

A tall, narrow sign for the Rocky Mountain Legacy Trail. It features a yellow and orange gradient background with the text 'Rocky Mountain Legacy Trail' in large, bold, black letters. At the top, there are three horizontal bars with the text 'USERS TO DATE', 'USERS THIS YEAR', and 'USERS TODAY' respectively.

# Rocky Mountain Legacy Trail

Canadian Consulting Engineering Awards 2015

## ROCKY MOUNTAIN LEGACY TRAIL

Redefining Intercommunity Connections

### Client

Town of Canmore  
on behalf of Bow Corridor Regional Mobility Partnership

### Award Category

F. Special Projects



McElhanney

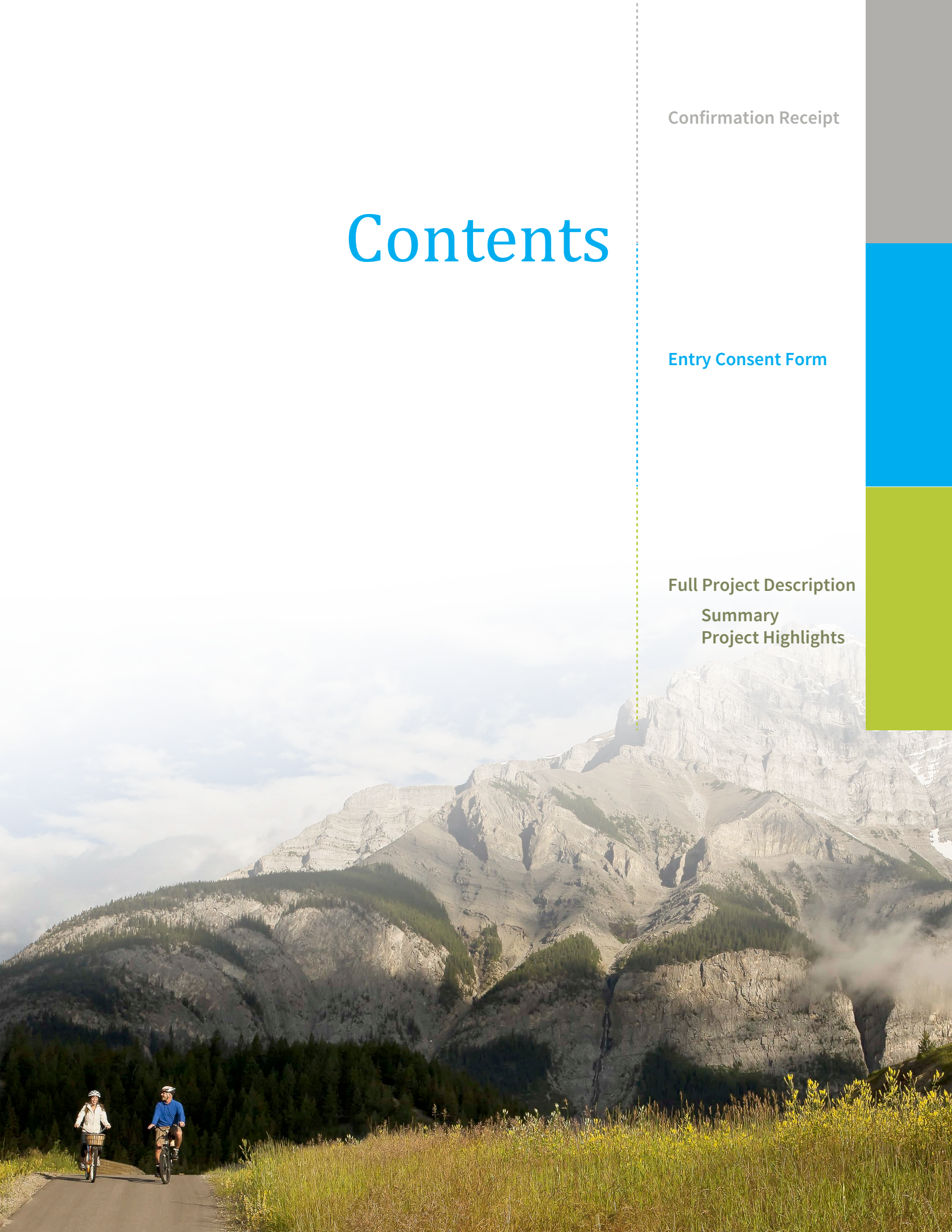


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Banff National Park East Gate

Rocky Mountain Legacy Trailhead (Canmore)  
Travel Alberta Visitor Information Centre



Canmore





# ROCKY MOUNTAIN LEGACY TRAIL

## Full Project Description

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The Rocky Mountain Legacy Trail is a multi-modal paved trail connecting Canmore to Banff National Park.

