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of Transportation

**Federal Highway
Administration**

**Federal Railroad
Administration**

**National Highway
Traffic Safety
Administration**

**Federal Transit
Administration**

Rails-with-Trails: Lessons Learned

Literature Review, Current Practices, Conclusions



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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1 inch (in)	=	2.5 centimeters (cm)
1 foot (ft)	=	30 centimeters (cm)
1 yard (yd)	=	0.9 meter (m)
1 mile (mi)	=	1.6 kilometers (km)

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1 square inch (sq in, in ²)	=	6.5 square centimeters (cm ²)
1 square foot (sq ft, ft ²)	=	0.09 square meter (m ²)
1 square yard (sq yd, yd ²)	=	0.8 square meter (m ²)
1 square mile (sq mi, mi ²)	=	2.6 square kilometers (km ²)
1 acre = 0.4 hectare (he)	=	4,000 square meters (m ²)

MASS - WEIGHT (APPROXIMATE)

1 ounce (oz)	=	28 grams (gm)
1 pound (lb)	=	0.45 kilogram (kg)
1 short ton = 2,000 pounds (lb)	=	0.9 tonne (t)

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1 teaspoon (tsp)	=	5 milliliters (ml)
1 tablespoon (tbsp)	=	15 milliliters (ml)
1 fluid ounce (fl oz)	=	30 milliliters (ml)
1 cup (c)	=	0.24 liter (l)
1 pint (pt)	=	0.47 liter (l)
1 quart (qt)	=	0.96 liter (l)
1 gallon (gal)	=	3.8 liters (l)
1 cubic foot (cu ft, ft ³)	=	0.03 cubic meter (m ³)
1 cubic yard (cu yd, yd ³)	=	0.76 cubic meter (m ³)

TEMPERATURE (EXACT)

$$[(x-32)(5/9)]^{\circ}\text{F} = y^{\circ}\text{C}$$

METRIC TO ENGLISH

LENGTH (APPROXIMATE)

1 millimeter (mm)	=	0.04 inch (in)
1 centimeter (cm)	=	0.4 inch (in)
1 meter (m)	=	3.3 feet (ft)
1 meter (m)	=	1.1 yards (yd)
1 kilometer (km)	=	0.6 mile (mi)

AREA (APPROXIMATE)

1 square centimeter (cm ²)	=	0.16 square inch (sq in, in ²)
1 square meter (m ²)	=	1.2 square yards (sq yd, yd ²)
1 square kilometer (km ²)	=	0.4 square mile (sq mi, mi ²)
10,000 square meters (m ²)	=	1 hectare (ha) = 2.5 acres

MASS - WEIGHT (APPROXIMATE)

1 gram (gm)	=	0.036 ounce (oz)
1 kilogram (kg)	=	2.2 pounds (lb)
1 tonne (t)	=	1,000 kilograms (kg)
	=	1.1 short tons

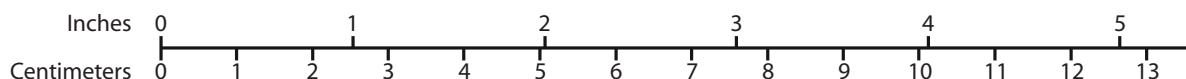
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1 cubic meter (m ³)	=	1.3 cubic yards (cu yd, yd ³)

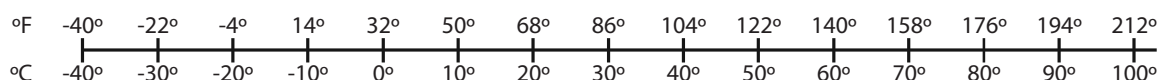
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Contents

EXECUTIVE SUMMARY	I
Data Collection and Analysis	II
Process	III
Liability	V
Design	VI
Operations/Maintenance	X
Conclusion	XI
INTRODUCTION	i
Trail Trends	iii
Railroad Trespassing and Safety Trends	iii
Background of the Report	iv
Data Collection	v
Process	vi
Intent	vi
Contents	vi
SECTION I: Literature Review Summary	1
Rail-with-Trail Studies	1
Individual Studies and Master Plans	2
Liability of Rails-with-Trails	4
Innovative Technological and Operational Improvements	5
International RWT Research	6
SECTION II: Case Studies	9
Overview of Findings	9
Case Study Summaries	11
SECTION III: RWT Development Process	27
Overview of Recommendations	27
Current Practice	28
Assessing Potential Benefits	29
Corridor Acquisition	32
Process Flow	32
RWT Feasibility: Examples	33
Involving the Stakeholders	35
Keeping Written Records	38

SECTION IV: Legislation, Liability, and Insurance	39
Overview of Recommendations	39
Overview of Concerns	40
Definitions and Laws	41
Available Legal Protections	44
Crash Trends	47
Property Control	48
Design	50
Review and Strengthen State Statutes	53
Crossings	53
Indemnification	54
Insurance	54
SECTION V: Design	57
Overview of Recommendations	58
Rail Characteristics and Setting	58
Setback: Considerations	62
Setback: Recommendations	64
Separation	66
Railroad Track Crossings	69
Trail-Roadway Crossings	81
Utilities	84
Accommodating Future Tracks and Sidings	84
Trestles and Bridges	85
Tunnels	87
Environmental Constraints	88
Support Facilities and Amenities	88
Trailheads and Parking Areas	88
Landscaping	89
Drainage	90
Lighting	90
Signing and Markings	90
Equestrian Considerations	91
Considerations for Steam Locomotives	91
SECTION VI: RWT Operational Aspects	93
Overview of Recommendations	93
Rail Operations Involvement	94
Maintenance Needs	94
Construction Management Strategies	96
Trail Safety Education and Outreach	96
Railroad Safety Education and Outreach	96
Security and Enforcement	97
Developing Trail Use Regulations	100
REFERENCES	101
APPENDIX A: Definitions	109
APPENDIX B: State-by-State Matrix of Applicable Laws and Statutes	113
APPENDIX C: Sample Legal Agreements	123
APPENDIX D: Photo Credits	155

List of Figures & Tables

FIGURE 1.1	Map of existing rails-with-trails.	i
FIGURE 1.2	Number and kilometers of U.S. rail-trails	iii
FIGURE 1.3	Number and kilometers of existing U.S. rails-with-trails	iii
FIGURE 1.4	Railroad trespassing casualties	iii
FIGURE 2.1	RWT case studies	9
FIGURE 2.2	Type of trespassing by percentage of incidents	10
FIGURE 2.3	“Would observed activity be accommodated by planned RWT?”	10
FIGURE 2.4	Age of observed trespassers	10
FIGURE 2.5	Observed gender of trespassers	11
FIGURE 2.6	Observed type of trespassers	11
FIGURE 3.1	Agency ownership of rail corridor, by percentage of trails	31
FIGURE 3.2	Steps in feasibility study	32
FIGURE 3.3	Involving railroad companies	36
FIGURE 4.1	Liability definitions	42
Table 4.1	Liability exposure reduction options	45
FIGURE 4.2	Highway-rail grade crossing collisions and casualties at public crossings	47
FIGURE 4.3	Highway-rail incident breakdown	47
FIGURE 4.4	Preferred easement agreement contents	51
FIGURE 4.5	Preferred license agreement contents	51
FIGURE 4.6	Requirement for indemnity, by percentage of RWTs	55
FIGURE 4.7	Source of liability insurance, by percentage of RWTs	55
Table 5.1	Examples of RWTs by corridor type and ownership	59
FIGURE 5.1	Type of railroad adjacent to existing RWTs	61
FIGURE 5.2	Frequency of trains, by percentage of existing RWTs	61
FIGURE 5.3	Type of terrain through which trails pass	61
FIGURE 5.4	Width of full corridor, by percentage of trails	61
FIGURE 5.5	Width of RWT, by percentage of trails	62
FIGURE 5.6	Setback and separation definition	62

FIGURE 5.7	Distance between edge of trail and track centerline, by percentage of trails	.62
FIGURE 5.8	RWT setback/train speed correlation	.63
FIGURE 5.9	Setback/frequency correlation	.63
FIGURE 5.10	Minimum RWT setback depends on specific situation	.64
FIGURE 5.11	Dynamic envelope delineation	.64
FIGURE 5.12	Minimum RWT setback – fill sections (depending on situation)	.65
FIGURE 5.13	Minimum RWT setback – constrained sections (depending on situation)	.65
FIGURE 5.14	Percentage of existing RWTs with barrier	.66
FIGURE 5.15	Barrier type, by percentage of existing RWTs	.66
FIGURE 5.17	Trail separation example – using vegetation as a separation technique	.66
FIGURE 5.16	Fencing styles	.67
FIGURE 5.18	Sample maintenance access transitions	.69
FIGURE 5.19	Approach grade at at-grade crossings	.72
FIGURE 5.20	45° Trail-rail crossing	.73
FIGURE 5.21	90° Trail-rail crossing	.73
FIGURE 5.22	Crossing equipped with passive warning devices	.74
FIGURE 5.23	Crossing equipped with active warning devices and fencing	.74
FIGURE 5.24	Highway-rail crossing (Crossbuck) sign	.75
FIGURE 5.25	MUTCD #2 approved railroad warning signs that may be appropriate for RWTs	.75
FIGURE 5.26	Sample trespassing and other signs	.76
FIGURE 5.27	Composite drawing showing clearances for active traffic control devices at highway-rail grade crossings	.78
FIGURE 5.28	Typical light rail transit flashing light signal assembly for pedestrian crossings	.78
FIGURE 5.29	Typical pedestrian gate placement behind the sidewalk	.78
FIGURE 5.30	Typical pedestrian gate placement with pedestrian gate arm	.78
FIGURE 5.31	RWT culvert under tracks	.79
FIGURE 5.32	RWT track undercrossing	.79
FIGURE 5.33	RWT track overcrossing	.79
FIGURE 5.34	RWT track overcrossing (meets Amtrak required clearance height for non-electrified track)	.79
FIGURE 5.35	Roadway crossing type 1 (reroute to nearest intersection)	.82
FIGURE 5.36	Roadway crossing type 2 (new signal)	.82
FIGURE 5.37	Roadway crossing type 3 (unprotected crossing)	.82
FIGURE 5.38	Roadway and track crossing	.82
FIGURE 5.39	Summary of potential trail user movements	.83
FIGURE 5.40	Angled intersection with roadway	.83
FIGURE 5.41	Trestle options	.86
FIGURE 5.42	Trailhead and parking design	.89
FIGURE 6.1	“Does railway help trail agency maintain corridor?” by percentage of trails	.94
FIGURE 6.2	Operation Lifesaver “Tips for Bicyclists” brochure	.98

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.



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

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-



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.

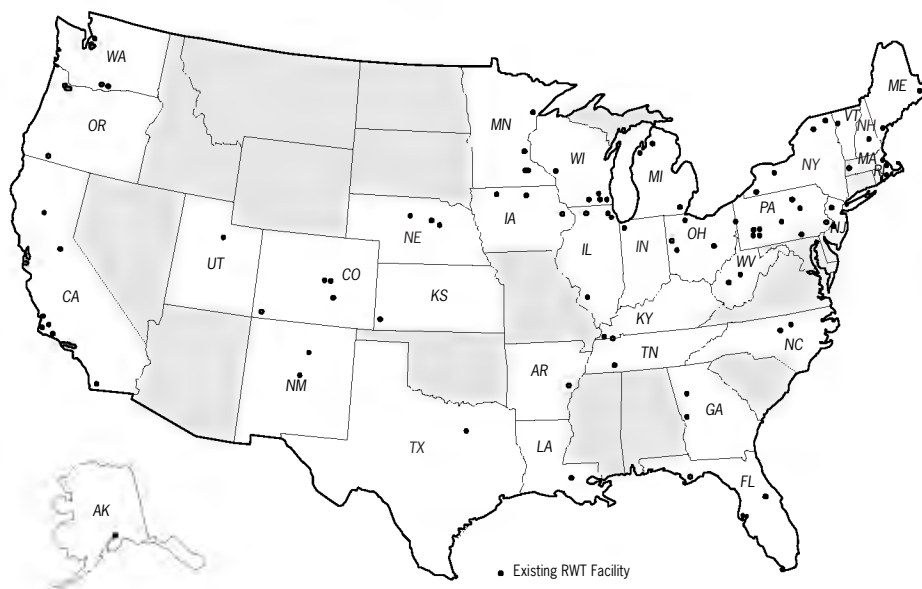


FIGURE 1.1 Map of existing rails-with-trails



“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-

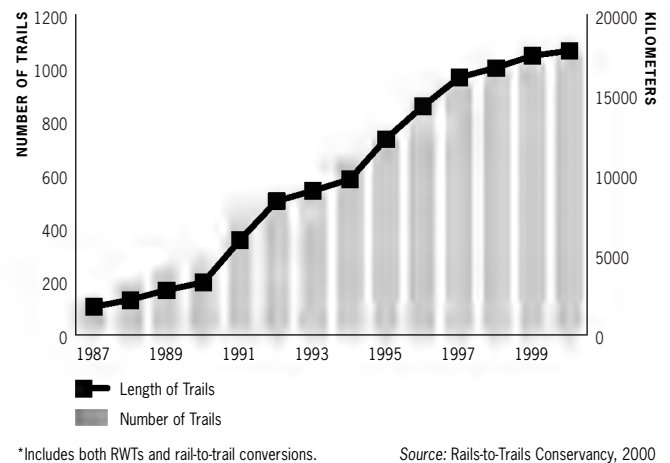


FIGURE 1.2 Number and kilometers of U.S. rail-trails*

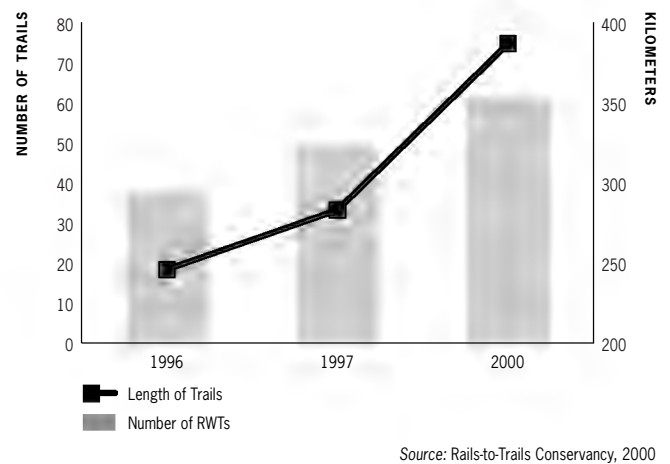


FIGURE 1.3 Number and kilometers of existing U.S. rails-with-trails

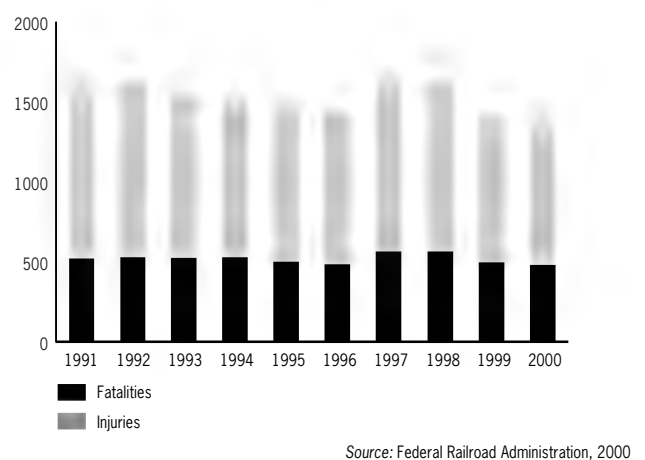


FIGURE 1.4 Railroad trespassing casualties



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;
- 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), 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.

SECTION I:

Literature Review Summary

Researchers focused on five areas of background research for this project:

- General RWT studies;
- Specific RWT project documentation;
- Legal analyses of the issues and cases that have defined the relationships between railroads, adjacent property owners, the public, and trail managers;
- Development of technologies to monitor trespass activity along active rail lines; and
- Current RWT practice in Australia, Canada, and Europe.

Since trails within active rail corridors represent a relatively new concept, most of the research relating to existing practices and facilities has been conducted within the past five years on a relatively small number of facilities. The following summary concentrates on those research findings with the most immediate application to RWTs.

Rail-with-Trail Studies

One of the earliest significant discussions on the topic of RWTs occurred as a result of an FRA-led forum held as part of the 1998 International Trails and Greenways Conference in San Diego. The major purpose of this forum was for both rail and trail stakeholders to identify the issues associated with RWTs and to determine their order of importance. Carolyn Cook (former Program Director, Crossing Safety, Railroad Commission of Texas; current Assistant Crossing and Trespass Prevention Region 5 Manager, Federal Railroad Administration) wrote an unpublished summary report, “A Working Outline of the Major Issues Related to Multi-Use Recreational Trails Located Near Active Rail Lines,” a work in progress of the Rails-with-Trails Task Force initiated at a pre-conference meeting at the First Annual International Trails and Greenways Conference (Federal Railroad Administration, 1998).



Joggers on the Burlington Waterfront Bikeway. Burlington, VT

Key aspects identified were liability issues, planning process, design issues, highway crossings, illegal crossing and trespassing issues, security, crime and vandalism concerns, safety and education issues, RWTs co-existing with railroad operations and management, and trail operations and management.

The Rails-to-Trails Conservancy (Kraich, 1997) published *Rails-with-Trails: Sharing Corridors for Transportation and Recreation*. It listed 49 existing RWTs through surveys of trail managers. The study provided detailed information on the physical and operating characteristics of the facilities. The study summary states that trails are compatible with active railroads, even high-speed and high-frequency/density mainline tracks.

The Rails-to-Trails Conservancy (Morris, 2000) published a study update, *Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines*. Again, relying on interviews with trail managers, the study offers an overwhelmingly positive overview of existing RWTs. The study makes the following conclusions:

- RWTs “are just as safe as other trails;”
- A wide range of successful designs exists;
- About one third of trail managers believe railroad officials are supportive of the RWT; and
- The vast majority of RWTs are insured through existing government coverage similar to other trails.

The railroad companies’ perspective was examined in *Rails with Trails* (Wait, 1998). The Wheeling Corporation, parent company of the Wheeling and Lake Erie Railway Company and the Akron Barberton Cluster Railway, privately produced and distributed this report. It presents a summary of the problems facing railroads, including vandalism, trespassing, injuries, and fatalities. The report outlines the circumstances (explained in more detail in *Section III*) under which the Wheeling Corporation will consider a trail. These include considerations of train speed and function, property availability, proper trail separation, suitable legal arrangements, property compensation, and clearly defined operations and maintenance responsibility.

Individual Studies and Master Plans

With respect to individual studies and master plans for RWT projects, very little has been written on safety and trespassing issues. Finding written documentation on RWT safety for individual projects was difficult because:

- A significant percentage of trails are built with no written master plan.
- For the trails that do have master plan reports, these reports are usually prepared before the trail is built, in the form of a master plan report and/or written agreement between the railroad and the trail developer/manager. The reports often do not cover, or only briefly touch on, safety issues related to the adjacent active line. After the trail has been built, documentation of safety issues is scarce.



- Master plan copies are rare for projects built before 1995. The master plan authors often are difficult to find, having turned over the management of the trail to other organizations or individuals.

For these reasons, the literature search concentrates on a sampling of RWT projects built later than 1995.

Three Rivers Heritage Trail Master Plan (Baldwin Borough Segment), Pennsylvania, 1999

The Baldwin Borough Segment of the Three Rivers Heritage Trail is a 4 km (2.5 mi) RWT in Pittsburgh, Pennsylvania, that is yet to be constructed. The CSX railroad company operates at least one train per day at 65 to 80 km/h (40 to 50 mi/h). CSX was concerned about liability and trespassing during the negotiations for this trail. It therefore stipulated a number of design requirements as part of their agreement to grant right-of-way to the Friends of the Riverfront.

The “Master Plan for the Three Rivers Heritage Trail — Baldwin Borough Segment” (October 1999 Draft) notes that there are two central issues related to the shared use of this corridor:

- Maintaining access for railroad maintenance. An access road that is separate from the trail will be built by CSX for maintenance of the rail line and the utilities that share the corridor.
- Security of the railroad property. A chain link fence that is 1.8 m (6 ft) high will be placed between the trail and the active rail line.

Five Star Trail – Terms of Agreement with Railroad, Pennsylvania, 1996

The Five Star Trail is a 6.4 km (4 mi) RWT that links Youngwood to Greensburg, Pennsylvania. This freight line carries two trains per day (southern section) at a speed of approximately 32 km/h (20 mi/h).

The construction plan for the Five Star Trail details a number of safety features that were part of the right-of-way agreement between the Regional Trail Council and Southwestern Pennsylvania Railroad (SPRR). The bylaws of the Regional Trail Council state that its purpose is to “maintain good relations and communications with the Westmoreland County Industrial Development Corporation (WIDC) and the SPRR, and to satisfy the requirements of the right-of-way entry agreement between the Regional Trail Council, the WIDC and SPRR.”

Officials expected the Five Star Trail to eliminate problems related to an unofficial jogging/walking trail that crisscrossed the active tracks and was only 0.9 to 1.2 m (3 to 4 ft) away from the active track.

The construction plan describes the following safety features for this RWT:

- Locate parking areas on the same side of the tracks as the trail, eliminating the need for people to cross the tracks.
- Construct the trail on one side of the tracks, with no crossings.
- Maintain a minimum distance of 1.95 m (6.5 ft) between the track centerline and the trail. Wherever physically possible, locate the trail further from the tracks.



- Maintain an area of rock ballast and vegetation between the trail and tracks.
- Place a 1.4 m (54 in) tall fence between the track and the trail in a few constrained locations with less than 3 m (10 ft) of buffer space available.
- Place markers every 61 m (200 ft) between the track and trail to explain rules and regulations.

The construction plan also notes that the proposed trail improvements would be beneficial to the railroad because the corridor had been poorly maintained for many years. In fact, the RTC removed more than 90 metric tons (100 U.S. tons) of trash from the corridor, improved drainage conditions, and continues to maintain the vegetation in the corridor.

Silver Creek Bike Trail, Minnesota, 1993

The Silver Creek Bike Trail is a 2.1 km (1.3 mi) RWT in Rochester, Minnesota. The Dakota, Minnesota and Eastern Railroad (DME) company operates a freight line that carries two trains per day. The funding application to the Minnesota Department of Transportation for this project describes the safety measures that had been agreed upon by the City and DME. The track right-of-way is 30 m (100 ft) wide with the rails in the center of the right-of-way. DME required a minimum 3.2 m (10.5 ft) setback from the track centerline to the edge of the trail, with no signs or other obstructions in that space. For most of the length, the trail is set back approximately 9.1 m (30 ft) without constructed barriers.

The application also describes the agreements made with DME for two at-grade crossings and one undercrossing (through an existing drainage culvert). Because of the slow speed of the trains (less than 16 km/h (10 mi/h)) and good visibility, the City installed no active warning devices at the at-grade crossing locations. According to the project contact, no safety problems have arisen since the installation of the RWT.

West Orange Rail-Trail Master Plan, Florida, 1996

The West Orange Trail extends along an active railroad for about a kilometer of its 8.8 km (5.5 mi) length. This section of trail is in downtown Winter Garden, Florida. CSX Corporation owns the freight line and carries one train per day at approximately 8 km/h (5 mi/h).

The “Master Plan for the West Orange Trail” describes the agreed-upon design features between CSX and Orange County. CSX granted an easement for trail construction. Since the trains move very slowly through downtown Winter Garden (8 km/h (5 mi/h)), they agreed on a low, 1.2 m (4 ft) tall chain link fence between the trail and the tracks. The minimum setback from the track centerline to the edge of the trail is 2.4 m (7.8 ft) as mandated by Florida statute.

Liability of Rails-with-Trails

Because RWTs have been recognized only recently in trail design, there is limited legal authority on this subject. The following three articles and publications are considered the most analogous to RWT issues.



The Rails-to-Trails Conservancy, in cooperation with the National Park Service's Rivers, Trails and Conservation Assistance Program, published *Rail-Trails and Liability: A Primer on Trail-Related Liability Issues and Risk Management Techniques*. Hugh Morris (2000) provides an overview of legal mechanisms that protect both trail managers and adjacent landowners, as well as a discussion on risk management techniques.

Morris concludes that most States have laws that substantially reduce public and private landowner liability for all types of trails, including RWTs. He states that experience shows that neither public agencies nor private landowners have suffered from trail development. "Adjacent landowners are not at risk as long as they abstain from 'willful and wanton misconduct' against trespassers such as recklessly or intentionally creating a hazard. Trail managers minimize liability exposure provided they design and manage the trail in a responsible manner and do not charge for trail access."

The *Coastal Rail Trail: Project Study Report* (Ferster and Jones, 1997) includes a review of the liability issues associated with RWTs under California law. They discuss the legal liability for governments operating the trails, the railroads, and adjacent property owners. Ferster and Jones also analyze the impact of the California Torts Claims Act and California's recreational use statute (see *Appendix B*) on the issue of liability.

The report concludes that government liability will be limited with regard to RWTs by general governmental immunities. In addition, it concludes that operators, railroads, and adjacent property owners are protected from liability by a recreational use statute (RUS) that provides protection to landowners who allow the public to use their land for recreational purposes. All 50 States have such RUSs, as discussed further in *Section IV*. Ferster contributed significantly to this *Rails-with-Trails: Lessons Learned* study.

In an article from *Public Management* magazine titled "Putting Value on Rail-Trails," Howser (1997) writes of the economic and environmental benefits to be gained from converting abandoned rails to trails. The author raises the potential to restart a rail line if it is economically viable, as well as potential opposition from landowners who own reversionary rights along the right-of-way. These issues are relevant to RWTs because planners must understand future plans of railroads. Not only can rail lines be banked, but lines can be upgraded and expanded to double tracks. The author concludes that adjacent landowners, even those initially opposed, are ultimately happier — both aesthetically and economically — with the trail present.

Innovative Technological and Operational Improvements

Individual railroads, States, and the Federal government are constantly trying to increase safety along rail rights-of-way. While these efforts to date have not been focused on RWTs, the goal of improving the safety and security of areas close to train operations is a consistent concern.

Individual railroads have spent considerable time and effort in the development of monitoring technologies to control trespass activity along their properties. The Burlington Northern and Santa Fe Railway Company (BNSF) reported in Black (1999) on efforts to develop and implement a remote monitoring system for rail crossings that would be combined with an in-cab video system to record activity on tracks. These systems would record



Coastal Rail Trail. The trail is proposed to be located across the track from the station.
Carlsbad, CA



locations using Global Positioning System (GPS) technology and record the dynamics of the train (braking, whistles, lights) to develop information about trespassing. Such technology has application in the monitoring of trespass activity along RWT corridors.

BNSF also has been active with local and State governments in an effort to control trespass activity through the establishment of a Trespasser Abatement Program of active security intervention and a Safety Assurance and Compliance Program (SACP) that emphasizes efforts with local communities to educate citizens of the risks and consequences of trespassing on railroad tracks. SACP is a program developed and monitored by FRA to address various safety issues in partnership with railroad companies.

A significant effort to study and apply lessons from trespass injuries is presented in a study from the Centers for Disease Control (1999), *Mortality and Morbidity Weekly Report*, "Injuries Among Railroad Trespassers in Georgia, 1990-1996." This report summarizes a study of fatal and nonfatal injuries to railroad trespassers in Georgia from 1990 through 1996. The 17 railroad companies operating in Georgia, as well as other sources, provided trespasser injury data.

This research found that most injuries to railroad trespassers involved 20 to 49-year-old men, many of whom were intoxicated. Most trespassers either were walking or socializing near the tracks at the time of injury. In many incidents, trespassers did not hear the train horn or misjudged the speed or location of the train. This latter problem appears to be more common when a train is approaching on one track in multiple-track territory.

Although the number of deaths from motor vehicle collisions with trains at highway-rail crossings has decreased, trespasser deaths have increased. The decline in deaths at highway-rail crossings is a result of multiple factors such as education efforts and engineering changes. Efforts to prevent trespasser deaths have been focused on public education and awareness and law enforcement. However, the target audiences, which vary in composition from region to region, are difficult to reach.

For RWT analyses, planners should strive to determine what types of trespassers are likely to be involved; what types of injuries can be expected; which railroad properties, operating characteristics and locations (urban or rural settings) are at high risk; how the incidents can be mitigated; and what types of actions and technologies the trail design can employ to enhance the safety of RWTs.

International RWT Research

Several other countries, including Switzerland, Denmark, Canada, and Australia, have extensive experience in the development of RWTs. However, researchers were unable to locate specific RWT-related studies in these countries. Instead, researchers commissioned a summary of Western Australian RWTs (specifically in Perth), *Rails with Trails: The Western Australian Experience*, Maher (2000) gathered brochures and other RWT promotional literature through surveys of Swiss and Danish trail representatives and gained access to ongoing dialogue and research being conducted by the Canadian Pacific Railways. Researchers sent information requests to all the major European railway companies and received few substantive replies.



The BLS-Lötschberg Railway produces a series of brochures promoting the BLS-Lötschberg Railway Trail. *Kander Valley, Switzerland*

Switzerland

RWTS are very popular in Switzerland, where there are famous hiking trails along the Gotthard and Lötschberg railroads. All of Switzerland's nine new national bicycle routes start and end at train stations. Swiss Federal Railways is a member of the Foundation Bike Country Switzerland and promotes the benefits of combining bicycles and public transport. For their adjacent BLS-Adventure Trail, the BLS-Lötschberg Railway produces a series of brochures that provides a point-by-point historic tour of all the features of the railway. Other railroads that have adjacent trails include the federally-owned Swiss Federal Railways and the privately owned Rhaetian Railways.

Canada

No formal tally of Canadian RWTs currently exists, although Transport Canada reports that hundreds of RWT kilometers probably exist. In response to a growing number of requests for RWTs, the Canadian Pacific Railway (CPR) Police Service Community Services Unit is undergoing an internal discussion about their policies and practices. The CPR has collected data about such issues as trespassing, accidents, vandalism, and liability through a survey of various field offices, many of which have experience with RWTs. In *Problem Analysis Report: Recreational Trail Use* (Law, 1999), the CPR lays out a series of issues to be discussed as part of their effort to develop a companywide policy on RWTs.

Western Australia

Perth, Western Australia, has 10 years of experience with the design and construction of RWTs. Perth has more kilometers of RWTs than any other city in Australia. The first length of RWT in Perth was constructed in 1989. The 500 m (1640 ft) section was regarded as a trial. Since 1989, the Western Australian Government has completed an additional 3 km (1.9 mi), and is designing many more.



Reseau Verte along Canadian Pacific Railway mainline. *Montreal, Quebec, Canada*



A section of RWT in Perth illustrates typical design and construction parameters, including 3 m (10 ft) wide asphalt path, set back from the adjacent rail line, and a 1.8 m (6 ft) chain mesh fence with three strands of barbed wire. *Perth, Australia*

Westrail, the railway department of the Western Australian Government has had many concerns about the construction of these RWTs. As a result, Westrail and Main Roads (the government's road construction department) entered into an agreement to ensure paths can be constructed with no impact on railway operations and safety. This agreement specifies that RWTs will be constructed adjacent to all suburban lines. The RWTs will consist of a 3 m (10 ft) wide asphalt path, set back a minimum 5.5 m (18 ft) from the track centerline, separated by a 1.8 m (6 ft) high chain mesh fence with three strands of barbed wire.

SECTION II:

Case Studies

This section provides summaries of 21 rail-with-trail case studies researched for this report (see **Figure 2.1**).

Overview of Findings

In general, when a trail developer owns the right-of-way, RWT projects tend to proceed more quickly. All RWT projects should involve the railroads, law enforcement officials, and other stakeholders from the outset. These stakeholders know best their operation and maintenance issues and potential trouble spots.

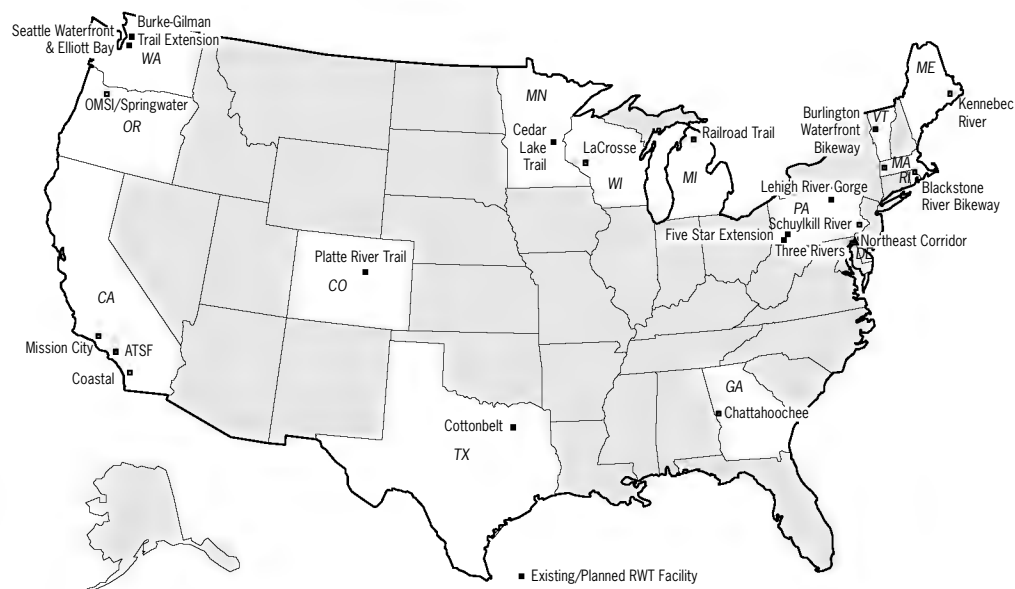


FIGURE 2.1 RWT case studies

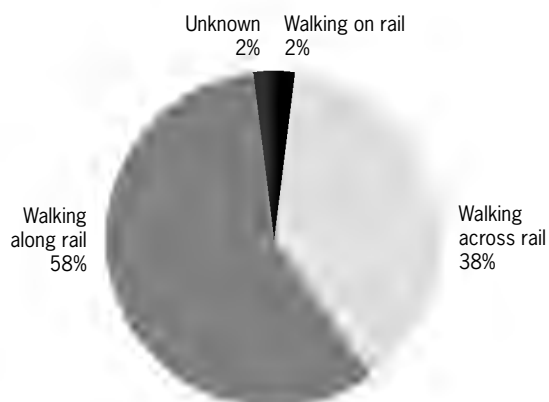


FIGURE 2.2: Planned RWT case studies: Type of trespassing by percentage of incidents, 2000

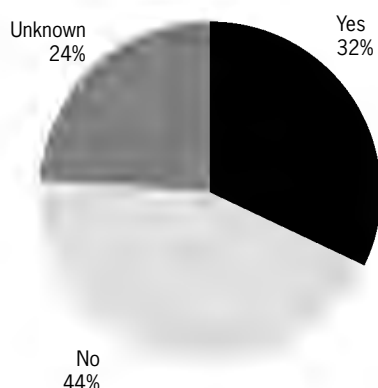


FIGURE 2.3: Planned RWT case studies: “Would observed activity be accommodated by planned RWT?” Percentage of observed incidents, 2000

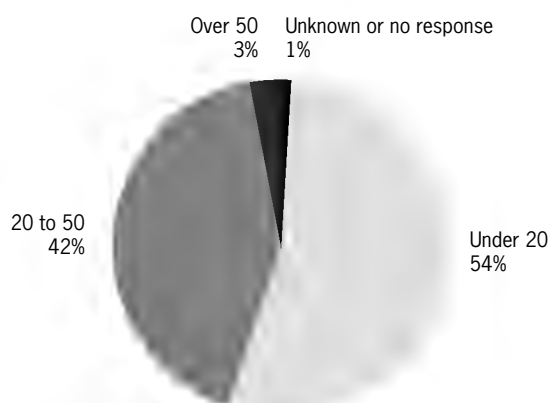


FIGURE 2.4: Planned RWT case studies: Age of observed trespassers, 2000

Railroad company participation in the design of RWTs can help maximize safety and minimize adverse impacts on railroad operations. Positive design features include good separation (distance, grade, vegetation, or fencing), well-defined and designed crossings, ongoing maintenance, and user education. Where these features are not present, RWTs can cause undue burden on the railroads in the form of increased trespassing, operation and maintenance costs, safety risks, and potential legal liability for injury to trail users and trespassers.

Researchers observed few trespassers on tracks next to existing trails. Those few observed were crossing or walking on tracks where fencing was not present to separate the trail from the tracks. In corridors where trails are planned but no formal facility exists yet, researchers observed more frequent trespassing. The most serious conditions were along the planned Coastal Rail-Trail in California near Del Mar and Encinitas, where 155 trespassers were observed over the course of two hours. On four trails partially built during the course of this study (Blackstone River Bikeway, Burke-Gilman Extension, Cottonbelt Trail, and Kennebec River Trail), before and after comparison found either no change or a significant drop in trespassing once the trail was built.

Among all the trails observed, most trespassers were crossing the track to access the ocean, a river, or lake for surfing, fishing, or other recreational activity (see **Figure 2.2**). The rest were walking alongside the tracks. Few were actually on the track. Approximately 44 percent of the trespassers were following a path that would not be accommodated by the RWT, while about 32 percent followed a path that likely will become the trail (see **Figure 2.3**).

Researchers noted the majority of trespassers were less than 20 years old and male (see **Figures 2.4** and **2.5**). More than three quarters were pedestrians, with the remainder split between runners, bicyclists, and other (see **Figure 2.6**).



FIGURE 2.5: Planned RWT case studies: Observed gender of trespassers, 2000

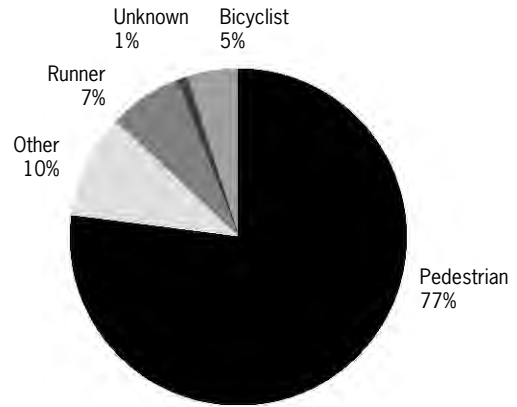


FIGURE 2.6: Planned RWT case studies: Observed type of trespasser, 2000

Case Study Summaries

The Atchinson, Topeka, and Santa Fe (ATSF) Trail
City of Irvine, Orange County, California

STATUS Existing, opened 1984

DESCRIPTION The ATSF Irvine Trail is a 3 m (10 ft) wide shared use path located on Southern California Edison's 61 m (200 ft) wide easement of the Orange County Transportation Authority's (OCTA) railway corridor. The trail parallels the railway for approximately 5 km (3.2 mi). The Southern California Regional Rail (SCRRA) operates 31 Metrolink trains in OCTA's rail right-of-way. In addition, 22 Amtrak trains and eight freight trains travel through the corridor. The passenger trains travel at speeds up to 145 km/h (90 mi/h). Freight trains travel about 89 km/h (55 mi/h).

DESIGN The easement generally is landscaped with trees and shrubs. A 1.5 m (5 ft) high chain link fence separates the Edison easement (and the trail) from the railway tracks. The trail meanders through the easement and typically is 15 m (50 ft) to 30 m (100 ft) from the track centerline. Primarily single-family and multi-family developments border the trail. No trail signage identifies the trail entrances. Other than a park with little parking, there are no staging areas.

PROBLEMS Officials report minor problems associated with the trail, mainly with graffiti and vandals cutting the fence, presumably to trespass across or on the tracks. Because of the width of utility easement, people rarely walk along the tracks. Thus, officials report no trespassing problems. Some portions of the trail are lit for night use.

OTHER Planners designed the trail in the 1970s. The older neighborhoods can access the trail only from major roadways. Newer neighborhoods, at the northern portion of the project, have built connections and several small parks along the rail corridor. Southern California Edison renews the lease agreement every five years.



Crossing the Metrolink track on the ATSF Trail. Irvine, CA



Location of the future Blackstone River Bikeway along the PWRR tracks. *Albion, RI*

Blackstone River Bikeway *Albion, Rhode Island*

STATUS Construction underway winter 2001-2002. Open in part as of April 2002.

DESCRIPTION The Blackstone River Bikeway is a 9.7 km (6 mi) planned shared use path along tracks owned by the Providence and Worcester Railroad (PWRR). It travels through rural Albion and runs adjacent to the Blackstone River, recently designated as a National Historic Corridor. Up to four diesel freight trains operate on the tracks on a daily basis at speeds up to 64 km/h (40 mi/h), while an additional 10 to 20 excursion trains use the tracks occasionally throughout the year. Projected use of the trail is more than 1,000 users per day.

DESIGN The trail will be located 5.5 to 18 m (18 to 60 ft) from the track centerline, averaging 7.6 m (25 ft) setback over the length of the trail. The Rhode Island Department of Transportation (RIDOT) will install and maintain a 2.4 m (8 ft) high chain link fence with black vinyl slats to separate the track and trail.

PROBLEMS The rail line has experienced extensive trespassing, from dirt bike and all-terrain vehicle users, to walkers and illegal dumping along the tracks.

OTHER The RIDOT and PWRR negotiated for several years to approve the trail, which represents one important link in a more than 72 km (45 mi) proposed project (of which 45 km (28 mi) are in Massachusetts and 27 km (17 mi) are in Rhode Island) to connect Providence, Rhode Island, and Worcester, Massachusetts. The PWRR saw the project as a way to improve operations and business opportunities in the State, hoping their cooperation would help with DOT support for other PWRR projects.

Burke-Gilman Trail Extension *Seattle, Washington*

STATUS 1.2 km (.75 mi) in place

DESCRIPTION The existing and planned trail is an approximate 6.4 km (4 mi) extension of the 21 km (13 mi) long Burke-Gilman Trail. The right-of-way is owned and managed by the City of Seattle, which purchased it from the BNSF Railway. The RWT portion is planned in four sections: the 1.2 km (.75 mi) built portion, a 0.8 km (.5 mi) section planned for construction in summer 2002, a 2.1 km (1.3 mi) section planned for construction in summer 2003, and a not-yet-designed section between 11th and Chittendon Locks. The Ballard Terminal Railroad (BTR) runs a freight service on the tracks with approximately two to three round trips per week at speeds no more than 16 km/h (10 mi/h). The company is considering the addition of passenger services.

DESIGN The tracks are bounded almost entirely by small industry, and ship-related and retail businesses. The trail, with an initial projected usage of 1,000 to 2,000 people per day, will be open 24 hours a day. Averaging 3 to 3.6 m (10 to 12 ft), the trail will set back 3 to 7.6 m (10 to 25 ft) from the track centerline, depending on the site situation. Physical separation will vary, depending on the conditions, from a 0.9 m to 1.1 m (3 ft to 3.5 ft) high fence, to motor vehicle parking, to nothing.



Planned future site of the Burke-Gilman Extension along the BTR tracks. *Seattle, WA*

PROBLEMS According to both the City and the BTR, the railroad's historic trespassing and dumping problems decreased significantly after the existing section of the RWT was built. In areas without the trail, a railroad employee precedes the infrequent trains on foot to ward off motorists, pedestrians, and others, whereas the channelization of trail users in the RWT section abrogates this need.

OTHER The public planning process for this proposed trail has been lengthy, adversarial, and has involved more than a dozen parties. Many challenges remain, including safety, sight distance, and access for industrial property owners in the area.

Burlington Waterfront Bikeway *Burlington, Vermont*

STATUS Existing, opened 1985

DESCRIPTION The entire Burlington Waterfront Bikeway recreational corridor is 12 km (7.5 mi) long. The RWT section is 3.2 km (2 mi) long. The Vermont Agency of Transportation (VTrans) owns the corridor. The City of Burlington developed and manages the trail. The Vermont Railway Company (VTRR), under an easement to VTrans, uses the tracks as a switching yard with numerous trains operating continuously throughout the day at speeds no greater than 16 km/h (10 mi/h).

Hundreds of thousands of users cycle and walk annually on the RWT.

DESIGN The contract agreement required fencing for most of the RWT length.

PROBLEMS Before the trail and fence were installed, people from abutting residential properties frequently crossed the tracks to get to their destinations. The addition of the trail had the effect of "channelizing" pedestrian crossings down to a few known areas, reducing the problems dramatically. Vandals occasionally cut the fences along the corridor. The City is in charge of fence and trail maintenance.



Burlington Waterfront Bikeway located along the Vermont Railway Company tracks. *Burlington, VT*



OTHER In 1982, the City Attorney for Burlington started to negotiate with the Central Vermont Railway (whose tracks approach from the north) and VTRR and VTrans. All parties reached agreement and built the trail in 1985.

Cedar Lake Trail
Minneapolis, Minnesota

STATUS Existing, opened 1980s

DESCRIPTION The Cedar Lake Trail runs from downtown Minneapolis to the western city limits on property owned by BNSF Railway. The Minneapolis Park Board operates the 7.6 m (25 ft) wide easement and trail, which has two at-grade crossings. The trail is 5.6 km (3.5 mi) long, with planned connections to other regional trails creating a loop of approximately 80 km (50 mi) of trail. The adjacent tracks carry 10 to 12 trains per day, with an average speed of between 40 and 80 km/h (25 and 50 mi/h).

DESIGN The minimum setback of the trail from the centerline of the track is 4.6 m (15 ft), with the average setback 7.6 m (25 ft). In the areas of minimum setback, a 1.8 m (6 ft) chain link fence separates the trail and nearest track. The trail reportedly helped improve railroad maintenance by upgrading the access roads.

PROBLEMS Security is provided by daily patrols, although the trail reportedly experiences fewer security problems than the surrounding area as a whole. No trail users have filed lawsuits against the railroad. Officials report a decrease in trespassing incidents on the adjacent tracks since the trail was installed.

OTHER The Parks Board provides maintenance, as well as security, with the Minneapolis Police Department.

Coastal Rail Trail
Cities of Oceanside, Carlsbad, Encinitas, Solana Beach, Del Mar, San Diego, and San Diego County, California

STATUS Planned, not built as of June 2002

DESCRIPTION This planned 3.7 m (12 ft) wide shared use path will be located within the San Diego Northern Railway right-of-way and will traverse from Oceanside to San Diego. It will connect commuter rail and transit stations for 53 km (33 mi) of the total 71 km (44 mi) high speed intercity and commuter rail corridor. The North County Transit District (NCTD) operates 18 “Coasters” per day Monday through Friday and eight “Coasters” per day on Saturday. Amtrak operates 22 “Pacific Surfliners” per day. These trains operate at speeds up to 145 km/h (90 mi/h). Five freight trains and up to 48 San Diego Trolley trains operate on a weekly basis at 80 km/h (50 mi/h) and between 48 to 64 km/h (30 to 40 mi/h), respectively. Construction of the trail is expected to commence in 2003.

An estimated 28,500 daily and 7,080,000 annual users are projected on the trail. The right-of-way is owned and managed by the NCTD and the Metropolitan Development Board. The responsible agency for management of the trail has not been identified yet.



DESIGN The setback distance still is under discussion as of this writing due to the relatively high speed of the trains, future potential track expansion, railroad maintenance needs, and security concerns. Trail users likely will be separated from the tracks by, depending on the section, fencing, grade variations, vegetation, and other barriers.

PROBLEMS Running parallel to the ocean, the tracks are frequently crossed by trespassers to access the beach.

OTHER Six cities joined efforts and together prepared a feasibility study, completed in January 1999. The six cities, the two railroad companies, NCTD, and Metropolitan Transit District, collaboratively developed the project study report and a Memorandum of Understanding. The Memorandum binds the parties to cooperatively plan a trail within the active railroad right-of-way. This process has included more than three years of monthly meetings.



Future trail alignment of the Coastal Rail Trail extension adjacent to the Coastline tracks. Carlsbad, CA

Columbus Riverwalk (Chattahoochee Trail) *Columbus, Georgia*

STATUS Existing, opened 1990s

DESCRIPTION The Columbus Riverwalk is approximately 25.7 km (16 mi) of trail adjacent to the Chattahoochee River from the Lake Oliver Walkway to Fort Benning. About 1.6 km (1 mi) of the trail is located on Norfolk Southern property. The tracks are leased by the Railtex/GATX/Georgia Southwestern Railroad Company. The Consolidated Government of Columbus operates the trail. Freight trains are the primary users of the tracks and run infrequently, mostly in the spring when the river is high enough so barges can bring petroleum products up to the docks for further transport by rail. The trains travel at speeds less than 16 km/h (10 mi/h).

DESIGN The 3.0 to 3.7 km (10 to 12 ft) concrete walkway is 3 to 9.1 m (10 to 30 ft) from the tracks, with nominal vertical separation and no fencing. The trail is lit at night although there is not much use after 11 p.m.



