

MOVING PEOPLE FORWARD

THE FUTURE OF MOBILITY IN COLORADO

Designing streets for all abilities

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Norms

- Be present and actively listen
- Generously share your thoughts, ideas and questions in the chat
- Assume best intentions of each other
- Challenge your assumptions
- Seek to understand new, different or constructive perspectives
- Expect and accept non-closure
- Lean into any discomfort
- Hold yourself and each other accountable to these norms





Rosemary McDonnell-Horita, Wheat Ridge resident and disability advocate



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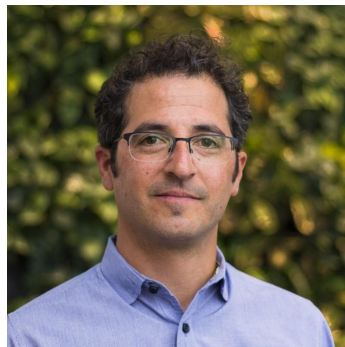
Designing streets for all abilities



Jodie Medeiros,
Executive Director,
Walk San Francisco



Mike Jacobsen,
Planner, Livable Streets
Division at San Francisco
Municipal Transportation
Agency (SFMTA)



Jonathan Fertig,
AIA, Senior Architect at
Davis Partnership
Architects and
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David Pulsipher,
Planning Supervisor,
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Denver Streets
Partnership

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Getting to the Curb Webinar

Walk SF & SFMTA

Tuesday, February 16, 2021



@walksf



walksf.org



Who is Walk SF?





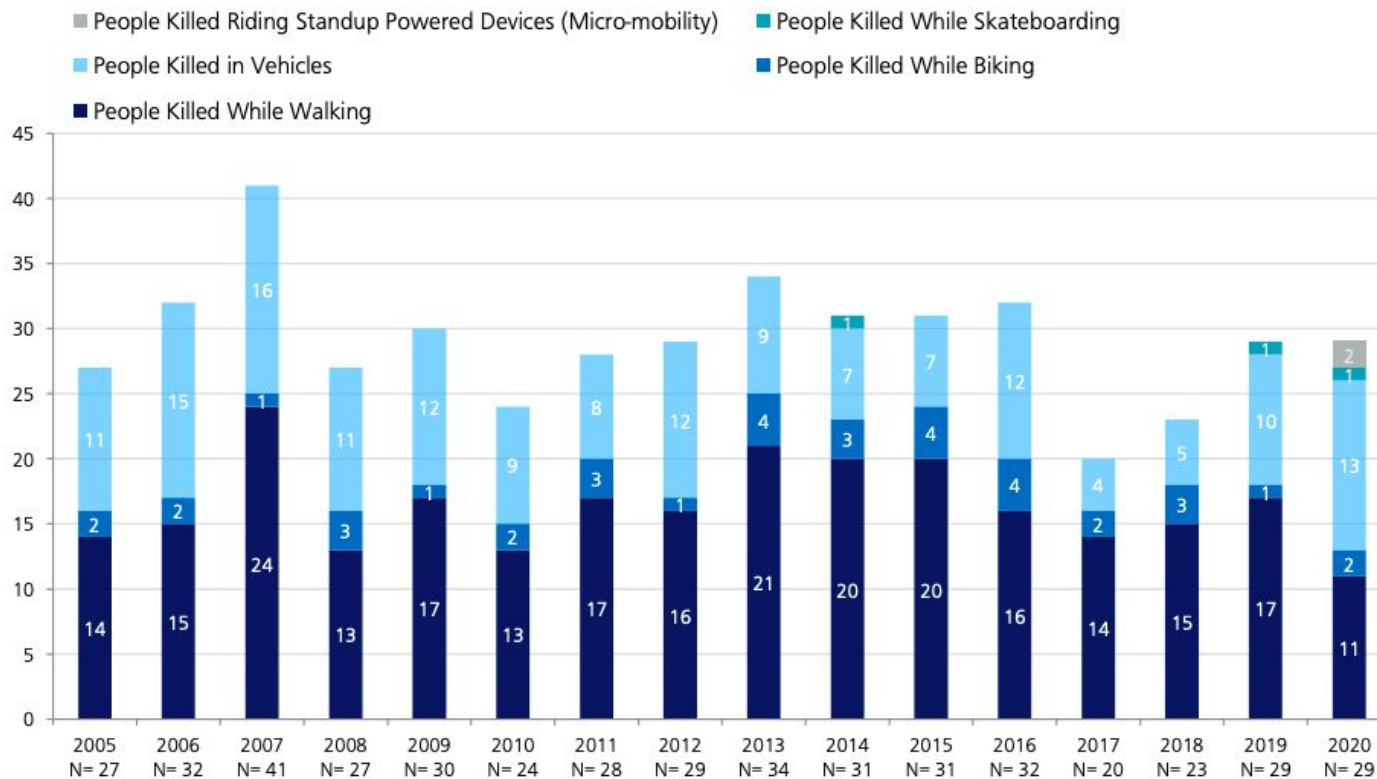
**Tenderloin Traffic Safety
Task Force**



