

# **Innovations in Walking & Biking in Burlington:**

**Inspiration from the University-and-Hospital  
Town of Erlangen, Germany**

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**The following topics will be covered  
to encourage you to think outside  
the box for Burlington:**

1. History of Erlangen, Germany
2. Twenty-five built environment innovations
3. How to apply these innovations to Burlington  
– beyond AASHTO and NACTO

# History of Erlangen, Germany



Erlangen, Germany, is a 600 year old city with a hospital and university. The population is approximately 100,000 with about 20,000 university students (20% university students).

Burlington, Vermont is about 250 years old and has a hospital and universities. The population is approximately 40,000 with about 15,000 university students (37% university students).

It can be cold and snowy in both cities.

# History of Erlangen, Germany



Dietmar Hahlweg, Ph.D. was a Fulbright scholar who studied at the University of Pittsburgh, followed the work of Jane Jacobs and Lewis Mumford, was elected Mayor of Erlangen in 1972, and served until 1996. He made a walk, bike, and bus network in the university and the hospital town, making travel easiest by walking, biking, or riding the bus.

# History of Erlangen, Germany



His slogan was “Green in Erlangen” and he was a pioneer in creating an ecological city. Instead of focusing on the car, he instituted city-wide traffic calming. Rather than pave everywhere with asphalt, he put pavers in sand to increase percolation. The walkers, bicyclists, and buses then traveled over these pavers.

# History of Erlangen, Germany



With increased percolation, he was able to green effectively because the trees could grow to full maturity in the large tree pits with naturally moist soil. Erlangen, Germany was a mecca in the 1970's with people traveling there from the U.S. to see what he did and how he did it.

# History of Erlangen, Germany



Unlike the 16<sup>th</sup> Street Mall in Denver, Colorado, that allows only pedestrians and buses, the Dr. Hahlweg instituted policies for roads on which buses, bicyclists, and pedestrians could travel.

# History of Erlangen, Germany



He created wide cycle tracks so bicyclists could travel side-by-side and not be in traffic. Instead of always putting trees in the sidewalk, he put them between the parallel parked cars. This freed up space for the cycle track while still greening the city.

# History of Erlangen, Germany



Rather than have pedestrians and bicyclists go around buildings, he provided ways for them to travel through buildings.

# History of Erlangen, Germany



Pedestrians in cities can travel through parks but often all bicyclists are made to go around the park. Dr. Hahlweg provided direct corridors for pedestrians and bicyclists through the parks, providing attractive travel routes throughout the city that included passage through parks.

# History of Erlangen, Germany



Woonerfs (streets closed to through traffic) were built, again with paver stones in sand, that only allowed residential parking and extremely slow traffic so children could play in the street.

# History of Erlangen, Germany



The main travel thoroughfares were not for vehicles but for people walking, biking, and also skating.

# History of Erlangen, Germany



Signs were provided to welcome bicyclists and pedestrians and separate spaces were provided for each. In the U.S., the bridge would have provided a space for the pedestrians and the bicyclists would be expected to travel with the traffic, including with the buses.

# History of Erlangen, Germany



Priority was given to bus designated spaces but innovations were also made for bikes and pedestrians. Cycle tracks were created on one sidewalk with the other side for pedestrians. Some roads were made one-way for cars and the other lane was made into a cycle track.

# History of Erlangen, Germany



Attractive covered bike parking was provided and ample space for bike parking existed at the entrance to the hospital. This prominent bike parking at the hospital spoke volumes about the emphasis on health.

# History of Erlangen, Germany



A downtown shopping plaza was created for pedestrians. Bicyclists were allowed to be there but encouraged to walk their bikes.

# History of Erlangen, Germany



A parallel route to the pedestrian plaza was provided for bicyclists so they could travel nearby and in the same direction as the pedestrian plaza, arriving and departing at the same end points.

# History of Erlangen, Germany



Smaller details were also provided so the pedestrian had a way to walk up or down stairs and a bicyclist had a parallel way to ride to or from the bike parking.

