U.S. Department
of Transportation
**Federal Railroad
Administration**

Deferred Maintenance and Delayed Capital Improvements on Class II and Class III Railroads

A Report to Congress

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INTRODUCTION

The rapid growth of short line and regional railroads is one of the most important recent developments in the railroad industry. By acquiring and operating light density lines that no longer fit the economics of the large carriers, small railroads have preserved service on lines which would likely have been abandoned and torn from the ground a decade ago.

But while the economics of light density trackage creates opportunities for small carriers, it often leaves them with structural problems. The trackage being acquired by today's small railroads is invariably secondary trackage. In the normal case, it has suffered declining traffic levels over a period of years, and was not compensatory for the large railroad that previously owned it. Major carriers are unlikely to make significant investments in track which does not produce compensatory returns, and by the time the trackage is sold it has often experienced a cycle of deferred maintenance dating back a half decade or more. When the new carriers acquire these lines, they inherit that deferred maintenance problem.

On the plus side, small railroads have established their ability to profitably operate light density trackage that cannot

be self-sustaining under the very different economics of a Class I carrier. The new carriers shift the lines' focus from heavy density line-haul carriage to a philosophy of particularized service to a more limited number of light density shippers. The new carriers generally alter maintenance practices to maintain the track and structures in a condition sufficient to meet the needs of those shippers. In fact, the rails, ties, and other investments made by the acquiring small carriers are often the first meaningful investments made on these lines in many years.

Two factors underlie the small carriers' success. First, by offering service and rates tailored to the needs of these identified local shippers, small railroads are able to compete for local traffic more effectively than major carriers managing thousands of miles of line. Second, small railroads by their nature have a more flexible cost structure than their larger predecessors. A small railroad can maintain a less costly inventory of freight cars and locomotives, fitting that inventory to its unique traffic needs. In addition, small operators can more closely control expenditures on each segment of rail line, maintaining the track for the specific volume and nature of local traffic rather than conforming to generalized maintenance standards common to Class I carriers. Equally important is the fact that new small railroads have generally been able to ease the work rules and rigid craft lines that characterize labor-

management agreements on most major railroads. This enables the small railroad to use the talents of a single employee to accomplish multiple tasks, rather than employing several individuals on a full-time basis when their services are only needed a portion of the time. Perhaps because of this, small railroads seem more able to match the size of their work force to the actual needs of the traffic they serve.

The economics of small railroad operations were significantly altered by two Federal policy changes adopted in the 1980's. Passage of the Staggers Rail Act of 1980 reduced economic regulation of the railroad industry, and gave railroads the incentive and ability to restructure rates and services to be more efficient and more competitive. The Act authorized railroad-shipper contracts, allowing carriers to plan equipment utilization with a high degree of certainty. It also removed the probability of Federal government intervention in railroad ratemaking for the great majority of rail shipments, fostering more aggressive marketing in all parts of the railroad industry.

Equally significant was the policy on small railroad labor protection announced by the Interstate Commerce Commission (ICC) in Finance Docket No. 30439, Gulf & Mississippi Railroad Corporation - Purchase (Portion) - Exemption - Illinois Central Gulf Railroad Company, served on January 2, 1985 (not printed). In that decision, the Commission made clear that the level of

labor protection payments generally required of major railroads in consolidations or restructuring cases would not be automatically imposed when light density rail lines are transferred to newly formed independent railroads. Imposition of mandatory labor protection would materially alter the economics of small railroads, either by increasing the costs that would have to be recovered by the previous owner or by adding to the cost and uncertainty of the new carrier's operations.

By the time of the Gulf and Mississippi decision, the Commission had already recognized that imposing labor protection on such transactions would create a major obstacle to preservation of service, and consequently preservation of jobs, on many light density rail lines. As the ICC itself stated in its August 27, 1985, decision in Ex Parte No. 392 (Sub-No. 1), Class Exemption for the Acquisition and Operation of Rail Lines Under 49 U.S.C. 10901:

> It is our established policy that the imposition of labor protective conditions on acquisitions and operations under 10901 could seriously jeopardize the economics of continued rail operations and result in the abandonment of the property with the attendant loss of both service and jobs on the line.

The Gulf and Mississippi decision spurred short line development--and preserved service on scores of light density lines--because for the first time, it made preservation and sale of light density lines more attractive to the major carriers than the traditional remedy, abandonment.

For decades, carriers had preferred abandonment because, given the labor protection mandate attached to branch line sales, abandonment was a far less costly option. If it sold the line the carrier had to pay protection obligations for the entire work force. But if it abandoned the same line, those obligations could easily be avoided.

The major carrier would simply stop investing in the line in question, allowing the quality of service to deteriorate. As service deteriorated, traffic volumes fell, and carriers could lay off the employees--with no protection--under the "decline in business" clauses common to industry labor agreements. When only a handful of employees remained, the carrier would abandon the line. The few remaining employees did receive protection payments, but they were few indeed. Furloughed employees received no benefits, and both jobs and service on the lines were lost permanently.

This was a cycle of deterioration that occurred across the United States throughout the 1960's and 1970's. By reversing that cycle, the Gulf and Mississippi decision did far more than create incentives for short line development. It preserved service on countless light density lines, along with the jobs required to provide that service. It is no accident that in the years since Gulf and Mississippi, approximately one hundred new short lines have been created--and abandonment filings have declined substantially.

As we enter the last year of the 1980's, most of the new railroads are operating successfully despite their low traffic densities and, in some cases, deteriorated track condition. The formation of small railroads on similar light density lines continues to offer significant opportunities for railroads, shippers, and communities by:

-- Maintaining transportation alternatives for shippers;

-- Preserving the feeder and distribution capacity of the rail system and allowing a larger railroad to shed unprofitable or less profitable rail lines while continuing to carry at least a portion of the movements it formerly originated or terminated on those lines;

-- Saving jobs on the rail lines involved and enhancing job opportunities on the larger railroad that continues to handle traffic coming from or going to those lines;

-- Enhancing safety and efficiency on the acquired lines, as the new owners invest in the properties to preserve the condition of the track and structures and meet the needs of their shippers.

With their strong commitment to shipper service and the distinct cost and marketing advantages they offer, small railroads clearly provide significant local and regional transportation benefits.

This report explores the development of small railroads in recent years, assesses the current condition of the rail lines they have responsibility for maintaining, and estimates the need for rehabilitation on those lines.

CHAPTER I BACKGROUND AND METHODOLOGY

In Senate Report No. 100-198 accompanying the Continuing Resolution for Fiscal Year 1988, the Appropriations Committees of the U.S. Senate and House of Representatives directed that the Secretary of Transportation undertake a study of deferred maintenance and delayed capital improvements on Class II and Class III railroads.[1] The report set out the following issues to be addressed in the study:

-- an estimate of the deferred maintenance and delayed capital improvements on Class II and Class III railroads;

-- an analysis of the availability of private sector financing to fund projects to correct the effects of deferred maintenance and delayed capital improvements;

-- an estimate of the traffic that would be diverted from rail to highway if these railroads ceased operations;

-- an accounting of the mileage of lines transferred to create new Class II and Class III railroads since the Staggers Rail Act of 1980;

-- an evaluation of the initial assessments of needs for rehabilitation on those lines and the reasons for any underestimates or inaccuracies in those assessments;

-- an estimate of the miles of Class I lines likely to be transferred to new or existing Class II or Class III railroads in the future; and

-- a survey of Class II and Class III railroads that have failed since 1980 and an analysis of the factors that contributed to their failure.

The Committee report also requested that particular attention be given to new railroad companies created as an alternative to abandonment by transfer of lines from Class I railroads.

A. METHODOLOGY

A primary goal of this study was to accumulate objective and current information on the condition of the track and structures maintained by Class II and Class III railroads. The data publicly available on these railroads are generally limited. The Interstate Commerce Commission (ICC) has not required Class II and Class III railroads to file financial and operating reports since 1980.[2] As a consequence, there has not been any systematic accounting of the track and facilities owned and maintained by the non-Class I railroads, the focus of this study. There are also no readily available figures on the magnitude of the non-Class I railroads' maintenance and capital

expenditures for track and structures, their earnings, or their overall financial resources.

To gather the information necessary to respond to the Committees' requests, the Federal Railroad Administration (FRA) conducted a mail survey of the Class II and Class III railroads. The FRA survey asked the railroads to provide information on the condition of their track and structures; their operations and traffic; actual maintenance expenditures and capital investments in infrastructure; estimated costs of rehabilitation necessary to remove the effects of deferred maintenance and delayed capital improvements; annual ongoing maintenance expense necessary to preserve the condition of track and structures after the rehabilitation; and internal and external sources of funds available to cover the rehabilitation costs. Appendix A provides a copy of the questionnaire.

To supplement the mail survey, a team of engineers with experience in railroad construction and maintenance (TRAX Engineering & Associates), working under contract for FRA, conducted on-site examinations of a selected subset of the railroads that responded to the survey to form an independent estimate of rehabilitation needs. The engineering assessments were compared to the survey responses submitted by the railroads to evaluate the reasonableness of the railroads' estimates.

FRA also examined the available literature related to the questions posed by the Committee and sought comments from the American Short Line Railroad Association (ASLRA), the Association of American Railroads (AAR), the Railway Labor Executives Association, the National Industrial Transportation League, and private sector groups involved in forming new railroads. In addition, FRA contacted the individual state rail planning agencies to gather their comments on the issues addressed in this study. Responses were received from 22 states.

B. SCOPE OF THE STUDY

In preparing this report, it was first necessary to identify the railroads to be studied. The primary source of information was a data base compiled by the AAR entitled Profiles of U.S. Railroads (hereafter referred to as "Profiles").[3] In the Profiles, the AAR attempts to include basic data from all the railroads operating as common carriers in the United States. The Profiles present figures on the year an individual railroad was formed, mileage, employment, traffic, revenue range, type of operation, and ownership category.

The non-Class I railroads have been referred to collectively by the AAR and the ASLRA as "small railroads," and this report follows that practice. However, because the size and nature of operations of small railroads may differ significantly within the revenue classes established by the ICC, i.e., Class II

and Class III, the report adopts the three functional categories developed by the AAR for grouping non-Class I railroads in the Profiles: regional, local line-haul (hereafter referred to as "local"), and switching and terminal.[4] This report uses the AAR definition of regional railroads, and also the AAR's method of identifying switching and terminal railroads. A regional railroad is defined by the AAR as a non-Class I line-haul railroad that operates at least 350 miles of rail line and/or earns at least $40 million in annual revenues. Switching and terminal railroads are those carriers that identify themselves as such.[5] All other non-Class I railroads make up the "local" category.

This study was designed to include only non-Class I railroads that were in independent operation as rail common carriers in the first half of 1988. Some carriers owned by Class I railroads are included within that definition, but the study excludes Class I-owned carriers that share officers with the Class I owner and are operated as an integral part of a Class I railroad so that they could not present independent responses on their track condition and needs. These criteria are based on the premise that the maintenance, investment, and financing of a small railroad meeting that description are not independent of a Class I railroad, and the small railroad does not have the sole financial responsibility for meeting its track and structure needs.

In order to fulfill the Committee's directive to give particular attention to new railroads, this report evaluates separately the companies that began operation as small railroads prior to 1970 and those formed in the 1970's and 1980's, the years when the greatest number of new railroads were formed through transfer of lines from Class I railroads.

To prepare an estimate of the extent of the deferred maintenance and delayed capital improvements on Class II and Class III railroads, it was necessary to adopt definitions of those concepts. Railroad maintenance of track is measured by current year expenditures to sustain the physical condition of track and structures such that they can continue to accommodate operations safely and economically. Capital improvements include additions and betterments, such as additional tracks and other facilities, or substitution of superior structures and materials for those previously in place. Deferred maintenance is generally defined in terms of a reduction in maintenance below the level necessary to meet annual replacement requirements for rail, ties, and other track materials. Likewise, delayed capital improvements refer to additions and betterments to the physical plant that are not undertaken at the time they become necessary to keep the track and structures at the desired operating condition.

The general definitions of deferred maintenance and delayed capital improvements require a considerable degree of judgment as well as historical information on track investment and spending patterns. Those definitions would be difficult to apply in a survey of several hundred small railroads, many of whom have recently acquired the rail lines on which they operate. Therefore, to gather responses that could be combined into an industry-wide quantitative assessment of track conditions and needs, it was particularly important to develop a simple, objective standard that would minimize the possibilities for confusion and bias in reporting of individual carriers.

Deferred maintenance and delayed capital improvements reflect decisions to forgo expenditures, and they also have the effect of creating rehabilitation needs. In addition, redressing the effects of both deferred maintenance and delayed capital improvements may be accomplished as part of the same projects. For those reasons, the FRA survey addressed the two issues together. Rather than seek a reconstruction of past maintenance and investment patterns on the rail lines now owned and maintained by small railroads, the study adopts the perspective that deferred maintenance and delayed capital improvements exist where the condition of the track and structures does not permit operations at the maximum speeds authorized in the railroad's timetable, where there are weight restrictions that preclude the movement of loaded cars that

generally move freely between railroads under standard interchange rules, or where rehabilitation is required to permit continued operations at current timetable speeds with only normal levels of ongoing maintenance.

This report presents the results of the FRA survey and other research conducted to address the questions posed in the Committee report. The study does not constitute an economic or financial analysis of the non-Class I segment of the railroad industry, nor does it seek to judge the viability of individual railroads or groups of railroads. It represents a one-time view of the rehabilitation needs of small railroads, their traffic, revenues and other characteristics. A complete evaluation of the economic and financial position of the small railroads and their ability to meet their rehabilitation needs would require a more comprehensive analysis of both present and potential traffic, revenues, and earnings, and of the long-term capacity of individual carriers to support capital investment and ongoing maintenance expenses.

The following chapters discuss small railroads with respect to their role and characteristics; the existing condition of their track and structures and estimated rehabilitation needs to remove the effects of deferred maintenance and delayed capital improvements; availability of internal and external sources of funds to finance the necessary rehabilitation; failure rates of

small railroads in recent years and the estimated diversion of traffic to highways if small railroads ceased operation; and likely levels of future transfers of rail lines from Class I railroads to new or existing small railroads. This report presents the data gathered to address these issues, but does not present recommendations.

1. The three classes of railroads are defined by the Interstate Commerce Commission based on annual revenues. 49 CFR 1201(1-1)(a). A Class I railroad is a carrier with annual railroad operating revenues of $50 million or more in 1978 dollars, calculated using the Bureau of Labor Statistics Index of Railroad Freight Prices as the adjustment factor. A Class II railroad is defined as having less than $50 million but more than $10 million in annual operating revenues, in 1978 dollars. A Class III railroad is defined as having less than $10 million in annual operating revenues, in 1978 dollars. The equivalent revenue thresholds, expressed in 1987 dollars, are $88.6 million for Class I and $17.7 million for Class II railroads. A carrier's classification is not changed unless it has met the revenue qualification for the new category for three consecutive years. Under the regulations, all switching and terminal railroads, as well as electric railway carriers, regardless of revenues, are classified as Class III railroads.

2. By Decision served December 15, 1980, in Docket No. 37523, Reduction of Accounting and Reporting Requirements, codified at 49 CFR 1201(1-1)(c), the ICC eliminated all reporting requirements beyond calendar year 1979 for Class III railroads, and beyond calendar year 1980 for Class II railroads, with the exception of the annual railroad classification survey form.

3. Much of the data collected for the AAR Profiles has been published by the AAR Economics and Finance Department in Statistics of Regional and Local Railroads, 1988.

4. A switching and terminal company is defined by the AAR in its Statistical Manual as:

> A company performing switching service, furnishing terminal trackage, bridges or other facilities such as union passenger or freight stations, operating ferries, or performing any one or a combination of these functions. It may incidentally conduct a regular freight or passenger service.

In some cases, a company may derive its revenues primarily from switching charges paid by other railroads, rather than from freight rates paid by shippers (or a division of the freight rates shared with its connecting railroad), and therefore is considered a switching and terminal company, even though it operates a similar length of line and appears to function in much the same way as companies classified as local railroads.

5. For purposes of this study, a railroad is treated as a switching and terminal railroad if it identified itself in the FRA survey as a switching and terminal railroad or, in the absence of a response to the FRA survey, it identified itself as a switching and terminal railroad in the AAR Profiles. Those respondents to the FRA survey that indicated they had only yard and siding track, but no main line or branchline track, are also classified as switching and terminal railroads in this study.

CHAPTER II THE ROLE AND CHARACTERISTICS OF SMALL RAILROADS

A. BACKGROUND AND HISTORY OF SMALL RAILROADS

Small railroads have always played a part in U.S. railroading. Beginning with the construction of the first short segments of unconnected rail line in the 1830's and 1840's, small railroads were the backbone of the nation's transportation system throughout the nineteenth century. Farmers and manufacturers typically sold their goods within a few hundred miles of the point of production, and small railroads were well suited to handling the shipments for those distances. Small railroads also served as the instrument for opening up many new communities for development as the nation grew. As markets expanded from local to regional and then national in scope, however, rail lines were consolidated into longer rail systems that fit the progressively expanding scale of the economy. Many of the small railroads that once functioned as trunk lines became the foundation for the larger merged rail systems assembled in the late nineteenth and early twentieth centuries. The remaining independent small railroads found a different function, primarily providing feeder and distribution service for the major rail systems.

Beginning in the 1970's, the role of the small railroads shifted. New small railroad companies were formed to take over many light density rail lines that until that time had been operated as parts of Class I rail systems. The collapse of seven railroads in the Northeast and Midwest, leading to the creation

of the Consolidated Rail Corporation (Conrail), provided the initial stimulus for the formation of new railroads during this period. Substantial mileage operated by the bankrupt railroads was not included in the Final System Plan for Conrail in 1976, and some of these rail lines were purchased for continued operation as small railroads. The reorganization of the Chicago, Milwaukee, St. Paul and Pacific Railroad and the liquidation of the Chicago, Rock Island and Pacific Railroad starting in 1979 and 1980 left as many as 12,000 miles of rail line potentially subject to abandonment, creating additional candidates for transfer to new operators. Formation of new small railroads thus has provided the means for preserving and even improving rail operations on light density lines that would otherwise be downgraded or abandoned by Class I railroads.

Much of the historical and analytical material available on the development of small railroads in recent decades comes from the work of John F. Due, Professor of Economics Emeritus, the University of Illinois at Urbana-Champaign, who has conducted extensive studies of the transfer of rail lines to new railroads and has produced many of the papers available on the topic. The AAR also has gathered information on the formation of small railroads. The data gathered by John Due and by the AAR indicate that from 1970 to 1975, eleven new local railroads and one new regional railroad (Providence and Worcester) were formed, all of them from the lines of larger railroads. Although

complete figures are not available on the mileage of rail line initially transferred to these railroads, the figures available indicate that the total length of the lines involved was between 700 and 1,000 miles, the majority of it formerly operated by predecessor railroads to Conrail in the Northeast. From 1976 through 1980, the number of small railroads grew even more rapidly, as 57 new railroad companies were formed, more than half of them from lines that were left out of the final Conrail system established in 1976. Together the small railroads that began operations in those years took over responsibility for operating more than 2,500 miles of rail line.

In the years since they were established, the railroads formed from 1970 to 1980 have abandoned close to 800 miles of rail line while they have acquired a total of more than 350 additional miles of rail line previously operated by Class I carriers or by other small railroads.