**Senior & Disability Working
Group of the Vision Zero
Coalition**



Fatalities in 2020



*2020 FATALITY COUNT REFLECTS PRELIMINARY YEAR-END VISION ZERO TOTALS – SUBJECT TO CHANGE

Traffic crashes are a public health & equity issue





Chronicle / Mark Costantini

14%

**Seniors make up
only 14% of our
current population***

50%

**50% of pedestrian
traffic fatalities
annually**

**By 2030 - Seniors are expected to
make up 27% of population*





Early guide....
But we needed to take
it even further!





Senior & Disability Working Group of the Vision Zero Coalition



April 2017 Bike Lane Tour



Pathway off the loading zone leads to a path of travel that leads to a crosswalk across the bike lane that leads to the curb – but there's no ramp!



April 2017 Bike Lane Tour



The “path of travel” (white striped section) next to the transit boarding island and/or floating parking is too narrow and is scary to travel in so close to moving bikes.



March 2018 Charette



Designing
Protected Bike
Lanes That
Are Safe and
Accessible for
Pedestrians



TRANSIT ISLANDS

Transit Islands are dedicated waiting and boarding areas that “float” in the street between a curbside bike lane and a vehicle through-lane. These islands enable transit vehicles to make in-lane stops that help streamline transit service. These islands also eliminate conflicts between transit and bicyclists at stops. For both streetcars and buses, transit islands allow the creation of accessible in-lane stops with near-level or level boarding.



CHALLENGES:

- Crossing bike lane safely
- Getting on and off transit island
- Awareness of transit island

RELATED PROJECTS:

Built: 7th Street, 8th Street, Folsom, Bayshore Boulevard, Potrero Avenue

Future: 2nd Street, Masonic Avenue, Folsom & Howard Streets, Townsend Street



Activity Worksheet: Transit Islands

For your topic, discuss challenges and possible solutions for each:

1. Transit Islands

Transit Islands are dedicated waiting and boarding areas that “float” in the street between a curbside bike lane and a vehicle through-lane. These islands enable transit vehicles to make in-lane stops that help streamline transit service. These islands also eliminate conflicts between transit and bicyclists at stops. For both streetcars and buses, transit islands allow the creation of accessible in-lane stops with near-level or level boarding.



Image 1.1 7th Street and Folsom Avenue, San Francisco; This transit island is temporary until the full project is constructed.

