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of Transportation

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Administration**

**Federal Railroad  
Administration**

**National Highway  
Traffic Safety  
Administration**

**Federal Transit  
Administration**

# Rails-with-Trails: Lessons Learned

*Literature Review, Current Practices, Conclusions*

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August 2002

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# Foreword

This report has been prepared at the direction of the U.S. Department of Transportation for the purpose of examining safety, design, and liability issues associated with the development of shared use paths and other trails within or adjacent to active railroad and transit rights-of-way. This document is intended to explore lessons learned from the experience of rails-with-trails (RWTs), and suggest practices to enhance safety and security for railroads, transit, and trail users.

The U.S. Department of Transportation does not actively promote RWT projects, but recognizes that RWTs already exist and that more are being planned and implemented. This report provides information for public agencies, railroads, legal interests, and trail organizations to make informed decisions.

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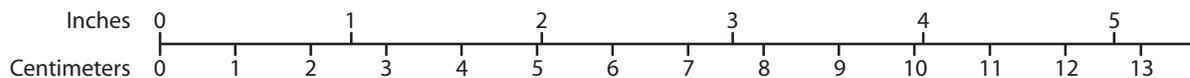
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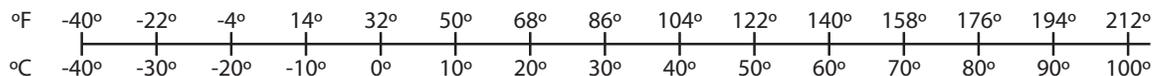
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<p><b>TEMPERATURE (EXACT)</b></p> <p><math>[(x-32)(5/9)]^{\circ}\text{F} = y^{\circ}\text{C}</math></p>	<p><b>TEMPERATURE (EXACT)</b></p> <p><math>[(9/5)y + 32]^{\circ}\text{C} = x^{\circ}\text{F}</math></p>

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# Rails-with-Trails: Lessons Learned

*Literature Review, Current Practices, Conclusions*

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# Executive Summary

This report offers conclusions about the lessons learned in the development, construction, and operation of “rails-with-trails” so that railroad companies, trail developers, and others can benefit from the history of trails in existence today. “Rail-with-trail” (RWT) describes any shared use path or trail located on or directly adjacent to an active railroad corridor. About 65 RWTs encompass 385 km (239 mi) in 30 States today. These trails are located adjacent to active rail lines ranging from a few slow-moving short-haul freight trains weekly, to high-frequency Amtrak trains traveling as fast as 225 km/h (140 mi/h). Dozens of RWTs are proposed or planned. While most are located on public lands leased to private railroads, many are on privately owned railroad property. Hundreds of kilometers of RWTs traverse Western Australia, Canada, and Europe.

RWT advocates and railroad company representatives often offer contrasting viewpoints. Trail planners view railroad property, often located in scenic areas with favorable topography, as a better alternative than bike lanes on roadways. They note that legal protections of varying degrees exist in all States, and that a litany of successful RWTs should provide comfort.

Railroads generally oppose RWTs for the following business reasons: the trails are not related to railroad operations and generally do not generate revenue for the railroads; railroad rights-of-way may be needed for future enhancements to system capacity; poor design or maintenance of trails could lead to increased trespassing, with consequent increases in injuries and deaths; narrowing the railroad’s portion of the right-of-way drives up the cost of maintaining track and structures (including complicating safety protection for roadway workers); and significant new populations of pedestrians close to the active track structure may result in additional stress on train crews seeking to ensure the safety of train movements. Railroad company representatives respond to assurances of legal protections by noting that the court system has not yet tested the lease and/or use agreements for existing RWTs. Railroads have borne the burden of litigation for many incidents on their property, even for crashes with at-fault



Baltimore York RWT, MD



trespassers or automobile drivers who ignored obvious warning systems. Further, they note that the railroad may be determined by civil courts to owe a higher duty of care to trail users than to trespassers, particularly at new, designated crossings.

Policy officials at the U.S. Department of Transportation's Federal Railroad Administration (FRA) have shared the railroads' public safety concerns. They also have pointed out that, for certain main lines, creation of a trail, under circumstances that could foreclose adding additional main line tracks or passing sidings to increase capacity, could result in a constriction of future freight rail service across the Nation or dramatically increased cost as a result of less-than-optimum routing. Nationally, railroads carry the highest percentage of freight of any mode on a "tonnage times distance" basis, and—for the bulk commodities they are well suited to handle—they do so at lower cost than trucks in terms of transportation charges, fossil fuel use, and greenhouse emissions. Although most existing service railroads could never replace the flexibility of trucking, the railroads will remain an essential transportation provider as the economy continues to grow into the future.

In the meantime, public pressure is increasing for railroads to free up space adjacent to rail lines for trail usage, pitting the railroad industry's safety, capacity, and liability concerns against trail proponents' desires to create shared use paths and other trails. This situation gave rise to the need to study the issue of RWTs to determine where they are appropriate, recommend design treatments and management strategies, find ways to reduce liability impacts on the railroad industry, and address other public interest considerations.