Passage of the Staggers Act in 1980 created new options for communities and shippers to purchase or support rail lines identified as candidates for abandonment by Class I carriers. Although the Staggers Act did not alter the standards for abandonment, it streamlined ICC abandonment procedures and gave the Class I railroads greater flexibility and incentive to identify and eliminate uneconomic operations. Those changes led many of the major carriers to evaluate more closely the costs and

profitability of their individual rail lines, and to seek abandonment or transfer of those found to be uneconomic. Frequently, the rail lines transferred to small railroads were in poor condition at the time of the transfer, having suffered declining traffic and corresponding declines in maintenance and investment for years prior to the transaction.

Many of the sales of rail lines in the 1970's and early 1980's involved the less profitable Class I railroads seeking to divest unnecessary and unremunerative properties. Fueled by competitive pressures and regulatory changes, sales of rail line in the 1980's have moved beyond the bankrupt carriers to the full range of Class I railroads. Railroads such as Illinois Central, Chicago and North Western, Soo Line, and the Burlington Northern have transferred substantial segments of their track network to new small railroads, generally where traffic is lighter and operations are less compensatory than on the core segments of the larger railroads. From January 1, 1981, through July 1, 1988, close to 200 new small railroad companies were formed, all but a handful of them out of lines formerly operated by Class I railroads. The great majority of the lines involved in those transfers are still in operation by small railroads. (See Chapter V for a discussion of the extent and causes of failures among the small railroads.)

B. CHARACTERISTICS OF SMALL RAILROADS

The AAR Profiles identify 502 railroads in the United States as of the second quarter of 1988, of which there were 484 Class II and Class III railroads.[1] Within this group, FRA identified 458 regional, local, and switching and terminal companies in independent operation as rail common carriers in mid-1988.[2] These 458 railroads provide the base for the FRA survey.

The 458 railroads in the Profiles own and/or operate 28,623 miles of line (excluding track owned by another railroad and operated under trackage rights), accounting for 15 percent of the nation's total rail lines. In 1987, more than one third of all the carloads of traffic shipped by rail in this country were handled by a small railroad for some part of the movement, in originating, terminating, line-haul and/or switching service.[3] The small railroads earned more than $1.5 billion in revenues in 1987 (5 percent of the total $28.7 billion for all U.S. railroads), and had 25,000 employees (10 percent).

More than half of the 458 railroads began operations as small railroads after January 1, 1970--56 in the years 1970 to 1980 and 190 since 1980. Of those 246 new small railroads, 223 (accounting for 98 percent of the mileage) acquired lines previously operated as part of a large railroad or rail system.[4] All of the regional railroads that began operations during the

1970's and 1980's were formed out of lines acquired from Class I railroads. In some cases, the Class I carriers received formal approval from the ICC to abandon the rail lines prior to the negotiation of a sale to the new owners. In most cases, however, the Class I railroads actively worked with prospective purchasers to negotiate the transfer of the rail lines to form a new small railroad.

Table II-1 shows the number of small railroads formed by time period and type of railroad, and the mileage involved.

TABLE II-1
NUMBER OF SMALL RAILROADS FORMED AND MILEAGE BY TYPE OF RAILROAD AND TIME PERIOD OPERATIONS BEGAN

Year of Formation	Regional		Local		Switching and Terminal		TOTAL	
	Number	Mileage	Number	Mileage	Number	Mileage	Number	Mileage
Before 1970	10	3,288	123	4,676	79	1,507	212	9,471
1970-1988	14	8,863	171	8,999	61	1,290	246	19,152
TOTAL	24	12,151	294	13,675	140	2,797	458	28,623
Average miles of line per railroad								
Before 1970		329		38		19		45
1970-1988		633		54		21		79
TOTAL		506		48		20		63

NOTE: Unless otherwise specified, all mileage figures used in this chapter reflect Profiles data on the length of line operated by each reporting railroad, less any mileage reported as owned by another railroad.

The railroads formed after 1980 differ in one major characteristic from those formed from 1970 through 1980: the average mileage accounted for by the carriers formed in the 1980's is greater than for those formed in the 1970's,

particularly for the regional railroads. Generally, however, the railroads formed during the past two decades are similar in the nature of their operations, physical conditions, and traffic levels, and therefore they have been grouped together for the remainder of this report.

FRA received responses to its survey from 358 railroads, or 78 percent of the 458 railroads to which it was sent. A list of the railroads that responded, time period formed, type, carloads, and mileage reported in the survey is shown in Appendix B. Based on the Profiles, the respondents account for 24,961 miles of the 28,623 miles of rail line associated with all 458 railroads, or 87 percent.

The 358 responding railroads appear to be highly representative of the railroads to which the survey was sent. The percentage of respondents that began operations before 1970 versus subsequent years is quite similar to the percentage for the 458 railroads. The distribution of respondents among the three types of railroads is also similar to that in the Profiles --22 regional, 238 local, and 98 switching and terminal carriers. The highest response rate (91 percent) was obtained from regional railroads, which largely explains the fact that the carriers that responded to the survey have a somewhat higher average number of carloads per carrier and mileage per carrier than the Profiles show for the total population of 458 railroads. As in the

Profiles, however, 90 percent of the small railroads that responded to the survey have less than 150 miles of rail line.

Among the respondents to the FRA survey, more railroads reported grain as their top commodity than any other product or commodity group, accounting for about 14 percent of the carriers. Somewhat smaller numbers of railroads report coal or lumber as their top commodity, followed by pulp and paper products, sand and gravel, and forest products. Of the total carloads handled in 1987 by the small railroads, coal, at 24 percent, accounted for the largest share of traffic for the railroads that responded to the FRA survey, as well as for all 458 small railroads to which the survey was sent. Metallic ores represented the next highest share of total carloads, followed by pulp and paper, primary metal products, and grain. The small railroads tend to be highly dependent on a single commodity or a small group of commodities. More than 20 percent of the railroads responding to the survey report that their top commodity accounted for over 90 percent of the total carloads they handled in 1987, and more than half of the railroads report that their top three commodities accounted for over 90 percent of total carloads.

The FRA survey requested information on several factors that are not covered in the Profiles, including data on the number of shippers served and the nature of the railroad's participation in the shipments. The railroads that responded report serving an

average of about 40 shippers, with figures ranging from one shipper for 41 of the responding railroads, up to more than 2,500 shippers for one regional railroad. The responses of the regional railroads indicate they serve an average of 345 shippers, compared to approximately 20 for local railroads and for switching and terminal railroads.

Small railroads provide the only direct rail service for many shippers and communities. Thus, as noted in the comments submitted to FRA by the state rail planning agencies, small railroads are particularly important to the individual companies and localities they serve, and therefore are a special concern to the states in which they operate.

Most small railroads carry traffic between plants or other shipping facilities and a junction point with a larger railroad. The majority of the small railroads have junctions or traffic "interchange" points with only one or two railroads. The survey responses show that approximately 87 percent of all carloads handled by the small railroads in 1987 were moved in connection with another railroad, while only 13 percent were shipped all the way from origin to destination on the small railroad.

In the survey, 48 percent of all the carloads handled by the local railroads in 1987 were originated by the reporting railroad and forwarded to another railroad, 29 percent were received from

another railroad and delivered to the final destination by the reporting railroad, and the remainder were divided approximately equally between traffic "local" to the railroad (i.e., both originated and terminated on it) and "bridge" traffic (i.e., not originated or terminated by the reporting railroad, but instead received from one railroad, moved to another junction point, and forwarded to a connecting railroad). The carloads handled by the regional railroads were split almost evenly among all four categories, while, as might be expected, more than 50 percent of the carloads handled by the switching and terminal railroads represented "bridge" traffic and only 7 percent of their carloads were "local" movements.

The FRA survey also asked railroads to estimate the average length of haul for their traffic. The responses indicate that the largest amount of traffic for the railroads in all three categories--44 percent of the total carloads handled in 1987--moved less than 150 miles from origin to destination (including mileage traveled on other railroads as part of a joint movement). Another 26 percent moved 150 to 500 miles, 16 percent moved 500 to 1000 miles, and 8 percent moved more than 1000 miles. The three types of railroads show virtually the same pattern of responses as to average lengths of haul.

Table II-2 shows the density of traffic for the local and regional railroads that responded to the survey, calculated from the reported number of carloads handled in 1987 divided by the mileage of main and branch line track maintained by the responding carrier. (While switching and terminal railroads often handle fairly high volumes of traffic, they generally have large amounts of yard and siding track as opposed to main and branch line track. Therefore, the average number of carloads handled per mile of main and branch line track for switching and terminal railroads is not directly comparable to the figures for local and regional railroads and may be misleading.)

TABLE II-2
CARLOADS HANDLED PER MILE

Carloads per Mile[5]	Number of Railroads	Main and Branch Line Miles	1987 Carloads Handled	Average Carloads per Mile
Local and regional railroads				
Over 300	58	3,643	2,517,360	692
101-300	63	7,303	1,117,074	153
41-100	65	7,260	490,566	68
21-40	37	3,223	105,900	33
20 or fewer	37	1,657	18,365	11
SUBTOTAL	260	23,086	4,249,265	184
Switching and terminal railroads	98	1,543	4,682,810	*
TOTAL	358	24,629	8,932,075	

* The figures are less meaningful for switching and terminal railroads and therefore are not included in the table. See text above.

Approximately 52 percent of the total carloads reported in the FRA survey for 1987 are accounted for by switching and terminal railroads; another 28 percent of the carloads are accounted for by the railroads that handled more than 300 carloads per mile in 1987. Those two groups of railroads combined handled a total of 80 percent of the reported carloads. Combining the carload figures reported by local and regional railroads handling more than 100 carloads per mile with the figures of the switching and terminal railroads accounts for more than 93 percent of the total carloads covered in the survey. At the other extreme, the railroads that handled fewer than 40 carloads per mile account for only 1 percent of the total carloads reported in the survey, although they comprise approximately 20 percent of the railroads that responded to the survey and 20 percent of the total main and branch line mileage maintained by the respondents.

The wide variations among the small railroads in the survey are primarily accounted for by the differences between the large established carriers and the other railroads. The statistics on mileage, traffic, and other characteristics for the regional railroads are dominated by several large carriers formed before 1979, which appear to be considerably different from the rest of the regional carriers. Seven of the regional railroads were formerly Class I railroads. With the increases through the years in the revenue threshold for classification as a Class I

railroad, these former Class I railroads' annual revenues are now below the level required to qualify for that revenue class, but they still tend to have far heavier traffic and revenues than the great majority of small railroads, particularly those that began operations in the 1970's and 1980's.

Among the switching and terminal railroads, eleven of those formed before 1970 handled more than 100,000 carloads in 1987. These eleven railroads account for 78 percent of the carloads handled in 1987 by the switching and terminal railroads and 42 percent of all carloads reported by the 358 small railroads that responded to the FRA survey.

One major distinguishing characteristic of these large established regional and switching and terminal railroads is the nature of their ownership. Although all of the small railroads in the study are operated and managed independently of Class I railroads, some of them are under the ownership of a Class I system or are jointly owned by several Class I railroads. Of the seven former Class I railroads in the regional category, two are owned today by larger Class I rail systems. Eight of the eleven switching and terminal railroads that handled more than 100,000 carloads in 1987 are owned by Class I railroads. Two of the other largest switching and terminal railroads, as well as three of the former Class I railroads, are wholly or partially owned by major steel companies.[6]

These seven established regional railroads and eleven largest switching and terminal carriers represent 9 percent of the mileage and 54 percent of the total carloads handled by all 358 survey respondents in 1987. Both the nature of their operations and their finances are affected by the differences in ownership and traffic characteristics between these large established carriers and the other small railroads.

Only 8 percent of the railroads that responded to the FRA survey are shown in the Profiles as owned by a Class I railroad or a group of Class I railroads, and 23 percent are owned by a shipper or group of shippers. Among the carriers that began operations in the 1970's and 1980's, none of the local or regional railroads are owned by Class I railroads. More than 63 percent of all the survey respondents are independent or owned by a private firm other than a Class I railroad or a shipper; 6 percent are owned by a government body. The types of owners and the distribution of railroads by type of owner reported by the survey respondents resembles closely the ownership of the 458 railroads to which the survey was sent.

Using the data gathered from the 358 respondents to the FRA survey to represent the total population of 458 railroads, the following chapters assess the condition of small railroads' track and structures, their rehabilitation needs, and the availability of internal compared to external sources of funds to finance these needs.

1. John Due reported an additional 14 small railroads not covered in the Profiles were in operation during the first half of the year, most of them founded in 1988.

2. The total of 458 railroads excludes 20 railroads that are owned by a Class I railroad and operated as an integral part of the Class I system, and also excludes 5 small railroads that had ceased operations or were not operating as rail common carriers in mid-1988. One additional railroad in Texas, the De Queen and Eastern, is not counted in the total 458, because it is under common ownership with the Texas, Oklahoma and Eastern Railroad (TOE) and reported jointly with TOE in responding to the FRA survey. The figures on the DeQueen and Eastern are included in the overall totals, but they are grouped with those of TOE, as though the two were a single company.

3. The sum of the carloads reported in the Profiles for all 458 railroads was 8,253,186. To compute the total carload figure for this report, the statistics in the Profiles have been supplemented by figures from the FRA survey for three large switching and terminal railroads:

1) 707,910 additional carloads reported by the Belt Railway of Chicago as handled for the account of other railroads, which were not reported in the Profiles;
2) total carloads of 172,563 for the Davenport, Rock Island and Northwestern Railroad, which did not report carload statistics in Profiles; and
3) total carloads of 150,671 for Portland Terminal Railway, which did not report carload statistics in the Profiles.

With those additions, the sum of the carloads reported for the 458 railroads is 9,284,330 carloads.

The FRA survey indicates that 40 percent of the carloads handled by small railroads represent traffic originated on their lines. Adding 40 percent of the total carload figures, or 3.6 million carloads, to the total originations reported by the Class I railroads in 1987 of 20.6 million carloads produces a total of 24.2 million, of which 9,284,330 carloads represent 38 percent. From the figures available in the Profiles and from the FRA survey, however, it is not possible to determine how much of the traffic of one railroad may have been handled in connection with another small railroad as part of the same movement from origin to destination. Thus, the total undoubtedly includes some double counting. Conservatively, the share of all carloads shipped by rail in 1987 that was handled by the small railroads is estimated to be at least one third.

4. Of the remaining 33 railroads formed in 1970 or later, 11 (representing 60 miles total) operate rail lines that were newly constructed in the 1970's and 1980's, and 12 (166 miles) were formed from rail lines transferred from other small railroads, shippers, or government bodies.

5. The categories of carloads per mile used in the table are based on the benchmarks established by John Due for evaluating the density of traffic on small railroads. See his papers "New Railroad Companies Formed to Take Over Abandoned or Spun Off Lines," Transportation Journal, Vol. 24 (Fall 1984), pp. 30-50, and Experience with New Small Railroads Formed to Take Over Abandoned Lines (Caterpillar Series Working Paper #7, Bureau of Economic and Business Research, University of Illinois, Champaign, Illinois, 1984). The ICC adopts the traffic density categories established by John Due in Before You Start a Small Railroad: A Brief Overview of Things to Consider, Office of Public Assistance, Interstate Commerce Commission, September 1988. For the purposes of this report, a density category of more than 300 carloads per mile has been added to the categories used by John Due, in order to isolate the railroads handling particularly high density traffic.

6. In December 1988, USX Corporation sold its transportation subsidiaries, including the Bessemer and Lake Erie Railroad and the Elgin, Joliet and Eastern Railway (two former Class I railroads) and the Union Railroad (a switching and terminal railroad that handled more than 100,000 carloads of traffic in 1987), to a joint venture USX formed with Blackstone Group, an investment banking firm. The railroads are now owned by Transtar Inc., a new corporation 44 percent of whose stock is held by USX. Blackstone Group owns 51 percent of Transtar stock, and the remaining 5 percent is owned by its senior managers.

CHAPTER III. REHABILITATION NEEDS OF SMALL RAILROADS TO REMOVE EFFECTS OF DEFERRED MAINTENANCE AND DELAYED CAPITAL IMPROVEMENTS

The FRA survey asked the small railroads to estimate the one-time expenditures that would be needed to remove the effects of deferred maintenance and delayed capital investments on the rail lines they maintain. In addition, the survey requested information on the condition of track and structures, operating speeds, the existence of slow orders[1] or weight restrictions on the rail lines, and recent spending on track maintenance and capital improvements. TRAX Engineering Associates, under contract with FRA, also made independent assessments of track conditions and rehabilitation needs of selected carriers from among the small railroads in the survey. The survey responses of the railroads on conditions of track and structures, combined with the findings of the engineering consultants, provide background on the nature of the small railroads' operations and a means of verifying the railroads' own estimates of their rehabilitation needs.

A. EXISTING CONDITIONS OF TRACK AND STRUCTURES

1. Operating Conditions on Small Railroads

Most of the track covered in the FRA survey does not require substantial repair, replacement, or improvement to meet operating needs. Although the reported condition of some track and structures suggests a degree of deterioration, the great majority of the survey respondents' traffic is handled by railroads that do not report deferred maintenance.

The general objective of a railroad's track maintenance and investment program is to keep the track and track structures in a condition that permits operations of the speed, frequency and type required to serve the traffic safely and economically. Railroad track does not have to be in perfect condition to be operated safely. The stresses placed on track and, consequently, the strength of the track structure necessary to withstand these stresses, are related to the type and volume of traffic handled and the manner in which trains are operated. The majority of small railroads have relatively light traffic density, so the gross weight of trains and therefore the stresses placed on track are typically lower than those on major trunk lines.

Operating speed is another major factor influencing stresses on track. Where track is deteriorated, trains can only be operated safely at reduced speeds. FRA's Track Safety Standards (codified at 49 CFR 213) establish minimum safety requirements for track conditions to permit operations at specified maximum train speeds. The standards cover six classes of track, with maximum speeds ranging from 10 miles per hour to 110 miles per hour.[2] Small railroads typically operate trains at low speeds, as reflected in the maximum operating speeds published in the railroads' timetables.[3]

Table III-1 shows the timetable speeds on the 24,629 miles of main and branch line track reported by the railroads

responding to the FRA survey. The calculations do not include yard and siding track, where speed of movement is normally slow and not a major factor for operations.

TABLE III-1
TIMETABLE SPEEDS ON TRACK MAINTAINED BY SMALL RAILROADS

Railroad's Total Mileage of Main and Branch Line	Number of Railroads	Miles of Main and Branch Line Track 10 mph or Less	11-25 mph	26-40 mph	Over 40 mph	TOTAL
Over 100 miles	55	2,820	5,087	6,357	2,832	17,096
25-100 miles	125	2,136	2,591	1,090	237	6,054
Under 25 miles	139	789	625	42	23	1,479
TOTAL	319*	5,745	8,303	7,489	3,092	24,629

* Only 319 of the 358 railroads that responded to the FRA survey report main and branch line track that they have responsibility for maintaining. The other 39 survey respondents report only yard and siding track, and therefore they are not included in the table.

NOTE: Unless otherwise specified, the mileage figures used in this chapter include only track miles of main and branch line that the reporting railroad is responsible for maintaining.

