

# MISSISSIPPI'S UNIFIED LONG-RANGE TRANSPORTATION INFRASTRUCTURE PLAN



2035



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

FINAL REPORT

## APPENDIX E: FREIGHT AND PASSENGER RAIL INVESTMENT NEEDS

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## 1. INTRODUCTION

This report identifies the needs and costs for improvements on rail lines, at rail passenger stations, and at highway-rail at-grade crossings in Mississippi. Rail projects to be funded through the Multimodal Transportation Improvement Program are also discussed. Needs were identified by the freight railroads, high speed rail planners, Amtrak, MDOT, and the Mississippi Rail Plan study team.

## 2. FREIGHT RAIL NEEDS

The state's rail carriers were surveyed as part of the outreach effort for the Mississippi State Rail Plan. Among other things, a statement of needs and estimated costs was requested. As could be expected, replies ranged from no response to detailed needs descriptions and cost estimates, and everything in between. Some responses contained only general statements such as "better access to . . . . .", but without a description of how "better access" could be accomplished or what comprised "better." Needs statements where the solution is not readily apparent will require planning and/or engineering assessments to determine how to satisfy the need. Other need responses were more specific but lacked cost estimates.

### 2.1 Operating Capacity and Bottlenecks

Capacity issues were identified from a national capacity assessment of the country's principal routes and survey responses. They are discussed in the following paragraphs by category.

#### 2.1.1 Association of American Railroads

A September 2007 study of rail capacity on a national basis was performed by the Association of American Railroads (AAR). It was prepared with member involvement and a steering committee that included representatives of three of Mississippi's Class I railroads – BNSF, CSXT, and NS<sup>1</sup>. This assessment of long-term capacity needs of the rail industry requested by the National Surface Transportation Policy and Revenue Study Commission was based on satisfying the U.S. DOT's projected rail freight demand for 2035. Estimates at that time projected an increase in demand of 88% (tonnage) by that date.<sup>2</sup>

The study rail system comprised 52,340 route miles of primary rail freight corridors, approximately one-third of the total U.S. rail system. The rail lines included in Mississippi were comprised of:

- The NS mainline between Birmingham and New Orleans passing through Meridian and Hattiesburg;
- The NS mainline between Chattanooga and Memphis passing through Corinth;
- The BNSF track between Memphis and Birmingham passing through Tupelo;

<sup>1</sup> With assistance from Cambridge Systematics.

<sup>2</sup> The 88% growth in tonnage is restated as 23% for the same time period in the FRA's *National Rail Plan – Moving Forward*, September 2010, p. 16.

- The CN Memphis-New Orleans mainline passing through Jackson;
- The Meridian Speedway also passing through Jackson; and,
- The CSXT Gulf Coast mainline passing through Pascagoula and Gulfport.

While existing capacity assessments included existing passenger service, future needs were based on additional freight demand without consideration of new passenger service needs. Existing levels of rail traffic were assigned to the study system using data from the STB's Carload Waybill Sample and line capacity estimated using track, signal and freight traffic/train type characteristics. Traffic volumes and the capacity of each segment of the rail system were compared and volume-to-capacity ratios developed and level of service ratings established.

Of the Mississippi designated corridors, the NS route through Corinth and the Meridian Speedway were projected to have capacity issues in the future with existing infrastructure, but when compared to planned improvements, both lines are projected to have acceptable volume to capacity conditions.

### 2.1.2 Corridor Initiatives

Improvements to the two line segments identified above are being approached through two corridor initiatives. Both the NS main track between Birmingham and New Orleans passing through Meridian and Hattiesburg, as well as the Sheffield-Memphis line passing through Corinth are included in the railroad's Crescent Corridor Initiative, and the Meridian Speedway has been subject to an improvement program since the establishment of the Meridian Speedway (MSLLC) in 2006.<sup>3</sup>

On March 10, 2010, NS reported at the J.P. Morgan Transportation Conference that expenditures as initially identified were 95% complete and an April 1, 2010 item in *Railway Track and Structures*<sup>4</sup> itemized some of the improvements:

- Installation of Centralized Traffic Control (CTC) on 250 miles of the 320-mile long corridor.
- Construction of new sidings, extension of others, and new second track in places.
- Bridges rebuilt.
- Track improvements, including 100 miles of rail replacement, 281,000 ties replaced, undercutting, ballasting, and surfacing of 240 miles.
- Crossing upgrades, some in association with MDOT.

