



MEMORANDUM

7th Avenue Neighborhood Bikeway | August 10, 2023

Purpose

The purpose of this memo is to respond to questions raised at the July 20, 2023 community meeting, as well as other questions sent to the DOTI team via phone and email throughout the duration of the project. We did our best to capture answers to commonly asked questions by category in this document, and encourage you to make your way through the links to other resources online if further clarification is needed.

7th and Williams Intersection

The 7th Avenue Neighborhood Bikeway project team has heard community concerns regarding the 7th and Williams intersection. In response to these concerns from residents, DOTI is currently making the following changes to the intersection:

- Added stop bar and stop sign for southbound travel within median area as well as “Crossing Bikes Do Not Stop” sign. The intent of this additional stop bar and signage is to slow intersection movements and help enhance safety for bicyclists traveling through the intersection eastbound.
- Moved northbound stop sign from landscaped median to be within the asphalt closer to the vehicle approach. We heard from residents that the stop sign was difficult to see in its former location.
- Removed flexposts adjacent to the green painted bike lane and improved turning radius for eastbound bicyclists. The intent of this improvement is to help bicyclists maneuver the corner more easily and reduce the total number of flex posts at the intersection.
- Relocated “Do Not Enter” sign to be more visible.
- Added yield markings within the bike lane that indicate that bicyclists must yield to pedestrians in the crosswalks.
- Relocated the “New Traffic Pattern Ahead” sign to be in advance of High Street for westbound traffic to alert motorists sooner that they should be prepared to turn left or right at the intersection.
- Worked with Google Maps to ensure vehicle routing no longer directs motorists to drive westbound on 7th past the Williams intersection.

DOTI staff appreciate all of the feedback we’ve gotten on this intersection in particular that can help us ensure it is safe and comfortable. We’ll continue to monitor this location as drivers, bicyclists, and pedestrians adapt to these modifications. We’ve also heard reports of drivers frequently disobeying the new “Do Not Enter” signs and will work with our enforcement teams to ticket drivers if this continues.

Safety

Denver is a Vision Zero city and we are taking every action to eliminate fatal and serious bodily injury crashes on our streets. You can see from the three maps on the last page of this [document](#) on our project [website](#) that there have been numerous crashes involving people walking, bicycling, and driving between 2015 and 2019. The improvements on 7th Ave are meant to improve safety and reduce crash risk by utilizing treatments that have been proven to slow vehicle speeds and volumes, reduce crashes, and create a more comfortable environment for our most vulnerable roadway users – people walking and biking – to travel through our city.

Many residents have brought up that only five of the nine bicyclist crashes along the corridor occurred in the neighborhood bikeway segment of the corridor and none of those were at the Williams St and 7th Ave intersection, and have alluded that there was “no safety issue” on the corridor as it was before. The majority of

bicyclist and pedestrian crashes go unreported, meaning the actual number of pedestrian and bicyclist crashes was likely much higher and DOTI's Vision Zero goal maintains that no crashes are acceptable.

In addition, Denver has a citywide goal to increase the number of people bicycling, especially those who do not bicycle today because they don't feel comfortable doing so. These "interested but concerned" riders, are the target audience for the expansion of Denver's bikeway network by 125 miles in 5-years. Neighborhood bikeways such as 7th Ave have been shown to be a "high comfort" bicycle facility where more people feel safe and comfortable riding a bicycle. Research of metro-Denverites indicated that only about 16% of people feel comfortable riding on Denver's streets today; the majority of people (59%) would bicycle, but only if safe, convenient bikeways are provided. Expanding high comfort bicycle infrastructure is intended to serve the 59% of bicyclists. *Here's a great [article](#) describing research that indicates that neighborhood bikeways increase safety and the perception of safety on neighborhood streets.*



While safety is DOTI's most critical goal right now with traffic deaths and serious injuries on the rise, Denverites also helped us craft Denver Moves Everyone's key goals (below). This project is one small step toward achieving DOTI's other important goals. Low income and people of color often rely on biking, walking, and transit to travel throughout our city – enhancing Denver's bikeway network helps these folks more safely and easily access education, jobs, and other essential services. This project also enhances mobility options in south central Denver, and promotes a sustainable future by reducing the number of people driving single occupancy vehicles and emitting toxic greenhouse gases. Getting people out of cars and onto bikes and on foot helps create a sense of community as well – it's much easier to say hello to your neighbors or catch your friend riding their bike the same way as you are for a quick chat than it is in a car. Fewer cars on the street also means that our streets need to be repaved and restriped less frequently, allowing us to stretch taxpayer dollars further. So yes, this project does help us move the needle on our safety goals by reducing vehicle speeds and the likelihood of fatal crashes, but it does much more than that.



