



TOWN OF CONCORD

Department of Planning and Land Management

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MEMORANDUM

To: Bruce Freeman Rail Trail Advisory Committee
From: Marcia Rasmussen, Director DPLM **MAR**
Re: Update of Phases 2A, 2B, 2C, the last ½ mile of 2C, and 2D
Date: September 21, 2021

- 1. Phase 2A Update:** This phase of the trail has been completed and is open for all to enjoy!
- 2. Phase 2B Update:** The concrete decking on the bridge is expected to be poured at the end of September/beginning of October. Work is being coordinated (weekend or evening) to be sure the pour is not being done over an active travel lane. The Wildlife Culvert installation has been completed; seeding will be done in the next couple of weeks and the group responsible for monitoring wildlife has been contacted. Final approval of the informational display has been given and the final display panel is expected to be delivered later this fall (estimated ship date is October 5, 2021). The fencing subcontractor has been working on the installation of fencing near the Police Horse Barn and is expected to start installation of the timber rail fence later this month.
- 3. Phase 2C Updates:** Concord Public Works Engineering Division staff has asked the contractor performing the construction of the crosswalk at the Sudbury Road/Seven Star Lane crosswalk to prepare an estimate for the curb cut at the Nashoba Brook bridge so this work might be done this fall.
- 4. The last ½ mile of Phase 2C:** MassDOT conducted a meeting with the design consultants from Concord and Sudbury in late August. Natural Resources Director Delia Kaye attended on my behalf and reported the following “minor” comments:
 - There was minimal cut near Powder Mill Road to achieve appropriate drainage.
 - The Timber Rail Note was determined to be too detailed and would conflict with the “Contractor Means and Methods”; the language would be added to the Special Provisions section of the specifications.
 - The final comment is to ensure consistency between the GPI plans (Concord) and the Fuss & O’Neill plan sets except where there are specific differences such as no centerline painting in Concord.

GPI consultant Matt Kearney added that the topic of fencing/railing was raised again during discussion of the Sudbury plan set with MassDOT restating the official position that fencing or railing will not be allowed except for the safety of trail users (see the attached American Association of State Highway and Transportation Officials (AASHTO) guidance “Chapter 5: Design of Shared Use Paths”). I have asked Matt to prepare a follow up letter to MassDOT requesting a formal response to the fencing/railing proposed for the Concord portion of the

trail. Matt also noted that fencing requires a minimum 5-foot clearing behind the fence and the observation that plants don't readily grow back in these cleared areas, so installing the fence as proposed could be taking down or reducing the existing landscape screening, creating a problem that may not have existed if the land was left alone. The topic of minimizing clearing to the extent possible was also discussed, which may add more language about this than was required in Phase 2C. GPI will also want to coordinate with MassDOT Landscape section for any vegetation that is proposed. Lastly, Matt noted that there were some questions raised about the "private property" signs proposed, with the observation that such signs should be located at the property line rather than at the edge of the trail for accuracy. He added that there wasn't resolution to that part of the discussion.

Given MassDOT's position that fencing/railing may be determined to be non-participatory, I prepared this year's Community Preservation Committee application to include a request for the BFRT in the amount of \$300,000 (the application (#8) and supporting materials are available online here: <https://concordma.gov/1587/2022-CPA-Funding-Applications-Received>). This request includes \$250,000 for the fencing and railing (estimated at \$185,000 and \$65,000, respectively) plus \$50,000 for additional features along other parts of the trail (such as benches, bike racks, signage, landscaping, etc.). One aspect of the CPC process is to submit letters of support, which the BFRT Advisory Committee may want to consider.

5. **Phase 2D Sudbury:** No update was available from the Sudbury Project Manager.
6. **Community Connections Grant follow up:** the Town requested an extension of time for completion of the equipment installation to December 31, 2021, which was granted in early September. The reasons for the delay were related to complications in getting the contract finalized, and delays in obtaining a quote/estimate from the equipment manufacturer, Dero. The current lead time is about 8-10 weeks, so delivery of this equipment is not expected until the end of September/early October. Concord Public Works staff have indicated that they will be able to schedule the installation of this equipment this fall once it has been delivered. They have reviewed the manufacturer's recommendations for installation and believe that they have the capacity and capability to complete the installation by the end of this year, so my requested time extension is for December 31, 2021

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studies. However, it is generally assumed that the speed of youth bicyclists is lower than adult bicyclists. Since much of the design criteria in this guide is based on design speed, children will be accommodated to a large extent. When considering criteria unrelated to design speed, engineering judgment should be used when modifying these values for children. Throughout this chapter, several design measures are recommended which are based primarily on pedestrian research. It is presumed that these measures will also benefit bicyclists and other path users, although the research has not been conducted to support this assumption.