### **Data Collection and Analysis**

The data collection and analysis for this study included the following:

- An analysis of existing literature, focused on RWT studies and projects, legal documents, and railroad safety experience.
- Focused case studies of 21 geographically diverse RWT projects representing a variety of railroad and trail characteristics. For each trail, researchers conducted interviews with railroad officials, trail managers, and law enforcement officials. They also gathered data about before-and-after conditions related to safety, trespassing, vandalism, and conflicts.
- Other research topics included the following:
  - Relevant laws and statutes, their effectiveness, and transferability;
  - Relevant legal case studies and precedents;
  - Ownership/use arrangements;
  - Railroad company policies toward RWTs, through a telephone survey of officials;
  - Analysis of current design practices;
  - Operations and maintenance issues, through interviews with train engineers and operations personnel; and
  - Educational efforts underway, through a survey and ongoing discussions with railroad officials, trail managers, and Operation Lifesaver officials.



**Process**

This report underwent extensive public review from 1999 to 2002. The input process included the following:

- Ongoing communication with more than 200 interested parties through an e-mail newsletter;
- Release and public review of three drafts (February 2001, December 2001, and April 2002);
- Incorporation of hundreds of comments from interested parties, including railroad officials, trail planners and managers, legal experts, and others;
- A legal symposium in Washington, D.C., (April 2001) for railroad representatives, followed by review and input on the proceedings from that meeting; and
- Presentations at numerous conferences, including the Transportation Research Board (2000 and 2001), Pro Bike/Walk (2000), Rails-to-Trails (2001), five regional Operation Lifesaver conferences (1999-2001), AASHTO (2000), RailVolution (2000 and 2001), and several State bicycle, trail, and pedestrian-focused conferences.

**RWT Development Process**

The current RWT development process varies from location to location, although common elements exist. Trail advocacy groups and public agencies often identify a desired RWT as part of a bikeway master plan. They then work to secure funding prior to initiating contact with the affected railroad.

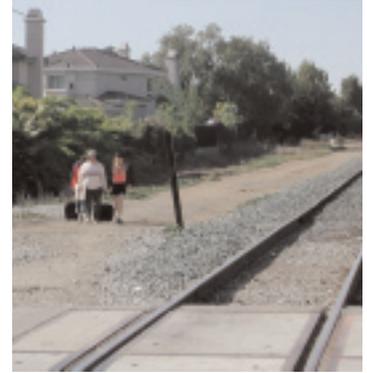
The railroad agency or company typically lacks an established, accessible review and approval process. While some RWTs move forward quickly (typically those where the trail development agency owns the land), many more are outright rejected or involve a lengthy, contentious process. RWT processes typically take three to ten years from concept to construction.

**Feasibility Review**

Trail managers should undertake a comprehensive feasibility analysis of proposed RWTs. An RWT feasibility study should describe the setting, relationship to local planning documents, land ownership patterns, railroad activity, and other information necessary to determine feasibility. The study should identify and evaluate multiple alternative alignments, including at least one that is not on the railroad right-of-way, and determine a preferred alignment.

**Assessing Potential Benefits**

Identifying potential benefits to railroad companies is crucial to developing a successful RWT. Such benefits may include the following:



The proposed Union Pacific RWT is feasible in parts...



and must be rerouted in others. Cupertino, CA



The Reading and Northern Railroad Company found a reduction in illegal dumping after the trail went in. Lehigh River Gorge Trail, Jim Thorpe, PA



- Reduced liability costs;
- Financial compensation;
- Reduced petty crime, trespassing, dumping, and vandalism;
- Reduced illegal track crossings through channelization of users to grade-separated or well-designed at-grade crossings;
- Increased public awareness of railroad company service;
- Increased tourism revenue;
- Increased adjacent property values; and
- Improved access to transit for law enforcement and maintenance vehicles.

#### Involving the Stakeholders

Involving the railroad and affected agencies early in the process is a common theme heard from surveys and interviews on existing RWTs around the country.

Stakeholders may include:

- Railroad companies, including representatives of real estate, operations, maintenance, and legal departments;
- Railroad customers (businesses that ship by rail or receive shipments by rail that are located on the line segment, such as passenger organizations, transit authorities, and State departments of transportation that may have an interest in funding new service on the line—either on the same tracks or on new tracks built within the right-of-way);
- Utility companies, such as telephone, cable, water, sewer, electric, and gas;
- Law enforcement officials;
- Other adjacent landowners;
- Trail user groups; and
- Transportation, public transit, parks and recreation, and health departments.

Stakeholders should be involved through a technical advisory committee or frequent communication via meetings, newsletters, phone calls, and e-mails.