Columbus Riverwalk (Chattahoochee Trail) segment located along Norfolk Southern tracks. Columbus, GA



PROBLEMS Officials report no trespassing and/or vandalism incidents along the rail corridor.

OTHER This is a multi-phase project: phases one and two are development of the riverwalk, while phase three is the planned acquisition and development of a trail and trolley from the riverwalk to Columbus State University and the Peach Tree Mall with future plans to extend the trail 56 km (35 mi) to Warm Springs.

Cottonbelt Trail Grapevine, Texas

STATUS 4 km (2.5 mi) opened 2000

DESCRIPTION The 16 km (10 mi) long Cottonbelt Trail is a multi-phase, multi-jurisdictional trail that comprises a piece of the Dallas-Fort Worth bicycle trail system called “Veloweb.” A 4 km (2.5 mi) section of the 16 km (10 mi) path has been completed. The track, owned by the Dallas Area Rapid Transit (DART), is leased to a short line company — Fort Worth and Western Railroad — which uses the track for tourist excursions and weekend dinner trips. Freight activity involves two trains per day. Train speeds do not exceed 48 km/h (30 mi/h). Each city involved in the project will own and manage the trail within their respective jurisdiction.

DESIGN The track is adjacent to residential areas and several large open fields. The trail maintains 7.6 m (25 ft) setback from track centerline to the edge of the trail.

PROBLEMS According to the railroad, trespassing is not a problem.

OTHER Initially, project planners overlooked the fact that part of the trail fell in the railroad right-of-way. Subsequent policy changes by DART allowed for trail use within their right-of-way. The City of Grapevine has a five-year lease, with option for renewal, from DART. Also, because Explorer Pipeline Company has a pipeline under the trail, a special design enables a section of the trail to be lifted during pipeline repairs.



Existing segment of the Cottonbelt Trail along the DART tracks. Grapevine, TX



A DART official noted benefits in terms of reduced costs of right-of-way maintenance, now undertaken by the City, but expressed concern about potential liability costs, even with the City assuming liability. A law enforcement official noted the trail's popularity and anticipated no increase in costs.

Five Star Trail

Youngwood to East Huntingdon, Pennsylvania

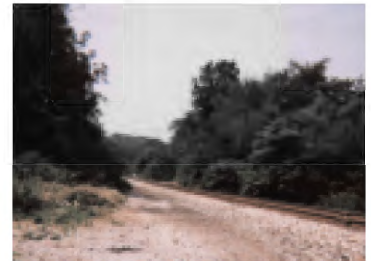
STATUS Planned, not built as of June 2002

DESCRIPTION This trail project is a 9.7 km (6 mi) extension to the existing 8 km (5 mi) Five Star Trail, currently the third most popular recreational facility in Westmoreland County. The Regional Trail Corporation manages the existing trail through a lease agreement with the Westmoreland County Industrial Development Corporation, which owns and operates the railroad. The track currently has two trains per day on weekdays, with up to four additional trains on weekend days. Maximum train speeds are 40 km/h (25 mi/h). Freight trains are the predominate users of the track followed by weekend excursion trains.

DESIGN The trail extension will be 3 m (10 ft) wide with a crushed limestone surface. The minimum setback will be 3.7 m (12 ft) from the center of the track, with additional setback distance provided whenever possible.

PROBLEMS Trespassing is a concern in the corridor where the trail extension is proposed. Currently, people on motorcycles and all-terrain vehicles use the area.

OTHER Establishing a good working relationship and open communication between the trail managers and railroad company led to the success of the existing section of the Five Star Trail. It also has provided a framework toward a successful, multi-jurisdictional planning process for the trail extension.



Future site of the Five Star Trail along the Westmoreland County train tracks. Youngwood, PA

Kennebec River Rail-Trail

Augusta, Hallowell, Farmingdale, and Gardiner, Maine

STATUS: 2 km (1.2 mi) opened October 2001

DESCRIPTION: The Maine Department of Transportation (MDOT) opened the first 2 km (1.2 mi) of the 10.5 km (6.5 mi) of the Kennebec River Rail Trail (KRRT) in the fall of 2001. The driving force behind trail development and construction is a consortium of KRRT Board of Supervisors members appointed by the four towns, as well as a nonprofit group called the Friends of the KRRT. The Board of Supervisors is responsible for overseeing the construction and management of the trail, while the Friends group is involved with trail fund raising, promotion, and maintenance. Volunteer project support has been tremendous and well organized. MDOT is committed to seeing the project succeed and has been aiding in the development, approval, and construction phases. In 1990, the State of Maine purchased the rail line from the Maine Coast Railroad, which no longer operates in the corridor. A short line operator, Safe Handling Rail, Inc., is contracted to operate trains at 40 to 48 km/h (25 to 30 mi/h). However, no trains have operated since January 2001 due to construction and management issues. Service is expected to resume in 2003.



Built portion of the Kennebec River Trail. *Farmingdale, ME*

DESIGN: The trail will be 3 m (10 ft) in width with 0.3 m (1 ft) shoulders. The surface treatment will be either bituminous pavement or stone dust. Projected use is 750 trail users per day. Along much of the corridor, the trail will be set back 4.1 m (13.5 ft) from track centerline. In a 300 m (1,000 ft) constrained area, the trail will be narrowed to 1.8 m (6 ft) in width and maintain a separation of 3.8 m (12.4 ft) setback, with a 2.4 m (8 ft) chain fence.

PROBLEMS: Trespassing during the winter by snowmobiles riding on the tracks has been a problem in the past.

OTHER: Opponents insist that the proposed trail cannot be safely located within the rail right-of-way given the perceived narrow setback distances. They dispute most of the State's assertions about process, design, and liability. They also are concerned that the trail's proximity is incompatible with passenger rail, which they are promoting for future operation in the corridor. More information about the trail is online at www.KRRT.org.

La Crosse River State Trail *La Crosse, Wisconsin*

STATUS Existing, opened 1987

DESCRIPTION The La Crosse River State Trail serves as a 34 km (21 mi) connector between the Elroy–Sparta and Great River Trails. The State of Wisconsin owns the railroad right-of-way. Freight and Amtrak trains run about 16 times daily, at speeds of up to 129 km/h (80 mi/h).

The trail is lightly used relative to other area trails, despite the fact that it traverses diverse, exceptionally beautiful terrain. The trail passes through several small towns with local bars and restaurants that welcome trail users.

DESIGN For most of its length, marshland, grass-filled ditches, and prairie separate the trail from the track centerline by approximately 30 m (100 ft) or more.



Riding alongside a freight train on the La Crosse River State Trail. *La Crosse, WI*

PROBLEMS Authorities report no current trail-related trespassing activities. In the past, trail users trespassed on the tracks when moving between the Great River and the La Crosse River trails. The State solved this by adding an overpass with signing that directs users between trails.

Vandalism and illegal motorized vehicles are problems on the trail. A special agreement in the contract allows the State to install fencing for adjacent landowners outside of the right-of-way for those who request it. Landowners, however, must sign an agreement to maintain the fence for 20 years.

OTHER The State surfaced and signed the trail twelve years after it purchased the right-of-way in 1978.

Lehigh River Gorge Trail *Jim Thorpe, Pennsylvania*

STATUS Existing, opened 1972

DESCRIPTION The entire length of the trail is 40 km (25 mi) long, with the southern 9.7 km (6 mi) being an RWT facility. The Reading and Northern Railroad Company (RNRC) operates between two and six freight trains per day on the tracks at speeds between 40 to 64 km/h (25 to 40 mi/h).

DESIGN The trail has a crushed-stone surface and generally is 3 m (10 ft) wide with a few areas that are wider. About 3.7 to 5.5 m (12 to 18 ft) separates the track centerline from the trail in most areas, although setback is as little as 2.3 m (7.5 ft) in places. For about half the length of the trail, 1.5 to 2.4 m (5 to 8 ft) of vertical grade separation lays between the tracks and the adjacent trail. No fencing is used.



Lehigh River Gorge Trail, adjacent to the Reading and Northern Railroad Company tracks.
Jim Thorpe, PA

PROBLEMS The area used for the trail previously served as an access road to the railroad and facilitated illegal dumping. Since the trail was established, the illegal dumping has ceased.

Officials report no trespasser-train incidents. However, railroad officials unofficially note “close call” incidents and express concerns about continued trespassing problems.

OTHER Bike rental companies in the area give users a safety speech that includes warnings about the track.

Mission City Trail *City of San Fernando, California*

STATUS Existing, opened 1990s

DESCRIPTION This 1.6 km (1 mi) shared use path traverses through the City of San Fernando, in the northern portion of Los Angeles County. The Southern California Regional Rail Authority (SCCRA) runs 26 Metrolink passenger trains traveling at 127 km/h (79 mi/h). Five freight trains also travel in the corridor at 80 km/h (50 mi/h). The number of trains is expected to increase.

DESIGN The trail is a concrete pathway, 2.4 m (8 ft) wide with 0.9 m (3 ft) shoulders, that meanders within a 6 m (20 ft) section of the right-of-way along the eastern edge of the railway. It connects to a Metrolink station within the City of Los Angeles. The trail is set-back at least 7.6 m (25 ft) from the track centerline and separated by a 1.8 m (6 ft) high fence (part chain link, part wrought iron). It is enhanced with shrubs, trees, and signs. The City designed and installed self-closing stop gates at several at-grade crossings to slow bicyclists prior to crossing major roadways. The trail is lit and allows night use.

PROBLEMS Vandalism and trespassing problems reportedly have decreased since the trail was developed.



Mission City Rail Trail along the Metrolink commuter rail line. *San Fernando, CA*

Northeast Corridor Trail *Newark, Delaware*

STATUS Planned, not built as of June 2002

DESCRIPTION The Northeast Corridor is a planned 2.7 km (1.7 mi) asphalt shared use path adjacent to Amtrak's Northeast Corridor main line. The trail setting includes a mixture of parkland, urban, and industrial land uses along the trail. The City of Newark owns some of the land and will lease property for the remainder. Up to 100 passenger and freight trains operate per day, some at speeds in excess of 161 km/h (100 mi/h). Amtrak's high speed Acela trains are expected to travel at speeds upwards of 193 km/h (120 mi/h). The Amtrak track is closest to the planned trail, and is shared with commuter trains operated by the Southeastern Pennsylvania Transportation Authority (SEPTA).

DESIGN As required by the contract, the City will install and maintain a chain link fence along the entire trail corridor. The minimum planned setback is 9.1 m (30 ft) between the track centerline and edge of the trail.

PROBLEMS The speed of the trains in relatively close proximity to the trail is a concern. An additional concern is the potential for trespasser casualties via fence breaks. Maintenance of fencing is a major challenge along the Northeast Corridor.

OTHER This proposed RWT has gone through an extensive public process to build support for the trail. An advisory committee provided input regarding trail development.



Norwottuck Rail Trail, Connecticut River Greenway State Park
Hampshire County, Massachusetts

STATUS Existing, opened 1994

DESCRIPTION The Norwottuck Rail Trail travels 16 km (10 mi) in the communities of Northampton, Hadley, Amherst, and Belchertown. In 1984, the Commonwealth of Massachusetts, through the Department of Environmental Management (DEM), purchased the corridor for the purpose of building a rail-trail. The towns of Amherst and Belchertown own 1.9 km (1.2 mi) at the eastern end. The first segment of trail from Northampton to Amherst opened in 1993, and the eastern extension to Belchertown opened in 1997. More than 300,000 people use the trail annually.

The eastern section of the Norwottuck Rail Trail is adjacent to a separate right-of-way owned and operated by the New England Railroad (NECR), formerly the Central Vermont Railway. Amtrak Vermonter also operates two trains a day. The right-of-way of the active railroad is 20 m (66 ft) wide.

DESIGN Two at-grade road crossings intersect the trail. One crossing is equipped with active warning devices, lights, and bells. The other (a semi-private grade crossing used primarily as an access road by the Town of Amherst's Water Department) only has passive warning devices. The latter does have whistle markers alerting the NECR and Amtrak engineers to sound the horn. No sign alerts trail users to the possibility of a train, although no attractive destinations encourage crossing.

The 3 m (10 ft) wide paved trail is situated 9.8 m (32 ft) from the centerline of the nearby tracks. There is no fencing between the trail and railroad where the rights-of-way are parallel.

PROBLEMS Officers report that the adjacent rail line has no reported incidents of trespassing.



Platte River Trail. Denver County, CO

Platte River Multi-Use Trail
Denver County, Colorado

STATUS Existing, opened 1980

DESCRIPTION The Platte River Multi-Use Trail, built around 1980, extends from downtown Denver along the Platte River. The trail abuts the Denver Regional Transit District's track, with an active trolley operation, for approximately 1.6 km (1 mi). The trail is owned and managed by the Denver Department of Parks and Recreation. Average train speed on the line is 16 km/h (10 mi/h).

DESIGN The 2.4 to 3 m (8 to 10 ft) wide concrete path is set back at least 7.6 m (25 ft) from the centerline of the nearest track. No fencing separates the trail and tracks. There are two at-grade crossings with passive warning signs and striping.



PROBLEMS The presence of homeless people is a notable problem in the corridor, although not directly related to the trail. No trail-related lawsuits have been filed against the City or railroad. Officials report decreased trespassing on the tracks since the trail installation.

OTHER Railroad construction and maintenance require periodic closure of the trail. The Denver Parks and Recreation Department provides maintenance and snow removal. Denver Urban Drainage and Flood Control provides landscape maintenance. The Denver Police Department provides security through spot checks and on an emergency response basis.

Railroad Trail *Gaylord, Michigan*

STATUS Existing, opened 1990s

DESCRIPTION The Railroad Trail is the first and only RWT in Michigan. It is a 35 km (22 mi) snowmobile trail and is part of a 90 km (56 mi) corridor. The Lake State Railroad operates up to five freight trains per week at speeds of 40 to 64 km/h (25 to 40 mi/h).

It officially is a snowmobile trail but nonmotorized uses are permitted. Up to 6,000 people use the trail on winter weekends.

DESIGN The trail is unpaved and looks little like a trail in summer months. Signage reminds trail users to stay off railroad tracks. Separation varies from less than 0.9 m to 10 m (3 to 30 ft).

PROBLEMS Officials report that the trail has relieved trespassing problems for the railroad by up to 90 percent. In particular, they have seen reduced snowmobile use on the tracks and a cleaner right-of-way due to snowmobile club maintenance activity. According to the sheriff, snowmobiles regularly cross the tracks to access a frozen lake.

OTHER The legislature passed a special act to allow this RWT. The legislation applies only to this trail and sets the terms of trail operation from December 1 through March 31. It took almost six years of negotiation with the railroad company and the legislature to establish the trail, first on a trial basis, then permanently. However, the Lake State Railroad



The 22-mile Railroad Trail located along the Lake State Railroad.
Gaylord, MI



was not involved in the decision to go from trial to permanent status. Lake State Railroad officials express support for the RWT as well as concern about potential liability in the case of a serious incident. The snowmobile club carries a \$2 million insurance policy.

Snowmobile users pay a mandatory registration fee and a trail fee of \$10. The Michigan Department of Natural Resources gives the managing organization, Alpine Snowmobile Trails, Inc., an annual maintenance grant of \$250 per mile per year. The grant helps supplement volunteer labor used to maintain the trail and area near the tracks.



Schuylkill River Trail.
Norristown, PA

Schuylkill River Trail Norristown, Pennsylvania

STATUS Existing, opened 1993

DESCRIPTION This approximately 6.4 km (4 mi) long RWT facility, located primarily in Norristown, is part of the 35 km (22 mi) Schuylkill River Trail connecting Philadelphia with Valley Forge. Approximately 3.2 km (2 mi) are located on Norfolk Southern Railroad Company property. The other two miles are adjacent to an active SEPTA right-of-way. About 20 freight and commuter rail trains operate on the track at speeds between 32 km/h to 64 km/h (20 to 40 mi/h). Montgomery County owns and operates the trail easement.

DESIGN The asphalt trail is 3 to 3.6 m (10 to 12 ft) wide. The setback between the trail and track centerline varies through the corridor, with the closest point being about 3 m (10 ft). A wrought iron fence also separates the tracks and the trail adjacent to the Norristown Transit Center. A split rail fence is in place in the area where the trail is within 3 m (10 ft) of the tracks.

PROBLEMS Officials observe some trespassing in the area adjacent to the trail, although the activity does not appear to be related to the trail. In fact, the presence of other trail users appears to deter incidences of trespassing and vandalism.

OTHER The process for approving the trail was long and difficult. The trail promoters involved the railroad in both the trail feasibility study and design phase. An easement agreement with the railroad stipulated that the railroad had final approval of the trail design, specifically with fencing and distance from centerline.

Seattle Waterfront Trail / Elliott Bay Trail Seattle, Washington

STATUS Existing, opened 1989

DESCRIPTION These two contiguous trails combine for a total length of approximately 9.7 km (6 mi). They run along the waterfront from the heart of downtown Seattle north to the Interbay area. The City of Seattle owns the right-of-way, which it purchased in the late 1980s. The BNSF Railway operates up to 60 passenger and freight trains daily on the street right-of-way, parallel to the trails. Train speeds vary from 64 km/h (40 mi/h) for passenger and 56 km/h (35 mi/h) for freight trains.



The highly utilized Elliot Bay Trail parallels the BNSF switching yard along a portion of the waterfront. *Seattle, WA*

DESIGN The trail has three distinct sections. The southern third, downtown, is close to a rail line that carries four slow-moving trolleys per hour. This section is an area dominated by bicycles and pedestrians. Much of the trail traffic consists of tourists and downtown workers getting exercise or simply taking in the views.

The middle section is in Myrtle Edwards Park. It is directly on the waterfront, surrounded by landscaping, set back from the tracks by about 30 m (100 ft), and separated by a 3 m (10 ft) high chain link fence and landscaping. The trail surface is old, bumpy, and curvy.

The northern section runs through the rail yards. In most parts, chain link fences and tracks closely border the trail on both sides, with almost no landscaping. The path is so narrow at several points that multiple warning signs are needed to help avoid collisions between users. The trail is lighted and has night use.

PROBLEMS Officials report few significant problems with trespassing or vandalism. However, motorists sometimes drive on the trail and have hit trolley cars.

Springwater Corridor Extension *Portland, Oregon*

STATUS Planned, construction slated for fall 2002

DESCRIPTION This 4.8 km (3 mi) long project is bounded on the west side by the Willamette River, and on the east by railroad tracks and relatively high-density neighborhoods, a wildlife sanctuary, and a semi-industrial district. Metro, the regional government, owns the land on which the Oregon Pacific Railroad (OPR) runs short-line freight and excursion trains. OPR



Location of the future Springwater Corridor Trail Extension along the Oregon Pacific Railroad tracks. *Portland, OR*



operates freight trains three times a week in winter and tourist excursion trains five times a day in the summer. The maximum train speed is 32 km/h (20 mi/h).

The trail is to be managed by the City of Portland Parks Bureau. It will be a commuter and recreational trail with a projected half-million annual users.

DESIGN The City will install a 1.2 m (4 ft) tall chain link fence and two pedestrian undercrossings. The trail will be 2.6 m (8.5 ft) from the centerline of the track to the fence, plus an additional 0.6 m (2 ft) to the trail.

PROBLEMS Officials report a long history of trespassing activity in the form of recreational walking, jogging, and bicycling on, along, and crossing the tracks to reach the Willamette River. The fence and pedestrian undercrossings should eliminate these problems.

OTHER The trail planning process between the City of Portland and the OPR was contentious and difficult due to a history of OPR track maintenance and construction incidents. Metro's involvement through an open space acquisition program helped: it provided financial incentives to OPR by purchasing part of its easement, hiring OPR for certain construction elements, and including design features to reduce trespassing.

Three Rivers Heritage Trail Pittsburgh, Pennsylvania

STATUS Planned, not built as of June 2002

DESCRIPTION The Three Rivers Heritage Trail will be a 4 km (2.5 mi) extension of an existing trail on the north side of the Monongahela River in Pittsburgh. Friends of the Riverfront purchased the property from the CSX Railroad, which retains ownership of the railroad line. CSX operates 20 to 25 trains per day at speeds of up to 40 km/h (25 mi/h).

DESIGN As a condition of sale of the property, CSX Railroad is requiring a chain link fence the entire length of the trail. This fence must be built before the trail is constructed. The fence will be located at least 15 to 20 m (50 to 65 ft) from the centerline of the tracks.

PROBLEMS Trespassing concerns are focused on the area near Becks Run Road where many people cross the tracks to access the river for fishing.

OTHER A lesson learned from this RWT is to identify all potential partners early in the planning process. When

the utility companies became more involved in the planning and negotiation for the trail property, the process moved forward at a faster pace. Water and sewer utilities are strong supporters of the trail, according to the trail manager, because the trail will provide better access for their maintenance vehicles.



Current illegal crossing location over CSX tracks on Three Rivers Heritage Trail. Pittsburgh, PA

SECTION III:

RWT Development Process

The current RWT development process varies from location to location, although common elements exist. Trail advocacy groups and public agencies often initially 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.

When a public agency seeks approval of an RWT, the railroad 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 between three and ten years from concept to construction.

Overview of Recommendations

Based on the research conducted for this report, the following recommendations are made regarding RWT development processes:

1. Local or regional bikeway or trail plans should include viable alternatives to any trail that is proposed within an active railroad corridor.
2. Each proposed RWT project should undergo a comprehensive feasibility study. If required, the proposed project also should undergo an independent, comprehensive environmental review.
3. Trail agencies must involve the railroad throughout the process and work to address their safety, capacity, and liability concerns.
4. Trail agencies should coordinate with other stakeholders, such as abutting property owners, utility companies, law enforcement officials, and residents.
5. The feasibility study and environmental analysis should incorporate extensive public review. Railroad officials should be invited to all public workshops, and encouraged to voice their concerns or suggestions.
6. Railroad companies should consider developing an internal process for handling and providing a consistent response to proposed RWT projects.

*Blackstone River Bikeway,
Albion, RI*

“As a general rule, bike trails should not be located along railroad rights-of-way...[we] should not encourage recreational use next to active [railroad] rights-of-way.”

**DEBORAH SEDARES, PROVIDENCE
AND WORCESTER RAILROAD, MA**

“The biggest driver was the realization that this was a historic transportation corridor...to put another mode into this old corridor and reintroduce it to the people was a very exciting prospect.”

**LAMBRI SERVA, P.E.,
RHODE ISLAND DEPARTMENT OF
TRANSPORTATION**



7. Railroad companies should assign a technical team to the project that includes, at a minimum, representatives from the real estate, legal, safety, and operations departments, to ensure that their needs and concerns are addressed.
8. All parties involved in RWT development should maintain a log of all conversations and decisions.

Current Practice

In August 2000, researchers for this report conducted a telephone survey of officials of all the Class I U.S. railroad companies and Class I equivalent Canadian railroad companies. In response to a question about the company's position or policy on RWTs, many offered statements such as:

- "Our position is to discourage trails on active railroad rights-of-way."
- "We do not allow trails along rights-of-way."

Most railroad companies emphasize consideration of future expansion needs, safety impacts, trespassing, liability, and future changes to adjacent land uses as reasons for opposing RWTs. Railroads often expect an increase in future business and would prefer to retain the right-of-way for expansion. They are reluctant to sell or lease the property for trail use because of the difficulty of returning the property to private use later. Possible reversion of the railroad land to adjoining landowners also may deter railroads from considering sale or lease of their land for non-railroad purposes. Railroad companies also protest that trail planners do not understand railroad operations and seem to promote the trail over safety and common sense. At the same time, most Class I railroads have at least one example of a trail near or in their corridors (see **Table 5.1**, page 59).

Many advocates, on the other hand, do not understand the railroads' concerns. They struggle to understand company structure and even to determine which railroad company to contact about a proposed trail, since railroad companies often lease the tracks to another company. Furthermore, transit authorities, Amtrak, and railroad companies are governed and regulated by different laws and administrations. The trail project manager must become acquainted with the regulations and governing authorities of the specific rail line and cannot assume that all rail line corridors are governed and regulated uniformly.

Many RWT planning processes are quite contentious. In most cases, railroad companies are involved in some stage of the planning, although often not early enough.

Railroad companies may be willing to consider an RWT proposal if certain conditions are met. For example, a Class I railroad company official said, "The only instances where we are presently willing to cooperate in proposals to establish new trails on or adjacent to active rail lines are:

- a) where we determine we have sufficient title and width of right-of-way that we can sell the subject property to the trail operator/sponsor, in other words, so that when all's said and done, it's not on our right-of-way;
- b) the trail operator/sponsor agrees to erect and maintain in perpetuity a substantial fence between our common rights-of-way to preclude or substantially discourage trespassing, typically in the form of a covenant in the conveyance document;
- c) that it does not include or require any new at-grade crossings; and

Cottonbelt Trail, Grapevine, TX

"What a railroad corridor is today does not mean it will be the same tomorrow... I would have liked to have been involved earlier in the planning process."

**JAN SEIDNER, MANAGER OF
RAILROAD FACILITIES, DALLAS
AREA RAPID TRANSIT**

"We did not realize how formal the railroad industry is. Make sure in all situations that the railroad company is involved."

**JOE MOORE, ASSISTANT DIRECTOR
OF PARKS AND RECREATION,
GRAPEVINE, TX**



d) if any existing crossings are involved, that they will be equipped with appropriate crossing warning devices at the project sponsor's expense."

Another Class I railroad company, the BNSF, has developed specific design requirements for acceptable projects, but stresses that each project will be analyzed on its own merits, with trespass history a major consideration.

The Wheeling Corporation's report, *Rails with Trails* (Wait, 1998), offers the perspective of a smaller, regional company. "We at the Wheeling Corporation see many benefits of rails-with-trails within some of the communities we serve, both in economic development and enhancing the beauty of the area. With properly patrolled trails, these areas could see a dramatic decrease in trespassing, vandalism, and sabotage. And hopefully, through it all, the public will become more informed about our industry and the economic benefits of the rail carrier serving their area."

However, the Wheeling Corporation is very clear that it does not support all RWT proposals. Rather they offer a stringent set of guidelines for considering an RWT, including the following:

- The line in question must be a low-frequency, low-speed operation.
- The property must be available and suitable for this type of project.
- The tracks must be isolated from the trail with proper barriers.
- The statutory scheme must be compatible with joint use between trails and railroads.
- The trail operator must obtain proper property liability insurance.
- There will be compensation to the railroad for the use of their property, either through sale or lease.
- The trail operator, not the railroad, will cover the improvements to the property, along with the insurance costs.
- The trail operator and/or local community groups must provide the security personnel to properly patrol and control the property.

The Canadian Pacific Railway has developed a detailed internal process for handling requests for trails along its Canadian corridors (Canadian Pacific Railway, 2002). Acceptable trails will not hinder or risk railway operations.

It should be noted that some publicly owned railroad agencies allow, even encourage RWT projects on their properties. Examples include the State of Maine, Orange County Transportation Authority (OCTA), and Vermont Central Railway.

Assessing Potential Benefits

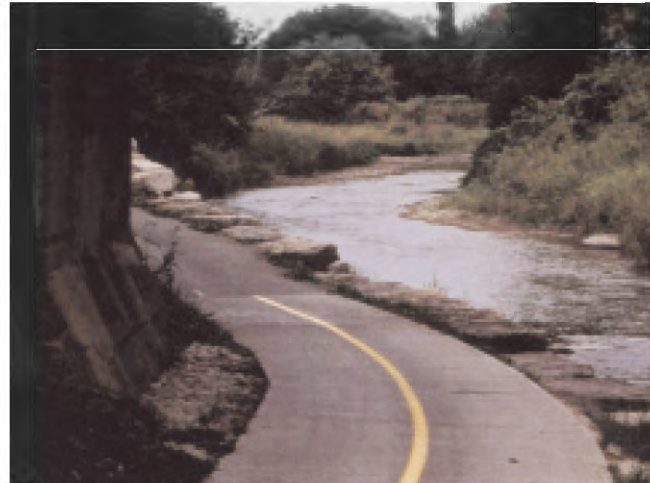
Through the course of this study, railroad company officials, law enforcement officials, and trail managers identified numerous potential ways that RWTs may benefit railroad companies and adjacent communities. Identifying such benefits is crucial to developing a successful RWT. Such benefits may include the following:

"The trail has reduced, maybe eliminated, illegal dumping that occurred before the trail designation."

PARK RANGER KEVIN FAZZINI,
LEHIGH RIVER GORGE TRAIL, PA



Beaten path made by children crossing tracks (left). New trail next to tracks leads to track undercrossing (right). Oshawa Creek, Ontario, Canada



- *Reduced liability costs*

Railroads spend millions of dollars per year on insurance, legal fees, and claim payments. Entering into agreements that reduce liability exposure (e.g., indemnification agreements) can help to reduce these costs. This assumes that an inappropriate project design does not result in bringing trespassers onto the right-of-way and that trail insurers do not successfully claim gross negligence.

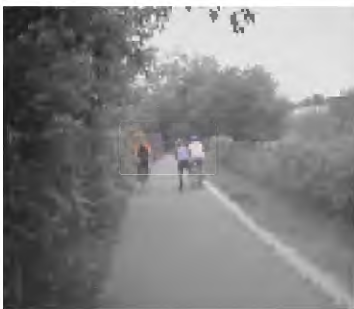
- *Financial compensation*

Many railroad companies receive some sort of financial compensation, with an average sale price of more than \$800,000 for those selling property. Others receive easement or license fees, or tax credits for donated land or easement.

- *Reduced petty crime, safety, and nuisance problems, including trespassing, dumping, and vandalism*

Many railroad companies noted reduced problems directly attributable to well-designed trails, including adequate setback, separation, landscaping, and crossing design. Trails showing improvements included the ATSF Trail, California; LaCrosse River State Trail, Wisconsin; Mission City Trail, California; Platte River Trail, Colorado; Schuylkill River Trail, Pennsylvania; and Railroad Trail, Missouri. Planned trails expecting to see such improvements include the Springwater Corridor Oregon, Five Star Trail Pennsylvania, and Coastal Rail-Trail California, which currently see high levels of trespassing behavior both along and over the tracks. It should be noted that a proposed RWT in an area without a history of trespassing may increase incidents of trespassing due to the introduction of people in the area.

The Canadian Pacific Railway (CPR) Police Service has had dramatic results in reducing crime and trespassing through RWT designs that have improved the aesthetic quality of an area. Their approach relies on the concept of “Crime Prevention Through Environmental Design” (CPTED), meaning, “the proper design and effective use of the built environment can lead to a reduction in the incidence and fear of crime — and to an increase in the quality of life” (Canadian Pacific Railway Police Service, 2000). Such designs attract families and large numbers of commuters and recreational users and discourage vandals and criminals, who thrive in abandoned, ugly areas. For the Oshawa Creek, Ontario, “Trespassing Prevention through Environ-



Living fence on the Waterfront Bikeway. Burlington, VT



mental Design Project,” the CPR built a new trail and pedestrian undercrossing to reroute trespassing children who were crossing to get to a nearby school. Another project, Toronto’s “Weston Living Fence Project,” aimed to reduce trespassing by providing landscaping near otherwise blank and often graffitied walls.

- *Reduced illegal track crossings through channelization of users to grade-separated or well-designed at-grade crossings*

Good RWT crossing designs direct users to safe crossing locations. For example, RWTs in Perth, Australia, channelize users to fenced trail sections leading to at-grade crossings with automatic, trail-width gates that lock in place when a train is present. Several trails in the U.S. offer similar improvements, including the Springwater Corridor, Oregon, which is planning to construct two pedestrian undercrossings under tracks currently frequently used by trespassing river seekers; the LaCrosse River State Trail, Wisconsin, which constructed a bridge to connect trails together and thereby eliminate inter-trail trespassing; and the Burlington Waterfront Bikeway, Vermont, which dramatically reduced trespassing problems by channelizing pedestrian crossings to a few locations.

- *Increased public awareness of the important service railroad companies provide*
A California train operator noted that people have been surprised to hear that trains still operate in this country today. Users on several trails expressed that the highlight of their tour is when trains come by. The Wheeling Corporation (Wait, 1998) offered hope that RWTs will help “the public become more informed about our industry and the economic benefits of the rail carrier serving their area.”

Possible benefits to the community may include the following:

- *Increased tourism revenue*

Along with other snowmobile trails in Michigan, the Railroad Trail brings in a reported \$15 million of income to Ostego County and more than \$100 million for northern Michigan. In Wisconsin, the LaCrosse River State Trail manager reported that the trail benefits local economies and greatly enhances the reputation of the State as a place to visit. However, it should be noted that trails increase the number of people in proximity to dangerous railroad operations, thereby enhancing the possibility of collisions and increased tort liability for the railroad.

- *Increased adjacent property values*

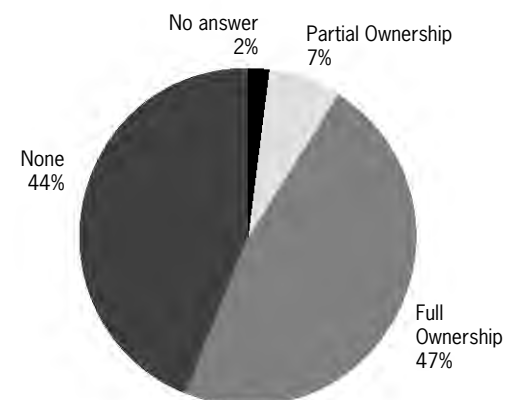
Desirable property is valuable property. Many studies have shown that trails enhance property values by providing community amenities for fitness and health, aesthetic experience, and reduced crime (National Bicycle and Pedestrian Clearinghouse, 1995; Moore, et al., 1992; Moore and Barthlow, 1998; City of Seattle, 1987; Conservation Fund, 1995; PKF Consulting, 1994; RTC, 2000; Ryan and Wintarch, 1993; Strauss and Lord, 1996).

- *Other community benefits*

- Additional benefits offered by various officials include the following:
 - Improved access to transit from RWTs connecting to transit stations;
 - Improved access for maintenance and law enforcement vehicles;
 - Opportunities to improve residents’ health;



Amtrak station bike parking being used to capacity. Davis, CA



NOTE: Partial ownership indicates that the trail manager owns parts of the trail and received an easement or unofficial permission for the remainder.

Source: Rails-to-Trails Conservancy

FIGURE 3.1 Agency ownership of rail corridor, by percentage of trails

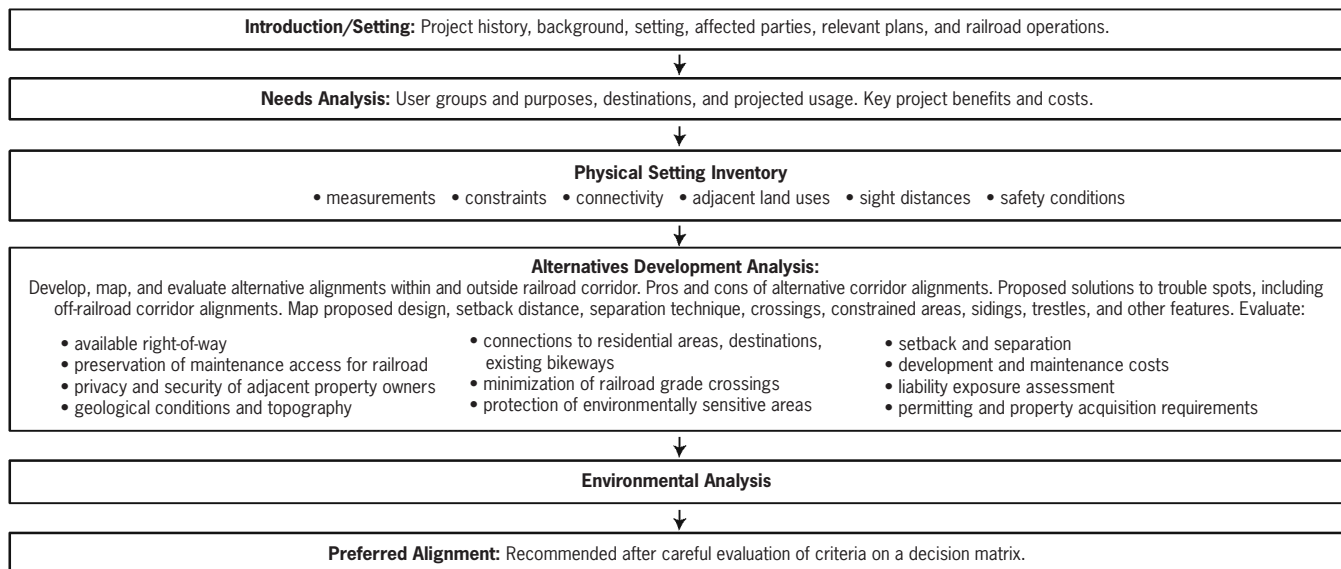


FIGURE 3.2 Steps in feasibility study

- Increased opportunities for aesthetic experiences;
- Alternative transportation options; and
- Family-friendly recreational opportunities.

Corridor Acquisition

Government agencies (usually States, counties, and cities) own about half the RWT corridors nationwide. In the remainder, the railroad retains ownership. For 80 percent of these, the trail management agency purchases a use easement or license from the railroad or transit authority, utility, private landowner, or other government agency (see **Figure 3.1**, RTC, 2000).

Many of the trail management agencies purchased the trail right-of-way, obtaining their funding through a variety of Federal, State, county, city, and private funds. Railroad companies also may choose to donate the land, gaining a tax deduction.

Transfer of ownership is seen as the cleanest way to reduce liability risks, although indemnification agreements can have a similar effect, as explained in *Section IV*. Financial compensation also helps gain railroad company support for projects.

Process Flow

Feasibility Review

Trail managers should undertake a comprehensive feasibility analysis of the project. An RWT feasibility study will serve numerous purposes. It will summarize the goals of the agency seeking to build the project. It will clearly describe the setting, the relationship to local planning documents, the need for the project, land ownership patterns, railroad activity, and other information necessary to determine feasibility (see **Figure 3.2**). The feasibility study should identify and evaluate multiple alternative alignments, including at least one that is not on the railroad right-of-way, and identify a preferred alignment. Three RWT feasibility studies are profiled on the next two pages:



- The proposed Cupertino, California, RWT (partly feasible);
- The Davis-Dixon, California, RWT (rejected as not feasible); and
- The proposed Indian Head, Maryland, Trail (considered feasible).

See *References* for additional examples.

RWT Feasibility: Examples

Cupertino RWT

DESCRIPTION: The California cities of Cupertino, Los Gatos, Campbell, and Saratoga are managing a feasibility study for this proposed 14 km (8.7 mi) RWT project that runs through the heart of California's Silicon Valley (Alta Transportation Consulting, 2001). Union Pacific Railroad (UP) owns the property. The Union Pacific services Hanson Permanente, a concrete plant, and runs approximately three freight trains per week. The trains move slowly, about 32 km/h (20 mi/h) and typically haul coal and cement products from Los Gatos to Cupertino.

DESIGN ISSUES: The right-of-way is 24 m (80 ft) wide in most spots but constrained in a few. A single set of tracks runs approximately 9.1 m (30 ft) off the east right-of-way line, leaving about 15 m (50 ft) of right-of-way to the west of track centerline. For approximately 3.2 km (2 mi), a Pacific Gas and Electric right-of-way parallels the UP right-of-way, allowing an additional 26 m (85 ft) to the west of the tracks. Constrained points include a tunnel, several drainages, and portions that are paralleled by a sound wall.

The typical trail setback from track centerline will be 7.6 m (25 ft) with a 1.2 m (4 ft) high chain link fence. The RWT would cross 18 roadways and impact five creeks that provide habitat for protected species including the California spotted toad and steelhead trout. An existing privately permitted at-grade crossing serving vehicle access to the historic Hammond Snyder home is recommended to become a public crossing.

PROBLEM: At the corridor's north end, steep grades and a single track tunnel.

SOLUTION: Implementation of this segment should be postponed until the rail line is no longer in use.

PROBLEM: Narrow setback in several spots

SOLUTION: Trail will divert to an adjacent roadway with bicycle lanes. At bridge locations, the trail will utilize fencing, signage, and guardrails to keep trail users on the trail and off the tracks.

PROBLEM: Two major roadway crossings requiring grade separation.

SOLUTION: Three options: Construct overpasses, wait for abandonment of rail line and then make use of existing rail bridges, or divert to adjacent roadway.

PROBLEM: With addition of a barrier between the tracks and the trail, residents who currently trespass to use the corridor will not have good access to the trail.



Adequate space along parts of proposed RWT. Cupertino, CA



Tunnel along proposed RWT. Trail will be re-routed in this section. Cupertino, CA



The Union Pacific Railroad planned track expansion led to a search for better alternatives. Davis, CA

SOLUTION: No easy solution. Trail developers would like to establish an at-grade crossing, while the UP representatives are opposed. An overcrossing would have an undesired impact on the community, while an underpass would not be environmentally feasible.

OTHER: Negotiations with the Union Pacific Railroad are underway as of this writing.

CONCLUSION: Many parts of the project are feasible, while others are not. One end of the project will be delayed indefinitely, and some segments will divert to adjacent roadways.

Davis-Dixon RWT

DESCRIPTION: This 8 km (5 mi) long project linking the cities of Dixon and Davis was originally proposed in the 1994 Solano County Bicycle Plan. That plan identified an option along the Union Pacific Railroad mainline, which would provide a direct connection between the two communities.

PROBLEMS AND SOLUTIONS: Design challenges included the need to cross both the tracks and Putah Creek. More importantly, the Union Pacific Railroad was concerned that this was an extremely high-speed and high-frequency mainline, and that additional tracks would be needed in the future. While the safety and liability issues could be addressed, the need for a future track was a major obstacle.

CONCLUSION: Since there were viable on-road albeit less direct alternatives, this option was dropped from consideration.



Proposed site of Indian Head Trail adjacent to Naval Surface Warfare Center Railroad. Charles County, MD

Indian Head Trail: Maryland

DESCRIPTION: The Indian Head Trail is a proposed RWT that would extend 20 km (12.5 mi) along the U.S. Navy Railroad from Waldorf to Indian Head, Maryland. This trail has the potential to draw significant tourism revenues to Waldorf and Indian Head and serve as a key regional linkage along the evolving Potomac National Heritage Trail. The Charles County Board of Commissioners and Naval Surface Warfare Center are both in favor of the project.

The railroad is owned, and infrequently used by the Naval Surface Warfare Center (NSWC), Indian Head Division, but also has been used for an occasional excursion train. The Commander of the NSWC has gained approval from the U.S. Navy to allow this dual use of the corridor, which has a 61 m (200 ft) right-of-way.



DESIGN ISSUES: This railroad is very rarely used, and the poor condition of the tracks requires very slow train speed. In some areas, the rail corridor extends through wetland areas, creating a constrained amount of space for dual use. It is anticipated that boardwalks will be installed in these areas.

CONCLUSION: This is a feasible project. The extreme low frequency of train use in the corridor makes it a good candidate for an RWT. The NSWC is very interested in this project as part of their physical fitness program for Navy personnel, while providing a community amenity.

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

Today, trail planners are more likely to run a more inclusive process than in years past, with most key agencies and companies reporting they were involved in various aspects. However, on many trails studied, railroad representatives complained that they were not involved early enough. Trail planners often echoed this sentiment.

Planning for Alternatives

Bikeway and trail networks are mapped out on both publicly and privately owned corridors as part of local general plans or master plans. Frequently, privately owned railroad corridors appear as part of a local or regional bikeway or trail network before the railroad has been notified or with little to no railroad permission. However, RWT corridors should not be included on bikeway or trail plans unless the affected railroad is notified. If a proposed trail shown on a trail or bikeway plan is on private railroad property, this information must be noted on the plan. Trail planners should consider all reasonable alternatives to the RWT corridor.



Environmentally sensitive area on proposed Downeast Trail along the abandoned Calais Branch owned by the State of Maine. Trail either will be on boardwalks or divert to an adjacent road.
Calais, ME

Environmental Considerations

Railroad corridors often parallel or bisect wetlands, waterways, shorelines, or other environmentally-sensitive areas. Where physical constraints on an RWT would result in a proposed trail having to be located in such an area, the RWT may have to be designed as a boardwalk, relocated, or eliminated from consideration.

As part of or concurrent with a feasibility study, environmental concerns should be analyzed pursuant to local, State, and Federal environmental laws to determine environmental resources that might be impacted. This would include biological, cultural, hydrologic, geologic, and other physical resources, along with potential noise, light, traffic, safety, and other impacts. By identifying sensitive areas, any potential RWT alignment can be tested and then altered as needed to avoid significant impacts. Concurrent feasibility and environmental analyses are recommended to allow RWT planners and engineers to pre-mitigate an RWT project or eliminate an unacceptable alignment early in the process.

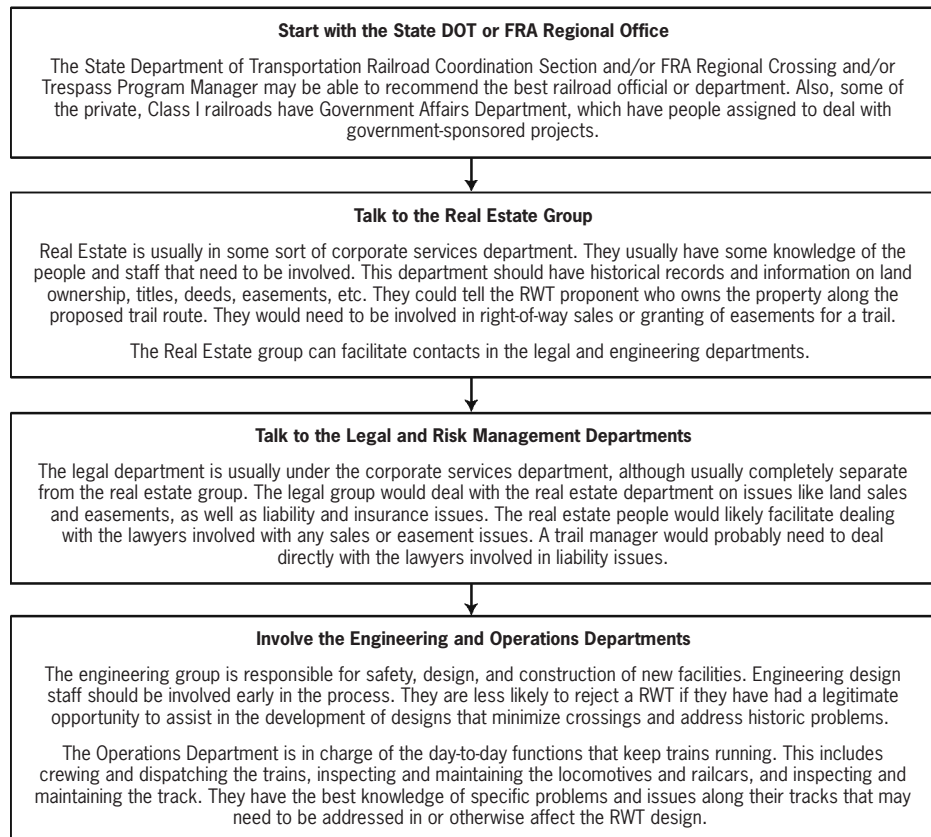


FIGURE 3.3 Involving railroad companies

Involving the Stakeholders

Coordination between the trail manager, other related government agencies, and the affected railroad is critical for success. 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 representatives from the following groups:

- Railroad companies, including representatives of real estate, operations, maintenance, and legal departments;
- 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.

A good example of railroad involvement occurred during planning of the Schuylkill River Trail, Pennsylvania. According to the trail manager, “The trail itself was approved by the County Commissioners in 1974; however, the approval of Conrail was hard fought. In 1990, the Chairman of County Commissioners contacted a senior vice president of Conrail

“Get top (railroad) management to agree and give them a stake in the project.”

JOHN WOOD, SCHUYLKILL RIVER
TRAIL MANAGER



and the two of them worked out an agreement. The County's designers worked with Conrail designers to assure that their interests were addressed, concurrent to negotiation of the agreement. When the design was completed, Conrail and the County signed the easement agreement. The Agreement had a clause that the trail design would meet approval of Conrail engineers, and it did, since they were part of the design process. Bottom line: Get top management to agree and give them a stake in the project."

The feasibility study and trail development process should incorporate extensive public review via public workshops and other outreach methods. Railroad officials should be invited to all public workshops, and encouraged to voice their concerns or suggestions. Public workshop facilitators should work to focus the discussion on the RWT proposal only, rather than allowing diversion onto other railroad-related issues and practices.

Railroad Coordination

Once a railroad corridor is selected as a potential shared use path, one of the first steps prior to initiating a feasibility study or environmental review is the question of railroad coordination and access to the right-of-way. Early coordination with the railroad is an essential element of a successful RWT project. If the public agency is serious about the project, they should commit to developing the project into enough detail so that the true impacts, benefits, cost, and feasibility of the facility are known. Conversely, if a railroad company has absolutely no interest in allowing public access to a corridor, they should express those thoughts in clear terms to a public agency at the outset. As part of any planning, feasibility, environmental, or design work on an active railroad right-of-way, the RWT entity should obtain written permission and meet other requirements, such as using flaggers, prior to entering the railroad property.