Neighborhood Bikeways and Why This Facility Type was Selected

Neighborhood bikeways are low-volume, low-speed streets designed to prioritize people who are biking, walking, and rolling by using design elements such as signage, pavement markings, speed and/or volume reduction features, and crossing improvements. On these streets, bicyclists are encouraged to ride in the center of the travel lane. This helps bicyclists be more visible and the low speeds and volumes of motor vehicles allows this to be done comfortably.



This type of bikeway, with low vehicle traffic volumes and speeds where bicyclists and drivers share the road, are designed to give bicycle travel priority and have been successfully installed and used in cities across the U.S., including, Portland, OR, Minneapolis, MN, Seattle, WA, Boulder, CO and Fort Collins, CO. See DOTI's [website](#) for more information about this new bicycle facility type.

When data was collected on this corridor in 2020 (pre-pandemic), the speeds and volumes of motor vehicles were well above the acceptable levels for a neighborhood bikeway – the absolute maximum threshold for a neighborhood bikeway is 2000 vehicles per day and 20mph, but a well-performing neighborhood bikeway should be well below those thresholds (see more info below). Our counts near Corona St showed 2,050 vehicles per day and 29mph speeds. *The purpose of the flex post curb extensions, traffic circles, and other elements on the street is to lower speeds and volumes to acceptable levels.* Without this intervention, the only other option for this corridor to remain within national standards for bikeway facility selection would be to fully remove all parking on the street and stripe a bike lane on the entire corridor.

Independent Traffic Study

We recently received 7th Avenue traffic data from a resident commissioned study prepared by a firm named IDAX. While it is not best practice to collect data during or directly after the implementation of a project of this nature due to the time it typically takes for traffic patterns to adjust to changed conditions, we can see a few immediate impacts to the traffic volumes on 7th Ave based on the data provided. The data showed that after the diverters and other traffic calming measures were installed, there was roughly 917 Average Daily Traffic (ADT) east of Humboldt and 1,100 ADT east of Downing during the study period of July 13 - July 16. This is a significant decrease from the 2,050 – 3,490 ADT (see table below) that was found during DOTI's traffic study back in February 2020, meaning that one of the project goals of lowering vehicle volumes to acceptable levels for a neighborhood bikeway was successful.

Corridor Average Daily Traffic (ADT) data was collected at the following locations:

TABLE 1.1.1: AVERAGE DAILY TRAFFIC SUMMARY*

Location on E 7th Ave	ADT
West of N Grant St	3,490
West of N Washington St	2,540
West of N Corona St	2,050

*Data collected 2/25/20

DOTI's guidance for vehicle speed and volume thresholds for neighborhood bikeways is shown below in a image from Denver's Bikeway Design Manual. These numbers are the goals for *post-construction* volumes and speeds. While 1,000 – 2,000 ADT is "acceptable," a high-functioning neighborhood bikeway should ideally have volumes below 1,000 ADT.



	Peak Hourly Traffic Volume (veh/hr)*	Average Daily Traffic Volume (ADT)	Measured 95th Percentile Speed (mph)
Preferred	≤ 50	≤ 1,000	≤ 15
Acceptable	51 - 100	1,001 - 2,000	16 - 20
Maximum**	301 - 450	2,001 - 3,000	21 - 25

*Peak hour traffic volumes are especially important on low-volume streets with large peak traffic generators, such as schools.

**These values require a bikeway design variance if applied for more than 300', per Volume 1 of the Manual

Table 4-1: Neighborhood Bikeway Motor Vehicle Thresholds

One critical piece of information that the IDAX study did not collect is vehicle speeds. While the traffic diverters installed at Williams and Pennsylvania did indeed reduce vehicle volumes, they likely did not reduce vehicle speeds along the corridor. The intent of the traffic circles is to reduce speed, not vehicle volumes. While the current signage on the corridor indicates a 25 mph speed limit, this will change very soon with implementation of Denver's new "[20 is Plenty](#)" ordinance.

