

7th Street SW Cycle Track: Calgary's First Centre City Cycle Track

Nominated for: The City of Calgary

Category: Sustainable Urban Transportation Award

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ABSTRACT: The City of Calgary opened its first physically separated cycle track in the Centre City in July 2013 along 7th Street SW between 1st Avenue and 8th Avenue. This cycle track connects many businesses, residences and office towers in west downtown to the popular Bow River Pathway, Peace Bridge and the LRT station along 7th Avenue SW.

With the approval of the Calgary Transportation Plan (CTP) in 2009, a shift from the “status quo” approach to city building was witnessed as there was an increasing focus on providing transportation choices, especially those that promote sustainability, health and the environment. One way The City of Calgary is achieving the goals of this plan is through the Cycling Strategy, which was approved by Council on July 2011. The 7th Street SW cycle track project accomplished a major milestone towards building the proposed ‘Centre City Cycle Track Network’ as identified in the ‘Cycling Strategy’.

The City reviewed different design options with a number of internal and external stakeholders before proceeding with the two-way cycle track on 7th Street SW. As this was the first cycle track in the Centre City, the project team faced an enormous challenge right from the inception of this project which continues to date. However, with proper planning and design, timely consultation with stakeholders, advocacy groups & community associations the project team was able to demonstrate the value of this sustainable initiative. The considerable constraints including tight timelines, fierce opposition by business owners for potential loss of parking, access/safety issues, operational/winter maintenance concerns etc. were overcome by providing design options, public engagement, timely project delivery, innovative educational and promotional tools and support from the City Council. The post opening increase in the number of cyclists speaks to the evident popularity of this infrastructure.

A number of innovations were witnessed in this project to address time constraints, operational issues, parking issues, safety of vulnerable road users, accessibility and beautification of the corridor. This project demonstrated the importance of timely engagement of the stakeholders. Buy-in from users was evident as the number of bicyclists almost quadrupled within a few months after opening. This project provided a test bed to demonstrate the opportunities of the cycle track and challenges associated with the winter maintenance that can be applied to other jurisdictions in Canada. It is an inspiration to the future cycle track network as it provided a successful example of how cycle tracks can be implemented in constrained downtown environment. In addition to the dialogue with the stakeholders, a pro-active approach to the media was one of the key factors behind the success of this cycle track.

This submission provides further details of the 7th Street SW Cycle Track Project, for the nomination in the Sustainable Urban Transportation Award category.

INTRODUCTION – How vision of cycle track on 7th Street SW came to reality

(All related figures are included in Appendix 1)

Calgary is one of the fastest growing cities in Canada with population over a million. Calgary's downtown remains the most important travel destination in the city with approximately 20% of all Calgary jobs located here. In 2013, transit (50.1%), single occupant vehicles (32.1%), walking (8.5%), car pooling (6.9%) and biking (2.5%) made up the modal split for the AM commute to the downtown. The Calgary Transportation Plan (CTP) identifies walking, cycling and transit as the most sustainable choices for travel because of their minimal energy consumption, smaller amount of infrastructure requirement and affordability (Figure 1).

The City of Calgary commissioned a telephone survey in September 2010 to hear from public about their cycling behavior and level of interest in cycling. The survey results indicated that 2% of cyclists are fearless and are willing to ride on any street, 20% of them are confident who are moderately comfortable in riding in mixed traffic, 51% of them are interested but not comfortable sharing the road with other modes and 28% are reluctant and will not cycle regardless of the facility type. The City of Calgary adopted the "Cycling Strategy" in 2011 that targeted to address the needs of middle 71% of the cyclists (Figure 2). The Cycling Strategy also set a goal of constructing 30 lane kilometers of cycle track by 2020.