More than half of the main and branch line mileage reported in the FRA survey has timetable speeds of 25 miles per hour or less--relatively slow speeds, particularly in comparison to most U.S. freight railroad operations. Low operating speeds, however, cannot be taken as precise indicators of the existence of substandard track. Track conditions that may be substandard for one railroad may be acceptable for another railroad with less traffic, slower speed requirements, or lighter weight commodities. For example, if the total length of a small railroad, or the distance a shipment must be moved by the small

railroad, is short enough that a movement can be completed within a normal operating day, a slow speed may be all that is necessary or economically appropriate. For longer railroads, however, the existence of substantial amounts of track limited to very slow speeds suggests that the current condition of track and structures may hamper economical operations on those carriers.

When track conditions are not sufficient to permit operations at timetable speeds, the railroad is responsible for posting slow orders. Slow orders are generally viewed as temporary measures, in contrast to permanent changes in the operating plan and timetable. Where maintenance work is going on, for example, short-term slow orders may be imposed in recognition of the fact that road crews and equipment are working on the lines. Longer term slow orders are often imposed where maintenance has not been adequate to allow continued operations at the timetable speed. Of the 358 railroads that responded to the FRA survey, 151 report slow orders accounting for 4,007 miles (23 percent) of the mileage of main and branch line that they maintain (16 percent of the total miles of main and branch lines reported in the survey). Those figures include 2,490 miles of main and branch line track subject to slow orders for speeds of 10 miles per hour or less. Even for small railroads where relatively slow operations are all that is necessary or economic, slow orders are likely to indicate difficulties in

providing service that meets the demands of the railroads' customers in the long term.

2. Physical Deficiencies in Track

Deficiencies in any of the components of track structure can lead to substandard track conditions, but defective ties are generally the most serious problem facing the railroads reporting rehabilitation needs. The condition of ties has an immediate and direct effect on track support, alignment, and general surface condition which, to a large extent, determine the speed and safety of the railroad's operations. Over an extended period of time, poor tie and ballast condition accelerates the deterioration not only of the ties and ballast but of all track components, including rail and subgrade.

Another factor that affects the ability of a small railroad to provide service is the type and weight of rail. As with other elements of track, the necessary weight and type of rail depend on the nature of operations and the condition of the rail, ties, ballast, and other track components. Most new rail purchased today weighs at least 115 pounds per yard, yet more than a quarter of the main and branch line track reported in the FRA survey has rail of less than 90 pounds per yard. Rail of 90 pounds per yard is probably adequate for many small railroad operations, but lighter weight rail is likely to lead to more frequent failures and higher maintenance costs.

The age and method of producing rail also affect the ability of rail to withstand stress. Between 1933 and 1938, the U.S. rail industry adopted as standard practice a new process of "control cooling" in manufacturing rail, which significantly lowers the occurrence of internal flaws and weaknesses in rail. Rail that is not control-cooled, and is therefore likely to be more than 50 years old, makes up more than 45 percent of the mileage of track reported in the FRA survey. Nearly half of the non-control-cooled rail is also less than 90 pounds per yard. These factors together contribute to a greater likelihood of track failure and a greater need for rehabilitation to ensure continued safe and economical operations.

A third condition often associated with deteriorated track and structures is the existence of weight restrictions on bridges, which prevent movement of the heavier freight cars (notably the 100-ton capacity coal and grain hoppers) that normally move freely over the railroads under standard interchange rules. Weight restrictions are generally imposed because of structural limitations on a bridge or deficiencies in the track. Approximately 80 percent of the bridges cited by survey respondents as subject to weight restrictions can accommodate freight cars carrying 90 tons; the remainder of the weight-restricted bridges are limited to lighter loads.

There is no uniform set of standards against which all rail lines can be measured to determine whether track conditions and maintenance levels are adequate. Maintenance and investment requirements are not just specific to the particular railroad but often are specific to the particular rail line and location. The FRA survey was designed to identify the existence of conditions that must be eliminated in order for a railroad to operate at its current timetable speed for the indefinite future, with a normal level of ongoing maintenance. Track conditions that do not meet the particular standards of a railroad's operation are typically the product of deferred maintenance or delayed capital improvements. Such conditions often exist where there are slow orders or weight restrictions. On the other hand, track and structures may require rehabilitation even where there are no slow orders or weight restrictions, if the property cannot continue to be operated at current timetable speeds with only a normal level of ongoing maintenance. In such cases, investment in the track is necessary to avoid slow orders or other problems in the future.

B. REHABILITATION NEEDS

1. Total Estimated Costs of Rehabilitation

In the FRA survey, the small railroads were asked to estimate the one-time cost of rehabilitation that would be required to remove slow orders and weight restrictions and to bring the track and track structure up to a condition that--with

ongoing maintenance--will permit continued operation at current timetable speeds. The questionnaire directed that the responses should include only rehabilitation work on those parts of the rail system that the carrier intends to keep in operation for the foreseeable future; repairs or replacement are not included if they involve track that is deteriorated but is not likely to be maintained and used to handle traffic for the long term. Though not all of the work involved could or would be undertaken within a single year, the work represents relatively short-range needs.

The responses to the FRA survey indicate that many of the small railroads do not require any significant rehabilitation to remove the effects of deferred maintenance and delayed capital improvements. Of the 358 railroads that responded to the FRA survey, 154 (43 percent) report that the lines they maintain have no deferred maintenance that would necessitate rehabilitation. The remaining 204 railroads (57 percent of the respondents) report rehabilitation needs, estimated to require total one-time expenditures of $541.3 million. The great majority of the traffic reported in the survey is handled by railroads without substantial rehabilitation needs: 55 percent of the total carloads handled by the survey respondents are accounted for by railroads that report no rehabilitation needs, and another 30 percent of total carloads are accounted for by railroads with needs no greater than they estimate they can cover from internal funds.

Based on comparison with the results of independent assessments made by TRAX Engineering, the railroads' estimates of rehabilitation needs appear, in the aggregate, to be reasonable. Survey responses were not received from all 458 small railroads to which it was sent, but total rehabilitation needs for this entire segment of the railroad industry can be estimated by assuming that the needs of the railroads that did not respond to the survey follow the same pattern as the needs of the railroads that did respond. If the estimated needs are extrapolated based on the share that the 358 responding railroads represent of the mileage the 458 railroads report in the AAR Profiles, the total rehabilitation needs of all the small railroads would amount to more than $600 million.

Table III-2 illustrates the characteristics of the railroads that report rehabilitation needs compared to those that report no need for rehabilitation.

TABLE III-2
CHARACTERISTICS OF SMALL RAILROADS
WITH AND WITHOUT REHABILITATION NEEDS

	Number of Railroads	Main and Branch line Track Miles	1987 Carloads Handled	Average Carloads Per Mile
Railroads reporting rehabilitation needs	204	18,863	4,007,763	212
Railroads reporting no rehabilitation needs	154	5,766	4,924,312	854
TOTAL	358	24,629	8,932,075	363

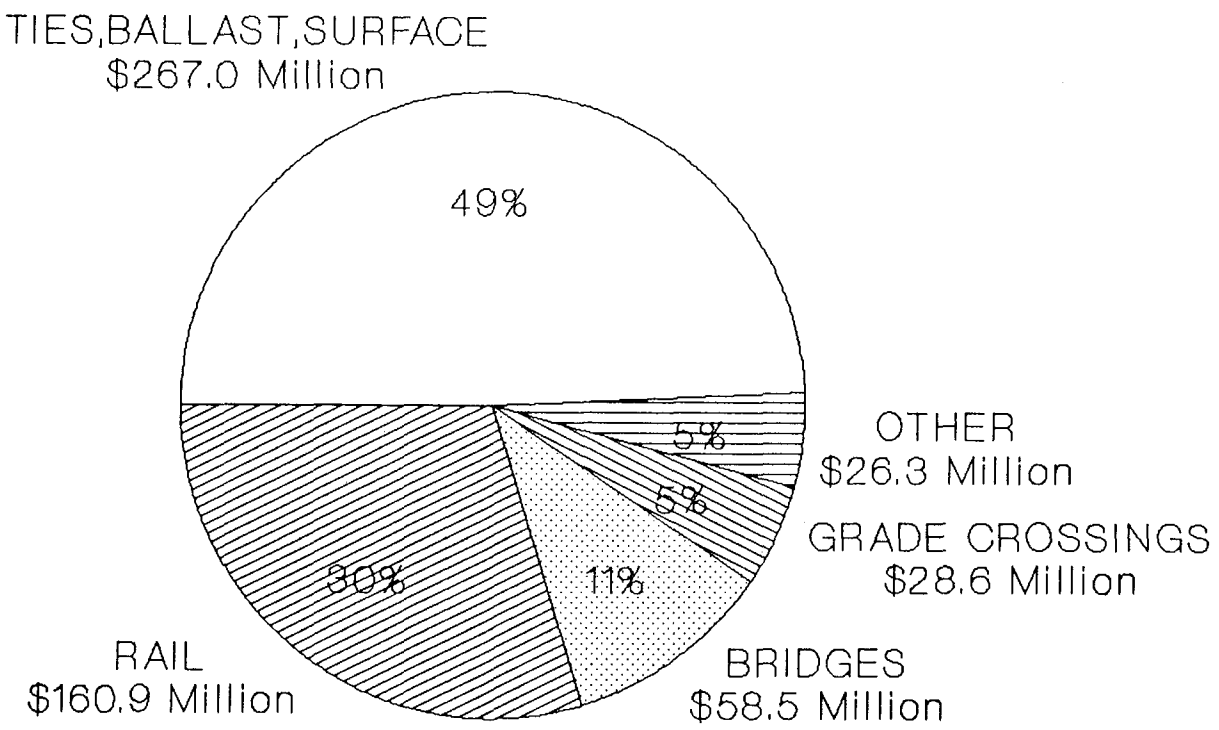
The railroads that report no need for rehabilitation account for 55 percent of the total carloads but only 23 percent of the total mileage of main and branch line track maintained by the respondents to the FRA survey. The railroads that report rehabilitation needs account for 45 percent of the total carloads and 77 percent of the main and branch line track covered in the survey. The combination of carloads and mileage figures indicates that the average density of traffic in 1987 was only one-fourth as high for the railroads reporting rehabilitation needs as for the railroads with no needs.

Figure III-1 shows the dollar cost and percentage share of estimated rehabilitation needs by type of project, as reported by the 204 railroads. More detail on the nature and extent of the rehabilitation work involved is provided in Table III-3.

TABLE III-3
REHABILITATION NEEDS BY TYPE OF PROJECT AND COST

	Scope of Work	Cost ($million)	Percent of Total Cost
Tie replacement, ballast and surface	7 million ties 7,550 miles	$267.0	49%
Rail replacement	2,100 miles	160.9	30
Bridge repair and replacement	719 bridges	58.5	11
Grade crossing rehabilitation[4]	156,000 linear feet	28.6	5
Other		26.3	5
TOTAL		$541.3	100%

REHABILITATION NEEDS OF SMALL RAILROADS BY TYPE OF PROJECT



TOTAL = 204 Railroads Reporting Rehabilitation Needs in the FRA Survey

FIGURE III-1

Among the railroads that report rehabilitation needs, replacement of ties, along with associated ballast and other aspects of the track surface, constitutes the area of greatest need. While rail and bridge work is generally less critical than tie replacement, the rail and bridge projects included in the estimated rehabilitation needs also are assigned high priority, by both the railroads responding to the survey and the TRAX engineers who conducted independent on-site inspections to assess track conditions.

2. Rehabilitation Needs by Type and Age of Railroad

Evaluating the concentration and magnitude of reported rehabilitation needs by type of railroad and time period formed provides a sharper view of the scope and nature of the problem. Table III-4 illustrates the relative rehabilitation needs of the small railroads in the FRA survey by type of carrier, for those railroads formed before 1970 compared to those formed in 1970 and later.

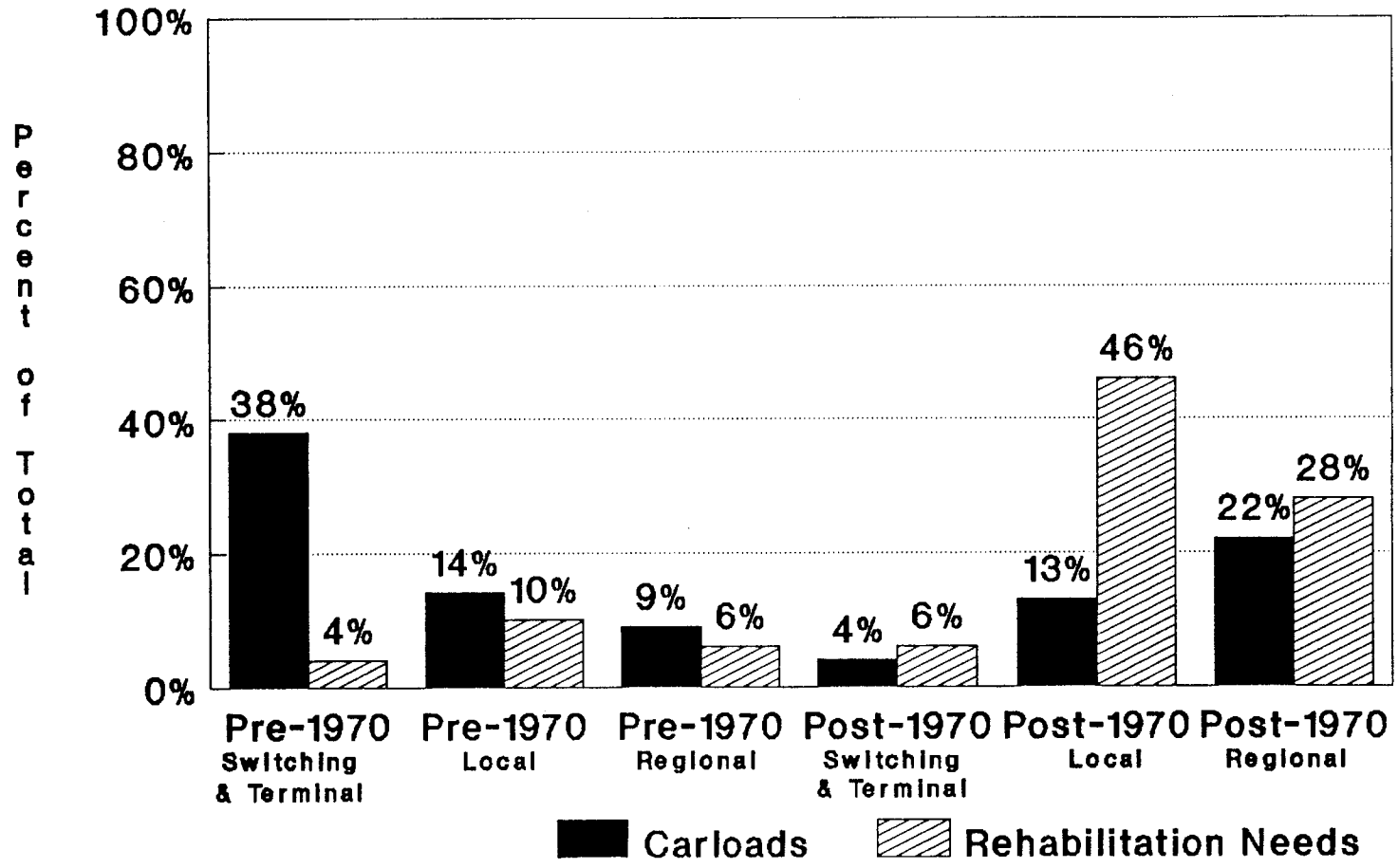
TABLE III-4
REHABILITATION NEEDS BY TYPE OF RAILROAD AND TIME PERIOD FORMED

	Before 1970			1970 - 1988		
Type of Railroad	Number of Railroads	Needs ($million)	1987 Carloads Handled	Number of Railroads	Needs ($million)	1987 Carloads Handled
Local	40	$51.7	563,046	105	$250.6	520,307
Regional	5	34.3	365,530	11	149.9	894,021
SUBTOTAL	45	$86.0	928,576	116	$400.5	1,414,328
Switching and terminal	19	23.2	1,528,036	24	31.6	136,823
TOTAL	64	$109.2	2,456,612	140	$432.1	1,551,151

The railroads reporting rehabilitation needs are concentrated among the carriers that began operations as small railroads since January 1, 1970. Not only are the total dollar costs of rehabilitation greater for the newer railroads as a group, but a higher proportion of the railroads established in the 1970's and 1980's reports a need for rehabilitation to remove the effects of deferred maintenance. Among the railroads formed before 1970--with or without rehabilitation needs--the 64 carriers reporting rehabilitation needs account for 35 percent of the carloads handled in 1987 by all pre-1970 railroads that responded to the survey, and 50 percent of the miles of main and branch line that they maintain. Among the newer railroads, the 140 respondents with rehabilitation needs account for 78 percent of the carloads and 89 percent of the mileage reported by small railroads that began operations in 1970 or later. These results reflect the fact that the small railroads that began operations in recent years generally were formed to take over light density lines which in many cases have been subject to considerable deferred maintenance under the previous Class I owner.

Figure III-2 illustrates even more clearly the share of rehabilitation needs and traffic represented by each of the three categories of small railroads, with separate figures for those carriers formed before 1970 and those formed in 1970 or after. The 105 local railroads that began operations since January 1, 1970, account for the single largest share of rehabilitation

SHARE OF TOTAL CARLOADS AND NEEDS BY TYPE OF RAILROAD AND YEAR FORMED



TOTAL = 204 Railroads Reporting Rehabilitation Needs in the FRA Survey

FIGURE III-2

needs, at 46 percent, but they account for only 13 percent of the carloads handled in 1987 by survey respondents reporting rehabilitation needs. At the other extreme, the 64 responding railroads that began operations before 1970 account for only 20 percent of the estimated costs of rehabilitation, but 61 percent of the total carloads handled by railroads with rehabilitation needs.

The great differences in the shares of needs and traffic for the different groups of railroads are largely explained by the widely divergent characteristics of the pre-1970 railroads and the newer railroads, as noted in Chapter II. Most of the local as well as regional railroads formed in 1970 or after handle relatively light density traffic. In contrast, among the pre-1970 railroads reporting rehabilitation needs, 19 are switching and terminal railroads, most of them large and 8 of them owned by Class I railroads. These 19 carriers account for 38 percent of the carloads handled by the 204 railroads, while their combined needs make up only 4 percent of the total estimated costs of rehabilitation. Ten pre-1970 Class I-owned railroads alone (counting two that are not switching and terminal railroads) account for nearly one-third of the total carloads handled by all railroads reporting rehabilitation needs, but only 3 percent of the costs of rehabilitation.

3. Relationship of Rehabilitation Needs to Size and Traffic Levels

The average costs of rehabilitation per mile or per carload handled offer additional indicators of the relative burden of rehabilitation needs. Since railroads' revenues and shippers' costs are related to the number of individual carloads handled, the costs of rehabilitation per carload in particular suggest the relative financial burden of the rehabilitation as well as the potential benefit of undertaking the work. Table III-5 shows the estimated rehabilitation needs per mile and per carload, by the type of railroad and the time period the railroads were formed.