#### Capacity Constraints

Privately-owned Class I railroads (see *Appendix A: Definitions*) tend to be reluctant to grant non-rail usage of their rights-of-way because loss of right-of-way width at any given location could reduce the ability of the railroad to add main track and sidings necessary to provide increased capacity and serve customer needs across the breadth of their systems. Freight railroads spent the decades of the 1980s and 1990s reducing excess capacity in order to control costs and survive in a competitive marketplace. This has resulted in concentrating more traffic on fewer lines and reducing the options for reaching given markets from other locations (e.g., there are essentially three corridors to the west coast from the Mississippi).



State departments of transportation and area transit authorities may have long-term plans for new service that could be foreclosed by permanent trail improvements on the particular line. To the extent the full width of the right-of-way may be needed for these purposes (including responding to air quality nonattainment requirements), the significant investments that would be required for a trail to cohabit with an active rail line may not be warranted.

It should be noted that the property interest held by railroads at many locations is an easement or similar right subject to an express reversionary interest should the line cease to be used for rail service. In many cases, the purpose for which the railroads hold the easement is to provide for intrastate rail transportation. If a portion of the right-of-way is allocated for trail use, and if this restricts allocation for later railroad demands for increased capacity, that is inconsistent with the purpose of the easement.

### Liability

In the context of RWT, liability refers to the obligation of a trail manager or railroad to compensate a person who is harmed through some fault of the trail manager or railroad. Railroads have a number of liability concerns about the intentional location of a trail near or on an active railroad corridor:

- Trail users may not be considered trespassers if a railroad permits trail use within a portion of their right-of-way, and thus the railroad would owe a higher duty of care to trail users.
- Incidents of trespassing and injuries to trespassers will occur with greater frequency.
- Trail users may be injured by railroad activities, such as falling or protruding objects, hazardous materials, or a derailment.
- Injured trail users might sue railroad companies even if the injury is unrelated to railroad operations, incurring expensive legal costs.

The level of railroad company concern is dependent in part on the class of railroad and the type of operations they perform. The Class I railroads' perceived deep financial pockets make them a frequent target of lawsuits, and they see no financial benefits from RWTs that would offset any increased exposure. Transit and tourist train operators may support RWT projects because they often are quasi-governmental entities, with a mission of attracting people to their service. Finally, locally based short-line operators have less reason to be concerned about future track expansion, and may be inclined toward the potential financial rewards of permitting an RWT project along their rights-of-way.

### Available Legal Protections

There is a range of options that can reduce railroad liability exposure. These include the following:

- State-enacted recreational use statutes (RUS) and rails-to-trails statutes. All 50 States have RUSs, which provide protection to landowners who allow the public to use their land for recreational purposes. An injured person must prove the landowner deliber-



Trail designers worked with Conrail designers to ensure that their interests were addressed, concurrent to negotiation of the RWT agreement. Schuylkill River Trail. Norristown, PA



ately intended to harm him or her. Additionally, about 20 States have enacted specific laws to clarify, and in some cases, limit, adjacent landowner liability. This can range from protecting adjacent landowners from liability to making the RUS for the State specifically applicable to a rails-to-trails program.



Portland's regional government, Metro, acquired the railroad property in the 1990s to allow for RWT development. Future Springwater Corridor Trail Extension, Portland, OR

- **Property acquisition.** Governments under civil law are treated differently from private landowners due to their unique status as sovereign entities. Many States have recently enacted statutes that limit the amounts or kinds of damages recoverable against governments (Isham, 1986). Public agencies considering RWTs should be prepared to identify financial incentives for a railroad to consider. This may be in the form of land transfers, tax breaks from donated land, cash payments, zoning bonuses on other railroad non-operating property, taking over maintenance of the trail right-of-way and structures, and measurably reducing the liability a railroad experiences.
- **Easement and license agreements** that indemnify the railroad owner against certain or all potential claims. In most cases, the railroad will retain property control, thus the form of legal agreement will be an easement or license agreement that, to the extent permissible under State law, reduces the railroad's liability exposure. Because of the many jurisdictions that have some involvement in an RWT—including the owner of the right-of-way, the operator of the railroad, and the trail manager(s)—the license or easement agreement should identify liability issues and responsible persons through indemnification and assumption of liability provisions.
- **Insurance.** Railroads may be concerned that trail users might sue them regardless of whether the injuries were related to railroad operations or the proximity of the trail. In most instances, the trail management entity should provide or purchase comprehensive liability insurance in an amount sufficient to cover foreseeable railroad liability and legal defense costs.

The research team for this report was unable to find a history of crashes or claims on the existing RWTs. There is only one known case of a specific RWT claim (in Anchorage, Alaska). The railroad was held harmless from any liability for the accident through the terms of its indemnification agreement. Research on other relevant cases has found that the State RUSs and other statutes do hold up in court.