Challenges	Possible Solutions (Be open! Solutions could be engineering treatments or designs, political changes needed, policy changes, etc.)
Crossing the bike lane safely	
Getting on and off transit island	
Awareness of transit islands	



9-Principles

1. Institutionalize Inclusive Engagement and Co-Design
2. Design a Wide Buffer Area, At Least Five Feet
3. Ensure the Buffer Area Is Obstacle-Free
4. Build Raised Pedestrian Crossings Across the Bike Lane
5. Install Robust Speed Management Features at Bike Lane Crossings
6. Make Crossings High-Visibility
7. Ensure There Are Access Points to/from the Curb At Least Every 100 Feet
8. Ensure That Quick-Build Projects Include Sidewalk Curb Ramps
9. Include Accessible Loading Islands When No Paratransit Access or Parking



Getting to the Curb

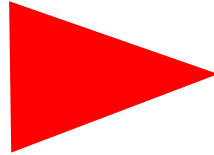
A Guide to Building Protected Bike Lanes
That Work for Pedestrians



Getting to the Curb



Challenges and Solutions





Importance of Inclusionary Planning & Community Engagement

Mike Jacobson

Transportation Planner, Livable Streets



Design Challenges

1. Curb and Sidewalk Access
2. Creating Safe Crossings
3. Buffer Geometry and Design

Challenges Crossing Bikeway:

Curb and Sidewalk Access

Challenge	Design Approach
Delineators blocking curb access	- Gaps between delineators to maintain path of travel
Midblock sidewalk access from the roadway	- Mid-block curb ramps (Quick-Build) - Raised crossings (Streetscape)

Delineators Blocking Curb Access



- Delineators spaced closely together
- Difficult to pass through in mobility device
- Paratransit vehicles cannot easily access curb



- Larger gaps between delineators
- Easier to access from loading zone
- Paratransit vehicles can pull to curb

Challenges Crossing Bikeway:

Curb and Sidewalk Access

Challenge	Design Approach
Delineators blocking curb access	- Gaps between delineators to maintain path of travel
Midblock sidewalk access from the roadway	- Mid-block curb ramps (Quick-Build) - Raised crossings (Streetscape)

Midblock Sidewalk Access



Lack of mid-block curb ramp next to parking



Challenges Crossing Bikeway:

Creating Safe Crossings

Challenge	Design Approach
Visibility of the crossing	<ul style="list-style-type: none">- Pavement markings (high visibility crosswalks, “LOOK” stencil)- Truncated domes at crossings
Bicycle speed management	<ul style="list-style-type: none">- Pavement markings (yield teeth, “SLOW PED XING” stencil)- Narrow bike lanes behind islands- Signage

Visibility of the Crossing



Crossing unclear

Contrasting paint and curb ramp, but
no marked crossing



Visibility of the Crossing



Continental crosswalk



Additional pavement markings



Continental crosswalk
with yield teeth and sign

Challenges Crossing Bikeway:

Creating Safe Crossings

Challenge	Design Approach
Visibility of the crossing	<ul style="list-style-type: none">- Pavement markings (high visibility crosswalks, “LOOK” stencil)- Truncated domes at crossings
Bicycle speed management	<ul style="list-style-type: none">- Pavement markings (yield teeth, “SLOW PED XING” stencil)- Narrow bike lanes behind islands- Signage

Bicycle Speed Management



Narrow bike lane
behind boarding island



Signs



Pavement markings including
yield teeth, "SLOW PED XING"
stencil, high visibility crosswalk

Challenges Crossing Bikeway: Buffer Geometry and Design

Challenge	Design Approach
Ensuring safe path of travel	- 5' minimum buffer width where travel is expected
Delineators impeding movement	- Allow travel from vehicle to curb but place delineators to discourage vehicle intrusion into bike lane buffer
Creating tactile separation between modes	- Trapezoidal edge* gives tactile and visual cue and will not be confused with truncated domes

Safe Path of Travel and Delineators Placement



Delineators in middle of buffer



Delineators offset in buffer

Challenges Crossing Bikeway: Buffer Geometry and Design

Challenge	Design Approach
Ensuring safe path of travel	- 5' minimum buffer width where travel is expected
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Creating tactile separation between modes	- Trapezoidal edge* gives tactile and visual cue and will not be confused with truncated domes

Creating Tactile Separation Between modes



Truncated domes for path of travel



Trapezoidal edge

Getting to the Curb

Online accessible guide: walksf.org

<https://walksf.org/2019/12/10/new-report-on-how-to-design-protected-bike-lanes-to-keep-pedestrians-safe/>



ABOUT US \ OUR WORK \ GET INVOLVED \ NEWS \ EVENTS \ Q

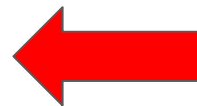
Select Language

DONATE



What's the state
of traffic safety
where you live?
Find out now.