Despite the City engineers and planners' recommendation to provide a bicycle facility on 7th Street SW as early as 2009, the conceptual design for the cycle track did not begin until fall 2012. A conceptual design, featuring a one-way couplet of bicycle lanes on 6th Street SW (Northbound) and 7th Street SW (Southbound), was developed by June 2012. After the on-site demonstration of how the bike lanes would perform, to the area's Council members and members of bicycle advocacy groups, political will grew in favor of a higher quality bicycle facility. Between August and November 2012, City staff developed a second set of conceptual designs: a two-way cycle track on 7th Street SW and one way couplet of cycle tracks on 6th and 7th Street SW. Administration presented the two options to the internal stakeholders (Transit, Roads, Parks, Fire, EMS, Land Use Planning, Parking Authority, etc) and the Centre City Bicycle Projects Committee for their input. After a rigorous evaluation against various criteria such as network connectivity, impacts to parking, vehicular traffic, businesses and residents, transit, safety, construction cost, operation and maintenance, etc., the two-way cycle track on 7th Street SW between 1st Avenue and 8th Avenue was selected as preferred option (Figure 3).

7th Street SW plays a vital role in the downtown street network. It is a "destination" street adjacent to high density residential buildings, destination restaurants and the business district. It also crosses multi-lane major arterials (4th Avenue, 5th Avenue and 6th Avenue) and the C-Train LRT line (7th Avenue). One of the major considerations during the design of cycle track along 7th Street SW was to avoid impacting the capacity of these major arterials due to the high volume of traffic they experience.

FUNCTIONAL AND DETAILED DESIGN

The cycle track was designed by City engineers and peer review of the design was carried out by the Boulevard Transportation Group. Transportation Association of Canada (TAC), National

Association of City Transportation Officials (NACTO) guidelines and best practices around the world were followed for the design of the cycle track.

Before the cycle track was constructed, 7th Street SW was a two-way street from 1st Avenue to 4th Avenue and a one-way southbound street from 4th Avenue to 8th Avenue. To accommodate a two-way cycle track, the complete stretch of 7th Street SW was converted into a one-way southbound street to reduce conflicts and improve safety. This change also required converting 1st Avenue between 6th Street SW and 7th Street SW into a one-way westbound street.

A few innovative ideas were brought forward during the functional design stage. These include:

1. Left side alignment along 7th Street SW was chosen as opposed to the right side to minimize conflicts with major east-west arterials (Figure 4). As the 4th Avenue SW and 6th Avenue SW are one-way westbound, they wouldn't conflict with the cycle track and potential conflicts with the eastbound 5th Avenue could be mitigated by providing bicycle only phase in the traffic signal to get the cyclists safely through the intersection,
2. On street parking loss was minimized by converting parallel parking to angled parking on 1st Avenue SW and creating off peak parking on 7th Street SW in front of businesses where it is needed the most in weekends and evenings,
3. Approximately 80 bike parking stalls were installed along the sidewalks placed strategically in front of local businesses without impacting the pedestrian experience (Figure 5). This initiative was particularly appreciated by the businesses as it is expected to promote their businesses by inviting more customers,
4. A holistic review of 7th Street SW was completed to identify efficiencies in coordinating numerous construction activities which were planned for the near future. This project provided several opportunities for improvements such as pavement rehabilitation, street lighting improvements, upgrading signal infrastructure and sidewalk repair which would otherwise cost a lot more if done independently.

The City's Jay-walking by-law and Exclusive Bicycle Lane bylaw were amended to accommodate the needs of pedestrians and cyclists and to ensure that any vehicle other than a bicycle or a vehicle approved by Traffic Engineer cannot operate, stop or park in an exclusive bicycle lane. The requirements of Calgary Fire Department (CFD), Access Calgary, and Calgary Transit were met after a number of discussions resulting in some changes to transit routes.

With 7th Street SW a one-way southbound street, signals facing northbound cyclist were needed. Separate signal heads for southbound cyclist were also installed to provide consistency for cyclist in both directions (Figure 6). Design guidelines were developed based on best practices, traffic engineering principles and discussions with other Canadian municipalities. Majority of the signal infrastructure was replaced because of its age or inability to support bike signals. Black backboards were used for bike signals to differentiate them from the conventional yellow backboards used for motorist signals. To be consistent with the downtown standard, 200 mm lens with bike symbols were used.

Careful consideration was given when preparing the signage design. The approach was to avoid signing "Rules of the road" and cover those aspects in the education campaign. This approach resulted in avoiding sign pollution on 7th Street SW. When required, smaller signs were used to

target cyclists to avoid confusion from signs intended for motorists. Extra steps were taken to ensure providing a safe environment for all 7th Street SW users. This included providing a separate signal phase for motorists turning left onto 5th Avenue to avoid conflict with cyclists, installing “No left turns on red” and “No right turn except cyclists” signs for motorists on 4th Avenue and 6th Avenue, and “yield to cyclist” signs for vehicles turning left onto 3rd Avenue, 7th Avenue and 8th Avenue.

