6 FLORIDA FREIGHT AND PASSENGER RAIL PLAN AND GENERALIZED ASSESSMENT

The State of Florida developed the Florida Freight and Passenger Rail Plan (Rail Plan) in February 2007. The Rail Plan is required by State Statute with a stated purpose to "provide the necessary information in a policy framework through which strategic actions can be taken to achieve the best rail system for Florida's future." FDOT consulted with public and private interests while developing the Rail Plan and has continued coordination with stakeholders as specific elements of the Rail Plan move through project development. For more information on the Rail Plan refer to:

http://www.dot.state.fl.us/rail/Publications/2006Plan/plan.htm

The February 2007 Rail Plan includes improvement projects along the CSXT S-Line, which extends from Jacksonville to Lakeland. These projects include CSXT's implementation of an Integrated Logistics Center (ILC) Project near Winter Haven and the Freight Rail Capacity Improvement Projects, which involves improvements along the S-Line, which will improve overall freight capacity and additional capacity in support of the ILC. These improvements are in support of CSXT's Business and Strategic Plan for the state, which in part call for additional freight capacity and the development of "intermodal villages" in lieu of multiple freight yards.

At the same time, the CRT Project has been advanced for different reasons, i.e., to provide an alternative mode of transportation for commuters that travel the overburdened north-south I-4 corridor in Volusia, Seminole, Orange and Osceola Counties. The concurrent timing of these entirely separate projects has necessarily resulted in the close coordination of the two independent efforts. Figure 6-1 shows the general location of the S-Line and the A-Line relative to one another.

Figure 6-1 CSXT A-Line and S-Line

In the coordination of these separate and independent projects, public and private officials have made numerous statements in various public documents, at meetings and in local and national media that have led interested parties to believe that the S-Line improvements project for freight is a direct consequence of, or is necessary for the CRT Project on the A-Line. FTA and FDOT have reviewed the planning history of the two projects and have concluded that, notwithstanding the aforementioned ambiguities in the

public record on this matter, they are separate projects. Although the operation of commuter rail service on the A-Line would be simplified by the reduction of freight trains on the A-Line, the operation of both commuter rail and the projected freight volumes, if no freight trains were removed from the A-Line, could be accommodated as evidenced in the approved Environmental Assessment for the CRT Project published on December 15, 2006, which received a Finding of No Significant Impact (FONSI) from FTA on April 27, 2007. More specifically, in evaluating the impacts of the CRT Project, FTA and FDOT have assessed the impacts under the assumption that the S-Line improvement project is not advanced and rail freight traffic would remain on the A-Line.

Despite the fact that these two projects are separate, FTA and FDOT have decided to include in this supplement to the approved EA a general analysis of the impacts of moving freight from the A-Line to the S-Line in part due to the inaccurate statements to the public in the past. This analysis is being completed to provide the public with "information useful in restoring, maintaining, and enhancing the quality of the environment" in the spirit of Section 102(2) (G) of the National Environmental Policy Act (NEPA). See 42 U.S.C. § 4332(2) (G). It was determined by FTA that the information on these impacts be provided to the public as part of the Federal NEPA process given the public confusion concerning the project that is being proposed for Federal funding. The information is especially important because FDOT will not be performing its own environmental analysis on the relocation of freight since this is not required under state of Florida environmental review processes. It should be clarified that the analysis will contain no proposals for mitigation given that the proposal to move freight from the A-Line to the S-Line has been independently made by private entities with assistance from the State of Florida, and, as such, is outside the control and discretion of FTA. At the same time, it was determined by FTA that it is in the public interest to alert State and local officials and others to the potential consequences of moving additional freight traffic onto the S-Line.

The potential impacts of rail operations include noise and vibration impacts on adjacent properties, noise from horn-blowing at highway grade crossings, highway traffic delays at railroad grade crossings, and safety concerns at railroad grade crossings and wherever members of the public cross the tracks. The rail freight improvement project on the S-Line, with a corresponding shift of some A-Line freight traffic, will reduce the impacts of freight rail operations in the more densely populated areas where rail freight traffic is reduced (A-Line). However, these proposed operational changes will increase these impacts in areas along the S-Line where the rail freight traffic will increase as a result of the shifting of freight trains from the A-Line. What follows are generalized noise and vibration assessments and at-grade road crossing impacts of freight on those portions of the S-Line that will have additional freight service after the shift of freight due to the CSXT project[14] between Jacksonville, Winter Haven, and South Orange County.

6.1 Freight Shifted from A-Line to S-Line

A map of the Lakeland area showing train movement after the relocation of A-Line traffic to the S-Line is shown in Figure 6-2. The figure shows A-Line, S-Line, CSXT corridor and regional connections.

[14] Some additional freight will travel on the southern segment of the A-Line. These trains will first travel along the S-Line and then switch to the A-Line and travel north to deliver freight to those customers on the A-Line south of Orlando. This freight traffic currently runs along the A-Line through Orlando.