READ YOUR DISTRICT
REPORT CARD



Using search
feature -
“Getting to the Curb”



THANK YOU!

Stay connected

Jodie Medeiros, Executive Director

Jodie@walksf.org

@walksf



walksf.org

Mike Jacobson, Planner

Michael.Jacobson@sfmta.com



Commentary from Jonathan Fertig and Rosemary McDonnell-Horita



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Denver's Complete Streets Design Guidelines

Moving People Forward
February 16, 2021

Residential Streets

Residential Arterials and Collectors serve primarily residential uses, but may also include schools, civic uses, parks, small retail nodes, and other similar uses. Buildings on residential streets usually have a modest setback, which vary by neighborhood. Signalized crossings with high visibility markings provide ample crossing opportunities. Street trees within an amenity zone are used to separate people walking or rolling from traffic. These streets typically have higher traffic speeds and volumes than local streets and serve more land uses than just residential.



Residential Arterial
with Bicycle Overlay

Example Streets

» E 14th Avenue

» Martin Luther King Jr.
Boulevard

	Frontage Zone	Sidewalk Zone*	Amenity Zone	Curbside Zone	Outside Travel Lane	Inside Travel Lane	Median
Preferred	-	6'	6'	8'	12'	10'	10'-16'
Minimum	0'	5'	5'	7'	11'	10'	6'
Maximum	2'	-	12'	9'	12'	10'	18'

Residential Streets

Right-Of-Way Allocation Priorities

STREET ELEMENTS	LOW	HIGH
Frontage Zone	← A G →	
Sidewalk	← A G →	
Amenity Zone	← A G →	
Curbside Zone	← A G →	
Drive Lanes	← A G →	
Medians	← A →	
Overlays	← A G →	

A Arterial G Collector

Design Parameters and Operational Characteristics

	Arterial	Collector
Design Speed	25 - 30 mph	25 mph
Typical Daily Traffic Volumes	10,000 - 30,000	5,000 - 15,000
Driveway Frequency	Varies	
Freight Loading/Unloading Location	Alley and on-site accessed via alley (preferred) and on-street	

Appropriate Design Elements

Design elements in **bold** are most appropriate for this street type.

Design Type	Design Element
Pedestrian Realm and Curbside Features	Street Trees and Supporting Infrastructure ; On-Street Parking; Transit Stops and Shelters
Safe and Accessible Features	Access Control and Diverters; Chicanes and Pinch Points (collector); Crosswalks ; Curb Extensions ; Driveway Crossings; In-Street Yield to Pedestrian Signs; Left-Turn Wedges; Median Refuge Islands (arterials) ; Neighborhood Traffic Circles (collector); No Turn on Red; Pedestrian Signal Phasing; Raised Crossings (collectors); Speed Humps and Tables (collector); Uncontrolled Pedestrian Crossings
Green Infrastructure	Bioretention Facilities; Stormwater Tree Trenches



Shared Streets

A shared street is a street that includes a shared zone where pedestrians, bicyclists, and motor vehicles mix in the same space. They can be one- or two-way streets. They prioritize pedestrian mobility over motorist mobility and frequently feature design elements that encourage low motor vehicle speeds and volumes. Shared streets are appropriate where pedestrian activity is high and motor vehicle and transit demand along the street is low. In downtown or mixed-use areas, shared streets often include cafe space, gathering areas, seating, art, and landscaping.

Shared street environments can be challenging for pedestrians with vision disabilities, because they often lack navigational cues such as curbs and defined crossings. Similarly, stormwater drainage on shared streets do not include curbs. Care must be taken to design shared streets that are accessible for all users, and designers should consult the Federal Highway Administration's 2017 *Accessible Shared Streets* guide.

