated to be 68 dBA at 100 ft. from I-4 based on the long term measurement site LT-12. Near the Celebration area, the Ldn is estimated to be 80 dBA at 100 ft. from I-4 based on 24-hour measurement at site LT-13.

- Alignment E1 (Corridor E). The existing Ldn in the I-4 area is estimated to be 80 dBA at 100 ft. from I-4 based on a 24-hour measurement at site LT-13. Along the Bee Line Expressway (S.R. 528), the Ldn is estimated to be 68 dBA at 100 ft. from the centerline based on a 1-hour measurement (ST-25). The existing Ldn in the eastern section of this alignment is estimated to be 59 dBA based on a 24-hour measurement at site LT-14. The existing daytime Leq is estimated to be 68 dBA based on the 1-hour measurement at site ST-23.

- Alignment E2 (Corridor E). The existing Ldn for the majority of this area is estimated to be in the range of 70 dBA to 74 dBA at 100 ft. from the Central Florida Greeneway (S.R. 417) based on 24-hour measurements (LT-16, LT-17, and LT-18). In the eastern most section of this alignment (East of Landstar Boulevard), the Ldn is estimated to be 65 dBA at 100 ft. from the centerline based on the measurement at site LT-15. The daytime Leq for parks, schools, or churches in this alignment is estimated to be between 53 and 64 dBA based on 1-hour measurements at sites ST-21, ST-22, and ST-24.

3.7.3 Vibration

Ground-borne vibration is the oscillatory motion of the ground about some equilibrium position that can be described in terms of displacement, velocity, or acceleration. Because sensitivity to vibration typically corresponds to the amplitude of vibration velocity within the low-frequency range of most concern for environmental vibration (roughly 5-100 Hz), velocity is the preferred measure for evaluating ground-borne vibration from rail projects.

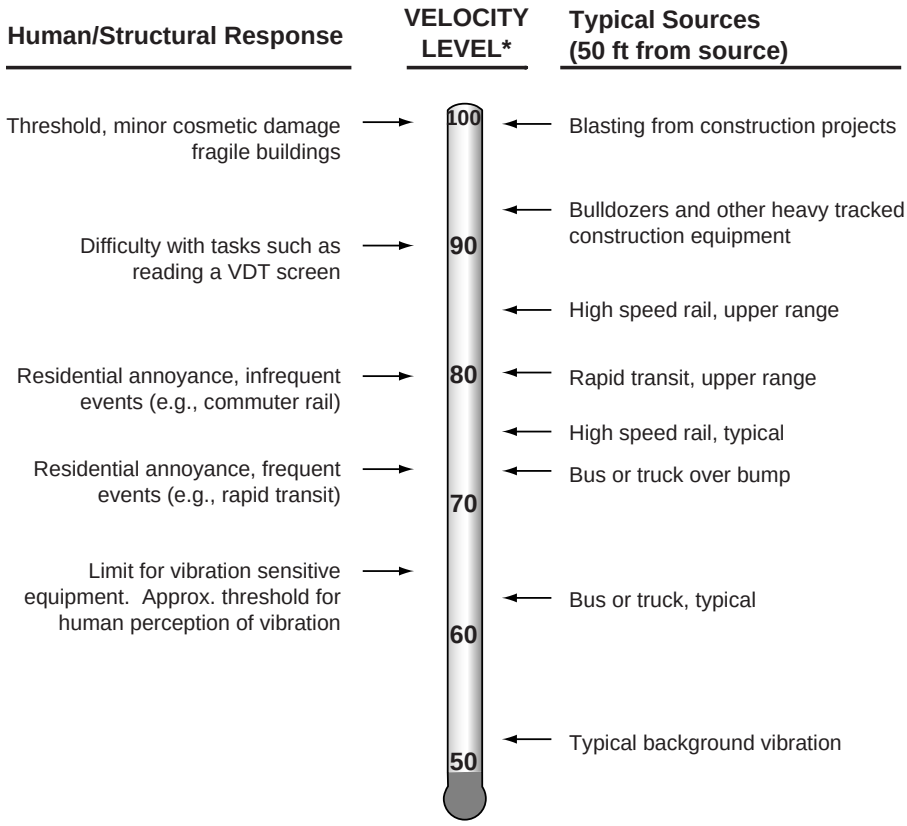
The most common measure used to quantify vibration amplitude is the peak particle velocity (PPV), defined as the maximum instantaneous peak of the vibratory motion. PPV is typically used in monitoring blasting and other types of construction-generated vibration, since it is related to the stresses experienced by building components. Although PPV is appropriate for evaluating building damage, it is less suitable for evaluating human response, which is better related to the average vibration amplitude. Thus, ground-borne vibration from passenger rail systems is usually characterized in terms of the "smoothed" root mean square (rms) vibration velocity level, in decibels (VdB), with a reference quantity of one micro-inch per second. VdB is used in place of dB to avoid confusing vibration decibels with sound decibels.

Figure 3-21 illustrates typical ground-borne vibration levels for common sources, as well as criteria for human and structural response to ground-borne vibration. As shown, the range of interest is from approximately 50 to 100 VdB, from imperceptible background vibration to the threshold of damage. Although the approximate threshold of human perception to vibration is 65 VdB, annoyance is usually not significant unless the vibration exceeds 70 VdB.

Ground-Borne Vibration Criteria

The FRA ground-borne vibration impact criteria are based on land use and train frequency, as shown in Table 3-20. There are some buildings, such as concert halls, recording studios, and theaters, which can be very sensitive to vibration, but do not fit into any of the three categories listed in Table 3-21. Due to the sensitivity of these buildings, they usually warrant special attention during the environmental assessment of a rail project.

Figure 3-21
Typical Ground-Borne Vibration Levels and Criteria



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

It should also be noted that Tables 3-20 and 3-21 include separate FRA criteria for ground-borne noise, the "rumble" that can be radiated from the motion of room surfaces in buildings due to ground-borne vibration. Although expressed in dBA, which emphasizes the more audible middle and high frequencies, the criteria are set significantly lower than for airborne noise to account for the annoying low-frequency character of ground-borne noise. Because airborne noise often masks ground-borne noise for above ground (i.e. at-grade or elevated) rail systems, ground-borne noise criteria are primarily applied to subway operations where airborne noise is not a factor. For the above-grade rail system planned along the FHSR alternatives, ground-borne noise criteria are not considered to be applicable to any adjacent receptors.

Table 3-20
Ground-Borne Vibration and Noise Impact Criteria

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 micro inch/sec)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB[3]	65 VdB[3]	-4	-4
Category 2: Residences and buildings where people normally sleep.	72 VdB	80 VdB	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	83 VdB	40 dBA	48 dBA

Notes:
1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
3. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
4. Vibration-sensitive equipment is not sensitive to ground-borne noise.

Source: Federal Railroad Administration, December 1998.

Table 3-21
Ground-Borne Vibration and Noise Impact Criteria for Special Buildings

Type of Building or Room	Ground-Borne Vibration Impact Levels (Vdb Re 1 Micro-Inch/Sec)		Ground-Borne Noise Impact Levels (Db Re 20 Micro Pascals)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Concert Halls	65 VdB	65 VdB	25 dBA	25 dBA
TV Studios	65 VdB	65 VdB	25 dBA	25 dBA
Recording Studios	65 VdB	65 VdB	25 dBA	25 dBA
Auditoriums	72 VdB	80 VdB	30 dBA	38 dBA
Theaters	72 VdB	80 VdB	35 dBA	43 dBA

Notes:
1. "Frequent Events" is defined as more than 70 vibration events per day. Most transit projects fall into this category.
2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
3. If the building will rarely be occupied when the trains are operating, there is no need to consider impact. As an example consider locating a commuter rail line next to a concert hall. If no commuter trains will operate after 7 pm, it should be rare that the trains interfere with the use of the hall.

Source: Federal Railroad Administration, December 1998.