Currently coal traffic represented by the green line travels to and from the Orlando Utilities Commission (OUC) Stanton Coal Plant east of the Orlando International Airport via the A-Line from the north and the OUC spur line south of Taft Yard in Orlando. This traffic occurs approximately 6 days a week (one loaded train to the Stanton Plant and one empty train from the plant each day, 6 out of 7 days a week). With the proposed CSXT train shift, this bi-directional train movement will now occur via the S-Line through Lakeland to the OUC Spur in Orlando via the south end of the A-Line (two additional coal train movements).

Two daily intermodal trains, one in each direction and represented in blue currently travel via the A-Line destined for Taft Intermodal Yard. Based on the CSXT Business Plan, Taft Intermodal Yard business is being incorporated in the Winter Haven ILC Terminal. As a result, these two daily intermodal trains represented by the blue line will shift from the A-Line to the S-Line and travel to and from Winter Haven through the City of Lakeland (two additional intermodal train movements).

Two daily intermodal trains are represented by the yellow line. These two trains, one in each direction, currently stop in Taft Intermodal Yard and then travel to and from Tampa via the City of Lakeland. This traffic will now travel via the S-Line through Vitis and Lakeland Junction (lighter green line) bypassing the City of Lakeland (two eliminated intermodal train movements).

The Auto Rack trains (tri-level automobile railway cars) are represented by the red line. These two daily trains, one in each direction, are currently routed via the A-Line to and from Taft Intermodal Yard. These Auto Rack trains will now be routed via the S-Line through Lakeland to and from Winter Haven (two additional auto train movements).

In summary, after the CSXT proposed A-line railroad traffic shift, there will be 4 additional train movements operating through Lakeland daily (2 two additional trains moving both ways daily).

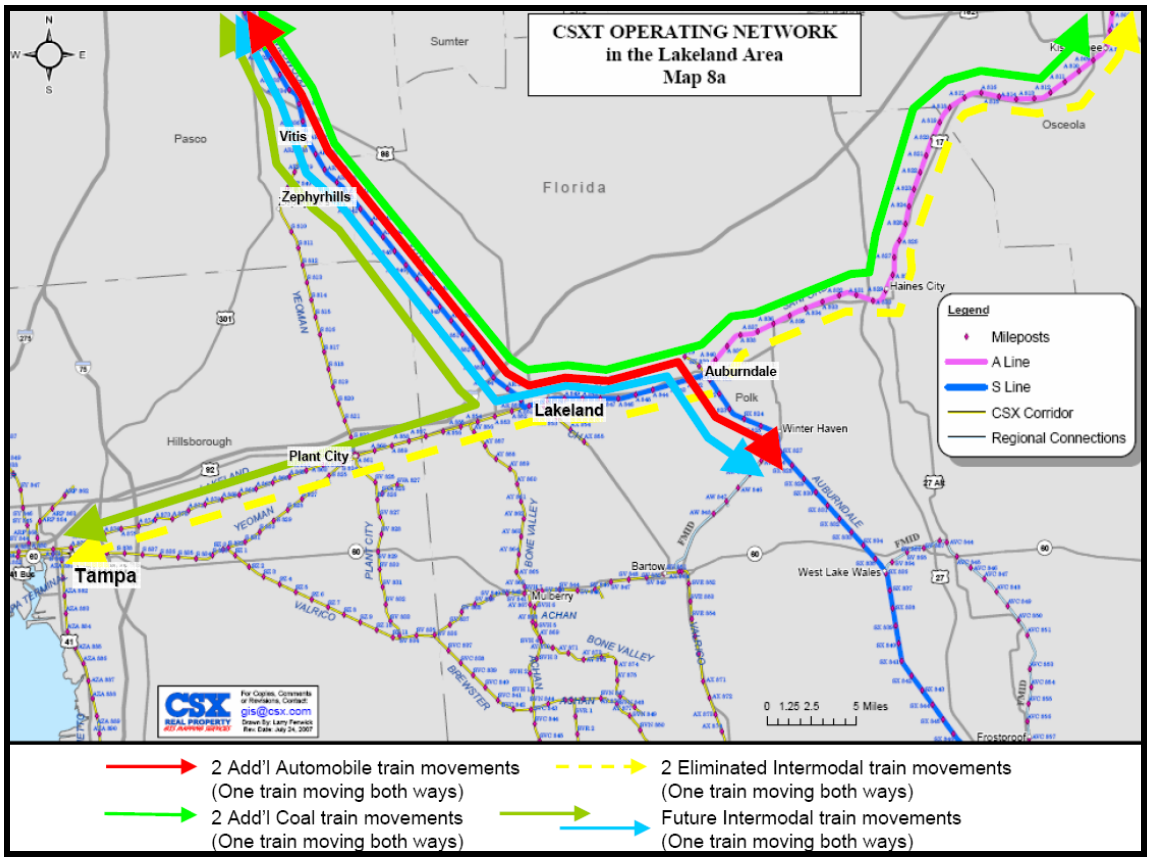

Figure 6-2 Freight Traffic in Lakeland Area after A-Line Shift

6.2 S-Line Grade Crossing Analysis

As part of this supplement to the approved EA, the general S-Line grade crossing assessment was directed primarily at those crossings with the highest volume of vehicular traffic that could be potentially delayed by increased frequency of train operations. The assessment compares general roadway and railroad operating conditions at selected grade crossings "without freight relocation" to anticipated conditions "with freight relocation". The details of the analysis including maps and tables are found in S-Line Grade Crossings: General Assessment of Potential Transportation and Safety Impacts of CSXT Freight Relocation Technical Report.