# History of Erlangen, Germany



In the end, Dr Hahlweg created a network of 175 kilometers of bicycle facilities. Between 1974 and 1980, the use of cars in Erlangen had been reduced by 35% and the use of bicycles had increased by 26%.

# History of Erlangen, Germany



The Mayor said that, probably as a result of not relying on the car in Erlangen, there were fewer heart attacks in Erlangen compared with nearby Nuremberg.

# Twenty-five built environment innovations

Pedestrians are safer if bicyclists have their own space and there are fewer cars (due to more bicyclists).

Therefore, the focus of this section will be on bicycle facility innovations.

1. Intersections
2. Cycle tracks
3. Bike parking
4. Other bicycle considerations

# Intersections

**Bicyclists can be given a tent over the cycle track at the intersection for shade. Fewer bicyclists then run red lights.**

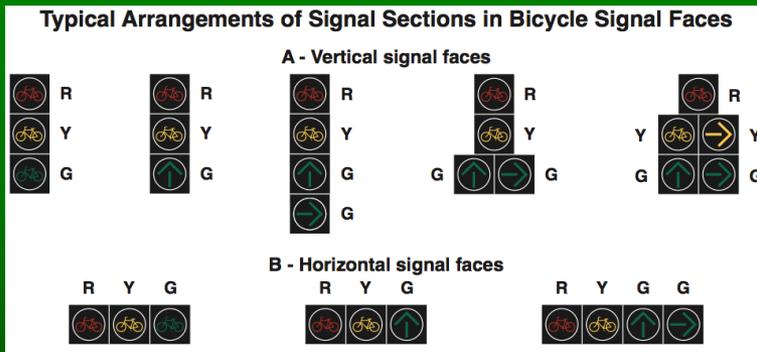


**Bicyclists and e-bike riders waiting at an intersection without a sunshield (canopy) were 1.37 times more likely to run a red light compared to intersections with sunshields, even when cloudy.**

Zhang, Y, Wu, C. (2013) The effects of sunshields on red light running behavior of cyclists and electric bike riders. *Accident Analysis and Prevention*. 52: 210-218.

# Intersections

Bicyclists can be given signals with red and green countdown numbers. Instead of the U.S. yellow, bicyclists, pedestrians, and drivers are given more information and bicyclists are ready to pedal.



# Intersections

Bicyclists can be given priority green lights at intersections if they bicycle at a set speed on the green wave.



# Cycle Tracks

Cycle tracks can float over water, as in the snake in Copenhagen or the proposed floating cycle route over the River Thames.



# Cycle Tracks

Cycle tracks can travel over or under Jpods (a unique mass transportation system).



# Cycle Tracks

A bicycle super highway can incorporate solar panels that provide energy to nearby houses. Perhaps in Vermont the solar panels could be overhead instead and provide protection from rain and snow while also providing energy?



# Cycle Tracks

Cycle tracks can co-exist with mass transit, as in Sydney with railings for leaning or stop lights to tell bicyclists to wait.



# Cycle Tracks

Cycle tracks can also, as in Copenhagen, have green LED lights that say when to ride in and not ride in the bus waiting area.



Photo: City of Copenhagen/Rambøll

# Cycle Tracks

Cycle tracks can have solar lighting. The poles can also have outlets for recharging, similar to English phone booths or benches being used for recharging.



<http://web.media.mit.edu/~nanzhao/webfiles/bench/bench.html>

# Cycle Tracks

Cycle tracks can, instead of plastic delineator posts, have trees and bushes between the cycle track and the road.



# Cycle Tracks

Cycle tracks can be wide enough to be “Social Cycle Tracks” or “Date Night” cycle tracks.



<http://www.streetsblog.org/2006/11/06/cyclists-and-pedestrians-fighting-over-the-scrap/>

Routes should be wide enough to foster socializing, resulting in surveillance of neighbors and creating citizen responders.

# Cycle Tracks

Cycle tracks can guide bicyclists with painted symbols that indicate nearby public bathrooms or eateries.



# Cycle Tracks

Cycle tracks can be evacuation routes, especially because roads become traffic jammed, cars run out of gas, and fewer people now own cars.