### Design

No national standards or guidelines dictate RWT facility design. Guidance must be pieced together from standards related to shared use paths, pedestrian facilities, railroad facilities, and/or roadway crossings of railroad rights-of-way. Useful documents include the *Manual on Uniform Traffic Control Devices*, the *AASHTO Guide for the Development of Bicycle Facilities* (1999), Americans with Disabilities Act publications for trails and pedestrian facilities, and numerous FRA documents regarding grade crossing safety and trespass prevention.



Trail designers should work closely with railroad operations and maintenance staff to achieve a suitable RWT design. The research in this report has shown that well-designed RWTs meet the operational needs of railroads, often providing benefits in the form of reduced trespassing and dumping. A poorly designed RWT will compromise safety and function for both trail users and the railroad.

#### Setback distance

The term “setback” refers to the distance between the paved edge of an RWT and the centerline of the closest active railroad track. Although RWTs currently are operating along train corridors of varying types, speeds, and frequencies, there simply is no consensus on an appropriate setback recommendation. Thus, trail planners should incorporate into the feasibility study an analysis of technical factors relating to setback distance. These should include the following factors:

- Type, speed, and frequency of trains in the corridor;
- Separation technique;
- Topography;
- Sight distance;
- Maintenance requirements; and
- Historical problems.

Another determining factor may be corridor ownership. Trails proposed for privately owned property, particularly on Class I railroad property, will have to comply with the railroad’s own standards.

Trail planners need to be aware that the risk of injury should a train derail will be high, even for slow-moving trains. Discussions about liability assignment need to factor this into consideration. For example, an RWT in a constrained area along a low frequency and speed train could be located as close as 3 m (10 ft) from the track centerline assuming that (a) the agency indemnifies the railroad for all RWT-related incidents, (b) separation (e.g., fencing or a solid barrier) is provided, (c) the railroad has no plans for additional tracks or sidings that would be impacted by the RWT, and (d) the RWT is available to the railroad for routine and emergency access. In contrast, along a high speed line located on private property, the railroad may require 15.2 m (50 ft) or more setback or not allow the trail at all.

Because every case is different, the setback distance should be determined on a case-by-case basis after engineering analysis and liability assumption discussions. The minimum setback distance ranges from 3 m (10 ft) to 7.6 m (25 ft), depending on the circumstances. In many cases, additional setback distance may be recommended. The lower setback distances may be acceptable to the railroad company or agency, RWT agency, and design team in such cases as constrained areas, along relatively low speed and frequency lines,



Setback of 7.6 m (25 ft) or greater often is needed for higher speed train corridors. Stavich Trail, OH and PA



Narrower setback distances may be acceptable, as on this Union Pacific railroad bridge with slow-moving trains. Steel Bridge Riverwalk. Portland, OR



and in areas with a history of trespassing where a trail might help alleviate a current problem. The presence of vertical separation or techniques such as fencing or walls also may allow for a narrower setback.

### Separation

This refers to the treatment of the space between an RWT and the closest active railroad tracks, including fences, vegetation, ditches, and other items. More than 70 percent of existing RWTs utilize fencing and other barriers (vegetation, vertical grade, walls, and/or drainage ditches) for separation from adjacent active railroads and other properties. Fencing style varies considerably from chain link to wire, wrought iron, vinyl, steel picket, and wooden rail.

From the trail manager's perspective, fencing is considered a mixed blessing. Installing and maintaining fencing is expensive. Improperly maintained fencing is a higher liability risk than no fencing at all. In all but the most heavily constructed fencing, vandals find ways to cut, climb, or otherwise overcome fences to reach their destinations. Fencing may detract from the aesthetic quality of a trail.

To the extent possible, RWT planners should adhere to the railroad company's request or requirements for fencing.

### Crossings

The point at which trails cross active tracks is the area of greatest concern to railroads, trail planners, and trail users. When it is necessary to intersect a trail with an active railway, there are three options: an at-grade crossing, a below-grade (underpass) crossing, or an above-grade (overpass) crossing.



Wrought iron fencing offers an aesthetically pleasing option. Mission City Rail Trail, San Fernando, CA



### *At-Grade Crossings*

With many railroads actively working to close existing at-grade roadway-track crossings, consistent with U.S. Department of Transportation policy, new at-grade crossings will be difficult to obtain. Each trail-rail intersection is unique; most locations will require engineering analysis and consultation with existing design standards and guidelines. Issues that should be considered include the following:

- Train frequency and speed;
- Location of the crossing;
- Specific geometrics of the site (angle of the crossing, approach grades, sight distance);
- Crossing surface;
- Nighttime illumination; and
- Types of warning devices (passive and/or active).

### *Grade-Separated Crossings*

Overpasses and underpasses are expensive and typically are installed in limited circumstances, such as locations where an at-grade crossing would be extremely dangerous due to frequent and/or high speed trains, limited sight distances, or other conditions. However, grade-separated crossings eliminate conflicts at trail-rail crossings by completely separating the trail user from the active rail line.