The general land use in the S-Line corridor is generally low density and the line passes through two urbanized areas, Ocala and Lakeland. Of the total 224 rail-crossings along the S-Line, 10 are arterials, 19 are urban collectors, 35 are rural/local, 51 are private crossings, and the remaining are either residential or low volume roads.

The 29 at-grade crossing locations where the S-Line crosses either an arterial or collector roadway were selected for screening and assessment, because roadways in these categories generally carry higher volumes of traffic compared to smaller, local roadways or private crossings. Of the total 29 grade crossing locations, two locations were screened out because they are under construction (N.W. Pine Avenue and SR 464/SW 17th Street in Ocala). Another seven locations were screened out due to 2010 roadway

traffic volumes that are below the FDOT 4,800 Annual Average Daily Traffic (AADT) threshold for LOS C on collector roads, as agreed upon with FTA. As a result of this screening process a total of 20 grade crossing locations were identified for further evaluation and are listed in Table 6-1.

6.3 Crossing Analysis without and with Freight Train Relocation

CSXT provided future railroad operations data for the S-Line corridor for the "With freight relocation" scenario. Information provided included average train counts by two-hour weekday peak periods (7–9 AM and 4–6 PM), average train lengths and existing timetable speeds by CSXT subdivision for the 2010 analysis year.

The S-Line is a bi-directional operation over single track with long distances between passing sidings. The maximum authorized speed is usually 60 mph over most of the corridor. The average train speed and the average train lengths were estimated from CSXT 2008 operations data for "Without freight relocation" scenario was also used for the "With freight relocation" scenario. For modal analysis the average speed assumed is 45 MPH in most municipalities and 60 MPH in Auburndale. The average train length of the future operations was established as 5,000 feet, or the equivalent of 75 rail cars. The number of trains for the two-hour weekday peak period was rounded to the nearest whole number. As shown in Table 6-2, the total number of peak hour trains with freight location varies from three trains in Polk County to four trains in Sumter County, five trains in Marion County and six trains in Bradford for the year 2010.

The analysis assumes the same freight train length and train speed as the "Without freight relocation" scenario, therefore gate down time for one event (one train passing) remains the same. However, the frequency of trains traveling through the grade crossing locations would increase based on projected train operations data provided by CSXT for the "With freight relocation" scenario. It is projected that the frequency of trains will increase by 1 train in each (morning and afternoon) peak hour for Bradford and Marion counties, and by 1 train in the afternoon peak hour only in Sumter County. No increase in the number of trains is expected for any of the Polk county locations under the "With freight relocation" scenario during the morning or afternoon peak periods.

The average delay per vehicle remains less than 10 seconds at all 20 study grade crossings during both peak hours (AM and PM) under the "With freight relocation" scenario. In addition to the delay calculations, a volume to capacity (v/c) ratio was determined for each study grade crossing location. The v/c ratio does not exceed 0.5 for any of the study crossings as a result of the freight relocation.

The traffic analysis results also include an estimation of the 95th percentile queue lengths for vehicles stopped at the grade crossings. It should be noted that these queues occur under existing conditions. Comparing the two scenarios shows that the 95th percentile queue length does not increase due to the freight relocation; however the frequency of the queues occurring will increase by one event at most during each peak hour. The Traffic Technical Report includes freight train operational data, roadway traffic data, and capacity analysis.