Roadway markings such as guidelines, bike symbol and green colour epoxy were used to highlight the presence of cyclists at intersections, alley crossings and entrance to underground parkades (Figure 7). A lot of thought was given to defining different levels of treatment depending upon the severity of the conflict. Factors such as roadway classification, traffic volume, traffic control and line of sight were considered when deciding the level of treatment for each intersection.

A large focus was put on providing treatments at intersections that would allow cyclist to transition in and out of the cycle track. Treatments such as a bike box, turn bays and loops were considered. Intersections were reviewed based on factors such as traffic volumes, traffic control, type of side street bicycle facility and safety when deciding if cyclist transition is warranted, and if so, using which treatment. With low traffic volumes (<5,000 veh/day) on 7th Street SW at 1st Avenue, 2nd Avenue and 3rd Avenue, traffic control was considered sufficient for cyclist to safely turn onto side streets. Transitioning on 4th Avenue, 5th Avenue and 6th Avenue was considered impractical and not provided because of high traffic volumes (>20,000 veh/day) and lack of connecting bicycle facilities on these Avenues. These intersections will be revisited at a later stage as more connecting cycle tracks are built in the Centre City. Transition onto 7th Avenue was not permitted because it is an exclusive LRT line. A bike box was installed on the westbound lane of 8th Avenue for the southbound right turning cyclist. A left turn lane for cyclist only was installed in the eastbound lane of 8th Avenue to accommodate cyclist entering northbound into the cycle track.

Careful consideration of all these design details is critical to function of the facility. Specific examples of Social, Economic and Environmental components are implied but this may be the way of explicitly identifying that the benefits in these areas are directly dependant on good design that will make the facility easy and desirable to use.

COMMUNICATION AND ENGAGEMENT

Communication and engagement was the most challenging aspect of the project as there were equally passionate stakeholders for and against the cycle track. There was a lot of interest from Calgarians as this was the first cycle track in the Centre City. Area Councillors, advocacy groups, cyclists and community associations were among strong supporters of the project where as some business owners along the route were sceptical about positive changes that the cycle track could create for them.

Several one-on-one meetings were held with key stakeholders, business owners and property managers to discuss and mitigate any concerns they had through minor design modifications. Two public open houses were also held to inform citizens about the project. A dedicated

communication lead and a designated media contact were assigned to the project to communicate with citizens and the media. Maintaining basic access to the area residents during and after the construction was explicitly discussed with the businesses and property managers as part of the communications and engagement. A number of bus stops were relocated on citizens' request and off peak on street parking stalls were created along few blocks adjacent to the businesses that would need the most in the evenings and weekends.

Regular updates including fact sheets during the design and construction stages were sent via e-mail and media releases to keep everyone informed. This pro-active approach helped in keeping the stakeholders and media well informed about the project and thus created a positive environment.

CONSTRUCTION

With the detailed design starting in February, 2013 and construction completion date set for end of June, 2013, several construction activities needed to be executed simultaneously to meet an aggressive deadline. A few innovative actions were undertaken at the construction stage. These include:

1. Continuation of the same project manager throughout the project: The same project manager from the planning stage was requested to continue until the completion of the project. This helped in minimizing loss of time due to the change in project team.
2. Procurement: Instead of going through regular procurement process, existing contracts with pre-qualified contractors were renewed for construction and signal work. This action saved a few months from the tight schedule.
3. Issue management: Regular coordination and issue management meetings with Transportation Planning and Roads directors were held to make critical decisions on time. This action helped to maximize effort and avoid stoppage time.

Underground work for the bike signals started in March, 2013 well before the start of the concrete work. Due to the age of the existing road and complications in the proximity of LRT infrastructure, the signal contractor faced several challenges while carrying out the underground work. Unexpected delays in signal work caused scheduling conflicts with the roadwork contractor. Roadway closures were avoided as much as possible. Weekly updates and in some cases daily updates were sent out to local businesses and residents to keep them informed of the progress.