5.2.1 Width and Clearance

The usable width and the horizontal clearance for a shared use path are primary design considerations. Figure 5-1 depicts the typical cross section of a shared use path. The appropriate paved width for a shared use path is dependent on the context, volume, and mix of users. The minimum paved width for a two-directional shared use path is 10 ft (3.0 m). Typically, widths range from 10 to 14 ft (3.0 to 4.3 m), with the wider values applicable to areas with high use and/or a wider variety of user groups.

In very rare circumstances, a reduced width of 8 ft (2.4 m) may be used where the following conditions prevail:

- Bicycle traffic is expected to be low, even on peak days or during peak hours.
- Pedestrian use of the facility is not expected to be more than occasional.
- Horizontal and vertical alignments provide frequent, well-designed passing and resting opportunities.
- The path will not be regularly subjected to maintenance vehicle loading conditions that would cause pavement edge damage.

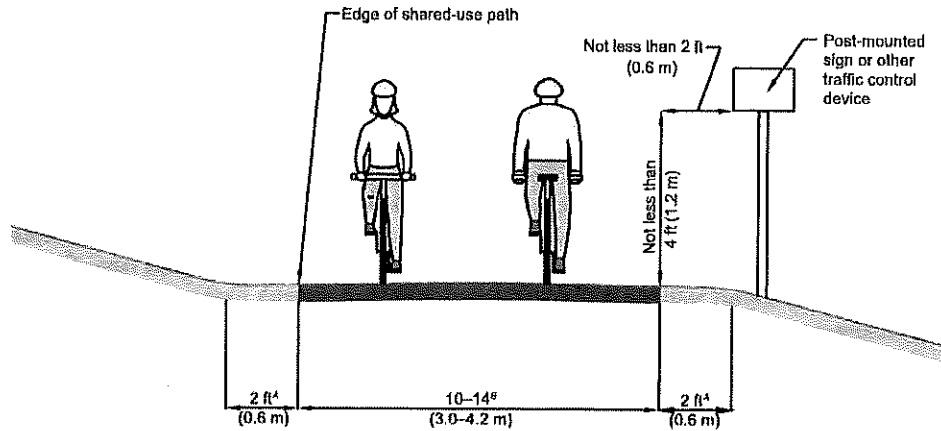
In addition, a path width of 8 ft (2.4 m) may be used for a short distance due to a physical constraint such as an environmental feature, bridge abutment, utility structure, fence, and such. Warning signs that indicate the pathway narrows (W5-4a), per the MUTCD (7) should be considered at these locations.

A wider path is needed to provide an acceptable level of service on pathways that are frequently used by both pedestrians and wheeled users. The *Shared Use Path Level of Service Calculator* is helpful in determining the appropriate width of a pathway given existing or anticipated user volumes and mixes (9). Wider pathways, 11 to 14 ft (3.4 to 4.2 m) are recommended in locations that are anticipated to serve a high percentage of pedestrians (30 percent or more of the total pathway volume) and high user volumes (more than 300 total users in the peak hour). Eleven foot (3.4 m) wide pathways are needed to enable a bicyclist to pass another path user going the same direction, at the same time a path user is approaching from the opposite direction (see Figure 5-2) (8). Wider paths are also advisable in the following situations:

- Where there is significant use by inline skaters, adult tricycles, children, or other users that need more operating width (see Chapter 3);
- Where the path is used by larger maintenance vehicles;

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- On steep grades to provide additional passing area; or
- Through curves to provide more operating space.



Notes:

^A (1V.6H) Maximum slope (typ.)

^B More if necessary to meet anticipated volumes and mix of users, per the *Shared Use Path Level of Service Calculator* (9)

Figure 5-1. Typical Cross Section of Two-Way, Shared Use Path on Independent Right-of-Way

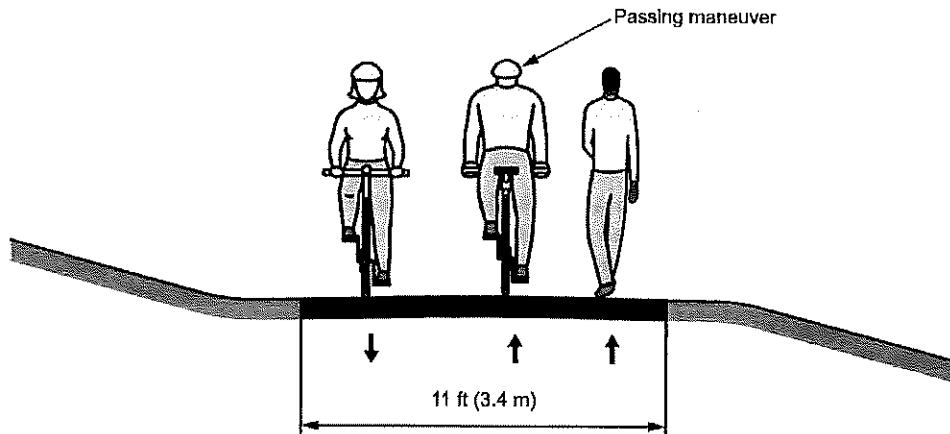


Figure 5-2. Minimum Width Needed to Facilitate Passing on a Shared Use Path

Under most conditions, there is no need to segregate pedestrians and bicyclists on a shared use path, even in areas with high user volumes—they can typically coexist. Path users customarily keep right except to pass. Signs may be used to remind bicyclists to pass on the left and to give an

