

Winnepesaukee Opechee Winnisquam (WOW) Trail Preliminary Feasibility Analysis

The Laconia Trails with Rails Exploratory Committee (LTREC) contracted with Alta Planning + Design to conduct a preliminary analysis of the feasibility of constructing a trail for bicyclists and pedestrians along the Concord and Lincoln Railroad in Laconia

On April 14, 2003, Alta Planning + Design conducted a site walk of the railroad corridor from the Belmont town line north to the Meredith town line. Steve Smith and Alan Beetle of LTREC accompanied Alta staff on the site walk. Photographs and measurements were taken at locations throughout the corridor. Additional field investigations were made on June 25 and July 16, 2003.

Alta Planning + Design obtained and reviewed the railroad valuation plans (val plans) of the corridor that were prepared in 1914 and updated through November 1964. These plans show the railroad centerline and stationing and the limits of the railroad right-of-way. Generally the ROW is 66 feet wide with 38 feet of ROW west of the centerline and 28 feet of ROW east of the centerline. The railroad is stationed from south to north. Locations to the east of centerline are referred to as to the right and locations to the west are referred to as to the left.

The railroad corridor is owned by the State of New Hampshire. The only operating rail service on the Laconia segment of the railroad is an excursion train (Winnepesaukee Scenic Railroad) operated by the Hobo Railroad of Lincoln, New Hampshire. This is a slow-speed seasonal train service.

To minimize costs for trail construction, on-road bicycle routes are recommended at three locations:

- On Messer Street in Laconia
- On a series of back streets in Lakeport
- On Lakeside Avenue, Weeks Street and Centenary Avenue in Weirs

A shared use path (trail) for bicyclists and pedestrians is recommended for all other portions of the railroad corridor. The path would be a 10-foot wide paved path with 2-foot wide grass shoulders as shown in the attached Rail Trail Typical Section. Where the path would be located within the railroad right of way, it would be offset from the track centerline by 16 to 26 feet. For the most part, the trail would be to the left (west) of the railroad, which is the wider side of the right of way. The location of the proposed path and on-road bicycle route segments is shown on a series of 22 drawings developed by Steven J. Smith Associates and Alta Planning + Design. A summary of the 17 path and on-road segments is provided in Table 1. Trail structures are listed in Table 2.

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Segment 1

The project would tie into an existing paved path approximately 700 feet north of the Belmont town line. The existing path is eight feet wide and is offset from the railroad centerline by approximately 13.5 feet as shown below.



Existing path along railroad (looking south)

The path would continue on the east (right) side for 1,350 feet north to an existing pedestrian crossing to Bartlett Beach, which is located on the west side of the railroad. This crossing is at the end of Keasor Court which extends to Route 3. Just south of this location, the trail would cross Durkee Brook on a short timber bridge.



Site of timber trail bridge over Durkee Brook (looking south)

In Segment 1, the trail is on the side of the rail with 28 feet of right-of-way (measured from the track centerline). The trail offset would be 16 feet (measured from center of track to edge of path).

Segment 2

The path would shift to the west side of the railroad at the existing Bartlett Beach pedestrian grade crossing.



Looking north from Bartlett Beach crossing

In this segment the path would be on the wider side of the right of way (38 feet from track centerline) and the trail offset would be as much as 26 feet.

Segment 3

This short segment extends from Bay Street to Fair Street. The path would be on the left side with an offset up to 26 feet.



Looking north between Bay and Fair streets.

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Segment 4

The path would cross Fair Street on the west side of the railroad and then turn left following Fair Street on its north side. The path would be offset from Fair Street by at least five feet. The 10-foot wide path would continue to the Winnepesaukee River. A 180-foot long prefabricated bicycle and pedestrian bridge would be installed adjacent to the east side of the existing Fair Street roadway bridge.



Fair Street Bridge over the Winnepesaukee River

At the far end of the bridge, the path would turn right and follow along the north bank of the river until it reaches the rail corridor. At that point, it would resume its previous position on the left side of the railroad. An easement may be required from the Laconia Citizen to locate the trail along the edge of the parking area shown below.



Looking south at Winnepesaukee River.