However, trail planners usually find it very difficult to identify the appropriate person at a Class I or other non-local railroad to contact about a project. Large railroads can have thousands of employees in numerous States; few if any have a person who deals specifically with RWT projects. Since RWTs are not revenue-producing (unless the railroad is compensated for the right-of-way purchase or use) or even related to railroading at all, the company has little incentive to devote staff resources to an RWT project. The decision-making process, as in all large organizations, involves multiple departments and professionals in a variety of disciplines.

Class I national railroad companies and other railroad companies with significant land holdings should consider developing internal procedures for dealing with RWT proposals. Short-line and transit operators may have only one or few rail lines, so they may not need a standardized procedure. The procedure may follow the process outlined in **Figure 3.3**, setting forth a standardized point of initial contact in the real estate department. The real estate representative would assign a technical team to each RWT project to ensure that RWT concerns are adequately addressed.

Another potential starting point may be FRA's Regional Crossing and Trespass Program Managers, who likely will know or be able to help to determine the appropriate contacts at the railroad. These managers, located in each of FRA's eight regions, develop programs to respond to the unique needs of the States and local communities in their regions in rela-

FRA Regional Crossing and Trespass Programs

Region I

CT, NJ, ME, NY, MA, RI, NH, VT
(800) 724-5991

Region II

DE, PA, MD, VA, OH, WV
(800) 724-5992

Region III

AL, MS, FL, NC, GA, SC,
KY, TN
(800) 724-5993

Region IV

IL, MN, IN, WI, MI
(800) 724-5040

Region V

AR, OK, LA, TX, NM
(800) 724-5995

Region VI

CO, MO, IA, NE, KS
(800) 724-5996

Region VII

AZ, NV, CA, UT
(800) 724-5997

Region VIII

AK, OR, ID, SD, MT, WA,
ND, WY
(800) 724-5998



tionship to the railroads and their safe operations. Some of the issues they address include assisting railroads and communities to close crossings, plan rail corridor programs, advance public education and awareness, and promote law enforcement.

State departments of transportation also have long established relationships with railroad company personnel. Thus, trail planners should consider contacting the Railroad Coordination Section of their State department of transportation for railroad company contact and coordination information.

Keeping Written Records

It is critical for the parties concerned to maintain written records of all aspects of an RWT project. This begins with the planning effort. Typically, the trail project manager or railroad representative will keep a log including a record of key phone conversations and copies of e-mails, transmittals, and meeting minutes. The written record may help defend parties against lawsuits. It also helps provide continuity through potential staff changes, since many RWT planning efforts last for several years. The written record provides documentation as to how and why decisions were made and which parties were involved.

Once the planning phase is complete, the project manager should continue maintaining the log through the construction, operations, and maintenance phases. He or she should write weekly reports documenting field conditions, key work items, and needed repairs. If requested in a court of law, these records will verify that the local agency diligently maintained the trail and proactively addressed safety issues and repairs.

SECTION IV:

Legislation, Liability, and Insurance

Liability is an extremely important area of concern in virtually all RWT projects. In the context of RWT, liability refers to the obligation of a trail manager or railroad to pay or otherwise compensate a person who is harmed through some fault of the trail manager or railroad. The filing of a personal injury or tort claim against the presumed responsible party typically begins the formal process of enforcing that responsibility. However, because there are relatively few RWTs, the courts rarely have analyzed the relative responsibilities of railroads and trail managers toward an injured trail user. Additionally, cases often are settled before they reach a court trial, leaving no legal precedents from which to draw. Thus, there are no clear legal guidelines as to how the courts will view RWT liability issues. Also, some liability questions relating to RWTs are resolved by State law, which varies from State to State, and the applicability of which depends on the specific facts of each case. Nevertheless, some conclusions, with certain references to minority positions, can be made as to how liability issues arising in the context of RWTs are likely to be resolved. This section¹ discusses the principles governing liability in the context of RWTs, including both statutory protections and common law standards.² This section does not address the fairly extensive body of law dealing with disputes related to ownership and acquisition of land near railroad tracks, nor does it address individual liability for violation of the Federal railroad safety laws (e.g., by interfering with the normal functioning of a grade crossing warning device) (see 49 CFR 234.209).

Overview of Recommendations

1. Trail development agencies interested in pursuing an RWT should conduct initial legal research as early into the process as possible. Important information includes the following: ownership, easement, and license agreements in the railroad corridor; legal protections available at the State level (e.g., indemnification, applicable State statutes, and strength of local trespassing ordinances); local or State property rights ordinances and information; and trail management organization insurance protection.

¹ Karl Morell, Ball Janik, LLP, who has experience representing railroads, and Andrea Ferster, Esq., who represents trail and land conservation proponents and serves as counsel to the Rails-to-Trails Conservancy, analyzed rails-with-trails issues for this section.

² “Common law” standards are those developed by judges through case-by-case litigation and set forth in published judicial decisions that are considered precedent in factually similar contexts.



2. Trail development agencies interested in pursuing an RWT should acquire the affected railroad property for public ownership whenever feasible.
3. Trail managers should adhere to design recommendations identified in this report and in design standards and guidelines (e.g., the *AASHTO Guide for the Development of Bicycle Facilities* and *Manual on Uniform Traffic Control Devices*) (see *Appendix A* for explanation of these documents). In particular, signs should be provided at entrances to warn users to stay off the railroad tracks and that trespassing is a crime.
4. Both trail managers and railroad companies should review State statutes to ensure the validity of indemnification agreements, and the scope or applicability of fencing laws (see *Appendix B, Matrix of Statutes and Laws*). To the extent there is any ambiguity as to the applicability of the statute, trail proponents should lead an effort to strengthen their State's laws to increase railroad liability protection, as States such as Arizona have done.
5. Trail management organizations should absolve railroad companies of liability responsibility for injuries related to trail activities on related property, to the extent practicable and reasonable.
6. Trail management organizations should purchase or provide comprehensive liability insurance in an amount sufficient to cover foreseeable liability costs and pay the costs for railroad company insurance for defense of claims.

Overview of Concerns

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 intentionally invites and permits trail use within a portion of their right-of-way, and that the railroad would therefore owe a higher duty of care to trail users than they would otherwise owe to persons trespassing on their corridor.
- Incidents of trespassing and injuries to trespassers will occur with greater frequency due to the proximity of a trail.
- Trail users may be injured by railroad activities, such as an object falling or protruding from a train, hazardous materials, or by a derailment.
- Injured trail users might sue railroad companies even if the injury is unrelated to railroad operations, causing railroads to incur legal fees, court costs, and potential judgments for damages. Railroads have in the past borne the burden of litigation for many incidents on their property, even for crashes with at-fault automobile drivers who have blatantly ignored obvious warning systems.

The level of railroad company concern is dependent in part on the class of railroad and the type of operations they perform. 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 customers. In addition, their perceived deep financial pockets make them a frequent target of lawsuits. 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. For all RWTs proposed for railroad property, the railroad must weigh the safety and liability risks against potential financial and other gains. Thus, minimization of these risks is a key ingredient to a feasible RWT.

Definitions and Laws

As the owners and occupiers of their rights-of-way, railroads have legal duties and responsibilities to persons both on and off their premises. Railroads have a duty to exercise reasonable care on their premises to avoid an unreasonable risk of harm to others who may be off the railroad premises. For example, railroads may be found liable if the use of their right-of-way creates an unreasonable risk to persons on an adjacent “public highway” such as through derailments or objects falling off the trains.

In most States, the duty of care owed to persons who enter another’s property depends on whether the injured person is considered a trespasser, a licensee, or an invitee. Trespassers are due the least duty of care, while invitees are due the most³ (see **Figure 4.1**).

As a general rule, railroads owe no special duty of care to persons trespassing on railway premises, other than to refrain from intentional, harmful, or reckless acts. There are, however, four exceptions to this general rule:

- **FORESEEABLE TRESPASS:** Whenever the railroad is aware, or should be aware, that trespassers are frequently entering on a small area of the right-of-way, most courts will find that the railroad has a duty to exercise reasonable care to look out for the trespassers. Where a known and apparent pathway is located along a railroad track, most courts will hold a railroad liable for not anticipating the presence of persons near the tracks and exercising ordinary care to prevent injury to them, such as by keeping a reasonable look-out.⁴
- **DANGEROUS CONDUCT:** A few States have placed an obligation on railroads to use reasonable care whenever a trespasser can be anticipated and the railroad’s activity in that area involves a high degree of danger.
- **DISCOVERED TRESPASS:** Under the “last clear chance” doctrine, a majority of States impose a duty on railroads to use reasonable care whenever the engineer of a train becomes aware of a trespasser on the right-of-way. In these jurisdictions, the railroad has a duty to use ordinary care to avoid injury to a discovered trespasser.⁵ Most jurisdictions have abandoned this doctrine.

³ A number of States have adopted a rule that a landowner’s liability depends on the foreseeability of the injury rather than the status of the injured person as invitee, licensee or trespasser. See Gulbis, Vitatus, “Modern Status of Rules Conditioning Landowners’ Liability Upon Status of Injured Party as Invitee, Licensee, or Trespasser,” 22 ALR 4th 294, § 3a.

⁴ In some States, a railroad’s tolerance of frequent trespassers has led courts to elevate the status of an injured intruder to licensee.

⁵ A railroad has a duty to take affirmative action to aid or protect a trespasser where the trespasser’s peril is caused by active force under control of the railroad, such as where a member of a train crew observes a trespasser in danger on a trestle.



LIABILITY INCREASES

TRESPASSER: “a person who enters or remains upon land in the possession of another without a privilege to do so, created by the possessor’s consent or otherwise.”¹ Trespassers are due the least duty of care and therefore pose the lowest level of liability risk. The landowner generally is not responsible for unsafe conditions. The landowner only can be held liable for actions that are either intended to cause harm to trespassers or are taken with reckless disregard for the consequences.

LICENSEE: a person on land with the owner’s tacit² or express permission but only for the visitor’s benefit.³ A licensee is owed a greater duty of care than a trespasser.⁴ While the landowner is not responsible for discovering unsafe conditions, the landowner must exercise reasonable care to provide warning of known unsafe conditions. The major distinction between a trespasser and licensee on a railroad right-of-way is that the railroad may be required to look out for licensees before their actual presence is discovered.⁵

INVITEE: a person on the owner’s land with the owner’s permission, expressly or implied, for the owner’s benefit, such as a paying customer. This is the highest level of responsibility and therefore carries the highest level of duty of care. The owner has a duty to (1) inspect the property and facilities to discover hidden dangers; (2) remove the hidden dangers or warn the user of their presence; (3) keep the property and facilities in reasonably safe repair; and (4) anticipate foreseeable activities by users and take precautions to protect users from foreseeable dangers.

¹Second Restatement of Torts, § 329.

²In most States, a railroad’s toleration of trespassers is not considered tacit consent if prevention or providing warning is considered futile.

³Licensees are often individuals taking short cuts over the property of others.

⁴The vast majority of States currently hold railroads to a duty of exercising reasonable care to protect licensees.

⁵Particularly in the context of railroad rights-of-way, there are great similarities between a licensee and a foreseeable trespasser.

FIGURE 4.1 Liability definitions

- **YOUNG CHILDREN:** Under the “attractive nuisance” doctrine, a vast majority of States hold railroads to a duty of exercising reasonable care for young children of whose presence the railroad has actual or constructive knowledge.

In deciding whether to allow an RWT on its right-of-way or determining the indemnity and insurance coverage appropriate for a given RWT, a railroad needs to weigh and balance three factors: (1) the extent, if any, to which the RWT will elevate the railroad’s duty of care to any particular individual; (2) the potential increased scope of the railroad’s liability; and (3) the increased or decreased likelihood of an injury occurring as a result of the RWT.⁶ Each RWT project will necessarily have unique characteristics affecting the extent, if any, to which a railroad’s liability is potentially enlarged. Some general observations, however, can be made.

By selling or leasing a longitudinal strip of its right-of-way for an RWT, the railroad will be permitting the creation of a public way immediately adjacent to its tracks. For rights-of-way not already adjacent to public highways and for those having low incidents of trespass, an RWT would likely enhance the railroad’s duty of care under common law principles and increase the scope of its potential liability for those on the trail. In such situations, an individual traversing the longitudinal strip would generally be deemed a trespasser pre-RWT, to whom no duty of care is owed, but would be considered either a licensee or invitee on the trail post-RWT. As a licensee or invitee on the adjacent trail, the railroad would owe the trail user a duty to exercise reasonable care. The scope of liability is likely to

⁶ The elevation of the duty of care owed to an individual can occur, for example, by having a current trespasser, to whom the railroad generally owes no duty of care, elevated to a licensee, to whom the railroad owes a duty of reasonable care. “Scope of liability” means the potential number of individuals that may be injured.



increase by virtue of the RWT increasing the public usage of the longitudinal strip. A well-designed RWT, however, may mitigate these potential increases in off-property liability by decreasing the likelihood of injury.⁷

In the above situation, a trail user, who departs from the trail and unlawfully enters the railroad's remaining right-of-way, would most likely be deemed a trespasser in most States as long as the incidents of trespass remain infrequent. Thus, the railroad's duty of care likely would not be enhanced for individuals leaving the trail and intruding on the right-of-way. In several cases involving track-side paths, such as a surfaced walkway, courts have found the person injured while walking near the tracks but off the pathway to be contributorily negligent thereby absolving the railroad from responsibility for the injury. Some States use comparative negligence instead of contributory negligence, thereby allowing juries to assess some portion of responsibility to the railroad. By inhibiting trail users from accessing the right-of-way, a well-designed and maintained RWT also could prevent an increase in the scope of the railroad's on-property liability and the likelihood of injury.

For rights-of-way already adjacent to public highways and those with a high incidence of trespass, an RWT likely would not enhance a railroad's duty of care to individuals on the trail. Railroads already have a duty to exercise reasonable care to those lawfully occupying adjacent property. Most States impose that same duty on railroads whenever trespassers frequently enter discrete areas of their rights-of-way. Most likely, the scope of the off-property liability will increase, since in only rare, if any, instances should the frequency of current trespass exceed the projected use of the trail. A well-designed and maintained RWT, however, could offset the increased scope of the off-property liability by channeling current trespassers away from the right-of-way, decreasing the likelihood of injury.

In this latter situation, a well-designed and maintained trail could reduce a railroad's current liability exposure by reducing the number of individuals to whom the railroad owes a duty of care, thereby limiting the scope of the potential liability and decreasing the likelihood of injury. If appropriate barriers are erected on the right-of-way between the trail and the tracks so as to reduce the incidents of trespass onto the tracks, the courts may view the remaining isolated trespassers as no longer foreseeable. Thus, at least in those States that recognize the "foreseeable trespass" exception, the railroad may no longer owe a duty of care to adult trespassers as a result of the RWT. By reducing the number of trespassers, the barriers also should serve to limit the scope of the potential on-property liability and the likelihood of injury on the right-of-way.

The railroad's concern is that an RWT will bring a large and increasing number of individuals near the tracks. This, it claims, will inevitably increase the number of people exposed to injury arising from railroad operations, the incidents of trespass, and the number of locations where a railroad will have to anticipate trespassers. For an RWT without barriers, or with improperly constructed or maintained barriers, these concerns are valid. Without appropriate separation between track and trail, the incidence of trespass is likely to increase and most States likely would hold the railroad to a standard of reasonable care in anticipating a trail user crossing or longitudinally traversing the tracks along the entire

⁷ In assessing a railroad's potential off-property liability, a number of factors need to be considered, including the width of the right-of-way, trail setback distance, condition of track, speed of the trains, and nature of the barrier between the track and trail.



RWT corridor. In these circumstances, both the railroad's duty of care and scope of liability are likely to increase. A trail with well-constructed and properly maintained barriers, however, could serve to reduce, rather than increase, the frequency of trespass onto the tracks. As indicated in *Section II*, a well-designed and maintained RWT can reduce trespassing by "channelizing" pedestrian crossings to safe locations or by providing separation or security. In these circumstances, the incidents of trespass and the railroad's corresponding duty of care may decrease or stay the same.

Available Legal Protections

Potentially offsetting some or all of a railroad's increased liability attributable to an RWT are the State-enacted recreational use statutes (RUS) and rails-to-trails statutes. Landowners receive special protection from liability by the RUS. All 50 States have an RUS, which provides protection to landowners who allow the public to use their land for recreational purposes. Under an RUS, an injured person must prove the landowner deliberately intended to harm him or her. States created these statutes to encourage landowners to make their land available for public recreation by limiting their liability provided they do not charge a fee.

Table 4.1 shows the available legal protections that reduce risk for adjacent property owners on RWT projects, with sample language from relevant legal documents. A compilation of the laws of the 50 States and the District of Columbia relating to the liability issues associated with RWTs is shown in *Appendix B*, providing a listing of the RUSs and governmental tort claims acts for each State. In addition, *Appendix B* also lists recreational trail and rails-to-trails statutes for the States that have enacted them. These are laws specifically enacted to clarify, and in some cases, limit, adjacent landowner liability. More than half of the States have enacted a recreational trail statute that directly addresses the issue of 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.

Trail managers face similar common law duties of care for on- and off-property injuries and damages. Recreational use statutes and governmental tort claims acts, however, can significantly limit a manager's liability. These statutes and acts vary greatly from State to State.

Recreational use statutes typically protect managing agencies from being held liable for injury to trail users, unless trail managers intentionally or recklessly injure or create danger to users. Virtually all RUSs essentially treat trail users as trespassers on the trail property for purposes of determining the duty owed by the manager of the property to the trail users. Most RUSs, however, are not applicable where a fee is charged for entry or use of the trail.⁸ In most States, the RUS grants immunity for the recreational use of any land, whether developed or undeveloped, rural or urban, so long as the plaintiff used it for recreation.⁹

⁸ Many RUSs, however, specifically provide that any consideration received by the private owner for leasing land to a State or State agency shall not be deemed a charge for purposes of rendering inapplicable the RUS. See Del. Code Ann. tit. 7, § 5906 (2000); Ga. Code Ann. § 51-3-25 (2000).

⁹ The possible exceptions are Alaska and Oklahoma. Alaska's RUS is only applicable to certain specified undeveloped lands. While the definition of "unimproved land" includes a "trail," it is unclear whether developed trails would fall under that Statute. See Alaska Stat. § 09.65.200 (Michie, 2000). Oklahoma's RUS appears to be limited to land "primarily used for farming and ranching activities." See OK Stat. tit. 7 § 10(2000).


TABLE 4.1 Liability exposure reduction options

Measure	Sample Language
Recreational Use Statute	“An owner of land who either directly or indirectly invites or permits, without charge, any person to use such property for recreational purposes does not thereby: (a) Extend any assurance that the premises are safe for any purpose; (b) Confer upon such person the legal status of an invitee or licensee to whom a duty of care is owed; (c) Assume responsibility or incur liability for any injury to person or property or for the death of any person caused by an act or omission of such person.”¹
Trespassing legislation	Whoever, without lawful authority or the railroad carrier’s consent, knowingly enters or remains upon railroad property, by an act including, but not limited to— “(1) standing, sitting, resting, walking, jogging, running, driving, or operating a recreational or non-recreational vehicle including, but not limited to, a bicycle, motorcycle, snowmobile, car, or truck; or “(2) engaging in recreational activity, including, but not limited to, bicycling, hiking, fishing, camping, cross-country skiing, or hunting—except for the purpose of crossing such property at a public highway or other authorized crossing, shall be guilty of a misdemeanor. Upon conviction of such act, the person shall be fined not more than \$100, imprisoned for not more than 30 days, or both.”²
Trail or rail-with-trail State statute	“No adjoining property owner is liable to any actions of any type resulting from, or caused by, trail users trespassing on adjoining property, and no adjoining property owner is liable for any actions of any type started on, or taking place within, the boundaries of the trail arising out of the activities of other parties.”³
Easement/lease agreements that limit liability	“The County hereby releases and will protect, defend, indemnify and save harmless Conrail from and against all claims, liabilities, demands, actions at law and equity (including without limitation claims and actions under the Federal Employer’s Liability Act), judgments, settlements, losses, damages, and expenses of every character whatsoever (hereinafter collectively referred to as “claims”) for injury to or death of any person or persons whomsoever which result from the unauthorized use of motorized vehicles, such as but not limited to, motorcycles, minibikes, and snowmobiles within the easement area, and for damage to or loss or destruction of property of any kind by whomsoever owned, caused by, resulting from or arising out of the exercise of this Easement granted hereby, except to the extent that such claims arise from Conrail’s negligence.”⁴ “Permittee shall assume complete liability for any and all claims resulting from the construction, reconstruction, maintenance, operation, use, and existence of the Facility located on, under, or over the Site. . . .however, (the) Permittee shall not be required by this permit to indemnify any person against liability for damages arising out of bodily injury or property damage caused by or resulting from the sole negligence of such person or such person’s agents or employees.”⁵
Easement/lease agreements with full indemnification	“...the City assumes all risk of loss or destruction or damage to the Walkway, to property brought thereon by the City or by any other person with the knowledge or consent of the City, and to all other property, including property of the Railroad, and all risk of injury or death of all persons whomsoever, including employees of the Railroad, where such loss, damage destruction, injury or death would not have occurred but for the presence of the walkway on the Bridge.”⁶
Insurance	See Appendix C, p. 149
Transfer of ownership	The language limiting liability or granting indemnification on behalf of the railroad should be the same or similar to easement agreements.

¹ Colorado Recreational Use Statute: Colo.Rev.Stat.Ann. § 33-41-101 et seq. (West 2000). Other examples available on-line at http://www.imba.com/resources/trail_issues/liability_chart.html.

² Federal Railroad Administration, Office of Safety, Model State Legislation for Railroad Trespass and Railroad Vandalism, available at <http://www.fra.dot.gov/content3.asp?P=297>.

³ California Recreational Trails Act, Cal.Pub.Res.Code § 5075.4 (Deering 2000), available at <http://www.leginfo.ca.gov/calaw.html>.

⁴ Schuylkill River Trail Indemnification agreement.

⁵ Coastal Bike Trail Permit between Municipality of Anchorage and the Alaska Railroad Corporation, August 1987: p.5.

⁶ Lease and Operating Agreement between City of Portland and the Union Pacific Railroad, January, 2000: p.9. Agreement provided in full in Appendix C.



Not all States' RUSs cover trail managers. The courts in California, Pennsylvania, and New York have held that the State RUSs do not cover public agencies, but instead are only applicable to private landowners.¹⁰ Under those circumstances, the public agencies would be liable to the extent specified by the State's tort claim statutes.

On the other hand, the Wisconsin RUS expressly covers the owner of the land, any governmental entity that leases the land, and any nonprofit organization that have a recreational agreement with the owner (Wis. Stat. Ann. § 895.52(1)(West 2000)).

Even if a public agency is not covered by a State RUS, its tort claims law may grant immunity. For example, California absolves governmental entities of liability for injuries caused by a condition of certain paved and unpaved trails ((Cal. Civ. Code § 831.4 (West 2000); Minn. Stat. Ann. § 3.736.3(h)(West 2000); S.D. Codified Laws § 20-9-12 et seq. (Michie 2000)). Pennsylvania has enacted a comprehensive rails-to-trails law that expressly extends the State RUS to "any person, public agency or corporation owning an interest in land utilized for recreational trail purposes" (32 Pa. Cons. Stat. tit. § 5621 (2000)). By contrast, Wyoming law specifically provides that the government is liable for damages resulting from negligent operation of maintenance of any "recreation area or public park" (Wyo. Stat. Ann. § 1-39-106 (Michie 2000)).

A trail along a right-of-way may be considered a linear park, the operation of which in some States is considered a "discretionary" or "proprietary" function and immune from liability.¹¹ For example, most States accord highway agencies with immunity from charges of defective highway design (called "design immunity") if the highway was designed in accordance with accepted engineering practices and standards (NCHRP, 1981).

The railroad's increased on- and off-property liability for RWT also may be limited, in whole or in part, pursuant to the various State RUSs.¹² Although there is little case law specifically interpreting the impact of the RUS on RWT, two Federal courts have given a very expansive interpretation to the scope of the recreational use and the reach of the immunity granted by the various RUSs. In both cases, the courts held that railroad rights-of-way are suitable for recreational use and that the railroads are immune from liability for negligence under the respective State RUS where the plaintiffs used the rights-of-way for recreational purposes even though no developed trail had been established on the rights-of-way.¹³ Virtually all RUSs provide that the owner of the property owes no duty of care to a recreational user as long as the use of the property and the property itself qualify under

¹⁰ See, e.g., *Delta Farms Reclamation Dist. No. 2028 v. Super. Ct. of San Joaquin County*, 190 Cal. Rptr.494 (1983); *Leonakis v. State*, 511 N.Y.S.2d 119 (1987); *Watterson v. Commonwealth* 18 Pa. D. & C.3d 276 (1980).

¹¹ See *Mayor and City Council of Baltimore v. Ahrens*, 179 A. 169, 171-73 (Md. 1935) (to hold governments liable for injuries in parks "would be against public policy, because it would retard the expansion and development of parking systems, in and around growing cities, and stifle a gratuitous governmental activity vitally necessary to the health, contentment, and happiness of their inhabitants").

¹² For example, Arizona's RUS is expressly extended to "railroad lands . . . which are available to a recreational or educational user, including, but not limited to, paved or unpaved multi-use trails . . ." *Ariz. Rev. Stat. Ann.* § 33-1551 (West 2000).

¹³ In *Lovell v. Chesapeake & Ohio R.R.*, 457 F.2d 1009 (6th Cir. 1972), a Boy Scout leader was killed when he tried to rescue a Scout from an oncoming train. The court found that the Boy Scouts had gone onto the railroad tracks for hiking, which was a recreational purpose. Consequently, the court held that the Michigan RUS "deprives his widow of a cause of action absent proof of gross negligence or wanton or willful misconduct on the part of the railroad." *Id.* at 1011. See also *Powell v. Union Pac. R.R. Co.*, 655 F.2d 1380 (9th Cir. 1981). The Washington State RUS was interpreted as potentially immunizing the railroad from liability where a teenager was killed when she used the right-of-way to access the beach, if, on retrial, the railroad was found to have allowed the use of the right-of-way for recreational purposes.



the RUS. The theory behind these statutes is that if landowners are protected from liability they would be more likely to open up their land for public recreational use and that, in turn, would reduce State expenditures to provide such areas. Consequently, the RUSs can be reasonably interpreted as overriding the common law duty railroads would otherwise owe to recreational users on their rights-of-way.¹⁴

Presumably as an added incentive to encourage private landowners to allow use of their property for recreational purposes, the California RUS allows the landowner to recover reasonable attorney's fees in defending against any unmeritorious claim for injury or damages on the property (Cal. Civ. Code § 846.1(a) (West 2000)). The Colorado RUS, in addition to limiting liability to willful and malicious conduct, limits the amount of damages owed by a private landowner for injury to a recreational user on his or her property as long as the owner does not share in any fees paid by the injured person (Colo. Rev. Stat. Ann. § 33-41-103(2) (West 2000)). Similarly, the Maine RUS permits courts to award legal costs, including reasonable attorneys' fees, to an owner or manager of a trail who is unsuccessfully sued for injury or damages (Me. Rev. Stat. Ann. tit. 14, § 159-A(6) (West 2000)).

Apparently the most sweeping protection for landowners who enter into an agreement with a governmental entity for recreational use of their property is offered by Virginia. The Virginia RUS expressly mandates that any governmental entity entering into such an agreement must "hold [the owner] harmless from all liability and be responsible for providing, or paying the cost of, all reasonable legal services required by [the owner] as a result of a claim or suit attempting to impose liability" (see Va. Code Ann. § 29.1-509(E) (Michie 2000)). The Statute further provides that any attempt to waive this governmental indemnification is invalid. The Virginia Statute, thus, appears to provide total indemnification for a railroad entering into an agreement with a Virginia governmental entity for trail use along the railroad's right-of-way.

Crash Trends

Almost 3,500 highway-rail incidents occurred in 2000, a dramatic decrease from the 5,715 reported in 1990 (see **Figure 4.2**). In almost three-quarters of the cases, a train strikes a motorist. However, the motorist is almost always at fault, having ignored warning signs, bells, lights, even gates. Automobile, van, and truck crashes make up 83 percent of railroad

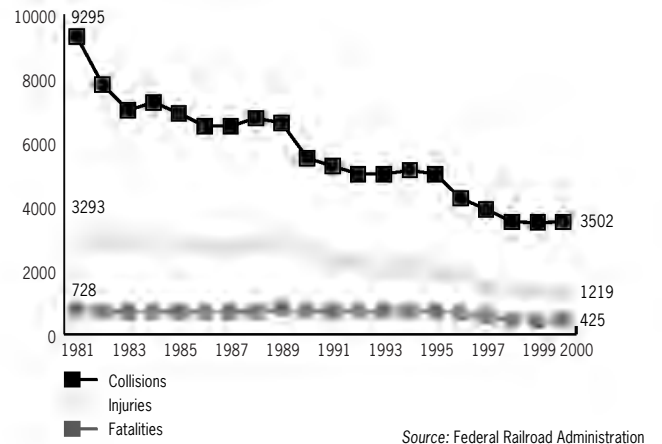


FIGURE 4.2 Highway-rail grade crossing collisions and casualties at public crossings, 1981-2000

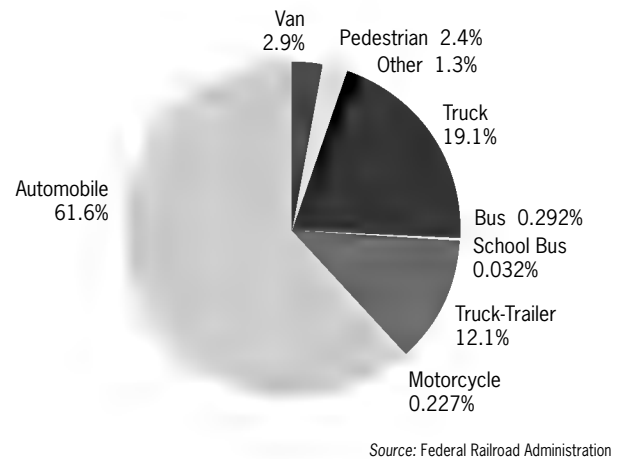


FIGURE 4.3 Highway-rail incident breakdown, 2000

¹⁴ As previously discussed, under common law, railroads have a duty to exercise reasonable care to prevent harm to anyone lawfully occupying adjacent property and those tacitly or expressly permitted to enter the railroad's property. Under virtually all of the RUSs, however, railroads would only be liable to recreational users on the right-of-way for intentional or reckless conduct. Also, most RUSs define the recreational users in a manner that would include minors. See e.g., Mass. Gen. Laws Ann. Ch. 21, § 17C(a) (West 2000). The Texas RUS, however, does not limit liability for "attractive nuisances" except for injured trespassers over the age of 16 on agricultural land. See Tex. Civ. Prac. & Rem. Code Ann. § 75.003(b) (West 2000).



collisions. Pedestrian crashes only account for about 2 percent (see **Figure 4.3**). These incidents reveal the dangers of trains interacting with people, whether in a car or on foot. Since 1975, the number of trespass fatalities has risen and fallen. Over the past seven years, the number of trespass fatalities has remained approximately 500 per year, a number that now exceeds deaths at highway-rail crossings. As a result, trespasser fatalities represent the greatest loss of life associated with railroad operations.

Researchers queried trail managers, railroad officials, and official railroad industry records for historical trends and information about at-grade RWT-track crossings. The available official documentation yielded no crash information. None of the trail managers or railroad officials reported any crashes along the RWTs studied for this report. The Reading and Northern Railroad official for the Lehigh River Gorge Trail, however, did report frequent close calls.

The Rails-to-Trails Conservancy's (RTC) 2000 report, *Design, Management, and Characteristics of 61 Trails along Active Rail Lines*, identified one crash that occurred at an at-grade road crossing on the Illinois Prairie Path. The bicyclist ignored the warning bells and flashing lights, rode around a lowered crossing gate, and collided with the train. Technically, this incident did not occur on the trail corridor but at an adjacent, pre-existing highway-rail crossing.

RTC found another incident involving a boy in Alaska, who used the Tony Knowles Coastal Trail to approach the tracks. The boy climbed under a damaged fence then attempted to hop onto a passing freight train, with tragic results. The City of Anchorage, which manages the trail and assumed liability, settled the case with the plaintiff for \$500,000. The railroad was held harmless from any liability for this accident by the terms of its indemnification agreement with the City. Subsequently, the Alaska Railroad Corporation took out a \$10 million per incident insurance policy with a \$100,000 deductible at a cost of \$15,000 per year.

Although these are the only known RWT incidents, and although no reported crashes appear to have occurred where RWTs cross active rail tracks at grade, it is important to recognize the potential dangers of human interaction with moving trains.

Many RWT agreements specify design features that are intended to reduce liability potential, such as fencing, landscaping, crossing design, and maintenance. None of the railroad officials interviewed reported an increase in liability costs since the adjacent trail was developed, nor had they had their indemnification agreements challenged in court.

Property Control

The type of property control dictates both the ease of the project and the liability burden. There are three types of property arrangements: purchase, easement, and license. Sample agreements are contained in *Appendix C*.



Acquisition

To accommodate the concerns of rail operators with respect to the location of a trail in an active right-of-way, a public agency might look to own the active rail corridor itself. This internalizes the liability and coordination efforts. Governments under civil law are treated differently from private landowners due to their unique status as sovereign entities. In some jurisdictions, immunity available to governmental agencies depends on the particular function performed, ranging from highway design and maintenance to employment. Many States have recently enacted statutes that limit the amounts or kinds of damages recoverable against governments (Isham, 1995).

Two examples of public ownership include the City of Seattle, Washington, which acquired a right-of-way for use by its Waterfront Streetcar and an RWT located next to the track. Portland, Oregon's regional government, Metro, purchased property under the Oregon Pacific Railroad tracks from a local utility so it could have control of the proposed Springwater Corridor Extension RWT. See *Section II: Case Studies*, for more information regarding these projects.

However, most examples of public acquisition of rail lines involve development of transit facilities or of new facilities providing access to intermodal hubs, such as the 16 km (10 mi) Alameda freight corridor in Los Angeles. The Dallas Area Rapid Transit agency has acquired title to short lines for eventual development as extensions of the existing Dallas light rail system. In California, acquisition of former Class I lines by Caltrain in the Bay Area, the purchase by North County Transit District (NCTD) and the Orange County Transportation Authority (OCTA) of the old Santa Fe mainline into San Diego, and the acquisition of surplus Southern Pacific and Santa Fe lines in the Los Angeles area by the Los Angeles County Metropolitan Transportation Authority (LAMTA) are other examples. These acquisitions have translated into hundreds of millions of dollars for railroads, while retaining use of the lines for their continued private enterprise.

On lightly-used branch lines, a railroad may prefer simply to sell the entire right-of-way rather than encumber it with easements or sub-parcels. Where a railroad corridor traverses suburban or urban areas with high property values, a prime consideration from the railroad's perspective is whether a trail constitutes the highest and best use for an interim or permanent use.

Class I railroads, however, consider their property to be a very important tangible resource. They commonly reserve corridor property for future potential capacity expansion and, for the most part, remain firm in their intent to retain full ownership and control of their infrastructure. Any public agency considering studying the feasibility of an RWT first must start with the assumption that railroads are profit-making enterprises with a strong fiduciary responsibility to their shareholders. Since large railroads are publicly-held corporations, their shareholder base includes millions of Americans with investments in mutual funds and retirement programs. While on occasion they may "donate" items to the public, for the most part they do not expect to part with their assets for free.

Railroad corridors are being sold to public transit agencies around the world for tens of millions of dollars, with the railroad still maintaining the ability to provide freight service. While a public agency may believe that their trail does not impact existing rail service,



The Steel Bridge Riverwalk in Portland, OR, is on property owned by the Union Pacific Railroad (UPRR) via a license agreement. Opened in May 2001, the shared use path is cantilevered off the south side of the bridge. Previously, the bridge was kept in the raised position until a train came across (about 60 per day at less than 32 km/h (20 mi/h)). This was to prevent trespassing and to reduce the maintenance cost of raising the structure for each watercraft.

The license agreement specifies that the UPRR is to incur no additional liability risk as a result of the trail. Thus, the City of Portland indemnifies the railroad against any and all incidents, including derailments. The City also is required to carry \$10 million private insurance at a cost of approximately \$40,000 annually, pay the railroad for the additional maintenance costs it has as a result of the trail, pay for safety improvements as needed, and provide a detailed management plan. The Riverwalk sees more than a thousand daily users.

Class I railroads see no incentive to giving an agency a free easement but do see the potential problems. While RWTs may provide benefits to a railroad, such benefits are unlikely to convince a railroad that it is beneficial to lose control of part of their right-of-way for public recreation. This is particularly true for heavily-used freight railroad routes, on which there are few existing RWTs today.

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 right-of-way and structures, and measurably reducing the liability a railroad experiences. The agency should employ an experienced land appraiser and attorney. A public agency may submit an offer to a railroad and then negotiate a purchase price for an easement. Once settled, the easement becomes a permanent feature on the land title regardless if it is sold in the future.

Other key considerations for a railroad include future needs for additional tracks and sidings, which an RWT may preclude. On a lightly-used corridor that may be abandoned in the future, the benefits of a short-term sale may outweigh the costs of waiting for a long-term sale. Other questions may include: What is the likelihood of the entire corridor being railbanked and purchased for transit or a linear park? What is the likelihood of the corridor being developed, and could a local agency exert control on type of development? What is the likelihood of the corridor being sold to adjacent property owners? The real estate department will want to analyze these options to determine which is best from an economic standpoint for the railroad.

Easements and License Agreements

In most instances, fee-simple (i.e., full ownership) acquisition is not necessary for trail development, and, in many cases, is not really an option. Easements, which come in many forms, typically are acquired when the landowner is willing to forego use of the property and development rights for an extended period. The landowner retains title to the land while relinquishing most of the liability and the day-to-day management of the property. The trail manager gets a lower price than a fee-interest acquisition and sufficient control for trail purposes. The easement is attached to the property title, so the easement survives property transfer. **Figure 4.4** provides a listing of the preferred contents of an easement agreement from both the railroad and trail manager perspective.

A license is usually a fixed-term agreement that provides limited rights to the licensee for use of the property. Typically, these are employed in situations when the property cannot be sold (e.g., a publicly owned, active electrical utility corridor) or the owner wants to retain use of and everyday control over the property. The trail management authority avoids a large outlay of cash, yet obtains permission to build and operate a trail. But it will have little control over the property, and may be subject to some stringent requirements that complicate trail development and operation. **Figure 4.5** provides a listing of the preferred contents of a license agreement from both the railroad and trail manager perspective.

**From the trail manager's perspective, a model easement agreement should:**

1. Guarantee exclusive use.
2. Be granted in perpetuity.
3. Include air rights if there is any possible need for a structure.
4. Broadly define purpose of the easement and identify all conceivable activities, uses, invitees, and vehicular types allowed to avoid any need to renegotiate with fee interest owner in future.
5. State that all structures and fixtures installed as part of trail are property of grantee.
6. Limit grantor indemnification to trail-related activities only.

From a railroad's perspective, a model easement agreement should:

1. Include a revocable clause, including removal, if the trail becomes a safety or liability problem.
2. Indemnify the railroads against trail-related trespasser activities.
3. Provide a specific definition of "negligence" in the indemnification exception section as it relates to the railroad's liability exposure, or potentially indemnify the railroad against all incidents including such events as derailments.
4. Place responsibility for ensuring adequate railroad access to the tracks, at any time, for any reason, and place responsibility for needed trail repairs or improvements in the hands of the public agency.
5. Reference a detailed trail management plan and feasibility study which includes design review, feasibility analysis, and maintenance and management procedures and responsibilities.
6. Retain approval rights for any improvement or use on the easement.

FIGURE 4.4 Preferred easement agreement contents**From the trail manager's perspective, a model license agreement should:**

1. Provide an acceptable term length with an option to renew.
2. Identify all conceivable activities, uses, invitees, and vehicular types.
3. Allow for railroads to review and approve the plan within a time limit.
4. Provide clarity on maintenance responsibilities.
5. Narrow potential environmental liability for pre-existing conditions.
6. Limit grantor indemnification to trail-related activities only.
7. Specify limits on other uses of license property.

From a railroad's perspective, a model license agreement should:

1. Allow for temporary trail closures for railroad maintenance activities.
2. Include a revocable clause, including removal, if the trail becomes a safety or liability problem.
3. Indemnify the railroads against trail-related trespasser activities.
4. Provide a specific definition of "negligence" in the indemnification exception section as it relates to the railroad's liability exposure, or potentially indemnify the railroad against all incidents including such events as derailments.
5. Place responsibility for ensuring adequate railroad access to the tracks, at any time, for any reason, and place responsibility for needed trail repairs or improvements in the hands of the public agency.
6. Reference a detailed trail management plan and feasibility study which includes a design review, feasibility analysis, and maintenance and management procedures and responsibilities.

FIGURE 4.5 Preferred license agreement contents

Design

Visible signage and good design are prudent liability protection strategies, as will be explained in *Section V: Design*. Trail users should be warned at the trailhead and at any other entrances to stay off the railroad tracks, particularly where there is no fencing or physical separation between the trail and the rail corridor. If the RWT is clearly designed to indicate that the railroad corridor is separate from the trail, trail users should be considered trespassers to which no special duty of care is owed.

¹⁵ See *Missouri, K. & T. RR Co. v. Wall*, 116 S.W. 1140 (Tex. 1909); *Chicago, & Q RR Co. v. Flint*, 22 Ill. App. 502 (1887).



Trespassing can lead to potentially deadly consequences. Lake State Railroad tracks. Gaylord, MI

The Canadian government sees the development of RWTs as a trespassing reduction strategy. “The proper design and effective use of space can lead to a reduction in the incidence of pedestrian conflicts with railway operations and improve overall safety and quality of life in the neighboring community.”

CONSTABLE WILLIAM LAW,
CANADIAN PACIFIC RAILWAY

Several court cases have held that the availability of a safer path or route, such as a surfaced walkway between two lines or railroad tracks was a factor in determining that a person injured walking near a railroad track was contributorily negligent, and absolved the railroad from responsibility.¹⁵ As the case studies in *Section II* summarize, a well-designed and maintained RWT can actually reduce trespassing by channelizing pedestrian crossings to safe locations or by providing separation or security. A well-designed and maintained RWT should have the effect of reducing both trespassing and the railroad’s risk of being held responsible for injuries sustained by trespassers.

Risk Reduction: Trespassing

For this study, researchers counted trespassers on the tracks adjacent to the case study trails for two hour periods during the time of day/week the trail manager, railroad official, or law enforcement agent suggested they would be most likely to observe trespassing activity. During these specified times, researchers observed few trespassers on tracks near existing trails, and typically only on tracks not separated by fencing. This is, of course, an initial study. Extensive observations for longer periods of time and over various seasons of the year could yield more comprehensive results.

In corridors with planned RWTs but no formal trail facility, researchers observed more trespassing, with the most serious conditions along the proposed Coastal Rail-Trail in California near Del Mar and Encinitas. There, researchers observed 155 trespassers over the course of two hours. Most trespassers were crossing the track to access water (ocean or river) for surfing, fishing, and other recreational activity (see **Figure 2.2** on page 10). The rest were walking alongside the tracks with very few actually on the tracks. Researchers observed that at least one-third of the activity occurred in areas planned to become the trail, while 44 percent seemed to be in areas that would not be accommodated by the planned trail (see **Figure 2.3** on page 10).

Most U.S. railroad companies rely on local and State trespassing ordinances to bolster their enforcement attempts and on local police departments to enforce trespassing and vandalism laws. However, most police departments respond “as needed” rather than having regular patrols. Additional information on various enforcement practices is contained in *Section VI*.

Railroad and trail officials on several of the existing trails studied reported some relief from trespassing. Several others reported no change (some with recurring problems), although at least one reported what they felt to be an increase in trespassing. The key to trespassing relief appears to be good design, particularly separation and maintenance.

On the Lehigh River Gorge Trail, Pennsylvania, much of the trail is relatively close to the tracks (less than 4.6 m (15 ft) from the track centerline) and is not separated by fencing. Railroad officials report trespassing is indeed a frequent problem. In contrast, as a condition of the sale of the property, CSX required the Three Rivers Heritage Trail, Pennsylvania, to build a chain-link fence the entire length with no opening or fence breaks allowed. Trespassing relief is expected.



However, fencing alone does not always solve the problem. On an RWT section of the Outremont Spur in Montreal, Canada, Canadian Pacific Railway officials noted 23 locations where the fence had holes. They also observed numerous locations where gates were not locked or secured properly. These incidents serve as evidence of significant continued trespassing and determined vandalism.

Risk Reduction: Vandalism

Railroad officials report the most common types of vandalism incidents on RWTs are fence cutting, dumping, and graffiti. Continuing problems are associated with several trails, including the ATSE, California, and Burlington Waterfront Bikeway, Vermont. Others, such as the Platte River Trail, Colorado, and Schuylkill River Trail, Pennsylvania, are associated with decreased problems. There are few reports of increased problems. Some trail agencies have installed innovative features to solve both trespassing and vandalism problems simultaneously, such as the “living fence” — tall and thick vegetation separating the trail from tracks — on the Burlington Waterfront Trail.

Review and Strengthen State Statutes

Trail managers should work to strengthen protections afforded by State statutes (see *Appendix B*). For example, RUSs should cover both recreational and transportation trail use. A number of States have enacted laws that require railroads to fence their rights-of-way under certain circumstances, and impose liability on the railroad for livestock that are injured on unfenced railroad corridors.¹⁶ In general, such laws are enacted for the benefit of adjacent landowners along the corridor and not for the benefit of the public at large (*Barbee v. Southern Pacific Co.*, 99 P. 541 (Cal. App. 1908)). In the absence of a statute, a railroad company does not have a duty to build fences to prevent trespassers from coming onto its property,¹⁷ though fencing appears to offer significant trespassing relief. However, fencing is not a practical or cost-effective option for many railroads, particularly for lengthy corridors in rural areas. Thirty States have passed laws relating to trespassing on railroad property, and the Federal Railroad Administration has developed a model State trespassing law that imposes misdemeanor penalties for entering or remaining on a railroad right-of-way (see **Table 4.1** on page 45).

Nationwide At-grade Crossings (2000):

Publicly owned	154,084
Privately owned	98,430

Crossings

The consolidation and closure of highway-rail at-grade crossings remains a key element in the U.S. DOT’s action plan to improve grade crossing safety. As part of this continuing national effort to improve rail safety and reduce costs associated with highway rail crossings, many Class I railroads, as well as the FRA and many State departments of trans-

¹⁶ These fencing laws are identified and summarized in Appendix B. In addition, fencing obligations can be imposed by municipal ordinance. See *Heiting v. Chicago, R. I. & P. R. Co.*, 96 N.E. (Ill. 1981) (Railroad’s violation of City ordinance requiring fence was proximate cause of injury to child who entered right-of-way at location where fence had previously existed and was torn down.)

¹⁷ See *Nixon v. Montana, W. & S. W.R.*, 145 P.8 (Montana, 1914); *Nolley v. Chicago, M., St. P. & P. R.*, 153 F.2d 566, 569-70 (8th cir. 1950); *Scarborough v. Lewis*, 518 A.2d 563 (Pa. 1986).



portation, are working to close existing at-grade rail crossings (FRA, 1994) in order to reduce liability exposure and incidents. For example, from 1991 to 1999, they closed 33,599 public and private at-grade crossings, an 11.5 percent decrease.

Typical criteria for closure of public at-grade crossings are:

- Redundant or unnecessary to meet motorist needs, and
- Usually requires hearings, a public forum, and/or City Council approval.

Typical criteria for closure of private at-grade crossings are:

- Unlicensed, nonpermitted, illegal, redundant, or alternate access exists, and
- Decision between the railroad and the user.

An RWT feasibility study must include a detailed assessment of crossings and should seek to close existing at-grade crossings, if possible, or redesign the crossings to accommodate the RWT safely. It should be noted that closing existing at-grade crossings can have a detrimental impact on pedestrian access.

A railroad's liability may depend on whether the railroad has adequately maintained the crossing or complied with State statutes controlling the signals and warnings that are required (Kuhlman, 1986). The railroad may minimize its liability by requiring trail managers to indemnify the railroad for liability in the event of an injury to trail users, to the extent permitted by State law, and by requiring insurance coverage of this risk.



Derailed train. Bourbonnais, IL

Indemnification

To the extent practicable and reasonable, trail management organizations should enter into indemnification agreements that absolve railroad companies of liability responsibility for injuries related to trail activities. Less than half the case study trail agreements require the government entity to indemnify the railroad against claims (see **Figure 4.6**). For RWTs like the Mission City Trail, California, and Schuylkill River Trail, Pennsylvania, the City or County assumes all liability.