The switch tender crossing of the KCS (MSLLC) and the CN in Jackson is an operating bottleneck that needs to be addressed in the Speedway Corridor. Crossing conflicts will only worsen as MSLLC volumes continue to grow.

<sup>3</sup> See WP 18: Rail Traffic Flows for additional discussion of all corridor initiatives.

<sup>4</sup> Page 8.

### 2.1.3 Columbus Interchange

Six different railroads, one Class I and five local or regional railroads, meet and interchange traffic in Columbus. In this case, additional yard capacity for interchange purposes was identified as a need.

## 2.2 Infrastructure Upgrades

Most track upgrades are needed for the branch line and local and regional system, although some, especially falling into the safety category, pertain to Class Is.

### 2.2.1 Track Upgrades

Track upgrades to create the ability to transport 286,000-lb. carloads, restore service or improve operating speeds and reliability comprised the largest component of the estimated need category. Rail lines lacking 286,000-lb. carload weight capacity are the subject of **Figure 2-1**.

### 2.2.2 Safety

Several grade separations and crossing improvements were also identified. These needs should be coordinated with MDOT's grade-crossing program.

### 2.2.3 Other

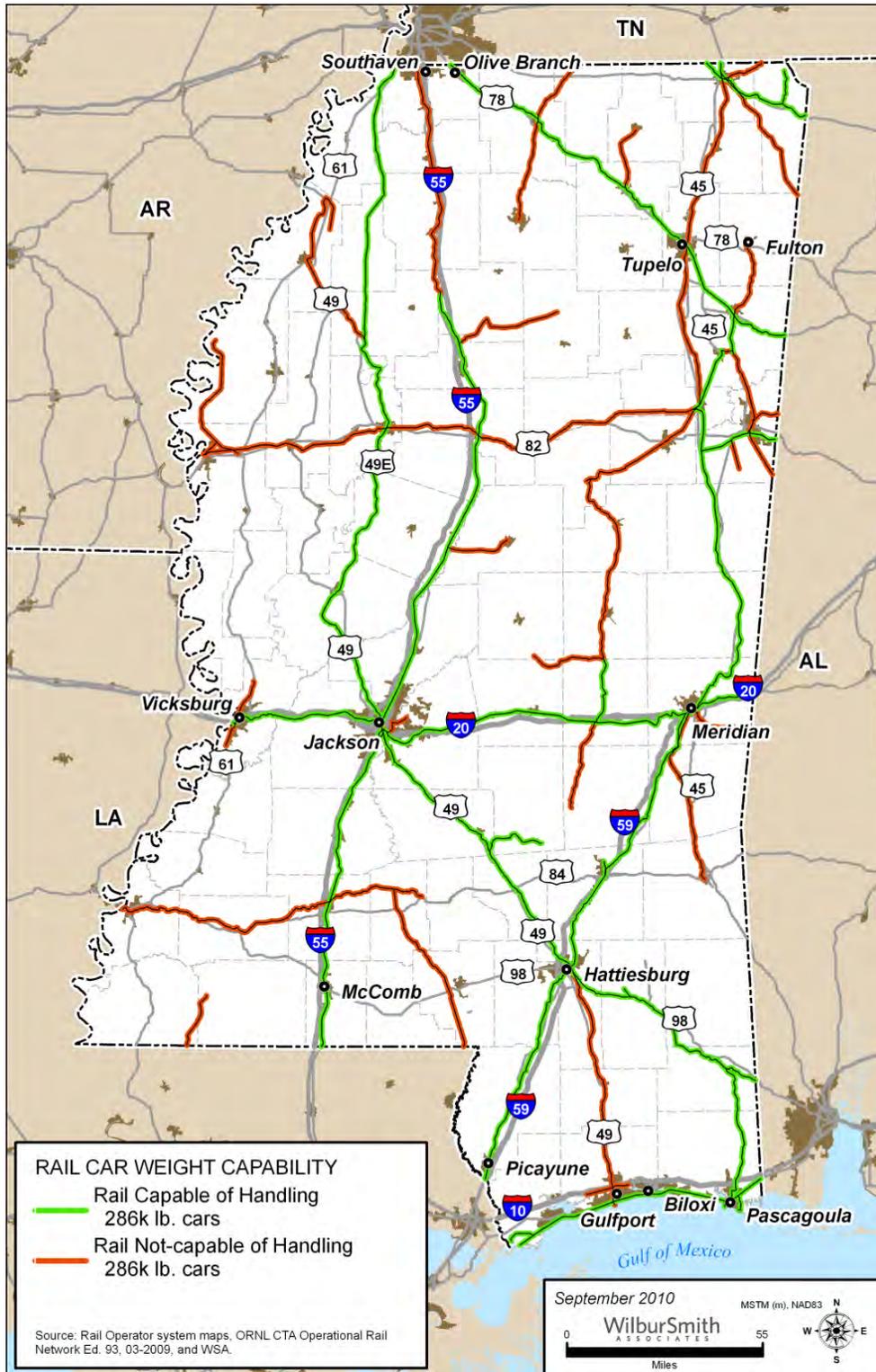
Needs falling into this category consist of construction of trackage or restoration of abandoned lines to facilitate access to various facilities or locations. One would restore a former through route crossing the Mississippi River using a carfloat.