Grand opening of the cycle track was planned for the end of June, 2013. However, approximately a week before the planned opening date, a disaster hit Calgary. Several communities along Bow and Elbow Rivers were flooded and City's focus shifted towards recovery efforts. Despite the challenges, the City of Calgary didn't want to lose the opportunity of opening of the cycle track in the summer as many people were eagerly waiting to ride on this first ever physically separated cycle track in the Centre City. After enormous amount of coordination by the City staff, the cycle track was opened to public on July 9, 2013.

MAINTENANCE

Calgary experiences an average of 120cm of snow annually. Effective and timely clearing of snow is vital to making cycling a viable option year round. The project team was aware that snow cleared from sidewalks and travel lanes would end up in the cycle track. A few innovative actions taken at this stage include:

1. The project team met with property managers and business owners along the 7th Street SW cycle track to discuss the snow clearing protocols and set expectations. This helped a lot to get the buy in from the directly impacted stakeholders.
2. A private contractor was hired for snow clearing to ensure a high standard was maintained and the cycle track was available year round. The contractor was asked to document activities and issues encountered during the first winter and pass the information to the City so that this information can be used as lessons learned. Now the City crews clear the snow themselves as it is more cost-effective. This could be a great resource for other Cities in Canada with similar climate conditions as snow clearance continues to be the major concern for most cities that are in the process of building cycle tracks. Figure 8 shows an example of the contractor clearing snow on the cycle track.

BEAUTIFICATION/WAY FINDING

One of the concerns from the businesses and residents along the 7th Street SW was about the look of the street after constructing a physically separated cycle track. Planters were placed on the median as part of improving the aesthetics of 7th Street SW. Some of the innovative and sustainable ideas considered at this stage were:

1. After careful consideration, self watering planters were chosen to minimize operation and maintenance costs. The self watering planters have a large reserve at the base that helps minimize the watering requirements for the planters.
2. To get the buy in from the stakeholders, the project team met with property managers along the route to discuss the type of plants they would prefer and what could be done during winter months.
3. Bicycle themed public art was placed on traffic controller boxes along 7th Street SW as part of The City's "Painted Utility Boxes" program.

Pedestrian way-finding signs were recently installed in the downtown after extensive public consultation. The pedestrian wayfinding sign project team was engaged to assist with the design of the bicycle wayfinding signs for consistency purposes. Figure 9 shows typical signal box art and planters that are placed along the median.

EDUCATION AND PROMOTION

In collaboration with the Calgary Police Service, Calgary Downtown Association and Bicycle Advocacy Groups, educational and promotional materials/plans were developed to create awareness about the new facility.

The "Get to know the 7th Street SW Cycle Track" was a how-to guide developed and distributed through several sources to educate everyone on the changes to 7th Street SW and how to use the cycle track. The success of the guide can be determined by the fact that over 1700 guides were

distributed in person and over 500 guides were picked up from brochure holder placed on 7th Street SW (Figure 10). In addition, this extensive education and promotion activity required 140 hours by staff. Special events were planned throughout the year such as “Corporate Bike to Work Day”, “Bike Month” and “Winter Bike to Work Day” to promote cycling.

MONITORING/EVALUATION

A two-year data collection program was developed which included traffic and bicycle counts, sidewalk biking, merchant surveys and pedestrian surveys. Bicycle counts conducted after a month of opening indicated increase in ridership to 1160/day which used to be 270/day in the summer months before the cycle track was built (Figure 11). In the winter months, 320/day was observed in the first year which has now increased to 488/day as of January 2015. A permanent bicycle counter has now been placed along the 7th Street SW cycle track to monitor the usage all year long (<http://7streetsouth.visio-tools.com/>). More than 90% of the cyclists on 7th Street SW used the cycle track and less than 1% used the sidewalk, increasing safety for cyclists and pedestrians. Travel time data for different modes collected in August 2013 indicated that the cycle track brought positive impacts by reducing travel times for both vehicles and bicycles between the project limits. As it is expected that the cycle track will positively impact local business, plans are in place to collect data on the economic effects.

CLOSING REMARKS

The successful implementation of the 7th Street SW Cycle Track has been the result of tireless efforts by Politicians, City staff and the Public. This facility provides a sustainable alternative to existing modes of transportation to the Centre City. It also encourages local trips to businesses and has a potential to be an integral part of a vibrant economy. Needless to say, with the popularity of this affordable mode of transportation, there will likely be substantial increase in bicycle users in coming years that will have positive impacts towards healthy lifestyle in an environmentally friendly way.