The extent to which government agencies possess the authority to enter into reasonable indemnification agreements depends on the law in that State. Public agencies may be more limited in their ability to enter into indemnification agreements than private trail managers. For example, a governmental entity may be barred by its State constitution from imprudently assuming the liability of another entity.¹⁸ Other States have, by statute, specifically granted agencies indemnification authority.¹⁹

¹⁸ See, e.g., *Chicago & N.W. Transp. Co. v. Hurst Excavating, Inc.*, 498 F.Supp. 1, 4 (N.D. Iowa 1980) (relying on Section 1 of Article VII of the Iowa Constitution.)

¹⁹ For example, Oregon law provides authority for the parks department to indemnify "an owner of private land adjacent to an Oregon recreation trail . . . for damage clearly caused to the land of the owner, and property therein, by users of such trail . . ." Oregon Rev. Stat. § 390.9980.

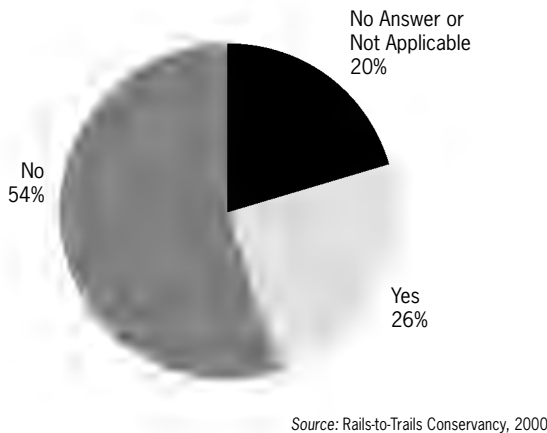


FIGURE 4.6 Requirement for indemnity, by percentage of RWTs

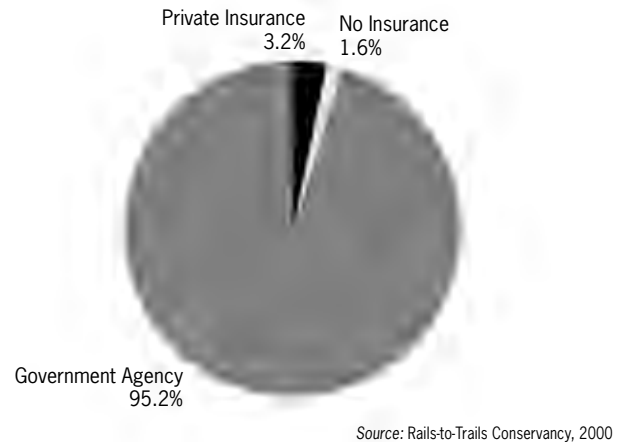


FIGURE 4.7 Source of liability insurance, by percentage of RWTs

In the event of a derailment, the issue would be whether or not the derailment was caused by the railroad's negligence; if so, the railroad likely would be held responsible for injury to any persons lawfully using a trail alongside the railroad right-of-way. However, the railroad's liability would be no different from its liability to persons injured on any other adjacent public highway, sidewalk, or crossing. The question from the railroad's perspective is whether the trail is bringing people into close contact with the rail line who would otherwise not be there. The railroad will seek to be indemnified for all potential incidents including derailments.

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. These concerns are best addressed through insurance and, to the extent permissible under State law, through indemnification agreements with trail managers. 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)—one important function of a license agreement is to identify liability issues and responsible persons through indemnification and assumption of liability provisions. In most instances, the railroad will seek an agreement by which the trail manager agrees to purchase comprehensive liability insurance in an amount sufficient to cover foreseeable liability costs. The railroad also may ask the trail manager to assume liability, as well as responsibility for the legal defense, in the event of damage or injury sustained by virtue of the trail use of the property.²⁰

The relevant government agencies' umbrella policies insure 95 percent of the existing RWTs against liability. Many government agencies are self-insured (see **Figure 4.7**). Insurance has been invoked very few times from injuries related to RWT activities (RTC, 2000). Railroad companies interviewed for this report declined to provide information about claims, citing privacy concerns.

²⁰ Indeed, in Alaska, any State or municipality using railroad lands for a public trail or walkway is required to indemnify and hold the railroad harmless for liability and claims arising from such use. Alaska Stat. § 42.40.420 (Michie 2000).

In very few cases, a private or nonprofit organization such as the snowmobile club for the Railroad Trail, Michigan, carries a supplemental insurance policy for the trail. However, the Lake State Railroad company official expressed doubt that the additional \$2 million policy would be sufficient in the case of a serious claim. For the planned Kennebec River Rail-Trail, the City of Augusta, Maine, will pay an additional \$2,000 annually to add railroad indemnification to their insurance.

As mentioned earlier, the City of Portland, Oregon, carries a \$10 million annual insurance policy on the Steel Bridge Riverwalk. Class I railroads often require \$5 million to \$10 million insurance policies for other activities permitted on their rights-of-way.

To the extent practical and reasonable, trail management organizations should purchase or provide liability insurance in an amount sufficient to cover foreseeable liability costs and pay the costs for railroad company insurance for defense of claims.

SECTION V:

Design

No national standards or guidelines dictate rail-with-trail 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. Trail designers should work closely with railroad operations and maintenance staff to achieve a suitable RWT design. Whenever possible, trail development should reflect standards set by adjacent railroads for crossings and other design elements. Ultimately, RWTs must be designed to meet both the operational needs of railroads and the safety of trail users. The challenge is to find ways of accommodating both types of uses without compromising safety or function.

The recommendations in this section are based on:

- Extensive research into all existing RWTs.
- In-depth case studies of 21 existing and planned RWTs.
- Interviews with railroad officials, trail managers, and law enforcement officials.
- Review of existing train and trail safety literature.
- Analysis of publicly-accessible trespassing and crash data.
- Input from a panel of railroad officials and experts, trail developers and managers, trail users, lawyers, railroad operators, and others.
- Extrapolation from relevant State transportation manuals, the American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* (1999) (hereafter referred to as the AASHTO Bike Guide), Americans with Disabilities Act (ADA) publications for trails and pedestrian facilities, the *Manual on Uniform Traffic Control Devices* (MUTCD, 2000), and numerous Federal Railroad Administration (FRA) and other Federal Highway Administration (FHWA) documents.
- The experience and expertise of researchers and reviewers, including experienced railroad and trail design engineers, landscape architects, safety specialists, trail developers and managers, trail users, lawyers, railroad operators, operations officials, and others involved in this study.



The design recommendations should be considered a toolkit, rather than standards or guidelines. More research will be needed to develop standards that can be incorporated into AASHTO's design guides and the MUTCD. Each RWT project is different; the design should be based on the specific conditions of the site, requirements of the railroad owner, completion of a feasibility study (as discussed in *Section III*), State and other regulatory requirements, and engineering judgment.

Overview of Recommendations

1. RWT designers should maximize the setback between any RWT and active railroad track. The setback distance between a track centerline and the closest edge of the RWT should correlate to the type, speed, and frequency of train operations, as well as the topographic conditions and separation techniques.
2. Subject to railroad and State and Federal guidelines and the advice of engineering and safety experts, exceptions to the recommended setbacks may include:
 - a. Constrained areas (bridges, cut and fill areas)
 - b. Low speed and low frequency train operations

In these cases and in areas with a history of extensive trespassing, fencing or other separation technique is recommended.

3. When on railroad property, RWT planners should adhere to the request or requirements for fencing by the railroad company. Fencing and/or other separation techniques should be a part of all RWT projects.
4. Trail planners should minimize the number of at-grade crossings, examine all reasonable alternatives to new at-grade track crossings, and seek to close existing at-grade crossings as part of the project.
5. RWT proposals should include a full review and incorporation of relevant utility requirements for existing and potential utilities in the railroad corridor.
6. The feasibility process should clearly document the cost and environmental impact of new bridges and trestles.
7. Trails should divert around railroad tunnels; if they need to go through a single-track railroad tunnel, they likely are not feasible.
8. Where an RWT is proposed to bypass a railroad yard (such as in Seattle, Washington), adequate security fencing must be provided along with regular patrols by the RWT manager. High priority security areas may need additional protection.
9. An environmental assessment should be conducted concurrent with, and usually independent from, the feasibility analysis, and should include project alternatives located off the railroad corridor, if at all possible.



Elliot Bay Trail. Seattle, WA

Rail Characteristics and Setting

Over half of the 65 existing trails run along Class I mainline or other freight railroad lines, with the remainder split between short lines and public transit (see **Figure 5.1**). Most of the RWTs are either adjacent to railroad property or on publicly-held land that is used or leased by freight or passenger railroad companies. At least 11 known RWTs (approximately 17 percent) are on privately held Class I railroad properties, and others are on privately-held Class II, shortline, or excursion lines (see **Table 5.1**). There is considerable


TABLE 5.1 Examples of Active RWTs by Corridor Type and Ownership

Trail Name	Corridor Owner	Railroad Operation	Location
Class I Railroads			
Arboretum Trail*	Norfolk Southern	Unknown	Pennsylvania
Cedar Lake Trail	Burlington Northern Santa Fe	Burlington Northern	Minnesota
Celina/Coldwater Bike Trail*	Norfolk Southern	RJ Corman	Ohio
Columbus Riverwalk*	Norfolk Southern	Railtex/GATX/Georgia Southwestern Railroad Company	Georgia
Eastbank Esplanade/Steel Bridge Riverwalk	Union Pacific	Union Pacific, Amtrak	Oregon
Elk River Trail*	Norfolk Southern	Norfolk Southern	West Virginia
Gallup Park Trail*	Norfolk Southern	Norfolk Southern	Michigan
Huffman Prairie Overlook Trail	CSX	CSX and Grand Trunk Western	Ohio
Schuylkill River Trail*	Norfolk Southern (3.2 km/2 mi)	Norfolk Southern	Pennsylvania
Stavich Bicycle Trail	CSX	CSX	Ohio and Pennsylvania
Union Pacific Trail	Union Pacific	Union Pacific	Colorado
Zanesville Riverfront Bikepath*	Norfolk Southern	CSX and Norfolk Southern	Ohio
Privately- owned, Class II or Other Freight			
Blackstone River Bikeway	Providence and Worcester Railroad	Providence and Worcester Railroad	Rhode Island
Central Ashland Bike Path	Rail TEX	Rail TEX	Oregon
Clarion-Little Toby Creek Trail	Buffalo to Pittsburgh Railroad	Buffalo to Pittsburgh Railroad	Pennsylvania
Heritage Trail	Illinois Central	Illinois Central	Iowa
Lehigh Gorge River Trail	Reading and Northern Railroad Company	Reading and Northern Railroad Company	Pennsylvania
Lower Yakima Valley Pathway	Washington Central	Washington Central	Washington
MRK Trail	Chicago & Northwestern	Chicago & Northwestern	Illinois
Railroad Trail	Lake State Railroad	Lake State RR	Michigan
Rock River Recreation Path	Chicago & Northwestern	CNW, Union Pacific and Soo Line	Illinois
Silver Creek Bike Trail	Dakota, Minnesota and Eastern	Dakota, Minnesota and Eastern	Minnesota
Tony Knowles Coastal Bicycle Trail	Alaska Railroad Corporation	Alaska Railroad Corporation	Alaska
Whistle Stop Park	Cimarron Valley Railroad	Cimarron Valley Railroad	Kansas
Excursion/Short-Line, Publicly or Privately Owned Land			
Animas River Greenway Trail	Durango & Silverton Narrow Gauge Railroad	Durango & Silverton Narrow Gauge Railroad	Colorado
Cottonbelt Trail	Dallas Area Rapid Transit	Fort Worth and Western Railroad	Texas
Eastern Promenade Trail	Maine Department of Transportation	Maine Narrow Gauge	Maine
Heritage Rail Trail County Park	York County	Northern Central Railway Inc.	Pennsylvania
Lowell Canal Trail	National Park Service	National Park Service	Massachusetts
Santa Fe Rail Trail	Santa Fe Southern	Santa Fe Southern	New Mexico

*Properties acquired by Norfolk Southern from Conrail.

**TABLE 5.1** Examples of Active RWTs by Corridor Type and Ownership (continued)

Trail Name	Corridor Owner	Railroad Operation	Location
Publicly Owned Railroad Corridors, Passenger or Freight			
Atchison, Topeka and Santa Fe Trail	Orange County Transportation Authority	Amtrak, Southern California Regional Rail	California
Bugline Trail	Waukesha County	Union Pacific	Wisconsin
Burlington Waterfront Bikeway	Vermont Agency of Transportation	Vermont Railway Company	Vermont
Cascade Trail (SR 20)	City of Burlington/Skagit County	Burlington Northern Santa Fe Railway	Washington
Duwamish Trail	City and Port of Seattle	Burlington Northern Santa Fe Railway	Washington
Eastern Promenade Trail	Maine Department of Transportation	Maine Narrow Gauge	Maine
Eliza Furnace Trail	City of Pittsburgh	CSX	Pennsylvania
Folsom Parkway Rail-Trail	Regional Transit Authority	Regional Transit Authority	California
Great Lakes Spine Trail	Iowa Dept. of Natural Resources, Dickinson County, Cities	Chicago Northwestern Transportation Company	Iowa
Heritage Rail Trail County Park	York County	Northern Central Railway Inc.	Pennsylvania
La Crosse River State Trail	State of Wisconsin	Canadian Pacific Railway, Amtrak	Wisconsin
Levee Walking Trail	City of Helena	Arkansas Midland	Montana
Myrtle Edwards Park Trail	City and Port of Seattle	Burlington Northern Santa Fe Railway	Washington
Platte River Trail	Regional Transit District	Denver Rail Heritage Society	Colorado
Porter Rockwell Trail	Utah Transit Authority	TRAX	Utah
Rock Island Trail	City of Colorado Springs	Denver & Rio Grande Western	Colorado
Rose Canyon Bike Path	Metropolitan Transit District Board	Amtrak and Santa Fe	California
Seattle Waterfront Pathway	City of Seattle	METRO Transit	Washington
Southwest Corridor Park	Massachusetts Bay Transit Authority	MBTA Commuter Rail and Amtrak	Massachusetts
Three Rivers Heritage Trail	City of Pittsburgh	CSX	Pennsylvania
Traction Line Recreation Trail	New Jersey Transit Authority	NJ Transit and Norfolk Southern	New Jersey
Traverse Area Recreation Trail (TART)	Michigan Department of Transportation	Tuscola & Saginaw Bay RR	Michigan
Watts Towers Crescent Greenway	Metropolitan Transportation Authority	Metropolitan Transportation Authority	California
West Orange Trail	Orange County Parks	CSX	California

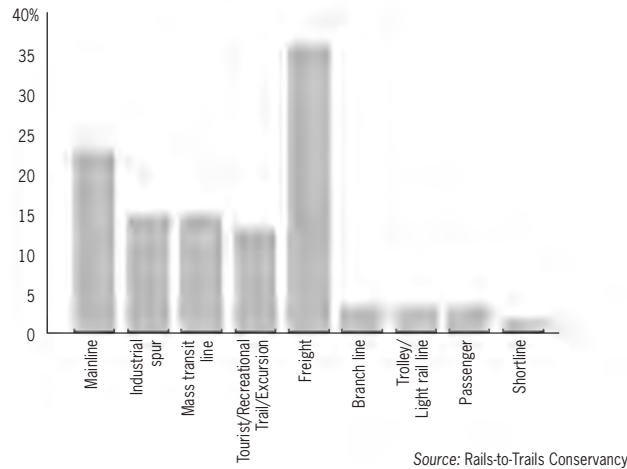


FIGURE 5.1 Type of railroad adjacent to existing RWTs
(Note: Railroads identified their function by a variety of names. Because more than one type of railroad may operate in a corridor, percentages add up to more than 100%.)

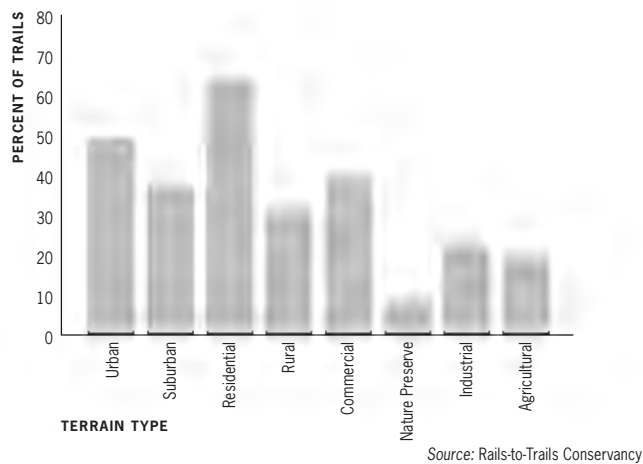
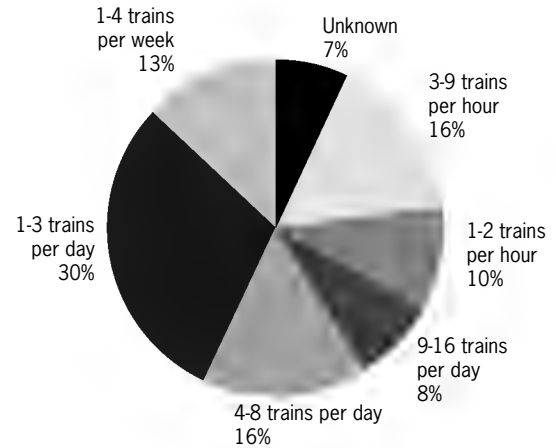
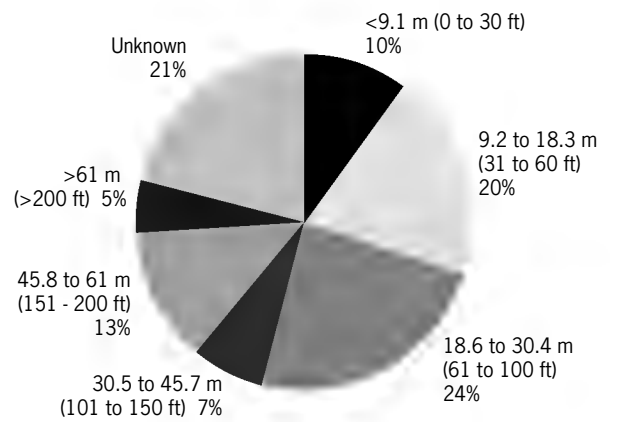


FIGURE 5.3 Type of terrain through which trails pass
(Because trails pass through more than one type of terrain, percentages add up to more than 100%.)



NOTE: Where a range of frequencies was given, the most frequent service was taken.
Source: Rails-to-Trails Conservancy

FIGURE 5.2 Frequency of trains, by percentage of existing RWTs



(Total number of trails = 61)

Source: Rails-to-Trails Conservancy

FIGURE 5.4 Width of full corridor, by percentage of trails
(Note: corridor widths often vary.)

variance in the frequency of train operation, from three to nine trains per hour (16 percent) to just a few trains a week (13 percent) (see **Figure 5.2**). In many cases, the peak hours of rail use correspond with peak trail use hours. The average maximum train speed is 51 km/h (32 mi/h), with a range of 8 to 225 km/h (5 to 140 mi/h). All but three trains in RWT corridors travel at speeds less than 97 km/h (60 mi/h). The three fastest trains are:

- Massachusetts Bay Transit Authority Commuter Rail and Amtrak (Southwest Corridor Park, Boston, Massachusetts), maximum speed 225 km/h (140 mi/h), setback over 6.1 m (20 ft), separated by concrete wall and chain link fence.
- Orange County Transportation Authority and Amtrak (see ATSF Trail case study, p.11).
- State of Wisconsin and Amtrak (see La Crosse River State Trail case study, p. 18).

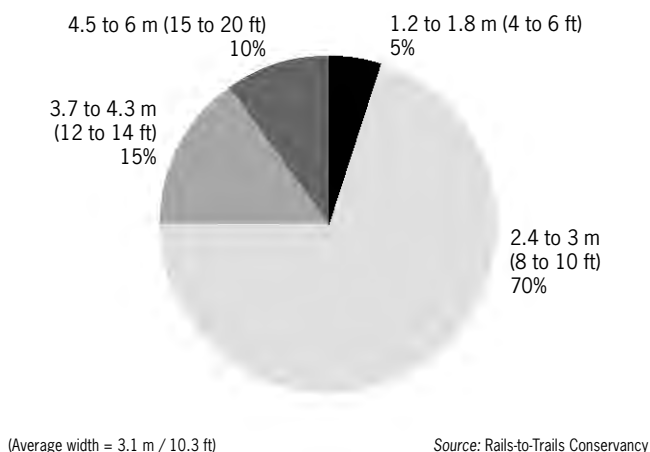


FIGURE 5.5 Width of RWT, by percentage of trails

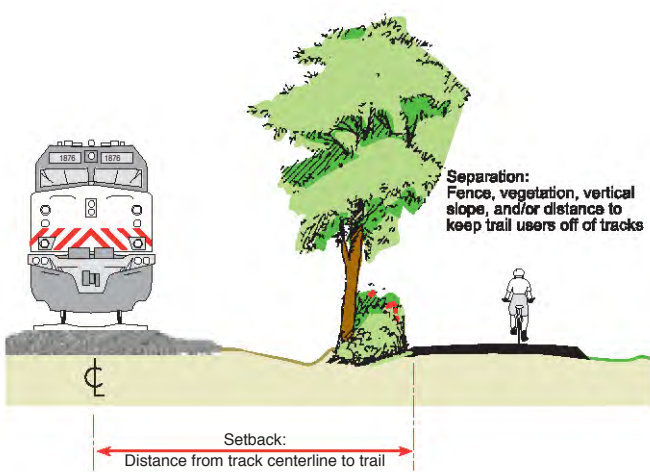


FIGURE 5.6 Setback and separation definition

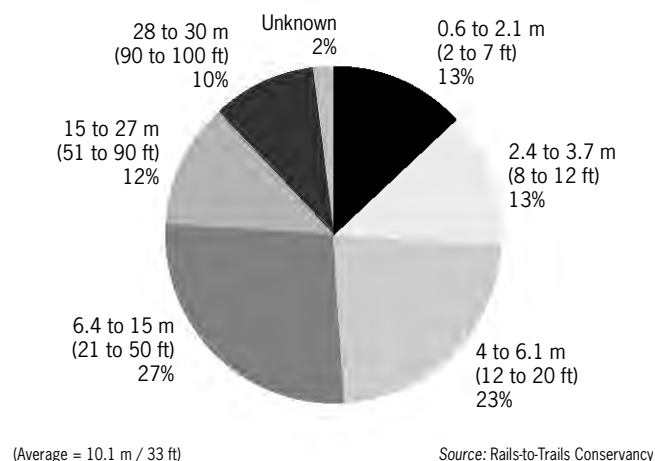


FIGURE 5.7 Distance between edge of trail and track centerline, by percentage of trails

The existing U.S. RWTs are located in 20 States, encompass 385 km (239 miles), and traverse a wide variety of terrain, including urban, suburban, residential, rural, commercial, nature preserve, industrial, and agricultural lands (see **Figure 5.3**).

The RWT corridor widths average 38 m (126 ft), while the trails are typically 2.4 to 3 m (8 to 10 ft) wide (see **Figures 5.4** and **5.5**).

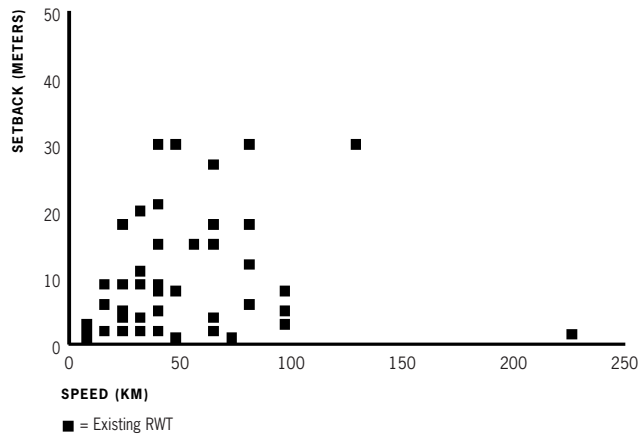
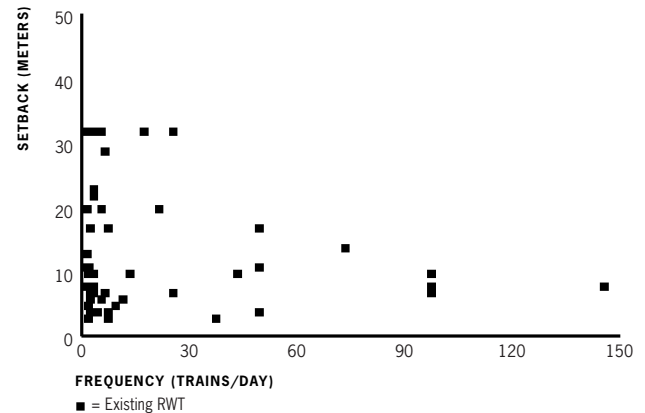
Setback: Considerations

The term “setback” refers to the distance between the edge of an RWT and the centerline of the closest active railroad track while “separation” refers to the treatment of the space between an RWT and the closest active railroad tracks, including fences, vegetation, ditches, and other items (see **Figure 5.6**). When determining the minimum setback for a RWT, factors to consider include train speed and frequency, maintenance needs, applicable State standards, separation techniques, historical problems, track curvature, topography, and engineering judgment.

The range of trail setback on the existing RWTs varies from less than 2.1 m (7 ft) to as high as 30 m (100 ft) (see **Figure 5.7**), with an average of almost 10 m (33 ft) of setback from the centerline of the nearest track. A comparison of RWT setback distance to both train speed and frequency reveal little correlation; over half (33 of 61) of the existing RWTs have 7.6 m (25 ft) or less setback, even alongside high speed trains (see **Figures 5.8** and **5.9**). Many of the trails with little setback are ones that have been established many years. The trail managers for these well-established trails report few problems. However, interviews with train engineers in several areas indicate that they observe a tremendous amount of daily trespassing and problems in areas with little setback and no physical separation.

In comparison, RWTs in Perth, Australia, are typically 3 m (10 ft) wide, and separated from the adjacent railway line by a 1.8 m (6 ft) high chain link fence with three strands of barbed wire. The minimum setback from track centerline to the fence is 4.5 m (15 ft).

Researchers attempted to determine if narrower setback distances have a direct correlation to safety problems. However, based on the almost nonexistent record of claims, crashes, and other problems on any RWTs, they were unable to determine a correlation between setback distance and trail user safety. An

**FIGURE 5.8** RWT setback/train speed correlation**FIGURE 5.9** Setback/frequency correlation

FRA study on the impact of high train speed on people standing on boarding platforms concludes that induced airflow is a safety issue for a person within 2 m (6.5 ft) of a train traveling at 240 km/h (150 mi/h) (Volpe, 1999).

There is no consensus on either appropriate setback requirements or a method of determining the requirement. Some trail planners use the AASHTO Bike Guide for guidance. Given that bicycle lanes are set back 1.5 to 2.1 m (5 to 7 ft) from the centerline of the outside travel lane of even the busiest roadway, some consider this analogous. Others use their State Public Utilities Commission's minimum setback standards (also known as "clearance standards") for adjacent walkways (for railroad switchmen). These published setbacks represent the legal minimum setbacks based on the physical size of the railroad cars, and are commonly employed along all railroads and at public grade crossings. The minimum setback distance is typically 2.6 m (8.5 ft) on tangent and 2.9 m (9.5 ft) on curved track. However, FRA and railroad officials do not consider either of these methods to be appropriate for an RWT. This is because AASHTO's guidelines for motor vehicle facility design are not seen as comparable to rail design, and the setback distance for the general public should be much greater than that allowed for railroad workers.

Some railroads and States have established their own standards. For example, the BNSF's policy on "Trails with Rails" states, "Where train speeds are greater than 145 km/h (90 mi/h), trails are not acceptable. No trail will be constructed within 31 m (100 ft) of any mainline track where train speeds are between 113 km/h (70 mi/h) and 145 km/h (90 mi/h). Trails may be constructed between 15 m (50 ft) and 30 m (100 ft) where mainline train speed is 80 km/h (50 mi/h) to 113 km/h (70 mi/h). Trails may be constructed 15 m (50 ft) from centerline of track where train speeds are 40 km/h (25 mi/h) to 80 km/h (50 mi/h), and 9 m (30 ft) from any branchline track with speeds of 40 km/h (25 mi/h) or less. No trails less than 9 m (30 ft) from centerline of track for any reason." The Alaska Railroad Corporation rule of thumb for setbacks along main tracks is one railcar length, or 18 to 21 m (60 to 70 ft), unless careful analysis of the risks suggests otherwise. In contrast, the Maine Department of Transportation allows for trails to be set back a minimum of 5.5 m (18 ft) from track centerline, down to 4 m (12.5 ft) in constrained circumstances.



Other considerations when determining setback may be flying debris and maintenance access. Trains throw up debris from the roadbed, including rocks and other objects deliberately placed on the rails by trespassers. Fast-moving trains have thrown up large ballast rocks. Debris has been known to fall off trains, or, in some cases, to hang off rail cars. Railroad companies need access to tracks for routine and emergency maintenance, including tie and ballast replacement, cleaning culverts, and accessing switches and control equipment. While most railroad companies have the ability to maintain tracks from the tracks themselves, it often is more cost effective and less disruptive to access the tracks from maintenance vehicles operating alongside the tracks. At a minimum, railroads need at least 4.5 m (15 ft) from the track centerline to provide reasonable access to their tracks.

Further considerations when determining setback requirements may be physical constraints on or adjacent to railroad corridors, presence of separation techniques such as fencing, historical trespassing, and other problems. Finally, train densities can change at any time and location, and railroads require flexibility in their operations to meet customer requirements. Structures or right-of-way modifications that impede a railroad's ability to change or control its operations are unacceptable.

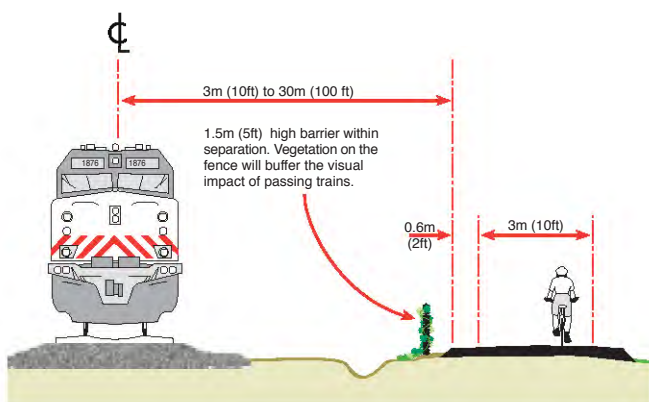


FIGURE 5.10 Minimum RWT setback depends on specific situation

Setback: Recommendations

Because of the lack of consensus on acceptable setback distances, the appropriate distance must be determined on a case-by-case basis (see **Figure 5.10**). Trail planners should incorporate into the feasibility study analysis an analysis of technical factors, including:

- 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 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.

In many cases, adequate setback widths, typically 7.6 m (25 ft) or higher, can be achieved along the majority of a corridor. However, certain constrained areas will not allow for the desired setback width. Safety should not be compromised at these pinch points – additional barrier devices should be used,

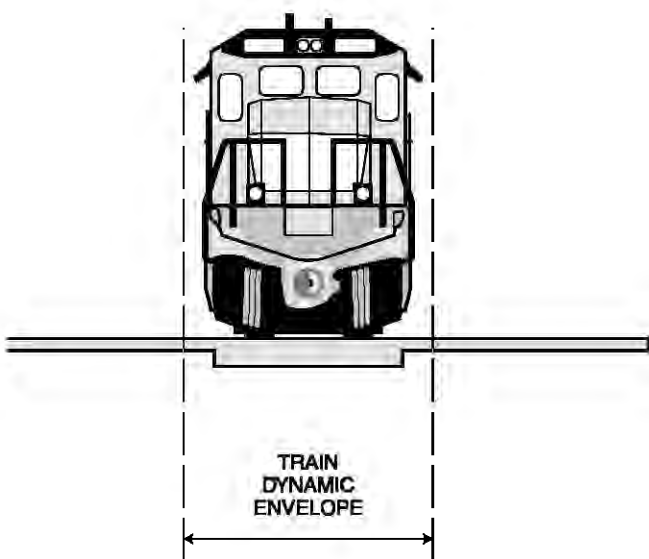


FIGURE 5.11 Dynamic envelope delineation (MUTCD Fig. 8A-1. Note: no dimensions given in MUTCD.)

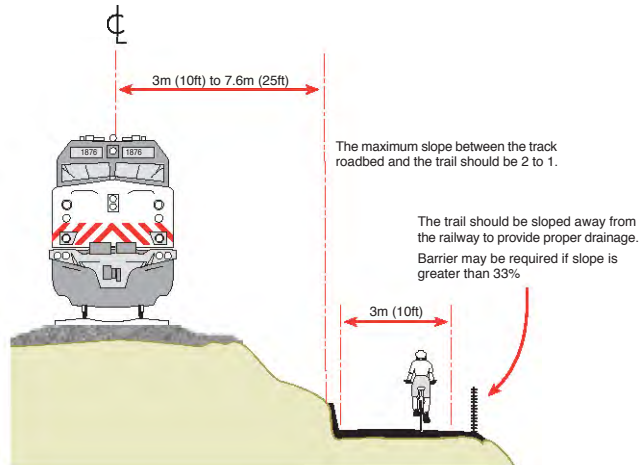


FIGURE 5.12 Minimum RWT setback – fill sections (depending on situation)

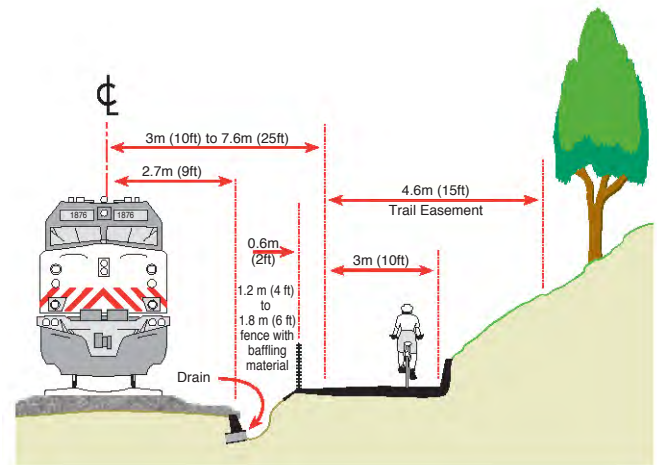


FIGURE 5.13 Minimum RWT setback – constrained sections (depending on situation)

and/or additional right-of-way purchased. In the case of high speed freight or transit lines, RWTs must be located as far from the tracks as possible and are infeasible if adequate setbacks and separation cannot be achieved.

At an absolute minimum, trail users must be kept outside the “dynamic envelope” of the track – that is, the space needed for the train to operate (see **Figure 5.11**). According to the MUTCD (Section 8), the dynamic envelope is “the clearance required for the train and its cargo overhang due to any combination of loading, lateral motion, or suspension failure.” It includes the area swept by a turning train.

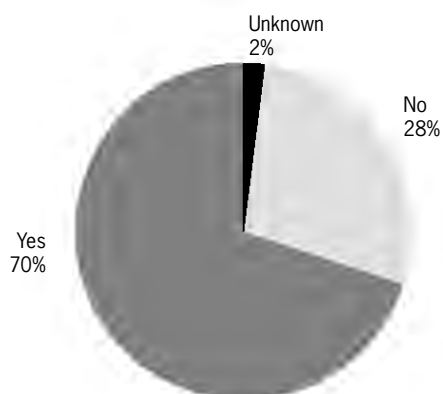
Relatively narrow setback distances of 3 m (10 ft) to 7.6 m (25 ft) may be acceptable to the railroad, RWT agency, and design team in certain situations, such as in constrained areas, along relatively low speed and frequency lines, and in areas with a history of trespassing where a trail might help alleviate a current problem. The presence of vertical separation or techniques such as fencing or walls also may allow for narrower setback.

Constrained Areas

Many types of terrain pose challenges to an RWT design. While a railroad corridor may be 30 m (100 ft) wide or greater, the track section may be within a narrow cut or on a fill section, making the placement of an RWT very difficult. RWTs in very steep or rugged terrain or with numerous bridges and trestles simply may not be feasible given the need to keep a minimal setback from the tracks, meet ADA requirements, allow railroad maintenance access, and still have a reasonable construction budget. Exceptions may exist where the RWT is accompanied by a solid barrier, vertical separation, or ditch (see “Separation” section, page 66), in the case of very low speed/frequency railroad operations, or for very short distances (see **Figures 5.12** and **5.13**). The railroad company or agency should review the proposal to ensure that they will have adequate maintenance and emergency access to the tracks.



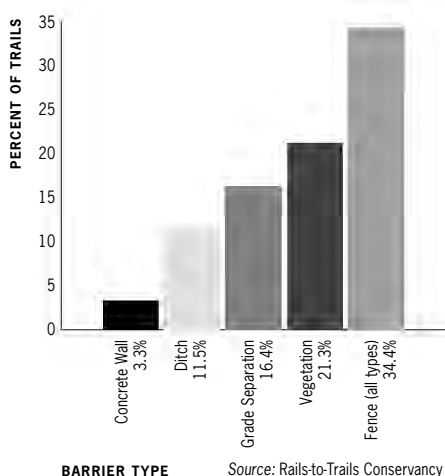
Setback (4.5m/15ft) and fencing along the Showgrounds Pathway RWT. Perth, Australia



NOTE: A "Yes" response does not necessarily indicate the presence of a full barrier. It includes some partial barriers and one instance of where a barrier is planned to be removed.

Source: Rails-to-Trails Conservancy

FIGURE 5.14 Percentage of existing RWTs with barrier



Source: Rails-to-Trails Conservancy

FIGURE 5.15 Barrier type, by percentage of existing RWTs

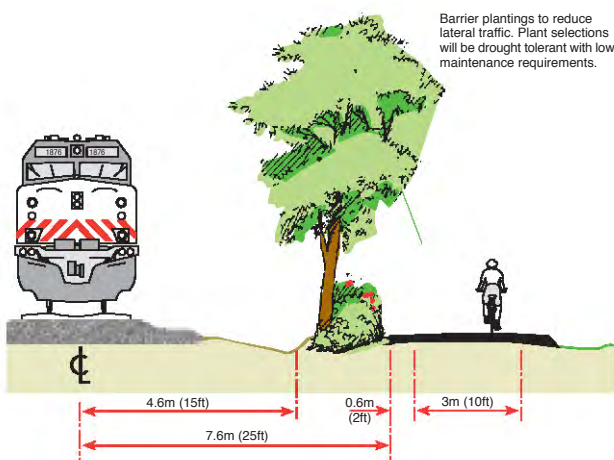


FIGURE 5.17 Trail separation example – using vegetation as a separation technique

Type of Rail Service

Lower speed and frequency train operations pose fewer hazards than higher speed and frequency trains. Numerous low speed line RWTs exist or are planned with relatively narrow setback distances. For example, Portland's Springwater-OMSI Trail, along the 32 km/h (20 mi/h) Oregon Pacific Railroad, is designed 3.2 m (10.5 ft) from the centerline to edge of trail, with a fence 0.6 m (2 ft) from the train edge the entire length. The narrower setbacks may be acceptable depending on feasibility analysis, engineering judgment, the railroad's future needs and plans, and liability assessment.

Areas of Existing High Trespassing

While trespassing on private railroad property is a common occurrence in virtually all settings, in some locations the historic pattern of trespassing has triggered legitimate concerns about the health, safety, and welfare of nearby residents. Research indicates that RWTs may be an effective tool to manage trespassing on corridors where it is physically difficult or impossible to keep trespassers off the railroad tracks. In these cases, the feasibility analysis may show that the risks of a narrower setback distance may be offset by the gains in trespassing reduction through trespasser channelization, using design features such as fencing or other barriers.

Separation

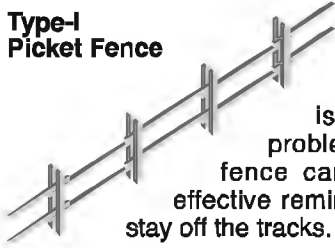
Over 70 percent of existing RWTs utilize fencing and other barriers such as vegetation for separation from adjacent active railroads and other properties (see **Figures 5.14** and **5.15**). Barriers include fencing (34 percent), vegetation (21 percent), vertical grade (16 percent), and drainage ditch (12 percent). The fencing style varies considerably, from chain link to wire, wrought iron, vinyl, steel picket, and wooden rail (see **Figure 5.16**). Fencing height ranges from 0.8 m (3 ft) to 1.8 m (6 ft), although typical height is 0.8 to 1.2 m (3 to 4 ft).

Most railroad companies require RWTs to provide fencing. Some railroad companies specify a requirement of 1.8 m (6 ft) high fencing, no matter what the setback distance is. Fencing may not be required where a significant deterrent to trespass is provided or exists. Examples include water bodies, severe grade differentials, or dense vegetation.

Other barrier types such as vegetation, ditches, or berms are often used to provide separation (see **Figure 5.17**), especially where an RWT is located further than 7.6 m (25 ft) from the edge of the trail to the centerline of the closest track, or where the vertical separation is greater than 3 m (10 ft). In constrained areas, using a combination of separation techniques may allow narrower acceptable setback distances.

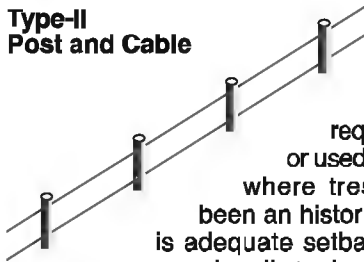


Type-I Picket Fence



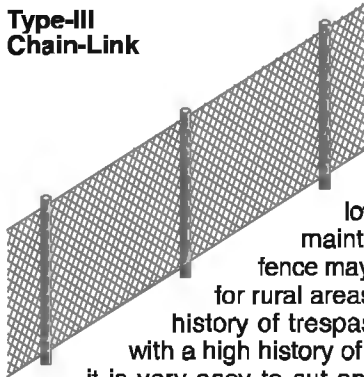
Where trespassing is not as much of a problem, a low wood rail fence can still serve as an effective reminder to trail users to stay off the tracks.

Type-II Post and Cable



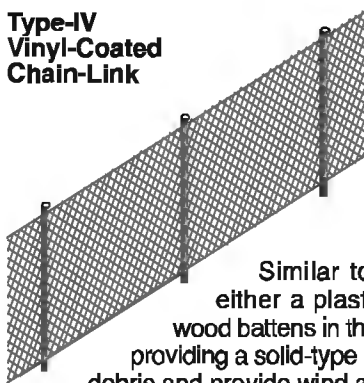
This inexpensive fence is occasionally requested by a railroad or used on a RWT primarily where trespassing has not been an historical problem, there is adequate setback, and the fence serves primarily to demarcate the railroad property boundaries. The fence does not provide any screening or anti-trespassing features.

Type-III Chain-Link



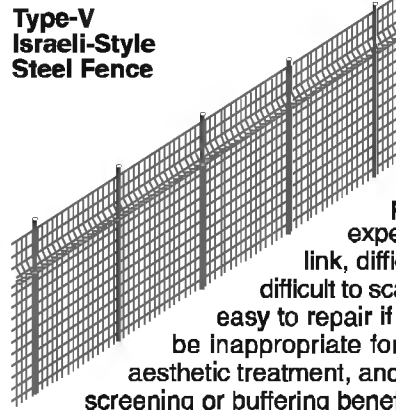
Chain-link fences are popular due to their effectiveness in keeping trail users off the tracks, relative low cost, and ease of maintenance. Chain-link fence may not be appropriate for rural areas where there is no history of trespassing, or for areas with a high history of trespassing, since it is very easy to cut and vandalize. Most chain-link fences are visually unappealing and tend to project an image of an urban industrial environment. For this reason, trail designers should explore using other, more appealing types of fences whenever possible.

Type-IV Vinyl-Coated Chain-Link



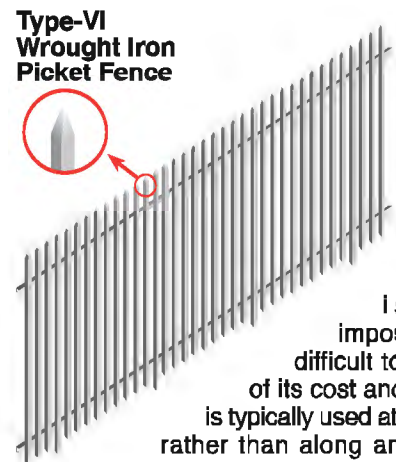
Similar to Type II, but with either a plastic woven fabric or wood battens in the chain-link material providing a solid-type barrier to help catch debris and provide wind and visual buffering.

Type-V Israeli-Style Steel Fence



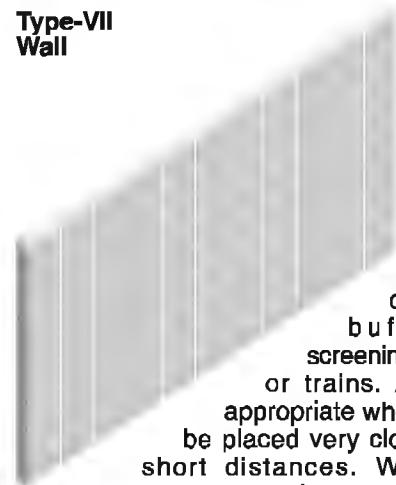
Sometimes referred to as Israeli-style fencing for its use in Israel to protect kibbutzes, this product is more expensive than chain-link, difficult to vandalize, difficult to scale, and relatively easy to repair if it is cut. It would be inappropriate for areas requiring aesthetic treatment, and provides limited screening or buffering benefits.

Type-VI Wrought Iron Picket Fence



This is the ultimate in vandal-resistant fencing, and is used in locations that have a history of trespassing. It is virtually impossible to cut and difficult to scale. Because of its cost and visual impact, it is typically used at specific locations rather than along an entire corridor.

Type-VII Wall



Very rarely used due to its cost and visual impact, solid concrete block walls are virtually indestructible and offer complete buffering and screening from rail debris or trains. A wall may be appropriate where a RWT must be placed very close to tracks for short distances. Walls are most commonly used in areas where a grade separation requires a retaining wall adjacent to the trail. Wall design in active rail corridors should be carefully coordinated with rail engineers, because they can have an effect on the structural integrity of the rail bed, alter drainage patterns in the rail corridor, and, in some circumstances, impede access by railroad maintenance equipment.

FIGURE 5.16 Fencing styles



When on railroad property, RWT planners must adhere to the request or requirements for fencing by the railroad company or agency. When not on railroad property, RWT planners still should coordinate with the railroad to determine appropriate fencing. On all existing RWTs, the trail authority is responsible for barrier installation and maintenance.



Grade separation along Schuylkill River Trail. Norristown, PA

Vertical Separation

Vertical or grade separation achieves many of the same benefits as horizontal separation, and is very common where an RWT is located along numerous cut and fill locations. For example, on a steep-fill section, the RWT may be located 6.1 m (20 ft) or more below the tracks (see **Figure 5.12** on page 65). In a case such as this, the setback becomes less important than the amount of vertical separation, which effectively addresses the elements of debris and wind. In cases with vertical separation of greater than 3 m (10 ft), the danger from falling objects may increase. A fence or barrier at the top of the slope may help prevent injuries on the trail below.

Vegetation and Ditches

Whether natural or planted, vegetation can serve as both a visual and physical barrier between a track and a trail (see **Figure 5.17**). The density and species of plants in a vegetative barrier determine how effective the barrier can be in deterring potential trespassers. A dense thicket can be, in some cases, just as effective as a fence (if not more so) in keeping trail users off the tracks. Even tall grasses can discourage trail users from venturing across to the tracks, although less effectively than trees and shrubs. Planted barriers typically take a few years before they become effective barriers. Separation between the trail and the track may need to be augmented with other temporary barriers until planted trees and hedges have sufficiently matured. Neither vegetation nor fencing should block the public's view of an approaching train at highway-rail crossings.

Many rail corridors contain drainage ditches that run adjacent to the tracks. The deeper and wider these ditches, the more difficult they are to cross on foot, and thus the greater deterrent to trespassing they provide. The presence of water in the ditch also will act as a deterrent. Trail and track drainage needs must be considered in the design process.

Fences and Walls

Fences and walls are the most common type of physical barrier used in RWT corridors (see **Figure 5.16**). Most railroads will require or request fencing, for which the trail management agency will be responsible. The height and type of material used on these barriers determines their effectiveness in discouraging trespassing and the resulting impact on required setback distance. A tall wall or fence constructed with materials that are difficult to climb should deter all but the most determined trespasser.

From the trail manager's perspective, fencing is 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 also detracts from the aesthetic quality of a trail.

