



## ***Agency of Transportation***

# **Report on Shared-use Path and Sidewalk Unit Costs**



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**Produced by the Bicycle and Pedestrian  
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## A. Introduction

This report is intended to provide basic unit cost (per foot) information for bicycle or pedestrian facilities and to provide some basic bid costs for items commonly included on projects that provide improved facilities for bicycling or walking. The report has been recently updated and the methodology for determining costs was modified to be more reflective of the bid item quantities and total project costs typically experienced on sidewalk and shared use path projects.

## B. Intended Use of this Data

VAOT staff, RPCs and municipalities often need to know what the relative cost of proposed bicycle and/or pedestrian infrastructure will be. At the local level, a community may be considering making improvements with a given amount of money and need to determine how much they will be able to accomplish. RPCs sometimes perform or hire consultants to perform feasibility studies for projects in member towns and need to determine if cost estimates are reasonable. VAOT staff often review applications for bicycle or pedestrian improvement projects and must judge whether presented construction costs are reasonable. VAOT staff may also need preliminary costs when considering the inclusion of bicycle or pedestrian facilities as part of a roadway, bridge or other transportation project. **The information in this report should be used for planning or checking purposes only and is not intended to substitute for “good engineering judgment” and detailed project cost estimates. The latest VAOT Five Year Averaged Price List or Estimator software should be consulted for detailed engineering estimates.**

## C. Unit Construction Costs

The unit costs for different configurations of shared-use paths and sidewalks have been factored to include typical project items such as fencing, drainage, lighting, landscaping, mobilization, signs, etc. They **do not account for** extreme topographic conditions, structures (bridges, retaining walls, tunnels), and other site-specific conditions that would result in increased construction expense.

The following assumptions for typical sections were used to develop the unit costs for the different sidewalk and shared-use path unit costs:

All sidewalks – 12-inches of sub-base material  
Concrete sidewalks – 5-inch thick concrete  
Bituminous sidewalks – 2-inch thick lift  
Aggregate sidewalks – 3 inches compacted material

All shared-use paths – 6 inches of sand and 12 inches of gravel sub-base material  
Bituminous paths – 2-inch thick lift  
Aggregate paths – 4 inches compacted material

An additional resource to use for early planning of projects is the VAOT Standard Drawings. A full listing of these drawings can be found on the Agency web site at [www.aot.state.vt.us](http://www.aot.state.vt.us). Hard copies of approved drawings may be obtained from the Agency Reprographics section (phone – (802) 828-2623).

**When referencing this data, please include the following disclaimer and cite the source as the VTrans Bicycle and Pedestrian Program Unit Cost Database.**

**The tables of unit costs represent construction costs only and do not include other costs associated with developing a shared-use path or sidewalk project (see D. Other Costs on page 3). The following costs include an allowance for associated items such as limited drainage work, signs, fencing, pavement markings, and limited landscaping.**

Sidewalk Costs

Although sidewalk and curb can be constructed as a standalone project, it is often included as part of a roadway, bridge or utility project. Savings can result when a sidewalk is incorporated into a larger more comprehensive infrastructure project, especially when larger quantities of materials such as aggregate or concrete are needed. The use of different types of curbing, primarily granite compared to concrete, is often a decision that communities struggle with. Although granite curbing has a slightly higher initial cost than concrete, the life cycle cost should be considered. Granite curbing has superior durability and aesthetic qualities and is the preferred curbing treatment in Vermont.

<b>Sidewalk/Curb configurations</b>	<b>Cost per foot</b>
5-foot wide concrete sidewalk with granite curb	\$140
5-foot wide concrete sidewalk with concrete curb	\$132
5-foot wide concrete walk with no curb	\$87
5-foot wide bitum. sidewalk with granite curb	\$106
5-foot wide bitum. sidewalk with concrete curb	\$98
5-foot wide bitum. sidewalk with no curb	\$52
5-foot wide aggregate walk with granite curb	\$94
5-foot wide aggregate walk with concrete curb	\$86
5-foot wide aggregate walk with no curb	\$40

Shared Use Path Costs

Over the past year or so, the cost of bituminous concrete pavement has fluctuated widely and generally has increased due to increased petroleum costs. Additionally, all construction costs have generally increased based on higher transportation and fuel costs.