# Bicycle Parking

To reduce space taken up outdoors for parking, bicycles can be parked in each office cubicle and taken into the grocery store.



# Bicycle Parking

Bicycles can have their own room in the home with an entrance and exit directly to the outside.



# Bicycle Parking

Bicycles can be parked level with the ground, and not up on a rack, especially as not all bicyclists can lift all bikes.



# Bicycle Parking

Public bicycle parking can be aesthetic, as in the Bicycle Apple in the Netherlands and the parking by the train station in Utrecht, tucked discreetly under the steps.



# Other Bicycle Considerations

Mobile bike repair can be provided, as in Copenhagen with the “Bike Doctor” in a van.



# Other Bicycle Considerations

Bikes can be allowed inside buses, lessening the “Loser Cruiser” bus stigma by adding the prestige of the bike.



<http://www.valleyrapid.org/2011/08/bikes-on-buses/>

# Other Bicycle Considerations

Drivers can be sent a ticket for driving in a bike lane or through a red light, as proven with video cameras.



# Other Bicycle Considerations

Bicycle routes, including cycle tracks, can be a response to Climate Change and be built with permeable surfaces to lessen storm runoff.



[http://en.wikipedia.org/wiki/Permeable\\_paving](http://en.wikipedia.org/wiki/Permeable_paving)

# Other Bicycle Considerations

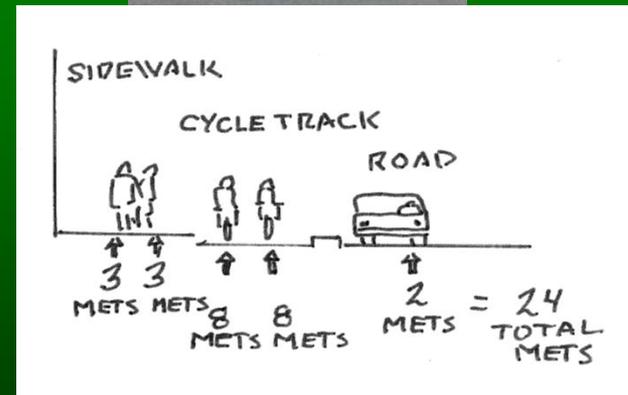
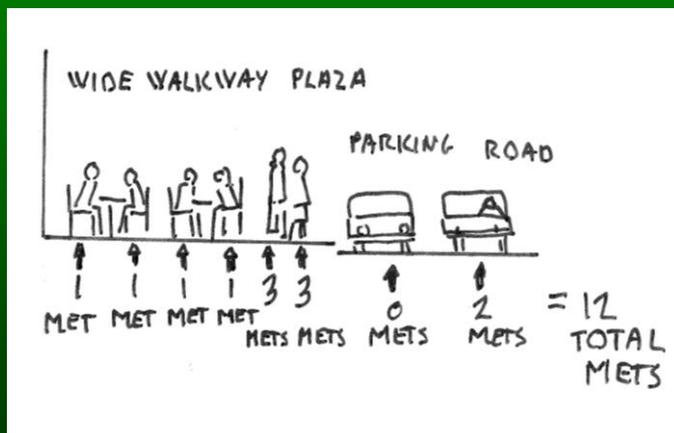
Benches beside the cycle tracks can retain water, perhaps including water from downspouts, to water plants that are between the cycle track and the road.



<http://archive.constantcontact.com/fs156/1101658999868/archive/1115565596484.html>

# Other Bicycle Considerations

The “MET Route” can be the new measure to assess the health of a community design, making the case for more inclusion of the bike.



# Other Bicycle Considerations

The new “public participation process” can involve different groups, including children, parents, and seniors who present plans for the bicycle that serve their abilities.