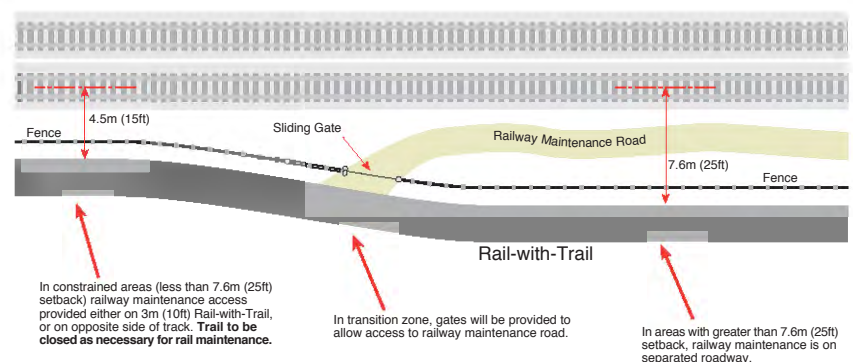


At-grade crossing. Dixon, CA

The visual quality of fencing materials can have an impact on illegal activities along RWTs. For example, the Canadian Pacific Railway (CPR) Police Service has had dramatic results in reducing crime and trespassing through RWT designs that improved the aesthetic quality of an area. Their approach relies on the concept of “Crime Prevention through Environmental Design” (CPTED), meaning, “the proper design and effective use of the built environment can lead to a reduction in the incidence and fear of crime....” (Canadian Pacific Police Services, 2000)

Particularly for an urban trail in an area with crime problems, it may be important to maintain visual access to the trail corridor from adjacent land uses, so that portions of the trail do not become isolated from public view. Fence design in these instances should not block visual access to the trail corridor. Tall fences that block views can cause sight distance problems at intersections with roadways — both for motorists who must be able to view approaching trains, and for trail users who need adequate sight lines to view traffic conditions.

Railroad maintenance vehicles and/or emergency vehicles may need fence gates in certain areas to facilitate access to the track and/or trail (see **Figure 5.18**). Fence design should be coordinated with railroad maintenance personnel, as well as representatives from local utilities that extend along the corridor. Where trespassing is an issue, the fence should be at least 1.8 m (6 ft) tall, and constructed of a sturdy material that is difficult to vandalize.

**FIGURE 5.18** Sample maintenance access transitions

Railroad Track Crossings

The point at which trails cross active tracks is the area of greatest concern to railroads, trail planners, and trail users. Railroad owners, the FRA, and State DOTs have spent years working to reduce the number of at-grade crossings in order to improve public safety and increase the efficiency of service. RWT design should minimize new at-grade crossings



Crossing treatment on the suburban rail network in Perth. Gates automatically close when train is approaching. Users are alerted to the presence of approaching train by flashing lights and audible bells. Gates remain locked until trains have passed. *Perth, Australia*

wherever possible. Modifying an existing highway-rail crossing may be an option. Alternative options are below-grade (underpass), or above-grade (overpass) crossings, which are expensive and typically have been 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; and
- Locations where trains are regularly stopped at the crossing point, effectively blocking the trail intersection for long periods of time.

Some government agencies and railroad owners have adopted policies of no new at-grade crossings. In these cases, using existing crossings or building grade-separated crossings may be the only alternatives. Also, many railroads are actively working to close existing at-grade crossings to improve safety, reduce maintenance costs, improve operating efficiency, and reduce liability exposure. The RWT feasibility analysis should carefully evaluate all proposed crossings, with consideration given to:

- 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)

The railroad company or agency, and State DOT or Public Utility Commission, will need to approve any new crossings, the design of which must be in compliance with the *MUTCD*.¹ Relevant information also is contained in the *Railroad-Highway Grade Crossing Handbook* (FHWA, 1986) and U.S. DOT Highway-Rail Grade Crossing Technical Working Group (TWG) document, *Guidance on Traffic Control Devices at Highway-Rail Grade Crossings* (FHWA, 2002).

More than half the existing RWTs in the U.S. include some sort of track crossing, mostly at-grade (RTC, 2000). The Bugline Trail, Wisconsin, Southwest Corridor Park Trail, Massachusetts, Illinois Prairie Path, and Rock River Recreation Path, Illinois, have overpasses or bridges. The Tony Knowles Coastal Bicycle Trail, Alaska, has tunnels under the tracks, and the Springwater Corridor Extension, Oregon, will have two pedestrian underpasses.

Existing at-grade crossings typically have some sort of passive warning devices — railroad “crossbucks” or railroad crossing signs (see **Figure 5.24** on page 75). Examples are on the Burlington Waterfront Bikeway, Vermont, and Lehigh River Gorge Trail, Pennsylvania. Several have active warning devices such as gates or alarms. Planned trails such as the Blackstone River Bikeway, Rhode Island, and Springwater Corridor Extension, Oregon, will have higher quality at-grade crossings, with a full complement of automatic gates, warning alarms, and signage.

¹ The *MUTCD* (see *Appendix A* for detailed definition) contains standards for signs, pavement markings and other devices used to regulate, warn, or guide traffic, placed on, over, or adjacent to a street, highway, pedestrian facility, or bikeway by authority of a public agency having jurisdiction.



Many bicycle routes in Perth, Australia, cross perpendicular to the suburban railway lines. Gates automatically close upon the approach of a train. When open, they have a straight-through passage, facilitating ease of movement by cyclists, pedestrians, and people in wheelchairs. The crossings feature warning bells and flashing lights. Westrail also uses a variety of pavement treatments to offer visual cues to both motorists and trail users in transit station areas (Maher, 2000).

Location of the Crossing

Trail-rail grade crossings should reduce illegal track crossings by channelizing users to safer crossing areas. Crossings must not be located where trains may be regularly stopped, since this would encourage trail users to cross between or under railroad cars — an extremely dangerous and unacceptable movement. Crossings should not be located on railroad curves where sight lines are poor. When new at-grade crossings are not permitted, the RWT design will need to channelize users to cross the tracks at roadway locations (see p. 81) or develop a grade-separated crossing (p. 79).

Sight Distance

Adequate sight distance is particularly important at trail-rail intersections that do not have active warning devices such as flashing lights or automatic gates. Bicyclists, pedestrians, and other trail users should be given sufficient time to detect the presence of an approaching train and either stop or clear the intersection before the train arrives.

Three elements required for safe movement of trail users across the railroad tracks are as follows:

1. Advance notice of the crossing

The first element concerns stopping sight distance, a common consideration in highway intersection design. The stopping sight distance is that distance required for a trail user to see an approaching train and/or the grade crossing warning devices at the crossing, recognize them, determine what needs to be done, and then come to a safe stop at a point 4.5 m (15 ft) clear of the nearest rail, if necessary. This point usually will be marked by a pavement marking in advance of the crossing. This sight distance is measured along the trail, and is based on a trail user traveling at a given speed, and coming to a safe stop as discussed above.

2. Traffic control device comprehension

The second element involves the recognition of the grade crossing warning devices by the approaching user. Trail users should be reminded of the meaning of all traffic control devices in use at grade crossings, such as the fact that the familiar crossbuck sign should be treated as a YIELD sign at any crossing, or that flashing lights without gates, when flashing, are to be treated the same as a STOP sign.

3. Ability to see an approaching train

The third element concerns the trail user's ability to see an approaching train in order to decide whether it is safe to cross. Two different kinds of sight distance considerations are involved for safe movement across the crossing. This third element involves the sight



Crossing at the City West Station.
Perth, Australia



Transit station pedestrian
crossing. Beaverton, OR



distance available in advance of the crossing, as well as the sight distance present at the crossing itself.

Approach sight distance (also known as corner sight distance) involves the clear sight line, in both directions up and down the tracks, that allows a trail user to determine in advance of the crossing that there is no train approaching and it is safe to proceed across the tracks without having to come to a stop. These sight triangles, dependent upon both train speed and trail user speed, are determined as shown in the *Railroad-Highway Grade Crossing Handbook* (FHWA, 1986).

Often these sight triangles are obstructed by vegetation, topography, or structures. If the clear sight triangles for a given trail user speed (bicyclists and skaters will probably be the fastest trail users) cannot be obtained, then the trail should have additional warning signs or a reduced speed limit posted in advance of the crossing. As another treatment, based upon local conditions and engineering judgment, STOP or YIELD signs may be placed on the trail at the crossing.

Clearing sight distance, which applies to all crossings without automatic gates, involves the clear sight line, in both directions up and down the tracks, present at the crossing itself. A trail user stopped 4.6 m (15 ft) short of the nearest rail must be able to see far enough down the track in both directions to determine if the user can move across the tracks, to a point 4.6 m (15 ft) past the far rail, before the arrival of a train. At crossings without gates that have multiple tracks, the presence of a train on one track can restrict a trail users' view of a second train approaching on an adjacent track.

A more detailed treatment of the sight distance problem at grade crossings may be found in the document titled, *Guidance on Traffic Control Devices at Highway-Rail Grade Crossings* (FHWA, 2002).

In addition, most railroad safety books and FRA Roadway Worker Safety rules (49 CFR 214), specify that upon the approach of a train, enough warning must be given to allow someone on the track to have at least 15 seconds between the time they are clear of the track and the time the train gets to their location. This criterion applies only to railroad personnel who are working within their established limits and are prepared to vacate the track structure with proper warning. Because the average trail user most likely is not familiar with the hazards of rail operations, they would need additional warning time.

Approach Grades and Angle

The AASHTO Bike Guide and ADA specify grade requirements for shared use paths. Trail grades over 5 percent are allowed for short distances in specific circumstances. Grades over five percent are not recommended for crossing approaches. In general, the trail approach should be at the same elevation as the track (see **Figure 5.19**). Steep grades on either side of the track can cause bicyclists to lose control, may distract trail users from the conditions at the crossing, and may block sight lines.

Another critical issue, particularly for bicyclists and people with disabilities, is the angle of crossing. The AASHTO Bike Guide makes the following statement with respect to the crossing angle of a bikeway at a railroad track:

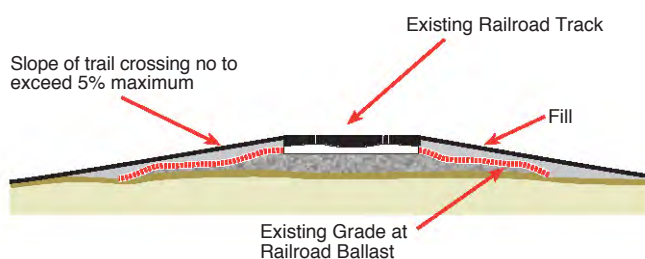


FIGURE 5.19 Approach grade at at-grade crossings

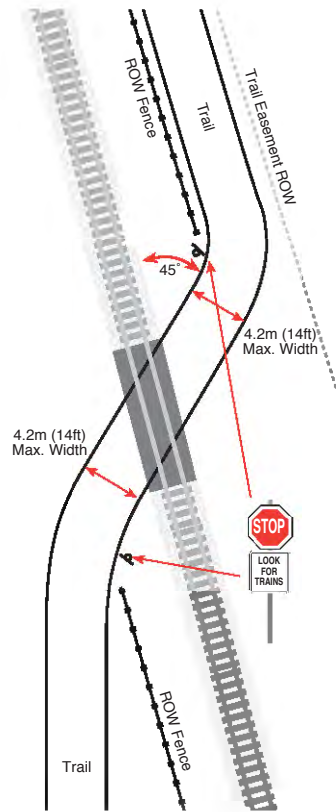


FIGURE 5.20 45° Trail-rail crossing

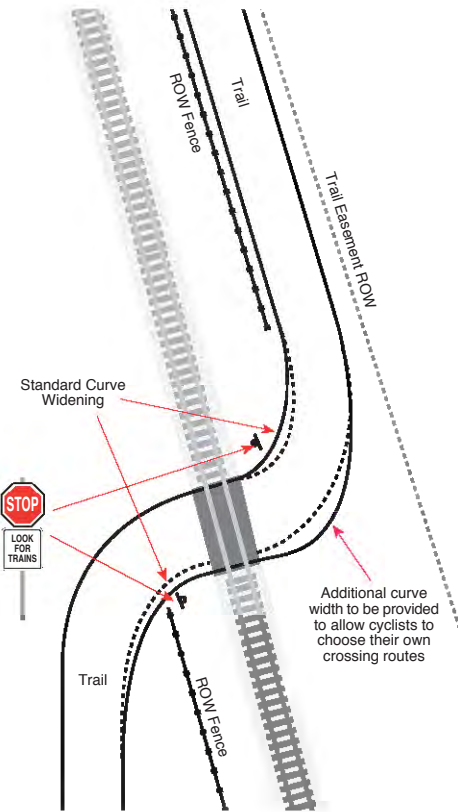


FIGURE 5.21 90° Trail-rail crossing

“Railroad-highway grade crossings should ideally be at a right angle to the rails....The greater the crossing deviates from this ideal crossing angle, the greater is the potential for a bicyclist’s front wheel to be trapped in the flangeway, causing loss of steering control. If the crossing angle is less than approximately 45 degrees, an additional paved shoulder of sufficient width should be provided to permit the bicyclist to cross the track at a safer angle, preferably perpendicularly.”

Flangeway is the term used for the space between the rail and the pavement edge. The standard flangeway width for commuter and transit railroad crossings is 63.5 mm (2.5 in), 76.2 mm (3 in) for freight railroads. These widths are greater than many bicycle tires and wheelchair casters. For this reason, acute angle crossings are not recommended. Also, according to the AASHTO Bike Guide, where active warning devices are not used to indicate an approaching train, the trail should cross the railroad at or nearly at right angles and where the track is straight (see **Figures 5.20** and **5.21**). Where the track is not straight (e.g., on a curve), complications exist: sight distance is restricted and the rails may be at different levels.

Crossing Surface

The smoothness of the crossing surface has a profound effect on trail users. Sudden bumps and uneven surfaces can cause bicycle riders to lose control and crash. For pedestrians, trails that are designed to meet ADA Accessibility Guidelines must maintain a smooth surface.



Dual track grade crossing.
Burlington, VT



The AASHTO Bike Guide notes, “The crossing surface itself should have a riding quality equivalent to that of the approach roadway. If the crossing surface is in poor condition, the driver’s attention may be devoted to choosing the smoothest path over the crossing. This effort may well reduce the attention given to observance of the warning devices or to the primary hazard of the crossing, which is the approaching train.”

Trail managers will be responsible for providing railroads with slip-resistant crossing surface materials. Accessible trails should include tactile warning strips prior to at-grade track crossings.

Nighttime Illumination

Most RWTs will experience nighttime use. Thus, lighting should be provided at trail-rail crossings. Refer to: *American National Standard Practice for Roadway Lighting, ANSI IESNA RP-8* (available from the Illuminating Engineering Society) for the appropriate location of lighting fixtures and recommended lighting levels for rail grade crossings. Lighting must be shielded from the locomotive engineer’s view for safety reasons.

Advanced Warning Devices at Trail-Rail Crossings

A variety of warning devices are available for trail-rail crossings. In addition to the MUTCD standard devices, there are innovative treatments developed to encourage cautious bicyclist and pedestrian behavior. This report does not sanction one type of treatment as being appropriate for all trail-rail crossings, nor does the MUTCD provide a standard design for highway-track crossings. The MUTCD states, “Because of the large number of significant variables to be considered, no single standard system of traffic control devices is universally applicable for all highway-rail grade crossings. The appropriate traffic control system should be determined by an engineering study involving both the highway agency and the railroad company.” The same applies for trail-rail intersections.

There are two categories of advanced warning devices:

- Passive warning devices: signs and pavement markings that alert trail users that they are approaching a trail-rail crossing and direct them to proceed with caution and look for trains (see **Figure 5.22**).
- Active warning devices: advise trail users of the approach or presence of a train at railroad crossings. These consist of bells, flashing lights, automatic gates, and other devices that are triggered by the presence of an approaching train (see **Figure 5.23**).

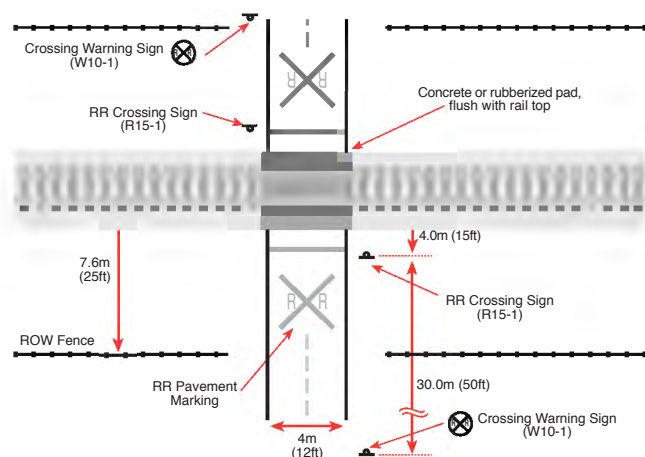


FIGURE 5.22 Crossing equipped with passive warning devices (MUTCD Fig. 9B-3)

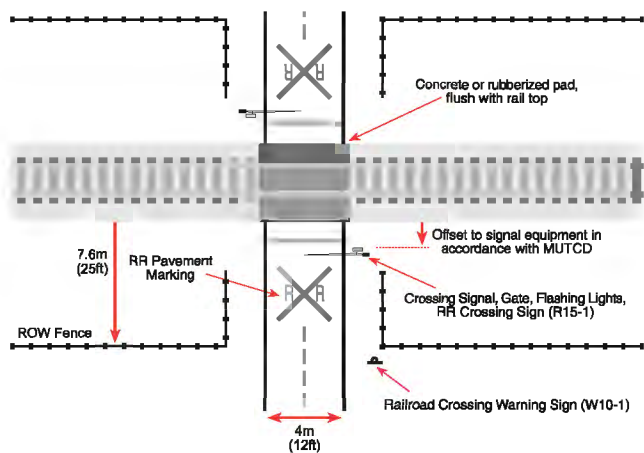


FIGURE 5.23 Crossing equipped with active warning devices and fencing

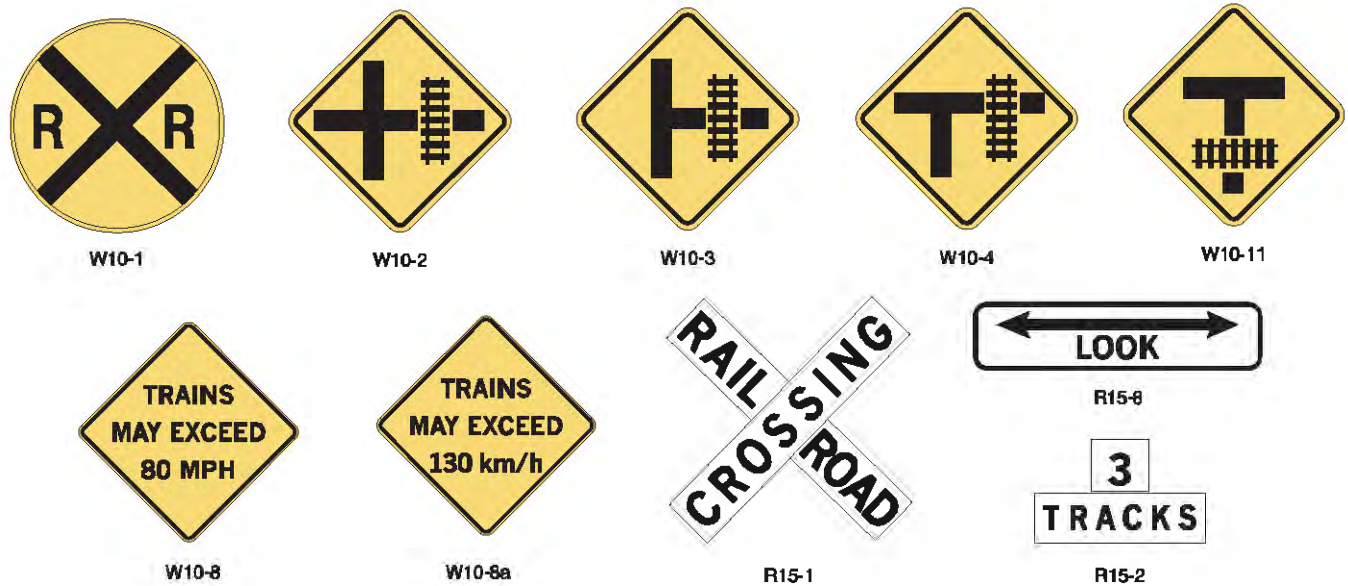


FIGURE 5.25 MUTCD-approved railroad warning signs that may be appropriate for RWTs

PASSIVE WARNING DEVICES AT TRAIL-RAIL CROSSINGS. Trail-rail crossings with passive warning devices should comply with the MUTCD's minimum recommended treatment at highway-rail grade crossings. The MUTCD states, "One Crossbuck sign shall be installed on each highway approach to every highway-rail grade crossing, alone or in combination with other traffic control devices."

The MUTCD also states that "if automatic gates are not present and if there are two or more tracks at the highway-rail grade crossing, the number of tracks shall be indicated on a supplemental Number of Tracks (R15-2) sign...mounted below the Crossbuck sign...indicated in Figure 8B-1" (see **Figure 5.24**). Refer to the MUTCD for further guidance regarding the location and retroreflectivity of these signs.

STOP AND YIELD SIGNS. The MUTCD makes the following statements about the use of STOP and YIELD signs at highway-rail grade crossings: "At the discretion of the responsible State or local highway agency, STOP or YIELD signs may be used at highway-rail grade crossings that have two or more trains per day and are without automatic traffic control devices." This may also apply to trail crossings, as determined by an engineering study that considers the number and speed of trains, sight distances, the collision history of the area, and other factors. Willingness of local law enforcement personnel to enforce the STOP signs should also be considered.

WARNING SIGNS. The MUTCD also contains a number of warning signs that can be used to indicate the configuration of the upcoming crossing, or to otherwise warn users of special conditions. Warning signs that may be appropriate for RWTs are shown in **Figure 5.25** (MUTCD signs: W10-1, W10-2, W10-3, W10-4, W10-8, W10-8a, R15-1, R15-2, R15-8, and W10-11).

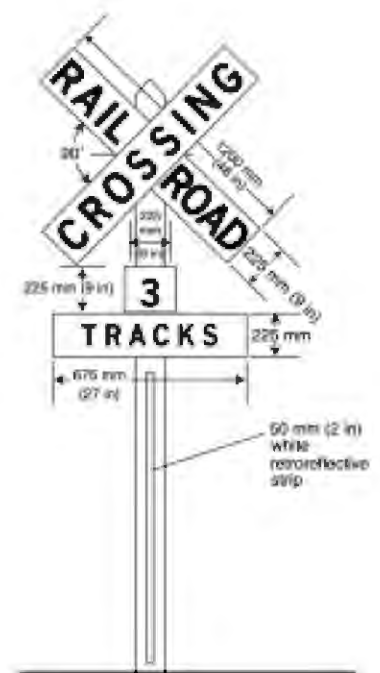


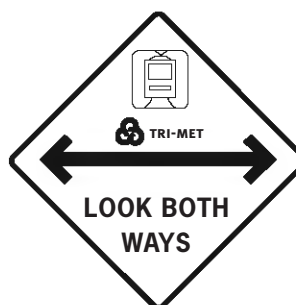
FIGURE 5.24 Highway-rail crossing (Crossbuck) sign (MUTCD Fig. 8B-1)



Steel Bridge Riverwalk. Portland, OR



ATSF Trail. Irvine, CA



Signs at transit stations. Portland, Beaverton, and Gresham, OR



Oregon Department of Transportation



Kennebec River Rail-Trail. Farmingdale, ME

FIGURE 5.26 Sample trespassing and other signs



OTHER SIGNS. The MUTCD applies to all signs that may be considered traffic control devices, whether on roads or on shared use paths. The MUTCD provides specifications on sign shapes, colors, dimensions, legends, borders, and illumination or retroreflectivity. Section 2A.06 notes that “State and local highway agencies may develop special word message signs in situations where roadway conditions make it necessary to provide road users with additional regulatory, warning, or guidance information.”

The MUTCD does not apply to signs that are not traffic control devices, such as “No Trespassing” signs and informational kiosks. Many jurisdictions require “No Trespassing” signs to be posted along railroad tracks. **Figure 5.26** offers some examples.

Some railroad companies, trail developers, and State and local governments have used a number of non-MUTCD-compliant supplemental signs at rail-trail crossings. Some of these have been adopted in State or local roadway and/or trail design guidelines. While these signs may provide information not available on MUTCD-compliant signs, they may increase the trail developer’s or community’s liability exposure.

The MUTCD recognizes that continuing advances in technology will produce changes that will require updating the Manual, and that unique situations often arise for signs and other traffic control devices that may require changes. Section 1A.10 describes the procedure to request changes or permission to experiment with traffic control signs and devices. Guidelines may be found on the Internet at <http://mutcd.fhwa.dot.gov>.

PAVEMENT MARKINGS. In the case of paved trails, pavement markings also are required by the MUTCD. At a minimum, they should consist of an “X,” the letters “RR,” and a stop bar line (see **Figure 5.25**, on page 75 and Parts 8 and 9 of the MUTCD).

For unpaved trails, consideration should be given to paving the approaches to trail-rail crossings, not only so that appropriate pavement markings can be installed, but also to provide a smooth crossing. If it is not possible to pave the approaches, additional warning devices may be needed.

ACTIVE WARNING DEVICES AT TRAIL-RAIL CROSSINGS. An engineering study is recommended for all trail-rail crossings to determine the best combination of active safety devices. Key considerations include train frequency and speed, sight distance, other train operating characteristics, presence of potential obstructions, and volume of trail users.

Active traffic control systems advise trail users of the approach or presence of a train at railroad crossings. Information regarding the appropriate uses, location, and clearance dimensions for active traffic control devices can be found in Part 8 of the MUTCD. In addition, Part 10 of the MUTCD contains specific recommendations for pedestrian and bicycle signals at light rail transit tracks, and should be referred to in cases where trails cross light rail transit corridors. Applicable diagrams from the MUTCD are shown in **Figures 5.27-5.30**.



Active warning devices at Burlington Waterfront Bikeway track crossing. Burlington, VT

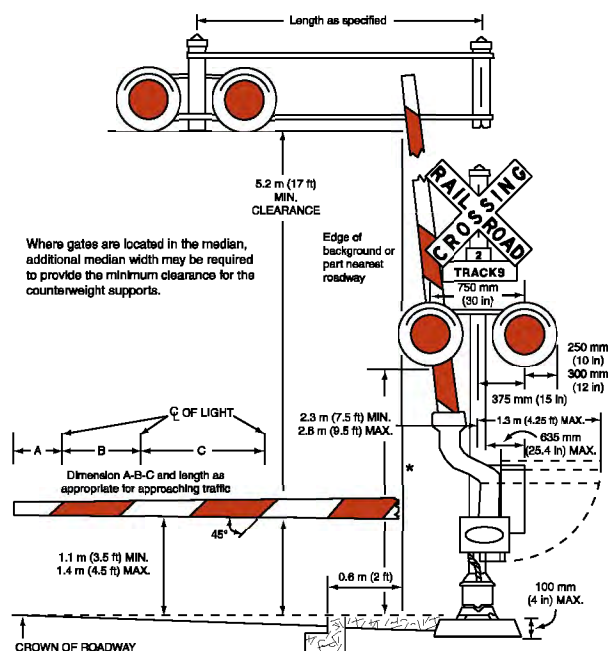


FIGURE 5.27 Composite drawing showing clearances for active traffic control devices at highway-rail grade crossings (MUTCD Fig. 8D-1)

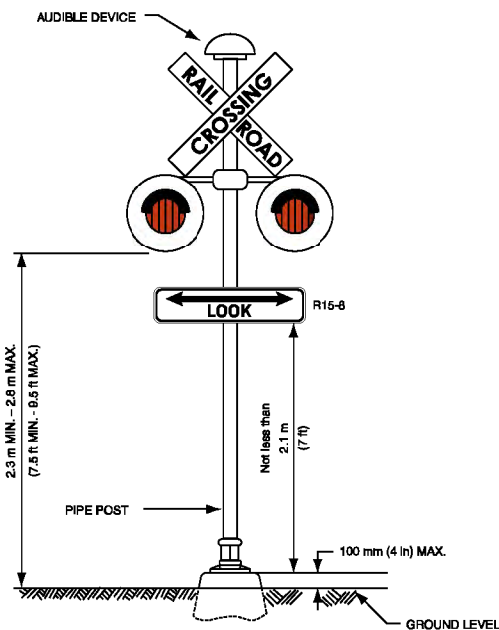


FIGURE 5.28 Typical light rail transit flashing light signal assembly for pedestrian crossings (MUTCD Fig. 10D-2)

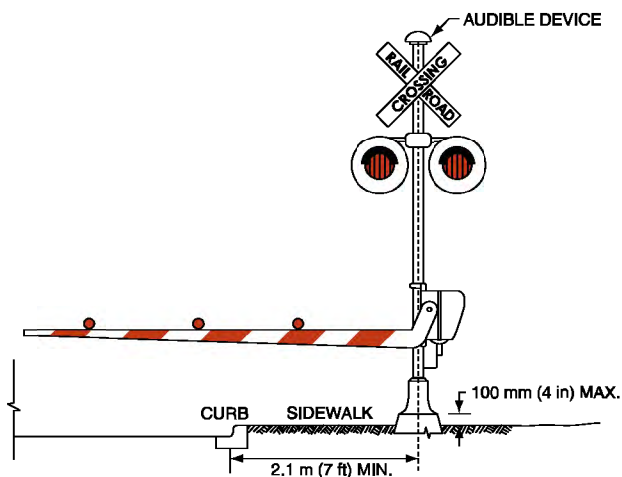


FIGURE 5.29 Typical pedestrian gate placement behind the sidewalk (MUTCD Fig. 10D-3)

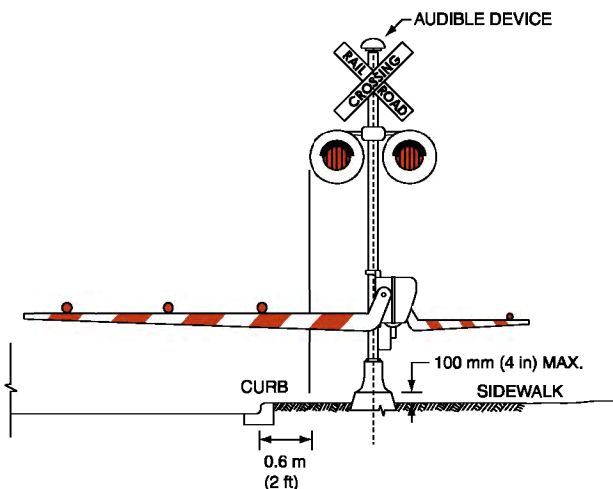


FIGURE 5.30 Typical pedestrian gate placement with pedestrian gate arm (MUTCD Fig. 10D-4)

See *Guidance on Traffic Control Devices at Highway-Rail Grade Crossings* (FHWA, 2002) for information about selection of traffic control devices. Flashing light signals combined with swing gates (see **Figure 5.30**) may be needed in cases of high speed transit or freight rail, limited sight distance, multiple tracks, and temporary sight obstructions, such as standing freight cars.



Railroad and trail planners should note that the same controls that generally keep a motor vehicle from crossing a track may not keep a pedestrian or bicyclist from proceeding through a crossing. People on foot or bicycle are reluctant to stop at barriers and will often find a way to proceed over, under, or around barricades. Photos of effective treatments in Perth, Australia, are shown on pages 70 and 71 and in Burlington, Vermont, on page 73.

Grade-Separated Trail-Rail Crossings

Grade-separated crossings (overpasses and underpasses) can eliminate conflicts at trail-rail crossings by completely separating the trail user from the active rail line. Refer to the AASHTO Bike Guide for specific design dimensions and lighting requirements for bridges and tunnels. In the case where a bridge or tunnel is constructed, a number of issues should be considered:

- **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 (see **Figures 5.31-5.34** and photos on page 80).
- **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, and to decrease its attractiveness as a hidden area. Adequate lighting is extremely important.
- **MAINTENANCE:** The decision to install a bridge or underpass should be made in full consideration of the additional maintenance these facilities require.

According to the AASHTO Bike Guide, the minimum clear width of the pathway on a bridge or through a tunnel should be the same as the width of the approach path, with an additional 0.6 m (2 ft) clear area on the sides. Therefore, the minimum width of a tunnel or bridge on a 3 m (10 ft) wide trail would be 4.3 m (14 ft). Vertical clearance should be 2.4 m (8 ft) minimum (see **Figures 5.31** and **5.32**). Larger horizontal and vertical clearances may be needed for certain types of maintenance and emergency vehicles. Future needs for vehicular access should be taken into consideration when designing these structures.

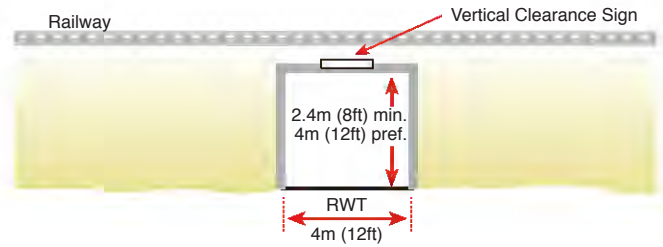


FIGURE 5.31 RWT culvert under tracks

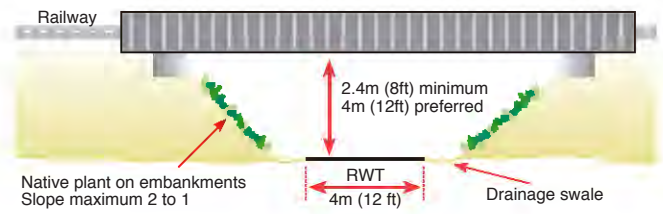
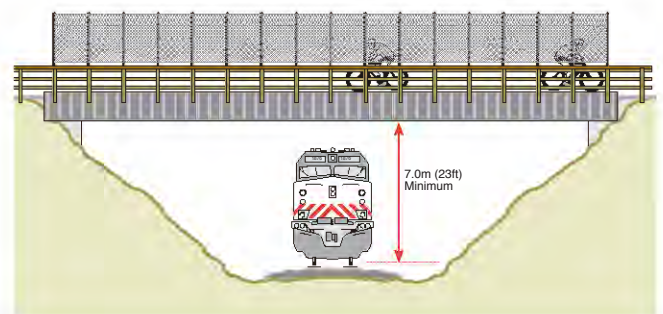
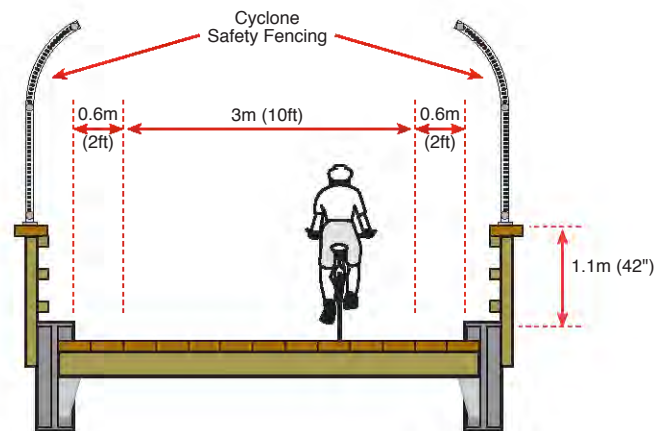


FIGURE 5.32 RWT track undercrossing





SAMPLE UNDER- AND OVERCROSSINGS



Apple Tree Park. Vancouver, WA



Platte River Trail. Denver County, CO



Tony Knowles Coastal Rail Trail. Anchorage, AK



Trail-rail overcrossing. San Luis Obispo, CA



Bridge over Union Pacific tracks. Portland, OR



Approach grades for bridges and tunnels on RWTs should follow AASHTO guidelines and typically also must meet ADA Accessibility Guidelines. Again, a greater than five percent grade is not recommended.

Trail-Roadway Crossings

At-grade crossings between RWTs and roadways can be complex areas that require the designer to think from the perspective of all types of users who pass through the intersection: trains, motorists, bicyclists, and pedestrians. Trail-roadway intersections are covered in detail by both the AASHTO Bike Guide and the MUTCD. While these manuals do not specifically recommend solutions for RWT crossings, they cover basic safety principles that apply to all trail-roadway crossings.

Variables to consider when designing trail-roadway intersections include right-of-way assignment, traffic control devices, sight distances, access control, pavement markings, turning movements, traffic volume, speed, and number of lanes. Refer to the AASHTO Bike Guide for information regarding these design factors. All traffic control devices should comply with the MUTCD.

At-Grade Trail-Roadway Crossings

At-grade RWT-roadway crossings can be very complex, and typically require the involvement of both the roadway agency and the railroad company. Each must be evaluated on a case-by-case basis through engineering analysis. There are essentially three different methods for handling RWT-roadway crossings:

1. Reroute shared use path users to nearest signalized intersection (see **Figure 5.35**).
2. Provide new signal across roadway (see **Figure 5.36**).
3. Provide unprotected crossing (see **Figure 5.37**).

Another possible scenario (although undesirable) has trail users crossing both the roadway and tracks, as shown in **Figure 5.38**.

The appropriate crossing design should be selected based on the following considerations:

- Motor vehicle traffic must be warned of both types of crossings (railroad and trail). Care should be taken to keep warning devices simple and clear; ambiguous and overly complicated signage and pavement markings can distract both motorists and trail users.
- If a pedestrian-actuated traffic signal is warranted at a mid-block RWT-roadway crossing, the traffic signal should be integrated with the design of active warning devices that alert motorists of an approaching train. This may require redesigning several aspects of the intersection.
- If automatic gates are used, they should be placed in between the trail crossing and the active track(s). Where possible, the stop bar on the highway should be located behind the trail crosswalk. However, if the crossing is located at too great a distance from the automatic gate, the stop bar should be placed in a standard position near the gate, and a DO NOT BLOCK CROSSWALK sign should be used at the trail crossing.

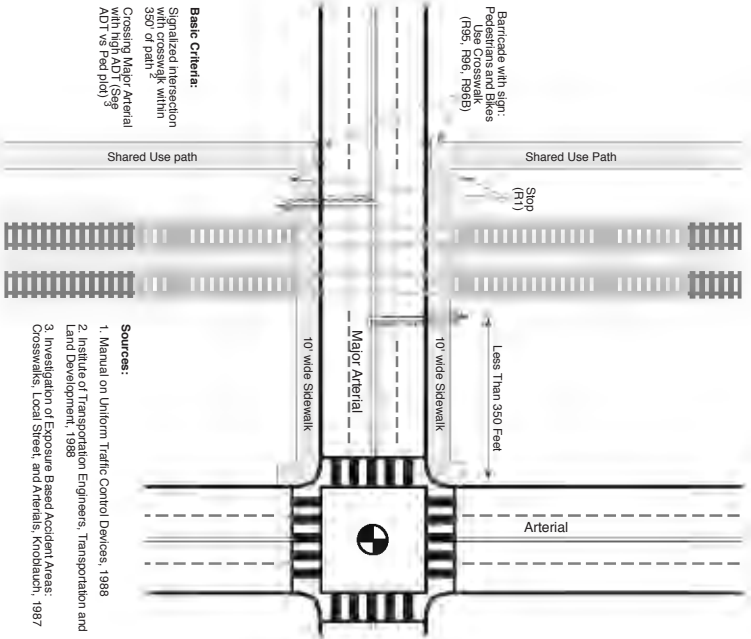


FIGURE 5.35 Roadway crossing type 1
(reroute to nearest intersection)

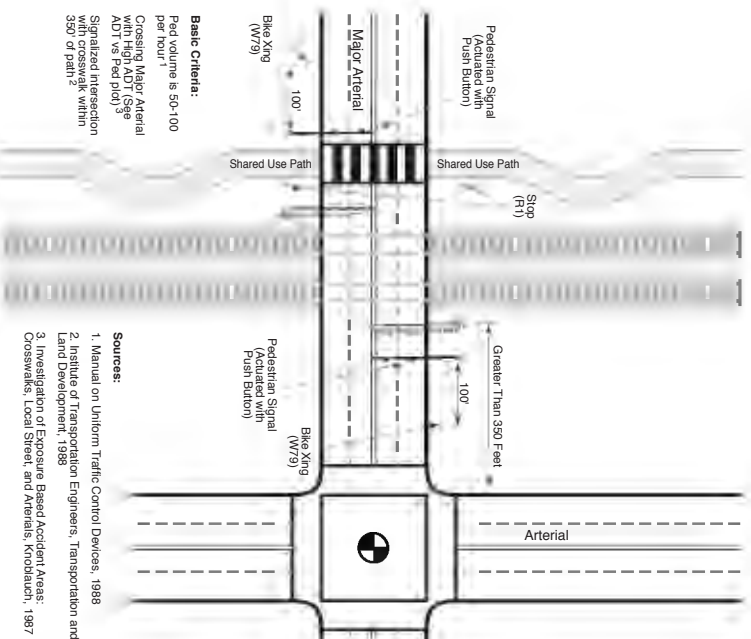


FIGURE 5.36 Roadway crossing type 2 (new signal)

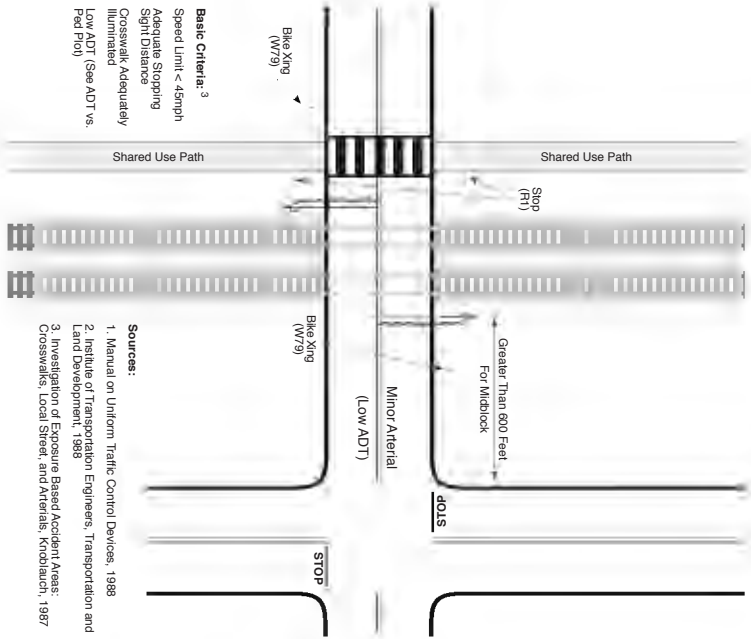


FIGURE 5.37 Roadway crossing type 3
(unprotected crossing)

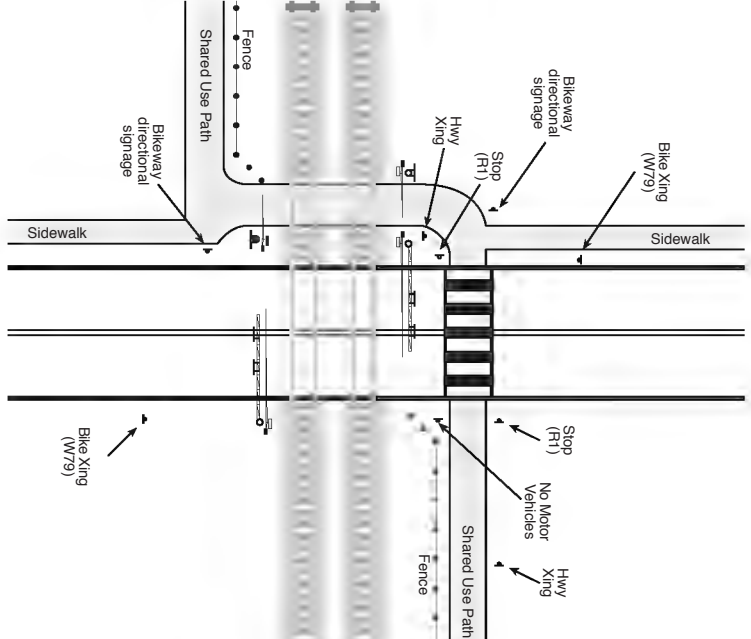


FIGURE 5.38 Roadway and track crossing

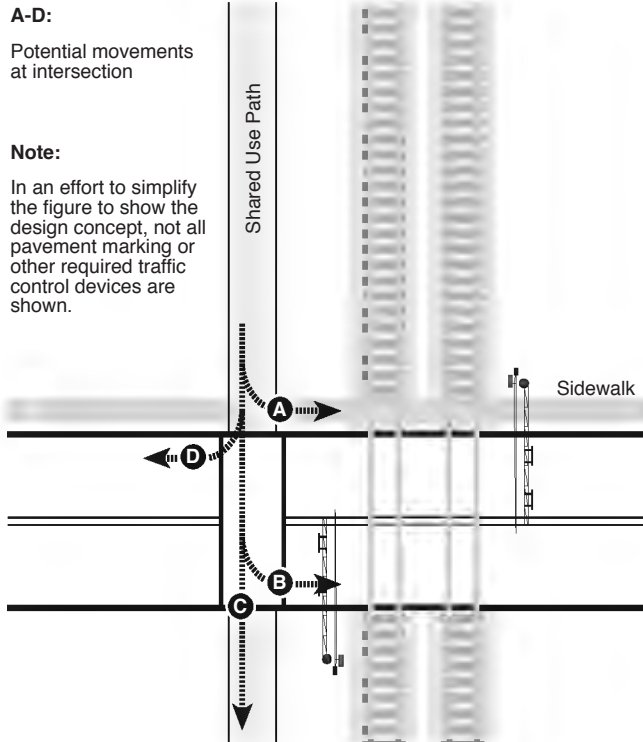


FIGURE 5.39 Summary of potential trail user movements

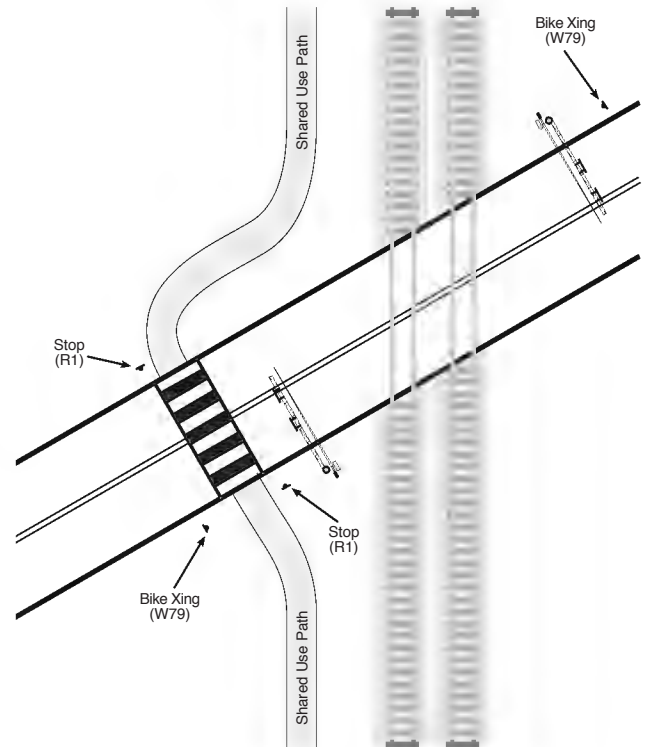


FIGURE 5.40 Angled intersection with roadway

- If active warning devices are used, the trail should be integrated so that trail users are made aware of approaching trains. Trail users may either elect to travel straight across the road, or may exit the trail and continue their journey on the roadway (see **Figure 5.39**). In this scenario, turning movements towards the tracks could be hazardous if the trail user is unable to view active warning devices, or if sight distances are restricted. The angle of approach for these trail users must be considered when placing warning devices. In cases where flashing light signals (post mounted) are used, it is important to locate these devices so that they can be seen by trail users, and to include bells and other audible warning devices to provide additional warning to bicyclists and pedestrians.

RWT-roadway intersections can become further complicated if the railroad crosses the roadway at an angle. Angled trail crossings are not recommended, because they increase the amount of exposure time in the roadway for pedestrians and bicyclists. **Figure 5.40** shows an alternative crossing design that permits trail users to cross perpendicular to the roadway at angled rail-highway crossings.

Grade-Separated Trail-Roadway Crossings

Where a proposed RWT will cross a major roadway or highway carrying heavy traffic volumes (typically more than 20,000 vehicles per day) and/or traffic at speeds greater than 72 km/h (45 mi/h), grade separation should be explored regardless of where the adjacent railroad tracks are located. The design issues related to these undercrossings or overcrossings are the same as on all other shared use paths, and are not covered in this document.



Utilities

Many railroad corridors have utilities that may impact the design, location, or even the feasibility of an RWT. At a minimum, most railroads have their own internal communication systems within their corridors, sometimes located on poles. Any RWT would need to either avoid these poles with a 0.9 m (3 ft) minimum shy distance, or relocate per specification by the railroad. Sometimes a railroad will require that their relocated communication lines be placed underground in new conduit.