Table 6-1 Study Grade Crossing: Screening Results

Crossing No.	Location	Roadway Classification	No. of Lanes	No. of RR Tracks	County	AADT [1]	AADT Year	2010 Volume[2]	2010 LOS [3]		Screening Result [4]
									AM Peak	PM Peak	
17	East Brownlee Street/SR 16	Collector	2	2	Bradford	8,500	2006	9,567	A	A	Retained
21	Call Street/SR 230	Collector	2	2	Bradford	7,000	2006	7,879	A	A	Retained
22	SR 100/Madison St.	Collector	2	2	Bradford	7,800	2006	8,779	A	A	Retained
82	NE 8th Avenue/CR 2877	Minor Arterial	4	2	Marion	6,100	2006	6,866	A	A	Retained
110	Hames Avenue/S.E.110th St.	Minor Arterial	2E/1W	1	Marion	14,400	2006	16,207	A	A	Retained
123	CR 466	Minor Arterial	4	1	Sumter	14,655	2005	15,552	A	A	Retained
131	SR 44	Minor Arterial	4	2	Sumter	17,492	2005	21,428	A	A	Retained
141	East Belt Avenue	Collector	2	2	Sumter	5,832	2003	7,173	A	A	Retained
142	East Noble Avenue	Collector	2	2	Sumter	9,900	2006	11,143	A	A	Retained
195	Galloway Road	Collector	2	1	Polk	6,600	2006	7,088	A	A	Retained
200	10th Street	Collector	2	1	Polk	6,600	2001	8,612	A	A	Retained
205	N. Florida Ave/US B 98/SR35	Urban Arterial	4	1	Polk	14,000	2006	16,003	A	A	Retained
207	Kentucky Avenue	Collector	2	1	Polk	7,210	2001	9,407	A	A	Retained
208	Massachusetts Avenue	Urban Arterial	4	1	Polk	9,300	2006	9,988	A	A	Retained
210	Ingraham Avenue	Urban Arterial	4	1	Polk	9,700	2006	10,417	A	A	Retained
217	Combee Road	Urban Arterial	4	1	Polk	20,400	2006	23,319	A	A	Retained
218	Fish Hatchery Road	Collector	2	1	Polk	6,700	2006	7,196	A	A	Retained
219	Reynolds Road	Collector	2	1	Polk	10,500	2006	11,277	A	A	Retained
220	Old Dixie Highway	Collector	2	2	Polk	4,637	2003	5,703	A	A	Retained
224	Recker Highway	Collector	2	1	Polk	15,700	2006	17,947	A	A	Retained

Source: Florida Department of Transportation

Notes: (1) AADT: Annual Average Daily Traffic
(2) Growth rates used to project roadway traffic volumes to year 2010 are based on rates published by local governments and MPOs and ranged from 1.8% to 3.4% per year.
(3) Grade crossing delay-based LOS based on average seconds of delay per vehicle experienced due to gate down time during the busiest AM or PM peak hour of roadway traffic.
(4) Dropped if 2010 AADT is less than 4,800 (defined by FDOT as LOS C for non-state/collector roadways), or if existing or proposed grade separated.

Table 6-2 Grade Crossing Analysis Summary – Weekday Peak Periods

Location	County	Without Freight Relocation AM/PM Peak Periods			With Freight Relocation AM/PM Peak Periods		
		Total No. of Trains	Gate Down Time (s) [1]	LOS [2] AM/PM	Total No. of Trains	Gate Down Time (s)	LOS AM/PM
East Brownlee Street/SR 16	Bradford	3	432	A/A	6	648	A/A
Call Street/SR 230	Bradford	3	432	A/A	6	648	A/A
SR 100/Madison St.	Bradford	3	432	A/A	6	648	A/A
NE 8th Avenue/CR 2877	Marion	4	432	A/A	5	540	A/A
Hames Ave./ S.E.110th St.	Marion	4	432	A/A	5	540	A/A
CR 466	Sumter	4	432	A/A	4	432	A/A
SR 44	Sumter	4	432	A/A	4	432	A/A
East Belt Avenue	Sumter	4	432	A/A	4	432	A/A
East Noble Avenue	Sumter	4	432	A/A	4	432	A/A
Galloway Road	Polk	3	324	A/A	3	324	A/A
10th Street	Polk	3	324	A/A	3	324	A/A
North Florida Ave/US B 98/SR35	Polk	3	324	A/A	3	324	A/A
Kentucky Avenue	Polk	3	324	A/A	3	324	A/A
Massachusetts Avenue	Polk	3	324	A/A	3	324	A/A
Ingraham Avenue	Polk	3	324	A/A	3	324	A/A
Combee Road	Polk	3	324	A/A	3	324	A/A
Fish Hatchery Road	Polk	3	324	A/A	3	324	A/A
Reynolds Road	Polk	3	324	A/A	3	324	A/A
Old Dixie Highway	Polk	3	267	A/A	3	267	A/A
Recker Highway	Polk	3	267	A/A	3	267	A/A

Notes:
(1) AM Peak Period is 7 – 9 AM.
PM Peak Period is 4 – 6 PM.
(2) Gate Down Time is measured in seconds.
(3) LOS: Level of Service

6.4 Safety

Through the Highway Railroad Grade Crossing Safety Improvement Program, FDOT continuously evaluates and identifies grade crossing locations that are potentially hazardous, and develops safety improvement projects to upgrade crossings and reduce the number of crashes at grade crossings. Approximately 95 percent of public crossings along the S-Line have warning devices, and with most of the relocated trains occurring during off-peak hours when traffic volumes are lower, the relocation of some freight trains to the S-Line is not expected to have a significant impact on safety.

6.5 Emergency Vehicles

This section identifies locations on the S-Line where existing train operations are of particular concern relative to their potential impact on emergency vehicle response time.