This project witnessed a number of innovations during project management, procurement, design, safety improvements at conflict locations, decision making, opportunity based improvements, proactive communication and engagement, education tools, winter maintenance, monitoring & evaluation and fostering great partnership with stakeholders.

Best of all, this project provided a test bed to the ‘Centre City Cycle Track Network’ pilot project that is currently underway. The 7th Street SW cycle track will connect to 3 more corridors in the Centre City to create a basic grid of protected bike lanes. This project helped in getting answers to a number of questions regarding the design, operation, maintenance, safety aspects and the costs associated with the cycle tracks. As many Canadian jurisdictions share similar climate conditions, most of these findings are directly applicable to them as well.

The approach of “Build it and they will come” has been true for motor vehicles and it is true for bicycles as well. The 7th Street SW Cycle Track proved that people are willing to travel a few blocks out of their way to access a safer facility. These types of cycling facilities also encourage people from the young to the old to ride on the street as shown in Figure 12 and Figure 13.

Appendix 1: Photos related to 7th Street SW cycle track, Calgary

Figure 1: The transportation sustainability triangle – adopted by the Calgary Transportation Plan

(Source: *Cycling Strategy, June 2011*)

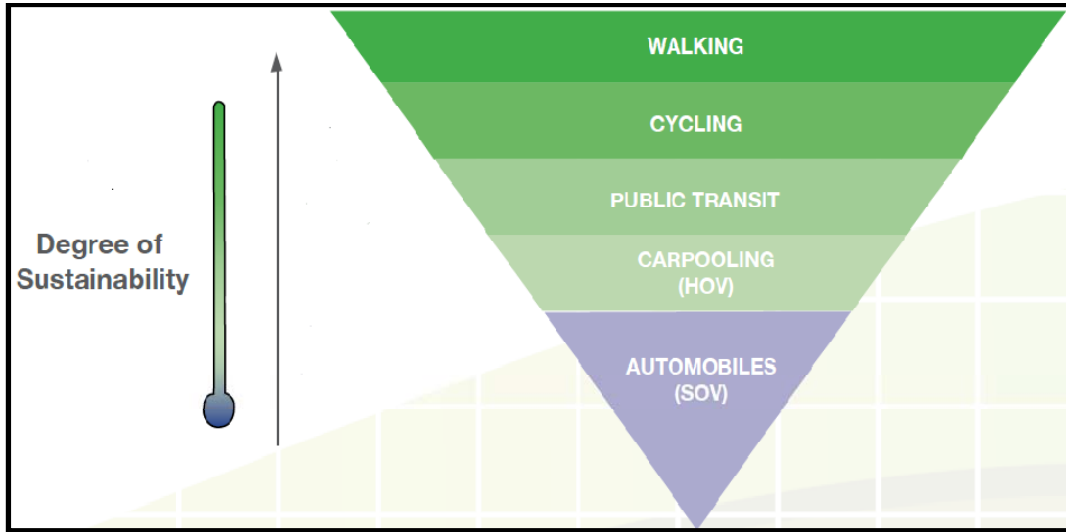


Figure 2: Types of Cyclists in Calgary This project aimed to address the needs of the two groups in red circle (Source: 2010 Random Telephone Survey, City of Calgary).