Existing Vibration Conditions

Because there are no significant sources of existing ground-borne vibration along the FHSR Corridors A through E, other than occasional truck traffic, the vibration measurements for this project focused on characterizing the vibration propagation characteristics of the soil at representative locations. Eleven vibration testing sites were selected to represent a range of soil conditions in areas along the retained alignments within the corridors that include vibration-

sensitive receptors. Figure 3-22 shows the general receptor locations and site descriptions are as follows:

- Site V-1: Alignment A1 (Corridor A) - Corner of Laniar and Estelle - Tampa, FL
- Site V-2: Alignment B1 (Corridor B) - Corner of 54th Street and 26th Avenue - Tampa, FL
- Site V-3: Alignment C1 (Corridor C) - Armwood High School - Tampa, FL
- Site V-4: Alignment C1 (Corridor C) - Townsgate Apartments - Plant City, FL
- Site V-5: Alignment D1 (Corridor D)- Glenwood Park - Gibsonia, FL
- Site V-6: Alignment E1 (Corridor E) - Marriott Village - Lake Buena Vista, FL
- SiteV-7: Alignment E1 (Corridor E) - Excel Tech - Orlando, FL
- Site V-8: Alignment E1 (Corridor E) - Corner of 3rd Avenue and 11th Street - Orlando, FL
- Site V-9: Alignment E2 (Corridor E) - Corner of International Drive and World Center Drive - Orlando, FL
- Site V-10: Alignment E2 (Corridor E) - Corner of Tacon Drive and Verano Drive - Orlando, FL
- Site V-11: Alignment E2 (Corridor E) - Pinnacle Cove Apartments - Orlando, FL

At each of the vibration sites, ground-borne vibration propagation tests were conducted according to the "Detailed Vibration Assessment" procedures described in the FRA guidance manual *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (Final Draft, December 1998). The tests were performed by impacting the ground at discrete points along a line, while measuring the input force and corresponding ground vibration response at various distances. The resulting force-response transfer functions were used to calculate the "line source transfer mobility", which describes vibration transmission characteristics of the soil as a function of both frequency and distance from the source. The transfer mobility can be combined with the input force characteristics of a high speed rail vehicle to predict future vibration levels at locations along the project corridor

To provide a representative summary of the ground-borne vibration characteristics of the soil along the project corridors, Figure 3-23 shows the results for the line source transfer mobilities measured at the 100 ft. position at each of the 11 vibration measurement sites. Except for those areas represented by sites 3, 4, and 6, results indicate that the ground vibration response to a given input force is greatest in the 25 Hz to 63 Hz frequency range. Vibrations in this frequency range can cause perceptible vibrations, but can mitigated using conventional track vibration isolation techniques (e.g. ballast mats). In the areas represented by sites 3 and 4, the maximum vibration response was measured to extend to higher frequencies (up to 250 Hz for site 3 and up to 80 Hz for site 4). Vibrations at these higher frequencies pose a greater risk of ground-borne noise impact, but can also be treated quite effectively by using conventional track vibration isolation methods. However, in the area represented by site 6, the ground vibration response was measured to be greatest in the 20 Hz to 125 Hz range. If the input force of a high speed rail vehicle is concentrated in this frequency range and causes vibration impact, mitigation may require more extensive and costly track vibration isolation treatments (e.g. floating slabs).

More details on the propagation test and analysis procedures are given in the FRA guidance manual, *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (Final Draft, December, 1998). Additional technical information, including all of the measurement data

from each of the eleven sites, can be found in the supporting technical report *Noise and Vibration Impact Assessment for the Florida High Speed Rail Project*.

3.7.4 Water Quality

Corridors A through E include seven major watersheds: Tampa Bay, the Hillsborough River, the Palm River, the Alafia River, the Peace River, the Withlacoochee River, and the Kissimmee River. The Hillsborough and the Palm Rivers drain into Tampa Bay. Tampa Bay is tidally influenced and is connected to the Gulf of Mexico. The Withlacoochee, the Alafia, and Peace Rivers drain to the Gulf of Mexico. The Kissimmee River flows to Lake Okeechobee. The area within Corridors A and B drain into the Palm and Hillsborough Rivers. The majority of the land within Corridor C drains into the Hillsborough River, with a portion flowing to the Alafia River. Corridor D drains to the Peace and the Withlacoochee Rivers. Corridor E drains into the Kissimmee River. Watershed data was collected for use in the Water Quality Impact Evaluation (WQIE), which is further described in Section 4 of this report.

3.7.5 Floodways and Floodplain

Floodplain information for Corridors A through E was obtained from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies. According to the FIRMs, the corridors traverse flood zones A, B, C, and E and portions of the FHSR project are located within the 100-year floodplain. Zone A denotes areas of the 100-year floodplain in which the base flood elevations and flood hazard factors have not been determined. Zone B denotes areas between the 100-year and 500-year floods, areas subject to 100-year flooding with average depths less than 1 ft; areas where the contributing drainage area is less than one square mile (sq. mi.); or areas protected by levees from the base flood. Zones C and E are areas of undetermined base flood elevation and/or areas subject to flooding by a frequency event exceeding 100 years.

Corridors A, B, C, and D pass through 32 areas designated as either Zone A or Zone B. Within the Green Swamp area of Polk and Osceola counties, the floodplain meanders, crossing I-4 at virtually every cross drain. Encroachment into the Green Swamp was counted as a single encroachment (i.e., there are 31 areas outside of the Green Swamp that are encroached by the corridors).

Floodplain encroachment in Florida is governed by FEMA and regulated by the Water Management Districts (WMD): Southwest Florida Water Management District (SWFWMD), SFWMD, and St. Johns River Water Management District (SJWMD) through the Environmental Resource Permit (ERP) process.

The base floodplain near the Hillsborough River in Hillsborough County (Corridor A) results from tidal storm surge, with the base floodplain elevation at approximately elevation 10.0 National Geodetic Vertical Datum (NGVD) of 1929. Any encroachment into a tidal storm surge floodplain does not have to be compensated.

All other floodplain encroachments within the study area are from fresh water rainfall events and would have to be compensated for on a "cup for cup" basis. This basis means that for every cup of fill-material placed in the floodplain below the 100-year floodplain elevation, one cup must be excavated at the same elevation in an area that is hydraulically connected to the floodplain.

3.7.6 Hydrology and Drainage

In order to assess the hydrologic needs for the FHSR system, an inventory of existing stormwater management systems was conducted. The evaluation determined that with the exception of recent reconstruction and widening of I-4, the areas containing the project alternatives do not have storm water permits or any surface water management systems currently in place. The following discussion identifies those areas on I-4 which were recently reconstructed and notes if drainage provisions for FHSR are included.

In Hillsborough County (Corridors A, B, and C), the reconstruction of I-4 extends from 21st Street on the west and ends at County Line Road to the east. The permits of these segments assumed the median of I-4 to be impervious. It is assumed that no additional drainage facilities for the water quality treatment and attenuation requirements would be necessary for FHSR construction; however, the conveyance system within the existing median may require modification.

Corridor D consists of four sections of I-4 in Polk County. Only Section One, from the Polk/Hillsborough County line to Memorial Boulevard, has been widened. Permit No. 4311896.09 has been issued and construction has been completed. This permit expired on May 13, 2003. The permit of this segment assumed the median of I-4 to be impervious. The Florida Department of Transportation (FDOT) has recently let each of the remaining three sections as design/build contracts. Additional coordination would need to occur between the FHSRA and the I-4 drainage designers within Polk County, FDOT – District One, and the WMDs.

Section Two (within Corridor D,), from Memorial Boulevard to U.S. 98, Permit No. 43011896.019, ERP was issued on September 28, 2000, and expires on January 30, 2006. Construction is underway. The design for the 6-lane widening did not take the FHSR project into consideration. However, the constructed ponds may be expanded to include FHSR. The permitting is in process for Section Three, from U.S. 98 to C.R. 557, and Section Four, C.R. 557 to the Polk/Osceola County line. Again, the design for the 6-lane widening did not take FHSR into consideration. The constructed ponds may be expanded or enlarged to include the FHSR project. The widening of Sections Two through Four is to the outside of the existing 4-lane highway and assumed the I-4 median to be grass. In some areas within these sections, the median has been utilized for storm water treatment and flood compensation; the 44-ft. minimum median clearance required for FHSR has not been provided.

For the remainder of Corridors D and E within Osceola and Orange counties, no previously issued permits have taken FHSR into consideration for storm water treatment and attenuation.