The content in this section pertains to streets that are permanently designed to be shared. The Regular Closure and Festival Streets Overlay and the Guidelines Appendix describes streets that are meant to be shared temporarily.



Example Streets

- » Fillmore Plaza
- » E 39th Avenue

	Comfort Zone (pedestrian access route)	Amenity Zone (space for greening/activation)	Shared Zone (shared circulation for pedestrians, bicycles, vehicles)
	Comfort Zone	Amenity Zone	Shared Zone
Minimum	6'	5'	16'
Maximum	-	-	24'

Shared Streets

Design Parameters and Operational Characteristics

Design Speed	10 mph
Typical Daily Traffic Volumes	100-400
Driveway Frequency	Low
Primary Curbside Uses	N/A
Freight Loading/Unloading Location	Alley and on-site accessed via alley (preferred) and on-street

Shared streets can either include curbs or be curbless (a.k.a. flush). Curbless streets are sometimes preferred to promote flexibility and access for events and to message that motor vehicles are the "guest." If a shared curbless street is chosen, the designer should include detectable elements to prevent pedestrians with vision disabilities from inadvertently crossing into lanes shared with vehicles outside of designated crossings. Designers must ensure adequate stormwater drainage on shared streets.

Appropriate Design Elements

Design elements in **bold** are most appropriate for this street type.

Design Type	Design Element
Pedestrian Realm and Curbside Features	Pedestrian Lighting; Street Furniture; Street Trees and Supporting Infrastructure; Bicycle and Dockless Mobility Parking; Parklets
Safe and Accessible Features	Access Control and Diverters; Chicanes and Pinch Points; Crosswalks; Curb Extensions; In-Street Yield to Pedestrian Signs; Neighborhood Traffic Circles; No Turn on Red; Pedestrian Signal Phasing; Raised Crossings; Speed Humps and Tables; Uncontrolled Pedestrian Crossings
Green Infrastructure	Bioretention Facilities; Pervious Surfaces; Stormwater Tree Trenches