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(i.e., distance between the edge of the path pavement and the top of the slope) is less than 5 ft (1.5 m), physical barriers or rails are recommended in the following situations (see Figure 5-3):

- Slopes 1V:3H or steeper, with a drop of 6 ft (1.8 m) or greater;
- Slopes 1V:3H or steeper, adjacent to a parallel body of water or other substantial obstacle;
- Slopes 1V:2H or steeper, with a drop of 4 ft (1.2 m) or greater; and
- Slopes 1V:1H or steeper, with a drop of 1 ft (0.3 m) or greater.

The barrier or rail should begin prior to, and extend beyond the area of need. The lateral offset of the barrier should be at least 1 ft (0.3 m) from the edge of the path. The ends of the barrier should be flared away from the path edge. Barrier or rail ends that remain within the 2 ft (0.6 m) clear area should be marked with object markers.

Railings that are used to protect users from slopes or to discourage path users from venturing onto a roadway or neighboring property can typically have relatively large openings. A typical design includes two to four horizontal elements with vertical elements spaced fairly widely, but frequently enough to provide the needed structural support and in accordance with applicable building codes. Where there is a high vertical drop or a body of water adjacent to the path where a railing is provided, engineering judgment should be used to determine whether a railing suitable for bridges (as described in Section 5.2.10) should be provided.

Other materials in addition to railings can be used to separate paths from adjacent areas, either due to substantial obstacles or to discourage pathway users from venturing onto adjacent properties. Berms and/or vegetation can serve this function.

It is not desirable to place the pathway in a narrow corridor between two fences for long distances, as this creates personal security issues, prevents users who need help from being seen, prevents path users from leaving the path in an emergency, and impedes emergency response.

The desirable vertical clearance to obstructions is 10 ft (3.0 m). Fixed objects should not be permitted to protrude within the vertical or horizontal clearance of a shared use path. The recommended minimum vertical clearance that can be used in constrained areas is 8 ft (2.4 m). In some situations, vertical clearance greater than 10 ft (3.0 m) may be needed to permit passage of maintenance and emergency vehicles.

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audible warning prior to passing other slower users. Part 9 of the MUTCD (7) provides a variety of regulatory signs that can be used for this purpose.

On pathways with heavy peak hour and/or seasonal volumes, or other operational challenges such as sight distance constraints, the use of a centerline stripe on the path can help clarify the direction of travel and organize pathway traffic. A solid yellow centerline stripe may be used to separate two directions of travel where passing is not permitted, and a broken yellow line may be used where passing is permitted. The centerline can either be continuous along the entire length of the path, or may be used only in locations where operational challenges exist. Per the MUTCD, all markings used on bikeways shall be retroreflective.

In areas with extremely heavy pathway volumes, segregation of pedestrians from wheeled users may be appropriate; however, care should be taken that the method of segregation is simple and straightforward. Pedestrians are typically provided with a bi-directional walking lane on one side of the pathway, while bicyclists are provided with directional lanes of travel. This solution should only be used when a minimum path width of 15 ft (4.6 m) is provided, with at least 10 ft (3 m) for two-way wheeled traffic, and at least 5 ft (1.5 m) for pedestrians.

Where this type of segregation is used on a path with a view (e.g., adjacent to a lake or river), the pedestrian lane should be placed on the side of the path with the view. Again, this solution should only be used for pathways with heavy volumes, as pedestrians will often walk in the “bicycle only” portion of a pathway unless it is heavily traveled by bicycles.

Another solution is to provide physically separated pathways for pedestrians and wheeled users. A number of factors should be considered when determining whether to provide separate paths, such as general site conditions (i.e., the width of separation and setting), origins and destinations of different types of path users, and the anticipated level of compliance of users choosing the appropriate path. In some instances, the dual paths may have to come in close proximity or be joined for a distance due to site constraints. As allowed by the MUTCD (7) and described in more detail in Section 5.4.2, mode-specific signs may be used to guide users to their appropriate paths.