About eight hospitals that provide emergency care and 26 fire departments (including volunteer fire departments) were identified within five miles of S-Line for emergency response. Total gate down time per train is assumed to be same with relocation and without relocation scenarios. The comparison of gate down time in a 24-hour period varies from two to three percent for "With relocation" scenario and from three to four percent for "Without relocation". The percentage of gate down time remains the same in both scenarios for all the hospitals and fire departments except for the ones located in Bradford, Sumter and Polk Counties, where the gate down time for 24-hour period increases by one percent. Therefore, relocation of freight trains along the S-Line will not have significant impact on emergency response vehicles.

6.6 Conclusion

The grade crossing capacity analysis and safety study for the study grade crossings show that the relocation of the CSXT trains will not significantly impact grade crossing delay and safety.

The grade crossing capacity analysis shows that all the study grade crossings will continue to operate at level of service (LOS) A under the "With freight relocation" scenario. The average delay per vehicle remains less than 10 seconds at all 20 study grade crossings during both peak hours (AM and PM) and the v/c ratio does not exceed 0.5 for any of the study crossings as a result of the freight relocation. The traffic analysis also shows that the 95th percentile queue length does not increase due to the freight relocation. Additionally, the rail operations data provided by CSXT for the "with relocation" scenario shows an increase in trains during peak hours only in the northern end of the corridor.

The relocation of freight trains will have minimal impact on safety and emergency response vehicles because FDOT continuously evaluates and provides recommendations on safety improvement for grade crossing locations that are potentially hazardous or require upgrades for protection devices. In addition, the percentage of time that the gate will be down in a 24-hour period is minimal in both scenarios. The gate down time increases by one percent in Bradford, Sumter and Polk Counties under the "With freight relocation" scenario, whereas it remains the same for all the other counties under both scenarios. Gate down time per train does not increase.

6.7 General Noise Assessment

Currently, the S-Line has significant CSXT freight service along its entire length with an average of 27 trains daily through Wildwood to 18 trains daily through Auburndale (refer to Appendix E, Average Train Counts)[15]. Due to the approximate 200 mile length and largely rural nature adjacent to the S-Line, this noise assessment does not include noise calculations at all receptors along the corridor. Instead, the assessment focused on cities and towns and developed detailed noise contours along the S-Line at 12 locations along the corridor where noise measurements were obtained. The complete details of the analysis including maps and table are in the S-Line Noise and Vibration Technical Report which is available at www.cfrail.com.

[15] CSXT Average Train Counts 2006 and January through October, 2007.

The Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment guidance manual (FTA-VA-90-1003-06, May 2006) presents the basic concepts, methods, and procedures for evaluating the extent and severity of noise impacts from transit projects. Transit noise impacts are assessed based on land use categories and sensitivity to noise from transit sources under the FTA guidelines.

In accordance with FTA noise guidelines, although no transit vehicles will utilize the S-Line, a noise-monitoring program was conducted along the S-Line Corridor to (1) establish the existing ambient background levels within the project area and (2) develop project criteria noise limits. Noise measurements were obtained at 12 receptor locations along the corridor (Table 6-3). The measurements at 11 of the locations consist of 24 hours of continuous noise monitoring at residential receptors. The remaining location was in a public park where hour-long noise measurements were collected. The results were used to establish baseline noise levels for both residential and non-residential receptors.

For this assessment, all tracks were assumed to be at-grade. The train speed profile was assumed to be 40 mph at all locations. Train operations were developed from information for both the S and A Lines and were aggregated into 8 regions from Auburndale and Lakeland in the south to Starke in the north.

The noise-monitoring program was conducted in March 2008 to establish existing peak hour L_{eq} noise levels at non-residential locations and 24-hour L_{DN} noise levels at residences. Locations 2 and 7 had the lowest measured L_{DN} levels because of fewer freight train operations on those days of monitoring. The lower measured L_{DN} levels at location 5 in Wildwood (63 dBA) is due to the distance of the residences in this area from the nearest track (150 feet). The remaining nine locations had L_{DN} noise levels due to the higher density of existing trains during the monitoring period.

Table 6-3 Summary of Noise Measurements

NUMBER	*DESCRIPTION*	*TOWN*	*FTA CATEGORY*	*MEASURED NOISE LEVEL*
1	346 North Thompson	Starke	2	77 L_{DN}
2	14394 NE 137th	Waldo	2	65 L_{DN}
3	6936 SE 272nd	Hawthorne	2	73 L_{DN}
4	521 SW 2nd	Ocala	2	82 L_{DN}
5	4545 Cr 116	Wildwood	2	63 L_{DN}
6	109 E. Virginia	Bushnell	2	74 L_{DN}
7	38635 Patti	Lacoochee	2	63 L_{DN}
8	14006 Blake	Dade City	2	72 L_{DN}
9	5940 Ivy Branch	Galloway	2	74 L_{DN}
10	Munn Park	Lakeland	3	70 L_{EQ}
11	1610 East Fern	Lakeland	2	75 L_{DN}
12	2127 Hillcrest	Auburndale	2	73 L_{DN}