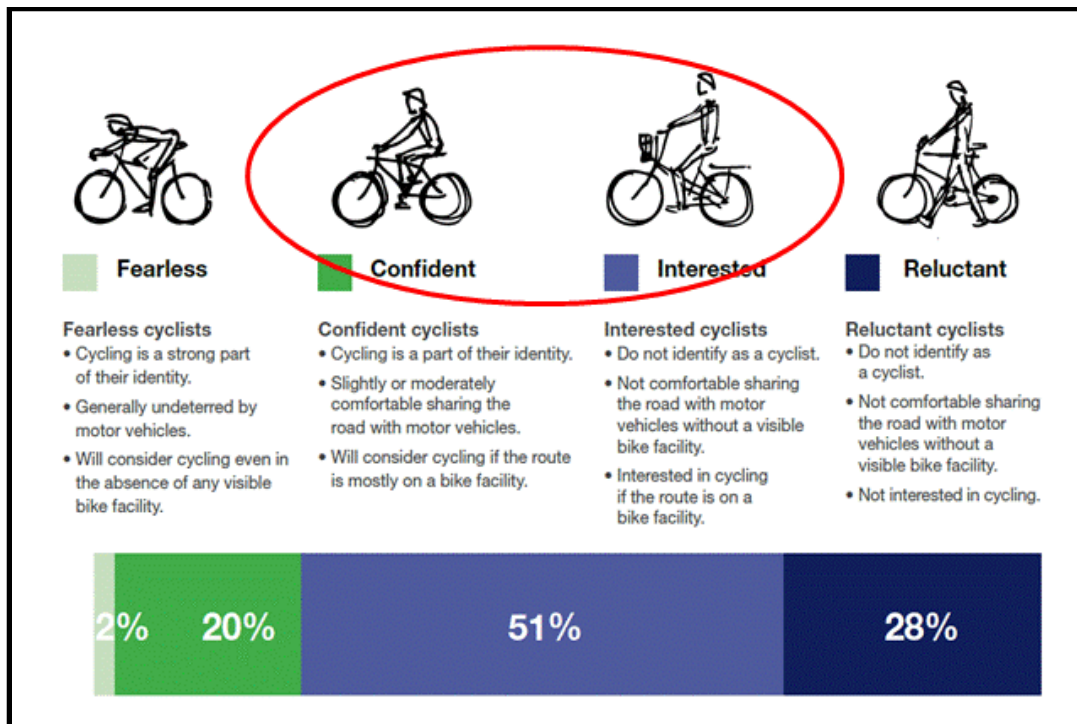


Figure 3: Project location (7 Street SW, Calgary, AB)

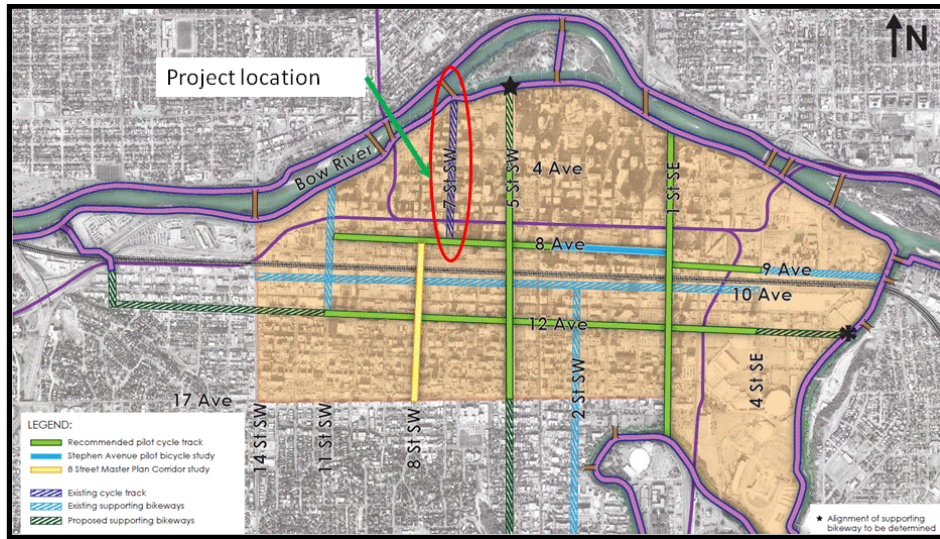


Figure 4: Typical cross-section of 7th Street SW with cycle track (looking southbound)