### Summary

The Bow Corridor Regional Mobility Partnership tasked McElhanney to design a 4.5km extension of the Legacy Trail from Canmore to Banff National Park for cyclists and pedestrians. Challenged to design the route along a narrow corridor between river and highway, McElhanney used extremely detailed LiDAR mapping and field survey data to ensure the design considered a myriad of constraints, and they delivered the project on time and budget despite extreme flooding in Alberta in 2013.







## Project Highlights

### 1. Innovation

Tourism is critical to this region, which has over four million annual visitors. The trail was conceptualized as a recreational and local commuter route and had to support various types of users, from novice cyclists to weekend joggers to Olympic-level athletes. McElhanney applied several innovations that helped to elevate this assignment above other trail projects:

**A mix of high-tech and traditional survey to present highly detailed designs that helped to quickly gain the confidence, and subsequent buy-in, of the diverse stakeholders.** McElhanney provided designs based on an extra high level of detail of the area in order to address the concerns, and eventually receive the approval, of the many stakeholders invested in the project, including Alberta Transportation, Alberta Environment & Sustainable Resource Development, Town of Canmore, Municipal District of Bighorn, Parks Canada, ATCO Pipelines, Alberta TrailNet Society, and Canadian Pacific Railway. McElhanney provided meaningful illustrations using a high-resolution orthophoto underlay to clearly show how the trail design would fit with the surroundings. McElhanney also used its extensive LiDAR archive to create a highly accurate AutoCAD base map of the corridor, down to the highway





**Left:** Eco-Totem at the Canmore trailhead facilities

**Right:** High-tension cable barriers were used to protect trail users from highway traffic

paint markings. McElhanney also mobilized its local field survey team to gather information in the most complex areas. This mixed methodology reduced traditional survey time and costs by 90%, and did not require any lane closures or traffic delays on the highway.

**High tension cables instead of concrete barriers.** Approximately 1km of the trail had to be right next to highway. Typically, solid concrete barriers would be used to keep the trail users safely separated from the traffic, however, McElhanney was concerned about drainage and snowdrifting issues associated with barriers. McElhanney used high tension cables to provide an equivalent safety barrier. The cables did not impede on drainage or snow removal, greatly improved aesthetics, and were cheaper to install and maintain than concrete barriers.

**A customized ECO-Totem and ECO-Counter system to track daily, annual, and total users on the trail – the first installation of its kind in Western Canada.** The system differentiates between pedestrians, cyclists, and other users while screening out wildlife, and it correlates usage statistics with weather and other data to help with operational planning. For example, an unexpected rainstorm may cause users to be stranded on one end of the trail and the system transmits a signal to increase bus service to shuttle users back to the other side.





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Balancing user safety, aesthetics, and experience made this much more complex project than a typical trail assignment.

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## 2. Complexity

**Collaborating with such a diverse stakeholder group required creative thinking, as well as innovative and equitable financing arrangements, to address the needs of the various municipalities and agencies involved in the project.** Despite their varied demands, they all agreed on the importance of safety in the design. This meant finding the best solutions that could work within the narrow corridor between the Trans-Canada Highway and the Bow River, in heavily treed and irregular terrain, near deep and shallow utilities, and in the proximity of the Canadian Pacific Railway's main line between Alberta and BC.

The first step was to gain trust. McElhanney worked with stakeholders for several years to obtain the necessary permissions and approvals to provide all parties with the confidence needed to steer the project through all stages of design to construction completion.

One of the biggest technical challenges facing the project was the narrow 1km-long section where the trail needed to fit within a 10m-wide corridor bounded by the highway and the railway line. High tension cables were used and accepted by Alberta Transportation.

Balancing all of the above against user safety, aesthetics, and experience made this project much more complex than a typical trail assignment.



*"Studies throughout North America show that trails are the most desired recreational amenity. This new Legacy Trail is a critical link between Canmore and Banff and is a shining example of how various levels of government and the trail community can work in partnership to achieve great things. Today, everybody is a winner."*

*– Peter Barr, past president of the Alberta TrailNet Society, at the grand opening*





**Left:** Screening local topsoil on site

**Right:** Darin Langhorst, McElhanney's project manager, at the trailhead in Canmore

### 3. Social and/or Economic Benefits

The Rocky Mountain Legacy Trail has become a “bucket list” activity for many of the region’s visitors, and therefore demands new or increased services in the area. When tourists use the trail, many require bike rentals and additional restaurant meals and accommodation than they would need if using a car between Canmore and Banff National Park. Several users have noted that riding the trail was the highlight of their trip to the Canadian Rockies. Those happy campers’ sentiments will travel back home and encourage more visitors to come and experience the trail as well. During construction, a couple on rental bikes told McElhanney’s staff that they had rediscovered the joy of cycling and were planning on buying bikes when they returned home. This illustrates how recreational infrastructure can influence and motivate people of all physical levels toward an active lifestyle back home.