Areas potentially impacted by the additional freight rail operations on the S-Line are shown in detail in the S-Line Noise and Vibration Technical Report. Residential receptors located within the noise contour lines would be considered impacted by the additional freight train operations. The noise contour for moderate impact is approximately 106-104 feet from the nearest rail in the vicinity of grade crossings where horns are sounded. In other areas of the corridor, the noise contour for moderate impact is approximately 26 feet from the nearest rail. The noise contour for severe impact is approximately 27-45 feet in the vicinity of grade crossings, and approximately 7-11 feet in other areas.

It should be recognized that many of these affected receptors are currently exposed to noise from warning horns from existing freight operations along the corridor. The horn soundings introduced by the additional freight operations will increase the cumulative horn noise exposure in the corridor by an insignificant amount.

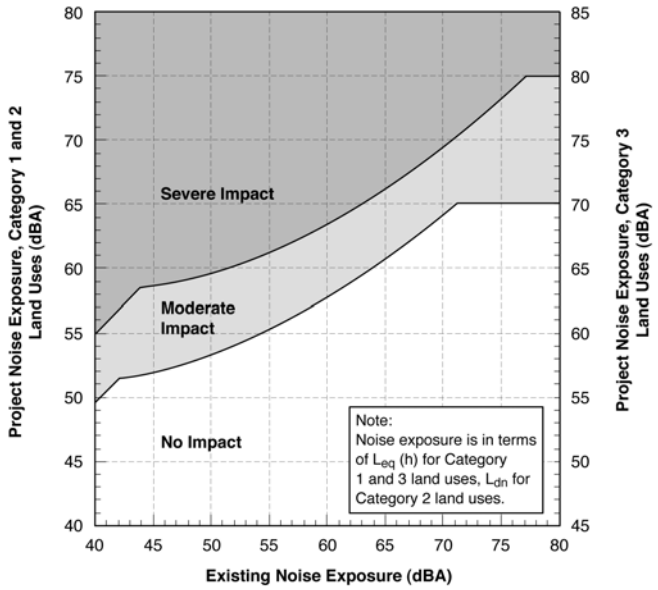

Figure 6-3 FTA Noise Impact Criteria for Transit Projects

Based on the noise measurements obtained along the S-Line, criteria levels were established from Figure 6-3 for moderate and severe impact conditions along the S-Line based solely on the additional freight train operations shifted from the A-Line. Calculations were then performed to determine the noise generated by the proposed additional freight train operations on the S-Line. These calculated noise levels, at the reference distance of 50 feet from the nearest rail, were then extrapolated to the FTA moderate and severe impact criteria levels to determine the distance from the nearest track within which moderate and severe noise impacts would be expected to occur due to the additional freight trains shifted from the A-Line. These calculated impact distances were then graphed as contours, superimposed on 2004 Florida GIS aerial quad maps of the region of interest. The results of the noise contour analysis are shown in Appendix F. The results of the analysis of impact criteria and contour distances for the additional freight rail operations shifted from the A-Line to the S-Line are shown in Table 6-4.

6.8 Additional Freight Impacts

The information contained in Table 6-4 is used as follows. For example, in the Lakeland area, the measured Ldn noise level was 75 dBA. Using the curves in Figure 6-3, the FTA moderate impact criterion is 65.0 dBA, and the severe impact criterion is 73.3 dBA. From Table 6-5 (discussed below), the predicted LDN noise level from the four additional freight trains (two during the daytime hours and two during the nighttime hours) that are expected to operate along this section of the corridor is 67.7 dBA (with horns) at a reference distance of 50 feet from the nearest rail. Extrapolating this noise level using sound propagation attenuation over soft ground (per the FTA methodology) would result in an LDN noise level of 65 dBA (the FTA moderate impact criterion) at a distance of approximately 68 feet from the from the nearest rail. As a result, any residential receptor located within 68 feet of the rail corridor would exceed the FTA moderate impact criterion of 65 dBA. Without horns, the moderate impact distance is 17 feet as indicated in Table 6-4.

Table 6-5 shows the calculated LDN noise exposure levels with and without horns at a reference distance of 50 feet for the current S-Line freight rail operations, the additional A-Line freight rail operations, and the calculated LDN noise level from the combined total freight rail operations on the S-Line. The values were calculated using the same FTA methodology used to calculate the LDN noise levels for the noise contours. The results show a range of 0.8 to 1.4 dBA increase in the average daily LDN noise exposure level at a reference distance of 50 feet. Again, using the Lakeland area as an example, the current predicted LDN noise at a reference distance of 50 feet from the corridor is 74.4 dBA with horns. Adding an additional four freight trains will generate an LDN noise level of 67.7 dBA for a total LDN noise level of 75.2 dBA (the logarithmic sum of 74.4 dBA + 67.7 dBA = 75.2 dBA). This results in an increase in the LDN noise level of 0.8 dBA at a reference distance of 50 feet. If the existing LDN noise level of 74.4 dBA were expressed as a noise contour at a distance of 50 feet from the corridor, then adding an additional four freight trains would increase the distance of this noise contour by approximately 8 feet. As a result, the existing 74.4 dBA noise contour line would now be located approximately 58 feet from the rail corridor.