Within Corridor E, the Central Florida Greeneway (S.R. 417) has a surface water management system constructed; but, again, FHSR was not included in the design.

3.7.7 Topography, Soils, and Geology

This section presents a summary of the existing subsurface soil conditions located in the vicinity of the proposed FHSR Corridors A through E. Included are discussions of the regional geology, topography, and problem soils identified in each corridor. More detailed information is contained in the two Contamination Screening Evaluation Reports (CSERs) prepared as part of this study, the Contamination Screening Evaluation Report[11] (December 2002, and the Florida High Speed Rail Draft Contamination Screening & Evaluation Report[12] (January 2003). The limits of the CSERs are from downtown Tampa to Lakeland (U.S. 98) and from Lakeland (U.S. 98) to Orlando International Airport.

Regional Geology

Throughout central Florida, water is one of the most important natural resources. It can be classified into two systems: the groundwater system and the surface water system. In the groundwater system, there are two water-bearing zones of interest: the confined and the unconfined aquifers. The confined aquifer, called the Floridan aquifer, extends under much of Florida. The Green Swamp region in the northeastern portion of Polk County is believed to be a recharge area for part of the Floridan aquifer that underlies most of west central Florida. Except for this recharge area, most of the Floridan aquifer is under a confining layer of clay or other impermeable material. This confining (cap) layer is responsible for the artesian water pressure within the Floridan aquifer.

The Hawthorn formation is the confining layer in Hillsborough, Polk, Osceola, and Orange counties. The Hawthorn formation is the cap layer between the deep Floridan aquifer and the shallow surficial and intermediate aquifers. The surficial aquifer is found throughout most of Polk County.

Due to its prevalent geology, central Florida is prone to the formation of sinkholes, or large, circular depressions created by local subsidence of the ground surface. In areas where the Hawthorn formation is absent, water table groundwater (and associated sands) can flow downward to cavities within the limestone aquifer recharging the Floridan aquifer, causing the formation of surface sinkholes. Thus, in central Florida, areas of effective groundwater recharge to the Floridan aquifer have a higher potential for the formation of surface sinkholes. Based on the review of the U.S. Geological Survey (USGS) map entitled "Recharge and Discharge Areas of the Floridan Aquifer in the SJWMD and Vicinity, Florida," (1984), the proposed FHSR project traverses regions that vary from a classification of "no recharge" to "high recharge" for Corridors A thru E. Generally, the FHSR corridor in Hillsborough and Polk counties (Corridors A through D) is in a "high recharge" area. Osceola and Orange counties (Corridors D and E) are in a "low recharge" area.

The groundwater table was measured where apparent. The depths to the groundwater table, when encountered, ranged from about 3 ft. to greater than 15 ft. below the existing ground surface in Hillsborough and Polk counties. The groundwater table is typically within 10 ft. of the ground surface for Osceola and Orange counties and fluctuates within 3 to 6 ft., with the highest level occurring near the end of September (seasonal high) and the lowest level occurring near the end of May (seasonal low).

Groundwater conditions vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as existing swales, drainage ponds, and underdrains.

Topography

Topographical quadrangle maps published by the USGS were reviewed for general elevation data along the proposed FHSR alignments. The results are summarized in Table 3-22.

Table 3-22
Elevation Data

USGS Map Title	Corridor	Approximate Range of Elevations Along Proposed Corridors (Feet, NationalGeodeticVertical Datum)
Tampa, Florida	A, B	0 to 55
Brandon, Florida	B	15 to 80
Thonotasassa, Florida	B, C	10 to 105
Plant City West, Florida	C	50 to 135
Plant City East, Florida	C	90 to 170
Lakeland, Florida	D	135 to 240
Providence	D	135 to 140
Lake Jessamine	E	80 to 135
Pine Castle	E	75 to 95

The elevations for Corridors A and B range from 0 to 105 ft. above NGVD. The elevations for Corridor C range from 10 to 170 ft. above NGVD. The elevations for Corridor D range from 135 to 240 ft. above NGVD. The elevations for Corridor E range from 75 to 135 ft. above NGVD. USGS maps from Providence to Lake Jessamine were not available for review.

Soil Survey Data

Natural Resources Conservation Service (NRCS) Maps were obtained for Hillsborough, Polk, Osceola, and Orange counties. Each map was reviewed for general near-surface soil information within Corridors A through E. More detailed information regarding soils is contained in the CSERs.

Based on the review of the Hillsborough, Polk, Osceola, and Orange County Soil Conservation Service maps, several map soil units along the proposed corridors have been identified as "problem soils." For purposes of this study, problem soils have been defined as organic soils and

mined land suspected of having the potential for settlement or stability concerns. Additional information regarding muck probe locations from Lakeland (U.S. 98) to Orlando International Airport is described in the CSER. The map soil units identified as problem soils are described by corridor alignments as follows:

Alignments A1 and A2 (Corridor A)

Alignments A1 and A2 do not contain any map soil units that have been identified as problem soils.

Alignments B1 and B2 (Corridor B)

Alignment B1 contains three map soils units that have been identified as problem soils. They are described as follows:

- Basinger, Holopaw, and Samsula soils, depressional are identified in the "Hillsborough County, Florida Soil Survey" as map unit (5). These soils are found in swamps and in depressions on the flatwoods. Undrained areas where these soils are found are frequently ponded for long periods. Based on the survey, the organic soils can be encountered as deep as 34 inches (in.) below existing grades.
- Chobee muck, depressional is identified in the "Hillsborough County, Florida Soil Survey" as map unit (11). These soils are found in broad depressions on Harney flats. Undrained areas can be ponded for very long periods. This soil consists of approximately 4 in. of muck. Underlying the muck are silty sands transitioning to sandy clays to depths of at least 80 in.
- Eaton mucky sand, depressional is identified in the "Hillsborough County, Florida Soil Survey" as map unit (14). Based on the survey, this soil is found in depressions on the flatwoods and consists of a top layer of approximately 8 in. of mucky sand. Underlying the layer of mucky sand is silty sand to sandy clay of at least 80 in. This soil experiences ponding for one to four months during most years.

Alignment B2 contains two map soil units that have been identified as problem soils. These map soil units are identified in the "Hillsborough County, Florida Soil Survey" as map units (5) and (14) and were described previously.

Alignment C1 (Corridor C)

Alignment C1 contains one map soils unit that has been identified as a problem soil. This map soil unit is identified in the "Hillsborough County, Florida Soil Survey" as map unit (5) and was previously described under Alignment B.

Alignment D1 (Corridor D)

Alignment D1 contains five map soil units that have been identified as problem soils. They are described as follows:

- Eaton mucky fine sand, depressional is identified in the "Polk County, Florida Soil Survey" as map unit (6). This soil is very poorly drained and is found in wet depressions on the flatwoods. This soil consists of a top layer of muck, approximately 6 in. thick, underlain by soils transitioning from slightly silty sands to sandy clays. Areas consisting of this soil may experience ponding for six months or more during most years.
- Samsula muck is identified in the "Polk County, Florida Soil Survey" and the "Osceola County, Florida Soil Survey" as map units (13) and (40), respectively. This soil is very poorly drained and is encountered in swamps and marshes. This soil consists of muck to about 31 in. underlain by strata of silty sands and sands. Development within this map unit is limited, according to the Soil Survey, due to excessive ponding and organics.
- Kaliga muck is identified by the "Polk County, Florida Soil Survey" as map unit (32). This soil is very poorly drained and is encountered in swamps and marshes. This soil consists of a top layer, approximately 30 in. thick, of muck. Underlying the muck are silty sands, sandy silts, and clayey sands. During most years, these soils experience ponding for very long periods.
- Hontoon muck is identified by the "Polk County, Florida Soil Survey" and the "Osceola County, Florida Soil Survey" as map units (35) and (15), respectively. This soil is poorly drained and is encountered in swamps and marshes. This soil consists of muck to 75 in. below grade. The underlying soils beneath this top layer of muck are identified as variable. The soil survey states development within this map unit is limited due to ponding and low soil strength.
- Udorthents, excavated is identified by the "Polk County, Florida Soil Survey" as map unit (58). This map unit consists of excavated areas, locally called "Borrow Pits." The excavated soil and geologic material have been removed for use as fill or as base for roads. Included in mapping are areas of spoil around the edge of the pits. The spoil is mostly sand or clay.