Issues to consider include the following:

- Existing and future railroad operations: Bridges and underpasses must be designed to meet the operational needs of the railroad both in present and future conditions. Trail bridges should be constructed to meet required minimum train clearances and the structural requirements of the rail corridor.
- Safety and security of the facility: Dark, isolated underpasses that are hidden from public view can attract illegal activity. Underpasses should be designed to be as short as possible to increase the amount of light in the underpass.



Dual track grade crossing.  
*Burlington, VT*



Undercrossing of Alaska Railroad Corporation tracks, Tony Knowles Coastal Rail Trail. *Anchorage, AK*



Overcrossing of Union Pacific tracks, Eastbank Esplanade. *Portland, OR*



- **Maintenance:** The decision to install a bridge or underpass should be made in full consideration of the additional maintenance these facilities require.

#### Other Design Issues

A whole host of other issues that must be considered in RWT design include the following:

- RWT-roadway crossings
- Utilities
- Future tracks and sidings
- Trestles and bridges
- Tunnels
- Environmental constraints
- Trailheads and parking areas
- Landscaping
- Drainage
- Lighting
- Signs and marking

#### Operations/Maintenance

Once a RWT is constructed, trail maintenance and operations should seek to minimize impacts on railroad companies and offer a safe and pleasant use experience. Representatives from railroad operating, track, and signal departments should be invited for technical discussions and advice in the feasibility analysis phase of an RWT.

RWT proponents should consider the maintenance and access needs of the railroad operator in the alignment and design of the RWT. In areas with narrower than 7.6 m (25 ft) setback, the trail likely will be used as a shared maintenance road. In all cases, the railroad



Steel Bridge Riverwalk. *Portland, OR*



should be provided adequate room and means for access to and maintenance of its tracks and other facilities. The feasibility study and easement/license agreement also should identify the designs and costs of any improvements that would become the responsibility of the RWT agency.

Trail managers should develop a phasing and management plan and program for the RWT. Trail managers should consult with railroad engineering and operating departments to determine the appropriate steps, approvals, permits, designs, and other requirements. They should ensure that the proposed RWT does not increase railroad employee stress or decrease their safety.

An education and outreach plan should be part of the trail plan. Trail managers should provide supplemental information through maps, bicycle rental and support services, trail user groups, and other avenues. Trail managers also should develop, in coordination with local law enforcement and the railroad, a security and enforcement plan, and develop and post RWT user regulations.

## **Conclusion**

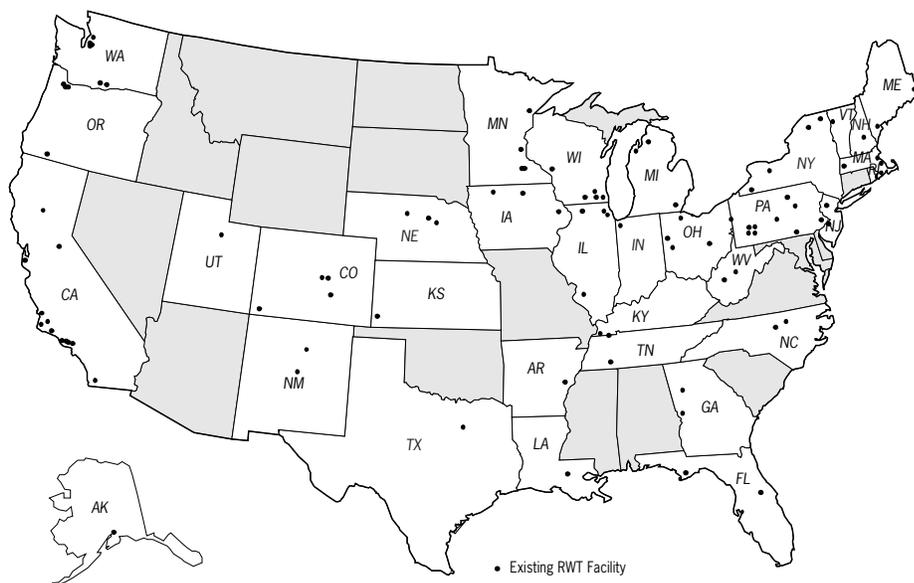
Based on the lessons learned in this study, it is clear that well-designed RWTs can bring numerous benefits to communities and railroads alike. RWTs are not appropriate in every situation, and should be carefully studied through a feasibility analysis. Working closely with railroad companies and other stakeholders is crucial to a successful RWT. Trail proponents need to understand railroad concerns, expansion plans, and operating practices. They also need to assume the liability burden for projects proposed on private railroad property. Limiting new and/or eliminating at-grade trail-rail crossings, setting trails back as far as possible from tracks, and providing physical separation through fencing, vertical distance, vegetation, and/or drainage ditches can help create a well-designed trail. Trail planners need to work closely with railroad agencies and companies to develop strong maintenance and operations plans, and educate the public about the dangers of trespassing on tracks.