### 2.2.4 Cost Development

Survey responses with estimated costs were used as supplied. In order to generate an indication of the magnitude of overall rail physical and funding needs including non-responding railroads, a goal was adopted that the entire state rail system be capable of transporting 286,000-lb. carloads. The cost estimates submitted to meet similar needs were averaged along with others contained in TIGER grant applications and a unit cost developed for application in the no-reply and estimate-lacking cases. The unit cost thus derived is much higher than required for tie replacements, which have been a typical need, especially on light density lines, in years past. Most of the estimated costs reflect larger rail sections and strengthened structures (trestles, bridges) required for today's heavier carload weights; therefore, in some cases, more than average requirements for either would result in significant cost differences. Thus, estimates made in this manner will require thorough assessments due to the differences in each line segment's composition and condition.

No attempt was made to estimate costs for stated needs when clear means to satisfy the need were not provided nor were obvious. These cases are simply designated as to be determined (TBD).

Figure 2-1: Rail Car Weight Capability



## 2.3 Needs Summary

Track and structure upgrades are designated for 817 miles of rail line on 19 different rail carriers. Four railroads identified rail and highway safety improvements (including grade separations), and five responses included operating and capacity improvements. The needs and costs by category are shown in **Table 2-1**. Needs identified but falling into the TBD category are not included in the summary above or Table 1.

**Table 2-1: Freight Railroad Needs**

Item	Estimated Costs (\$ millions)
Track and Structure Upgrades	\$355.45 <sup>(1)</sup>
Rail – Highway Safety Projects	36.90
Operating and Capacity Improvements	169.10
Total	\$561.45

<sup>(1)</sup>\$36.8 million also included in Port rail needs

In order to compare the needs tabulated above with needs of other modes, they are restated in **Table 2-2**. For railroad needs, the preservation category includes projects to preserve or restore rail service. Modernization needs are those that upgrade track and structures to today’s standards such as 286,000-lb. carload weight capability and safety improvements. Expansion needs are those intended to improve operations and/or capacity.

**Table 2-2: Freight Railroad Needs Restated**

Item	Estimated Cost (\$ millions)
Preservation	\$116.20
Modernization	293.15 <sup>(1)</sup>
Expansion	152.10
Total	\$561.45

<sup>(1)</sup>\$36.8 million also included in Port rail needs

## 3. PASSENGER RAIL NEEDS

### 3.1 Existing Service Needs

As profiled in Working Paper 22, there are two Amtrak services running Mississippi today. These are the *City of New Orleans*, operating between Chicago and New Orleans, with six station stops in Mississippi; and the *Crescent*, with four station stops in Mississippi. The former operates over the CN, and the latter on the NS. Both trains have one round trip daily.

Amtrak has made no commitments to modify service on these routes. However, one option outlined in *Gulf Coast Service Plan Report*, Amtrak, July 2009, envisioned extending the *City of New Orleans* to Orlando.