TABLE III-5
REHABILITATION NEEDS PER MILE AND PER CARLOAD
BY TYPE OF RAILROAD AND TIME PERIOD FORMED

	Before 1970			1970 - 1988		
Type of Railroad	Number of Railroads	Needs per Mile	Needs per Carload	Number of Railroads	Needs per Mile	Needs per Carload
Local	40	$29,528	$92	105	$38,319	$481
Regional	5	21,624	94	11	19,029	168
SUBTOTAL	45	$25,773	$93	116	$27,777	$283
Switching and terminal	19	*	15	24	*	231
TOTAL	64		$44	140		$279

* The figures on needs per mile include only main and branch line track and therefore are not as meaningful for switching and terminal railroads, which tend to have a large share of yard and siding track. Therefore, needs per mile are not shown for switching and terminal railroads.

The estimated costs of rehabilitation per mile are not greatly different for railroads established before and after 1970, but the average costs per carload are considerably higher for the railroads that began operations in 1970 or later. The higher cost of rehabilitation per carload for the railroads formed in the 1970's and 1980's again reflects the lower levels of traffic handled by the new railroads. The local railroads formed since January 1, 1970--the group accounting for the largest share of rehabilitation needs--provide a particularly striking example. The 105 post-1970 local railroads reporting rehabilitation needs accounted for such a high share of the costs and a low share of the traffic (see Figure III-2) that their estimated average rehabilitation cost of $481 per carload handled is much higher than for any other group.

Even within a specific category or type of railroad, rehabilitation needs are greatest for those carriers with lower traffic density. Table III-6, stratified by the number of carloads handled per mile, shows that the average rehabilitation cost per mile ranges from an average of less than $15,000 for the carriers handling more than 300 carloads per mile to an average of more than $36,000 for the railroads reporting 20 or fewer carloads per mile. The difference between the average costs per carload is even greater, ranging from $23 for the high density carriers to more than $3,200 for those in the lowest density category. These figures indicate that in general, low density

railroads face a far heavier burden of rehabilitation costs than the higher density carriers.

TABLE III-6
REHABILITATION NEEDS BY TRAFFIC DENSITY CATEGORY

Carloads Handled per Mile	Number of Railroads	Main and Branch line Miles	1987 Carloads Handled	Rehabilitation Needs ($million)	Needs per Mile	Needs per Carload
Local and regional railroads						
Over 300	19	1,432	926,091	$ 21.1	$14,711	$ 23
101-300	41	5,581	866,048	158.6	28,410	183
41-100	44	6,383	438,328	181.9	28,493	415
21-40	28	2,927	96,359	72.7	24,852	755
20 or fewer	29	1,430	16,078	52.2	36,513	3,248
SUBTOTAL	161	17,753	2,342,904	$486.4	$27,401	$ 208
Switching and terminal railroads						
	43	1,110	1,664,859	54.9	*	33
TOTAL	204	18,863	4,007,763	$541.3		$ 135

* As explained in the note to Table III-5, needs per mile are not as meaningful for switching and terminal railroads and are therefore not shown here.

Of the total carloads handled in 1987 by all the railroads reporting rehabilitation needs, 82 percent are accounted for by two groups: the switching and terminal companies formed before 1970--primarily large established carriers with heavy volumes of traffic (see Table III-4)--and the local and regional railroads handling more than 100 carloads per mile. Together, these two groups represent only 37 percent of the reported rehabilitation needs. At the other extreme, local and regional railroads with 40 or fewer carloads per mile account for only 3 percent of the total carloads handled by railroads reporting rehabilitation needs, but 23 percent of the costs of rehabilitation.

4. Projected Ongoing Expense to Maintain Track

After one-time rehabilitation work is completed, a railroad may also incur substantial ongoing annual maintenance expense to keep the track and structures up to the operating condition achieved by the rehabilitation. As with rehabilitation needs, the heaviest relative burden of ongoing maintenance expense is reported by the lower density railroads. Table III-7 presents the railroads' projections of ongoing annual maintenance that would be necessary to continue to operate at timetable speeds after rehabilitation needs are met.

TABLE III-7
PROJECTED ONGOING ANNUAL MAINTENANCE AND REPAIR EXPENSE
BY TRAFFIC DENSITY CATEGORY

Carloads handled per Mile	Number of Railroads	Average Expense per Mile	Average Expense per Carload
Local and regional railroads			
Over 300	18	$29,068	$ 44
101-300	38	10,140	66
41-100	44	8,661	126
21-40	27	7,628	232
20 or fewer	27	3,368	254
SUBTOTAL	154	$10,236	$ 77
Switching and terminal railroads	40	*	20
TOTAL	194		$ 53

* As explained in the note to Table III-5, needs per mile are not as meaningful for switching and terminal railroads and are therefore not shown here.

The average ongoing maintenance expense per carload ranges from $20 for switching and terminal companies and $44 for local and regional railroads with more than 300 carloads per mile, up to more than $250 per carload for carriers with 20 or fewer carloads per mile. The projected levels of ongoing maintenance for the railroads in various traffic density categories suggest that, in addition to having more deferred maintenance to correct per mile or per carload, railroads with low density traffic would continue to incur higher costs per carload to maintain their lines after rehabilitation.

C. SUMMARY

Many small railroads do not require any significant rehabilitation to remove the effects of deferred maintenance and delayed capital investments. Of the 358 railroads that responded to the FRA survey, 154 do not report any rehabilitation needs. The remaining 204 railroads report rehabilitation needs representing one-time costs of $541.3 million. If the responses to the FRA survey are extrapolated to all small railroads, the total rehabilitation needs to remove the effects of deferred maintenance would exceed $600 million.

The majority of small railroads' traffic (55 percent of the carloads handled by the survey respondents in 1987) is accounted for by railroads that do not report any need for rehabilitation to correct deferred maintenance. Another 37 percent of the total

carloads are accounted for either by local and regional railroads handling more than 100 carloads per mile, or by switching and terminal railroads established before 1970, which generally handle high traffic volumes and are in many cases owned by Class I railroads or by major shippers. These railroads together account for 37 percent of total rehabilitation needs. Although their estimated rehabilitation needs are not insignificant, their average cost of rehabilitation per carload is comparatively low.

The small railroads with the lowest traffic density face the greatest rehabilitation needs, whether expressed in total dollars or cost per mile or per carload. Local railroads that began operations after 1970 in particular report high rehabilitation needs per carload, reflecting the relatively light volumes of traffic they handle. Survey respondents with traffic density of 100 or fewer carloads per mile account for only 6 percent of the total carloads handled by small railroads in the survey, but 57 percent of the total rehabilitation needs, and considerably higher rehabilitation costs per carload than the other groups of respondents.

If the effects of deferred maintenance were corrected through the one-time rehabilitation work cited as necessary in the survey, the carriers with low traffic density would still have the highest expenses per carload to maintain track and structures to the condition achieved by the rehabilitation.

The next chapter assesses the ability of small railroads to finance needed rehabilitation from internal funds, as well as the availability of external sources of financing for rehabilitation.

1. A slow order is a temporary speed restriction placed on a segment of railroad track when safe passage of trains can only be assured at speeds below those in the current timetable. Slow orders must be posted if a track inspector or other responsible employee locates a defect or condition and determines that the track does not meet the criteria for the safe passage of trains at the maximum authorized operating speed and/or other conditions as published in the current timetable. This requires that each train crew operating in the territory involved must be issued appropriate train orders, general orders and/or special instructions setting forth the location, limits or other specified conditions, and maximum authorized speed permitted under each slow order, in order to protect train movements until the defect or condition is corrected.

2. The FRA Track Safety Standards permit the owner of a rail line to designate a segment of line as "excepted" under 49 CFR 213.4, and to continue operations on the segment at speeds not exceeding 10 miles per hour, as long as there are no passenger operations over the track and hazardous materials shipments are handled according to specified limitations.

3. A timetable is a publication issued by each railroad, which, together with the railroad's Operating Rules (a separate publication), establishes instructions and guidelines for railroad operations. The timetable contains schedules with special instructions relating to the movement of trains, and establishes, for the railroad's operating divisions and subdivisions, permanent speed and weight limitation restrictions and maximum authorized operating speeds for the movement of the various types and classes of trains over the territory involved. On many railroads, the timetable is the authority for the movement of regular trains subject to the rules. A timetable goes into effect on a specified time and date, and it remains in effect until replaced by a subsequent timetable.

4. The grade crossing projects cited as necessary on the small railroads involve rehabilitating the track and crossing surface at public and private railroad-highway grade crossings. By the nature of grade crossings, the track cannot be laid or repaired in the same way as other track, but requires special, often manual, and costly procedures. Public funds from state, local, or Federal programs can be used for grade crossing projects--generally with a requirement for matching funds from the railroad (see Chapter IV)--but in most cases, those programs are applied to crossings on primary roads.

CHAPTER IV. SOURCES AND AVAILABILITY OF FUNDS TO COVER REHABILITATION NEEDS

Chapter III identified the rehabilitation needs of the 204 small railroads reporting deferred maintenance and delayed capital improvements on their lines, and evaluated the concentration and magnitude of those costs in relation to the type of railroad and the cost per mile and per carload to perform the needed work. The results of that analysis suggest that carriers with the lowest density lines face formidable costs to cover rehabilitation needs. This chapter evaluates the ability of the small railroads to fund those needs from internal sources, and the availability of other sources of funds for those purposes, including commercial loans, financial support from shippers or Class I railroads, and assistance from communities, states, or other government programs.

A. INTERNAL SOURCES OF FUNDS FOR FINANCING REHABILITATION NEEDS

1. Use of Internal Funds for Track Work

A primary source of capital for any business is internally generated funds, primarily cash flow from operations.[1] Small railroads also typically seek to finance maintenance and capital expenditures out of internal funds. By the magnitude and nature of the rehabilitation projects and the long time periods required, the expenditures associated with removing the effects of deferred maintenance resemble capital investments more closely than they resemble railroads' annual maintenance expenditures.

Within that framework, the FRA survey asked the small railroads to identify the amount and sources of funds used to finance capital improvements to track and track structures in the most recent three-year period. The results provide an indication of the type and extent of financing available for these carriers to accomplish needed rehabilitation work.

For the 197 small railroads reporting the sources of their 1985-1987 capital improvements expenditures, the responses show that 59 percent of the costs of track improvements were funded internally ($162.3 million out of a total of $274.6 million). Those survey respondents reporting no deferred maintenance financed more than 90 percent of their track-related capital improvements from internally generated funds, while the railroads that reported rehabilitation needs financed only 36 percent of their capital improvements to track from internally generated funds. The balance of the capital expenditures for track improvements made by the latter group came from external sources: new equity (6 percent), private lenders or shippers (19 percent), and public loans and grants (75 percent). To the extent that the railroads now reporting rehabilitation needs were delaying capital investments in the last three years, the proportion of capital expenditures that they covered from internal funds during that time may overstate those carriers' ability to cover their full track investment needs.

2. Relationship of Internal Funds to Rehabilitation Needs

The small railroads do not report detailed financial information to the ICC, and there are no other publicly available sources for the figures that would be necessary to determine whether the carriers reporting deferred maintenance have the ability to fund rehabilitation needs from internal sources. To gain an insight into the prospects for the small railroads to cover the costs from internal funds, this report examines the railroads' estimated rehabilitation needs in comparison to annual revenues, aggregated for the three types of railroads and time period of formation. Average revenues per carload provide a useful indicator of the size of the earnings base available to the railroads to cover rehabilitation needs.

Table IV-1 shows the relative revenues and rehabilitation needs per carload for the railroads reporting rehabilitation needs, stratified by type of railroad and the time period the railroad began operations. The 1987 revenue figures for railroads with rehabilitation needs were based primarily on data compiled in aggregate form by the AAR.[2]

TABLE IV-1
REVENUES AND REHABILITATION NEEDS PER CARLOAD
BY TYPE OF RAILROAD AND TIME PERIOD OPERATIONS BEGAN

	Before 1970				1970 - 1988			
Type of Railroad	Number of Railroads	Revenues per Carload	Needs per Carload	Needs as % of Revenues	Number of Railroads	Revenues per Carload	Needs per Carload	Needs as % of Revenues
Local	40	$267	$92	34.4%	105	$249	$481	193.2%
Regional	5	422	94	22.3	11	464	168	36.2
SUBTOTAL	45	$330	$93	28.2%	116	$396	$283	71.6%
Switching and terminal	19	79	15	19.0	24	166	231	139.2
TOTAL	64	$180	$44	24.4%	140	$374	$279	74.8%

As a percentage of revenues, rehabilitation needs are substantially higher for the railroads formed after January 1, 1970, ranging from less than twice as high for the regional railroads to more than five times as high for the local railroads and switching and terminal companies. Within the group of railroads formed in the 1970's and 1980's, the 105 local railroads present a particularly dramatic case. As noted in Chapter III, these 105 local railroads account for 46 percent of the total needs, although only 13 percent of the total carloads handled by all the railroads reporting rehabilitation needs. The average rehabilitation costs per carload for the 105 railroads are almost two times as great as their average 1987 revenues per carload. All the other groups of railroads, with the exception of the 24 switching and terminal railroads formed since January 1, 1970, show rehabilitation needs that are substantially less than revenues per carload for 1987.

As a practical matter, the rehabilitation work to correct small railroads' deferred maintenance, as well as the cost of undertaking the work, is likely to be distributed over a period of several years. Table IV-2 illustrates the costs the railroads would face to accomplish the work within one, three, or five years, by comparing 1987 revenues per carload to the rehabilitation needs, in costs per carload, spread over each of those three time periods.

TABLE IV-2
REVENUES AND REHABILITATION NEEDS PER CARLOAD
BY TRAFFIC DENSITY CATEGORY AND FINANCING PERIOD

Carloads Handled per Mile	Revenues Per Carload	Needs Per Carload	Needs As Percent of Revenues Per Carload: Within 1 Year	Within 3 Years	Within 5 Years
Local and regional railroads					
Over 300	$302	$ 23	7.6%	2.5%	1.5%
101-300	390	183	46.9	15.6	9.4
41-100	483	415	85.9	28.6	17.2
21-40	312	755	242.0	80.7	48.4
20 or fewer	404	3,248	804.0	268.0	160.8
SUBTOTAL	$369	$ 208	56.4%	18.8%	11.3%
Switching and terminal railroads	87	33	37.9	12.6	7.6
TOTAL	$257	$135	52.5%	17.5%	10.5%

The railroads in the highest traffic density category face rehabilitation costs that, on average, represent less than 10 percent of 1987 revenues, and potentially as little as 1 or 2 percent of revenues, if the costs are spread over a period of several years. This suggests that the railroads handling a high density of traffic would generally have little difficulty

covering their rehabilitation needs from internal funds. In contrast, for the railroads in the lowest traffic density category to cover their rehabilitation needs from internal funds would require devotion of more than eight times 1987 gross revenues--without allowing for payment of any expenses--a financial burden that no railroad would be likely to be able to bear.

For the many railroads with traffic density in the middle range, the average costs of rehabilitation relative to revenues fall between the two extremes. To cover all the costs from internal funds, these carriers would have to use a substantial share of revenues. If they follow the typical pattern for small railroads, they retain a relatively low share of their total revenues, after payment of expenses. To make a complete assessment of the prospects for the small railroads to finance rehabilitation work from operating revenues or other internal funds, however, would require a detailed financial and economic evaluation of each individual carrier, far beyond what is possible with the available data.

The responses of the individual railroads to the FRA survey provide some additional perspectives on the extent of internally available funds, as well as general confirmation of the implications from the above data as to the prospects for rehabilitation needs to be financed from internal sources.

The responding railroads indicate that, on average, they can cover approximately 25 percent of their estimated rehabilitation needs from internally generated funds, based on their current financial condition. The responses do not differ greatly in the aggregate between the railroads formed before 1970 and those formed in the 1970's and 1980's. The railroads that began operations before 1970 indicate an ability to cover approximately 29 percent of rehabilitation needs from internal funds, whereas the railroads formed since that time indicate that 24 percent of needs can be covered from internal funds. The major differences in estimated internal funding capacity relate to average traffic density of the railroads. Table IV-3 shows the rehabilitation needs in comparison to internal funding ability, as reported by the individual railroads, grouped by traffic density categories.

TABLE IV-3
ESTIMATED INTERNAL CAPACITY TO FUND REHABILITATION NEEDS
BY TRAFFIC DENSITY CATEGORY

Carloads Handled per Mile	Number of Railroads	Total Needs ($million)	Estimated Internal Funding ($million)	Needs Beyond Internal Funding ($million)
Local and regional railroads				
Over 300	19	$ 21.0	$ 9.0	$ 12.0
101-300	41	158.6	70.4	88.2
41-100	44	181.9	17.9	164.0
21-40	28	72.8	11.8	61.0
20 or fewer	29	52.1	3.6	48.5
SUBTOTAL	161	$486.4	$112.7	$373.7
Switching and terminal railroads	43	54.9	20.8	34.1
TOTAL	204	$541.3	$133.5	$407.8

In the aggregate, the internal funding ability of the railroads in the two highest traffic density categories represents 40 to 45 percent of their rehabilitation needs. The responses of the switching and terminal railroads indicate that, on average, they can cover 35 to 40 percent of their needs from internal sources. In contrast, just as the data in Table IV-2 on needs in comparison to revenues also suggested, the railroads in the lowest traffic density category have the least ability to finance rehabilitation from internally generated funds. The railroads handling 20 or fewer carloads per mile in 1987 report that internal funds are sufficient to cover only 7 percent of their rehabilitation needs. Even that level of internal funding represents more than half of these railroads' total 1987 revenues. As shown in Chapter III, however, the 29 lowest density carriers with rehabilitation needs account for only a fraction of one percent of the total carloads handled by all the small railroads responding to the survey.

The railroads' estimates of their internal funding ability are necessarily speculative, and could be biased upward or downward for individual respondents. Within each traffic density category, the responses also vary. These variations, however, do not affect the general conclusion that for many of the low density railroads reporting rehabilitation needs, the costs of removing the effects of deferred maintenance would far exceed the internal funds available, while for the railroads handling high

density traffic, rehabilitation needs do not represent a heavy burden in relation to revenues or internally generated funds.

The 45 railroads that report that they can cover their entire costs of rehabilitation from internal sources are unlikely to have difficulty financing the required rehabilitation work. They account for 30 percent of the total carloads handled in 1987 by all the survey respondents. Those 45 railroads together with the 154 railroads that report no rehabilitation needs account for 85 percent of the total carloads reported in the survey.

3. Ability to Finance Ongoing Maintenance Expense

A second essential consideration in evaluating the small railroads' ability to finance rehabilitation involves their ability to pay for the ongoing maintenance necessary to keep up track conditions after the one-time rehabilitation work has been accomplished. Table IV-4 presents, for each traffic density category, the estimates provided by the railroads of their projected annual ongoing track maintenance expense in comparison to 1987 revenues, in each case expressed in dollars per carload handled in 1987.