Alignments E1 and E2 (Corridor E)

Alignment E1 contains four map soil units that have been identified as problem soils. They are described as follows:

- Basinger fine sand, depressional is identified in the "Orange County, Florida Soil Survey" as map unit (3). This soil is very poorly drained and is found in shallow depressions and sloughs and along the edges of freshwater marshes and swamps. This soil consists of a surface layer of black fine sand about 7 in. thick, underlain by soils transitioning from gray fine sand to pale brown fine sand. Areas consisting of this soil may experience ponding for six months or more during most years.
- Samsula muck is identified in the "Orange County, Florida Soil Survey" as map unit (40). This soil is very poorly drained and is found in freshwater marshes and swamps. This soil consists of a surface layer of black muck about 8 in. thick, underlain by soils transitioning from brown muck to gray fine sand. Areas consisting of this soil may experience ponding for six months or more during most years.
- Samsula, Hontoon, Basinger association, depressional is identified in the "Orange County, Florida Soil Survey" as map unit (41). This soil is very poorly drained and is found in

shallow depressions and sloughs and along the exterior and interior areas of freshwater marshes and swamps. Undrained areas where these soils are found are frequently ponded for long periods. The organic soils can be encountered as deep as 80 in. below existing grades.

- Sanibel muck is identified in the "Orange County, Florida Soil Survey" as map unit (42). This soil is very poorly drained and is found in depressions, freshwater marshes and swamps, and poorly defined drainageways. This soil consists of a surface layer of black muck about 11 in. thick, underlain by soils transitioning from black fine sand to gray fine sand. Areas consisting of this soil may experience ponding for six months or more during most years.

Alignment E2 contains three map soil units that have been identified as problem soils. These map soil units are identified in the "Orange County, Florida Soil Survey" as map units (3), (41), and (42) and were described previously.

Subsurface Exploration

Subsurface exploration was performed to obtain preliminary subsurface data in areas without sufficient current geotechnical information. The exploration was done to identify areas of potential problems for further site specific testing during the final design phase. Borings, samples, and tests have been completed in accordance with the FDOT Soils and Foundation Handbook (2000).

Standard Penetration Test (SPT) borings, power auger borings, and manual muck probes were performed along Corridors A through E, in areas where the proposed FHSR is anticipated to be constructed either on embankments or upon structures above existing grades. The test areas generally consist of many potential successive street and/or rail crossings, and the SPT borings were performed at locations without sufficient existing geotechnical data. Two borings were drilled from a barge in the Six Mile Creek By-Pass Canal within Alignment B2. In general, the soil borings performed along the retained alignments encountered various soil types. The description of the soil types and their corresponding classification are summarized in Table 3-23. The approximate boring locations are shown in the Report of Geotechnical Data Collection[13] and the Preliminary Geotechnical Report[14] that were prepared as part of this Study.

Table 3-23
Soils Encountered in SPT and Power Auger Borings

Soil Description	Unified Soil Classification
Clean to Slightly Silty Fine Sand	SP/SP-SM
Slightly Clayey to Clayey Sand	SP-SC/SC
Organic Sand to Organic Silt, Clay	PT
Sandy Clay to Clay and Calcareous Sandy Muck Clay to Clay	CL/CH
Weathered Limestone with Calcareous Clay	WL
Slightly Silty to Silty Sand	SP-SM/SM
Chert	---

3.7.8 Contamination

A Contamination Screening Evaluation was completed for each corridor to help identify any known or potential, hazardous material or petroleum contamination sites. Contaminated sites present potential production delays, as well as cost for required remedial actions when contamination is discovered. If the discovery is made early enough, there may be the possibility of avoiding the problem entirely. If avoidance is not possible, early discovery would allow proper handling in a logical, timely manner. For the purpose of this study, potential contamination sites are separated into two categories: hazardous materials sites and petroleum sites. Table 3-24 lists the number, ranking, and type of sites by corridor.

All sites were evaluated to determine risk potential. Risk ratings were assigned to each site based upon field reviews, land use, historical tenancy evaluations, and regulatory agency research. Risk ratings range from No to High risk and are described as follows:

- **No –** After a review of all available information, there is nothing to indicate contamination would be a problem.
- **Low –** The former or current operation has a hazardous waste generator identification number, or deals with hazardous materials; however, based on all available information, there is no reason to believe there would be any involvement with contamination.
- **Medium –** After a review of all available information, indications are found that identify known soil and/or water contamination and that the problem does not need remediation, is being remediated, or that continued monitoring is required.
- **High –** After a review of all available information, contamination is documented, and would require remediation to avoid impacts to the corridor.

Two separate CSERs were prepared for this study. The first addresses the area from downtown Tampa to Lakeland, while the second evaluates the area from Lakeland to Orlando International Airport. The potentially contaminated sites were identified based on regulatory records review, literature review, aerial photography review, and project reconnaissance within 300 ft. of the proposed ROW. The potentially contaminated facilities within the study corridor are discussed in detail and figures depicting the location of the facilities and tables providing the names and other relative information regarding these facilities are also contained in the CSERs.

Table 3-24
Ranked Potential Contamination Sites By Corridor

Corridor	Total Sites	Ranked High	Ranked Medium	Ranked Low	Ranked No.	Hazardous Materials	Petroleum	Both
A	148	94	20	32	2	39	71	38
B	52	24	5	18	5	17	22	13
C	20	5	3	10	2	4	14	2
D	36	6	3	27	0	8	11	17
E	51	10	0	41	0	8	17	26

3.8 NATURAL RESOURCES

3.8.1 Natural Communities

Existing upland and wetland vegetative communities within Corridors A through E were identified through literature reviews, existing maps, and photo-interpretations. Each community was classified using the FDOT Florida Land Use, Cover and Forms Classification System[15] (FLUCCS). Wetlands communities and their classifications are discussed in Section 3.8.2, this section will focus on the upland communities identified.

The following published information was also collected and analyzed for uplands:

- U.S. Department of Agriculture (USDA), NRCS, Hillsborough, Polk, Osceola, and Orange County Soil Surveys
- USGS, Topographic Quadrangle maps, 7.5-minute series
- Aerial Photographs of the Project Area
- WMD Land Use Mapping

Twenty-three upland communities, primarily natural, are located within the project study area. Many upland community types, especially those minimally altered by land use changes or natural fire suppression, support protected wildlife and plant species. Table 3-25 presents the list of upland communities recorded within the FHSR corridors.

Table 3-25
Existing Natural Communities within the FHSR Study Area

FLUCCS Code	Description
200	Agriculture
210	Cropland and Pasture
212	Unimproved Pasture
214	Row Crops
220	Tree Crops
221	Citrus Groves
240	Nurseries and Vineyards
260	Other Open Rural Lands
300	Rangeland
310	Herbaceous
320	Shrub And Brush
321	Palmetto Prairie
329	Other Shrubs And Brush
400	Upland Forests
410	Upland Coniferous Forests
411	Pine Flatwoods
413	Sand Pine
414	Pine And Mesic Oak
419	Other Pines
420	Upland Hardwood Forests
421	Xeric Oak
430	Other Upland Hardwood Forests
434	Hardwood – Coniferous Mixed
436	Upland Scrub, Pine And Hardwoods
440	Tree Plantations
441	Coniferous Plant

Agriculture

Although altered by human activity, some agricultural lands (FLUCCS 200) provide suitable habitat for many protected wildlife species, but few protected plant species. In particular, pasturelands offer the most valuable habitat of all the agricultural lands. This land use/habitat type is located in Corridors A through E, especially concentrated in Alignments C1 and D1.

Rangelands

Rangelands (300) are native habitats that lack tree cover. These habitats can either support a groundcover mostly of grasses and forbs or saw palmetto (*Serenoa repens*) and shrubs may dominate. Some protected wildlife species (e.g., sandhill cranes and burrowing owls) depend on the native habitats in rangeland. Rangeland habitats are located exclusively in Alignments D1, E1, and E2.