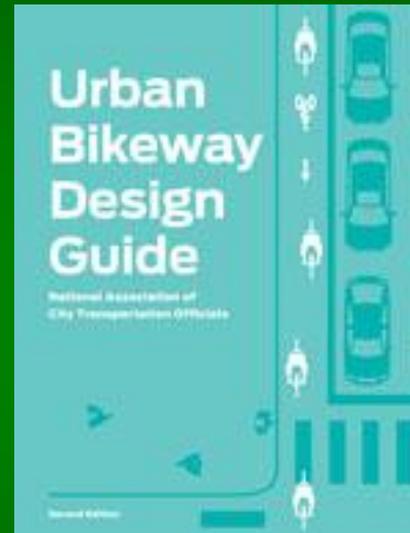
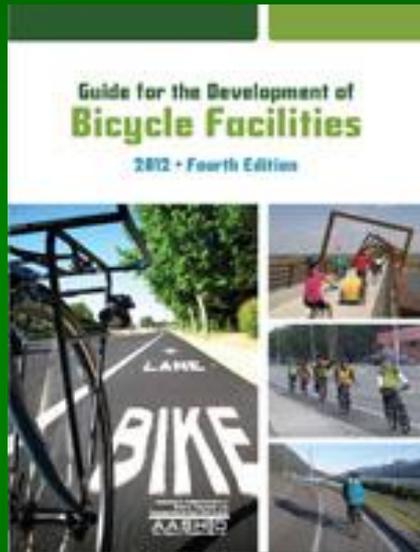


# Other Bicycle Considerations

Architectural renderings can include more than sun, trees, flowers, wide sidewalks, buildings, parks, parking, cars, and pedestrians. Architectural renderings could also include bicyclists of all ages and abilities.



# How to apply these innovations to Burlington – beyond AASHTO and NACTO



The American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities does not support cycle tracks. The National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide does support cycle tracks but Burlington can be even more progressive.

## A first consideration is connections:



You want to have as many walkers and bicyclists on your innovative connections as possible. Therefore, connect key places where people “are” to key places people want to “go.” Could you connect a shared use path to an ice cream store that also has a public bathroom?

## A second consideration is safety:



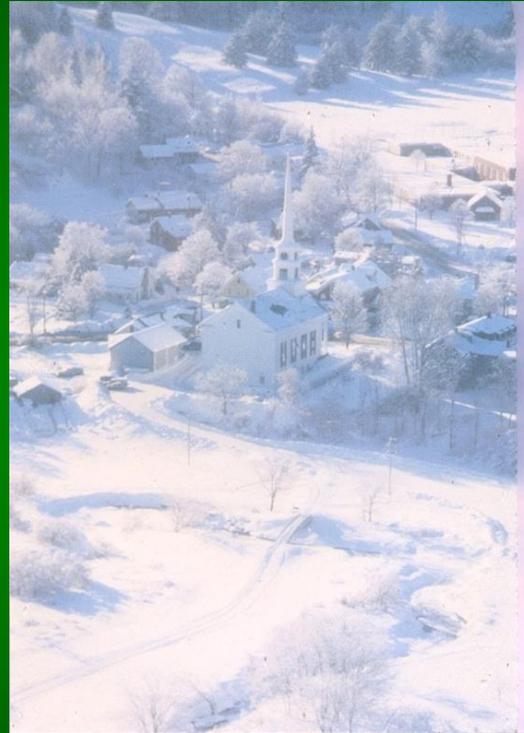
Are there places to walk and bike that are considerably less safe, especially for children and people who currently aren't biking. Could a new signal at an intersection improve safety at the intersection? Could you install a coffee shop so there are more eyes on the street?

## A third consideration is social draw:



Could you build in “Social Bridges” so people want to be on your walk and bike facilities because the design of the environment fosters conversations between strangers?

**A fourth consideration is aesthetics:**



**Could you incorporate aesthetics on your new walk and bike routes, especially as Vermont has so many classic elements to play up?**

## **A fifth consideration is projected increase in use of the walk and bike facility:**



**Could you incorporate something like a zipper barrier on a highway so you could expand the facilities once demand increases? Montreal has two-way cycle tracks wide enough only for one bicyclist each way. It would be expensive to take out the concrete barrier but perhaps that one two-way cycle could be made one-way?**

# This talk presented innovations in walking and biking in Burlington:

1. History of Erlangen, Germany
2. Twenty-five built environment innovations
3. How to apply these innovations to Burlington – beyond AASHTO and NACTO

**Thank you!**

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