An interesting way to look at the added-value economics of trail development is to consider the increased health benefits of trail users within the context of reduced health care costs. *In A Cost-Benefit Analysis of Physical Activity Using Bike/Pedestrian Trails (Wang, G. et al., 2004)*, it was estimated that for each dollar spent on building, maintaining, and using trails, nearly three dollars were realized in reduced health care costs due to improvements in trail users’ health.

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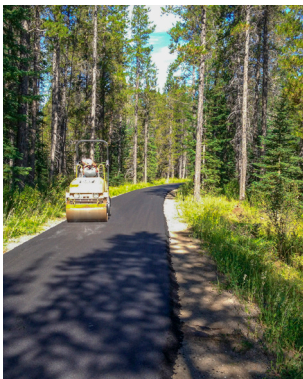
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*Top:* ROAM bus in Canmore



*Bottom:* Fingerprinting the trail into the forest with minimal disturbance

## 4. Environmental Benefits

The trail promotes many environmental and socially beneficial modes of transportation. It is used for commuting, recreation, and athletic training, and provides immediate access to parks and wilderness areas – all without the need for a car. **According to Transport Canada’s urban transportation emissions calculator, each vehicle round trip that is eliminated between Canmore and Banff prevents 12.6kg of greenhouse gas pollution.**

As a local firm with employees living in the area, McElhanney staff had a deep understanding of the Bow Valley, and required less commuting time to the site. In fact, many site reviews were completed by bike.

The designs created minimal disturbance to the environment and landscape. Sustainable project features included:

- Maintaining existing terrain wherever possible to avoid disturbance,
- Keeping tree or foliage clearing to a minimum,
- Using natural openings to provide trail users with spectacular views of the Rocky Mountains,
- Recycled asphalt millings were used for constructing the trail base,
- Screening and reusing topsoil on-site, and
- Using excess topsoil for local flood rehabilitation work.

A bus stop for Canmore’s ROAM intercommunity transit system was also incorporated into the design. Buses are equipped with bike racks, providing trail users with an opportunity to use public transit instead of relying on cars. The integration of the Rocky Mountain Legacy Trail into the municipal trail network and transit system provides environmental benefit by giving residents and tourists a variety of travel options between Canmore and Banff.



*"[This project is] a clear signal to Albertans that we are continuing to invest in infrastructure, road safety and tourism. This trail will provide cyclists, hikers and other recreational users with a safe off-highway path, making the Trans-Canada Highway safer for both individual motorists and commercial users."*

– Ric McIver, Alberta's Minister of Transportation



*Left:* Government representatives including John Borrowman, Mayor of Canmore, and Ric McIver, Alberta's Minister of Transportation

*“creating a sustainable gift for future generations”*

– Trans Canada Trail Foundation mission statement





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## 5. Meeting Client's Needs

The Bow Corridor Regional Mobility Partnership was formed to address a diverse group of objectives related to the needs of Canmore and Banff. The two communities are very closely connected, with commuters and recreational users regularly travelling between the neighboring towns. However, with the exception of two rugged, isolated trails –recommended only for very experienced cyclists – the only option for land-based travel was the busy Trans-Canada Highway. A secondary route was needed to safely accommodate non-motorized modes of transportation such as walking, running, cycling, rollerblading, and roller skiing.

Although not directly involved in design or construction, the Alberta TrailNet Society and the Trans Canada Trail Foundation were also important stakeholders in the project. Combining the existing 22.3km Banff Legacy Trail with the Rocky Mountain Legacy Trail closed a significant gap between Canmore and Banff National Park and, eliminating a missing link in the Trans Canada Trail.

The project was completed on time and on budget during a tumultuous summer following extreme flooding in Alberta in 2013. At the grand opening, municipal, provincial, and federal representatives showcased the Legacy Trail as a shining example of Alberta's resiliency to rebuild the region. Accolades from stakeholders have been many but the real proof of the overwhelming success is in the usership statistics for the trail itself, with more than 267,000 trips recorded since its opening; that's over a quarter of a million smiling faces tell the story!





*"Completing the Rocky Mountain Legacy Trail will help us welcome even more Albertans and visitors to enjoy these breathtaking landscapes. Whether it's used for cycling, running, hiking or roller skiing, this scenic route is set to become one of the most popular trails in the Rockies—if not our entire province."*

*– Dr. Richard Starke, Alberta's Minister of Tourism, Parks and Recreation, at the grand opening*



*"We couldn't be more pleased seeing this long-term dream of the Legacy Trail extension become a reality... We can accomplish a lot when we have local groups and our three levels of government working in partnership."*

*– John Borrowman, Mayor of Canmore, at the grand opening*