Forested Uplands

Forested uplands (400) are represented by twelve distinct FLUCCS codes in the study area. However, the majority of upland forest types within the study area are Pine Flatwoods (411) and

Hardwood – Coniferous Mixed (434). One small, forested upland area occurs in Corridor A, where land use is mostly urbanized. In Corridors B through E, where land use is predominantly rural, forested uplands are located throughout.

3.8.2 Wetlands

In order to determine the approximate locations and boundaries of existing wetland communities within the FHSR project study area, available site-specific data was collected and reviewed. The following information was collected and analyzed:

- USDA, NRCS, Hillsborough County Soil Survey 1990
- USDA, NRCS, Polk County Soil Survey 1990
- USDA, NRCS, Osceola County Soil Survey 1990
- USDA, NRCS, Orange County Soil Survey 1990
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Maps
- USGS, Topographic Quadrangle maps, 7.5 minute series
- WMD Land Use Mapping
- USFWS Classification of Wetlands and Deepwater Habitats of the United States, 1979
- FLUCCS
- Aerial Photographs of the project area at 1"= 400' scale

A total of 1,760 surface water and wetland systems have been identified within the study area or adjacent to the existing ROW and represent 34 individual FLUCCS categories falling within ten broad community types and total approximately 2,401 ac. (Table 3-26). These systems include emergent, scrub shrub, forested, and open water habitats that have become fragmented and encroached upon by urban, agricultural, and transportation-related activities. These systems include mainly riverine, palustrine, and some lacustrine systems. The project corridor crosses the Hillsborough River in Tampa and the Green Swamp, which is located primarily in Polk County. The composition of broad community types within the FHSR corridor are described in the table.

Table 3-26
FLUCCS Categories and Corresponding USFWS Code for Wetlands Identified in the FHSR Study Area

FLUCFCS[1]	Description	USFWS Code[2]	Description
500	Water (used for stormwater ponds)	L1OW	Lacustrine, Limnetic, Open Water
510	Streams and Waterways	R2OWHx	Riverine, Lower Perennial, Open Water, Permanently Flooded
520	Lakes	L1OWH	Lacustrine, Limnetic, Open Water, Permanent

Table 3-26 (cont.)
FLUCCS Categories and Corresponding USFWS Code for Wetlands Identified in the FHSR Study Area

FLUCFCS[1]	Description	USFWS Code[2]	Description
523	Lakes larger than 10 ac.		Lacustrine, Limnetic, Open Water, Permanently Flooded
530	Reservoirs		
540	Bays and Estuaries	M2US	Marine, Intertidal, Unconsolidated Shore
600	Wetlands	PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
610	Wetland Hardwood Forests		
611	Bay Swamps		
615	Streams and Lake Swamps		
617	Mixed Wetland Hardwoods		
618	Willow and Elderberry		
619	Exotic Wetland Hardwoods		
620	Wetland Coniferous Forests	PFOxx	Palustrine, Forested (needle-leaved, broad leaved), (seasonally, temporarily flooded)
621	Cypress		
622	Pond Pine		
627	Slash Pine Swamp Forest		
630	Wetland Forested Mixed		
631	Wetland Shrub		
640	Vegetated Non-Forested Wetlands	PEMxx	Palustrine, Emergent
641	Freshwater marsh		
643	Wet Prairie		
644	Emergent Aquatic Vegetation	L1AB	Lacustrine, Limnetic, Aquatic Bed
653	Intermittent Pond	L1OWJ	Lacustrine, Limnetic, Open Water, Intermittently Flooded
621/640	Cypress/ Vegetated Non-Forested Wetlands	PFOxx; PEMxx	Palustrine, Forested (needle-leaved, broad leaved), Palustrine, Emergent
621/641	Cypress/Freshwater Marsh	PFOxx/ PEMxx	Palustrine, Forested (needle-leaved, broad leaved), (seasonally, temporarily flooded); Palustrine, Emergent
510/630	Stream & Waterway/Wetland Forested Mixed	R2OWHx/ PFOxx	Riverine, Open Water, Permanently Flooded; Palustrine, Forested (needle-leaved, broad leaved), (seasonally, temporarily flooded)
510/631	Stream & Waterway/Wetland Shrub	R2OWHx/ PFOxx	Riverine, Open Water, Permanently Flooded; Palustrine, Forested (needle-leaved, broad leaved), (seasonally, temporarily flooded)
641/643	Freshwater Marsh/Wet Prairies	PEMxx	Palustrine, Emergent
510/641	Streams & Waterways/Freshwater Marsh	R2OWHx/ PEMxx	Riverine, Open Water, Permanently Flooded; Palustrine, Emergent

Table 3-26 (cont.)
FLUCCS Categories and Corresponding USFWS Code for Wetlands Identified in the FHSR Study Area

FLUCFCS[1]	Description	USFWS Code[2]	Description
510/621	Streams & Waterways /Cypress	R2OWHx/ PFOxx;	Riverine, Open Water, Permanently Flooded, Palustrine, Forested (needle-leaved, broad leaved)
610/510	Wetland Hardwood Forests/Streams & Waterways	PFOxx/ R2OWHx	Palustrine, Forested (needle-leaved, broad leaved), (seasonally, temporarily flooded); Riverine, Open Water, Permanently Flooded
640/510	Vegetated Non-Forested Wetlands/Streams & Waterways	PEMxx/ R2OWHx	Palustrine, Emergent; Riverine, Open Water, Permanently Flooded

Notes:
1. FLUCCS =Based on Florida Land Use Cover Forms Classification System, third ed. 1999.
2. USFWS = Based on U.S. Fish and Wildlife Service Classification of Wetlands and Deepwater Habitats of the United States, 1979.

The 500 series represents approximately 28.7 percent, or 695.59 ac., of the wetland systems within the project corridor. This category also includes stormwater management facilities (retention/detention ponds), which account for 636 ac. of the total 1,760 ac. of wetlands (36.0 percent of total).

The 610 series represents approximately 11.0 percent or 264.60 ac. within the project corridor. Of the 1,760 wetlands identified in the study area, 136 are freshwater wetland hardwood forests.

Within the 620 series, a total of 236 coniferous forested wetlands were identified totaling approximately 715.09 ac. in coverage. Coniferous forested wetland communities represent 29.7 percent of the total wetlands. Cypress (621) comprises 26.0 percent of that total.

The 630 series comprises a total of 259 separate mixed forested wetlands, totaling approximately 367.83 ac. in coverage. This category represents 15.3 percent of the total wetlands.

The 640 series has a total of 492 non-forested freshwater wetlands in the project corridor totaling approximately 339.49 ac. The area comprised by these non-forested wetland communities within the project corridor is approximately 14.7 percent.

Series 650, specifically 653, has a total acreage of 4.55. The intermittent pond is located in Alignment C1.

Table 3-27 provides the wetland acreages per FLUCCS code and corridor.

3.8.3 Wildlife and Habitat

A determination of all potential protected species occurring within the study area was accomplished by evaluating the most recent data available from the Florida Natural Areas Inventory and databases provided by the Florida Fish and Wildlife Conservation Commission (FFWCC). Those databases identify known occurrences of protected and rare species by county. These data were evaluated in conjunction with considerations for the FHSR Corridors A through E physical location and the habitat requirements of protected species within each county. Preliminary field reviews were conducted in February and March 2003 to identify those species occurring or potentially occurring within Corridors A through E.

During the field evaluations, a total of five state protected (only) and one federally protected wildlife species were observed. These include the American alligator, gopher tortoise, Florida pine snake, Southeastern American kestrel, Florida sandhill crane, and the Florida mouse. One federally protected plant species was observed, Lewton's milkwort.

In addition to those species observed during the field evaluations, there is a potential for four state protected (only) and five federally protected species to be present within the project study area (all corridors). These include the Eastern indigo snake, gopher frog, Florida panther, Sherman's fox squirrel, Florida manatee, Florida black bear, Florida burrowing owl, bald eagle, and wood stork.