Questions



Applying the Guidelines: A Denver Case Study

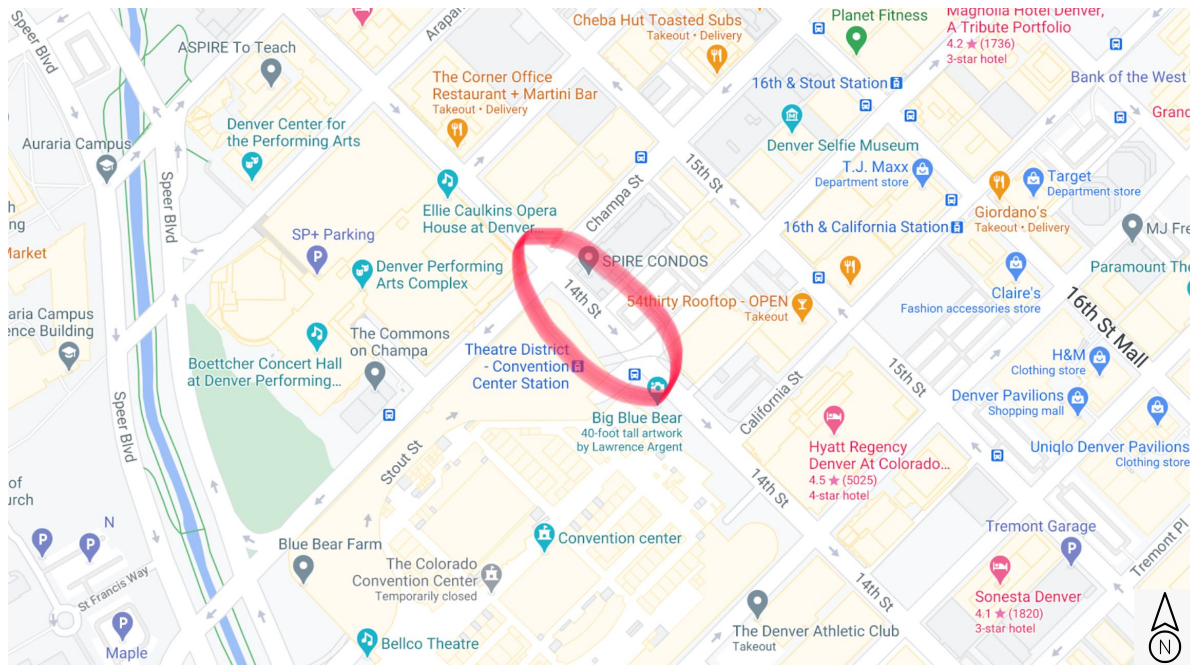


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14th Street Protected Bike Lane

Downtown Denver

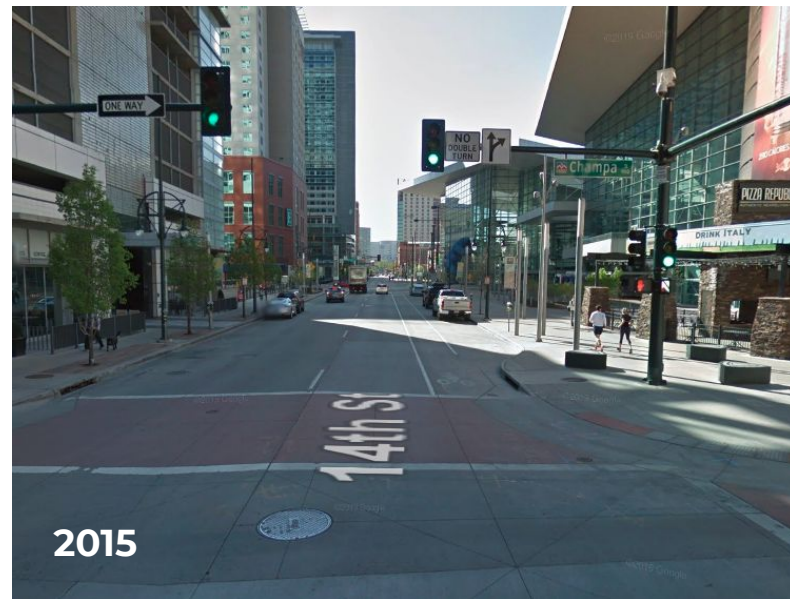
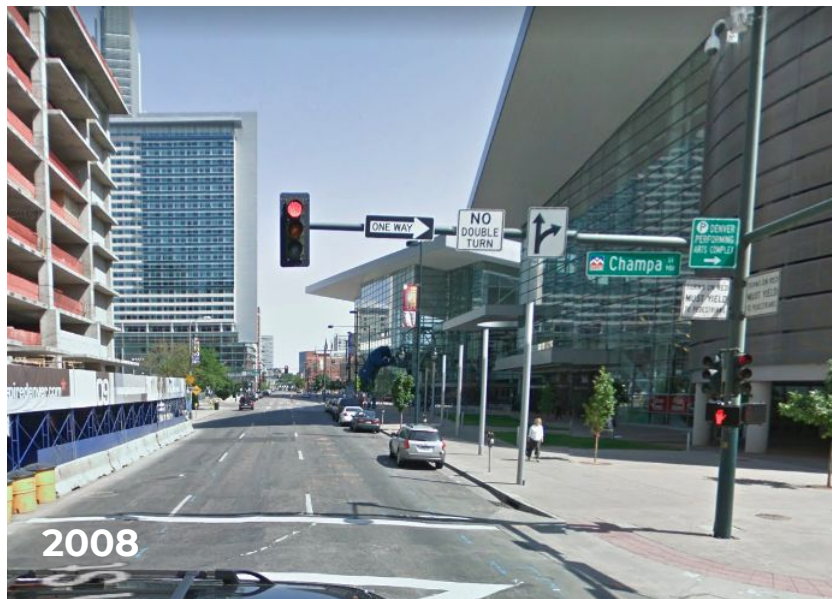


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14th Street Protected Bike Lane

Downtown Denver



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14th Street Protected Bike Lane

Downtown Denver

STREETSBLOG DENVER

Walking / Biking / Transit

Eyes on the Street: The 14th Street Bike Lane Is Immediately Denver's Best

The protected bikeway feels more comfortable than other on-street bikeways — but there are a few chinks in its armor.