Station needs on the two routes were detailed in *A Report on Accessibility and Compliance with the Americans With Disabilities Act of 1990*, Amtrak, February 2009. Cost estimates for improvements ensuring ADA compliance and a state of good repair at four Mississippi stations were: Greenwood and Jackson, on the *City of New Orleans* route, \$2.5 million; and Hattiesburg and Meridian, on the *Crescent* route, \$5.2 million.

At relatively little cost MDOT could encourage ridership on these two trains by promoting travel to and from Mississippi and improving on-board and station information and passenger assistance with volunteer docents.

The existing passenger services in Mississippi are shown in **Figure 3-1**, along with potential future passenger services discussed in the following section.

## 3.2 Future Passenger Rail Corridors

Working Paper 23 identified five potential passenger rail corridors. These corridors and needs relative to each in Mississippi are discussed below.

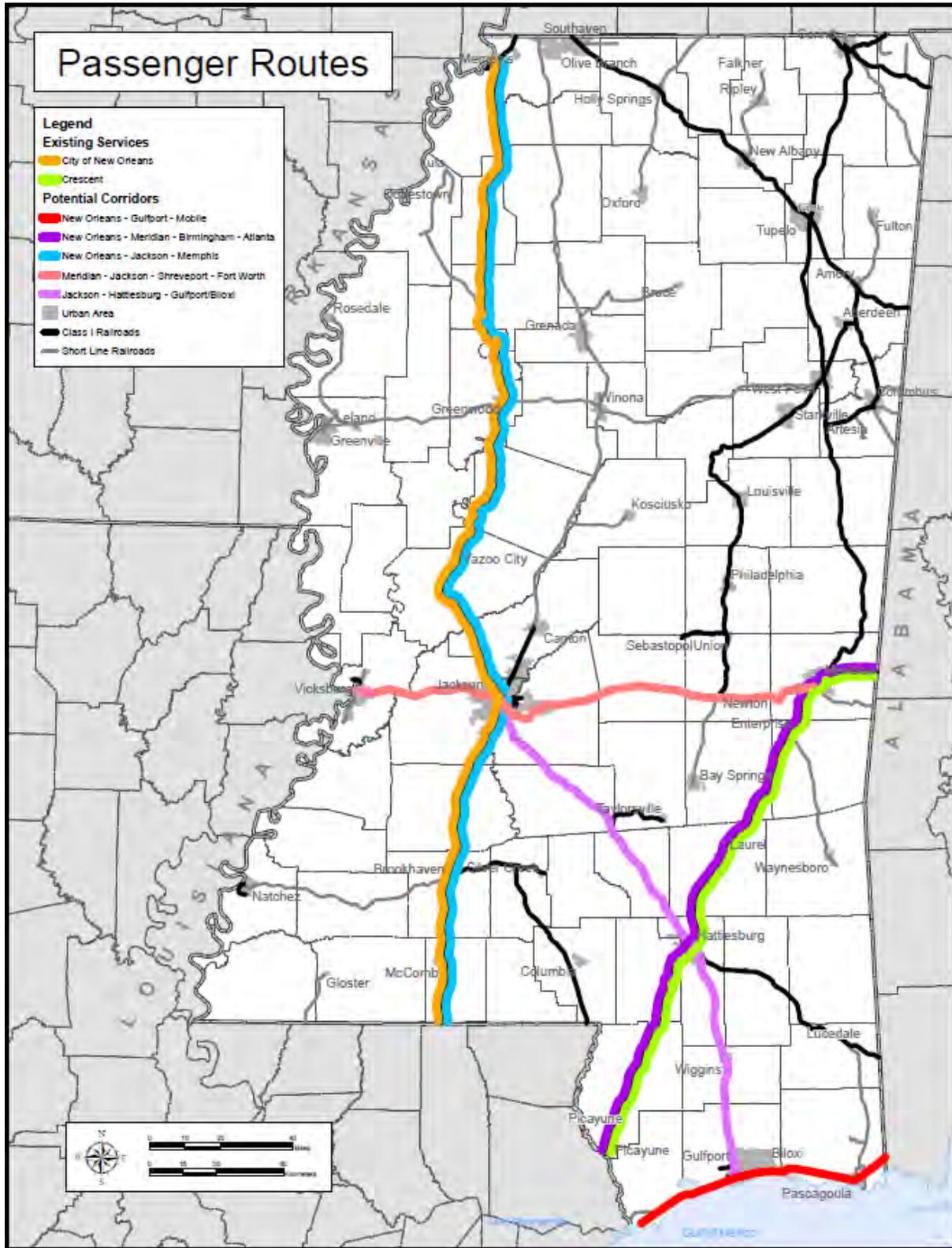
### 3.2.1 New Orleans-Gulfport-Mobile

Focusing on Mississippi's Gulf Coast and the New Orleans-Gulfport-Mobile route may represent the best near term strategy for new rail service. This route is part of the Gulf Coast High-Speed Rail network, and the successful implementation of rail service will help to solidify the partnership among the three core states. This segment of the corridor was intensively reviewed in the *Gulf Coast High-Speed Rail Corridor, New Orleans to Mobile Corridor Development Plan, Volume I, Summary Report*, Southern Rail Rapid Transit Commission, October 2006.

Plans for the service assumed improved running times, 79 mph and 90 mph speeds, and three frequency options (two round-trips, four round-trips and six round-trips).

The route, just inland from the Gulf of Mexico, is part of the CSXT rail network. It is heavily used by freight trains. In addition to local freight trains serving on-line industries, the development plan noted that an average of about 18 to 19 freight trains use the corridor on a daily basis.

Figure 3-1: Existing and Future Passenger Rail Corridors in Mississippi



New passenger trains, operating with up to six round trips daily at speeds up to 90 mph, will require capacity improvements to ensure fluid passenger and freight operations on the line. The aforementioned study estimated a need for \$287.5 million in line capacity and signal improvements in Mississippi.

Amtrak's *Gulf Coast Service Plan Report* estimated another \$2.4 million needed to modernize the four Mississippi stations along the route: Bay St. Louis, Gulfport, Biloxi and Pascagoula.