DOTI is currently working on a study to evaluate all neighborhood bikeway, protected bike lane, and other Vision Zero treatments citywide. We are collecting many types of before and after data to evaluate treatments such as speed cushions, traffic circles, curb extensions, chicanes, and others to determine their effectiveness. In addition to quantitative data such as traffic volume and speed counts, we will be kicking off a qualitative survey asking residents their thoughts on these treatments this fall. We will also use biometric data to inform the study. We're asking residents to ride specific corridors before and after installation to measure their stress levels via their heart rate fluctuations. We'll be posting more information about how to get involved soon on our website and social media platforms.

One result of this study could be rethinking some of these design elements and how and when we use them. We'll gain better insights as to what the right tool is for each unique problem we face on our streets *in Denver* without needing to rely solely on research from other cities. Vertical speed deflection treatments, such as speed cushions, are one element that many Denverites have requested for years. This study will verify both whether these treatments are an effective tool for their intended purposes and ensure that they can also be maintained during snowy months before we begin using them outside of the study corridors.

Project History and Outreach

We've been working in this area since 2020 to gather feedback and install a neighborhood bikeway as part of our broader efforts to create a more connected transportation system through our Community Transportation Networks. This bikeway connection was first identified as part of the Denver Moves: Bicycle plan in 2011 and the Plan update in 2015, and then confirmed through the Blueprint Denver planning process in 2019 as a connection the community wanted us to prioritize. All three of these efforts conducted extensive city-wide public outreach processes. Between 2020 and 2022, we held six virtual community meetings, distributed several public surveys, met with community leaders, presented to Registered Neighborhood Organizations (including CHUN), and held virtual office hours to gather community feedback to determine where this bikeway should be located and what the bikeway should look like. Before we began construction, we distributed flyers in the mail to adjacent households to alert residents of upcoming construction activities. You can find summaries of all of these touch points with the public on our website under the "outreach" tab, [here](#).



The COVID-19 Pandemic forced DOTI's outreach strategy for the Community Transportation Networks to change rapidly to ensure consistent communication with community, so DOTI pivoted to an online-centered engagement plan. While thousands of people use this corridor every day, we recognize that inevitably not all who use the street learned about the project prior to implementation.

Why 7th Ave?

This street was chosen as a critical east/west connection between the Cherry Creek Trail and Cheesman Park, with the goal to eventually extend all the way into the eastern border of Denver. It provides a calm and comfortable route that parallels 6th Ave and 8th Ave's more vehicular-centric thoroughfares. Denver's streets, are the travelways that connect our community and are not intended to benefit one neighborhood or group of people. Street design must include the needs of the broader community with goal of safety for all users. Streets are a public good, which provide benefits to people beyond those who live on a particular street. It is DOTI's responsibility to assess the use of this public good, and ensure that the highest-and-best use is maintained. Blueprint Denver and the Denver's Mobility Plans, including Denver Moves: Bicycles, represent the vision thousands of people have provided for how places and streets should be planned and designed to operate for all Denverites.

Historic Designation/Aesthetics

We have heard from the community that the improvements are not currently the most visually appealing and degrade the historic status of 7th Ave. DOTI's long-term goal is to come back to the streets where we've implemented these improvements and construct them with more permanent and aesthetically pleasing materials as resources are identified. Throughout the design development of this project, we worked with Denver Parks and Recreation and the City Historic Landmarks Committee and confirmed that the treatments installed are not in conflict with 7th Ave's Historic District status. Historic Districts and Parkway designations do not dictate what DOTI can and cannot do in the right-of-way. This includes all striping, vertical elements, and location of parking. DOTI's current practice is to do our best to reduce sign clutter and ensure these streets retain as much of their historic and parkways qualities while still enhancing safety on the roadways.

DOTI's Community Streets Program helps residents permit and install public artwork murals on Denver streets. This program does not have funding for installation of community murals, but residents can seek grant or other fundraising opportunities to pay for the materials needed for these projects. More information on this program can be found [here](#).

Secondly, DOTI will be kicking off a project in Fall 2023 to update our [recommended bikeways map](#), which was last updated in 2015. This update will help DOTI better align planned bikeway facility recommendations with the most recent bikeway design standards and densify the planned network. In addition, this project will develop a small DOTI program aimed at upgrading Denver's existing bikeways. This includes both upgrading substandard "low-comfort" bikeways to higher comfort facilities, as well as making permanent some of the "paint and post" projects like 7th Avenue. You can learn more about this project and sign up for our email list to be notified of ways to get involved [here](#).

