

1.1 Trail maintenance: Trends, Standards, and Practices

A national push for the construction of new bicycle and pedestrian facilities began in the early 1990s. The results were notable: an 80-fold increase in new construction spending (between 1988 and 2002), the designation through the White House Millennium Initiative of more than 2,000 local, shared-use Millennium Trails, and close to 5,000 state-driven trails projects in progress in 2002.ⁱ In Indiana, this movement has created “more than 3,268 miles of trails and bikeways open for public use across the state,” nearly meeting the goal set by the Indiana Department of Natural Resources of “having a trail within 7.5 miles (or 15 minutes) of all Indiana residents by 2016” in July, 2013.ⁱⁱ

The explosion of multi-use paths brings increased health and recreational opportunities for users, and new planning challenges for trail managers. While the majority of Indiana’s trails have been built with a mix of state and federal funding, the funding options for non-construction activities are comparatively few: in addition to the RTP (Recreational Trails Program), the FHWA lists only the “STP (including the enhancement set-aside), the Highway Safety Improvement Program, and the CMAQ Program (23 U.S.C. 217(a)). State and Community Highway Safety Grant Program funds (Section 402) are to be used exclusively for nonconstruction activities.”ⁱⁱⁱ Additionally, it is far easier to find technical support for design and construction matters than for maintenance concerns. This manual, sponsored by the Indiana Local Technical Assistance Program, is a first response to this deficit of information.

Deferred trail maintenance is a nationwide issue. As our leading expert in parks and preservation services, the National Park Service, approaches its 100-year anniversary in 2016, it faces a multi-billion dollar backlog of deferred maintenance.^{iv} The problem of securing funding for maintenance is not unique to trails: Smart Growth America states that, between 2009 and 2011, annual state spending on expanding and constructing roadways (accounting for 1% of the total state-owned road network) was at \$20.4 billion, while annual state spending on maintenance and preservation (caring for the other 99% of the network) stood at only \$16.5 billion.^v Such spending priorities do not reflect that nearly a quarter (21%) of the national road network was rated in poor condition in 2011.

In 2011, INDOT estimated the cost-per-mile of constructing new separate-alignment, shared-use paths at \$775,000, and the cost-per-mile of building out and maintaining an existing separate-alignment, shared-use path at \$115,000.^{vi}

Table 1. Milwaukee Construction Cost-Per-Mile Estimates

Segment/Trail	Description	Cost-per-mile
Honey Creek Parkway	bike trail from Portland Ave to 70th St, not including bridge construction	\$149,206 per mile for 10 foot wide asphalt trail
Root River	from 60th St. under Hwy 100 to Rainbow Airport, not including boardwalk	\$301,014 per mile for 10 foot wide asphalt trail

South Side Trail (a.k.a. Kinnickinnic River Bicycle Trail)	base construction including trail amenities, signage, and drainage issues	\$176,470 per mile for a 10 foot wide asphalt trail
Hank Aaron State Trail (West Allis Line)	6.5 miles, including retrofit of bridges	\$224,307 per mile for a 10 foot wide asphalt trail

Source: Milwaukee County Dept. of Parks, Recreation, and Culture

A comparison of the cost estimates for construction in Milwaukee (Table 1, above) and an assortment of cost estimates for maintenance services (Table 2, below) likewise demonstrate that construction is much more costly than routine maintenance.

Table 2. Assorted Maintenance Cost Estimates

Source	Trail	Cost-per-mile
provided in the Iowa Trails 2000 plan by the Iowa Department of Transportation	a mixture of different surfaces	\$1,500 per mile
Milwaukee County Park System	all asphalt paths	\$2,525 per mile
Rail Trail Maintenance & Operation Manual provided by the Rails-to-Trails Conservancy		\$1,200 per mile (absolute minimum)
for government run trails in the Rail Trail Maintenance & Operation Manual provided by the Rails-to-Trails Conservancy		\$2,077 per mile
in the Trail Cost Model - Draft by the Wisconsin Department of Natural Resources	unpaved trail	\$2,042.06 per mile

Source: Milwaukee County Dept. of Parks, Recreation, and Culture

Despite the difficulties with comparing collected cost data, which is compiled by different agencies on varying criteria, it is clear that initial construction costs dwarf the costs of routine maintenance and enhancement of existing facilities; however, as this manual will stress, deferring maintenance can dramatically increase maintenance costs and invert that cost balance. Unfortunately, deferment is common since funding for routine maintenance has been comparatively difficult to secure. As trails age without appropriate maintenance, opportunities for substantial cost-savings through early intervention shrink. Despite a present lack of funding and technical support, local trail managers are obligated to maintain federally-funded trailways in accordance with standards for public safety and access rights (see [Table 1](#)). In addition to compiling a menu of best practices for managers' reference, this document highlights the important role of maintenance to the longevity of trail systems and the need for legislation establishing appropriate funding mechanisms.

Table 3. National, state, and industry standards

Indiana Department of Transportation – 2013 Design Manual. Chapter 51 – Special Design Elements.	http://www.in.gov/indot/design_manual/files/Ch51_2013.pdf
ADA.gov. Information and Technical	http://www.ada.gov/ada_req_ta.htm

Assistance on the Americans with Disabilities Act	
The American Association of State Highway and Transportation Officials. Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2010 (AASHTO Pedestrian Guide)	http://www.railstotrails.org/resources/documents/ourWork/trailBuilding/DraftBikeGuideFeb2010.pdf
The American Association of State Highway and Transportation Officials. Guide for the Development of Bicycle Facilities, 1999 (AASHTO Bike Guide)	http://www.fhwa.dot.gov/environment/recreational_trails/guidance/manuals.cfm#aashto
Federal Highway Administration. Program Guidance.	http://www.fhwa.dot.gov/environment/recreational_trails/guidance/manuals.cfm#links
Federal Highway Administration. A Guide for Maintaining Pedestrian Facilities for Enhanced Safety.	http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa13037/

ⁱ [Center for Environmental Excellence, p. 48](#)

ⁱⁱ [INDOT, Bicycle and Pedestrian Program](#)

ⁱⁱⁱ [INDOT, Bicycle and Pedestrian Program; FHWA, Bicycle & Pedestrian Program](#)

^{iv} [Clementino, Deferred Maintenance](#)

^v [Smart Growth America, Repair Priorities 2014](#)

^{vi} [INDOT, Indiana Safe Routes to School Program](#). This is no longer a standalone program, so these figures could not be investigated; however, these are the most recently available figures available from the state, and are thus included herein.