By David Sachs | Aug 31, 2017 | 8 COMMENTS



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Case Study: 14th St, Downtown Denver

What potential conflicts do you see between bicyclists and people with disabilities at this location?

lack of snow removal in the bike lane

narrow buffer

opportunity to get doored as a person riding a bike

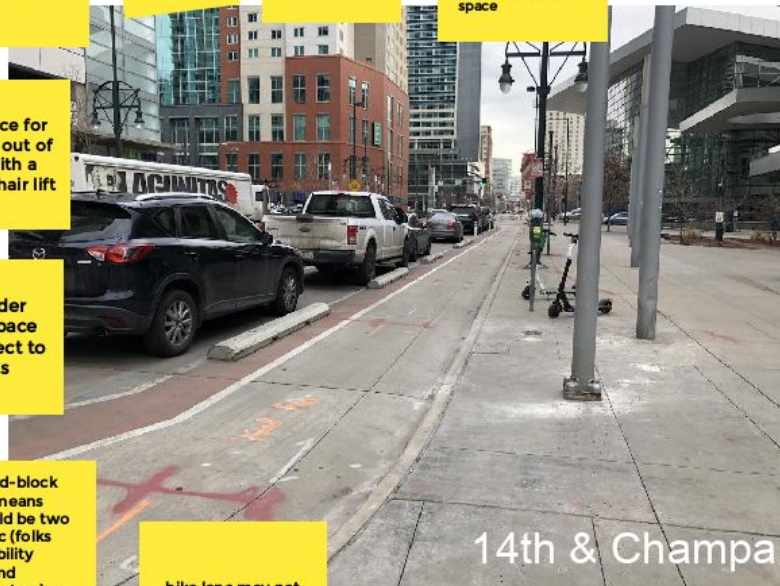
curbs make it challenging for people with disabilities to get out of the vehicles, not much buffer space

not space for getting out of a van with a wheelchair lift

need wider buffer space to connect to curb cuts

lack of mid-block curb cut means there could be two way traffic (folks using mobility devices and bikes/scooters) as people try to get to the nearest curb cut

bike lane may not be that visible/obvious to everyone



14th & Champa

posts at the ends of each parking stall make it easier for folks to get out of vehicles



14th & Stout

Case Study: 14th St, Downtown Denver

What potential solutions could mitigate conflicts? How can the San Francisco guidelines be applied?

**mid block
curb cuts!**

**bike lane a
different color
so that it's
more obvious**

**couple mid
block curb cut
with mid
block loading
zones**



Case Study: 14th St, Downtown Denver

Intersection photos for additional context

opportunity to narrow the corners of the intersections to make the crossing distances shorter

crosswalk is challenging b/c it has tracks for the light rail - it makes it difficult to cross. can we make it more clear which way to cross, some more direction about how to navigate the intersection?



Case Study: 14th St, Downtown Denver

Potential redesign idea
by Jonathan Fertig



Jonathan Fertig, A.A.
@RightieCpegged

PROJECT

DRAWING
14th Street

PROJECT NO.

SCALE: 1" = 40'-0"

ISSUE DATE:
02/16/21

SHEET
A101

DAVIS PARTNERSHIP ARCHITECTS



Recommended resources

- [Getting to the Curb: A Guide to Building Protected Bike Lanes That Work for Pedestrians](#) (Walk San Francisco)
- [Urban Bikeway Design Guide: Cycle Tracks](#) (NACTO)

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Tickets at bit.ly/raffle221



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THE FUTURE OF MOBILITY IN COLORADO

2021 Speaker Series



**Session 4: Undoing
systemic racism through
equitable planning**
February 18

February 9-18
bit.ly/MPF2021

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