TABLE IV-4
PROJECTED ONGOING ANNUAL MAINTENANCE AND REPAIR EXPENSE
COMPARED TO REVENUES BY CATEGORY OF TRAFFIC DENSITY

Carloads Handled per Mile	Number of Railroads	1987 Carloads Handled	Revenues per Carload	Expense per Carload	Expense as % of Revenues
Local and regional railroads					
Over 300	18	901,091	$ 302	$ 44	14.6%
101-300	38	844,543	390	66	16.9
41-100	44	438,328	483	126	26.1
21-40	27	95,992	312	232	74.4
20 or fewer	27	14,788	404	254	62.9
SUBTOTAL	154	2,294,742	$ 369	$ 77	20.9%
Switching and terminal railroads	40	1,663,261	87	20	23.0
TOTAL	194	3,958,003	$ 257	$ 53	20.6%

The estimated ongoing track-related expense per carload ranges from a high of nearly 75 percent of revenues per carload, for railroads with traffic density of 20 to 40 carloads per mile, down to a low of less than 15 percent for railroads with traffic density above 300 carloads per mile. The high overall average share for the carriers handling less than 40 carloads per mile--at close to two-thirds of annual revenues, almost three times the average for all small railroads--suggests that even if their rehabilitation needs could be covered, they are likely to have considerable difficulty meeting the costs of maintaining track and structures to the desired condition, once the needed rehabilitation work is completed.

The limited financial and operating statistics on small railroads do not permit a definitive assessment of the ability of individual carriers to cover rehabilitation needs from internal funds. From the data available, however, it can be seen that there is considerable variability in the internal funds available to the small railroads which might be used to finance rehabilitation needs. Some small railroads appear likely to need financing beyond the funds now available internally, in order to undertake their full track-related rehabilitation needs. The railroads with smaller traffic bases and lower revenues are the ones with the poorest prospects for covering the costs of rehabilitation work from internal funds.

Where present levels of internal funds fall short of spending needs, the railroads have several potential alternatives for raising increased funds in the future: enhanced earnings; commercial loans; private financing from shippers or Class I railroads; and assistance from public bodies, including economic development authorities.

4. Potential for Enhancing Internal Funds

The principal means of enhancing internal funds lie in increasing revenues and reducing costs. The high level of competition faced by small railroads, from motor carriers in particular, limits the possibility of raising rail rates, although some increases may be possible where the higher rates

are accompanied by significant improvements in meeting customers' needs. Improvements in service permitted by the rehabilitation may also make it possible for small railroads to attract additional traffic and thereby generate increased revenues and earnings.

Most small railroads, particularly those formed in recent years, are already organized to minimize costs: operating crews are small; there are few limitations on the functions that individual workers can perform, permitting more efficient use of employees' time; and management and operations are flexible enough that the use of equipment, materials, and other goods and services is controlled to avoid unnecessary costs. Therefore, while some cost reductions are theoretically possible, the costs incurred by a small railroad generally provide little latitude for substantial cost reduction.

Some changes in overall policies affecting small railroads at the Federal, state, and local levels could help the small railroads reduce costs and thereby increase both earnings and internal funds available for rehabilitation projects. For example, in an effort to permit cost savings and efficiencies for all small railroads, the Regional Railroads of America and ASLRA have sought to reduce employee-related costs by supporting changes in railroad retirement and unemployment compensation programs, and proposing extension of state workers' compensation

programs to cover railroads, in place of the present Federal Employers' Liability Act (FELA), a tort-based system of compensating employees in accident and injury cases. Reduced costs for providing these employee benefits would have a positive impact on small, marginally profitable railroads. State and local government property tax policies also can affect cash flow for small railroads. Where an enterprise meets an important state or local interest, tax forgiveness, tax rebates, or tax deferrals are commonly used techniques to provide cost relief.

Class I railroads have helped small railroads to reduce costs in areas as diverse as marketing, maintenance and repair, clerical functions, accounting, and purchasing. For example, several Class I railroads have entered into contracts with small railroads to provide services to the smaller carriers, as an extension of services already being performed on the Class I carrier's connecting lines. These arrangements permit the small railroads to use the staff and expertise of the large carriers and gain the advantage of the economies of scale generated by the larger operations. Some small railroads also offer services such as locomotive and car repair to other carriers on a contract basis, to achieve economies of scale and potentially generate additional revenues.

The alternatives mentioned above can generate important cost savings and enhanced earnings for small railroads, but they do not, in and of themselves, appear to represent realistic prospects for covering a major portion of rehabilitation needs. If currently available internal funds fall substantially short of total rehabilitation needs, a small railroad will still have to identify external sources of financing in order to undertake the work.

B. EXTERNAL SOURCES OF FUNDS FOR FINANCING REHABILITATION NEEDS

In order to accomplish all of the rehabilitation work the small railroads identify as necessary to correct the effects of deferred maintenance, many of the carriers require some funds beyond cash flow and other internal sources. In recent years, funds from outside sources have been available and extremely important in the financing of acquisition and start-up of small railroads. To date, however, the small railroads have had little experience in securing financing for rehabilitation work after the initial start-up period. Their ability to attract external financing for one-time rehabilitation costs depends at least in part on the specific characteristics and circumstances of the individual carrier, including its internal cash flow, debt-equity ratio, unencumbered assets, and overall credit worthiness. The following sections assess outside sources of financing that may be pursued by small railroads.

1. Private Sector Financing

a. Commercial Financial Institutions

Substantial commercial loans have been made to finance acquisition of rail lines for formation of small railroads, particularly in recent years with the rapid growth in this sector of the railroad industry. Local and regional banks have participated in the financing, as have large national financial institutions, such as General Electric Credit, Irving Trust, Bank of Boston, Westinghouse Credit, and Bank of America. In fact, during the 1980's, financial institutions have been in competition for clients seeking secured debt to cover purchase and start-up costs.

While commercial lenders have been heavily involved in financing the acquisition of small railroads, they have been reluctant to finance rehabilitation projects. Some of the acquisition loans have included limited funds to address rehabilitation needs, but rarely any funding for projects beyond those undertaken at the time of formation. Part of the reason for the absence of loans for rehabilitation may be that after securing acquisition funds, most newly-formed small railroads are highly leveraged; debt represents from two-thirds to more than 90 percent of their total capital. That level of debt leaves a railroad with few unencumbered assets, so a lender must assume considerably greater risk in extending additional loans.

Some holders of a small railroad's senior debt have been willing to provide funds for rehabilitation after the start-up period, if the railroad in question is performing well financially, or the financing is part of an overall debt restructuring package. Some recent transactions have also involved private lenders sharing security with a new lender, typically a government agency offering rehabilitation financing. In general, however, a small railroad that is only marginally profitable and lacks unencumbered assets has limited access to commercial lenders to finance significant track rehabilitation projects.

b. Class I Railroads

Class I railroads have assisted in financing the purchase of some of their rail lines for formation of small railroads. For example, the Burlington Northern Railroad (BN) has provided financing in several cases and held the mortgage on the property transferred to the new railroad. Although the specific terms of these transactions are negotiated to suit the particular situation, BN's agreements typically require that the new railroad maintain the rail line in the same condition as it was when the property was transferred, in order to preserve the value of BN's security and to ensure that the line will be able to continue providing feeder and delivery service for BN's core system. Other Class I railroads have offered different forms of financial assistance, including lease/purchase options.

Although these mechanisms have not been used to any significant extent for rehabilitation work, assistance from Class I railroads may be an avenue for small railroads to pursue in the future, particularly where the Class I railroads recognize that their objectives in formation of small railroads may be advanced through continued support to the new carriers. Funds made available by Class I railroads for rehabilitation projects on small railroads can help make up for any lack of commercial loans for these purposes. In addition, to the extent that the financing terms offered by a Class I railroad are more generous than commercial lenders offer, the Class I assistance leaves more of the small railroad's internally generated funds available to spend on rehabilitation.

c. Financing from Shippers

Direct financial involvement of large shippers or groups of small shippers served by a regional or local railroad has been and continues to be an important source of assistance. Shippers on a rail line transferred from a Class I railroad have a vital interest in assuring that the line remains in service; investments in these lines are investments in the shippers' own business. Shipper financing can take several forms: equity investment; low-interest or non-interest loans, possibly with repayment through reductions in rates charged to the shipper; loan guarantees; use-or-pay contracts assuring stable traffic levels and/or revenues to the railroad; or payment of

rehabilitation costs on those sections of the rail line that serve the shipper. Shipper funds are also an important source of matching funds required by public sector assistance programs.

2. Public Sector Financing

The public sector has provided financing for small railroad rehabilitation as well as acquisition. Assistance has come from state and local governments, specialized quasi-public authorities or economic development agencies, and a series of special Federal programs established to help the rail system recover from the financial crisis of the 1970's.

a. State Assistance Programs

Many states have established programs to provide financial assistance for rail freight projects. In addition to these programs, state legislatures often have responded to rail crises by making emergency one-time funding available for special projects. While not exclusively reserved for small railroads, state funding has often been directed at small railroads with deferred maintenance. Financial assistance programs covering rehabilitation of privately-owned and operated track are now active in 20 states. In a poll of states, FRA identified $94 million in funding available for these programs in 1988-1989, including loans, grants, and other forms of assistance.[3]

Several states gain increased value from the funds they provide for rail projects by requiring repayment and placing the repayments in a revolving fund to finance future projects. The states of Illinois, Indiana, Iowa, Minnesota, and Mississippi use this approach. Another common element in state financial assistance programs is the requirement for matching funds from private or public sector groups with an interest in the projects. Even among states that provide loans rather than grants, such as Illinois, Iowa, and Minnesota, financial participation by private or other non-state interests is required for rehabilitation projects. Iowa, for example, limits state funds to a maximum of 40 percent of the project cost.

Most state programs also require that a benefit-cost analysis be submitted for all projects proposed for state funding. Beyond a financial viability test of the railroad, the benefit-cost analysis generally includes an assessment of overall public costs of the project or other alternatives, a critical consideration in allocating scarce funds among competing projects.

b. Federal Assistance Programs

Federal assistance to small railroads has been provided in the past through the Local Rail Service Assistance Program (LRSA), under Section 803 of the Department of Transportation Act, and through the Section 505 and 511 programs, under Title V

of the Railroad Revitalization and Regulatory Reform Act (4R Act) of 1976, all of which are administered by FRA.

The LRSA program was established in the Regional Rail Reorganization Act (3R Act) of 1973 to provide funds to subsidize continued service where rail lines were being abandoned in the restructuring of bankrupt railroads in the Northeast and Midwest. The program was expanded under the 4R Act to provide funding to states throughout the country for purposes such as rail line acquisition and track rehabilitation and improvement. From an emergency subsidy program, providing formula grants with no state or local matching requirement, LRSA evolved into a discretionary funding program aimed at rehabilitating light density rail lines before they become subject to abandonment. The program now requires that the Federal assistance be at least partially matched, with a limit of 70 percent of the project costs coming from Federal funds and 30 percent from state and local sources.

Since its inception in 1973, LRSA has provided $496 million in grants to states for local rail assistance. LRSA program authorization expired on September 30, 1988.

Title V of the 4R Act established two programs to provide rehabilitation and improvement financing directly to bankrupt and marginal railroads or to government entities. The Section 505 program offered 20- and 30-year debt financing at below-market interest rates, with deferred payment of principal and interest. The Section 511 program guaranteed loans made at the Federal government's cost of borrowing. Both these programs were intended to support one-time efforts to rehabilitate track and equipment as a means to restore railroads' financial viability.

Since 1976, Section 505 assistance totaling $569 million has been drawn down. Small railroads have received $50 million, or 9 percent, of that total. Of the Section 505 financing agreements executed from January 1, 1982, through Fiscal Year 1988, small railroads represent 29 percent of the total draw-downs. Section 511 loan guarantees totaling $248 million were drawn down from 1976 through 1988. Small railroads represented only 1 percent of the total draw-downs under Section 511.

The authorization for the Section 505 program expired on September 30, 1988. Although there is no statutory termination date for the Section 511 program, no loan guarantee funding has been approved by the Appropriations Committees in the U.S. Senate or the House of Representatives in the last two fiscal years.

No other Federal programs exist for the sole purpose of providing capital or rehabilitation assistance to railroads. However, the Small Business Administration (SBA) has a loan guarantee program that has been used for small railroad projects that meet SBA requirements, and the Farmers Home Loan Administration (FHLA) has guaranteed loans under certain circumstances for small railroads in rural areas. The Federal Highway Administration provides funds under Section 203 of the Highway Act for safety-related projects such as installation of automatic warning devices at railroad-highway grade crossings.

2. Economic Development Groups

Local economic development authorities can assist in financing small railroad projects by providing quasi-public sector funding directly or by acting as a catalyst to stimulate private financing. Many localities facing the potential loss of rail service have successfully used public authorities either to purchase a local rail line or to provide a combination of local bonding and shipper investments to support continued operations. The critical element behind establishment of a special authority to purchase a small railroad is the local decision that continuation of a rail line is important enough to the community or region to warrant financing acquisition and start-up costs. Likewise, where continued rail service is considered vital to

the communities and shippers, economic development groups may also find it advantageous to finance rehabilitation projects on small railroads.

E. SUMMARY

The great majority of the total traffic handled by small railroads is accounted for by carriers that do not require track rehabilitation or can cover their rehabilitation needs without external funds. The railroads reporting no rehabilitation needs or no needs beyond what they can fund from internal sources handled a combined total of 85 percent of the total traffic of all the railroads that responded to the FRA survey.

For those railroads with rehabilitation needs, internally generated funds often represent a primary source of maintenance and rehabilitation funding. Responses to the FRA survey indicate, however, that the small railroads with rehabilitation needs can meet only 25 percent of the one-time cost of rehabilitation from internal funds, assuming these railroads remain in their current financial condition. If these figures are extrapolated to the carriers that did not respond to the FRA survey, total internal funding capacity of all the small railroads would be approximately $150 million, leaving approximately $450 million in rehabilitation costs to come from other sources.

In general, the small railroads with the highest traffic density (300 carloads per mile or more) should be able to finance a significant share of the costs of rehabilitation from internal funds. The railroads in the lowest traffic density categories (fewer than 40 carloads per mile), however, face estimated rehabilitation needs several times greater than their total annual revenues. With the low profit margin that small railroads typically achieve, such a burden would be extremely difficult for the carriers to bear. Furthermore, if the one-time rehabilitation costs were met, the ongoing maintenance requirements for the lowest density railroads would be so high relative to revenues that deferred maintenance would likely continue to accumulate. Between the high and low density traffic groups is a number of small railroads whose situation is not clear-cut. A detailed case-by-case evaluation would be necessary to determine the individual railroads' ability to fund rehabilitation and ongoing maintenance from internal sources.

In some cases, small railroads can obtain commercial loans to finance track rehabilitation projects. Access to private lending sources, however, is likely to be limited for carriers with marginal earnings, high debt levels, and few unencumbered assets that could be used to secure additional borrowing.

Funds from Federal government sources are extremely limited and some Federal programs used to finance railroad rehabilitation in the past are no longer available. Federal assistance to railroads in the last two decades primarily involved "seed money" provided in response to the critical need for large-scale restructuring of the railroad industry nationwide in the aftermath of the major railroad bankruptcies of the 1960's and 1970's.

With the restructuring of Class I railroads and the formation of new small railroads in recent years, the states have played an increasing role in providing financial assistance to railroads at the local and regional level. A total of $94 million in state assistance for railroad projects is currently available in a variety of programs and forms. As service by small railroads continues to offer an important link for local firms and communities, economic development groups and shippers represent another valuable source of funds to finance the work necessary to remove the effects of deferred maintenance and to assure continued safe and efficient rail operations in this sector of the railroad industry.

1. Cash flow is defined as net income plus depreciation and retirement expenses on both equipment and track and structures, plus deferred income taxes, minus income from affiliated companies.

2. The AAR provided 1987 revenue figures for 170 of the 204 railroads that report rehabilitation needs in the FRA survey, aggregated to the three categories of railroads and two time periods of formation, as they were applied in this report. To increase the proportion of the small railroads that the revenue figures cover, FRA gathered revenue data from 8 additional railroads individually. In terms of traffic, those 178 small railroads combined represent more than 90 percent of the total 1987 carload figure for the 204 railroads, and they represent at least 80 percent of the carloads reported for any of the six groups of railroads, categorized by type and time period formed. As a result, the average revenues per carload calculated for each group are likely to be reasonably representative of the actual average revenues per carload.

3. In addition to the 20 states with existing financial assistance programs, Oklahoma and Vermont finance the purchase of track materials for state-owned lines that are leased to private operators.

CHAPTER V. SUCCESSES, FAILURES, AND FUTURE GROWTH OF SMALL RAILROADS

A. SUCCESS RECORD AMONG SMALL RAILROADS

The great majority of small railroads formed in recent years have survived and most of the rail lines they acquired remain in operation. Although few of the small railroads would be considered highly profitable, most of them are able to continue to provide service and remain in business. Since 1980, a total of less than 4,000 miles of rail line operated by small railroads has gone out of service, an average of less than 2.3 percent per year of the total mileage operated by this sector of the industry.

The work of John Due and others on successes and failures of small railroads since 1980 indicates that the key requirements for successful operation of a small railroad--in addition to initiative and perseverance through the process of planning, promoting, and establishing the enterprise--are capable management; ability to control costs and achieve efficiencies; good shipper relations and cooperation of connecting railroads, labor, and state and local officials; sound track and structures; and adequate traffic. The most critical factor for success of a newly formed small railroad is sufficient traffic volume to generate the revenues needed to cover costs and provide a return on the investment.

Initially, establishing a small railroad requires an individual or group to develop the proposal and to assume the risks of the undertaking. Once the railroad is in operation, knowledge of the railroad industry and experience in railroad management are the most valuable skills, with general business management experience probably the next best qualification.

As in any business, an essential element of managing a successful small railroad is cost control. The motivation for transferring a rail line to a new Class II or Class III operator often is that the traffic and revenues generated on the line are not adequately covering the costs of Class I operation. The new railroad typically must reduce costs below the level previously incurred by the Class I carrier if the new enterprise is to survive. Labor is generally the largest component of costs, and labor costs are a primary focus of cost savings on small railroads. As in other areas of cost, however, labor costs are difficult to reduce below a certain base level, regardless of traffic volume, if service is to continue.

The volume of traffic required for a small railroad to generate needed revenues and cover its basic costs differs depending on the nature of the traffic available, the competition from trucks and other railroads, and the rates that can be charged on the traffic. Where a small railroad handles most of its traffic in connection with other railroads, the formula for

dividing the joint rates between the small railroad and the connecting carriers has a significant effect on the revenues available to the small carrier. That is one reason why cooperation with the connecting railroads is so critical to a small railroad's success.

B. FAILURES OF SMALL RAILROADS SINCE 1980

The AAR estimates that 93 small railroads have failed since 1980, an annual average of about 3 percent.[1] The average age of the railroads that have failed since 1980 was just over 35 years. Approximately half of the carriers survived less than 10 years while, at the other extreme, over one third survived more than 65 years. Of the railroads that have failed since 1980, 47 (approximately half) were formed after January 1, 1970. For those railroads, the average age was 3 years. The 26 railroads that were formed and failed since 1980 survived an average of only 2 years.

Approximately 90 percent of the local railroads that began operation since 1980 and all of the regional railroads formed in that time were being operated in some form in mid-1988. While service has halted on some rail lines, John Due estimates that 8,141 (86 percent) of the 9,480 miles of line transferred to local railroads since 1980 were still in service on July 1, 1988. All 8,113 miles of rail line transferred to regional railroads in the 1980's were reported in service as of mid-1988,

although the physical or financial structure of the operators has changed in some cases.

Failure rates of small railroads are difficult to compare to failure rates of companies in other industries. First, the number of railroads is small relative to the number in most other industries, so comparison of percentages between the two groups may not be meaningful or statistically significant. Second, many of the small railroads were formed relatively recently, and the time period for observing successes and failures among those carriers has therefore been short. Finally, the statistics on failures are not compiled on the same basis for the railroads as for other groups.