Railroad companies, for their part, need to understand the community desire to create safe walking and bicycling spaces. They may be able to derive many benefits from RWT projects in terms of reduced trespassing, dumping, and vandalism, as well as financial compensation. Together, trail proponents and railroad companies can help strengthen available legal protections, trespassing laws and enforcement, seek new sources of funding to improve railroad safety, and keep the railroad industry thriving and expanding in its services (freight and passenger).

# Introduction

“Rail-with-trail” (RWT) describes any shared use path or other trail located on or directly adjacent to an active railroad corridor. Shared use paths are physically separated from motorized vehicular traffic by an open space or barrier. They may be used by multiple nonmotorized users (AASHTO Bike Guide, 1999, p. 3). The term “trail” will be used interchangeably with “shared use path” in this report.

About 65 RWTs encompass more than 385 km (239 mi) in 30 U.S. States today (see **Figure 1.1**). These trails are located adjacent to active rail lines ranging from a few slow-moving short-haul freight trains weekly, to high frequency Amtrak trains traveling as fast as 225 km/h (140 mi/h). Another 82 RWTs are proposed or planned; if all are built, there will be RWTs in 40 States. Hundreds of kilometers of RWTs traverse Western Australia, Canada, and European countries such as Switzerland, Denmark, and the Netherlands.



**FIGURE 1.1** Map of existing rails-with-trails



“Being on rail property is a very dangerous pastime which can and does result in injury and loss of life. Juries have and will continue to award multi-million dollar settlements to the families of those who have been hurt or killed while on railroad property despite all good efforts to protect and warn.”

**WHEELING CORPORATION**

“Rail corridors can be attractive sites for trails because they often provide a direct connection between popular community locations... At a time when demand for trails is increasing, finding land for them can be difficult. Placing trails alongside active rails can be an excellent method of securing land for safe, popular, and effective trail development.”

**RAILS-TO-TRAILS CONSERVANCY**



Traction Line Recreational Trail. Morristown, NJ

Communities interested in improving conditions for bicycling and walking see rail corridors as prime opportunities. Rail corridors often offer scenic, unbroken stretches along rivers or canals. The alternative is typically a busy roadway without bicycle lanes. Thus, communities and their representative public agencies increasingly look to utilize railroad corridors to provide safe, shared use paths.

The railroad industry serves as an efficient and important component of the passenger and goods movement business. Railroads possess strategic corridors through urban and suburban areas that are virtually irreplaceable in the utility they provide. Freight and passenger rail movement is growing rapidly, thus many States, railroad companies, and transit agencies are considering additional service.

Railroad companies continue to improve their technological safety, including active warning devices, train lighting, and video monitoring of tracks. The railroad industry created Operation Lifesaver to educate the public about the dangers of disregarding crossing safety equipment. Railroad labor unions also advocate safety improvements. Railroad companies and unions are concerned that the addition of new adjacent trails will erode safety by attracting thousands of people close to railroad operations.

RWT advocates and railroad industry representatives often offer contrasting viewpoints. Trail advocates argue that legal protections exist in all States, and that a litany of successful RWTs show that they can be safely designed and operated. Railroad company representatives respond to assurances of legal protection by noting that the court system has not yet tested the lease and/or use agreements for existing RWTs. Further, railroads have borne the burden of litigation for many incidents on their property, even for crashes with at-fault trespassers or automobile drivers who have blatantly ignored obvious warning systems. In addition, they note that the railroad may be determined by civil courts to owe a higher duty of care to trail users than to trespassers, particularly at new, designated crossings.

In the meantime, public pressure is increasing for railroads to free up space adjacent to rail lines for trail usage, pitting the railroad industry’s safety, capacity, and liability concerns against trail proponents’ desires to create shared use paths. This situation gave rise to the need to study the issue of RWTs to determine where RWTs are appropriate, recommend



design treatments and management strategies, find ways to reduce trail impacts on the railroad industry, and address other public interest considerations.

**Trail Trends**

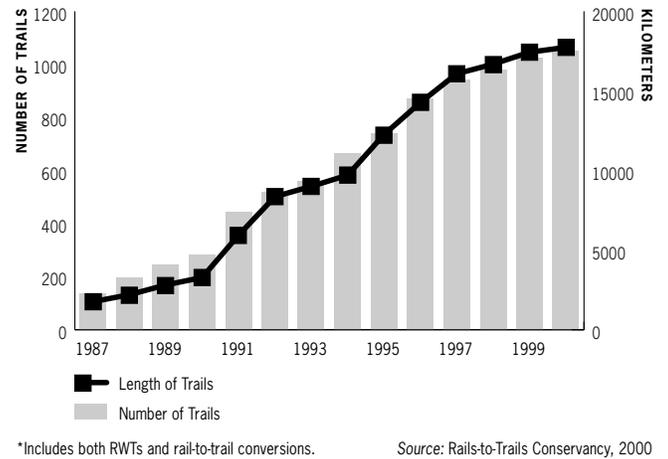
Bicycling and walking for transportation and recreation have increased over the past decade. This increase has been fueled to a large extent by a growing interest and concern about health and the environment. Since 1991, the Federal government has provided significant amounts of funding for shared use paths through the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21). Additionally, communities nationwide are converting abandoned railroad corridors to trails (rails-to-trails).