Buried fiber optic cable,
Washington & Old Dominion Trail,
Fairfax County, VA

Surface and subsurface utilities often are located within the railroad right-of-way, impacting the location and construction of the RWT. Utilities include active and abandoned railroad communications cable, signal and communication boxes, fiber optic cable, and water, sewer, and telephone lines. Added to this mix, utilities may run parallel to the tracks on one or both sides of the right-of-way, and across, under, or over the tracks.

Trails may need to be closed temporarily to allow utility work. The manager of the Cottonbelt Trail, Texas, notes that one should expect to have interference when utilities companies perform maintenance. The Explorer Pipeline Company required the Cottonbelt Trail to have removable pavement where the trail crossed its pipeline.

Part of the initial feasibility study should identify existing utilities in the corridor, and specifically (a) ownership, (b) location, and (c) easement agreements with the railroad company. While it is not uncommon for a trail to be constructed on top of a subsurface utility, there typically are easement restrictions and requirements that will impact the trail design and location.

RWTs may be constructed with buried conduit under or adjacent to the path to serve existing or future utilities. Inclusion during initial construction saves immense cost and disruption in the future. Conduit and auxiliary equipment (e.g., repeater boxes) should not present slip, trip, or fall opportunities; visual obstacles; or other hazards. The feasibility study staff also must meet with both the railroad and utility representatives to discuss their concerns and requirements.

Accommodating Future Tracks and Sidings

A fundamental part of any feasibility study is to examine the possible addition of tracks and sidings (railroad car storage facilities) that will have a direct impact on RWT design and alignment. The RWT team must seek out information from the railroad operator about their future expansion plans. In many cases, a railroad company may not have specific plans but may want to reserve room to expand in the future if it is needed. In other cases, a railroad operator may have specific plans for additional tracks, either in the short, mid, or long term. In still other cases, a transit agency may have long range plans to use part of or the entire corridor for future transit or commuter rail service. Should a railroad company choose to reserve their land for future rail service, the trail project is not likely to be feasible.



The issue of sidings must be clearly understood by the feasibility study team. A corridor may have existing but unused sidings that either may be removed if the land use has changed significantly or reactivated if a new tenant comes in or economic conditions change. If a rail corridor traverses an industrial or warehouse area, there may be a future need for sidings to serve future land uses, impacting the proposed RWT.

Should additional tracks or sidings seem a possibility even in the long term, they should be included in the RWT design process. In flat terrain, the additional tracks should be located on the opposite side of the proposed RWT, and there should be sufficient room for additional tracks if the RWT is located at the extreme edge of the right-of-way. In terrain with cut and fill, any future tracks would probably require major engineering that would most likely impact the overall feasibility of the RWT project within a typical 30 m (100 ft) wide railroad right-of-way.

An RWT should be located and designed so as to avoid active, potentially active, or potential future sidings. RWTs that cross sidings pose operational and safety problems for the trail manager and rail operator alike. A railroad corridor with numerous sidings or industrial spurs on both sides of the existing tracks would be a poor choice for an RWT project.

One option is to include language in the easement or license agreement to remove or re-locate the RWT in the event that there is a future need for additional tracks or sidings. If there are firm plans for future expansion, this is not likely to be attractive to the railroad operator because of the anticipated difficulty in removing or rerouting a popular path in the future.

Trestles and Bridges

As part of the feasibility analysis, the presence of trestles and bridges will loom large as major constraints to the overall feasibility of a project. Virtually all railroad corridors will have at least some minor bridges or culverts either as part of the local drainage system, or the local network of streams and creeks. In some cases, there will be longer trestles and bridges over roadways, highways, rivers, and canyons. In almost all cases, the railroad structures are not designed to accommodate pedestrians at all, let alone bicycles, and represent a real safety hazard (and attraction) to trespassers.

Simple prefabricated bridges over small streams, culverts, and other waterways are not expensive items. However, they may impact a project's feasibility from an environmental perspective. A new bridge over a highway or on a long trestle may have enormous costs, and may, in some cases, represent the single greatest cost on the project.



Siding on site of proposed RWT.
Kelowna, BC, Canada



Harpers Ferry Bridge. Harpers Ferry, VA

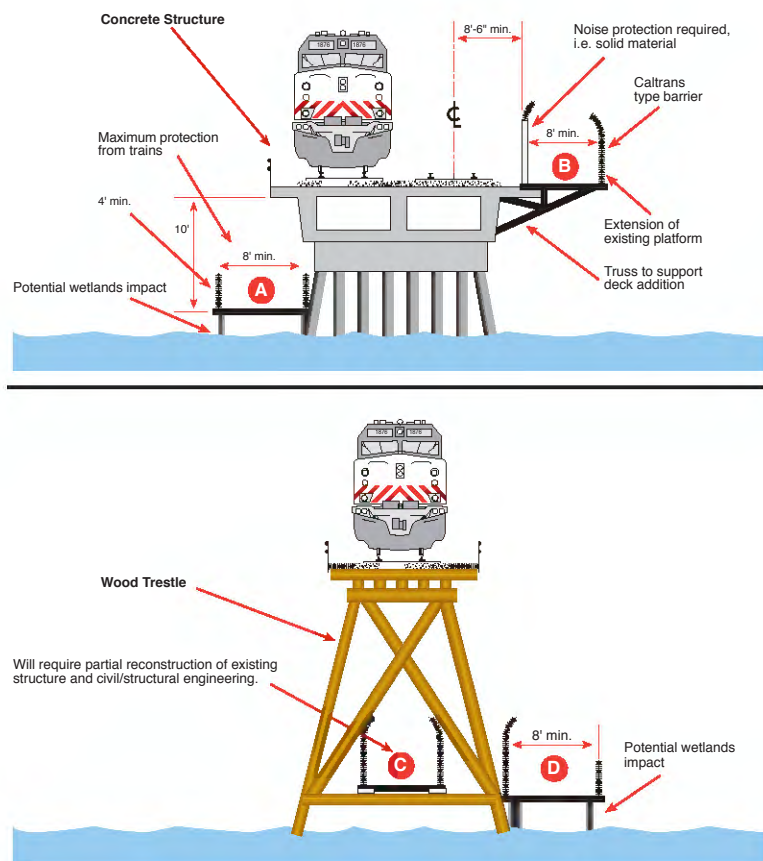


Steel Bridge Riverwalk. Portland, OR

RWT bridges constructed over existing roadways or over corridors with existing trails or bikeways pose a special problem. Neighboring residents will want access to the RWT. Since these connections will need to meet ADA gradient standards, they may involve the construction of an expensive series of ramps.

Engineers can design solutions to virtually any challenge (see **Figure 5.41**). Any trail facility that is to be appended to or otherwise incorporated into a bridge must maintain full and unimpeded bridge maintenance and inspection access. Some of the prototype solutions for RWTs on corridors with bridges and trestles include:

- *Use of existing structure.* In rare cases, an RWT has been constructed on an existing railroad structure. This has been accomplished in Harper's Ferry, Virginia, on a bridge where there were formerly two or more tracks by placing the RWT on the roadbed of the abandoned tracks and placing a security fence between the active tracks and the RWT. The other option is to construct a bridge structure that is attached in some fashion to the existing trestle or bridge. For example, in May 2001, the City of Portland, Oregon, opened a new 3 m (10 ft) shared use path, cantilevered onto the south side of the Union Pacific Railroad bridge (Steel Bridge), set back 3.7 m (12 ft) from the track centerline. While this may be less expensive than constructing a completely new





Single track tunnel on Lake Oswego Trolley Line. Lake Oswego, OR

bridge, the RWT developer must be prepared to make structural integrity improvements to the existing bridge and assume maintenance and liability protection for the new combined structure.

- *Construct a new structure.* This offers a simple, independent solution, rather than trying to utilize an existing railroad structure. This option may be very expensive and may have negative environmental impacts if it requires construction in a riparian or other habitat. If constructed over a State highway, it may require time-consuming permit approvals and strict design standards.

Tunnels

The presence of a single track tunnel on a railroad corridor typically signifies that an RWT is not feasible, at least on the segment where the tunnel is located. There is one known case of a shared rail-with-trail single track tunnel: the York County Heritage Trail, Pennsylvania, which is along an active tourist rail line. Trail users are required to wait when a train is in the tunnel. Usually, tunnels are constructed where the topography dictates the need for going through — rather than around — terrain, meaning that an RWT would have a difficult time traversing over or around the obstacle to avoid a tunnel.

In some cases, there is a roadway or even an abandoned railroad roadbed that could be used by an RWT to circumvent the tunnel. If the terrain is not too steep, an RWT could go over the tunnel hill. While multi-track tunnels with one or more abandoned tracks could conceivably serve dual usages, no known examples exist, and they should be avoided.



RWT designs must take endangered species into consideration. Victorville, CA

Environmental Constraints

If necessary, a full environmental assessment per State and Federal National Environmental Policy Act (NEPA) law should be included as part of the RWT feasibility study. Environmental impacts are not relegated simply to riparian zones, but include impacts to:

- a. public safety
- b. public expenditures
- c. light and glare
- d. geology, soils, and hydrology
- e. biological resources
- f. land use
- g. cultural resources
- h. aesthetics
- i. transportation and circulation
- j. economics
- k. parks and recreation
- l. noise levels

The environmental analysis should be conducted simultaneously with feasibility study to allow for the RWT design team to minimize or avoid significant environmental impacts. The environmental analysis also provides a good forum for public input and political approvals, and usually is a required activity if the project is to receive Federal funding. In some cases, the environmental impacts of a proposed RWT will be so great as to make the project unfeasible.

In other cases, the RWT enhances a previously damaged site. Thus, the impacts may be offset by proposed mitigation and/or by the benefits accrued from the project.

Support Facilities and Amenities

Any new trail or RWT will require support facilities both to enhance the experience for trail users, and to serve basic user and manager needs. Some of these items could be considered extra amenities that are dependent on local desires and available budget, while others should be considered basic elements of any new trail facility.

Trailheads and Parking Areas

Any new RWT will attract people to drive and park near the facility, potentially impacting local neighborhoods. The best design will locate trailheads, parking areas, restrooms, and other such facilities on the same side of the tracks as the trail, so as to avoid additional crossings. A feasibility study should include a full analysis of access to the trail from local communities, along with a projection of future annual and peak day usage and



Tree-lined RWT looking north. *Burlington, VT*

modal split. Should the analysis reveal that a significant number of vehicles will be parking near the RWT, a trailhead parking scheme should be included as part of the feasibility study (see **Figure 5.42**).

Aside from parking, trailheads also offer amenities such as restrooms, entrance signs and maps, kiosks, drinking fountains, and other features. These and other details of trailheads are a standard element of most trail master plans and trailhead designs, which any landscape architecture or trail planning firm should provide as part of the design team.

Landscaping

Landscaping is an optional but very important element of any new trail. Landscaping offers not only visual relief and aesthetic benefits, but also shelter from the sun and wind and assistance with erosion control. At the same time, landscaping can be very expensive to install and maintain, especially if it requires irrigation. Most trail projects utilize landscaping at gateways and specific areas along the corridor, and often use native, drought-resistant species that do not require irrigation. Landscaping should not interfere with track and roadbed maintenance or the visibility of motorists, trail users, or the locomotive engineers at crossings.

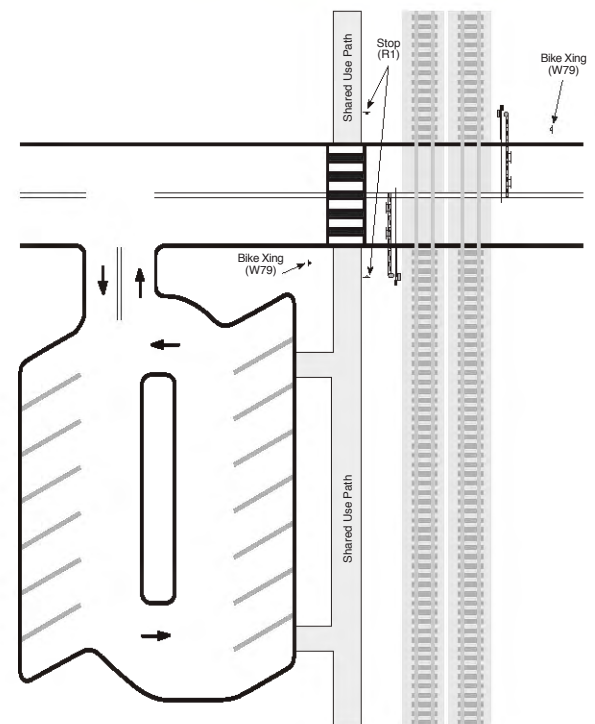


FIGURE 5.42 Trailhead and parking design



Lighting on Eastbank Esplanade.
Portland, OR



Trailhead sign, Burlington Waterfront Bikeway. Burlington, VT



Signing on the Railroad Trail.
Gaylord, MI

Drainage

Railroad corridors are constructed with both lateral and cross roadbed drainage in order to keep water off of the tracks and ballast. Lateral drainage consists of the ditches seen parallel to most tracks and ballast, which in turn feed into natural or built waterways. Cross-roadbed drainage pipes are used to connect lateral drainage ditches via a connection under the tracks.

Maintaining the integrity of the railroad drainage system is of paramount importance for any RWT. Since many RWTs are constructed where there is an existing lateral drainage ditch or swale, a new drainage system must be designed. The cost of this system, along with a section identifying the basic design approach, should be included in the feasibility study. Also, the RWT paved surface will add to the local surface runoff, and should be included in the drainage calculations as appropriate.

The feasibility study should include a section on drainage, and especially how the existing railroad drainage system will be maintained. Prototype designs of any changes along with cost estimates should be included if the RWT will impact the existing drainage system in any way. The railroad company or agency should review plans, even if the proposed trail is adjacent to railroad property.

Lighting

Lighting an RWT is dependent on a variety of factors, including cost to install, maintain, and operate; whether the RWT will be used as a commuter facility in the winter and low light hours; and potential impact on neighbors. Most paved paths are not illuminated due to the expense to install and maintain the lighting and the potential impacts on nearby homes. Exceptions to this are at-grade crossings and undercrossings, where lighting is a matter of safety and visibility. Trail designers should take into account lighting impacts on train operation and visibility for any RWT crossing of or under a roadway and/or tracks.

One innovative pathway lighting concept that may be considered is to have lighting activated by motion detectors, so that the trail is lighted while people approach and a few minutes after they pass, but not for the entire night.

Signing and Markings

Advisory and regulatory signs on RWTs related to transportation (stop, slow, curve ahead, etc.) should follow MUTCD standards, especially for signs that directly impact user safety. The size, frequency, location, and other aspects are clearly identified in the MUTCD or State highway design manual. Local agencies may use their own discretion for other signs, such as user protocol between pedestrians and bicyclists, speed limits, hours of use, and emergency contact information.

The feasibility study should present recommendations, designs, specifications, and costs on signing and striping that meet Federal and State standards, and the local agency needs. This may include entrance or gateway signs, natural or historic interpretation signs, or regulatory and etiquette signs.



Equestrian Considerations

Lack of equestrian experience near railroads, horses' instinctual flight behavior, and equestrians' general wariness of new and potentially challenging situations require specific design considerations when planning for equestrian use on RWTs. All RWTs with potential equestrian use require site-specific analysis. Some equestrian users advocate fences of sufficient height to prevent horses jumping them when startled or frightened; however, this concern must be balanced with the need for visibility of trains for both horses and riders. Horses that cannot see an oncoming or approaching train will experience greater fear and confusion than if they are able to see and identify the source of noise. Equestrian use should not be promoted where barriers create a narrow trail environment.

Trail width is an overriding design issue when considering equestrian use on RWTs. RWTs designed to accommodate equestrian use should provide separate pathway treads for multiple users. Narrow railroad rights-of-way that afford width for only a single paved trail, or that provide inadequate shy distance for horses frightened by nearby or oncoming trains, are not appropriate candidates for accommodation of equestrian use.

Trestles and bridges require additional considerations. Many horses are frightened by bridges and other elevated environments, particularly lattice or perforated bridges and trestles that allow the animal a view of the ground surface substantially below the bridge deck. Most horses are not accustomed to this environment and will respond unpredictably with potentially negative consequences.

Considerations for Steam Locomotives

Several trails exist and/or are proposed within proximity to steam locomotives, for which special consideration is warranted. From time to time, depending on operations and the steam locomotive itself, it is necessary to blow condensation out of the steam cylinders while the locomotive is standing or moving. The outlets for this escaping steam and moisture are less than 300 mm (12 in) above the ground, and generally shoot out perpendicular to the locomotive. This may startle nearby trail users. Also, the reciprocating motion of valves and drive rods (attached to the large drive wheels) require additional lateral clearance for safety reasons. Thus, the feasibility study for RWTs proposed alongside steam locomotives should analyze the need for additional setback and other safety measures.



Equestrian RWT users require special design consideration.
Bourbon, MO

SECTION VI:

RWT Operational Aspects

Once a rail-with-trail is constructed, trail maintenance and operations should minimize impacts on railroad companies and offer a safe and pleasant use experience. Operational aspects covered in this section include rail operations, maintenance, education, outreach, and enforcement.

Overview of Recommendations

- Representatives from railroad operation, 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. They should provide adequate room for railroad access and operations outside the RWT and fenced area wherever possible. 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 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.
- 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 should develop, in coordination with local law enforcement and the railroad, a security and enforcement plan.
- Trail managers should develop and post RWT user regulations.

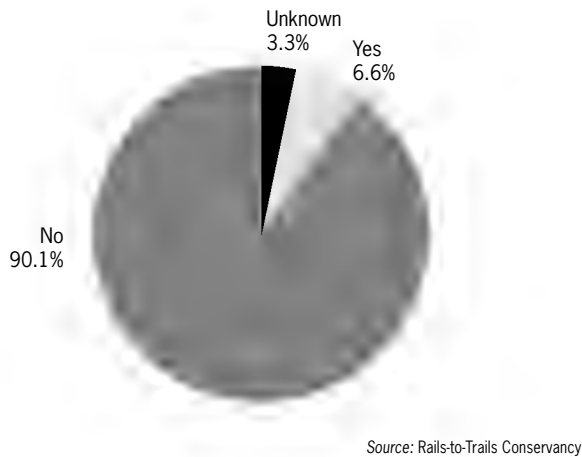


FIGURE 6.1 “Does railway help trail agency maintain corridor?” by percentage of trails

- Trail managers should follow recommended design practices, such as signing to warn trail users to stay on the trail and off the tracks.

Rail Operations Involvement

Train crews and track and signal maintenance personnel should be included in any discussion that may impact rail operations and safety. The day-to-day experiences of these professionals can be instrumental in helping to avoid or minimize potential problems. For example, a Union Pacific Railroad engineer in Roseville, California, pointed out that he frequently stops his train on an at-grade public crossing for hours at a time. He sees frustrated people climb between rail cars to cross, putting themselves in extreme danger as they reach the parallel tracks on the other side, where high speed trains could be coming. A number of possible solutions exist to these problems, including

improving engineer sight lines, relocating public crossings, relocating or configuring sidings, enhancing train signals and communications, and reorienting train operations.

Other issues identified by train operators include:

- Areas with difficult sight lines, which often are on curves or impacted by natural features;
- Weather-related concerns, such as fog in the San Francisco Bay Area;
- Train movement patterns;
- Harassment of train crews; and
- Petty vandalism and trespassing trouble areas.

Finally, stress reduction is a significant concern for train engineers, who bear the onerous emotional burden of striking a trespasser, pedestrian, bicyclist, or motorist on the tracks. RWT planners must be sensitive to this overwhelming personal and professional problem.

Maintenance Needs

Government agencies maintain 94 percent of existing RWTs, with local trail user groups maintaining the rest. For about 6 percent of trails, the railroad does offer some maintenance assistance (see **Figure 6.1**). The average RWT maintenance cost is about \$17,000 per year (\$4,200 per mi or \$2,600 per km). However, maintenance costs range considerably, from a few hundred dollars annually when relying on volunteer labor, to a reported \$50,000 annually on the Mission City Trail, California. Maintenance activities include sweeping, cutting debris, patching holes in fences, fixing trail problems, replacing signs, and replacing deteriorating surfaces.

Railroads must have access to their tracks for routine and emergency maintenance and other activities. While all railroads can service their tracks' drainage systems, bridges, and other structures from the tracks if needed, most need landside access. Routine railroad activities include tie and track replacement; drainage culvert cleaning; bridge, tun-



nel, and trestle inspection and repairs; switching and communication equipment access and maintenance; and crossing equipment servicing and repairs. Most of these activities are accomplished by having trucks drive alongside the tracks on maintenance roads or, in some cases, on the side of the ballast near the rails themselves. Tie replacement machines, which are track-mounted, throw old ties out on one side while installing new ties on the other side.

Most railroad companies prefer a minimum of 7.6 m (25 ft) from nearest track centerline for maintenance activities. This allows room for truck access, turning, and tie replacement. The feasibility study should address maintenance access in the RWT design, including how any barrier or fence would be removed and reinstalled as part of maintenance activities. Also, the feasibility study should have a detailed operations and management plan that addresses the procedures and responsibilities when the railroad has either a routine or emergency maintenance access need. Typically, the RWT manager is responsible for closing the trail when the railroad requires access that may impact the public's safety.

An RWT located closer than 7.6 m (25 ft) from the track centerline must assume that the RWT itself will become the maintenance road for the railroad, and that the railroad will need the trail manager to close the trail for routine and emergency maintenance activities. Any fence or barrier between the tracks and RWT would need to be removed quickly, and the fence, barrier, pathway surface, landscaping, and other trail amenities may be damaged or destroyed by activities of the railroad, while maintaining or re-opening their tracks.

Several possible methods are available to address shared RWT-railroad maintenance roads. For example, the RWT can be constructed to accommodate heavy railroad trucks and equipment. Fencing can be designed for easy removal and re-installation, or constructed with sliding gates (see **Figure 5.21**, page 69). Entrance signs should include, "Trail May Be Closed at Any Time Without Notice." The RWT should have a gate or other barrier to quickly close the facility to public access.

Another important issue is responsibility for retaining walls, cut-and-fill areas, drainage culverts, barriers and signs, and bridges and trestles. For example, a new RWT may require extension of an existing cut area or construction of a retaining wall. This area may already have erosion or landslide problems that are handled by the railroad. RWT managers may need to assume full responsibility for any structure, culvert, or natural condition within its easement, regardless of whether it is a pre-existing condition or not. The feasibility study team must understand the existing geological, hydrological, structural, and other conditions, and estimate the capital and maintenance costs.



Steel Bridge Riverwalk warning sign. *Portland, OR*



Construction Management Strategies

The feasibility study should address how an RWT would be staged and constructed so as not to interfere with the operations of the railroad. In some cases, construction might involve temporary use of railroad property or temporary permission to cross sidings or other tracks. Most railroads have a very detailed process for activities on their property, including approval by district supervisors and engineering departments, along with the use of flaggers. Construction activity that will impact rail operations, such as a new undercrossing or changes to bridges or trestles, will require extensive review and approval by the engineering and operations departments. Also, an agreement to allow railroad personnel access to the RWT to perform needed work must be in force.

Trail Safety Education and Outreach

Most trail managers report having some type of safety education, whether passive or active. This varies from signage and trail brochures to more formal programs. The local snowmobile club and sheriff for the Railroad Trail, Michigan, conduct a mandatory safety operation class for youth 12 to 18 years of age, who must carry a class completion card when on the trail. Companies renting bikes or conducting rides on the Lehigh River Gorge Trail, Pennsylvania, give a safety speech to users, including a strong warning to stay off the tracks. Along the Schuylkill River Trail, Pennsylvania, signs display an advisory warning to stay on the path.

The Five Star Trail Extension, Pennsylvania, intends to make safety brochures available at trailheads, while the Blackstone River Bikeway, Rhode Island, will use signage and brochures. The Springwater Corridor, Oregon, will use a “Teens on the Trail” program for high school students. The teens will spend a term learning about the corridor, giving summer tours, and doing manual support work. The Coastal Trail, California, will use the Operation Lifesaver (see below) program. It also expects other agencies to conduct bicycle safety programs.

Trail managers should recognize that on-going safety education is an important means of reducing liability exposure and encouraging safe behavior. Trail managers need to ensure that warning signs, which explain the importance of staying on authorized trails only, and off private railroad property, are prominently displayed and regularly maintained.

Railroad Safety Education and Outreach

Many railroad companies participate in some kind of active outreach, including posting signs at trailheads and crossings, attending community events, regular monitoring of tracks, and penalties for trespassers. Most also support and participate in Operation Lifesaver. Trail managers are encouraged to contact their State’s Operation Lifesaver Coordinator to arrange for presentations about pedestrian safety and railroad trespass prevention for trail clubs and other trail users.

Operation Lifesaver, Inc.

Operation Lifesaver is a nationally recognized nonprofit organization dedicated to educating the public about the dangers associated with highway-rail grade crossings and railroad rights-of-way. The program works to end collisions, deaths, and injuries at highway-



rail grade intersections and on railroad property. It is sponsored cooperatively by a wide variety of partners, including Federal, State, and local government agencies, highway safety and transportation organizations, and the nation's railroads.

The Operation Lifesaver program seeks to improve driver, bicyclist, and pedestrian behavior at highway-rail grade crossings by encouraging compliance with crossing signs and signals. Operation Lifesaver also recognizes the importance of strong enforcement and engineering improvements, including consolidation and closure of redundant highway-rail crossings. In recent years, Operation Lifesaver has increased its efforts to educate the public that trespassing on railroad rights-of-way, tunnels, trestles, and other railroad property is both illegal and deadly.

In a survey of the Operation Lifesaver State coordinators, presenters, FRA Regional Managers, locomotive engineers, law enforcement officials, and railroad representatives, it is apparent that Operation Lifesaver and its safety participants usually are not contacted during the planning phase of the RWTs. Often, they are not aware of the trail's existence.

Operation Lifesaver can be an extremely valuable resource for both RWT managers and all public and private railroad companies. Its award-winning safety materials include videos and brochures about the dangers of rail trespassing, as well as information for pedestrian and bicycle safety at crossings (see **Figure 6.2**). As part of a new or existing RWT, railroad companies should encourage their State's Operation Lifesaver coordinator to discuss the possibility of arranging safety presentations and other education events for trail users; identify where safety information materials might be made available on a regular basis (e.g., at a trailhead information kiosk); consider whether local bicycle sales or rental shops would be willing to distribute safety information; and consider other means for encouraging safe use of approved trails.

Security and Enforcement

While studies indicate that trails have the same or fewer security and safety issues than surrounding communities, the trail managing authority is responsible for security and public safety. With RWTs, the trail manager has the added responsibility of ensuring that trail users stay away from railroad operations and safely cross tracks. Most railroads rely on local police departments to enforce trespassing and vandalism laws. However, most police departments respond "as needed," rather than having regular patrols. The Lehigh River Gorge Trail, Pennsylvania, utilizes State Park Rangers, who patrol usually once a day by car or bike.

Other railroad companies have their own monitoring, such as the Burlington Northern Santa Fe's daily inspections along Seattle's Elliott Bay/Waterfront Trail, Washington. Such inspectors typically do not review trail issues unless they impact the rail property.

Police on the Railroad Trail, Michigan, receive a State grant to patrol daily in the winter by snowmobile. In the 1998-99 winter season, for example, they taught 97 students about snowmobile safety, issued 57 citations and another 47 warnings. Most warnings and citations were for not having a snowmobile permit or helmet, although 16 were for operating (trespassing) on the railroad tracks and another 16 were for operating a vehicle under



TIPS FOR BICYCLISTS

Hey, bike riders! Operation Lifesaver, Inc. (OLI) and its safety partners, the Federal Railroad Administration, the Federal Highway Administration and the National Highway Traffic Safety Administration want you to be alert when bicycling near and/or crossing railroad tracks.

Remember – highway-rail grade crossings are the only places where it's legal for bicyclists, pedestrians and/or vehicles to cross railroad tracks!

TO STAY SAFE, KEEP THESE LIFESAVING TIPS IN MIND:

- Look out! If you see a railroad crossing, Always Expect a Train – on any track, in any direction!
- Watch for warning signs and pavement markings as you approach the crossing. At the crossing, look for crossbuck signs, stop signs, flashing lights and/or gate arms.
- Think before you cross! LOOK in both directions. LISTEN for a train. PROCEED across the tracks only after making sure that no trains are coming and that no warning devices are activated.
- Don't let your bike wheels get caught in the rails. Always try to cross at a 90-degree angle to the tracks. Never bicycle across tracks at less than a 45-degree angle – instead, dismount and walk your bike across.
- Did you know that an optical illusion makes trains seem farther away and slower moving than they actually are? Don't take chances by trying to "beat" a train across the tracks!
- If you see or hear a train coming, or if warning lights start flashing and/or gates are lowering, SLOW DOWN AND STOP a safe distance (at least 15 feet) from the railroad tracks.
- Stay alert at crossings with more than one track! Even after a train passes, before crossing look and listen for other trains on other tracks coming from either direction.
- Wet train tracks can be slippery. Be extra careful when crossing railroad tracks if it's rainy, snowy, foggy or just plain wet. Dismount and walk your bike across the tracks if the crossing looks hazardous. Step over the rails, not on them.
- Gravel service roads and green space beside railroad tracks are usually railroad property. It's illegal - and dangerous - to ride your bike on these areas.
- Trains are wider than the tracks! Locomotives and railroad cars can extend as much as three feet beyond the rails on both sides. When a train is passing, stay at least 15 feet from the tracks, behind any gates or "stop lines" marked on the pavement.
- Some railroad crossings can be rough. Slow down and be careful – a bumpy crossing may cause you to lose control of your bike and loosen accessories or cargo.

OPERATION LIFESAVER, INC.

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FIGURE 6.2 Operation Lifesaver "Tips for Bicyclists" brochure



alcoholic influence. (Note: The Railroad Trail sees 4,000 to 6,000 daily snowmobilers in winter and is not separated by a fence. The distance between the tracks and trail varies from 0.9 to 12 m (3 to 39 ft). Because of the snowpack, the tracks can be hard to see.)

The Mission City Trail, California, has bike patrols for special events. Police patrol by bike on Lehigh, Pennsylvania, Burlington Waterfront, Vermont, and Mission City, California RWTs. Police respond by car for the ATSF Trail, California.

Most police departments contacted for this study were not involved in the planning process for the respective RWT. Police offer important perspectives on avoiding serious security problems through proper trail design that emphasizes sight distance, access, encouraging proper use, and providing width for patrol cars.

Most police officers note no specific benefits of RWTs to the police. The officer assigned to the Lehigh River Gorge Trail, Pennsylvania, noted reduced illegal dumping, and for the ATSF Trail, California, reduced trespassing. Although none complained specifically about increased costs, the police officer assigned to the Springwater Corridor, Oregon, explained that patrolling new areas is not free; proper enforcement should be a budget item in the operations and maintenance costs of a trail.

Each RWT project should develop a public safety plan similar to that developed by the Portland, Oregon, Police for the Eastbank Esplanade, part of which is an RWT. This includes:

- Applying “Crime Prevention through Environmental Design” and “Trespass Prevention through Environmental Design” concepts, which recognize that the proper design and effective use of space can lead to a reduction in conflicts and improve overall safety (Canadian Pacific Railway, 2000).
- Employing strong, secure, and damage-resistant construction materials, landscaping, and a parks maintenance plan.
- Providing secured access areas (parking lots, storage areas), barrier systems (gates, fences, access control), video monitoring, and “call for assistance” systems.
- Providing coordinated and responsive patrol service.
- Designating and enforcing rules and regulations (park rules and hours, exclusion provisions, expansion of “drug free” zones, and emergency closure provision).
- Employing crime prevention and problem solving strategies, such as park user education, informational signage, a problem reporting system, incident management and follow-up, and broad-based problem solving groups.
- Holding programmed uses and events, such as regularly scheduled activities, permitted events, and vendors.
- Encouraging positive presence, including staff, vendors, volunteers, docks, and public buildings.

Additional security recommendations include:

- Make sure all segments of the trail are accessible to emergency vehicles.
- Provide fire and police departments with map of system, along with access points and keys/combinations to gates/bollards.



Trail regulations sign. Santa Clarita, CA

- Locate posts frequently (every 1.6 km or 1 mi at a minimum); identify markers on maps.
- Provide and maintain emergency telephones or call box systems linked to 911 or other emergency networks in isolated sections of trail.
- Consider lighting any unusually dark sections of the trail.
- Trim all vegetation at least 3 m (10 ft) from the trail where possible to maximize visibility, and try to minimize thick undergrowth.
- Provide bicycle racks and lockers at key destinations that allow for both frame and wheels to be locked.
- Enforce speed limits and other rules of the road.

Developing Trail Use Regulations

The purpose of trail regulations is to promote user safety and enhance the enjoyment of all users. Before the trail is opened, the trail manager should develop and post trail use regulations, maps, and informational materials at trailheads and key access points. Establishing that the trail facility is a regulated traffic environment is critical for compliance and often results in a facility requiring minimal enforcement. An agency may want to post penalties for violators. The trail management agency should review proposed trail regulations with the city attorney for consistency with existing ordinances and enforceability. In some locales, it may be necessary to pass additional ordinances to implement trail regulations. Items typically covered in trail regulations include:

- Hours of use;
- Stay on trail, trespassing on railroad property is illegal;
- Keep to the right except when passing;
- Yield to oncoming traffic when passing;
- Bicycles always yield to pedestrians;
- Give an audible warning when passing;
- Pets always must be on short leashes;
- Travel no more than two abreast;
- Alcoholic beverages are not permitted on the trail;
- Do not wander off of trail onto adjacent properties;
- Do not stand in middle of trail when stopped; and
- Speed limit.

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- Liability of railroad company for injury to trespassers or licensees other than employees or passengers struck by object projecting, or thrown, from a passing train*, 112 A.L.R. 850 (1938).
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APPENDIX A:

Definitions

The American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (1999): Provides information and guidelines for the planning, design, and maintenance of bicycle facilities. The AASHTO Bike Guide provides information to help accommodate bicycle traffic in a way that is sensitive to bicyclists and other roadway users. It also provides specific information about the design of shared use paths, railroad grade crossings, and path roadway intersections.

Centerline: An imaginary line midpoint between the track rails that conforms to the geometry of that track. “Centerline” often is used in reference to the nearest track to an RWT when discussing such issues as setback and separation.

Class I Railroad: A railroad with annual gross operating revenue in excess of \$250 million based on 1991 dollars.

Class II Railroad: Railroads with an annual gross operating revenue of between \$250 million and \$20 million.

Class III Railroad: Railroads with gross operating revenue of less than \$20 million. These include short-line and light-density railroads.

Commuter Rail: Urban passenger train service for travel between a central city and adjacent suburbs, excluding rapid rail transit and light rail service.

Department of Transportation: Established by an Act of Congress in 1966, the U.S. Department of Transportation (USDOT) works to build a safe transportation system. The USDOT includes the Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration, National Highway Traffic Safety Administration, and Surface Transportation Board.

Excursion Trains: Generally, trains used by a private enterprise catering to the leisure or tourism market, such as dinner trains or tourist trains to an historical destination.

Federal Highway Administration: The Federal Highway Administration (FHWA) coordinates highway transportation programs in cooperation with States and other partners to enhance the country’s safety, economic vitality, quality of life, and the environment. Major program areas include the Federal-Aid Highway Program, which provides Federal financial assistance to the States to construct and improve the National Highway System, urban and rural roads, bridges, and pedestrian and bicycle facilities.



Federal Railroad Administration: The Federal Railroad Administration (FRA) promotes safe and environmentally sound rail transportation. FRA sets and enforces safety standards for track, signals, motive power and equipment, hazardous materials, operating practices, and highway-rail crossings. The FRA conducts research and development projects to support its safety mission and enhance the railroad system as a national transportation resource. FRA also administers public education campaigns addressing highway-rail grade crossing safety and the danger of trespassing on rail property.

Federal Transit Administration: The Federal Transit Administration (FTA) assists in developing improved mass transportation systems for cities and communities nationwide. Through its grant programs, FTA helps plan, build, and operate transit systems with convenience, cost, and accessibility in mind.

Fixed Transit: Transit service with fixed guideways includes heavy and light transit rail. In general usage, fixed transit also is known as rapid rail, rapid transit rail, transit mode, or transit railway.

Heavy Rail: Exclusive rights-of-way, multi-car trains, high speed rapid acceleration, sophisticated signaling, and high platform loading characterize fixed transit heavy rail. In general terms, heavy rail also is known as subway, elevated railway, or metropolitan railway (metro).

Light Rail: Light rail transit may be exclusive or shared rights-of-way, high or low platform loading, multi-car trains or single cars, automated or manually operated. In general usage, light rail includes trolley cars, streetcars, and tramways.

Manual on Uniform Traffic Control Devices: The Manual on Uniform Traffic Control Devices (MUTCD) provides standards and guidelines for traffic control devices that regulate, warn, and guide road users along the highways and byways in the United States. The FHWA published the most recent edition, The Millennium Edition, in December of 2000, with revisions in December 2001. Part 8 provides guidelines for signs, signals, markings, and other warning devices at all highway-rail grade crossings. Part 9 provides standards for bicycle facilities including on-road treatments and shared use paths. Part 10 provides standards and guidelines for highway-light rail grade crossings. See http://mutcd.fhwa.dot.gov/kno-millennium_12.28.01.htm.

National Highway Traffic Safety Administration: The National Highway Traffic Safety Administration (NHTSA) sets and enforces safety and performance standards for motor vehicles and equipment; helps States and local communities reduce the threat of impaired drivers; promotes the use of safety belts, child safety seats, and air bags; provides consumer information on motor vehicle safety topics; conducts research on driver behavior and traffic safety; and promotes traffic safety for pedestrians and bicyclists.

Railbanking: The preservation of otherwise abandoned railroad easements for possible future railroad activity by interposition of interim trail use.

Rail-Trail: Usually refers to a trail developed on an abandoned or converted railroad line (a rail-to-trail), where there is no active rail service; however, it may be used to refer to any trail associated with active rail or rail property, e.g., RWT.



Rail-with-Trail (RWT): Any shared-use path that is located on or directly adjacent to an active railroad or fixed route transit corridor.

Setback: The lateral distance between the centerline of the “nearest track” (that track located closest to the RWT or other physical feature under consideration) to the nearest edge of the trail or to the separation feature (fence, wall, etc.).

Separation: A feature, such as fencing, wall, vegetation, body of water, or vertical elevation difference, that is found, placed, or used to separate a railroad track or railroad corridor and an RWT, sufficient to prevent or discourage access to an active rail right-of-way by trail users.

Shared use path: A trail that is physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared use paths may be used by bicyclists, pedestrians, skaters, wheelchair users, runners and other nonmotorized users.

Short Line Railroad: See Class III Railroad.

Trespasser: A person who enters or remains upon property in the possession of another without a privilege to do so, created by the possessor’s consent or otherwise.

APPENDIX B:

State-by-State Matrix of Applicable Laws and Statutes

Provided by Andrea Ferster, Esq., as of 2002

This matrix is intended to present the state of the law as of the year 2002. Every effort has been made to assure accuracy in the information contained in this matrix as provided by Andrea Ferster, Esq. However, due to the broad scope of this project and the fluid nature of state statutory law, the Department of Transportation cannot guarantee complete accuracy of the material presented. For more detailed and up-to-date information, the reader is encouraged to review the relevant state statutes directly.



State-by-State matrix of applicable laws and statutes

State	Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
Alabama	Ala. Code § 35-15-1 (1975)		Ala. Code § 41-9-62 et seq. (2000) Ala. Code § 11-93-1 et seq. (2000)	Ala. Code § 37-2-89 (2000.) – RR liable if Pub. Serv. Commission has deemed fence necessary and livestock injured by unfenced right-of-way; does not apply to injury to dogs
Alaska	Alaska Stat. § 09.65.200 (Michie 2000) – limited to undeveloped lands	Alaska Stat. § 42.40.420 (Michie 2000.) – allows a municipality or the State to petition to use railroad land, including along active railroads for public use, including trails. Must be established that the use will not create a safety hazard, and the municipality or State must enter into an agreement to indemnify the railroad.	Alaska Stat. §§ 09.50.250, -.300 (Michie 2000.)	
Arizona	Ariz. Rev. Stat. Ann. § 33-1551 (West 2000.)		Ariz. Rev. Stat. § 12-820 et seq. (2000.)	
Arkansas	Ark. Code Ann. §§ 18-11-301 to -307 (Michie 2000.)	Ark. Code Ann. § 22-4-401 et seq. (Michie 2000.) – Trails System Statute – no liability provision	Ark. Code Ann. § 21-9-201 et seq. (Michie 2000.)	
California	Cal. Civ. Code § 846 (West 2000.)	Cal. Pub. Res. Code § 5070 et seq. (Deering 2000.) – Recreational Trails Act – limits liability for adjacent property owners	Cal. Gov't Code § 810-996.6 et seq. (West 2000.)	Cal. Pub. Util. Code § 7626 et seq. (West 2000.) – RR liable for injury to livestock, domestic animals injured due to unfenced right-of-way
Colorado	Colo. Rev. Stat. Ann. §§ 33-41-101 to -106 (West 2000.)	Colo. Rev. Stat. § 33-11-101 et seq. (2000.) – Recreational Trails System Act of 1971 – no liability provision	Colo. Rev. Stat. Ann. § 24-10-101 et seq. (West 2000.)	Colo. Rev. Stat. Ann. § 40-27-102 (West 2000.) – RR liable if livestock injured by unfenced right-of-way
Connecticut	Conn. Gen. Stat. Ann. §§ 52-557(f)-(k) (West 2000.)		Conn. Gen. Stat. Ann. § 4-140 et seq. (West 2000.) – administrative claims or procedure	Conn. Gen. Stat. Ann. § 13b-299 (West 2000.) – Commissioner of Transportation directs where and when RR Co.'s should erect and maintain fences
Delaware	Del. Code Ann. tit. 7, §§ 5901–5907 (2000.)		Del. Code Ann. tit. 10, § 4001 et seq. (2000.) – State and local	Del. Code Ann. tit. 2, § 1811 (2000.) – RR liable for injury to livestock if injured on unfenced right-of-way
District of Columbia			D.C. Code Ann. § 1-1201 et seq. (2000.)	


State-by-State matrix of applicable laws and statutes (*cont'd.*)

State	Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
Florida	Fla. Stat. ch. 375.251 (2000.)	Fla. Stat. ch. 260.011 et seq. (2000.) – Recreational Trails System Statute – § 260.012(4) of the Recreational Trails System Chapter makes the Recreational Use Statute (RUS) – § 375.251 is applicable to the Recreational Trails System Chapter	Fla. Stat. Ann. § 768.28 et seq. (West 2000.) – Tort Claims Act	
Georgia	Ga. Code Ann. §§ 51-3-20 to -26 (2000.)	Ga. Code Ann. § 12-3-110 et seq. (2000.) – Scenic Trails Act – § 12-3-116 limits liability for property owners whose land is traversed by trails system	Ga. Code Ann. § 36-33-1 et seq. (2000.)	
Hawaii	Haw. Rev. Stat. §§ 520-1 to -8 (2000.)	Haw. Rev. Stat. Ann. § 198D-7 to -7.5 (Michie 2000.) – Statewide Trail and Access System – § 198D-7 requires review by the State of the legal issues relating to trails, including exposures to liability for the State, counties, and private landowners, and strategies to reduce or limit that liability exposure – § 198D-7.5 permits the State to enter into agreements to defend and indemnify owners of public or private land to further the purposes of the chapter (e.g., developing a trails system)	Haw. Rev. Stat. Ann. § 662-2 et seq. (Michie 2000.)	
Idaho	Idaho Code §§ 36-1601 to -1604 (2000.)	Idaho Code § 67-4236 (2000.) – indemnification of owners of land adjacent to trails – allows State to indemnify the owner of private land adjacent to trail, for damage caused by trail users, for which the owner was unable to recover from the user who caused the damage	Idaho Code § 6-901 et seq. (2000.)	Idaho Code §§ 62-1201, 62-406 (2000.) – RR liable if livestock injured by unfenced right-of-way
Illinois	745 Ill. Comp. Stat. Ann. 65/1-31 to -37 (West 2000.)	20 Ill. Comp. Stat. Ann. 862/1 et seq. (West 2000.) – Recreational Trails of Illinois Act	705 Ill. Comp. Stat. 505/8 (West 2000.) – Court of Claims Jurisdiction – State 745 Ill. Comp. Stat. 10/1-101 (West 2000.) – local gov't units	625 Ill. Comp. Stat. Ann. 5/18c-7504 (West 2000.) – RR liable if livestock injured by unfenced right-of-way
Indiana	Ind. Code §14-2-6-3 (2000.)	Ind. Code Ann. § 8-4.5-5-1 et seq. (Michie 2000.) – Recreational Trails Program – § 8-4.5-5-5 designates abandoned railroad corridors as eligible for grant program to create recreational trails – § 8-4.5-6-5, Liability for injury; relieves property owner of “duty of care” for recreational trail user that would otherwise be owed	Ind. Code Ann. § 34-6-2-34 et seq. (West 2000.) – Indiana Tort Claims Act	Ind. Code Ann. § 8-4-33-1 (West 2000.) – RR liable if livestock injured by unfenced right-of-way

State-by-State matrix of applicable laws and statutes (*cont'd.*)

State	Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
Iowa	Iowa Code Ann. §§ 111C.1 to -.7 (West 2000.)	Iowa Code § 465B.1 et seq. (2000.) – Recreational Trails Statute – no liability provision	Iowa Code Ann. §§ 669.1 to -.24 (West 2000.) – Iowa Tort Claims Act – state Iowa Code Ann. §§ 670.1 to -.13 (West 2000.) – Tort Liability of Governmental Subdivisions	Iowa Code Ann. § 327G.3 (2000.) – RR liable if livestock injured by unfenced right-of-way
Kansas	Kan. Stat. Ann. §§ 58-3201 to -3207 (2000.)	Kan. Stat. Ann. § 58-3211 et seq. (2000.) – Recreational Trails Statute – § 58-3212 provides an extensive list of duties for trail managers – § 58-3214 provides that an adjacent property owner has “no duty of care” to any person using a recreational trail, except where an injury is a direct result of negligence or willful or wanton misconduct	Kan. Stat. Ann. §§ 75-6101 to -6115 (2000.)	
Kentucky	Ky. Rev. Stat. Ann. §§ 150.645, 411.190 (Michie 2000.)	Ky. Rev. Stat. Ann. § 147A.250 (Banks-Baldwin 2000.) Ky. Rev. Stat. Ann. § 277.402 et seq. (Banks-Baldwin 2000.) – RUS § 411.190 defines owner as including the possessor of a “reversionary, or easement interest.” – The trespass statute, §511.090, was amended to include the following: “(5) Private land adjoining a railtrail that is neither fenced nor otherwise enclosed shall be presumed to be land where notice against trespassing has been given by the owner of the land, and a person utilizing the railtrail shall be presumed to lack privilege or license to enter upon that land unless the person has permission from an adjoining landowner to do so.”	Ky. Rev. Stat. Ann. § 44.070 et seq. (Banks-Baldwin 2000.)	Ky. Rev. Stat. Ann. § 256.110 (Michie 2000.) – requires RR and adjoining property owner to construct and maintain a good lawful fence
Louisiana	La. Rev. Stat. Ann. tit. 9, §§ 2791, 2795 (West 2000.)	La. Rev. Stat. Ann. § 56:1781 et seq. (West 2000.) – program to establish rails-to-trails – § 1785 of the statute transfers ownership and all legal rights and obligations to trail administrator, and the railroad or corporation shall be relieved of all responsibilities and legal obligations, unless agreed otherwise through contractual obligations	La. Const., art. XII, § 10.	
Maine	Me. Rev. Stat. Ann. tit. 14, § 159-A (West 2000.)	Me. Rev. Stat. Ann. tit. 12, § 1892 (West 2000.) – Trails System Statute – no liability provision	Me. Rev. Stat. Ann. tit. 14, § 8101 et seq. (West 2000.) – Tort Claims Act	Me. Rev. Stat. Ann. tit. 23, § 6021 (West 2000.) – RR liable if livestock injured by unfenced right-of-way


State-by-State matrix of applicable laws and statutes (*cont'd.*)

State	Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
Maryland	Md. Code Ann., Nat. Res. I §§ 5-1101 to -1108 (2000.)	Md. Code Ann., Nat. Res. I. § 5-1010 (2000.) – abandoned railroad corridor as trails – establishes program to convert abandoned railroad corridors into recreational trails – no liability provision	Md. Code Ann., State Gov't § 12-101 et seq. (2000.) – Tort Claims Act – State gov't Md. Code Ann., Cts. & Jud. Proc. § 5-401 et seq. (2000.) – local gov't	
Massachusetts	Mass. Gen. Laws Ann. ch. 21, § 17C (West 2000.)		Mass. Ann. Laws ch. 258, § 1 et seq. (Law. Co-op. 2000.) – Tort Claims Act	Mass. Gen. Laws Ann. ch. 160, § 93 (West 2000.) – RR liable if livestock owned by adjacent property owner injured by unfenced right-of-way
Michigan	Mich. Comp. Laws Ann. § 324.73301 (West 2000.) – RUS protects the owner, tenant, or lessee of land used to enter or exit a public trail or trail covered by the Trailways Act § 721	Mich. Comp. Laws § 324.72101 et seq. (2000.) – Michigan Trailways Act – § 72105(a) provides that volunteer groups may adopt trailways or rail-to-trails segments, and that volunteers will be granted the same immunity from civil liability as a State employee while they are working on an “adopt-a-trail” project	Mich. Comp. Laws Ann. §§ 691.1401 to -.1415 (West 2000.)	Mich. Comp. Laws Ann. § 462.325 (West 2000.) – RR liable if livestock injured by unfenced right-of-way
Minnesota	Minn. Stat. Ann. §§ 87.01 to -.03 (West 2000.)	Minn. Stat. § 222.63 (2000.) – establishes rail bank program for public use Minn. Stat. § 84.029 (2000.) – permits the State to acquire land, including abandoned railroad rights-of-way, for trails – no liability provision	Minn. Stat. Ann. § 3.736 et seq. (West 2000.) – Tort Claims Act, Minn. Stat. Ann. § 466.01 et seq. (West 2000.)	Minn. Stat. Ann. § 219.31 (West 2000.) – RR liable if livestock or children who could not scale legal fence injured by unfenced right-of-way
Mississippi	Miss. Code Ann. §§ 89-2-1 to -7, 89-2-21 to -27 (2000.)	Miss. Code Ann. § 55-25-1 et seq. (2000.) – Rails-to-Trails Recreational District Statute – no liability provision	Miss. Code Ann. §§ 11-46-1 to -16 (2000.)	
Missouri	Mo. Ann. Stat. §§ 537.345 to -.348 (West 2000.)	Mo. Rev. Stat. § 258.100 (2000.) – trails have civil immunity – specifically covers railroad rights-of-way acquired by State for use as a recreational trail – provides immunity from liability for adjacent property owners for injuries to person or property if the person entered from the trail; does not apply if person on land is invitee, or the injury was caused by an intentional, unlawful, willful, or wanton act	Mo. Ann. Stat. § 537.600 et seq. (West 2000.)	Mo. Ann. Stat. § 389.650 (West 2000.) – RR liable if livestock injured by unfenced right-of-way

State-by-State matrix of applicable laws and statutes (*cont'd.*)

State	Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
Montana	Mont. Code Ann. §§ 70-16-301 to -302 (2000.)		Mont. Code Ann. § 2-9-101 et seq. (2000.) – MT Comprehensive State Insurance Plan and Tort Claims Act – State and local Mont. Code Ann. § 7-1-4125 et seq. (2000.) – municipal immunity is waived	
Nebraska	Neb. Rev. Stat. Ann. §§ 37-1001 to -1008 (Michie 2000.)	Neb. Rev. Stat. Ann. § 37-1002 et seq. (Michie 2000.)– Recreational Trails Statute – § 37-1012, Responsibility for fences. The Game and Park Commission shall “have the same responsibility as a railroad as provided in §74-601 to 74-602.”	Neb. Rev. Stat. § 81-8, 209 et seq. (2000.) Neb. Rev. Stat. § 13-902 et seq. (2000.) – Political Subdivisions Tort Claims Act	Neb. Rev. Stat. § 74-601 (2000.) – RR liable if livestock injured by unfenced right-of-way
Nevada	Nev. Rev. Stat. § 41.510 (2000.)		Nev. Rev. Stat. Ann. § 41.031 et seq. (Michie 2000.)	
New Hampshire	N.H. Rev. Stat. Ann. § 212.34 (2000.)	N.H. Rev. Stat. Ann. § 228:60-a et seq. (2000.) – Railroad Right-of-Way Statute – § 228:60-c allows the State to enter into agreements for the use of railroad rights-of-way that relieve the landowner from civil liability for personal injury or property damage for the period of the agreement	N.H. Rev. Stat. Ann. § 541-B: 1 et seq. (2000.) – administrative claims against the State – political subdivisions excluded	N.H. Rev. Stat. Ann. § 373:30 (2000.) – RR liable if livestock of adjacent property owner injured by unfenced right-of-way
New Jersey	N.J. Stat. Ann. §§ 2A:42A-1 to -7 (West 2000.)	N.J. Stat. Ann. § 13:8-30 et seq. (West 2000.) – Trails System Act – no liability provision	N.J. Stat. Ann. § 59:1-1 et seq. (West 2000.) – Tort Claims Act	N.J. Stat. Ann. § 48:12-46 (West 2000.) – RR liable if livestock injured by unfenced right-of-way
New Mexico	N.M. Stat. Ann. §§ 16-3-9, 17-4-7 (Michie 2000.)	N.M. Stat. Ann. § 16-3-3 et seq. (Michie 2000.) – State Trails System Statute – § 16-3-9 limits liability for landowner who has granted right-of-way or easement to State for recreational trail	N.M. Stat. Ann. §§ 41-4-1 to -27 (Michie 2000.) – Tort Claims Act	N.M. Stat. Ann. § 77-16-16 (Michie 2000.) – RR liable if livestock injured by unfenced right-of-way
New York	N.Y. Gen. Oblig. Law § 9-103 (Consol. 2000.)		N.Y. Ct. Cl. Act § 8 (McKinney 2000.)	N.Y. R.R. Law § 52 (McKinney 2000.) – RR liable if livestock injured by unfenced right-of-way but RR not liable for injuries to livestock resulting from engine frightening animal
N. Carolina	N.C. Gen. Stat. § 113A-95 (2000.)	N.C. Gen. Stat. § 113A-84 et seq. (2000.) – Trails System Statute – § 113A-95 limits liability for landowner who allows land to be used for trail by limiting “duty of care” owed to users to that owed to a trespasser	N.C. Gen. Stat. §§ 143-291 to -300.1 (2000.)	