For other types of industries, business starts and failures are estimated by Dun and Bradstreet Corporation each year, and reported in the annual Business Starts Record and Business Failure Record (Economic Analysis Department, The Dun and Bradstreet Corporation, New York, NY). The measure of business failure used by Dun and Bradstreet in evaluating other industries is based on financial failure and loss to the stockholders; liquidation and withdrawal from operations or cessation of service, without loss to the stockholders, are not counted as failures. By those standards, the instances reported as business failures in other industries are likely to be lower than the total number of firms that failed and went out of business.

In contrast, the AAR's figures for small railroads include as a failure any case in which service to shippers is halted, the rail lines are abandoned, or the company is dissolved, whether or not loss to stockholders occurs.

The success rate estimated by Dun and Bradstreet for other industries, computed by deducting the number of failed firms from the number of firms started during the period, was 85 percent for the five top industry sectors for the years 1980 through 1987.[2] In comparison, the AAR estimates that the success rate for small railroads during the same years was approximately 83 percent. By that calculation, the figure for the railroad industry closely matches that for other industries, in spite of the fact that the AAR uses a broader definition of failure.

Because of his extensive experience in studying small railroad formation and particularly small railroad failures, John Due was contracted to update his data on the extent and causes of failure of small railroads, for use in this report. From the small railroads created out of the lines of Class I railroads and operating in some form during the 1980's, John Due examined in detail fifty small railroads that went out of business since 1980, in the following three categories:

-- withdrawal from operations, with immediate transfer to another operator;

-- financial failure and discontinuance of service, followed eventually by resumption of operations by another firm; and

-- cessation of operations and abandonment of the lines.

Some of the railroads studied by John Due were not counted as failures by the AAR, because service to shippers did not cease, although the companies themselves may have failed. On the other hand, John Due was able to identify the instances in which failure of one small railroad was subsequently followed by transfer of the rail lines to another small railroad and resumption of service, which the AAR's data do not reflect. (Bankruptcy alone was not counted as failure by either the AAR or John Due unless it also involved liquidation or sale of the assets, abandonment of the rail lines, or transfer of operating responsibility to another company.)

John Due's research indicates that since January 1, 1980, nine small railroad firms operating 872 miles of line have withdrawn from operations with immediate transfer of operating responsibility to another railroad.[3] This type of failure has generally involved rail lines owned by government bodies.[4] An additional eleven small railroad companies operating nine different properties and a total of 808 miles have experienced financial failure and discontinuance of service, but the track was not abandoned and operations were subsequently restored.[5] Finally, 21 small railroads representing 946 miles of line have failed since January 1, 1980, and abandoned the entire trackage they served.[6] John Due identified another nine small railroads that abandoned some portion of their total trackage in the 1980's

due to failing operations, accounting for 393 miles (24 percent) of the total 1,660 miles of rail line operated by these carriers. Thus, according to that accounting, a total of 1,339 miles of rail line have been removed from service and abandoned since January 1, 1980, as a result of the failure of small railroads formed from the lines of Class I railroads.

With the assistance of the state rail planning agencies, John Due also assessed the major causes of failure of small railroads since 1980. The figures below indicate the number of railroads for which each cause was specifically identified as the primary immediate reason for failure:[7]

Lack of adequate traffic	25
Problems with physical plant (track condition, bridges, washouts, etc.)	10
Management problems	9
Lack of capital	2

Once a railroad begins operating, it faces a complex set of conditions, and the precise cause of a failure is often hard to distinguish. For example, if the railroad had more traffic, more revenue would be generated to cover costs and perhaps more outside capital could be raised. With adequate capital, the railroad might have sufficient funds to address problems with the physical plant. In the majority of cases, however, the fundamental cause of failure appeared to be inadequate traffic,

which started the downward spiral of inadequate capital, deferred maintenance, and poor and infrequent service.[8]

Some of the rail lines that failed appeared to have adequate traffic volumes, but suffered management inadequacies that kept them from achieving the necessary cost savings, providing acceptable service, and maintaining good relations with customers and connecting railroads. In other cases, the shippers played a role in the failure of a small railroad: some shippers from the beginning were suspicious or antagonistic toward the railroad, or unwilling to route sufficient traffic over the lines to permit the railroad to survive. Several small railroads failed in some form after their only shipper shut down operations.[9]

Another difficulty beyond a railroad's control involves natural disasters or other extraordinary and unanticipated physical problems. The Chippewa River Railroad (Wisconsin) abandoned operations after serious defects were identified in a bridge on its rail line. Floods, fires, mudslides, accidents, and other unforeseen events all can impose heavy costs on a railroad.[10] With the low margin of profit and limited financial reserves of most small railroads, the carriers generally cannot afford to correct problems of that magnitude and often must go out of service in that situation, although some carriers have

successfully gone through bankruptcy reorganization or have received assistance that permits them to continue.[11]

Some small railroads were failing almost from the day they were formed, primarily because they had acquired track in poor condition, had insufficient capital, expected traffic that did not materialize, or otherwise underestimated what would be involved in operating the railroad. Common problems involved overestimates of the amount of new traffic they would be able to attract, inaccurate figures on pre-existing traffic levels, or failure to recognize that traffic had shifted to other modes and carriers during the break in operations and could not be recovered. Anecdotal evidence suggests that some of the new operators paid too much for the lines in relation to their revenue-generating potential and therefore were not able to earn enough to cover costs.

C. ACCURACY OF ASSESSMENTS OF REHABILITATION NEEDS MADE WHEN SMALL RAILROADS WERE FORMED

The Committee requested that this study evaluate the initial assessments of needs for rehabilitation on rail lines transferred from Class I railroads to create new small railroads since 1980. In response to the Committee request, the FRA survey asked the railroads whether they had received assessments of needs for rehabilitation at the time they were formed, and specifically whether there had been underestimates or other inaccuracies in the assessments. Of the 158 responding railroads

formed since 1980, 106 report that an estimate was made of the extent of rehabilitation needs at the time that the railroad was established. Of that total, 61 report that rehabilitation needs were accurately estimated; 36 report underestimates; while only 4 report overestimates of rehabilitation needs. The magnitude of underestimation was as follows:

25-50 percent underestimated	20
50-100 percent underestimated	12
More than 100 percent underestimated	4

D. POTENTIAL DIVERSION OF TRAFFIC TO THE ROAD SYSTEM AS A RESULT OF FAILURE OF SMALL RAILROADS

The Committee report also specifically requested that this study estimate the traffic that would be diverted from rail to highway if, in relation to the amount of deferred maintenance and rehabilitation needs, small railroads ceased operation. It is clear that the majority of existing small railroads will not fail in the foreseeable future. As noted in Chapter IV, the railroads reporting no rehabilitation needs and those that indicate they can cover their rehabilitation needs from internal sources account for 85 percent of total carloads handled by the carriers that responded to the survey. Some hypotheses can be developed, however, about the likely effects on traffic if small railroads failed.

When a small railroad goes out of service, the traffic it normally handles can potentially shift to another means of transportation or routing, or traffic may cease to move. Where

the small railroad serves only as a short "bridge" between Class I railroads, the traffic might simply be diverted to an alternative rail routing that bypasses the rail lines of the small railroad. Other traffic may shift to another mode, move by truck to the junction with the connecting Class I railroad or to another nearby Class I railroad for transfer into a rail car, or be loaded into a trailer or container for movement by truck to a "piggyback" or intermodal loading facility for onward movement by rail.

The shipments most readily shifted to truck are probably those already moving as intermodal traffic, which represents less than 5 percent of all carloads handled by the small railroads that responded to the FRA survey. If the railroad operating one intermodal facility ceases operations, trailer loads can generally be moved by truck to another intermodal loading facility on another rail line.

Most of the bulk commodities handled by small railroads in conventional carload service also can and do move by truck or another mode in some circumstances, particularly over short distances. The Census of Transportation, last conducted in 1977, showed that some share of all the manufactured goods moved by truck. U.S. Department of Energy data on coal shipments presented in its annual publication Coal Distribution, and similar work on grain compiled by the U.S. Department of

Agriculture, also show that large volumes of those commodities are handled by truck each year, although often for intrastate or other relatively short movements.

The results of the FRA survey indicate that nearly half of the carloads handled by the responding railroads moved for a total distance of less than 150 miles (including both the haul on the small railroad and any portion of the movement handled by another railroad). Seventy percent of the carloads handled by responding railroads moved less than 500 miles. These are relatively short hauls for a railroad; trucks are highly competitive at distances of up to 300 miles, for all but the largest and heaviest movements.

A recent survey of shippers on small railroads conducted jointly by the FRA and the ICC posed the question of what the shippers would do if the railroad ceased operation. Of 437 users of small railroads, 22 responded that they would have no alternative but to close, 5 that they would have to cut back production, and 4 that their only choice would be to purchase the line. Almost two-thirds (286 out of 437) reported that they would divert their traffic to another mode, either all-truck or truck to another railroad or intermodal service. Of those shippers who indicated that they would find another transportation alternative, 276 reported that they could send the traffic entirely by truck.

Previous studies of the effects of rail line abandonments demonstrate that virtually all of the traffic previously handled on the rail lines has continued to move by other means after cessation of rail service. Even those shippers who indicated prior to the abandonment that they could not survive without the rail line have generally found alternatives once rail service was no longer available. Only in rare and isolated instances was production of a commodity curtailed, the plant shut down, or employment lost, and then only where the products were oversized or otherwise difficult for trucks or other modes to accommodate.

The traffic handled by all small railroads represents a total of approximately 9 million carloads per year. Many of the railroads, however--including most of those with high traffic volumes--are strong operations with no deferred maintenance and are extremely unlikely to fail. If operations ceased on all of the small railroads with rehabilitation needs beyond their reported internal funding capacity, and if virtually all of their traffic were shifted to truck, that would represent less than 1.5 million carloads per year. Using the 1986 average from the Carload Waybill Statistics of about 80 tons per carload for small railroads' traffic and an estimated 20 tons per truckload, that amounts to approximately 5 million truckloads of traffic per year diverted to the road system for at least some portion of the total movement.

It is difficult to evaluate how far traffic diverted from small railroads might move by road without having much more detailed information about the precise location, commodities, length of haul, and nature and cost of the options available. According to the 1986 Carload Waybill Sample, the average distance that non-Class I railroads moved traffic on their own rail lines was 73 miles, while the total length of the rail hauls involved--including distances shipped over connecting railroads--was 521 miles. If traffic estimated above as potentially divertable as a result of the failure of a small railroad moved only to the junction with the connecting railroad, the total additional truck movements on the road system would represent approximately 350 million truck-miles per year, or less than one-tenth of one percent of the total 520 billion truck-miles on U.S. highways in 1986. If all diverted traffic moved by truck for 500 miles on the road system, that would correspond to 2.5 billion truck-miles per year, or about half of one percent of the total.

In their responses to FRA's requests for comments on the issues raised in this study, several states provided quantitative assessments of the costs to accommodate additional traffic on the roads and highways. Alabama estimated that it would incur $50,000 in additional highway costs per mile of roadway within a 20-year period from diversions of as little as 800 rail carloads. Washington State estimated costs of $100,000 per mile in road costs to accommodate grain traffic diverted from rail to road,

although the documents submitted do not indicate a specific volume of traffic or time frame for that expense.

In the report, North Dakota Rail System Needs: 2020 Consensus Transportation Program, issued in October 1987, the state of North Dakota projected that the total 30-year impact of abandonment of 1,400 miles of marginal rail lines would be at least $90 million in additional costs for state highways over a 30-year period ($33 million for added pavement thickness and $57 million due to reduced life and earlier repair or replacement needs), plus $23 million for county roads over the same time period. The North Dakota report noted that the highway costs would vary depending on the design and condition of the roads that would handle the traffic diverted to truck. The state estimated the following road expenses, in costs per mile for the different types of roads:

Principal arterial	$ 28,000
Minor arterial	$ 55,000
Major collector	$ 53,000
Rural roads with gravel or other minimum surface	$100,000-150,000

Several of the states also expressed a concern that loss of rail service could mean higher costs to shippers. It is widely believed that higher rates are associated with truck service than with rail service, although John Due's work suggests that rates for small railroad service tend to be much closer to competing truck rates than is generally perceived. However, as an additional competitor in a market, a small railroad also may

create downward pressure on rates. It is possible that, if the small railroad ceased operations, the resulting reduction in the number of competing carriers available to some shippers and locations could result in increasing rates. These issues are outside the scope of the Congressional mandate, and the study did not reveal any basis for confirming or denying these points.

E. POTENTIAL FUTURE SALES OF LINES TO SMALL RAILROADS

The Committee report requested that this study estimate the miles of rail line currently owned by Class I railroads that are likely to be transferred to new or existing small railroads. Any response must be speculative. The explosive growth of small railroads has abated in the past two years, partly in response to a series of unresolved disputes and legal challenges over railroad labor's rights and role in line sales. The U.S. Supreme Court has agreed to hear two cases involving whether the Railway Labor Act or the Interstate Commerce Act has preeminence as controlling law governing labor protection issues raised by rail line sales, and whether the ICC's authority can supersede the Norris-LaGuardia Act's prohibition of Federal injunctions against lawful strikes.

All line transfers from Class I railroads to new small railroads have not been halted by the uncertainties. Some Class I railroads have continued to plan line sales and to negotiate with potential purchasers. Although the subject of

legal challenges, two major transfers occurred in 1988: 1) the sale of 208 miles of Chicago and North Western line in Wisconsin, known as the Duck Creek South Division, to the Fox River Valley Railroad, a subsidiary of Itel Rail Corporation; and 2) the sale of 369 miles of CSX line between Eidenau, PA, and Buffalo, NY, to the Buffalo and Pittsburgh Railroad.

A complete assessment of the likely scope of future line sales by the Class I railroads would require access to the confidential internal planning of individual carriers. However, a number of the major Class I railroads agreed to participate in a survey covering these issues, for the purposes of this report. To conduct the survey, a group of Class I railroads retained RBC Associates, a transportation consulting group associated with the Regional Railroads of America. Ten of the major Class I railroads responded to the RBC survey. Among the six largest carriers, only Southern Pacific (SP) is not included in the results.[12]

Of the ten railroads that responded to the survey, seven reported plans to transfer lines to non-Class I railroads over the next five years, amounting to a total of 17,265 miles:

Atchison, Topeka and Santa Fe	4,000
Burlington Northern	2,244
Chicago and North Western	1,797
Conrail	-- *
CSX	2,115
Grand Trunk Western	142
Kansas City Southern	--
Norfolk Southern	1,251
Soo Line	--
Union Pacific	5,716
TOTAL	17,265

* Conrail advised that it has no plans to sell or abandon significant mileage other than the miles already shown on the railroad's System Diagram Map filed with the ICC as potential candidates for abandonment.

Among the Class I railroads surveyed, the objective of the line sale programs is to preserve and enhance traffic on their core rail systems by selling marginally profitable lines to carriers who can operate with lower costs, more frequent service, and more localized marketing programs. The candidates for line sales fall between the railroads' profitable core lines and the lines that are so unprofitable that they are clearly destined for abandonment. Thus, the lines proposed for transfer are either self-sustaining or capable of being self-sustaining under the appropriate conditions.

In comparison to the Class I railroads' core rail lines, the lines that are candidates for sale or transfer generally have lighter traffic density, and they have often experienced a long-term decline in traffic. Some also have rehabilitation requirements that cannot be met by the Class I railroad if it is to maintain its internal threshold rate of return for

reinvestment. On the other hand, in comparison to lines that are clear candidates for abandonment, the lines proposed for transfer generally have higher traffic density, a traffic base that offers the potential for growth, and capital needs that may be fundable in the context of the lines' current or projected revenues and the low cost structure of a small railroad.

In responding to the RBC survey, the railroads emphasized that the line sale process is dynamic, and that plans change in relation to changes in planning guidelines, operating costs, transportation demands, capital requirements, and external factors. The railroads indicated that additional rail lines are under study as possible candidates for sale, beyond the 17,265 miles reported as likely to be transferred, and that those lines could be added to the list of potential future line sales at some time during the five-year planning period. Because line sale planning is a dynamic process, some lines now included in the total may also be withdrawn.

The 17,265 miles of rail line reported as likely to be transferred from Class I railroads to new small railroads would represent a 60 percent increase in the mileage of rail lines now owned or leased by small railroads. If all the lines were actually transferred, the non-Class I segment of the railroad industry would account for more than one-fourth of the total miles of rail line in the country. While it is not possible to

assess the final outcome of the Supreme Court's deliberations on issues affecting line transfers or to predict the events that would follow the Court's decision, the potential for substantial growth in the number and mileage of small railroads is clearly strong.

1. The AAR figures include as failures the "cessation of reliable transportation service due to changes in economic conditions." The figures do not, however, include situations in which the owner or operator changes but the same lines remain in continuous "reliable service" by a small railroad both before and after the transfer of ownership. In some cases, the AAR has counted as a failure instances in which service was halted but resumed at a later date or the company subsequently went back into operation at a different location.

2. The top five industry sectors are construction, retailing, service, wholesale trade, and manufacturing.

3. The railroads that have failed since January 1, 1980, with immediate transfer of operating responsibility to another railroad, are Michigan Interstate (lines west of Ann Arbor); Michigan Northern (lines south of Petoskey); Ohio Rail; Wabash Valley (Illinois); South Jersey (New Jersey); Eastern Shore (Virginia and Maryland); Pend Oreille (Washington); Madison (Indiana); and Chillicothe Southern (Missouri).

4. Five of the railroads that have failed since January 1, 1980, with immediate transfer to another railroad--Michigan Interstate; Michigan Northern; Madison; Pend Oreille; and Chillicothe Southern--operated on lines owned by government units. These railroads withdrew either voluntarily or at the request of the owners, because operations were unsatisfactory to the government and/or the firm.

5. This total counts only once the two cases where lines were operated by one small railroad that failed and was succeeded by a second small railroad, which subsequently failed and transferred operations and ownership to a third small railroad. Those two sets of carriers are the 225-mile Chicago, Madison and Northern and its successor, the Central Wisconsin, and the 22-mile Indiana Midland and its successor, the Indiana Eastern.

6. A small portion of the abandoned lines of two of those railroads was taken over by a successor and is still in service by the new operator: 16 miles of the Erie Western, now operated by the Tippecanoe (Indiana), and 30 miles of the Northern Missouri, now operated by the Chillicothe Southern.

7. When two causes were identified as of major importance, both were included, so the total exceeds the number of railroads for which causes of failure were documented.

8. Not included in the statistics are several new railroads formed in recent years that never truly got their operations "off the ground." This occurred a number of times in the 1970's. For example, the 16-mile Indiana Interstate, established in 1979, only operated for a few months, while the 85-mile Great

Plains and the 60-mile Iowa Central were formed in 1974 and abandoned in 1976. While this phenomenon has been less common in the 1980's, John Due reports that the 26-mile Southwest Oklahoma, formed in 1980, as well as the 10-mile Raccoon River (Iowa), formed in 1981, both went out of operation within the same year in which they were established. The lines of the Keota Washington and its successor KeWash (Iowa), although somewhat longer lived, might also be considered in the same category. Other railroads, such as the Starbuck-Pomeroy line (Washington), were established but never actually went into operation.