The number of shared use paths nationwide has grown dramatically over the last decade, with more than 1,000 of these paths in operation nationwide. These include about 17,750 km (11,029 mi) of rail-trails (see **Figure 1.2**), including trails on both active and abandoned railways. The number of RWTs alone increased from 37 RWTs (246 km/152 mi) in 1996, to 49 (283 km/175 mi) in 1997, to over 60 (387 km/240 mi) in 2000 (see **Figure 1.3**). The number of rail-trail and RWT users has increased to an estimated 4.5 million annually.

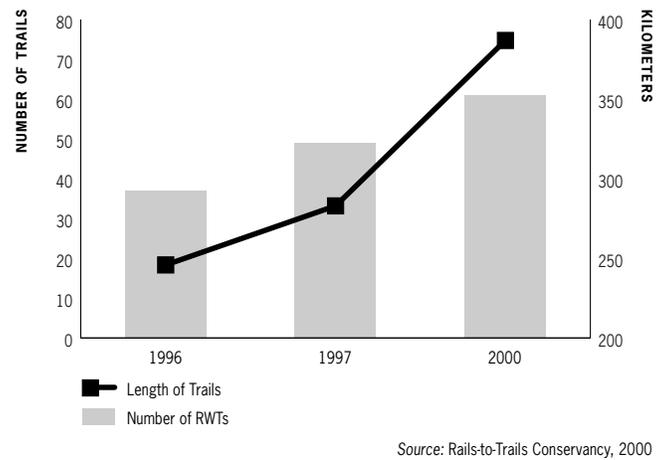
**Railroad Trespassing and Safety Trends**

A trespasser is someone who is on railroad property without permission. In 2000, the U.S. railroad industry experienced close to 900 trespassing casualties, including approximately 500 fatalities (see **Figure 1.4**). Research produces no singular profile of a trespasser, although regional differences in trespasser profiles do exist. Close to the borders, railroads report problems with undocumented aliens. In the East, youth trespassers dominate because of nearby schools and shopping centers. In other areas of the country, reported trespassers include substance abusers, the homeless, sportsmen, snowmobilers, and cyclists. Some trespassers intend suicide.

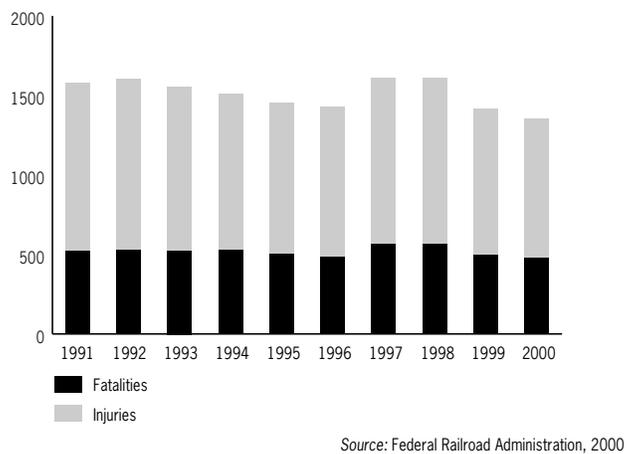
Because of this diversity, railroad companies use numerous measures, such as education programs and selective fencing, to help deter trespassing. The Burlington Northern and Santa Fe Railway Company and Norfolk Southern Railway Company law enforcement departments have implemented comprehensive trespass abatement programs. While most States have trespassing laws for private property owners, only 32 States have trespassing laws with specific legal language for railroad prop-



**FIGURE 1.2** Number and kilometers of U.S. rail-trails\*



**FIGURE 1.3** Number and kilometers of existing U.S. rails-with-trails



**FIGURE 1.4** Railroad trespassing casualties



Trespasser crossing Union Pacific tracks. Del Mar, CA

erty. Of those, only a handful prescribe a punishment for trespassing on railroad property and equipment. Enforcement of such laws is another problem. With this in mind, railroad companies are reluctant to support the idea of inviting thousands of people to walk and bicycle next to or on their property.

### Background of the Report

This study is a direct result of numerous public agencies and nonprofit groups seeking to develop RWTs and the resulting frustration on both sides of the issue. In 1997, the Federal government approved funding for planning and conducting a feasibility analysis for a 71 km (44 mi) proposed shared use path along the San Diego Northern Railroad right-of-way between San Diego and Oceanside, California. The high speed railroad corridor carried more than 30 passenger trains and six freight trains per day under public agency ownership, the North County Transit District (NCTD). In the project feasibility process, NCTD raised specific questions about liability. A follow-up legal analysis concluded that, to limit liability, the shared use path should conform to accepted guidelines for RWT crossings, fencing, setbacks, and other items (Ferster and Jones, 1997). Unfortunately, no such guidelines exist.