Restoration of passenger service on this route could require the installation of a Positive Train Control (PTC) system, per the 2009 Rail Safety Improvement Act. The *Gulf Coast Service Plan Report* estimated a cost for PTC New Orleans-Jacksonville of \$20 million, but provided no figure specifically for Mississippi. Also, CSXT may have to install PTC anyway because of hazardous material loads on its freight trains. Thus, PTC costs are not included in the line improvement estimate above.

### 3.2.2 New Orleans-Meridian-Birmingham-Atlanta

The proposed eastern Mississippi leg of the Gulf Coast High-Speed Corridor utilizes the NS's Crescent Corridor linking the Mississippi cities of Meridian, Laurel, Hattiesburg and Picayune with New Orleans, Birmingham, and Atlanta. This segment of the corridor was intensively reviewed in the *Gulf Coast High-Speed Rail Corridor Development Plan, Phase I: Improvement Implementation Plan – Meridian to New Orleans, Volume I Summary Report*, Southern Rapid Rail Transit Commission, September 2002.

Plans for the service assume improved running times, 79 mph and 90 mph speeds, and three frequency options (two round-trips, four round-trips and six round-trips).

The route, part of the NS system, passes through rural country with rolling hills. It is heavily used by freight trains. In addition to local freight trains serving on-line industries and Amtrak's *Crescent*, the development plan noted that the line is used by an average of 16 through freight trains per day.

New passenger trains, operating with up to six round trips daily at speeds up to 90 mph, will require capacity improvements to ensure fluid passenger and freight operations. The aforementioned study estimated a need for \$251.6 million in line capacity and signal improvements in Mississippi.

As previously noted, the 2009 Amtrak ADA compliance study cited \$5.2 million needed for the Hattiesburg and Meridian stations.

As the route already hosts the Amtrak *Crescent*, this route will have PTC presumably by the end of 2015, as required by the Rail Safety Improvement Act.

### 3.2.3 Three Other Potential Corridors

Working Paper 23 identified three other potential passenger rail corridors in Mississippi. These are:

- New Orleans-Jackson-Memphis
- Meridian-Jackson-Shreveport-Dallas/Fort Worth
- Jackson-Hattiesburg-Gulfport/Biloxi

The first potential would ramp up service on the existing *City of New Orleans* route. The working paper envisioned two daily round trips: one between New Orleans and Jackson, and another between New Orleans and Memphis. In addition to the *City of New Orleans*, there are 12 to 16 through freight trains per day on this route, plus local service. As noted, the 2009 Amtrak ADA compliance study identified \$2.5 million in station needs on this route.