Table 3-27
Wetland Acreage by FLUCCS Category and Corridor Alignments

FLUCCS Code	Acreage by Corridor Alignments							
	Corridor A		Corridor B		Corridor C	Corridor D	Corridor E	
	A1	A2	B1	B2	C1	D1	E1	E2
500			17.06	0.53	31.72	70.22	208.59	132.69
510	0.08		11.0	11.07	3.03	1.99	36.07	23.72
510-621							24.25	
510-641						2.14	0.24	
510-630							3.99	
510-631							1.03	
520	2.19		38.76		10.96			
523						17.12		
530		0.31	9.99	1.69	16.73	2.19	15.05	
540		1.19						
600							102.23	3.25
610			0.55	4.08	24.4	25.24	22.37	
611							3.59	
615			4.99	2.92	6.4	21.02		

Table 3-27 (cont.)
Wetland Acreage by FLUCCS Category and Corridor Alignments

FLUCCS Code	Acreage by Corridor Alignments							
	Corridor A		Corridor B		Corridor C	Corridor D	Corridor E	
	A1	A2	B1	B2	C1	D1	E1	E2
617					9.83	3.46	17.29	2.10
618					2.86	0.91	0.01	6.59
619				0.51				
620			4.55	0.28	3.4	62.31		
621			4.44	0.65		356.32	137.01	103.81
621/510								26.20
621/640							4.53	2.38
621-641								5.30
622							3.63	
627							0.29	
630		1.88	11.38	10.25	13.29	195.17	46.67	35.32
631				1.36		45.62	0.91	
640	2.43				1.12	0.39	8.49	0.96
640/510							0.46	
641	0.08	0.22		17.39	96.97	161.12	2.71	2.39
641(osw)			0.10			1.52		
643					1.4		1.31	
641/643						0.01		
643				1.13		16.97		
644			1.72			0.11		
653					4.55			
TOTAL ACREAGE	4.78	3.60	144.28	52.47	226.65	983.82	640.71	344.70

During other studies conducted for the FDOT, the federally protected sand skink and Florida scrub jay were found to be located within the FHSR study area. In addition, one federally protected plant species was documented, the scrub plum.

Protected Species Within Project Corridors

Corridor A -- Within Corridor A, the most urbanized of all the project's corridors, no protected species or suitable habitat occurs.

Corridor B -- This corridor transitions from the highly urban areas in the Tampa vicinity, to less urban areas of central Hillsborough County. Here, wildlife habitat is extremely limited, but some areas provide habitat for protected species. Gopher tortoise habitat occurs in one area along Alignment B2, while Florida sandhill crane habitat occurs along Alignment B1. However, no direct evidence or observations of either species were recorded. Also, a Florida panther was killed on I-4 in Alignment B1 on March 10, 2003, in a highly developed area that does not provide suitable habitat. Neither the USFWS nor FFWCC identifies Hillsborough County as providing suitable habitat for the panther.

Corridor C -- Corridor C traverses eastern Hillsborough County, where the land use is much more rural than Corridors A and B. Both suitable habitat areas and observations of occurrence were recorded for the gopher tortoise, Southeastern American kestrel, and Florida sandhill crane. In addition, suitable habitat was located for the Sherman's fox squirrel.

Corridor D -- This corridor traverses most of the alignment through Polk County and a portion of the alignment through Osceola County. Much of this corridor, with the exception of the Lakeland area, is agricultural with many undeveloped natural communities, including the southern edge of the Green Swamp and Florida's Central Ridge System.

Both suitable habitat areas and observations of occurrence were documented for the gopher tortoise, sand skink, Florida pine snake, and Florida sandhill crane within this corridor. Under a separate study, the Florida scrub jay was documented, but no other suitable habitat area was located. Also under the study, the sand skink was observed (Polk County) and a suitable habitat area was located during the FHSR evaluations in Osceola County. Suitable habitat areas were also located for the following species: the Florida burrowing owl, Southeastern American kestrel, bald eagle, Florida mouse, and Sherman's fox squirrel. A radio-collared Florida panther was tracked by the FFWCC, and in the spring of 2000, it crossed I-4 at least twice. Protected plant species observed from this corridor include the scrub plum and Lewton's milkwort.

Corridor E -- Although some natural communities still persist in this corridor, much of this corridor (both Alignments E1 and E2) has been developed, especially in the vicinity of the Orlando International Airport. Both suitable habitat areas and observations were documented for the American alligator, gopher tortoise, Florida sandhill crane, and Florida mouse (Alignment E1). Also, other suitable habitat areas were located in Alignment E2 for the Florida mouse.

All Corridors -- Some protected wildlife species are noted for their ability to utilize altered habitats and/or a great diversity of natural habitats. Those species are typically transient in nature and, therefore, may occur along any corridor of this study. For this project, such species include the state and federally protected wood stork and Eastern indigo snake, and the state protected wading birds: snowy egret, tricolored heron, little blue heron, and white ibis.

3.8.4 Farmlands

Future adopted land use plans for the study area indicate that planned uses along Corridors A through E range from mixed use, commercial, industrial, and all densities of residential uses to rural/agricultural land uses. There are scattered areas of existing farmland throughout the project. Corridor A does not have any existing farmlands. Corridors B, C, and D have the majority of existing farmlands throughout the study area. Within Corridors B and C, in the Hillsborough County area, farmlands extend from east of 50th Street to just west of County Line Road and from north of I-4 to south of the CSX corridor. They are concentrated in an area just west of Kingsway Road eastward to just west of Thonotosassa Road. These farmlands consist of mostly citrus groves with limited farmlands of small crops. Within Corridor D, farmlands are located east of the Polk County line to east of the Osceola County line and from north of I-4 to

the CSX corridor, just east of the Haines City area. They are concentrated in the area from east of Mount Olive Road to west of Greenpond Road both north and south of I-4. The farmlands in this area consist of mostly citrus groves with limited farmlands of small crops. Corridor E has very limited existing farmlands that are located north of I-4 in the vicinity of Sand Lake Road and are small crops.

Based on the 2000 edition of the Florida Statistical Abstract[16], citrus acreage by county is as follows:

- Hillsborough County – 27,328 ac.
- Polk County – 101,482 ac.
- Osceola County – 15,480 ac.
- Orange County – 9,155 ac.

3.9 TRANSPORTATION

3.9.1 Existing Railroad Conditions/Operations

Existing Passenger Train/Bus Service

The National Railroad Passenger Corporation (Amtrak) does not provide passenger rail service between Tampa and Orlando, but it does provide bus service between the two cities. Bus transportation is available via Martz Tampa Bay bus lines. This route runs twice daily from Tampa (Corridor A) with one stop in the City of Lakeland (Corridor D) before reaching Orlando (Corridor E). It takes about 2 hours and 50 minutes one-way and the round trip fare for one adult passenger is $54.00. Amtrak, by way of Martz Tampa Bay, offers bus service from Lakeland to Orlando that runs daily and the round trip cost is $36.00 for one adult passenger.

Within the Orlando area (Corridor E), there are two passenger train services available, Sunset Limited and Silver Service/Palmetto. Sunset Limited provides passenger train service to a number of destinations, including Winter Park, Sanford, DeLand, Palatka, Jacksonville, Lake City, Madison, Tallahassee, Chipley, and Pensacola. Fares vary from $9.50 to $76.00, depending on the destination. From Pensacola, the Sunset Limited provides passenger service to Alabama, Mississippi, Louisiana, Texas, New Mexico, Arizona, and California. All destinations are served three times a week. Silver Service/Palmetto provides service to Miami with possible stops along the way in Kissimmee, Winter Haven, Sebring, Okeechobee, West Palm Beach, Delray Beach, Deerfield Beach, Ft. Lauderdale, and Hollywood. At its destination in Miami, Amtrak, by way of Martz Tampa Bay, offers extended service via bus to the Miami International Airport. This trip takes approximately 5 hours and 35 minutes, runs daily, and the one-way cost for one adult passenger to the Miami station is $53.00.

There is no direct service from Tampa to Miami. The traveler must first take Martz Tampa Bay bus service to Orlando and then take the Silver Service/Palmetto train to Miami. The trip takes 9 hours and 15 minutes, and the cost is $71.00.