<b>Typical Shared-Use Path Costs</b>	<b>Cost per foot</b>
8-foot wide bitum. shared-use path	\$116
10-foot wide bitum. shared-use path	\$132
12-foot wide bitum. shared-use path	\$150
8-foot wide aggregate shared-use path	\$98
10-foot wide aggregate shared-use path	\$111
12-foot wide aggregate shared-use path	\$124

\*Note that for shared-use paths, 10-feet is the typical width

Individual Item Costs

Some individual costs of construction items typically found on bicycle and pedestrian facilities are as follows:

<u>Item</u>	<u>Cost</u>	<u>Project Type</u>
Bituminous Concrete Pavement	\$75 - \$90/Ton	Paths
Vertical Granite Curb	\$23 - \$28/Lin. Foot	Roadway or sidewalk
Cast-In-Place Cement Concrete Curb	\$19 - \$25/Lin. Foot	Roadway or sidewalk
Bituminous Concrete Sidewalk	\$125/Ton or \$13/Sq. Yard	Roadway or sidewalk
Cement Concrete Sidewalk (5-in.)	\$37 - \$45/Sq. Yard	Roadway or sidewalk
Crosswalk Pavement Marking (8 foot wide crosswalk – block pattern)	\$20/Lin. Foot	Roadway, path or sidewalk
Imprinted Crosswalks	\$14 - \$18/Sq. Foot	

On-road Bicycle Lanes

There is very little data regarding the cost of adding bicycle lanes, with the associated signs and pavement markings, to an existing roadway. However, it is possible to estimate the cost of re-striping an existing roadway that has adequate width such that a bike lane is provided in each direction.

The following costs are based on contracting out the work. If a municipality uses its own forces and equipment to create the bike lanes, the cost would likely be lower.

Bike lanes with durable pavement markings and appropriate signs - \$9000/mile

Bike lanes with regular painted pavement markings and appropriate signs - \$4000/mile

Note that this includes bike lanes in both directions for the entire distance covered.

Structure Costs

If a proposed path project requires a bridge, the rough cost of \$1200/linear foot (for a 12-foot wide structure) can be used for bridges up to 100 feet in length. This cost includes sub-structure work such as abutments. If the bridge is greater than 100 feet in length, the unit cost should be increased.

Other structures that could significantly increase the cost of a project are retaining walls or underpasses. It is not possible to provide estimates for these based on the variability of costs given different site conditions.

## D. Other Project Costs

**It is important to note that the costs listed above reflect bid costs (materials and installation) only.** Other costs that would likely be associated with a shared-use path or sidewalk project would be:

- ◆ Engineering costs (ranges from a minimum of 10% to as high as 30% of construction costs).  
For preliminary planning purposes, it is suggested to use 20%.
- ◆ Municipal project management costs (generally range from 10% to 20% of construction)
- ◆ Right of Way costs (extremely variable)
- ◆ Construction inspection costs (generally range from 10% to 25% of construction costs, depending on the complexity of the project and the amount of oversight that is needed)

These percentages should be used as a guideline only. For simpler, more straightforward projects, the lower end of the ranges is more appropriate. The high end of the ranges generally reflects more complex projects.

## E. Methodology

One of the best sources of cost information is contractor bid prices on actual projects. Existing data was collected for shared-use path and sidewalk projects that were funded by VTrans between 1998 and 2005. To develop unit costs that can be applied to potential projects on a per-foot basis, certain adjustments were made to actual cost data. For example, structures tend to be specific project elements that can greatly increase the overall cost of a project. Additionally, some of the projects used to create the database included significant roadway reconstruction work. To accurately identify costs associated specifically with bicycle and/or pedestrian infrastructure, the costs of these ancillary items were deducted (to the extent feasible) from the overall path cost. In some cases, a project identified as a shared-use path project may have included significant quantities of sidewalk. In those cases, the sidewalk was also accounted for separately.

In addition to actual project costs, quantities were developed for several typical sidewalk and shared-use path typical sections. The latest version of AASHTO's Trns.Port Estimator software was used to develop costs for the different scenarios. It is important to note that these costs do not include structures or other project-specific costs that would need to be accounted for in a complete estimate.

## F. Results

An analysis of the results for actual path/sidewalk projects highlights some interesting facts. The basic cost of either a path or sidewalk project (the cost of the fundamental elements including excavation, sub-base material, surfacing, and curbing) is fairly consistent. A comparison was made of the basic cost to the overall project cost (excluding structures or roadway reconstruction). For shared-use paths, the basic elements comprised only 30% of the total cost on average. For sidewalks, the basic elements comprised from 40% to 60% of the total cost. In both cases, ancillary

items such as drainage, fencing, lighting, signs and landscaping contributed significantly to the overall project cost (to a greater extent with paths as opposed to sidewalks).

**G. Future Data Needs**

It is recognized that the cost information provided in this report is incomplete. Although on-road bike facilities (shoulders or bike lanes) are eligible projects, there is very little data on the actual costs of this type of improvement. Once data on this type of project is available, unit costs will be developed. Another area where data is desired is on typical maintenance costs of different facilities. This will require data collection at the municipal or local sponsor level and will be contained in a future report. It is expected that as the data base of actual project costs is updated, this report will be updated.