Appeals to the California Public Utilities Commission (CPUC) and the California Department of Transportation (Caltrans) to provide guidelines came to the attention of the FRA, which held a meeting later in 1997 in Washington, D.C., to discuss the matter. Attendees of that meeting — representatives from the railroad industry, Federal agencies, trail advocacy groups, and State and local agencies — recommended a “best practices” study to review existing RWTs and draw conclusions from their operations.

The Institute of Transportation Engineers (ITE), relying on a voluntary committee of interested railroad and trail representatives, agreed to sponsor such a “Best Practices Informational Report” in 1998. However, due to lack of funds to develop hard data on subjects such as trespassing, participants pushed for a more in-depth study of the issue. In 1999, the U.S. Department of Transportation (USDOT), including the FRA, Federal Highway Administration (FHWA), National Highway Traffic Safety Administration (NHTSA), and Federal Transit Administration (FTA) joined forces to sponsor this *Rails-with-Trails: Lessons Learned* report.



Four thousand student bicycle commuters use the Libba Cotton Trail daily. Chapel Hill, NC



Elliot Bay Rail Trail. Seattle, WA

### Data Collection

The nationwide research team assembled for this report began with an analysis of existing literature, as summarized in *Section I*. The literature review focuses on RWT studies and projects, legal documents, and railroad safety experience.

Next, the research team selected 18 geographically diverse locations (see **Figure 2.1**, page 9) for focused case studies. They sought trails representing a variety of railroad and trail characteristics. Half the trails were in place at the outset of this study. The other half were planned to be complete by summer 2002 to allow for comparison of before and after conditions related to trespassing, accidents, vandalism, and other issues. Of these nine planned RWTs, only four were built in part by the conclusion of this study; the others experienced delays for various reasons.

For each trail, researchers conducted interviews with railroad officials, trail managers, and law enforcement officials. They also gathered data about before and after conditions related to safety, trespassing, vandalism, and conflicts. These case studies — summarized in *Section II* — offer guidance as to the best practices in developing and operating RWTs.

The ITE Rails-with-Trails Technical Committee draft paper, “Rails-with-Trails: A Best Practices Informational Report” (Jones, et al., 1999) also included case studies, which are included in *Section II*, bringing the number of case studies to 21. Furthermore, researchers used the information gathered by the Rails-to-Trails Conservancy (RTC) through surveys of trail managers. This information is contained in *Rails-with-Trails: Design, Management, and Characteristics of 61 Trails along Active Rail Lines* (Morris, 2000).

Finally, team members researched various other aspects of RWTs, including:

- Relevant laws and statutes — their effectiveness and transferability;
- Relevant legal case studies and precedents;
- Ownership/use arrangements;
- Railroad company policies toward RWTs, through a telephone survey of officials;
- Analysis of current design practices;



- Operations and maintenance issues, through interviews with train engineers and operations personnel; and
- Educational efforts underway, through a survey and ongoing discussions with railroad officials, trail managers, and Operation Lifesaver officials.

### Process

This report underwent extensive public review from 1999 to 2002. The input process included:

- Ongoing communication with over 200 interested parties through an e-mail newsletter;
- Release and public review of three report drafts (February 2001, December 2001, and April 2002);
- Incorporation of hundreds of comments from interested parties, including railroad officials, trail planners and managers, legal experts, and others;
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- Presentations at numerous conferences, including the Transportation Research Board (2000 and 2001), Pro Bike/Walk (2000), Rails-to-Trails (2001), RailVolution (2000 and 2001), five regional Operation Lifesaver conferences (1999-2001), AASHTO (2000), and several State bicycle, trail, and pedestrian-focused conferences.

### Intent

The intent of this report on RWTs is to summarize the lessons learned to date and offer conclusions regarding the development, construction, and operation of RWTs so that railroad companies, trail developers, and others can benefit from the history of trails in existence today. The research team strived to offer a neutral and balanced position that takes into consideration the perspectives of geographically diverse railroad officials, trail planners, law enforcement officials, and trail users. This report does not constitute a standard, specification, regulation, or endorsement of RWTs.

### Contents

The report is divided into the following sections:

- *Section I* offers key selections from the literature review.
- *Section II* summarizes information from 21 U.S. RWT case studies.
- *Section III* focuses on the RWT development process, including trail feasibility and selection, planning, and policy.
- *Section IV* addresses legal issues, liability, insurance, and legislation.
- *Section V* offers recommendations regarding RWT design, including setback, separation techniques, signage, and crossing treatments.



- *Section VI* discusses operational aspects, including maintenance, education, and enforcement.
- *Appendix A* provides definitions for trail and railroad terminology and many acronyms.
- *Appendix B* is a matrix of existing State laws and statutes related to trails and rails-with-trails.
- *Appendix C* includes sample easement and indemnification agreements.
- *Appendix D* lists photo credits.