9. The only shipper closed and rail operations ceased on the 20-mile Ontario Eastern Railroad (New York), abandoned in 1980; the 10-mile Franklin County Railroad (North Carolina), abandoned in 1987; and the 8-mile Falls Creek Railroad (Pennsylvania), abandoned in 1988.

10. Serious floods affected the San Diego and Arizona Eastern (California), a 148-mile railroad whose lines were acquired in 1984 and are now operated by the San Diego and Imperial Valley Railroad. Floods also caused partial failure and abandonment on the Northern Missouri Railroad's line north of Chillicothe, Missouri, and the Charlevoix line of the Tuscola and Saginaw Bay (Michigan).

11. The South Branch Valley (West Virginia), which was partially destroyed by flooding, was able to rebuild with the help of the state and the Federal Emergency Management Administration Civil Defense funds.

12. The Southern Pacific was purchased by Rio Grande Industries in late 1988, and the consolidated companies are in the process of reviewing their future plans.

APPENDIX A

RAILROAD

INFRASTRUCTURE

STUDY

Respondent Railroad:

Requested by: Senate Report No. 100-198

Conducted by: Federal Railroad Administration
U.S. Department of Transportation

Public reporting burden for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Policy, Federal Railroad Administration, Washington, D.C. 20590, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

OMB No. 2130-0528
(Expires August 31, 1989)

CLASS II/III RAILROAD INFRASTRUCTURE STUDY

Section 1 - Railroad Identification

The purpose of this section is to properly identify the railroad, its address and its appropriate classification.

1.1 Railroad Name and Address.

(Affixed by FRA)

1.2 Is the information in 1.1 above correct?

Yes ___
No ___ Corrected Information:

Name: _____

Address: _____

1.3 Is this a Class II or a Class III Railroad?

Class II _____ (Revenues greater than $17.7 million)

Class III _____ (Revenues less than $17.7 million)

1.4 Please indicate which characterization best describes this railroad.

a. Shortline RR _____
b. Regional RR _____
c. Switching and terminal RR _____

1.5 Please indicate the year this railroad came under its present ownership. _____

1.6 If the change in ownership was 1981 or later, please indicate the name of the seller: _____

1.7 Please indicate, by checking the appropriate line, the percent of revenues realized from passenger or excursion services.

a) _____ 0% (i.e. no passenger service)
b) _____ between 1% and 49%
c) _____ between 50% and 99%
d) _____ 100% (i.e. no freight service)

Section 2 - Type of Ownership/Control

The purpose of this section is to develop information on how many class II and III railroads fall within the various classes of ownership, e.g. independent, subsidiaries of larger railroads, etc., and how many provide service as operators, but do not own the underlying track and roadbed.

2.1 Please indicate which category best describes the carrier's ownership. (Please check appropriate category.)

a. Subsidiary of a Class I railroad. _____

b. Jointly owned by several Class I railroads. _____

c. Subsidiary of company which owns other Class II or III railroads. _____

d. Subsidiary of non-railroad company. _____

e. Independent ownership. _____

f. Government ownership. _____

g. Other (Please describe: _____) _____

2.2 Please indicate which category best describes the ownership of the track structure.

a) Track structure is owned by the carrier reporting on this form. _____

b) Track structure is owned by a public sector or government entity. _____

c) Track structure is owned by a private sector company other than the carrier reporting on this form. _____

d) Other track ownership. (Please describe: _____) _____

2.3 If (b) was checked in response to question 2.2 above, please indicate the best description of the public sector owner of the property.

a. state government _____
b. county _____
c. city _____
d. other type of government unit _____

2.4 Who is financially responsible for track and structure improvements on this railroad.

a) Carrier _____ b) Other Owner _____

Section 3 - Description of Property Being Maintained

The purpose of this section is to obtain a "snapshot" of the infrastructure of class II and III railroads. (Please note "<" designates less than, ">" designates greater than, "≤" designates less than or equal to, and "≥" designates greater than or equal to. The abbreviation mi. indicates miles.)

3.1 Miles of maintained track by existing timetable speed ranges.

TIMETABLE SPEED RANGES IN MPH

	≤ 10	11-25	26-40	> 40	TOTAL MILES
a) Mainline mi.					
b) Branchline mi.					
c) Yards/Sidings mi.					
d) Total mi.					

3.2 Of the total track miles shown in response to Question 3.1, please indicate the number of miles operated as excepted track.

a) Mainline _____ mi.

b) Branchline _____ mi.

c) Yards/Sidings _____ mi.

d) Total excepted track _____ mi.

3.3 Miles of slow orders (because of track and structure conditions) on maintained track.

MILES OF SLOW ORDERS

	≤ 5 MPH	6-10 MPH	11-25 MPH	TOTAL MILES
a) Mainline Miles				
b) Branchline Miles				
c) Yards/ Sidings Miles				
d) Total Miles				

3.4 Existing rail inventory: miles of track < 90 and ≥ 90 lbs./yd. separated by control cooled (CC) or not control cooled (NCC).

	MILES < 90 #		MILES ≥ 90 # RAIL		TOTAL
	CC	NCC	CC	NCC	
a) Mainline Miles	____	____	____	____	____
b) Branchline Miles	____	____	____	____	____
c) Miles Yards/ Sidings	____	____	____	____	____
d) Total Miles	____	____	____	____	____

3.5 Please estimate the total number of defective ties, separated by mainlines, branchlines and yards/sidings.

	Number of defective ties
a) Mainline	____
b) Branchline	____
c) Yards/Sidings	____
d) Total Defective Ties	____

3.6 Number of bridges with weight restrictions, i.e. below 100 ton capacity cars (263,000 lbs).

	Number of Bridges with Restrictions	
Load Limit (000 lbs.)	Mainline	Branchline
241-263	____	____
211-240	____	____
≤ 210	____	____

Section 4 - Employment

The purpose of this section is to quantify the average employment in 1987 and how many employees were assigned to track maintenance.

4.1 Average number of employees, 1987. _____

4.2 Number of employees assigned to track maintenance:

High _____ Low _____

4.3 Please indicate by placing a check mark on the appropriate line, the percentage of track maintenance performed by contractors.

_____ 0% - all track maintenance performed by carrier employees.

_____ some contract work, but less than 50%.

_____ 50% or over, but less than 100%.

_____ 100% - all track maintenance performed by contractors.

Section 5 - Traffic

The purpose of this section is to gather information about the volume of traffic and types of commodities moving over class II and III railroads. Although this is a study of deferred maintenance and delayed capital improvements, the condition of the infrastructure must be correlated to the transportation service provided.

5.1 Total Carloads 1987 _____

Percent of total carloads:

a. originated and forwarded to connection _____%

b. terminated, received from connecting carriers _____%

c. overhead (bridge) _____%

d. local (i.e. originated and terminated on line) _____%

total 100 %

5.2 Listed below are the twenty top railroad commodity groups. Please rank the top three commodities, based on the relative number of carloads, for this railroad in 1987, and estimate the number of carloads for the same top three commodities.

FOR EXAMPLE, IF GRAIN IS THE DOMINANT COMMODITY, PULP IS SECOND AND SCRAP IS THIRD, IN THE COLUMN HEADED "RANK" THE NUMERAL 1 WOULD BE INSERTED BEFORE GRAIN, 2 BEFORE PULP, AND 3 BEFORE WASTE AND SCRAP MATERIALS, ALONG WITH THE CORRESPONDING NUMBER OF CARLOADS IN THE ADJACENT COLUMN.

Rank (Top 3 only)	Carloads (top 3 only)	Commodity
		Grain
		Other Farm Products
		Metallic Ores
		Coal
		Crushed stone, gravel & sand
		Nonmetallic minerals
		Grain mill products
		Food and kindred products
		Primary forest products
		Lumber and wood products except furniture
		Pulp, paper & allied products
		Chemicals & allied products
		Petroleum products
		Stone, clay & glass products
		Coke
		Metals and products
		Motor vehicles and equipment
		Waste and scrap materials
		Forwarder & shipper assoc.
		All other carloads, including LCL

5.3 Regarding the top three commodities listed in response to Question 5.2 above, please indicate, by placing a check in the appropriate column, the average distance origin to destination (i.e. average total length of haul) for these commodities.

For Commodity Ranked:	Average distance origin to destination			
	less than 150 miles	150-500 miles	500 - 1000 miles	over 1000 miles
# 1				
# 2				
# 3				

5.4 Total number of in-service, operating locomotive units owned or leased:

Road Service _____
Switching _____
Total _____

5.5 Are hazardous materials transported? Yes ___ No ___
If yes, number of hazardous material carloads in 1987? _____

5.6 Intermodal traffic: Yes _____ No _____
If yes, number of TOFC/COFC, flatcar loads in 1987 _____

5.7 How many shippers did this railroad regularly serve in 1987? _____

Section 6 - Prior Track Maintenance/Capital Expenditures

The purpose of this section is to develop information about the level of track maintenance and capital improvements over the last three years (1985-1987), and the source of financing.

6.1 Please indicate the yearly expenses for roadway maintenance and repair (exclusive of any depreciation) for the most recent three year period.

	track maintenance and repair
1987	$ _____
1986	$ _____
1985	$ _____

6.2 Please indicate the yearly amount of capital improvements made to the track structure for the most recent three year period.

	capital improvements track
1987	$ _____
1986	$ _____
1985	$ _____

6.3 Please indicate by percentage the funding sources for the capital improvements shown in 6.2 above, (aggregate of 3 years).

Sources:	Percentage:
- Internally generated	_____ %
- Private borrowing	_____ %
- Public sector loans, guarantees or grants	_____ %
- New equity	_____ %
Total	100 %

6.4 Has this railroad ever obtained financing with the assistance of a Federal or State Government loan guarantee, direct loan, or grant?

Yes _____ No _____

6.5 If the answer to Question 6.4 was YES, please indicate agency and the type of financing by inserting the amount on the appropriate line.

	loan guarantee	direct loan	grant
Small Business Administration	$ _____	$ _____	$ _____
Federal Railroad Administration	$ _____	$ _____	$ _____
Other Federal Agency Specify _____	$ _____	$ _____	$ _____
State Agency Specify _____	$ _____	$ _____	$ _____

Section 7 - Deferred Maintenance/Capital Improvements

The purpose of this section is to estimate the rehabilitation that would be REQUIRED TO REMOVE SLOW ORDERS AND WEIGHT RESTRICTIONS. Rehabilitation here refers to the one-time cost to bring the track and track structure up to a condition which with on-going program maintenance will enable its continued operation at current timetable speeds.

7.1 Please describe the major components and the estimated cost of the rehabilitation work that would be needed to remove slow orders and weight restrictions on those parts of the system which the carrier intends to keep in operation for the foreseeable future.

a. Rail Replacement

Track miles new rail	_____ mi.	
Track miles relay	_____ mi.	
Track miles to be cascaded	_____ mi.	
Est. Cost (net of salvage) including OTM		$_____

b. Ties

Miles of tie improvement	_____ mi.	
Number of ties to be replaced	_____ ties	
Est. Cost		$_____

c. Ballast and Surface

Track miles to surface	_____ mi.	
Tons of ballast	_____ tons	
Est. Cost		$_____

d. Bridge Repair:

Type, number, and total linear feet to repair.

Wood	____ bridge(s)	_____ ln. ft.
Concrete	____ bridge(s)	_____ ln. ft.
Steel	____ bridge(s)	_____ ln. ft.

Est. Cost $_____

e. Bridge Replacement:

Type, number, and total linear feet to replace.

Wood	____ bridge(s)	_____ ln. ft.
Concrete	____ bridge(s)	_____ ln. ft.
Steel	____ bridge(s)	_____ ln. ft.

Est. Cost $_____

f. Grade Crossing Rehabilitation
Linear Ft. to renew:

Public Crossings	_____	ft.
Private Crossings	_____	ft.

Est. Cost $_____

g. Other track structure improvements:

Rail Anchors (anchoring only)	_____	(units)
Other, viz. _____	_____	(units)
Other, viz. _____	_____	(units)

Est. Cost $_____

h. Total Est. Cost (sum of a. through g.) $_____

7.2 For the total estimated cost to remove slow orders and weight restrictions shown in response to Question 7.1(h) above, please indicate by percent the portion that could be funded from internal sources of funds and the portion that would have to come from external sources. Estimates should be based on the current financial condition of the carrier.

Funding sources:	Percent
Internally generated funds	_____
External financing	_____
Total	100%

7.3 Please estimate what the average annual roadway maintenance and repair expense (i.e. normalized maintenance), and program (cyclical) maintenance would be for the foreseeable future (this is in addition to the one-time rehabilitation costs shown in 7.1) in order to continue to operate at timetable speeds and without weight restrictions.

a. Projected average track repair expense per year $ _____
b. Projected on-going program maintenance per year $_____

Section 8 - Rehabilitation of Recently Transferred Lines

For class II and III railroads created since enactment of the Staggers Act of 1980, the Congress has requested that this study examine whether purchasers of rail lines had full knowledge of the line's rehabilitation requirements at the time of purchase. Therefore, this section need only be answered by carriers that began operating the property in 1981 or later.

		YES	NO	UNKNOWN
8.1	At the time of purchase, was an estimate made of the cost of needed rehabilitation?	____	____	____
8.2	Did this estimate prove to be accurate?	____	____	____
8.3	Was the inaccuracy an under-estimate?	____	____	____

8.4 If there was an underestimate of rehabilitation needs, please indicate the magnitude of the underestimate.

a. more than 25% _____
b. more than 50% _____
c. more than 100% _____

****
****

Thank you for completing the survey. Cooperation from the industry will greatly assist the FRA in preparing a report to Congress on the infrastructure of Class II and III railroads. Please enclose the completed form in the pre-addressed, postage paid envelope. The return address is:

Infrastructure Study
Federal Railroad Administration
400 7th Street, S.W.
Washington, D.C. 20590

ATTN: Pam Roylance (RRP-12)

If you wish us to send you a copy of the completed report to Congress, please check the box. ☐

List of
Class II and III Railroads
that Responded to FRA Survey

RAILROAD (* = POST 1970)	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
AT&L Railroad *	III	LOC	49	52	1798
Aberdeen & Rockfish Railroad	III	LOC	46	46	4500
Aberdeen, Carolina and Western Rwy. Co. *	III	LOC	34	36	850
Akron & Barberton Belt Railroad	III	S&T	0	17	3305
Alameda Belt Line	III	S&T	0	10	2683
Alaska Railroad Corp.	II	RE6	539	684	56300
Alexander Railroad	III	LOC	19	22	2800
Algers, Winslow & Western Railway	III	LOC	19	27	33305
Aliquippa & Southern Railroad	III	S&T	0	34	8326
Allegheny Railroad *	III	LOC	154	161	4833
Almanor Railroad	III	LOC	12	13	490
Alton & Southern Railway	II	S&T	31	139	371186
Amador Central Railroad	III	LOC	12	15	480
Angelina & Neches River Railroad	III	LOC	19	24	5687
Apache Railway	III	LOC	40	53	15987
Apalachicola Northern Railroad	III	LOC	91	96	45303
Appanoose County Community Railroad *	III	S&T	12	14	220
Arcade & Attica Railroad	III	LOC	15	15	289
Arkansas & Louisiana Missouri Railway	III	LOC	53	65	7631
Arkansas & Missouri Railroad *	III	LOC	142	152	23000
Aroostook Valley Railroad	III	LOC	8	12	473
Ashland Railway Co. *	III	LOC	35	35	1500
Ashley, Drew & Northern Railway	III	LOC	40	67	21767
Ashtabula, Carson & Jefferson Railroad *	III	S&T	0	6	1189
Atlanta & St. Andrews Bay Railway	III	LOC	88	141	35651
Atlanta, Stone Mountain & Lithonia Ry.	III	S&T	3	3	1079
Austin & Northwestern Railroad Co. *	III	S&T	161	168	6800
Baltimore & Annapolis Railroad	III	LOC	6	6	500
Bangor & Aroostook Railroad	II	RE6	420	569	51257
Bath & Hammondsport Railroad	III	LOC	36	36	565
Batten Kill Railroad *	III	LOC	32	35	471
Bauxite & Northern Railway	III	LOC	3	15	2815
Bay Colony Railroad Corp. *	III	LOC	100	120	1928
Beaufort & Morehead Railroad	III	S&T	4	8	8806
Beech Mountain Railroad Company	III	LOC	8	9	5981
Belfast & Moosehead Lake Railroad	III	LOC	33	36	852
Belt Railway Company of Chicago	III	S&T	53	348	855788
Belton Railroad	III	S&T	0	7	83
Berlin Mills Railway, Inc.	III	S&T	0	10	6545
Bessemer & Lake Erie Railroad	II	RE6	196	378	107024
Birmingham Southern Railroad	III	S&T	0	84	67608
Black River & Western Railroad *	III	LOC	19	19	1195

RAILROAD (* = POST 1970)	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
Bloomer Line, The *	III	LOC	42	46	1944
Blue Mountain & Reading Railroad *	III	LOC	13	15	750
Brandywine Valley Railroad *	III	S&T	0	13	22546
Brownsville & Rio Grande Intl. Railroad *	III	S&T	25	33	4788
Buffalo Southern Railroad *	III	LOC	32	34	470
Burlington Junction Railway *	III	S&T	0	2	780
C&J Railroad *	III	LOC	8	9	292
Cadillac & Lake City Railway *	III	LOC	60	63	150
Cadiz Railroad *	III	LOC	28	28	326
Cairo Terminal Railroad *	III	S&T	19	28	860
Camas Prairie Railroad	III	LOC	237	257	15786
Cambria & Indiana Railroad Company	III	LOC	33	50	17075
Caney Fork & Western Railroad *	III	LOC	60	63	1813
Canton Railroad Company	III	S&T	6	16	4253
Cape Fear Railways *	III	LOC	19	23	2534
Carolina Rail Services, Inc. *	III	S&T	0	2	6428
Carthage, Knightstown & Shirley Railroad *	III	LOC	24	24	50
Cedar Valley Railroad *	III	LOC	117	121	12000
Central California Traction Co.	III	LOC	46	51	2316
Central Indiana & Western Railroad *	III	LOC	9	9	1578
Central Michigan Railway Company *	III	LOC	211	278	19600
Central Montana Rail, Inc. *	III	LOC	66	73	1680
Central Vermont Railway, Inc.	II	REG	294	419	39000
Chattahoochee Valley Railroad	III	S&T	10	12	2880
Chicago & Illinois Midland Railway	III	LOC	97	159	42559
Chicago & Western Indiana Railroad	III	S&T	10	10	0
Chicago Rail Link *	III	S&T	10	15	10000
Chicago Short Line Railway	III	S&T	0	11	44816
Chicago, Central & Pacific Railroad *	II	REG	694	993	113977
Chicago, Missouri & Western Railway *	II	REG	656	987	46613
Chicago, South Shore & South Bend RR *	II	LOC	96	142	48341
Chicago, West Pullman & Southern RR	III	LOC	11	30	367
Chillicothe-Brunswick Rail Maint. Auth. *	III	LOC	37	37	812
City of Prineville Railway	III	LOC	19	25	2612
Claremont & Concord Railway	III	LOC	2	3	397
Clarendon & Pittsford Railroad *	III	LOC	26	30	5071
Coe Rail *	III	LOC	4	5	185
Columbia & Cowlitz Railway	III	LOC	8	15	11537
Columbia & Silver Creek Railroad *	III	LOC	38	40	1350
Columbia Terminal Railroad *	III	S&T	22	23	600
Columbus & Greenville Railway *	III	LOC	207	312	13183
Conemaugh & Black Lick Railroad	III	S&T	14	32	20482