As a noise mitigation measure, CSX has committed to develop quiet zones in the downtown Lakeland area that will restrict the use of warning horns as the freight trains approach the grade crossings. Since the warning horns are the major noise source from the freight trains, this will have a significant effect in reducing the overall noise levels in the downtown Lakeland area. The location of the quiet zones and the existing grade-separated crossings are shown in Figure 6-4. In addition, the results of this noise mitigation are reflected in the noise contours shown in Appendix F for the Lakeland area.

Table 6-4 Summary of FTA Noise Criteria and Noise Contour Impact Distances

	FTA MODERATE IMPACT			*FTA SEVERE IMPACT*		
REGION	***L_{DN}***	***DISTANCE NEAR GRADE CROSSING (with Horns)***	***DISTANCE (withoutHorns)***	***L_{DN}***	***DISTANCE NEAR GRADE CROSSING (with Horns)***	***DISTANCE (withoutHorns)***
Starke	**65.0 dBA**	**104 feet**	**26 feet**	**74.7 dBA**	**27 feet**	**7 feet**
Waldo	**65.0 dBA**	**105 feet**	**26 feet**	**71.6 dBA**	**42 feet**	**11 feet**
Ocala	**65.0 dBA**	**104 feet**	**26 feet**	**75.0 dBA**	**26 feet**	**7 feet**
Wildwood	**65.0 dBA**	**104 feet**	**26 feet**	**71.2 dBA**	**38 feet**	**9 feet**
Lacoochee	**65.0 dBA**	**104 feet**	**26 feet**	**71.6 dBA**	**44 feet**	**11 feet**
Vitis	**65.0 dBA**	**105 feet**	**26 feet**	**71.2 dBA**	**45 feet**	**11 feet**
Lakeland	**65.0 dBA**	**68 feet**	**17 feet**	**73.3 dBA**	**21 feet**	**5 feet**
Auburndale	**65.0 dBA**	**68 feet**	**17 feet**	**71.8 dBA**	**27 feet**	**7 feet**

Table 6-5 Summary of Calculated LDN levels at a Reference Distance of 50 Feet

	CALCULATED L_{DN} @ 50 FEET WITH HORNS (dBA)				*CALCULATED L_{DN} @ 50 FEET WITHOUT HORNS (dBA)*			
REGION	***S-LINE***	***A-LINE***	***A+S LINE***	***DIFFERENCE***	***S-LINE***	***A-LINE***	***A+S LINE***	***DIFFERENCE***
Starke	**76.0**	**70.8**	**77.2**	**1.2**	**66.0**	**60.8**	**67.2**	**1.2**
Waldo	**75.2**	**70.9**	**76.6**	**1.4**	**65.2**	**60.9**	**66.6**	**1.4**
Ocala	**75.2**	**70.8**	**76.6**	**1.4**	**65.2**	**60.8**	**66.6**	**1.4**
Wildwood	**75.7**	**70.8**	**76.9**	**1.2**	**65.7**	**60.8**	**66.9**	**1.2**
Lacoochee	**75.0**	**70.8**	**76.4**	**1.4**	**65.0**	**60.8**	**66.4**	**1.4**
Vitis	**74.9**	**70.9**	**76.3**	**1.4**	**64.9**	**60.9**	**66.3**	**1.4**
Lakeland	**74.4**	**67.7**	**75.2**	**0.8**	**64.4**	**57.7**	**65.2**	**0.8**
Auburndale	**74.4**	**67.7**	**75.2**	**0.8**	**64.4**	**57.7**	**65.2**	**0.8**