State-by-State matrix of applicable laws and statutes (cont'd.)

State	Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
N. Dakota	N.D. Cent. Code §§ 53-08-01 to -06 (2000.)		N.D. Cent. Code § 32-12.1-01 et seq. (2000.) – history of statute found in Chapter 303, S.L. 1977 – applicable to political subdivisions of State	N.D. Cent. Code § 49-11-24 et seq. (2000.) – every owner or lessee of land abutting any RR's right-of-way may make written request of owners/operators of RR to construct a fence N.D. Cent. Code § 49-11-30 – RR liable if livestock injured by unfenced right-of-way
Ohio	Ohio Rev. Code Ann. §§ 1533.18, 1533.181 (Anderson 2000.)	Ohio Rev. Code Ann. § 1519.01 to -.02 (Anderson 2000.) – Recreational Trails Statute – § 1519.02 permits the State authority to acquire land on an “existing or abandoned” railroad for use as a recreational trail – no liability provision	Ohio Rev. Code Ann. § 2743.01 et seq. (West 2000.) – Court of Claims Act – applicable only to the State and its agencies or instrumentalities Ohio Rev. Code Ann. § 2744.01 et seq. (West 2000.) – Political Subdivisions Act – applicable to political subdivisions of State	
Oklahoma	Okla. Stat. tit. 76, §§ 10 to 15 (2000.)	Okla. Stat. tit. 74, § 1853 et seq. (2000.) – Trails System Act – § 1859 C makes it a misdemeanor to damage adjacent properties Okla. Stat. tit. 74, § 3458 (2000.) – limits liability of landowners who permit the State to use their land for trails system	Okla. Stat. Ann. tit. 51, § 151 et seq. (West 2000.) – Political Subdivision Tort Claims Act	Okla. Stat. Ann. tit. 66, § 141 (West 2000.) – every RR Corp. has duty to fence its road with a good & lawful fence
Oregon	Or. Rev. Stat. § 105.688 (2000.)	Or. Rev. Stat. § 390.950 et seq. (2000.) – Recreational Trails Statute – § 390.980 permits the State to use funds to indemnify landowners adjacent to recreational trails for damage to their property caused by trail users for which the landowner was unable to recover from the user causing the damage	Or. Rev. Stat. §§ 30.260 to -.300 (2000.) – § 30.265(2) pertains to State and subdivisions	Or. Rev. Stat. § 608.310 (2000.) – every person owning or operating any railroad shall erect and maintain good and sufficient lawful fences on both sides of the RR line, with exceptions
Pennsylvania	68 Pa. Cons. Stat. §§ 477-1 to -8 (2000.)	32 Pa. Cons. Stat. § 5611 et seq. (2000.) – Rails-to-Trails Act – § 5619(c) encourages the preservation of the trails, if possible, when a rail line is reactivated, creating a rails-with-trail – § 5621 limits liability for landowners who allow their land to be used for trails, trail, owners and adjacent property owners with the protections similar to a RUS	1 Pa. Cons. Stat. Ann. § 2310 (West 2000.) – commonwealth 42 Pa. Cons. Stat. Ann. § 8541 et seq. (West 2000.) – local agencies Pa. R. Civ. P. 2101 et seq. – commonwealth and political subdivisions	

State-by-State Matrix of Applicable Laws and Statutes (*cont'd.*)

State	Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
Rhode Island	R.I. Gen. Law § 32-6-1 to -7 (2000.)		R.I. Gen. Laws § 9-31-1 et seq. (2000.) – State and subdivisions	R.I. Gen. Laws § 39-8-18 (2000.) – every RR shall erect /maintain fence along boundary lines of right-of-way
S. Carolina	S.C. Code Ann. § 27-3-10 to -70 (Law. Co-op. 2000.)		S.C. Code Ann. § 15-78-10 et seq. (Law. Co-op. 2000.) – Tort Claims Act – State and local	
S. Dakota	S.D. Codified Laws § 20-9-12 to -18 (Michie 2000.)		S.D. Codified Laws § 3-21-1 et seq. (Michie 2000.) – State	S.D. Codified Laws § 49-16A-91 (Michie 2000.) – if owner of land abutting the road fences their property, except for the side abutting the road, the RR shall supply landowner with materials needed to construct fence not less than 4.5 feet high
Tennessee	Tenn. Code Ann. §§ 70-7-101 to -104, 11-10-101 to -104 (2000.)	Tenn. Code Ann. § 11-11-101 (2000.) – Trails System Act Tenn. Code Ann. § 11-11-111 et seq. (2000.) – § 11-111 provides for consideration of abandoned railroad for recreational trails – §§ 11-113 and 11-114, respectively, prohibit hunting and the use of motor vehicles on trails	Tenn. Code Ann. § 9-8-101 et seq. (2000.) – State Board of Claims Act – administrative claims procedure against State Tenn. Code Ann. § 29-20-101 et seq. (2000.) – Governmental Tort Liability Act – applicable only to units of local government and not to the State	Tenn. Code Ann. § 65-6-301 (2000.) – RR liable if livestock injured by unfenced right-of-way
Texas	Tex. Civ. Prac. & Rem. Code Ann. § 75.001 to -.003 (West 2000.)	Tex. Parks & Wild. Code Ann. § 28.001 et seq. (West 2000.) – Trails System Act – no liability provision	Tex. Civ. Prac. & Rem. Code Ann. § 101.001 et seq. (West 2000.)	
Utah	Utah Code Ann. § 57-14-1 to -7 (2000.)	Utah Code Ann. § 63-11a-101, -102(3)(c), -301 (2000.) – Recreational Trails System Act – § 301 permits the State to enter into cooperative agreements with private landowners and corporations that specify the responsibilities for development, operation, and maintenance, including law enforcement along trails	Utah Code Ann. §§ 63-30-1 to -34 (2000.) – Governmental Immunity Act	Utah Code Ann. § 56-1-13 (2000.) – RR liable if livestock injured by unfenced right-of-way



State-by-State Matrix of Applicable Laws and Statutes (cont'd.)

State	Recreational Use Statute (RUS)	Trail, Rails-to-Trails Program, Recreational Trails System, or Similar Statute	Government Tort Liability Act	Railroad Fencing Laws
Vermont	Vt. Stat. Ann. tit. 12, §§ 5791–5794 (2000.)	Vt. Stat. Ann. tit. 10, § 443 et seq. (2000.) – Trails System Act – does not specifically cover trails on active or inactive railroad – § 444 requires written permission to use land for trail that must address liability for persons or property and states that for fee simple or lesser interest in property, the State will hold harmless the private landowner who conveyed land – § 448 limits liability for public and private land owner	Vt. Stat. Ann. tit. 12, § 5601 et seq. (2000.) – Tort Claims Act – State	Vt. Stat. Ann. tit. 5, § 3642 (2000.) – RR liable if livestock injured by unfenced right-of-way
Virginia	Va. Code Ann. § 29.1-509 (Michie 2000.)	Va. Code Ann. § 15.2-1806 (Michie 2000.) – Statute provides: “In furtherance of the purposes of this subsection, a locality may provide for the protection of persons whose property interests or personal liability, may be related to or affected by the use of such trails.”	Va. Code Ann. § 8.01-195.1 et seq. (Michie 2000.) – Tort Claims Act, – State Va. Code Ann. § 8.01-222 (Michie 2000.) – notice of claims to cities and towns	Va. Code Ann. § 56-429 (Michie 2000.) – need written request by adjacent landowner to the registered agent of RR to require RR Co. to erect and to maintain fence; once request is made, RR liable if livestock injured by unfenced right-of-way
Washington	Wash. Rev. Code Ann. §§ 4-24.200, -210 (West 2000.)	Wash. Rev. Code Ann. § 79A.35.010 et seq. (West 2000.) – Recreational Trails System Act – does not specifically cover rail-trails on active or inactive railroad – limits liability for volunteers working with public agencies on trails	Wash. Rev. Code Ann. § 4.92.090 (West 2000.) – State and subdivisions	
West Virginia	W. Va. Code § 19-25-1 to -5 (2000.)	W. Va. Code § 5B-1A-1 et seq. (2000.) – Rails-to-Trails Program – § 5B-1A-8 relieves an owner of an abandoned railroad right-of-way from liability during the interim period when it is being held by the State for future development – § 5B-1A-9 adopts a RUS-type provision for owners of trails and adjacent property owners under this article	W. Va. Code § 14-2-1 et seq. (2000.) – Court of Claims Act – State W. Va. Code § 29-12A-1 et seq. (2000.) – Governmental Tort Claims and Insurance Reform Act – political subdivisions	
Wisconsin	Wis. Stat. Ann. § 895.52 (West 2000.)	Wis. Stat. § 85.09 (2000.) – acquisition of abandoned rail property – no liability provision	Wis. Stat. Ann. § 893.80 (West 2000.) – claims against governmental bodies or officers, agents, or employees	Wis. Stat. Ann. § 192.33 (West 2000.) – RR liable if livestock injured by unfenced right-of-way
Wyoming	Wyo. Stat. Ann. § 34-19-101 (Michie 2000.)		Wyo. Stat. Ann. §§ 1-39-101 to -118 (Michie 2000.) – Governmental Claims Act	Wyo. Stat. Ann. § 37-9-304 (West 2000.) – RR liable if livestock injured by unfenced right-of-way

APPENDIX C:

Sample Legal Agreements



License Agreement, Los Angeles Metropolitan Transportation Authority for the Mission City Trail

File: RVAL008562

LICENSE AGREEMENT

This LICENSE AGREEMENT ("Agreement") is made and entered into as of JANUARY 9, 1997 by and between THE LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY, a public agency existing under the authority of the laws of the State of California ("MTA"), and THE CITY OF SAN FERNANDO, a general law city and a municipal corporation duly organized and existing under the laws of the State of California ("Licensee"), upon and in consideration of the agreements, covenants, terms and conditions below:

PART I

BASIC LICENSE PROVISIONS

1. Description of License Property:

A parcel of land lying entirely within the MTA's right-of-way, along the Valley Subdivision, as more particularly described in Exhibit A, attached hereto.

2. Use of License Property:

The License Property shall be used as a bicycle/pedestrian trail. As such, this Agreement allows Licensee to access and use the License Property to construct, install, alter, maintain, reconstruct, remove and repair the Facility. In addition, this Agreement permits the Licensee to allow the public to access and use the Facility. The public's use, however, is limited to bicycle, jogging and pedestrian purposes, only. Except for: (i) the maintenance and police vehicles of Licensee (which are allowed on the License Property only when being used in conjunction with Licensee's maintenance responsibilities hereunder or in conjunction with Licensee's law enforcement activities, as applicable); (ii) the vehicles of SCRRA (as defined in Section 4.1 of the General License Provisions); (iii) the vehicles of MTA; and (iv) the vehicles of tenants, licensees, permittees, easement holders and others with rights to access and/or use all, or a portion of, the License Property under agreements with SCRRA or MTA, no motorized vehicles shall be permitted or allowed on the License Property. No other uses of the License Property are allowed under this Agreement.

3. Commencement Date:

The date that this Agreement is made and entered into.

4. Term:

An initial term of thirty-six (36) months, ending 36 months after the Commencement Date, and year-to-year thereafter, unless canceled by MTA as provided in Section 1.2.



5. License Fees:

- A. Base License Fee: \$1, for the term of this Agreement.
- B. Additional License Fee:
 - a. One time fee: - None -
 - b. Other fees: - None -

6. Insurance Amount: See Exhibits B and C

7A. MTA's Address:

Los Angeles County Metropolitan Transportation Authority
 One Gateway Plaza
 Los Angeles, California 90012-2932
 Attn.: Real Estate Department
 Property Management Section

7B. SCRRA's Address:

Southern California Regional Rail Authority
 P. O. Box 86425
 Los Angeles, California 90086-0425
 Attn.: Ron Mathieu, Manager of Public Projects

8. Licensee's Address:

City of San Fernando
 117 Macniel Street
 San Fernando, California 91340
 Attention: City Engineer

9. Facility:

A bicycle/pedestrian trail, including, but not limited to: (i) a pedestrian sidewalk, (ii) a jogging trail, (iii) a two-way, two-lane bike path, (iv) landscaping, (v) an irrigation system, (vi) fencing, (vii) gates, (viii) drainage facilities (including culverts, culvert extensions, inlets, drainage pipes, swales, and ditches), (ix) paving, (x) street lighting, (xi) benches, and (xii) bike racks.



The foregoing Basic License Provisions and the General License Provisions set forth in attached Part II are incorporated into and made part of this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives as of the date first written above.

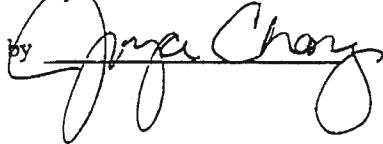
MTA:

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

By: 

Name: VELMA C. MARSHALL
Title: Director of Real Estate

APPROVED AS TO FORM BY:
Dewitt Clinton
County Counsel

by 

LICENSEE:

THE CITY OF SAN FERNANDO

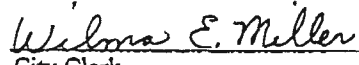
By: 

Name: ROSA CHACON
Title: Mayor of the City of San Fernando

APPROVED AS TO FORM BY:


City Attorney
City of San Fernando

ATTEST:


City Clerk
City of San Fernando

[SFBikeway-092496-gsa]



INDEX TO LICENSE AGREEMENT - PART II

<u>Section</u>	<u>Page</u>
1. Grant of License/Term	1
2. Payments	1
3. Taxes	2
4. Construction	2
5. Contractors; Approval and Insurance	3
6. Reimbursement	3
7. Liens	3
8. Maintenance and Repair	4
9. Landscaping, Fencing Gates and Signs	4
10. Use	5
11. Abandonment	5
12. Breach	5
13. Surrender	5
14. Indemnification	6
15. Assumption of Risk and Waiver	6
16. Insurance	7
17. Tests and Inspections	7
18. Hazardous/Toxic Materials Use and Indemnity	7
19. Underground Storage Tanks	8
20. Subordinate Rights	8
21. Compliance with Laws	8
22. Condemnation	9
23. Markers	9
24. General Provisions	9

Exhibits:

- A License Property
- B Insurance Requirements
- C Form of Insurance Endorsement/Certificate
- D Permitted Hazardous Materials
- E Additional Provisions



PART II - GENERAL LICENSE PROVISIONS

1. Grant of License/Term.

1.1 Grant of License. MTA hereby grants a non-exclusive license to Licensee in, on, over, under, across and along the real property of MTA in the location shown in the diagram attached hereto as Exhibit A and described in Item 1 of the Basic License Provisions (the "License Property"), to:

- A. Carry out Licensee's obligations under this Agreement; and
- B. Use the License Property in the manner set forth in Item 2 of the Basic License Provisions.

In connection with this grant of license, Licensee, its council members, officers, directors, affiliates, employees, agents, customers, visitors, invitees, licensees, contractors, subcontractors, consultants, attorneys, and/or any other person or entity acting by, through or under Licensee (collectively, "Licensee's Parties"), subject to the provisions hereof, may have reasonable rights of entry and access onto adjoining real property of MTA if necessary to carry out Licensee's obligations to construct, install, alter, maintain, reconstruct, remove and/or repair the Facility, so long as Licensee has received MTA's prior written approval for the use of such adjoining property of MTA. This grant of license onto adjoining real property of MTA does not extend to the public, which Licensee shall take all reasonable methods to exclude from such adjoining property of MTA. The License Property, adjoining real property of MTA and personal property of MTA located thereon shall hereinafter collectively be referred to as "MTA Property".

1.2 Term of Agreement. The term of this Agreement shall commence on the "Commencement Date" specified in Item 3 of the Basic License Provisions. This Agreement shall be a license for the term specified in Item 4 of the Basic License Provisions; provided, however, that MTA shall have the right to terminate this Agreement, at any time, for the following reasons:

- A. MTA, in its sole and absolute judgment, determines that it then may require possession of all, or any portion, of the License Property for a transportation-related purpose other than the bicycle/pedestrian trail contemplated herein. In this instance, MTA shall provide Licensee with at least one hundred eighty (180) days prior written notice of such termination, and this Agreement shall terminate one hundred eighty (180) days from receipt of such notice by Licensee.
- B. Licensee breaches this Agreement. In this instance, no notice of termination is necessary, and this Agreement shall immediately terminate, as set forth in Section 12 of this Agreement's General License Provisions.
- C. Licensee abandons the Facility or the License Property, as set forth in Section 11 of this Agreement's General License Provisions. In this instance, no notice of termination is necessary, and this Agreement shall immediately terminate as set forth in Section 11.

The term of this Agreement as provided above is referred to as the "Term".

1.3 Condition of Premises. Licensee acknowledges that it has inspected and accepts the License Property in its present condition as suitable for the use for which this Agreement is granted. Execution of this Agreement by Licensee shall conclusively establish that the License Property is in good and satisfactory condition as of the Commencement Date.

2. Payments.

2.1 License Fee.

[INTENTIONALLY OMITTED]



2.2 License Fee Adjustment

[INTENTIONALLY OMITTED]

2.2.1 Annual CPI Adjustment

[INTENTIONALLY OMITTED]

2.2.2 Fair Market Adjustment

[INTENTIONALLY OMITTED]

2.3 Late Charge

[INTENTIONALLY OMITTED]

3. Taxes. Licensee shall be liable for, and agrees to pay promptly and prior to delinquency, any tax or assessment, including but not limited to any possessory interest tax, levied by any governmental authority: (a) against the Facility, the License Property and/or any personal property, fixtures or equipment of Licensee used in connection therewith, or (b) as a result of Licensee's use of the License Property or the Facility.

4. Construction

4.1 General Provisions. Any work performed or caused to be performed by Licensee on the Facility or the License Property shall be performed: (a) at Licensee's sole cost and expense; (b) in accordance with any and all applicable laws, rules and regulations (including the MTA's and the Southern California Regional Rail Authority's ("SCRRA's") rules and regulations); and (c) in a manner which is (i) equal to or greater than the then applicable standards of the industry for such work, and (ii) reasonably satisfactory to MTA and SCRRA. Licensee shall prepare detailed work plans (the "Work Plans") setting forth any and all construction, reconstruction, installation, restoration, alteration, repair, replacement, removal, landscaping, fencing and sign erection work (hereinafter, "Construction Work") Licensee plans to perform on the License Property. Such Work Plans shall be submitted to MTA and SCRRA for their review and approval, and shall be developed, altered and/or changed so as to meet the requirements of MTA and/or SCRRA. Licensee shall not perform, nor cause any of Licensee's Parties to perform, any Construction Work on the License Property until it has received written approval of the relevant Work Plans from MTA and SCRRA. Changes to approved Work Plans are allowed hereunder. However, all such changes must be reviewed and approved in writing by the MTA and the SCRRA prior to their implementation. Any Construction Work to be performed on the License Property must be carried out pursuant to Work Plans or changes approved in writing by MTA and SCRRA. In no event shall approval by MTA or SCRRA of any plans for any Construction Work be a representation that any such plans comply with any applicable laws. Licensee shall comply with all laws applicable to any Construction Work, and shall be solely responsible for obtaining all required approvals and permits for the same.

4.2 Initial Construction of Facility. With respect to the initial construction and installation of the Facility, Licensee shall ensure that neither it nor any of Licensee's Parties shall enter upon the License Property to commence any Construction Work relating to the Facility until Licensee and each of Licensee's Parties which plan to enter the License Property have met all of the requirements of the SCRRA, which may include a requirement that each of such Licensee's Parties enter into a written right-of-entry agreement with the SCRRA. Licensee's request for such SCRRA requirements shall be in writing and should be delivered to SCRRA, at the address set forth in Item 7B of this Agreement's Part I, at least ten (10) working days prior to any of Licensee's Parties' proposed entry onto the License Property. Licensee shall deliver a copy of such request to the MTA at the address set forth in Item 7A of this Agreement's Part I.



4.3 Work Performed After Initial Construction. Except for emergency work (which may be required from time to time) and normal day-to-day maintenance work, the provisions of Sections 4.1 and 4.2 of this Agreement's General License Provisions shall apply to all work which may need to be performed on the Facility or the License Property after the initial construction and installation of the Facility. In cases of emergency, Licensee shall notify MTA's representative personally or by phone prior to commencing such work. Normal, day-to-day maintenance work on the Facility or the License Property, may be performed by Licensee or any of Licensee's Parties without written notice to MTA or SCRRRA, without Work Plans and without Work Plan approval by MTA or SCRRRA (subject to the other provisions of this Agreement), so long as Licensee and any of Licensee's Parties wishing to perform such day-to-day maintenance: (i) have previously received SCRRRA's requirements, (ii) have previously received MTA's and SCRRRA's written approval to access the License Property, (iii) abide by SCRRRA's requirements at all times while on the License Property, and (iv) perform all such maintenance work from entirely within the License Property.

4.4 As-Built Drawings. Within ninety (90) days after the substantial completion of the construction and installation of the Facility, Licensee shall deliver to MTA, for MTA's and SCRRRA's review and approval, two (2) full sets of as built drawings for the Facility (the "As Built Drawings"). The As Built Drawings are subject to the review and approval of MTA and SCRRRA, and shall be developed, altered and/or changed so as to meet the requirements of MTA and/or SCRRRA. At a minimum, however, such As Built Drawings shall: (i) be substantially of the form of the Work Plans approved by MTA and SCRRRA; (ii) include all changes to the Work Plans which were approved, in writing, by MTA and SCRRRA; (iii) show all improvements and construction performed by Licensee, or caused to be performed by Licensee, on the License Property; (iv) clearly indicate and label the area of the License Property; (v) show the centerline of all railroad tracks existing on the MTA Property as of the date that construction and installation of the Facility was substantially complete; and (vi) show, to scale, on all overhead and cross section drawings the easterly and westerly boundaries of the License Property, and the Facility with respect to the centerline of the mainline railroad track existing on the MTA Property as of the date that construction and installation of the Facility was substantially complete. To the extent that the As-Built Drawings indicate or show that the Facility has not been constructed pursuant to the Work Plans approved by MTA and SCRRRA or any change thereto approved by MTA and SCRRRA, Licensee shall, at the request of MTA, rebuild, reconstruct and/or reinstall the Facility, at Licensee's sole cost and expense, so that the Facility will be constructed, located and installed in accordance with the approved Work Plans and the approved changes thereto. Failure to provide As Built Drawings to the MTA as set forth herein shall be deemed a material breach of this Agreement.

5. Contractors: Approval and Insurance. Any contractors of Licensee performing work on the Facility or the License Property shall first be approved in writing by MTA and SCRRRA. With respect to such work, Licensee shall, at its sole cost and expense, obtain and maintain in full force and effect throughout the term of such work, insurance, as required by MTA and SCRRRA, in the amounts and coverages specified on, and issued by insurance companies as described on Exhibit B. Additionally, Licensee shall cause any and all of its contractors and subcontractors which may (i) be involved with such work, or (ii) may, for any reason, need to enter onto the License Property to obtain and maintain in full force and effect during the Term of this Agreement, or throughout the term of such work (as applicable), insurance, as required by MTA and SCRRRA, in the amounts and coverages specified on, and issued by insurance companies as described on, Exhibit B. MTA reserves the right, throughout the Term of this Agreement, to review and change the amount and type of insurance coverage it requires in connection with this Agreement or the work to be performed on the License Property.

6. Reimbursement. Licensee agrees to reimburse MTA and/or SCRRRA for all reasonable costs and expenses incurred by them in connection with work on, or maintenance of, the License Property or the Facility, as a result of City's acts or omissions under this Agreement, including, but not limited to, costs incurred by MTA and/or SCRRRA in: (i) furnishing any materials or performing any labor, (ii) reviewing Licensee's Work Plans and/or inspecting any Construction Work, (iii) installing or removing protection beneath or along MTA's tracks, (iv) furnishing of those watchmen, flagmen and inspectors as MTA and/or SCRRRA deems necessary, and (v) furnishing other items or performing other acts as MTA and/or SCRRRA in their sole discretion deems necessary to monitor or aid in compliance with this Agreement.

7. Liens. Licensee shall fully and promptly pay for all materials joined or affixed to the Facility or



MTA Property, in connection with the construction or maintenance of the Facility and/or Licensee's acts under this Agreement, and fully and promptly pay all persons who perform labor upon said Facility or MTA Property, in connection with the construction or maintenance of the Facility and/or Licensee's acts under this Agreement. Licensee shall not suffer or permit to be filed or enforced against the MTA Property or the Facility, or any part thereof, any mechanics', materialmen's, contractors', or subcontractors' liens or stop notices arising from, or any claim for damage growing out of, any testing, investigation, maintenance, Construction Work or other work, or out of any other claim or demand of any kind. Licensee shall pay or cause to be paid all such liens, claims or demands, including sums due with respect to stop notices, together with attorney's fees incurred by MTA with respect thereto, within ten (10) business days after notice thereof and shall indemnify, hold harmless and defend MTA from all obligations and claims made against MTA for the above described work, including attorney's fees. Licensee shall furnish evidence of payment upon request of MTA. Licensee may contest any lien, claim or demand by furnishing a statutory lien bond or equivalent with respect to stop notices to MTA in compliance with applicable California law. If Licensee does not discharge any mechanic's lien or stop notice for works performed for Licensee, MTA shall have the right to discharge same (including by paying the claimant) and Licensee shall reimburse MTA for the cost of such discharge within ten (10) business days after billing. MTA reserves the right at any time to post and maintain on the MTA Property such notices as may be necessary to protect MTA against liability for all such liens and claims. The provisions of this section shall survive the termination of this Agreement.

8. Maintenance and Repair. Licensee, at Licensee's sole expense, shall maintain the Facility and all other facilities and improvements of Licensee on the License Property in a first-class condition during the Term of this Agreement and shall perform all maintenance and clean-up of the Facility and all other facilities and improvements of Licensee on the License Property as necessary to keep the Facility and all other facilities and improvements of Licensee on the License Property in good order and condition, to MTA's and SCRRA's satisfaction. Licensee's maintenance responsibilities hereunder shall include, but shall not be limited to, keeping each and every portion of the Facility and all other facilities and improvements of Licensee on the License Property weed, graffiti and litter-free to the satisfaction of MTA and SCRRA. In addition, Licensee shall ensure that: (i) any and all landscaping associated with the Facility be, at all times, adequately watered, fed, and pruned, so as to keep it in a healthy condition; (ii) any and all signs required by the MTA or the SCRRA to be kept on the License Property by Licensee be maintained in a readable condition; and (iii) any and all culverts, culvert extensions, inlets, drainage pipes or other drainage facilities constructed to accommodate the Facility be maintained to allow for the free-flow of water therethrough. Licensee shall further ensure that all fencing, gates and barrier landscaping, be maintained in conjunction with one another to prevent those members of the public (as defined in Section 14 of this Agreement's General License Provisions) who may access and use the License Property and the Facility from accessing the MTA Property lying adjacent to the License Property. Licensee shall use its reasonable efforts to ensure that any and all gates installed in the fencing remain closed and locked at all times. Licensee shall close and lock any gates which it finds open and/or unlocked. If any portion of the MTA Property (including, but not limited to, any portion of the Facility, or any improvements or fixtures of the MTA) suffers damage by reason of the access to or use of the License Property or the Facility by Licensee, the public, Licensee's Parties or Licensee's partners, officers or directors, including, but not limited to, damage arising from vandalism (including graffiti), or from any tests or investigations conducted upon the License Property, Licensee shall, at its own cost and expense, immediately repair all such damage and restore the MTA Property to as good a condition as before such cause of damage occurred. If any portion of the Facility's fencing, gates or barrier landscaping suffers damage by reason of the presence upon the License Property or the adjacent MTA Property of any of the beneficiaries of the Title Exceptions set forth in Section 20 of this Agreement's General License Provisions, then Licensee shall, at its own cost and expense, immediately repair all such damage and restore such fencing, gates and/or barrier landscaping to as good a condition as existed immediately prior to the occurrence of such damage. Repair of damage shall include, without limitation, regrading and resurfacing of any holes, ditches, indentations, mounds or other inclines created by any excavation by Licensee or Licensee's Parties.

9. Landscaping, Fencing, Gates and Signs. Licensee, at its sole cost and expense, shall install barrier landscaping, fencing and signs on the License Property so as to prevent those members of the public who may access and use the License Property and the Facility from accessing the MTA Property lying adjacent to the License Property. Licensee, at its sole cost and expense, shall also install signs indicating that MTA is the owner of the License Property, that the right to enter thereon is by permission, and that all persons who enter upon and use the License Property and the Facility do so at their sole risk. The barrier landscaping, fencing and signs required herein



shall be installed and maintained to the satisfaction of the MTA and the SCRRRA. Licensee shall prepare landscaping, fencing and sign plans as part of the Work Plans to be prepared by Licensee pursuant to the provisions of Section 4.1 of this Agreement's General License Provisions. As with all other Work Plans, such landscaping, fencing and sign plans shall be submitted to the MTA and the SCRRRA for review and approval prior to the installation of any barrier landscaping, fencing or signs. Licensee agrees to provide gaps in the Facility's barrier landscaping and to install locked gates in the Facility's fencing at locations to be specified by MTA and SCRRRA. Such locations will be used to provide access to the MTA Property lying adjacent to and easterly of the License Property for the benefit of MTA, SCRRRA and the beneficiaries of any lease, license, sign lease, sign license, permit, easement or other property right affecting such MTA Property. All landscaping, fencing (including gates) and sign installation and work shall be done in accordance with the provisions of Section 4 and Section 5 of this Agreement's General License Provisions, and shall be subject to Section 6 and Section 7 of this Agreement's General License Provisions. After installation, all landscaping, fencing (including gates) and signs shall be maintained and repaired in accordance with the provisions of Section 8 of this Agreement's General License Provisions.

10. Use. The License Property shall be used only for the purposes specified in Item 2 of the Basic License Provisions and for such lawful purposes as may be directly incidental thereto. No change shall be made by Licensee in the use of the License Property or the Facility without MTA's prior written approval.

11. Abandonment. Should Licensee at any time abandon the use of the Facility or the License Property, or any part thereof, or fail at any time for a continuous period of ninety (90) days to use the same for the purposes contemplated herein, or should the Facility, or any portion thereof, be closed to the public for a continuous period of ninety (90) days (except for periods of construction, reconstruction, maintenance or repair which have been approved in writing by MTA), then this Agreement shall immediately terminate to the extent of the portion so abandoned, discontinued, or closed to the public, and in addition to any other rights or remedies, MTA shall immediately be entitled to exclusive possession and ownership of the portion so abandoned, discontinued, or closed, without the encumbrance of this Agreement.

12. Breach. Should Licensee breach, or fail to keep, observe or perform any agreement, covenant, term or condition on its part herein contained, then, in addition to any other available rights and remedies, MTA at its option may:

(a) perform any necessary or appropriate corrective work at Licensee's expense, which Licensee agrees to pay to MTA upon demand, or

(b) with or without written notice or demand, immediately terminate this Agreement and at any time thereafter, recover possession of the License Property or any part thereof, and expel and remove therefrom Licensee and any other person occupying the License Property by lawful means, and again repossess and enjoy the License Property and the Facility, without prejudice to any of the remedies that MTA may have under this Agreement, at law or equity by reason of Licensee's default or of such termination.

13. Surrender. Upon any termination of this Agreement (including, but not limited to, a termination resulting from an abandonment of all or a portion of the Facility or the License Property, as described in Section 11 of this Agreement's General License Provisions), unless otherwise requested in writing by MTA prior to or within thirty (30) days after the date of termination, Licensee, at its own cost and expense, shall, within ninety (90) days after the date of termination, remove the Facility from the License Property and restore the MTA Property as nearly as possible to the same state and condition as existed prior to the construction, reconstruction or installation of said Facility. Should Licensee fail to comply with the requirements of the preceding sentence, MTA may at its option (i) perform the same at Licensee's expense, which costs Licensee agrees to pay to MTA on demand, or (ii) assume title and ownership of said Facility. No termination hereof shall release Licensee from any liability or obligation hereunder, whether of indemnity or otherwise, resulting from any acts, omissions or events happening prior to the date the Facility is removed and the MTA Property is restored. Notwithstanding anything to the contrary contained herein, upon any termination of this Agreement, Licensee shall comply with any MTA request that Licensee leave all, or any portion of, the Facility in place on the License Property. Should MTA make such a request, title and ownership of such Facility, or portion thereof, shall, upon termination hereof, immediately vest with MTA, at no cost to MTA.



14. Indemnification. Licensee, on behalf of itself and its successors and assigns, agrees to indemnify, defend (by counsel satisfactory to MTA), and hold harmless MTA, SCRRRA and their respective subsidiaries, officers, commissioners, employees, agents, attorneys, consultants, contractors, invitees, licensees, customers, visitors, passengers, successors and assigns (individually and collectively, "Indemnitees"), to the maximum extent allowed by law, from and against all loss, liability, claims, demands, suits, liens, claims of lien, damages (including consequential damages), costs and expenses (including, without limitation, any fines, penalties, judgments, litigation expenses, and experts' and attorneys' fees), that are incurred by or asserted against Indemnitees (individually and collectively, the "Claims") arising out of or connected in any manner with (i) the acts or omissions to act of Licensee, Licensee's Parties or anyone directly or indirectly employed by Licensee, or for whose acts Licensee is liable (collectively, "Personnel"), in connection with the MTA Property, or arising from the presence upon or performance of activities by Licensee or its Personnel with respect to the MTA Property, (ii) the acts or omissions to act of any member of the public arising from such member of the public's activities with respect to the License Property, or such member of the public's presence upon the License Property; (iii) bodily injury to or death of any person (including employees of Indemnitees or employees of any Indemnitee) or damage to or loss of use of property resulting from such acts or omissions of Licensee, its Personnel, or the public, or (iv) non-performance or breach by Licensee or its Personnel of any term or condition of this Agreement, in each case whether occurring during the Term of this Agreement or thereafter.

The foregoing indemnity shall be effective regardless of any negligence (whether active, passive, derivative, joint, concurring or comparative) on the part of Indemnitees or any Indemnitee, unless caused solely by the gross negligence or willful misconduct of Indemnitees or any Indemnitee; shall survive termination of this Agreement; and is in addition to any other rights or remedies which Indemnitees may have under the law or under this Agreement. Upon request of MTA, Licensee shall provide insurance coverage for possible claims or losses covered by the indemnification and defense provisions of this Agreement.

Claims against the Indemnitees, or any Indemnitee, by Licensee, its Personnel, or the public shall not limit the Licensee's indemnification obligations hereunder in any way, whether or not such claims against Indemnitees, or any Indemnitee, may result in any limitation on the amount or type of damages, compensation, or benefits payable by or for a Licensee, its Personnel, or the public, under workers' compensation acts, disability benefit acts or other employee benefit acts or insurance.

15. Assumption of Risk and Waiver. To the maximum extent allowed by law, Licensee assumes any and all risk of loss, damage or injury of any kind to any person or property, including without limitation, the Facility, the MTA Property and any other property of, or under the control or custody of, Licensee which is on or near the MTA Property. Licensee's assumption of risk shall include, without limitation, loss or damage to the Facility or any other facility or improvement of Licensee located on the MTA Property, bodily injury to, or death of, any person located on the MTA Property, or damage to, or loss of use of, property of any such person located on the MTA Property, in each event to the extent caused by: (i) defects in any structure or improvement on the MTA Property, (ii) accident or fire or other casualty on the MTA Property, (iii) electrical discharge, noise or vibration resulting from MTA's transit operations on or near the MTA Property, (iv) soil conditions on the MTA Property, or (v) any response by MTA, SCRRRA or any Indemnitee with respect to any event resulting from the foregoing Items (i) through (iv). The term "MTA" as used in this section shall include: (i) any transit or rail-related company (including, but not limited to SCRRRA) validly operating upon or over MTA's tracks or other property, and (ii) any other persons or companies employed, retained or engaged by MTA and/or SCRRRA. Licensee, on behalf of itself, its Personnel (as defined in Section 14 of this Agreement's General License Provisions) and, to the extent permitted by law, the public, as a material part of the consideration for this Agreement, hereby waives all claims and demands against MTA or any Indemnitee for any such loss, damage or injury of Licensee, its Personnel and/or, to the extent permitted by law, the public. In that connection, Licensee, on behalf of itself, its Personnel and, to the extent permitted by law, the public, waives the benefit of California Civil Code Section 1542, which provides as follows:

A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor.



The provisions of this section shall survive the termination of this Agreement.

16. Insurance. Licensee, at its sole cost and expense, shall obtain and maintain in full force and effect during the Term of this Agreement insurance as required by MTA and SCRRRA in the amounts and coverages specified and issued by insurance companies as described on Exhibit B. MTA and SCRRRA reserve the right, throughout the Term of this Agreement, to review and change the amount and type of insurance coverage each may require in connection with this Agreement or any work to be performed on the License Property. Prior to (i) entering the License Property or (ii) performing any work or maintenance on the License Property, Licensee shall furnish MTA and SCRRRA with insurance endorsements or certificates in the form of Exhibit C, evidencing the existence, amounts and coverages of the insurance required to be maintained hereunder. In most instances, self-insurance is not allowed hereunder; however, if Licensee can demonstrate assets and retention funds meeting MTA's and SCRRRA's self-insurance requirements, Licensee may be permitted to self-insure, provided, however that the right to self-insure with respect to any coverage required to be maintained hereunder may be granted or revoked by MTA at its sole and absolute discretion. Neither MTA nor SCRRRA shall be liable for the payment of any premiums or assessments for insurance required to be maintained by Licensee under this Agreement.

17. Tests and Inspections. MTA and SCRRRA shall have the right at anytime to inspect the License Property and the Facility, so as to monitor compliance with this Agreement. If, in MTA's or SCRRRA's sole judgment, any installation on, or use or condition of, the License Property may have an adverse effect on the MTA Property, adjacent property (whether or not owned by MTA), or MTA or SCRRRA operations, MTA and/or SCRRRA shall be permitted to conduct any tests or assessments, including but not limited to environmental assessments, of, on or about the License Property, as MTA and/or SCRRRA determines to be necessary or useful to evaluate the condition of the License Property. Licensee shall cooperate with MTA and SCRRRA in any tests or inspections deemed necessary by MTA and/or SCRRRA. Licensee shall pay or reimburse MTA and/or SCRRRA, as appropriate, for all reasonable costs and expenses incurred due to the tests, inspections or any necessary corrective work and inspections thereafter.

18. Hazardous/Toxic Materials Use and Indemnity. Licensee shall construct the Facility, and shall use, operate and maintain the License Property in compliance with all, and shall not cause or permit the License Property to be in violation of any, federal, state or local environmental, health and/or safety-related laws, regulations, standards, decisions of the courts, permits or permit conditions, currently existing or as amended or adopted in the future which are or become applicable to Licensee or the License Property ("Environmental Laws"). Except for Hazardous Materials expressly approved by MTA in writing as shown on Exhibit D, Licensee shall not cause or permit, or allow any of Licensee's Parties or the public to cause or permit, any Hazardous Materials to be brought upon, stored, used, generated, treated or disposed of on or about the MTA Property. Any Hazardous Materials on the site shall be stored, used, generated and disposed of in accordance with all applicable Environmental Laws. As used herein, "Hazardous Materials" means any chemical, substance or material which is now or becomes in the future listed, defined or regulated in any manner by any Environmental Law based upon, directly or indirectly, its properties or effects.

Licensee shall indemnify, defend (by counsel acceptable to MTA) and hold harmless the Indemnitees (as defined in Section 14 of this Agreement's General License Provisions) from and against all loss, liability, claim, damage, cost or expense (including without limitation, any fines, penalties, judgments, litigation expenses, attorneys' fees, and consulting, engineering, and construction fees and expenses) incurred by Indemnitees as a result of (a) Licensee's breach of any prohibition or provision of this section, or (b) any release of Hazardous Materials upon or from the Facility or the License Property, or any contamination of the MTA Property or adjacent property (i) which occurs due to the use and occupancy of the Facility or the MTA Property by Licensee, Licensee's Parties or the public, or (ii) which is made worse due to the act or failure to act of Licensee or Licensee's Parties.

The foregoing indemnity shall be effective regardless of any negligence (whether active, passive, derivative, joint, concurring or comparative) on the part of Indemnitees, unless caused solely by the gross negligence or willful misconduct of Indemnitees; shall survive termination of this Agreement; and is in addition to any other rights or remedies which Indemnitees may have under the law or under this Agreement.



In addition, in the event of any release on, or contamination of, the License Property which: (i) occurs due to Licensee's, Licensee's Parties' or the public's access, use and/or occupancy of the Facility or the MTA Property, or (ii) becomes worse as a result of Licensee's failure to promptly notify MTA, as set forth in the following sentence, Licensee, at its sole expense, shall promptly take all actions necessary to clean up the affected property (including the MTA Property and all affected adjacent property, whether or not owned by MTA) and to return the affected property to the condition existing prior to such release or contamination, to the satisfaction of MTA and any governmental authorities having jurisdiction thereover. In all cases, Licensee shall promptly notify MTA of any release on, or contamination of, the MTA Property of which Licensee or any of Licensee's Parties becomes aware.

19. Underground Storage Tanks. NEITHER LICENSEE NOR LICENSEE'S PARTIES SHALL INSTALL OR USE ANY UNDERGROUND STORAGE TANKS ON THE LICENSE PROPERTY UNLESS SPECIFICALLY APPROVED IN ADVANCE IN WRITING BY MTA, WHICH APPROVAL MAY BE WITHHELD IN MTA'S SOLE DISCRETION.

At MTA's option, upon the termination of this Agreement at any time and for any reason, Licensee shall, prior to the effective date of such termination, remove and close all underground storage tanks and related equipment placed on the License Property by Licensee, or any of Licensee's Parties, and clean up and remove all Hazardous Materials associated therewith in, on, under and about the MTA Property, in accordance with the requirements of all Environmental Laws and to the satisfaction of MTA and any governmental authorities having jurisdiction thereover, and deliver to MTA a copy of a certificate of closure issued for such tanks by the appropriate governmental authority.