RAILROAD (* = POST 1970)	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
Connecticut Central Railroad *	III	LOC	11	12	1005
Corinth & Counce Railroad	III	LOC	16	25	23000
Crab Orchard & Egyptian Railroad *	III	LOC	10	14	6500
Curtis, Milburn & Eastern Railroad *	III	LOC	11	11	0
Cuyahoga Valley Railway Company	III	S&T	0	19	79833
D&I Railroad *	III	LOC	132	136	14307
Dakota Rail Inc *	III	LOC	44	46	500
Dakota Southern Railway *	III	LOC	270	273	790
Dakota, Minnesota & Eastern Railroad *	II	REG	832	957	43079
Dansville & Mt. Morris Railroad	III	LOC	8	9	62
Dardanelle & Russellville Railroad	III	LOC	5	6	382
Davenport, Rock Island & Northwestern Ry	III	S&T	43	84	172563
Delaware Coast Line Railroad *	III	LOC	23	23	1055
Delray Connecting Railroad	III	S&T	0	2	18340
Delta Valley & Southern Railway	III	LOC	2	2	1000
Denver Terminal Railroad Company *	III	S&T	0	11	466
Detroit & Mackinac Railway	III	REG	395	450	21000
Duluth & Northeastern Railway	III	S&T	11	19	6398
Duluth, Missabe & Iron Range Railway	II	REG	453	635	379722
Duluth, Winnipeg & Pacific Railway	II	LOC	178	212	124640
Dunn-Erwin Railway Corp. *	III	S&T	5	5	1600
East Camden & Highland Railroad *	III	LOC	48	77	4956
East Cooper & Berkeley Railroad *	III	LOC	14	16	778
East Erie Commercial Railroad	III	S&T	4	12	769
East Jersey Railroad & Terminal Co.	III	S&T	0	2	1737
East Tennessee Railway Corp. *	III	LOC	11	17	3400
Eastern Shore Railroad *	III	LOC	60	70	9950
El Dorado & Wesson Railway	III	LOC	5	13	6200
Elgin, Joliet & Eastern Railway	II	REG	225	737	174000
Everett Railroad *	III	S&T	0	14	905
Farmrail Corp. *	III	S&T	85	85	857
Florida Central Railroad Co. *	III	LOC	60	60	4000
Florida Midland RR Co. *	III	LOC	36	41	425
Florida West Coast Railroad Company *	III	LOC	45	51	8000
Fordyce & Princeton Railroad *	III	LOC	52	62	12871
Fore River Railway *	III	LOC	2	4	1000
Galveston Railway, Inc. *	III	S&T	0	39	55000
Garden City Western Railway	III	LOC	14	18	1028
Genesee & Wyoming Railroad	III	LOC	26	51	22994
Georgetown Railroad	III	LOC	8	25	36642
Georgia Eastern Railroad *	III	LOC	15	17	3600
Gettysburg Railroad *	III	LOC	25	27	1433

RAILROA (* = POST 1970)	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
Gloster Southern Railroad Co. *	III	LOC	35	35	2597
Golden Cat Railroad Corp., The *	III	LOC	11	11	245
Golden Triangle Railroad *	III	LOC	9	12	3360
Grafton & Upton Railroad Company	III	LOC	15	17	186
Grainbelt Corporation *	III	LOC	186	186	6531
Graysonia, Nashville & Ashdown Railroad	III	LOC	32	37	5733
Great River Railroad *	III	S&T	33	34	300
Great Western Railway *	III	LOC	111	126	3500
Green Bay & Western Railroad	III	LOC	252	306	28922
Green Mountain Railroad Corp.	III	LOC	50	60	1977
Greenville & Northern Railway	III	LOC	12	15	909
Hampton & Branchville Railroad	III	LOC	46	48	9416
Hartwell Railway	III	LOC	10	10	189
High Point, Thomasville & Denton RR	III	LOC	34	49	4526
Hollis & Eastern Railroad	III	LOC	14	17	2128
Hutchinson & Northern Railway	III	S&T	0	6	1934
Indian Creek Railroad *	III	S&T	0	5	1000
Indiana & Ohio Central RR., Inc. *	III	LOC	50	50	5000
Indiana & Ohio Eastern *	III	LOC	52	52	1600
Indiana & Ohio Railroad, The *	III	LOC	26	26	1200
Indiana & Ohio Railway, The *	III	LOC	27	27	2400
Indiana Harbor Belt Railroad	II	S&T	75	340	596001
Indiana Hi-Rail Corp. *	III	S&T	188	188	10000
Indiana Rail Road, The *	III	LOC	112	127	12904
Iowa Interstate Railroad, Ltd. *	II	REG	462	541	48080
Iowa Northern Railway Company *	III	LOC	134	158	14276
Iowa Traction Railroad Company *	III	LOC	10	13	500
Jackson & Southern Railroad *	III	LOC	18	18	350
Jefferson Warrior Railroad *	III	S&T	25	55	12900
KWT Railway, Inc. *	III	LOC	62	65	3208
Kalamazoo, Lake Shore & Chicago Railway *	III	LOC	13	13	6
Kansas City Terminal Railway	III	S&T	42	86	26992
Keokuk Junction Railway *	III	LOC	36	38	7400
Kiamichi Railroad Co. *	III	LOC	227	274	20727
Klamath Northern Railway	III	LOC	9	11	680
Kyle Railroad *	III	REG	423	461	15700
Lackawanna Valley Railroad *	III	LOC	24	24	777
Lake Erie, Franklin & Clarion Railroad	III	LOC	15	22	7798
Lake Superior & Ishpeming Railroad	III	LOC	55	75	102470
Lake Terminal Railroad	III	S&T	0	20	21839
Lancaster & Chester Railway	III	LOC	31	36	5695
Landisville Railroad *	III	LOC	3	4	191

RAILROAD (* = POST 197(	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
Lenawee County Railroad Inc. *	III	LOC	30	30	1200
Little Rock & Western Railway Corp. *	III	LOC	79	89	6364
Little Rock Port Railroad	III	S&T	6	10	4338
Livonia, Avon & Lakeville Railroad Corp.	III	LOC	9	10	1491
Logansport & Eel River RR Museum *	III	S&T	0	2	0
Long Island Rail Road	III	LOC	253	267	17126
Longview, Portland & Northern Railway	III	LOC	3	5	5798
Los Angeles Junction Railway	III	S&T	0	64	17887
Louisiana & Delta Railroad, Inc. *	III	LOC	97	127	7350
Louisiana & North West Railroad Company	III	LOC	62	66	6300
Louisville & Wadley Railroad	III	LOC	10	11	327
M Line Railroad, The *	III	LOC	2	2	927
M6 Rail *	III	S&T	7	7	4007
MNVA Railroad, Inc. *	III	LOC	95	105	5100
Madison RR.,Div. City of Madison P Auth *	III	LOC	26	31	96
Magma Arizona Railroad Company	III	LOC	28	30	431
Mahoning Valley Railway, The *	III	S&T	0	22	5047
Manufacturers Railway Company	III	S&T	7	23	21061
Marinette, Tomahawk & Western Railroad	III	LOC	10	15	10943
Maryland & Delaware Railroad *	III	LOC	130	130	5000
Maryland & Pennsylvania Railroad Co. *	III	LOC	26	26	6902
Maryland Midland Railway *	III	LOC	66	71	5349
Massachusetts Central Railroad Corp. *	III	LOC	29	31	3687
McCloud River Railroad Co.	III	LOC	106	111	1300
McKeesport Connecting Railroad	III	S&T	5	16	458
Meridian & Bigbee Railroad	III	LOC	51	55	37000
Michigan Interstate Railway *	III	LOC	53	77	10203
Mid Atlantic Railroad Co., Inc. *	III	LOC	76	82	12999
MidLouisiana Rail Corporation *	III	LOC	65	70	14000
MidSouth Rail Corp. *	II	REG	417	602	140457
Midland Terminal Company, The *	III	S&T	0	12	14572
Minnesota Commercial Railway	III	S&T	23	69	10105
Minnesota, Dakota & Western Railway	III	LOC	5	9	4244
Mississippi & Skuna Valley Railway	III	LOC	21	21	3700
Mississippi Delta Railroad *	III	LOC	47	52	5600
Mississippi Export Railroad	III	LOC	42	62	28035
Mississippian Railway Cooperative, Inc. *	III	LOC	24	26	714
Modesto & Empire Traction Co.	III	S&T	0	33	23400
Monongahela Connecting Railroad Co., The	III	S&T	0	25	29675
Monongahela Railway	II	LOC	157	208	180285
Montana Rail Link *	II	REG	888	1092	225546
Montana Western Railway Co., Inc. *	III	LOC	60	88	10615

RAILROAD (* = POST 1970)	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
Moscow, Camden & San Augustine Railroad	III	LOC	6	7	4612
Mount Vernon Terminal Railway	III	LOC	2	2	45
Mt. Hood Railroad *	III	LOC	22	27	1400
Muncie & Western Railroad	III	S&T	4	4	47
Municipal Bridge Railway, St. Louis	III	S&T	14	14	337446
NDC Railroad *	III	S&T	2	3	1000
Napa Valley Railroad Company *	III	S&T	21	23	0
Nashville & Ashland City RR *	III	LOC	1	1	0
Nashville & Eastern Railroad Corp. *	III	LOC	127	139	8203
Natchez Trace Railroad *	III	LOC	55	57	3650
New England Southern Railroad Co., Inc. *	III	LOC	101	104	3800
New Hampshire Northcoast Corp. *	III	LOC	30	31	4400
New Orleans Public Belt Railroad	III	S&T	35	102	24495
New York & Lake Erie Railroad *	III	LOC	51	58	370
Newburgh & South Shore Railroad *	III	LOC	3	13	2644
Nicholas, Fayette & Greenbrier Railroad	III	S&T	134	145	21617
Nicolet Badger Northern Railroad *	III	LOC	34	37	1264
Nittany & Bald Eagle Railroad *	III	LOC	42	44	1205
Norfolk & Portsmouth Belt Line Railroad	III	S&T	17	57	63924
North Carolina & Virginia Railroad Co *	III	S&T	52	56	4300
North Shore Railroad *	III	LOC	43	44	1095
North Stratford Railroad Corp. *	III	LOC	23	26	175
Northwestern Pacific Railroad	III	LOC	156	171	9192
Oakland Terminal Railway	III	S&T	0	8	3933
Octoraro Railway *	III	LOC	56	58	2410
Ohi-Rail Corp. *	III	LOC	39	44	242
Ohio Southern Railroad *	III	LOC	38	38	1500
Oil Creek & Titusville Lines *	III	LOC	16	19	207
Oklahoma Central Railroad Co. *	III	S&T	0	6	0
Old Augusta Railroad *	III	LOC	3	5	9511
Ontario Central Railroad *	III	LOC	13	14	228
Ontario Midland Railroad *	III	LOC	56	58	836
Oregon, California & Eastern Railway *	III	LOC	64	71	10000
Otter Tail Valley Railroad *	III	LOC	168	207	4900
Ottumwa Terminal Railroad Co. *	III	S&T	0	7	40
Paducah & Louisville Railway *	II	REG	311	535	149218
Panther Valley Railroad Corp. *	III	LOC	34	34	1285
Patapsco & Back Rivers Railroad	III	S&T	16	94	37351
Pecos Valley Southern Railway	III	LOC	30	36	1201
Pee Dee River Railway Corp. *	III	LOC	19	19	1200
Pend Oreille Valley Railroad *	III	LOC	61	66	2700
Peninsula Terminal Co.	III	S&T	0	2	922

RAILROAD (* = POST 1970)	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
Peoria & Pekin Union Railway	III	S&T	36	138	145000
Peoria, Peoria Heights & Western RR. *	III	S&T	8	8	150
Philadelphia, Bethlehem & New England RR	III	S&T	13	53	64780
Pickens Railroad Company	III	LOC	10	12	160
Pigeon River Railroad *	III	LOC	14	17	417
Pioneer Valley Railroad *	III	LOC	26	30	3418
Pittsburg & Shawmut Railroad	III	LOC	96	128	21345
Pittsburgh & Lake Erie Railroad	II	REG	251	589	80273
Pittsburgh & Ohio Valley Railway	III	S&T	0	7	20122
Pittsburgh, Allegheny & McKees Rocks RR	III	S&T	0	5	224
Pittsburgh, Chartiers & Youghiogheny Ry.	III	S&T	17	21	15925
Pocono Northeast Railway Inc. *	III	S&T	0	97	1500
Point Comfort & Northern Railway	III	LOC	13	17	19031
Port Jersey Railroad *	III	S&T	1	1	2000
Port Royal Railroad *	III	LOC	25	28	1686
Port Terminal Railroad Assoc.	III	S&T	45	141	420657
Port Terminal Railroad of South Carolina	III	S&T	0	4	6786
Port Utilities Comm. of Charleston, S.C.	III	S&T	0	6	7688
Port of Royal Slope Railroad *	III	LOC	24	26	195
Portland Terminal Railroad	III	S&T	1	38	150671
Poseyville & Owensville Railroad Co Inc *	III	LOC	12	14	789
Prescott & Northwestern Railroad	III	LOC	35	35	3609
Providence & Worcester Railroad *	III	REG	219	219	25024
R. J. Corman RR - Memphis Line *	III	LOC	64	69	5100
R. J. Corman Railroad Corp. *	III	LOC	20	21	729
Rarus Railway Corp. *	III	LOC	34	78	1951
Red River Valley & Western Railroad Co *	III	REG	658	678	25092
Richmond, Fredericksburg & Potomac RR	II	REG	238	446	215071
River Terminal Railway	II	S&T	0	35	119387
Rochester & Southern Railroad, Inc. *	III	LOC	103	123	15241
Rockdale, Sandow & Southern Railroad	III	LOC	6	9	10242
Rocky Mountain Railcar and Railroad,Inc. *	III	S&T	8	34	15
Sabine River & Northern Railroad	III	LOC	31	35	15611
Salt Lake, Garfield & Western Railway	III	LOC	13	15	717
San Diego & Imperial Valley Railroad *	III	LOC	35	35	4645
San Luis Central Railroad	III	LOC	12	16	1662
San Manuel Arizona Railroad	III	LOC	29	35	4387
Sand Springs Railway	III	LOC	5	33	10056
Sandersville Railroad	III	LOC	9	23	30117
Santa Maria Valley Railroad	III	LOC	17	26	14046
Seminole Gulf Railway, L. P. *	III	LOC	59	137	14375
Sequatchie Valley Railroad *	III	LOC	40	42	3800

RAILROAD (* = POST 1970)	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
Shore Fast Line Railroad *	III	LOC	26	27	1617
Sierra Railroad Company	III	LOC	49	54	1577
Sisseton Southern Railway Company *	III	LOC	38	39	1205
Somerset Railroad Corp. *	III	LOC	16	16	21705
South Branch Valley Railroad *	III	LOC	53	56	1031
South Buffalo Railway	III	S&T	5	67	73402
South Carolina Central RR. Co., Inc. *	III	LOC	59	67	25000
South Central Tennessee Railroad *	III	LOC	51	56	2136
SouthRail *	II	REG	732	883	74000
Southeast Kansas Railroad Co. *	III	LOC	104	111	650
Southern San Luis Valley Railroad	III	LOC	1	2	64
St. Maries River Railroad *	III	LOC	71	78	14287
Steelton & Highspire Railroad	III	S&T	0	26	13806
Stockton Terminal & Eastern Railroad	III	LOC	14	22	5832
Strasburg Rail Road Company	III	LOC	5	6	54
Tacoma Municipal Belt Line Railroad	III	S&T	0	22	51985
Tennken Railroad *	III	LOC	51	56	4307
Terminal Railroad Assn. of St. Louis	III	S&T	55	183	197939
Terminal Railway Alabama State Docks	III	S&T	4	59	59209
Terre Haute, Brazil & Eastern R. R. *	III	LOC	30	38	1000
Texas & Northern Railway Company	III	LOC	8	48	17685
Texas City Terminal Railway	III	S&T	6	32	39840
Texas Mexican Railway	III	LOC	168	232	30291
Texas North Western Railway *	III	LOC	42	46	2151
Texas South-Eastern Railroad	III	LOC	17	22	2241
Texas Transportation Co.	III	S&T	1	3	371
Texas, Oklahoma & Eastern Railroad	III	LOC	86	109	49708
Tioga Central Railroad Co. *	III	LOC	27	30	59
Tippecanoe Railroad *	III	LOC	16	18	984
Tonawanda-Monroeton Shipper Lifeline *	III	LOC	6	6	105
Tradewater Railway *	III	LOC	89	93	19704
Transkentucky Transportation Railroad *	III	LOC	50	54	42879
Trona Railway	III	LOC	31	40	16592
Tulsa-Sapulpa Union Railway	III	LOC	10	13	2881
Turtle Creek & Allegheny River Railroad	III	LOC	2	3	50
Tuscola & Saginaw Bay Railway *	III	REG	421	452	9000
Union Railroad	II	S&T	58	206	175057
Upper Merion & Plymouth Railroad	III	S&T	3	13	3841
Utah Railway Company	III	LOC	30	53	33868
Valdosta Southern Railroad	III	LOC	10	12	7783
Vandalia Railroad *	III	LOC	3	8	239
Ventura County Railroad	III	LOC	12	13	3141

RAILROAD (* = POST 1970)	CLASS	RR TYPE	MAIN + BRANCH MILES	TOTAL MILES	1987 CARLOADS
Vermont Railway, Inc.	III	LOC	131	150	9006
WCTU Railway Company *	III	S&T	12	14	6914
Waccamaw Coast Line Railroad Co., Inc. *	III	S&T	14	14	6000
Walking Horse & Eastern Railroad *	III	LOC	7	8	550
Warren & Saline River Railroad Company	III	LOC	5	7	5134
Washington Central Railroad Co. *	III	LOC	306	340	17390
West Jersey Short Line *	III	LOC	18	19	718
West Shore Railroad Corp. *	III	LOC	20	21	25
West Tennessee Railroad *	III	LOC	45	52	5663
West Virginia Northern Railroad, Ltd.	III	LOC	18	20	6297
Western Rail Road Co. *	III	LOC	2	2	36685
Willamette Valley Railroad *	III	S&T	2	3	432
Willamina & Grand Ronde Railway Co. *	III	S&T	5	6	464
Wilmington & Western Railway Corp. *	III	S&T	10	12	200
Wilmington Terminal Railroad, Inc. *	III	S&T	0	3	10547
Winchester & Western Railroad *	III	LOC	100	102	10459
Winston Salem Southbound Railway	III	LOC	88	103	23650
Wisconsin & Calumet Railroad *	III	LOC	261	263	5099
Wisconsin & Southern Railroad *	III	LOC	147	174	6231
Wisconsin Central Ltd. *	II	REG	1801	2265	143716
Youngstown & Austintown Railroad *	III	S&T	5	5	788
Youngstown & Southern Railway	III	LOC	36	60	345
*** Total ***			24629	33323	8932075