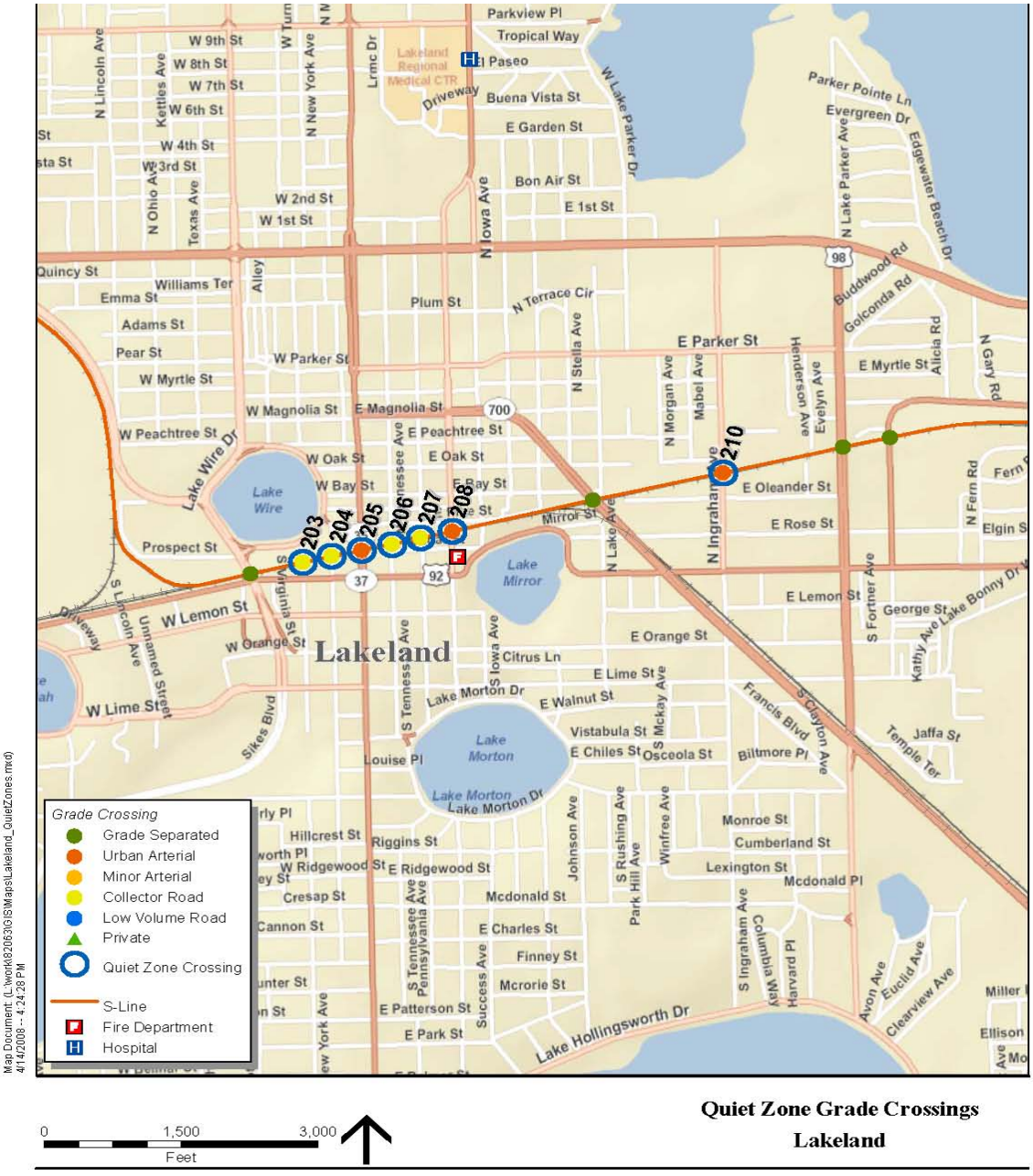

Figure 6-4 Proposed Lakeland Quiet Zones

6.9 Vibration Assessment

Vibration levels from S-Line freight rail passbys at sensitive receptors along the project corridor were determined using the FTA guidelines. Vibration measurements were conducted at 6 of the 12 noise measurement locations. The results of the vibration measurements are summarized in Table 6-6. The measured levels range from 80 to 92 VdB. The variation in the measured levels is a function of distance, speed, weight and other factors. For instance, the condition of the wheels on the locomotives and the rolling stock can have a large effect on the vibration levels, which may account for differences in level that would not be expected based on distance and speed alone.

The FTA has revised their impact assessment criteria for rail corridors with existing train operations. For heavily used rail corridors (more than 12 trains per day), where existing vibration levels already exceed the FTA criteria and there is not a significant increase in rail operations (a doubling of trains per day), then only when the project vibration levels are 3 VdB or more higher than the existing vibration levels would an impact condition occur. Since the vibration levels from the additional shifted A-Line freight rail operations are the same as that from the existing freight rail operations on the S-Line, there would be no change (or increase) in the freight rail vibration levels. Therefore, by the FTA's definition, there would be no vibration impact from the additional freight rail operations on the S-Line. Although there will be more freight rail operations per day, the vibration levels from a freight train passby would be similar to those already experienced along the S-Line.

Table 6-6 Summary of Vibration Measurement Results

NUMBER	*DESCRIPTION*	*TOWN*	*FTA CATEGORY*	*MEASURED VIBRATION LEVEL (VdB)*
1	**14639 US 98 Bypass**	**Dade City**	**2**	**91.1**
2	**Munn Park**	**Lakeland**	**3**	**83.1**
3	**Lake Weir & SE 38th**	**Ocala**	**2**	**88.6**
4	**NE 42 and CR 106**	**Oxford**	**2**	**90.1**