Existing Freight Rail Service

CSX provides freight rail services over the largest rail network in the eastern United States and provides rail transportation to over 23,000 route miles in 23 states. In Florida, CSX owns 1,619 route miles and owns 56 percent of the state's railway system. The main CSX freight line in central Florida begins in the Uceta Yard in Tampa (Corridor A), continues east through Plant City (Corridor C), Lakeland (Corridor D), Auburndale (Corridor D), and Orlando (Corridor E), and then runs north to Sanford, and finally to Jacksonville. The primary freight is food, lumber, wood, chemicals, and minerals. Nighttime operations in the Uceta Yards (Corridor A) involve trains carrying phosphates. From the Uceta Yard, trains can go east through Brandon paralleling S.R. 60. In Brandon, the line forks and the main line continues on to Plant City, while the other line travels southeast into Polk County. Another mainline, out of the Uceta Yard, travels past the Amtrak passenger station in downtown Tampa and heads in the eastern direction along S.R. 574 and S.R. 600 into Polk County. The line out of the Uceta Yard that travels through downtown Tampa in the middle of Polk Street travels through the CBD six times a day.

3.9.2 Existing Highway Conditions/Operations

The existing highway conditions evaluated include roadway characteristics and operations primarily for the interstate system. Existing conditions were obtained from the FDOT, the Tampa-Hillsborough County Expressway Authority, the Orlando-Orange County Expressway Authority, and other local agencies. The traffic count data available was for the year 2001 and was used for existing conditions. The level of service (LOS) was determined from the FDOT Generalized Tables. Table 3-28 provides a summary of existing roadway characteristics by corridor.

Overall Operations

Throughout the project area, I-4 is generally operating at a deficient LOS. The deficiency results from the increase in vehicle traffic associated with land development, population growth, tourism, and the lack of funds for corresponding roadway expansion. Generally, the local roadway system and toll roads have been expanded to meet the traffic demand. Specific conditions for each corridor are summarized in the following paragraphs.

Table 3-28
2001 Roadway Network LOS by Corridor

Corridor	Road Name	Number of Lanes	Road Type	AADT	LOS
A	I-275	6	Interstate	161,000	F
	I-4	4	Interstate	132,000	F
	Nuccio Pkwy	2	Collector	4,000	A
	Adamo Drive	4	Arterial	27,000	B
	Lee Roy Selmon	4	Expressway	51,000	C
B	I-4 (East of I-75)	6	Interstate	95,000	D
	I-4 (West of I-75)	6	Interstate	109,000	E
	I-75	6	Interstate	86,000	D
	Broadway Avenue	2	Collector	9,000	C
C	I-4 (West of Plant City)	6	Interstate	93,000	D
	I-4 (East of Plant City)	6	Interstate	87,000	D
D	I-4 (West of Lakeland)	6	Interstate	69,000	E
	I-4 (East of Lakeland)	4	Interstate	62,000	D
	I-4 (East of U.S. 27)	4	Interstate	82,000	F
	I-4 (Osceola County)	4	Interstate	63,000	E
E	I-4 (NE of U.S. 192)	6	Interstate	117,000	E
	I-4 (SW of Bee Line	6	Interstate	143,000	F
	S.R. 536	6	Arterial	26,000	B
	S.R. 417	4	Expressway	25,000	B
	Bee Line Expressway	4	Expressway	63,000	D
	Taft/Vineland Road	2	Collector	24,000	F
	Boggy Creek Road	2	Collector	9,700	D

Corridor A

Beginning east of Hillsborough River in downtown Tampa and moving eastward to U.S. 41, Corridor A has several major roadways. These include I-275, I-4, and the roadway network within the Tampa CBD. I-275 is a 6-lane urban interstate in the vicinity of the FHSR corridor. I-275 provides mobility to the various business districts in Hillsborough County and adjacent Pinellas County. It is a major east-west interstate, linking Tampa International Airport and the Tampa CBD. It also extends north from the CBD to northern Hillsborough County, a rapidly developing area. I-4 is a major east-west interstate linking the CBD with I-75 in eastern Hillsborough County. The roadway network in the CBD consists of 3-lane and 4-lane, one-way minor arterials and collectors. The AADT is low and the LOS is acceptable. Nuccio Parkway connects the CBD with Ybor City, one of Tampa's historical districts. Adamo Drive is an east-west arterial that runs from downtown Tampa through eastern Hillsborough County. The Lee Roy Selmon Expressway provides a connection between the CBD and unincorporated east Tampa. The segments of I-275 and I-4 in Tampa are deficient, as the existing traffic has exceeded the capacity of these facilities. The operation of Nuccio Parkway, Adamo Drive, and the Lee Roy Selmon Expressway is acceptable.

Corridor B

Continuing eastward from U.S. 41 to east of I-75, the existing roadway network in Corridor B includes I-4, I-75, and Broadway Avenue. The segment of I-4 within Corridor B is a 6-lane urban interstate. In Corridor B, the LOS of I-4 east of I-75 is marginally deficient.

Corridor C

Continuing eastward from east of I-75 to the western connection of the Polk Parkway, Corridor C follows the I-4 corridor. It serves eastern Hillsborough County, a rural agricultural area. I-4 is a 6-lane rural interstate, except through Plant City where it is an urban interstate. There were no existing deficiencies in Corridor C due to the recent 6-lane widening of I-4 in eastern Hillsborough County. The LOS should substantially improve subsequent to the construction.

Corridor D

Continuing from the western connection of the Polk Parkway east to Celebration, Corridor D follows the I-4 corridor. It serves Polk and Osceola counties and its various communities (i.e., Lakeland, Polk City, Auburndale, and Kissimmee). In Corridor D, I-4 is marginally deficient in the Lakeland urban area and deficient east of U.S. 27 in eastern Polk County. I-4 is programmed for 6-laning throughout Corridor D, prior to the opening year 2008 for the FHSR system.

Corridor E

Continuing eastward from Celebration to the Orlando International Airport, the existing roadway network within Corridor E includes I-4, State Road 536 (S.R. 536), Central Florida Greeneway (S.R. 417), Bee Line Expressway (S.R. 528), Taft/Vineland Road, and Boggy Creek Road. In Corridor E, I-4 is marginally deficient in Osceola County and Orange County north of U.S. 192 and deficient southwest of the Bee Line Expressway (S.R. 528). Taft/Vineland Road is also deficient. The operation of S.R. 536, the Central Florida Greeneway (S.R. 417), the Bee Line Expressway (S.R. 528), and Boggy Creek Road is acceptable.

3.9.3 Existing Modes of Public Transportation

This section provides information on other modes of public transportation that will continue to serve the community needs throughout the study corridors. The primary mode of public transportation is bus transit service. The bus routes described in this section are those near the proposed FHSR station locations in Hillsborough, Polk, Osceola, and Orange counties.

Corridor A (From East of the Hillsborough River, City of Tampa to U.S. 41, Hillsborough County)

Within Corridor A, the Hillsborough Area Regional Transit Authority (HARTline) is the primary mass transit provider of public transportation service and is available throughout Hillsborough

County. HARTline also offers two other types of public transportation, the Tampa Electric Company's (TECO) Line Streetcar and the proposed Tampa Light Rail, in which travel is centered on the main business routes within the City of Tampa. These three modes of travel are interconnected and can easily work with the schedule of FHSR and the proposed station location for downtown Tampa. These modes can provide easy and convenient extended services to downtown Tampa and other points of interest.

HARTline operates 143 peak period buses serving 37 local routes and 12 express routes. Of these 49 bus routes, 31 operate near the proposed FHSR station in downtown Tampa. The buses run seven days a week, starting as early as 4:30 AM and continuing as late as 10:30 PM, depending on the route being serviced.

Corridor A has one proposed FHSR station located south of I-275, just east of the Hillsborough River. The Marion Transit Center (MTC) is the closest bus terminal near the proposed station and is an avenue for "buses only." Soon both MTC terminals will be a stop for all buses in the HARTline system. This "buses only" avenue runs south of I-275 through downtown Tampa along Marion Street and ends at Whiting Street. MTC has two terminals: the Northern Terminal, located at 1211 North Marion Street, and the Commuter Center, with listings of bus routes, showers, lockers, customer service, and ticket sales, located further south. Because MTC is across the street from the proposed FHSR station, it would allow passengers to use HARTline's public transit service throughout the county.

The TECO Line streetcar is operated and maintained by HARTline and is currently running in its first phase of development. The 2.3-mi. section connecting downtown Tampa, Ybor City, and Channelside currently provides ten station stops with service every 15 – 20 minutes. Planned phases of construction will soon extend services north on Franklin Street to Whiting Street and the Fort Brooke garage. The streetcar, which runs seven days a week with extended hours on the weekend, is projected to connect more than 35,000 people to the downtown area. HARTline has committed to locating a northern expansion route to abut the FHSR station.