Segment 5

North of Water Street, there are multiple tracks within the rail corridor. There is an existing pedestrian grade crossing about 500 feet north of Water Street.



Looking north between Water and Pleasant streets

The trail would continue on the west side of the railroad right of way. Railroad spurs which come in from both the west and east sides appear inactive. A side track is apparently used for temporary parking of excursion trains, which will need to be taken into account during trail design.

Segment 6

At Pleasant Street two tracks head north to the former railroad depot.



Pleasant Street grade crossing, looking north at Laconia Station

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Most likely the existing sidewalk on the left side of the track would be widened to accommodate bicycle and pedestrian use. At Main Street the railroad right of way narrows and a two lane approach is provided on New Salem Street. This limits the available space for the rail trail.



Looking north toward Main Street



Main Street, looking east from railroad grade crossing toward Church Street

Segment 7

From Main Street to Messer Street the path would be located on the east (right) side of the railroad. The initial portion of the path may need to be located on the library property because the railroad ROW narrows here. Further north the ROW widens to 28 feet on the right side where the trail would be constructed with a 16-foot offset.



Looking north from Main Street toward Messer Street

Segment 8

At Messer Street, cyclists would be routed onto the roadway and pedestrians onto the sidewalks. The on-road route would continue to the northern intersection of Messer Street with the railroad to avoid the expense of constructing a bicycle/pedestrian bridge over the Winnepesaukee River.



500+ foot long railroad bridge/causeway (above) and Messer Street Bridge (below) over the Winnepesaukee River



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Segments 9 and 10

These two segments are 0.7 miles long and include a path on the left (west) side of the railroad. Segment 9 runs from Messer Street to Bridge Street. Segment 10 continues from Bridge Street to Elm Street. The trail would be offset from the track centerline by as much as 26 feet.



Looking north between Messer and Bridge streets

Segment 11

After crossing Elm Street the project would continue as an on-road bicycle route. Pedestrians would use sidewalks or walk along low volume streets. The route is 0.6 miles long and follows Railroad Avenue, Gold Street, Belvedere Street, North Street, Sheridan Street and School Street.



Gold Street in Lakeport



Existing pedestrian bridge connects Gold Street to Belvedere Street. This bridge is 120 feet long and 8 feet wide. New bridges for bicycle and pedestrian use should have an inside dimension of at least 12 feet.

Segment 12

The path within the rail corridor resumes on the north side of the Paugus Bay Marina and will be connected to School Street with a short path. In this segment the path along the railroad will be left of the tracks with an offset of up to 26 feet. The path segment continues 0.2 miles north to Appleton Street



Looking north along Paugus Bay (north of the marina)

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Segment 13

This segment runs 0.8 miles from Appleton Street to Van Buren Street. The path segment begins in a cut section. A retaining wall will be needed to support the trail near the top of the slope as the trail passes along a residential property (see Section A on Plan Sheet 8). The house and outbuilding are near the railroad right of way.



North of this property, the trail would rise to the top of the embankment. An easement would be required to locate the trail outside the cut.

Another area where a special treatment would be required is along a berm between Breakwater Cove and Paugus Bay as shown below.



A high retaining wall would support the trail on the west side of the railroad (see Section B on Plan Sheet 9). The trail offset would be about 12.5 feet for a 550 foot long segment. An alternative to avoid the costly retaining wall would be to use existing private roads, including portions of Starboard Way within the Breakwater Cove development.



North of Breakwater Cove, the trail would be located about 24 feet left of the track as shown in Section C on Plan Sheet 9. The path would be about 6 feet higher than the tracks.

Segment 14

This segment is 2.2 miles long and runs from Van Buren Street north to Birch Haven Road.



Looking north in railroad corridor adjacent to Southdown development

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As shown in the previous picture, areas are suitable for trail development within the rail corridor in this segment. However, retaining walls and short timber bridges are required at several locations.



North of the dirt road crossing, the trail would be supported by a low retaining wall on the left side of the railroad.



A timber trail bridge would span a brook at this location.

The trail would be built on the berm separating Paugus Bay and Pickerel Cove following the same alignment as the sewer. The trail offset would be 18 to 20 feet (see Section E on Plan Sheet 15). A short trail bridge would span the inlet at the southern end of the cove.