Ideally, a graded shoulder area at least 3 to 5 ft (0.9 to 1.5 m) wide with a maximum cross-slope of 1V:6H, which should be recoverable in all weather conditions, should be maintained on each side of the pathway. At a minimum, a 2 ft (0.6 m) graded area with a maximum 1V:6H slope should be provided for clearance from lateral obstructions such as bushes, large rocks, bridge piers, abutments, and poles. The MUTCD requires a minimum 2 ft (0.6 m) clearance to post-mounted signs or other traffic control devices (7). Where “smooth” features such as bicycle railings or fences are introduced with appropriate flaring end treatments (as described below), a lesser clearance (not less than 1 ft [0.3 m]) is acceptable. If adequate clearance cannot be provided between the path and lateral obstructions, then warning signs, object markers, or enhanced conspicuity and reflectorization of the obstruction should be used.

Where a path is adjacent to parallel bodies of water or downward slopes of 1V:3H or steeper, a wider separation should be considered. A 5 ft (1.5 m) separation from the edge of the path pavement to the top of the slope is desirable. Depending on the height of the embankment and condition at the bottom, a physical barrier, such as dense shrubbery, railing, or fencing may be needed. This is an area where engineering judgment should be applied, as the risk for a bicyclist who runs off the path should be compared to the risk posed by the rail. Where a recovery area

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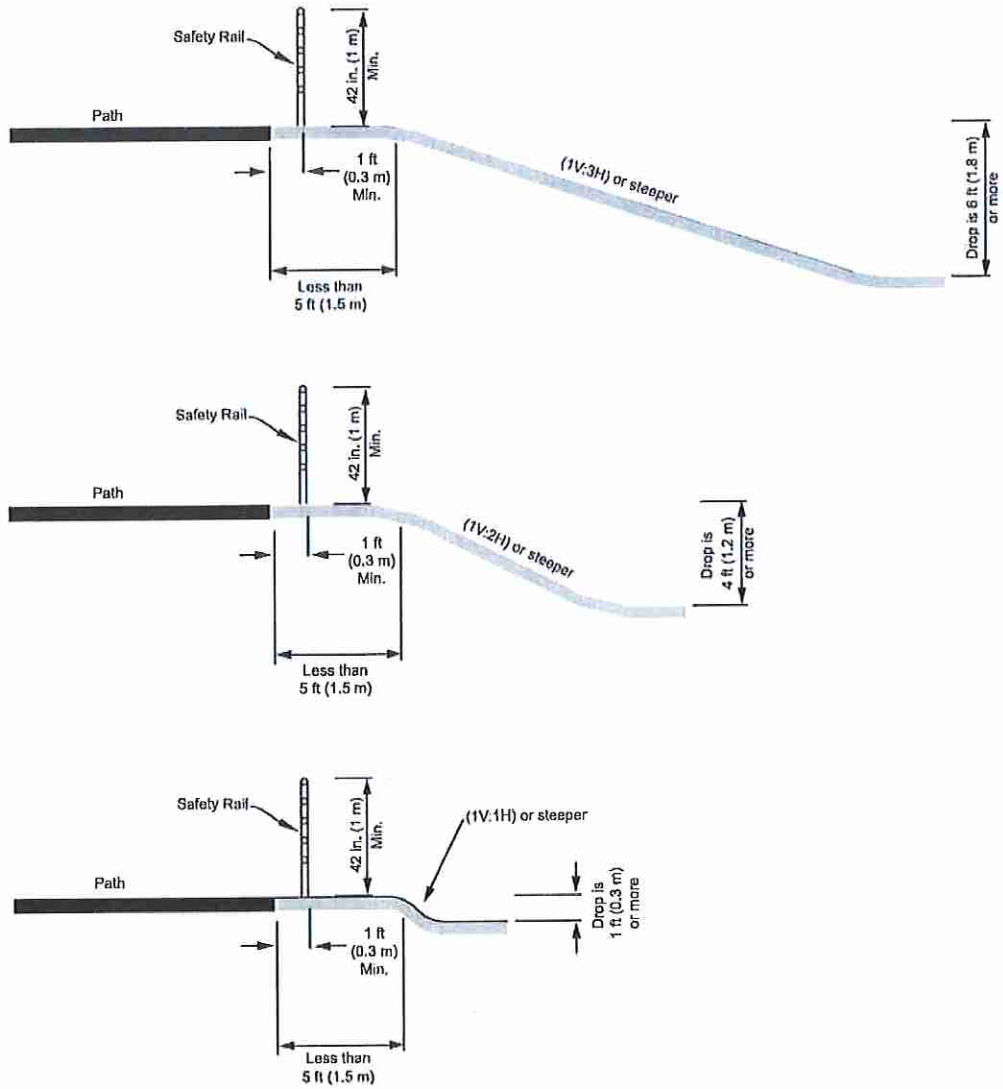


Figure 5-3. Safety Rail Between Path and Adjacent Slope