Maintenance

DOTI plans to maintain our bikeways the same way it does other streets. We've purchased several mini street sweepers that help our operational crews maintain our protected bike lanes, and are continuously working on identifying process improvements to keep our streets and bikeways clear. Our crews will continue to do their best to make sure these new treatments, including curb extensions and traffic circles, are clean and clear of debris. While DOTI crews go out on a regular rotation to clean each of Denver's streets, we also use 311

requests to help prioritize locations that need a little extra attention in the near-term. We encourage residents to use 311 by dialing in on their phone or using our [website](#) if issues arise.

Traffic Circles

A neighborhood traffic circle creates a circular intersection that reduces traffic speeds by requiring motorists to move cautiously through conflict points. Neighborhood traffic circles are installed at intersections along neighborhood bikeways to help lower speeds on streets designated as neighborhood bikeways. These improvements help make the street safer for people walking and bicycling.

How to use a traffic circle as a motorist, bicyclist, and scooter rider:

1. **Slow down** as you approach the traffic circle.
2. **Yield or stop** to give the right-of-way to anyone who arrived first at the intersection or is already in the intersection.
3. **Arrive at the same time?** If you arrive at the exact same time as another driver, bicyclist, or scooter rider, yield the right-of-way to the person on the immediate right.
4. **Always yield to pedestrians.**

We have also worked with the Denver Fire Department closely to design these traffic circles so that they do not impede emergency response times. Fire trucks are able to partially mount the traffic circles and maneuver around them quickly and efficiently. Parking had to be set back at intersections with traffic circles in order to maintain DFD trucks' ease of operation through the circles. We conducted extensive engineering analysis and field tests to determine the appropriate parking setback and traffic circle sizes that would reduce vehicle speeds while also prioritizing emergency response.

Turning Left



Turning Right



As stated above, the purpose of the traffic circles is to reduce motor vehicle speeds and create a safer and more comfortable environment for bicyclists. When coupled with curb extensions and other traffic calming treatments, we anticipate a reduction in speeding and a safer, calmer 7th Avenue. We've observed that far too many road users do not stop at all way stop controlled intersections and the intent of the roundabouts is to encourage everyone to move slowly and courteously through these intersections.



7th Between Sherman and Grant Patio Closure

The restaurants' outdoor patio permit is set to expire at the end of 2023, at which point they will either need to remove the furniture and the westbound bike lane will become available for use again or they will need to apply for permanent status and redesign the street to better accommodate westbound bicyclist travel. Given this and the construction happening on the south side of 7th, we decided to stripe the bike lane now since it's much cheaper with crews already out doing the work on the rest of the corridor. We're actively working with the businesses and construction crews to see if there's a way to reduce vehicle traffic on this block for the time being and add signage so that bicyclists traveling westbound may use the eastbound bike lane or dismount and use the sidewalk. We understand this condition isn't ideal, but know that it's temporary and we're working to make it function better during this interim phase.

Cost

For the past several years, DOTI has invested approximately \$7 million annually to expand and improve Denver's bikeway network, including utilizing funding from Denver's general budget, grants, and the 2017 Elevate Denver Bond (source: DOTI, 2017-2021). The 7th Ave project was funded via the 2017 voter-approved Elevate Denver Bond to be designed and constructed, which provided \$18 million for the design and construction of more than 35 bikeways across Denver within a 10-year period. Bikeway construction costs vary depending on the bicycle facility type, materials used, and other factors. For neighborhood bikeways specifically, costs vary based upon the type and quantity of traffic calming measures needed to align a project with targets established for a neighborhood bikeway. On average, a neighborhood bikeway costs roughly \$800,000 per mile. The total cost for the 7th Ave project came to about \$960,000 for the 1.14 mile corridor.

Timeline and Next Steps

Construction of the traffic circles, Williams intersection modifications, and the final touches on the 7th Ave project will be ongoing throughout August, with substantial completion slated for the end of the month. After construction is complete DOTI will continue to monitor the corridor and react if any safety issues become apparent.

We appreciate the input from the community on this project. We will continue to monitor the project and will make any necessary tweaks if safety concerns identified.