20. Subordinate Rights. This Agreement is subject and subordinate to the prior and continuing right and obligation of MTA, its successors and assigns, to use the MTA Property in the exercise of its powers and in the performance of its duties, including those as a public transportation body. Accordingly, there is reserved and retained unto MTA, its successors, assigns and permittees (including the SCRRA), the right to construct, reconstruct, maintain and use existing and future rail tracks, facilities and appurtenances and existing and future transportation, communication, pipeline and other facilities and appurtenances in, upon, over, under, across and along the MTA Property, and in connection therewith the right to grant and convey to others, rights and interests to the MTA Property in, upon, over, under, across, along and on the License Property and in the vicinity of Facility. This Agreement is subject to: (i) all rights, licenses, leases, easements, restrictions, conditions, covenants, encumbrances, liens, claims and other matters of title (collectively, "Title Exceptions", and, individually, a "Title Exception") which may affect the MTA Property now or hereafter, and (ii) to the rights of the beneficiaries of any such Title Exceptions. Neither MTA, SCRRA or any Indemnitee shall have any liability or obligation with respect to any acts or omissions of any of the beneficiaries described in the preceding sentence. The words "grant" or "convey" as used herein shall not be construed as a covenant against the existence of any such Title Exceptions. MTA and SCRRA shall, at all times, have the right to enter upon and use the License Property in common with Licensee, provided that such entry and use does not materially and adversely affect Licensee's use thereof (except as set forth in Section 24.20.8 and 24.20.9 attached hereto as a portion of Exhibit "E" and except to the extent required in an emergency). In addition, MTA may, at any time, grant lease rights, license rights, permit rights, easement rights and/or other rights in, upon, over, under, across, along and/or on the License Property to pipeline companies, utility companies, communications companies, fiber optic companies, advertising sign companies and/or other companies or users, provided that such rights do not materially and adversely affect Licensee's use of the License Property hereunder (except as set forth in Section 24.20.8 and 24.20.9 attached hereto as a portion of Exhibit "E" and except to the extent required in an emergency). Licensee agrees to consent to the granting of any such rights, to the extent such consent is required or is reasonably requested by MTA, and to execute, acknowledge and deliver any and all documents MTA may require in connection therewith.

21. Compliance with Laws. Licensee shall comply, and shall use its best efforts to cause each of its Personnel and the public to comply, with all applicable federal, state and local laws, regulations, rules and orders in its work on, or maintenance, inspection, testing or use of, the Facility and the MTA Property, and shall furnish satisfactory evidence of such compliance promptly upon request of MTA. MTA and SCRRA may enter the License Property to inspect the Facility at any time. Licensee shall obtain all required permits or licenses required by any governmental authority for its use of the License Property and the Facility, at its sole cost and expense.



22. Condemnation. Licensee hereby assigns to MTA all compensation which may be awarded to Licensee as a result of any taking or condemnation (including any conveyance by deed in lieu of, or in settlement of, any condemnation proceeding) of all, or a portion of, the License Property for a public use by any public agency.

23. Markers. Project markers in form and size satisfactory to MTA, identifying the Facility and its owners, will be installed and constantly maintained by and at the expense of Licensee at such locations as MTA shall designate. Such markers shall be relocated or removed upon request of MTA without expense to MTA. Absence of markers in or about MTA Property does not constitute a warranty by MTA of the absence of subsurface installations.

24. General Provisions.

24.1 Notices. All notices and demands which either party is required to or desires to give to the other shall be made in writing by personal delivery, by express courier service or by certified mail postage prepaid, and addressed to such party at its address set forth in the Basic License Provisions. Either party may change its address for the receipt of notice by giving written notice thereof to the other party in the manner herein provided. Notices shall be effective only upon receipt by the party to whom notice or demand is given.

24.2 Non-Exclusive License. The license granted herein is not exclusive and MTA specifically reserves the right to grant other licenses, easements or other rights within the License Property, as is more particularly set forth in Section 20 of this Agreement's General License Provisions.

24.3 Governing Law. This Agreement shall be governed by the laws of the State of California.

24.5 Severability. If any term, covenant, condition or provision of this Agreement, or the application thereof to any person or circumstance, shall to any extent be held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the terms, covenants, conditions, or provisions of this Agreement, or the application thereof to any person or circumstance, shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby.

24.6 Interest on Past-due Obligations. All amounts payable to MTA hereunder, shall be due forty five (45) days after the date of an invoice therefore to Licensee. Except as expressly herein provided, any amount due MTA which is not paid when due shall bear interest, from the date due MTA as it accrues. Payment of such interest shall not excuse or cure any default by Licensee under this Agreement.

24.7 Captions. The captions included in this Agreement are for convenience only and in no way define, limit, or otherwise describe the scope or intent of this Agreement or any provision hereof, or in any way affect the interpretation of this Agreement.

24.8 Survival of Obligations. All obligations of Licensee hereunder not fully performed as of the expiration or earlier termination of the Term of this Agreement shall survive the expiration or earlier termination of this Agreement, including without limitation, all payment obligations and all obligations concerning the condition of the MTA Property and the Facility.

24.9 Waiver of Covenants or Conditions. The waiver by one party of the performance of any covenant or condition under this Agreement shall not invalidate this Agreement nor shall it be considered a waiver by it of any other covenant or condition under this Agreement.

24.10 Amendment. This Agreement may be amended at any time by the written agreement of MTA and Licensee. All amendments, changes, revisions, and discharges of this Agreement in whole or in part, and from time to time, shall be binding upon the parties despite any lack of legal consideration, so long as the same shall be in writing and executed by the parties hereto.

24.11 Assignment. This Agreement and the license granted herein are personal to the Licensee.



Licensee shall not assign or transfer (whether voluntarily or involuntarily) this Agreement in whole or in part, or permit any other person or entity to use the rights or privileges hereby conveyed, without the prior written consent of MTA, which may be withheld in MTA's sole and absolute discretion, and any attempted act in violation of the foregoing shall be void and without effect and shall give MTA the right to immediately terminate this Agreement.

24.12 Attorneys' Fees. In any judicial or arbitration proceeding involving performance under this Agreement, or default or breach thereof, the prevailing party shall be entitled to its reasonable attorney's fees and costs.

24.13 Nondiscrimination. Licensee certifies and agrees that all persons employed thereby and/or the affiliates, subsidiaries, or holding companies thereof and any contractors retained thereby with respect to the License Property are and shall be treated equally without regard to or because of race, religion, ancestry, national origin, or sex, and in compliance with all federal and state laws prohibiting discrimination in employment, including but not limited to the Civil Rights Act of 1964; the Unruh Civil Rights Act; the Cartwright Act; and the California Fair Employment Practices Act.

24.14 Further Acts. The Parties agree to perform any further acts and to execute and deliver in recordable form any documents which may be reasonably necessary to carry out the provisions of this Agreement.

24.15 Waiver of Relocation Rights. Licensee hereby waives any right to relocation assistance, moving expenses, goodwill or other payments to which Licensee might otherwise be entitled under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, 42 U.S.C. § 4601 *et seq.* and/or the California Relocation Assistance Law, as amended, Government Code § 7260 *et seq.* but for this waiver and MTA's express right of termination.

24.16 Time of Essence. Time is of the essence.

24.17 No Recording. Licensee shall not record or permit to be recorded in the official records of the county where the License Property is located any memorandum of this Agreement or any other document giving notice of the existence of this Agreement or the license granted hereby.

24.18 Revocable License. Licensee agrees that notwithstanding the improvements made by Licensee to the License Property or other sums expended by Licensee in furtherance of this Agreement, the license granted herein is revocable by MTA in accordance with the terms of this Agreement.

24.19 Entire Agreement. This Agreement and the Exhibits attached hereto constitute the entire agreement between the parties with respect to the subject matter hereof and supersede all prior verbal or written agreements and understandings between the parties with respect to the items set forth herein.

24.20 Additional Provisions. Those additional provisions set forth in Exhibit E, if any, are hereby incorporated by this reference as if fully set forth herein.



Easement Agreement with Conrail for the Schuylkill River Trail, PA



AGREEMENT AND GRANT OF EASEMENT

THIS AGREEMENT made this 12TH day of August A.D. 1994, by and between CONSOLIDATED RAIL CORPORATION, a Pennsylvania corporation (hereinafter called "Conrail") parties of the first part, and the County of Montgomery, (hereinafter called "County"), party of the second part.

WHEREAS, Conrail, is the owner of a tract or tracts of land being more particularly shown on the plan attached hereto and made a part hereof as Exhibit "A" sheets 1,2,3,4, and 5 or as amended by mutual consent of both parties, situate in the Borough of Conshohocken, the Borough of Norristown, and Whitmarsh Township, Montgomery County, Pennsylvania, (hereinafter referred to as "Premises"); and

WHEREAS, County desires to establish a hiking and biking trail, better known as the Philadelphia to Valley Forge Bikeway together with associated recreation including, but not limited to bicycling, walking, jogging, and cross country skiing (hereinafter called "Bikeway") for use by the general public through and over the surface of the Premises, and Conrail is willing to grant a fifteen (15) foot wide exclusive surface easement in perpetuity (hereinafter referred to as "Easement") for said use to County for such Bikeway purposes.

NOW, THEREFORE, THIS AGREEMENT WITNESSETH, that Conrail, for and in consideration of the sum of \$54,740.00, lawful money of the United States, and other good and valuable consideration paid to it by the County, receipt of which is hereby acknowledged, Conrail and County intending to be legally bound hereby agree as follows:

(1) Conrail hereby grants unto County, its successors and assigns, an exclusive Easement in perpetuity to construct, reconstruct, improve, operate, repair, and maintain the Bikeway which will connect with and become a part of a bicycle path system, and the necessary accessories and appurtenances used in connection therewith, and the right to enter upon the Premises for such Bikeway purposes, on, across, through, and along the Premises. The fifteen (15) foot wide easement area hereby granted is shown as a dotted line on Exhibit A, attached hereto.

(2) Conrail, its successors or assigns shall not erect or maintain any improvements on, over or under the Easement, which would affect access to or use of the Easement, and other rights and privileges granted herein, without first obtaining the written approval of the County, which approval shall not be unreasonably withheld.

(3) Conrail and its successors and assigns reserves the right after prior written notice to the County, to grant such other easements, rights, or privileges in, on, over, under, above, across or through the Easement to such persons, corporations, partnerships, and entities as Conrail and its successors and assigns may elect so long as such easements, rights or privileges do not interfere with this Easement, the safe use of this Easement for a Bikeway, any improvements made by the County in the easement area, and such other rights granted to County herein.

(4) The County hereby covenants and agrees with Conrail to continuously maintain the Easement so as to provide safe bicycle and pedestrian access thereto.

(5) This Easement shall be exercised only for purposes of a bikeway and hiking trail, and at all times so as not to interfere with Conrail's use, operation and maintenance of its property for its corporate purposes here or elsewhere. Conrail, except in an emergency, shall not park or stop its rolling stock or other equipment in any manner on the easement area that will impede the use or safety of the bikeway. Conrail, however, agrees that it will use its own best efforts to assure the safety of such property and facilities as remain within its control.

(6) County hereby releases and will protect, defend, indemnify and save harmless Conrail from and against all claims, liabilities, demands, actions at law and equity (including without limitation claims and actions under the federal Employer's Liability Act), judgments, settlements, losses, damages and expenses of every character whatsoever (hereinafter collectively referred to as "claims") for injury to or death of any person or persons whomsoever which results from the unauthorized use of motorized vehicles, such as, but not limited to, motorcycles, minibikes, and snowmobiles within the easement area,



and for damage to or loss or destruction of property of any kind by whomsoever owned, caused by, resulting from or arising out of the exercise of this Easement granted hereby, except to the extent that such claims arise from Conrail's negligence.

(7) All the installation, repair, renewal and rehabilitation expenses including material and labor costs and related overhead costs for the Bikeway, railroad Bikeway crossings, and pedestrian gates, which are necessary for the safe construction of the Bikeway whether done by Conrail or by the County, shall be at the sole cost and expense of County and all future maintenance costs associated with the Easement area and Bikeway shall be at the sole cost and expense of the County.

(8) All track and tie removal and/or recovery required for the bikeway shall be at the sole cost and/or gain of Conrail and all work shall be done by Conrail.

WWE (9) The County shall pay to Conrail a sum of money the amount not to exceed \$100,000.00 for the actual cost of the railroad Bikeway crossings (per Article 13 Section (a) of this agreement) which are necessary for the future construction of the Bikeway, and Conrail shall complete said construction work at the sole cost and expense of the County within one hundred eighty (180) days of the signing of this agreement.

(10) County shall at its sole cost and expense maintain the Bikeway in a safe, clean and orderly condition including the prompt removal of ice and snow from all railroad Bikeway crossings.

(11) County shall prohibit the Bikeway from being used by motorized recreational vehicles, such as, but not limited to, motorcycles, minibikes, and snowmobiles, except that motorized vehicles shall be permitted to be used by authorized County employees, Rangers, municipal police, or others specifically authorized by County and Conrail for the purpose of patrolling and maintaining the Bikeway.

(12) Prior to the construction of the Bikeway and any facilities for the Bikeway, such as, but not limited to a paved bikeway, parking, access, road crossing approaches, railroad Bikeway crossing approaches, signs or similar facilities or any changes in grade, County shall comply with the following conditions:

(a) County agrees to provide Conrail's Chief Engineer-Design and Construction with a Bikeway construction plan for written approval by Conrail prior to the installation and/or construction now or in the future which approval shall not be unreasonably withheld, of any improvements, alterations or changes in grade on Conrail property and Easement area, to notify Conrail upon completion of such installation and or construction in order that a final inspection can be made by Conrail for acceptance, which acceptance shall not be unreasonably withheld, and to forward an "as built" plan to Conrail upon completion of said installation and or construction.

(b) All work will be done at the sole cost and expense of County and in a manner that will not adversely affect existing drainage patterns.

(c) Following approval by Conrail of any proposed construction, County shall notify Conrail at least thirty (30) working days prior to beginning any construction or future alterations.

(d) County shall not do anything which would block or impede Conrail ingress and egress with personnel, vehicles and equipment as necessary for the construction and maintenance of its facilities or the operation of its facilities for its corporate business.

(13) County covenants and agrees that the Easement for the Bikeway, where it crosses Conrail tracks, shall be under and subject to the following terms and conditions:

(a) The Crossings shall be located as indicated by Exhibit "A" as determined by Conrail and County and no departure shall at any time be made therefrom except upon the mutual consent of the parties hereto.

(b) Conrail, at the sole cost and expense of the County, shall construct the railroad Bikeway Crossings with design specifications acceptable to the County for safe bicycle use.



(14) In the event Conrail shall be required, or may desire at any time, or from time to time to change the grade or location of any of its tracks or facilities which adversely affect the Bikeway, railroad Bikeway crossings or any other Bikeway related facility within the Premises, then Conrail shall, at its own cost and expense make such changes in its tracks and facilities and relocate and reconstruct the Bikeway Facilities at a location on the Premises acceptable to the County.

(15) No waiver by either party of any breach or default on the part of the other of any of the terms, covenants, or conditions of this agreement shall be deemed or construed to constitute a waiver of any subsequent similar breach or default.

(16) In the event County vacates or abandons the use of this Easement or any part thereof, for the purposes intended, it shall forthwith notify Conrail and within thirty (30) days after such notification execute a Release prepared by Conrail, in recordable form, which would in effect abrogate this Easement, or part thereof of record, and the County shall, at its sole cost and expense remove pavement of the bikeway within the hereby granted easement area or part thereof.

(17) Every notice, approval, consent, or other communication desired or required under this agreement shall be effective only if the same shall be in writing and sent postage prepaid by overnight mail, United States registered or certified mail (or a similar mail service available at the time), directed to the other party at its address as follows (or such other address as either party may designate by notice given from time to time).

If to Owner: CONSOLIDATED RAIL CORPORATION
2001 Market Street - Room 19-B
P.O. Box 41419
Philadelphia, Pa. 19101-1419
Attn: Director-Asset Management

If to Owner: COUNTY OF MONTGOMERY PARKS DEPARTMENT
Courthouse
Norristown, Pa. 19404
Attn: Director

Notwithstanding anything to the contrary set forth above, in the event Owner is unable to locate County, such notices may be posted at or near the Crossings.

TO HAVE AND TO HOLD: The Easement to the County, its successors and assigns, together with the right and privilege at any and all times to it and to its agents to enter the Easement, or any part thereof, for the purpose of constructing, reconstructing, operating, repairing, and maintaining the said Bikeway and for making connection therewith.

The words "Conrail" and "County" used herein shall be construed to include at all times and in all cases their legal representatives, successors, or assigns.

IN WITNESS WHEREOF, CONSOLIDATED RAIL CORPORATION and the COUNTY OF MONTGOMERY intending to be legally bound hereby have caused their respective common or corporate seals to be hereunto affixed, duly attested, the day and year first above written.

ATTEST:

Wilberta C. Jackson
Assistant Secretary
WILBERTA C. JACKSON

CONSOLIDATED RAIL CORPORATION

By: M. Virginia Ebert
M. Virginia Ebert
Director-Asset Management

WITNESS:

Michael D. McGee

COMMISSIONERS, COUNTY OF MONTGOMERY

Mario Miele
Joseph M. Hefel III



Lease and Operating Agreement for the Union Pacific Steel Bridge Walkway, Portland, OR



LEASE AND OPERATING AGREEMENT

THIS LEASE AND OPERATING AGREEMENT (Agreement), is made and entered this 22 day of January, 2000, by and between the City of Portland, Oregon (City) and the Union Pacific Railroad Company, a Delaware corporation (Railroad).

RECITALS

A. The Railroad owns a double track, double-deck bridge called the Steel Bridge (Bridge) that extends across the Willamette River in the City of Portland, Oregon.

B. The authority to construct that bridge was granted by an ordinance adopted by the Port of Portland on August 17, 1909, and amended on December 30, 1940, and the benefits and obligations of that ordinance were accepted and assumed by the Railroad.

C. The Port ordinance provided that the upper deck of the bridge structure should be available for travel by streetcars, wagons, automobiles and vehicles of all kinds, and pedestrians.

D. Pursuant to the provisions of the Port ordinance, the Railroad, Multnomah County, the Oregon Department of Transportation (ODOT) and the Tri-County Metropolitan Transportation District (Tri-Met) entered into agreements providing for the use of the upper deck for the purposes for which it was constructed.

E. An Agreement dated March 23, 1984, entered into by the Railroad, ODOT and Tri-Met permitted operation of light rail vehicles across the upper deck.

F. The City now wishes to construct outside of the lower deck of the south side of the Steel Bridge a walkway along with access ramps to the Willamette River's east and west banks along with an aerial connection across Railroad's tracks, and a pathway along the east river bank to the south. This walkway, connections, and facilities are to be constructed for the purpose of providing a public pedestrian transportation system with ADA-accessible, improved and safe access across the Willamette River.

G. The operation of a walkway within the Railroad right-of-way is subject to the control and supervision of the Railroad.

H. The Railroad is willing to grant the City the right to construct, maintain, remove and replace the walkway and attachments to the Bridge on the terms and conditions set forth herein.

NOW THEREFORE, in consideration of the mutual covenants and agreements contained in the Agreement, the parties hereto mutually agree to enter into this Agreement regarding the construction, operation and maintenance of the walkway



facility and to define the rights and responsibilities of the parties, as follows:

I. DEFINITIONS AND DOCUMENTS

1. Walkway means the pedestrian and bicycle facilities that are physically attached to and/or supported by the Bridge, including the east and west bank approach structures, east and west lower deck fixed spans, the lower deck lift span depicted on the Attached Exhibit A, together with counter weights, transverse balance weights, railings, conduit, conductors, lighting, automatic and manual gate systems, public address systems, closed circuit monitoring systems, drainage, and other related facilities and appurtenances.

2. The City and the Railroad are also parties to other documents that relate to this project. Those documents are:

a. Steel Bridge Pedestrian Crossing and River Access Construction Agreement, covering the terms under which construction will take place on or adjacent to the Railroad's property;

b. Permanent Public Right of Way Easement, Railroad Folder No. 1733-68, for purposes including public walkway, bicycle paths, over-crossing structures, ramp, stairs and retaining wall structures, storm water drainage systems, retaining wall foundation drainage system, public restrooms and service buildings, landscaping, irrigation, lighting, utilities and signage over five parcels of land outside the Railroad's operating right of way on the east bank of the Willamette River;

c. Beautification Lease, Railroad Folder No. 1655-78, covering fencing, slope pavers and maintenance access rights to property within the Railroad's operating right of way on the east bank of the Willamette River;

d. Public Highway Crossing Agreement, Railroad Folder No. 1846-86, covering the pedestrian overcrossing of the Railroad's tracks on the east bank of the Willamette River;

e. Supplement to an existing Wireline Crossing Agreement, covering the extension of power and telephone services from Block 17 beneath the Railroad's tracks; and

f. Pipeline Crossing Agreement, covering a water line crossing under the Railroad's tracks from the Overlook and a storm water drainage system located behind the retaining wall structure to the west of the railroad tracks, running along the tracks within a portion of the operating right of way.

3. If any property or rights other than the rights granted in this agreement or the above agreements are necessary for the construction, maintenance and use of the project, the City will acquire all such other property and rights at its own expense and without expense to the Railroad.



II. TERM

1. The City and the Railroad hereby agree that the term of this Agreement is 99 years. Provided however, that the Railroad shall not be obligated to maintain the Bridge solely for the benefit of the City in the event it determines to abandon or transfer ownership of the Bridge for any cause.

2. In the event the Bridge is destroyed, dismantled or damaged beyond justifiable repair, the Railroad may elect to rebuild the Bridge or not as it may determine. Likewise, if the lower deck of the Bridge is destroyed, dismantled or damaged, the Railroad may elect to repair it or not as it may determine. Unless the Railroad elects to rebuild the Bridge or repair the lower deck within one (1) year, this Lease and Operating Agreement shall terminate as of the date the damage or destruction was sustained and the parties shall make an equitable apportionment of the City's annual payments. The City shall not be required to make payments for the period of time during which the City had no use of the Walkway.

III. LEASE OF RAILROAD FACILITY

1. The Railroad, in consideration of a one-time lump sum payment of Three Hundred Forty-two Thousand Nine Hundred Eighty-Eight Dollars (\$342,988), hereby leases and grants to the City the right to occupy those portions of the Steel Bridge necessary for the City's construction and maintenance of the Walkway as provided herein.

2. The use of the Walkway shall be limited to crossing of the Willamette River by pedestrians and bicycles and special uses agreed to in advance by the City and the Railroad. Motorized vehicles shall not be allowed on the Walkway, except that fire and life safety or maintenance vehicles and equipment shall be allowed to the extent they are compatible with the capacity of the Walkway. The Walkway may also be used by the Portland Police Mounted Patrol.

3. The City will pay all electrical costs associated with the Walkway that are not metered or otherwise charged to the Railroad. The Railroad shall be responsible for the any additional utility costs incurred because of the more frequent operation of the span required by the presence of the Walkway, as provided in Section VIII. The City shall pay all taxes associated with the Walkway. The City is now tax exempt.

4. The City has made its own investigation and determination regarding the use of the Bridge for the purposes intended in this Agreement and is not relying on any representations of the Railroad regarding the condition of the Bridge or the appropriateness of the intended use.

IV. CONSTRUCTION OF THE WALKWAY

1. The City may construct the Walkway along and across the Steel Bridge in accordance with the approved plans and specifications provided by the City to the



Railroad in accordance with the Construction Agreement between the parties.

2. The Walkway shall be designed and constructed so as to be completely removable and the Bridge capable of being restored to its previous condition.

3. The City shall obtain all necessary federal, state and local permits necessary for the construction, operation and maintenance of the Walkway, shall comply with all requirements of those permits for the life of this Agreement and shall make any improvements necessary to keep such permits in full force and effect until such time as the Walkway and related fixtures are removed from the Bridge.

4. The City, at its own expense, shall install and maintain in good repair such fences and signage as shall be agreed to for the purpose of distinguishing and keeping separate the Railroad operating corridors and the Walkway facilities.

5. The Railroad, at its own expense, shall relocate or protect any signal wires that it determines are at risk due to the addition of the Walkway to the Bridge or the operation of the Bridge. The Railroad shall be responsible for the maintenance and repair of signal wires.

6. The City's monitoring and communications equipment is to be designed so as to permit the installation of additional cameras by the Railroad for its own use. The Railroad shall install and maintain any such additional camera equipment at its own expense.

7. The Railroad shall support the City in its negotiations with the U.S. Coast Guard and river users to secure a period of lockdown for the lower deck of the Bridge to allow construction of the Walkway and for additional lockdowns of the Bridge needed for maintenance or removal of the Walkway or portions of it.

V. MAINTENANCE

1. The Walkway shall be maintained at the expense of the City to the reasonable satisfaction of the Railroad's Chief Engineer or the Chief Engineer's designated representative. The Walkway, including all operating and monitoring facilities, shall be inspected at regular intervals and kept in good operating condition at all times by the City.

2. The City at its own expense shall provide, keep and maintain adequate and necessary lighting, monitoring and communications equipment, manual or mechanically operated pedestrian and maintenance gates, railings, special signals, devices, electronic controls, structural supports and decking, paint, walkway surfaces or any other materials or devices required for the safe operation and use of the Walkway.

3. If the Railroad determines that the City's maintenance or repair of the Walkway is not reasonably satisfactory for the safe and efficient operation of the Bridge, the Railroad shall notify the City in writing of the specific measures that are required to bring the Walkway into a satisfactory condition. The City shall perform the



necessary repairs or maintenance within a reasonable time, not to exceed 60 days. If the repairs or maintenance are not completed as required, the City shall close the Walkway. If the City fails to do so and the Railroad believes that public safety is jeopardized by the failure of the City to perform the repair or maintenance activity, the Railroad may, but is not required to, conduct the repair or maintenance required after giving notice to the City. The City shall reimburse the Railroad for its reasonable costs so incurred, including customary additives.

4. The City shall notify the Railroad and shall obtain approval from the Railroad before beginning maintenance activities on the Walkway that involve the Bridge or attachments. The City shall give Railroad 7 days notice of repair or maintenance or as much notice as practicable under the circumstances. Maintenance or work on the Walkway itself within the limits of the Walkway railings shall not require notice to the Railroad provided that work does not utilize equipment or procedures that could foul a track or affect the Bridge or rail operations.

5. The City shall not cause or allow any structural or substantive modification to the Walkway without prior notice to and approval by the Railroad.

VI. REMOVAL AND CLOSURE

1. The parties acknowledge that it may be necessary for the repair and maintenance of the Bridge by the Railroad for the Walkway to be removed from the Bridge. The parties acknowledge that removal of the Walkway will be a major expense for the City. The City agrees that the Walkway shall be designed so as to be removable in segments. Upon two years written notice from the Railroad, the City shall remove such Walkway segments as are reasonably required for repair or maintenance of the Bridge by the Railroad.

2. In the event the Bridge requires emergency repair, and should the Railroad in the interest of public safety declare an emergency, the Railroad may require removal of segments of the Walkway or remove segments of the Walkway itself to allow repair of the Bridge. If the Railroad removes Walkway segments, it shall take reasonable steps to preserve those segments for the City.

3. If the Walkway is removed under the provisions of paragraph 1 or 2 above, removal and replacement will be at the City's sole cost.

4. In the event the repair or maintenance of the Bridge by the Railroad shall require the temporary closure of the Walkway in order to reduce costs or delays to rail traffic, the City shall, at its expense, close the Walkway. If the closure is required to remain in effect for longer than 30 days, the annual charges payable by the City shall be abated during the period of the closure.

5. Should the Railroad replace the Bridge with a new structure, the City may, at its own expense, place the Walkway on such new bridge in accordance with plans and specifications approved by the Railroad, with no additional charge to be made



during the term of this Lease and Agreement.

VII. BRIDGE OPERATION

1. The Railroad agrees to provide monitoring and operation of the Walkway. Monitoring is to include observation of whether anyone is occupying or approaching the lift section of the Walkway at times when the lift section needs to be raised and alerting such persons to the impending raising of the lift section. The monitoring and operation shall be conducted in accordance with procedures to be agreed upon between the parties and incorporated by the Railroad in its Operations and Maintenance Guide for the Steel Bridge. Any modifications of those procedures shall be by mutual agreement of the parties.

2. The lower span of the Bridge shall be kept in a down position during the times the Walkway is open for use. The Railroad shall lift the lower span of the Bridge to allow river traffic to pass beneath the Bridge and for testing and maintenance purposes as required by the Railroad. If the City notifies the Railroad that the Walkway is not going to be used for transportation or repair and maintenance purposes, the Railroad may store the lower span in the position chosen by the Railroad. The City shall notify the Railroad of closures of the Walkway other than those agreed to or included in the normal scheduled operations, testing, inspection, restoration or maintenance of the Walkway.

3. The Railroad shall give the City reasonable notice if it is necessary to close the Walkway for purposes of Railroad maintenance or repair. Notice will be given as soon as possible under the circumstances. The length of the notice shall depend on the length of the anticipated closure. Specific notice requirements will be included in the Operations and Maintenance Guide for the Steel Bridge. The City shall close the Walkway as necessary. If such use by the Railroad interferes completely with the use of the Walkway by the City and continues for a period longer than 30 days the City's annual payment shall be pro-rated so that the City is not required to pay for that portion of the year in which interference with the use of the Walkway extends beyond that 30-day period.

4. The City, at its own expense, shall install a video-based monitoring system for operation of the Walkway, the design and location of which are acceptable to the Railroad. In the event the City assumes responsibility for the operation and supervision of the Walkway, the City shall pay the full cost of removing the portion of the system no longer deemed by the railroad to have utility to railroad operations. In the event the City closes or discontinues the use of the Walkway, the City will pay the full cost of removing the monitoring system or whatever portion of the system the Railroad determines has no utility to railroad operations.

5. The City and the Railroad both have a long term commitment to public safety in the operation of their facilities. Each party agrees to cooperate with the other to resolve any safety concerns that may arise in the activities conducted under the



Agreement.

VIII. PAYMENT

1. The Railroad will incur increased operating and maintenance costs due to the addition of the Walkway. The number of additional lifts of the lower span has been forecast and an analysis performed to determine the increased costs for electricity, labor, lubrications, replacement parts and other routine maintenance of the Bridge. In addition, the Railroad is leasing to the City the right to maintain the Walkway across and along the Bridge. Based on this analysis, the parties agree that the City shall pay to the Railroad the annual sum of \$36,000 for the increased costs of maintenance and repair of the Bridge, exclusive of lift rope replacement. The City's payment shall be adjusted annually based on the Consumer Price Index (CPI) for all Urban Consumers (1982-84 equals 100), Portland, Oregon, for All Items, or a comparable index published by the United States Bureau of Labor Statistics if such Consumer Price Index be discontinued. The redetermination of the payment for each period shall be based on the most recently available CPI that precedes the adjustment date.

2. The City shall bear the proportional cost of the replacement of the lift ropes for the lower deck caused by the increased number of lifts due to the use of the Walkway. The parties agree at this time that that cost is \$8200 per year, which shall be paid annually by the City to the Railroad. The payment for lift rope replacement shall be adjusted annually based on the Consumer Price Index (CPI) for all Urban Consumers (1982-84 equals 100), Portland, Oregon, for All Items, or a comparable Index published by the United States Bureau of Labor Statistics if such Consumer Price Index be discontinued. The redetermination of the payment for each period shall be based on the most recently available CPI that precedes the adjustment date. This cost is based on the following assumptions: a) there will be a 41% increase in lower deck lifts because of the Walkway; b) the total cost of lift rope replacement for the entire Bridge is approximately \$1,000,000 at the time of the execution of this Agreement; c) 30% of the rope cost is attributable to the lower deck; and d) the life of the lift rope is not less than 15 years. $(\$1,000,000 \times 30\% = \$300,000 \times 41\% = \$123,000 \div 15 \text{ years} = \$8200)$ Either party may seek adjustment of the lift rope replacement payment based on a study performed by that party that documents the need for adjustment. If the parties are unable to reach agreement, the matter shall be determined by arbitration as provided in Section XIV below.

IX. LIABILITY AND INSURANCE

1. Before the Walkway is opened to the public and no later than the expiration of the insurance coverage required under the Steel Bridge Pedestrian Crossing and River Access Construction Agreement, the City agrees to purchase and to maintain during the remaining life of this Agreement the following insurance coverage:

- a. Commercial General Liability insurance including but not limited to:



providing bodily injury including death, personal injury, property damage and punitive damage liability (ISO Form CG 00010196 or equivalent) coverage with a single limit of at least \$5,000,000 each occurrence or claim and an aggregate limit of at least \$10,000,000. This insurance shall contain broad form contractual liability. Exclusions for railroads (except where the Job Site is more than fifty feet (50') from any railroad including but not limited to tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings), and explosion, collapse and underground hazard shall be removed. The policy shall also contain the following endorsement: "For purposes of this insurance, Union Pacific Railroad payments related to the federal Employers Liability Act or any Union Pacific Wage Continuation Program or similar programs are deemed not to be either payments made or obligations assumed under any Workers Compensation, disability benefits or unemployment compensation law or similar law.

b. The City and its insurers shall endorse the required insurance policy(ies) to waive their right of subrogation against Railroad. The City and its insurers also waive their right of subrogation against Railroad for loss of its owned or leased property or property under its care, custody or control. The City's insurance shall be primary with respect to any insurance carried by the Railroad. The policy(ies) shall provide severability of interests and shall name Railroad as an additional insured.

c. Before commencing Work, the City shall furnish to Railroad original certificate(s) of insurance evidencing the required coverage, and upon request, a certified duplicate original of any required policy. The certificate(s) shall contain a provision that obligates the insurance company(ies) issuing such policy(ies) to notify Railroad in writing of any material alteration.

d. The insurance policy(ies) shall be written by a reputable insurance company(ies) acceptable to Railroad or with a current Best's Insurance Guide Rating of A or Class VII or better, and, unless otherwise agreed by Railroad, shall be authorized to do business in the state in which the Job Site is located.

e. The City WARRANTS that this Agreement has been thoroughly reviewed by the city's insurance agent(s)/broker(s), who have been instructed by the City to procure the insurance coverage required by this Agreement and acknowledges that the City's insurance coverage will be primary.

f. If the City fails to procure and maintain insurance as required, Railroad may elect to do so at the cost of the City.

2. It is understood by the parties that the Railroad's willingness to allow the Walkway to be attached to its Bridge is contingent upon the Railroad being exposed to no additional risks for doing so. It is therefore agreed, as one of the material considerations for this Agreement and without which the same would not be granted by the Railroad, that, to the extent it lawfully can do so, the City assumes all risk of loss or destruction of or damage to the Walkway, to property brought thereon by the City or by any other person with the knowledge or consent of the City, and to all other property, including property of the Railroad, and all risk of injury or death of all persons whomsoever, including employees of the Railroad, where such loss, damage,



destruction, injury, or death would not have occurred but for the presence of the Walkway on the Bridge, whether caused by or resulting from the negligence of the Railroad, or otherwise. The City further agrees, to the extent it lawfully can do so to indemnify and hold harmless and defend the Railroad, its officers, agents, and employees, against and from all liability, causes of action, claims or demand which any person may hereafter have or assert, arising out of or by reason of any such loss, damage, destruction, injury, or death of persons to the extent of the insurance coverage required under this Agreement. In addition, the City shall indemnify the Railroad for any deductible amount under any insurance policy provided.

3. If the City, in the performance of any work authorized or required to be performed under this agreement or by the failure to do or perform anything for which the City is responsible under this agreement, shall damage or destroy any property of the Railroad or of any other person lawfully occupying or using the property of the Railroad, or if such property is otherwise damaged or destroyed where such damage or destruction would not have occurred but for the presence of the Walkway on the Bridge, such property shall be replaced or repaired by the city at the City's own expense, or by the Railroad at the expense of the city, and to the satisfaction of the Railroad's Vice President-Engineering Services. If it is not feasible to replace or repair the damaged or destroyed property, the City agrees to make a suitable settlement with the Railroad.

X. COMPLIANCE WITH LAWS

1. This Agreement shall be construed according to the laws of the State of Oregon. Any litigation between the City and the Railroad arising under this Agreement shall occur, if in the state courts, in the Multnomah County Court having jurisdiction thereof, and if in the federal courts, in the United States District Court for the District of Oregon.

2. In connection with its activities under this Agreement, each party shall comply with all applicable federal state and local laws and regulations, including but not limited to with the applicable Workers' Compensation law or Federal Employees Liability Act law or equivalent as they apply to that party's employees working under this Agreement.

XI. TERMINATION

1. This Agreement may be terminated by the City on one year's notice to the Railroad. Upon termination of this Agreement, the City, to the reasonable satisfaction of the Railroad and at the City's own expense, shall remove the Walkway and whatever portion of the video system the Railroad determines has no utility to railroad operations and restore the Bridge to its condition before construction of the Walkway.

2. Either party may terminate this Agreement upon substantial breach by the other, which breach is not cured within 60 days after notice from the non-breaching party. If the breach is of the nature that is cannot reasonably be cured within 60 days, the Agreement shall not be terminated if the breaching party begins to cure the breach



within the 60 day period and makes diligent efforts to complete the cure.

3. In the event the Bridge or its upper or lower deck is acquired by a public body by purchase under the threat of condemnation or after trial through the exercise of the power of eminent domain, the right of exercising that power being specifically reserved to the City, then in that event the Walkway constructed by the City pursuant to this Agreement shall not be considered in fixing or determining the reasonable market value of the Bridge.

XII. AUTHORITY and NOTICES

1. Each party represents and warrants that it has obtained the necessary authority to execute and enter into this Agreement.

2. Any notice, consent or approval to be given under this Agreement shall be in writing and shall be mailed by first class mail or sent by facsimile

If to the Railroad, to

Chief Engineer
Union Pacific Railroad Company
Room 1030
1416 Dodge Street
Omaha, NE 68179
Facsimile No. (402) 271-3296

If to the City, to

Director, Portland Office of Transportation
1120 SW Fifth Avenue
Portland, Oregon 97204
Facsimile No. (503) 823-7576

XIII. LEGAL EXPENSES

The City agrees to pay the reasonable expenses for the Railroad to have the agreements between the City and the Railroad regarding construction and operation of the Walkway, real property acquisition and related agreements reviewed by the Railroad's outside legal counsel, Carolyn Larson, and Kirner, Voorhees & Laurick, P.C. Compensation for those costs shall be based on actual invoiced costs and shall not exceed \$15,000.

XIV. ARBITRATION

1. The parties agree that should any disputes arise under this Agreement, they will attempt to resolve those disputes through mediation.



2. If mediation is unsuccessful, the dispute will be submitted to non-binding arbitration.
3. Arbitration will be conducted pursuant to the arbitration provisions of the Uniform Trial Court Rules and the Supplemental Rules of the Multnomah County Circuit Court.
4. An arbitrator shall be selected jointly by the parties. If they are unable to agree on the selection of an arbitrator, one shall be appointed by the Presiding Judge of the Multnomah County Circuit Court.

APPROVED AS TO FORM

Linda Meyer
CHIEF DEPUTY CITY ATTORNEY

CITY OF PORTLAND

Carl H. [Signature]
Commissioner of Public Safety

SUBSCRIBED AND SWORN TO before me this 8th day of March, 2000, by Charlie Hales, Commissioner

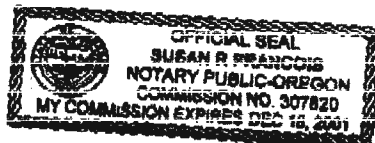


[Signature]
Notary Public for Oregon
My Commission Expires: 4-21-2002

CITY OF PORTLAND

[Signature]
Auditor

SUBSCRIBED AND SWORN TO before me this 9th day of March, 2000, by City Auditor Gary Burkner



Susan R. Francois
Notary Public for Oregon
My Commission Expires: 12-16-01

UNION PACIFIC RAILROAD COMPANY

Asst. Vice President - Contracts & Real Estate

SUBSCRIBED AND SWORN TO before me this _____ day of _____, 2000, by _____

Notary Public for Oregon

Notary Public

APPENDIX D:

Photo Credits

PAGE	DESCRIPTION, LOCATION, CREDIT
Cover	Riding alongside a freight train on the La Crosse River State Trail, La Crosse, WI, <i>Suzan Pinsof</i>
I	Baltimore-York RWT, MD, <i>Jennifer Toole</i>
III	The proposed Union Pacific RWT is feasible in parts and must be rerouted in others, Cupertino, CA, <i>George Hudson</i>
III	The Reading and Northern Railroad Company experienced a reduction in illegal dumping after the trail went in, Jim Thorpe, PA, <i>Charles Denney</i>
V	Trail designers worked with Conrail designers to ensure that their interests were addressed, concurrent to negotiation of the RWT agreement, Norristown, PA, <i>Charles Denney</i>
VI	Portland's regional government, Metro, acquired the railroad property in the 1990s to allow for RWT development. Future Springwater Corridor Trail, Portland, OR, <i>Barbara Plummer</i>
VII	Setback of 7.6 m (25 ft) or greater often is needed for higher speed train corridors, Stavich River Trail, OH and PA, <i>Rails-to-Trails Conservancy</i>
VII	Narrower setback distances may be acceptable for short distances, as on this Union Pacific railroad bridge with slow-moving trains, Portland, OR, <i>Mia Birk</i>
VIII	Wrought iron fencing offers an aesthetically pleasing separation option. Mission City Rail Trail, San Fernando, CA, <i>Ron Mathieu, SCRRA/Metrolink</i>
IX	Dual track grade crossing, Burlington, VT, <i>Craig Della Penna</i>
IX	Undercrossing of Alaska Railroad Corporation tracks, Tony Knowles Coastal Rail Trail, Anchorage, AK, <i>Andy Clarke</i>
IX	Overcrossing of Union Pacific tracks, Eastbank Esplanade, Portland, OR, <i>Mia Birk</i>
X	Steel Bridge Riverwalk, Portland, OR, <i>Mia Birk</i>
ii	Traction Line Recreational Trail, Morristown, NJ, <i>Craig Della Penna</i>
iv	Trespasser crossing Union Pacific tracks, Del Mar, CA, <i>Peggy Gentry</i>
iv	4,000 student bicycle commuters use the Libba Cotton Trail daily, Chapel Hill, NC, <i>Jennifer Toole</i>
v	Elliot Bay Rail Trail, Seattle, WA, <i>Timothy Witten</i>
2	Joggers on the Burlington Waterfront Bikeway, Burlington, VT, <i>Craig Della Penna</i>
5	Coastal Rail Trail. The trail is proposed to be located near the station, Carlsbad, CA, <i>Peggy Gentry</i>
7	The BLS-Lötschberg Railway produces a series of brochures promoting the BLS-Lötschberg Railway Trail, Kander Valley, Switzerland, <i>Unknown</i>
7	Reseau Verte along Canadian Pacific Railway mainline, Montreal, Quebec, Canada, <i>François Vermette</i>
8	A section of RWT in Perth illustrates typical design and construction parameters, including 3 m (10 ft) wide asphalt path, set back from the adjacent rail line, and a 1.8 m (6 ft) chain mesh fence with three strands of barbed wire, Perth, Australia, <i>Michael Maher</i>
11	Crossing the Metrolink track on the ATSF Trail, Irvine, CA, <i>Peggy Gentry</i>
12	Location of the future Blackstone River Bikeway along the PWRR tracks, Albion, RI, <i>Craig Della Penna</i>
13	Planned future site of the Burke-Gilman Extension along the BTR tracks, Seattle, WA, <i>Timothy Witten</i>
13	Burlington Waterfront Bikeway located along the Vermont Railway Company tracks, Burlington, VT, <i>Eric Stachon</i>
15	Future trail alignment of the Coastal Rail Trail extension adjacent to the Coastline tracks, Carlsbad, CA, <i>Peggy Gentry</i>
15	Columbus Riverwalk (Chattahoochee Trail) segment located along Norfolk Southern tracks. Columbus, GA, <i>Michele Brown</i>
16	Existing segment of the Cottonbelt Trail along the DART tracks, Grapevine, TX, <i>Michele Brown</i>



- 17 Future site of the Five Star Trail along the Westmoreland County train tracks, Youngwood, PA, *Charlie Denney*
- 18 Built portion of the Kennebec River Trail, Farmingdale, ME, *Russell Spinney, Maine Department of Transportation*
- 19 Riding alongside a freight train on the La Crosse River State Trail, La Crosse, WI, *Suzan Pinsof*
- 20 Lehigh River Gorge Trail, adjacent to the Reading and Northern Railroad Company tracks, Jim Thorpe, PA, *Charlie Denney*
- 21 Mission City Rail Trail along the Metrolink commuter rail line, San Fernando, CA, *Ron Mathieu, SCRRA/Metrolink*
- 22 Platte River Trail, Denver County, CO, *Rails to Trails Conservancy*
- 23 The 22-mile Railroad Trail located along the Lake State Railroad, Gaylord, MI, *Suzan Pinsof*
- 24 Schuylkill River Trail, Norristown, PA, *Charlie Denney*
- 25 The highly utilized Elliot Bay Trail parallels the BNSF switching yard along a portion of the waterfront, Seattle, WA, *Timothy Witten*
- 25 Location of the future Springwater Corridor Trail Extension along the Oregon Pacific Railroad, Portland, OR, *Barbara Plummer*
- 26 Current illegal crossing location over CSX tracks on Three Rivers Heritage Trail, Pittsburgh, PA, *Charlie Denney*
- 30 Living fence on the Waterfront Bikeway, Burlington, VT, *Craig Della Penna*
- 30 Beaten path made by children crossing tracks, Oshawa Creek, Ontario (Canada), *Constable William Law, Canadian Pacific Railway*
- 30 New trail next to tracks leads to track undercrossing, Oshawa Creek, Ontario (Canada), *Constable William Law, Canadian Pacific Railway*
- 31 Amtrak station bike parking being used to capacity, Davis, CA, *Michael Kiesling*
- 33 Adequate space along parts of proposed RWT, Cupertino, CA, *George Hudson*
- 33 Tunnel along proposed RWT. Trail will be re-routed in this section, Cupertino, CA, *George Hudson*
- 34 The Union Pacific Railroad planned track expansion led to a search for better alternatives, Davis, CA, *Michael G Jones*
- 34 Proposed site of Indian Head Trail, adjacent to Naval Surface Warfare Center Railroad, Charles County, MD, *Jennifer Toole*
- 35 Environmentally sensitive area on proposed Downeast Trail along the abandoned Calais Branch owned by the State of Maine. *Rizzo Associates*
- 52 Trespassing can lead to potentially deadly consequences. Lake State Railroad tracks, Gaylord, MI, *Suzan Pinsof*
- 54 Derailed train, Bourbonnais, IL, *National Traffic Safety Board*
- 58 Elliot Bay Trail, Seattle, WA, *Timothy Witten*
- 65 Setback and fencing along the Showgrounds Pathway RWT, Perth, Australia, *Michael Maher*
- 68 Grade separation along Schuylkill River Trail, Norristown, PA, *Charlie Denney*
- 69 At-grade crossing, Dixon, CA, *Chris Gioia*
- 70 Crossing treatment on the suburban rail network in Perth. Gates automatically close when train is approaching. Users are alerted to the presence of approaching train by flashing lights and audible bells. Gates remain locked until trains have passed, Perth, Australia, *Michael Maher*
- 71 Crossing at the City West Station, Perth, Australia, *Michael Maher*
- 71 Transit station pedestrian crossing, Beaverton, OR, *David Lanning, Oregon Department of Transportation*
- 73 Dual track grade crossing, Burlington, VT, *Craig Della Penna*
- 76 Steel Bridge Riverwalk warning sign, Portland, OR, *Mia Birk*
- 76 Transit station warning sign, Beaverton, OR, *David Lanning, Oregon Department of Transportation*
- 76 Warning sign, Kennebec Rail-Trail, Farmingdale, ME, *Michael G. Jones*
- 77 Active warning devices at Burlington Waterfront Bikeway track crossing, Burlington, VT, *Eric Stachon*
- 80 Appletree Park Underpass, Vancouver, WA, *George Hudson*
- 80 Platte River Trail, Denver County, CO, *Rails to Trail Conservancy*
- 80 Tony Knowles Coastal Rail Trail tunnel, Anchorage, AK, *Andy Clarke*
- 80 Trail-rail overcrossing, San Luis Obispo, CA, *Bill Mulder, RRM Design Group*
- 80 Bridge over Union Pacific Tracks, Portland, OR, *Mia Birk*
- 84 Buried fiber optic cable under Washington & Old Dominion Trail, Fairfax County, VA, *Hugh Morris*
- 85 Siding along site of proposed RWT, Kelowna, B.C., Canada, *George Hudson*
- 86 Steel Bridge Riverwalk, Portland, OR, *Mia Birk*
- 86 Harpers Ferry Bridge, Harpers Ferry, VA, *Rails to Trails Conservancy*
- 87 Single track tunnel on Lake Oswego Trolley Line, Lake Oswego, OR, *Mia Birk*
- 88 RWT designs must take endangered species into consideration, Victorville, CA, *George Hudson*
- 89 Tree-lined RWT looking north, Burlington, VT, *Craig Della Penna*
- 90 Lighting on Eastbank Esplanade, Portland OR, *George Hudson*
- 90 Trailhead Sign, Burlington, VT, *Eric Stachon*
- 90 Signing on the Railroad Trail, Gaylord, MI, *Suzan Pinsof*
- 91 Equestrian RWT users require special design considerations, Bourbon, MO, *Meramec Trail Riding Club*
- 95 Steel Bridge Riverwalk warning sign, Portland, OR, *Mia Birk*
- 100 Trail regulations sign, Santa Clarita, CA, *Ron Mathieu, SCRRA/Metrolink*