Looking north on berm between Paugus Bay and Pickerel Cove

Segment 15

This segment is 0.9 miles long and runs from Birch Haven Road north to Endicott Street in Weirs Beach. The trail would continue on the west side of the railroad right of way. A low retaining wall is needed to support the trail on the berm separating Chattle Cove and Paugus Bay (see Section F on Plan Sheet 16 and photo below).



Looking north along Chattle Cove

A short trail bridge would span the inlet at the northern end of the cove. The trail departs from the rail corridor at station 376+00 and uses a 50 foot right of way along the edge of the drive in theater property to reach Endicott Street.

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Segment 16

An on-road segment would run along Lakeside Avenue, Weeks Street and Centenary Avenue in Weirs Beach. Pedestrians would use sidewalks and experienced cyclists would travel on the roads. The on-road segment avoids the railroad tunnel under Endicott Street (Route 3) and along Weirs Beach where it is not feasible to construct a trail along the railroad.



The WOW Trail would follow Centenary Avenue in the old Methodist Camp.

Segment 17

This segment is a 1.3 mile path along the railroad corridor from Centenary Avenue north to the Meredith town line.



This height of this gabion wall would be increased to support a trail along the west side of the railroad (see Section G, Sheet 19).



The path would continue on the west side of the railroad, offset from the tracks by about 24 feet in most locations.



To avoid this constrained area along Maiden Lady Cove, the path would leave the rail corridor at Station 461+00 and be located between the cove and Scenic Road. North of the junction of Watson Road, the path would be located in the one-lane Scenic Road.



Looking south from Scenic Road near Meredith town line.

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Cost Estimate

Table 1 includes an estimate of the construction cost of the project. The total estimated construction cost is approximately \$2.75 million. This includes 7.4 miles of shared use path along the railroad (rail trail). The cost of the path is estimated at \$43.00 per linear foot for a 10-foot wide paved path. The unit cost estimate was derived from New Hampshire Department of Transportation (NHDOT) Weighted Average Unit Prices for 2002 as itemized on the figure entitled "Rail Trail Typical Section: Cost Estimate by Linear Foot." The unit cost includes a contingency of 35 percent. Fencing is included on rail-with-trail segments between the Belmont town line and Elm Street in Lakeport due to development densities and the desire to channelize crossings of the railroad at existing grade crossings. The cost of the 6-foot-high chain link fence is \$12.80 per linear foot based on NHDOT Weighted Average Unit Prices for 2002.

The costs for trail bridges and retaining wall segments are itemized in Table 2 and incorporated in Table 1. Three of the bridges would be 20 or less feet long, while one would be 70 feet long. All of these are assumed to be timber bridges with a 12-foot inside dimension. This provides an effective width of 10 feet and excludes one foot of shy distance on each side. A 180-foot long prefabricated bicycle and pedestrian bridge is included in Segment 4 to span the southernmost crossing of the Winnepesaukee River. The bridge would be located adjacent to the east side of the existing Fair Street roadway bridge.

Six trail segments would require retaining walls to support the trail. These include areas where the railroad is in a cut section with steep slopes rising to the edge of the right of way. In other areas, the railroad is elevated on a berm between two water bodies. The wall is needed to support the trail at the edge of the berm and not significantly affect the surface waters or wetlands. An alternative trail alignment is suggested to avoid the most expensive retaining wall near Breakwater Cove.

The costs of signing the on-road bicycle route segments are also included in Table 1.

All construction cost estimates are considered "order-of-magnitude" for planning purposes. Detailed engineer's cost estimates will be developed as part of the design phase of the project. No right-of-way costs are anticipated at this time. Any easements are assumed to be at no cost to the City of Laconia.

Priority Project - Phase I

The highest priority part of the project is considered to be Segments 7 through 10. Segment 8 is an on-road bicycle route along Messer Street. All other segments combined total 1.0 miles of rail trail. The estimated cost for Phase I of the WOW Trail project is provided in Table 3 and summarized as follows:

Construction cost	\$292,725
Design cost	\$ 35,125
Total	\$327,900