The second potential would a totally new route, providing a connection to the *Crescent* in Meridian and to the *City of New Orleans* at Jackson. It would use the Meridian Speedway, but no specific level of service was suggested in Working Paper 23. In 2005, there were 10 to 19 freight trains per day on this route. Since then, NS and KCS have invested more than \$300 million in the Speedway to enable more train traffic and higher speeds.

The third potential would also be a totally new route, potentially providing connections to the *City of New Orleans* at Jackson, the *Crescent* at Hattiesburg, and a Gulf Coast service, if and when that is restored, at Gulfport. It would use the CN between Jackson and Hattiesburg, and the KCS between Hattiesburg and Gulfport, but no specific level of service was suggested in Working Paper 23. A 2005 study found about eight trains a day on the CN Jackson-Hattiesburg portion, and one to four trains per day on the KCS Hattiesburg to Gulfport route. Plans are afoot to upgrade the route for double stack container traffic.

No recent passenger train ridership and rail line capacity studies have been performed with respect to new passenger service on these three potential passenger rail corridors. Such studies are essential elements of an assessment of feasibility. An estimate for a ridership and line capacity study of all three potential routes is \$300,000.

### 3.3 Needs Summary

Appearing in **Table 3-1** are estimated costs for track and structure upgrades designated for 224 miles of rail line in Mississippi on two different rail corridors – New Orleans to Meridian (NS), and New Orleans to Mobile (CSXT). Station improvement cost estimates are cited for two existing corridors (the *City of New Orleans* on the CN, and the *Crescent* on NS) and for restored service on the CSXT's Gulf Coast line. Ridership and line capacity studies are cited for three potential corridors.

**Table 3-1: Passenger Rail Needs**

Item	Estimated Costs (\$ millions)
Track and Structure Upgrades	\$539.1
Station Improvements	10.1
Ridership Forecasts and Line Capacity Studies	0.3
Total	\$549.5

In order to compare the needs tabulated above with needs of other modes, they are restated in **Table 3-2**. Modernization needs are those that pertain to stations. Expansion needs are those intended to improve operations and/or capacity allowing passenger service on freight lines.

**Table 3-2: Passenger Rail Needs Restated**

Item	Estimated Cost (\$ millions)
Modernization	\$10.1
Expansion	539.4
Total	\$549.5

#### 4. GRADE CROSSING NEEDS

MDOT identified its current grade crossing projects, which are underway but not completed. Estimated costs for the projects are cited in **Table 4-1** by county.

**Table 4-1: Current Grade Crossing Projects.**

County	Number of Projects	Estimated Cost (\$ thousands)
Leflore	2	\$362
Newton	1	26
Covington	2	28
Grenada	1	137
Pearl River	1	42
Harrison	15	2,300
Total	22	\$2,895

In addition, MDOT identified the following future grade crossing improvement projects by county, with cost estimates. Appearing in **Table 4-2** are projects funded by not initiated. For the purpose of tabulating needs, these cost estimates are considered modernization costs.

**Table 4-2: Funded but Not Initiated.**

County	Number of Projects	Estimated Cost (\$ thousands)
Coahoma	1	\$250
Copiah	1	186
Forest	16	2,350
Greene	1	60
Hancock	6	786
Harrison	6	1,125
Holmes	1	85
Jackson	3	608
Jones	1	14
Lee	1	170
Lowndes	1	154
Newton	1	24
Perry	1	60
Rankin	1	45
Warren	2	500
Total	43	\$6,417

MDOT related that Pike and Simpson Counties have projects approved, but specific cost estimates were not available at the time of this writing.

## 5. MULTIMODAL NEEDS

MDOT also reported that five grants have been approved under the Multimodal Transportation Improvement Program. This fund, established in 1972, is to be expended by MDOT for the improvement of publicly owned (state, county, or municipality) ports on the coastal and inland waterways. Funds are allocated to the program by mode. Rail projects are eligible for 12 percent of the funds available.

The planned projects appear below.