The proposed Tampa Light Rail system is scheduled to begin operation in approximately five years and will connect downtown Tampa to major parts of the city including the USF, area hospitals, South Tampa, the West Shore business district, and later to Tampa International Airport. The light rail system will have a total of 26 stations throughout the city, with three in close proximity to the MTC and the proposed FHSR station in downtown Tampa. The Tampa Light R ail route and stations along with the TECO Streetcar route are shown together in Figure 3-24 and Figure 3-25.

Corridor B (U.S. 41 in Tampa to East of I-75, Hillsborough County)

Within Corridor B, HARTline is the primary mass transit provider of public transportation service. In Corridor B, the transfer center for buses in the HARTline system is located in Netpark on the corner of Hillsborough Avenue and 56th Street. There are six bus routes: 15, 32, 34, 37, 39, and 41 that utilize this transfer center, with each serving different areas of Hillsborough County. Serviceable areas are as far north as Busch Boulevard, south to Brandon,

west to Town N' Country, and one route stopping at HCC, Tampa Campus. Local route number 32 provides limited service to the area east of Hillsborough Avenue and west of I-75.

Corridor C (East of I-75, Hillsborough County to the West Entry of Polk Parkway, Polk County)

Within Corridor C, the HARTline is the primary mass transit provider of public transportation service with one express route, 28X, the Plant City/Seffner/Dover Express, and four local routes. Going eastbound, the route starts at the MTC center in downtown Tampa and travels on I-4, exiting south at County Road 579. This route utilizes the major roads of Martin Luther King, Jr. Boulevard, Branch Forbes Road, and Highway 92 until reaching Plant City. The four local routes, 70, 71, 72, and 73 known collectively as the Strawberry Connection, provide bus services to areas of downtown Plant City.

Corridor D (West Entry of Polk Parkway, Polk County to Celebration Area, Osceola County)

In Corridor D, in Polk County, transit services include the Lakeland Area Mass Transit District (LAMTD), which operates the Citrus Connection, Handy Bus, Van Pool, and the Citrus Trolley to serve the business district. LAMTD provides service to 15 routes and operates 31 buses, 13 mini-buses, and seven vans. Also, in Polk County there is the Winter Haven Area Transit (WHAT) and the Intercity Bus Service. The WHAT serves residents of Winter Haven and operates three buses on four routes. The Intercity Bus Service provides connections to LAMTD and WHAT for residents of small urban areas. LAMTD and WHAT center their services in the areas of Lakeland and Winter Haven, with extended service to Bartow and Auburndale.

Polk County has two proposed FHSR station locations, one at Kathleen Road and the other at Polk Parkway, both north of I-4. Although there is no bus service to the Polk Parkway site, there is one bus terminal, through the LAMTD with the Citrus Connection that is near the proposed FHSR Kathleen Road station site. This bus terminal is at Kathleen Road and 10th Street, just south of I-4. It is also an Amtrak Train Terminal and a Greyhound bus terminal. Amtrak, by way of Martz Tampa Bay, continues its bus service onward to Orlando and to Tampa. LAMTD route number 50 makes a stop at the terminal and also serves the Coleman Busch Building, Lakeland Square Mall, and Market Square Shopping Center.

Corridor E (Celebration Area, Osceola County to Orlando International Airport, Orange County)

Within Osceola County, the proposed FHSR station location, known as the Walt Disney World site, would either be located in the median or the north side of I-4, between Osceola Parkway and U.S. 192. The Lynx bus system provides public transportation to this area of Osceola County. Lynx is the bus system serving the tri-county area of Orange, Seminole, and Osceola counties. The Central Florida Regional Transportation Authority runs Lynx, and they operate 231 buses around 61 routes. Currently, there are seven Lynx bus routes that serve Osceola County. These routes: 50, 56, 300, 301, 302, 303, and 304 travel on I-4 to the westside transfer center in

downtown Disney. The bus routes make stops to a number of Walt Disney theme parks and also provide service to areas in other parts of Orange and Osceola counties including Celebration, downtown Orlando, International Drive, and Sea World.

Along with the 61 routes that the Lynx bus system services in Orange County, there is a circulator specifically for the downtown area, Lymmo, which is free of charge and runs approximately every five minutes during office hours. There is a van pool service for commuters; A+ Link, which offers door-to-door service for people who are medically or physically qualified; and community shuttles.

Orange County has two proposed FHSR station locations: OCCC and the Orlando International Airport. Since Lynx has many transit services in place serving different parts of the more than 2,100 sq. mi. in the tri-county area of Osceola, Orange, and Seminole counties, a FHSR station at any of the proposed locations would allow easy transfer between the high speed rail and the local transit service.

For the proposed station location at the OCCC, Lynx Routes 8, 38, and 42 are in the vicinity of this high speed rail station. Route 8 starts its service at the downtown bus station near Church Street. It continues southwest and makes various stops along the way at Orange Blossom Trail, Beltz Factory Outlet Mall, Wet N' Wild, OCCC, and ultimately, International Drive. Route 38 starts its bus schedule at the downtown bus station, and runs south on I-4 with stops also at the OCCC and Wet N' Wild. Route 42 begins its service at the Orlando Premium Outlets and continues north to the Osceola Parkway bus stop. It has nine stops along the way, some of which are the OCCC, Wet N' Wild, Beltz Factory Outlet Mall, and the last stop at the Orlando International Airport.

Along with Route 42, Routes 11, 41, and 51 also serve the Orlando International Airport. Route 11 begins in downtown Orlando at the bus station and runs south on Orange Avenue with a total of five stops, including Orlando Regional Lucerne and two hospitals. Route 41 runs along S.R. 436 with 11 stops serving Apopka, West Town Center, Altamonte Mall, Florida Hospital, Casselberry, and Florida Southern College. Route 51 consists of six stops along Conway Road. It begins in downtown Orlando and serves Reeves Terrace, Lake Como, Dover Shores, Lee Vista Center, and the Orlando International Airport.

Modes of Private Travel

In addition to the public transportation listed above, there are other modes of private travel such as cruise lines, private bus service, and shuttle services that operate in Hillsborough, Polk, Osceola, and Orange counties.

The Port of Tampa, which serves Corridor A within the Channelside District in downtown Tampa, is home to a number of cruise lines. These include Carnival, Celebrity, Holland America, and Royal Caribbean cruise lines, which offer cruises to the Caribbean and Latin America. There is also the Yucatan Express, which is a cruise ferry to Mexico where one can board a car on the trip. Channelside offers a parking garage for those who drive to the port and

for those who fly into Tampa International Airport. There are numerous shuttles and taxis that can transport travelers to their destination.

Greyhound bus line, which serves Corridors A through E, offers service between Tampa and Orlando and visits numerous cities within Hillsborough, Polk, Osceola, and Orange counties. They have a variety of schedules throughout the day, and trips occur on a daily basis. Bus stops include the cities of Plant City, Lakeland, Winter Haven, Lake Alfred, Haines City, Davenport, Kissimmee, and finally Orlando. The cost of a one-way ticket is $17.25, and a round trip fare is $32.25 for one adult passenger on all schedules.

Air travel serves the areas within Corridors A through E (Tampa to Orlando) and currently provides one round trip per day between Tampa and Orlando, departing Tampa in mid-morning and returning in the early evening. Scheduled flight time between the two cities is about 45 minutes with additional time necessary for check-in and travel to and from the airport and the ultimate destination, making entire trip approximately 2 hours and 45 minutes. Round trip fares range from $145 to $270.

Walt Disney World provides shuttle service in Corridors D and E (Osceola and Orange counties) for customers who fly into the Orlando International Airport.

3.10 REFERENCES

1. 2025 Long Range Transportation Plan; Hillsborough County Metropolitan Planning Organization; Tampa, Florida; November 13, 2001.

2. 2025 Long Range Transportation Plan; Polk County Transportation Planning Organization; Adopted December 7, 2000, Amended December 2002.

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4. National Register of Historic Places; National Park Service; Washington, D.C.; 2001.

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