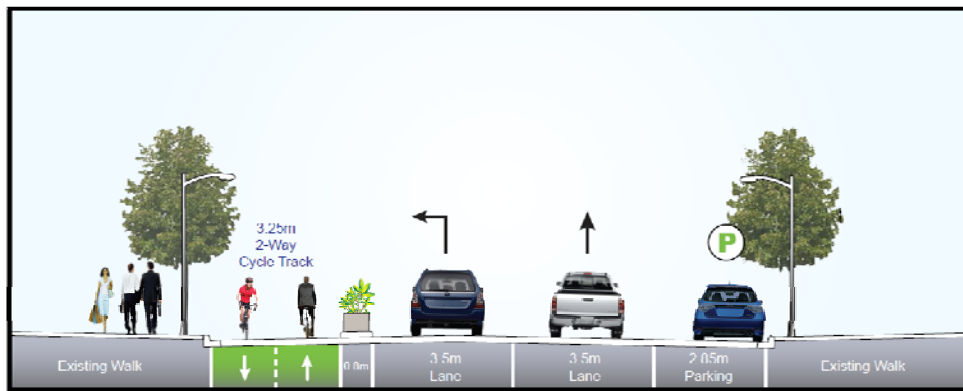


Figure 5: Parking opportunities



Figure 6: Typical bike signal



Figure 7: Typical conflict marking used to enhance safety at intersections



Figure 8: Contractor clearing snow from the 7th Street SW cycle track after heavy snowfall in Dec. 2013



Figure 9: Beautification along the 7th Street SW cycle track



Figure 10: Education campaign: City staff distributing educational materials to cyclists

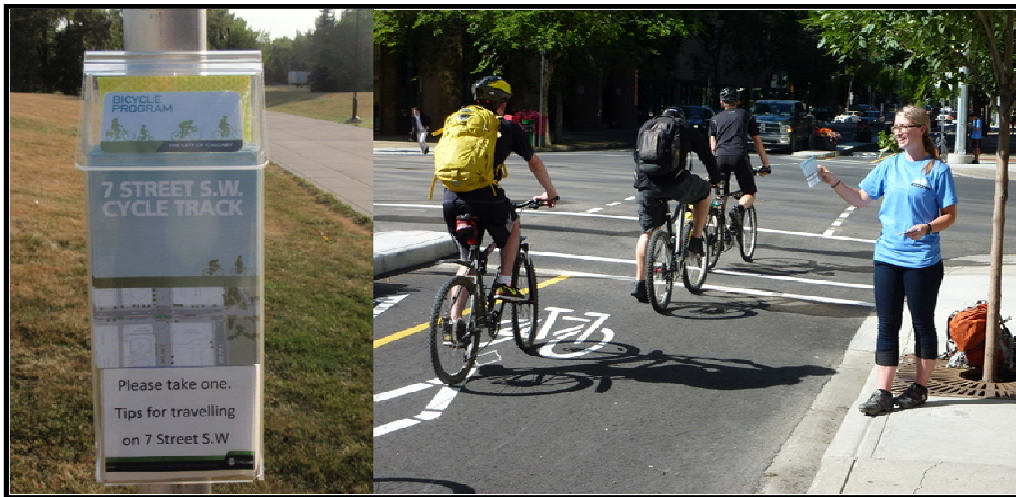


Figure 11: Before-after comparison of number of cyclists on 6th Street SW and 7th Street SW

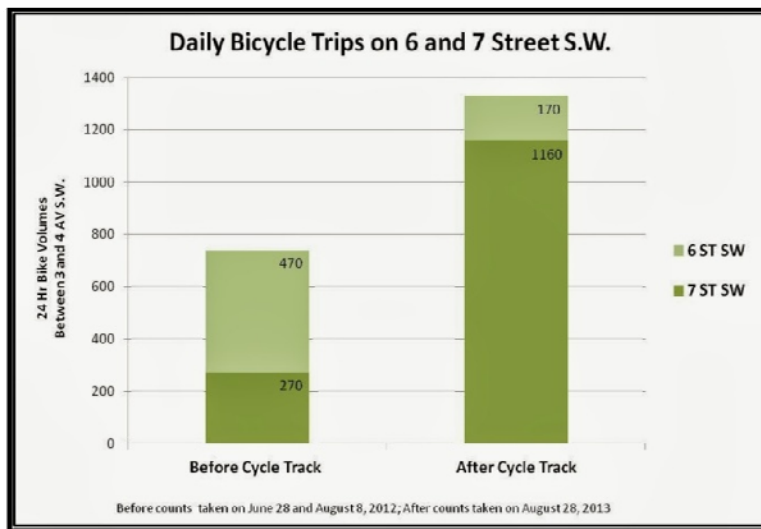


Figure 12: Final product – 7th Street SW cycle track after opening: Southbound



Figure 13: Final product - 7th Street SW cycle track after opening: Northbound

