Transfers Design Guide

Improving Connections for a Seamless Trip

Metro®

MARCH 2018

Transfers Design Guide

Improving Connections for a Seamless Trip

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Table of Contents

1 Overview

Why Are Transfers Important?

Most transit riders transfer at least once to complete their journey. Making a transfer involves combining two or more legs (i.e. taking two buses, or a bus and train) to complete one's trip.

Making transfers safe, easy and comfortable is important to creating a seamless journey.

The Los Angeles County Metropolitan Transportation Authority (Metro) serves an average of 1.3 million riders on buses and trains each day. Nearly two-thirds of Metro customers transfer once or more during their trip. When transfers between Metro and other transit operators are included, that number quickly increases. Providing safe and convenient transfers is critical to serving existing customers and growing Metro's ridership.

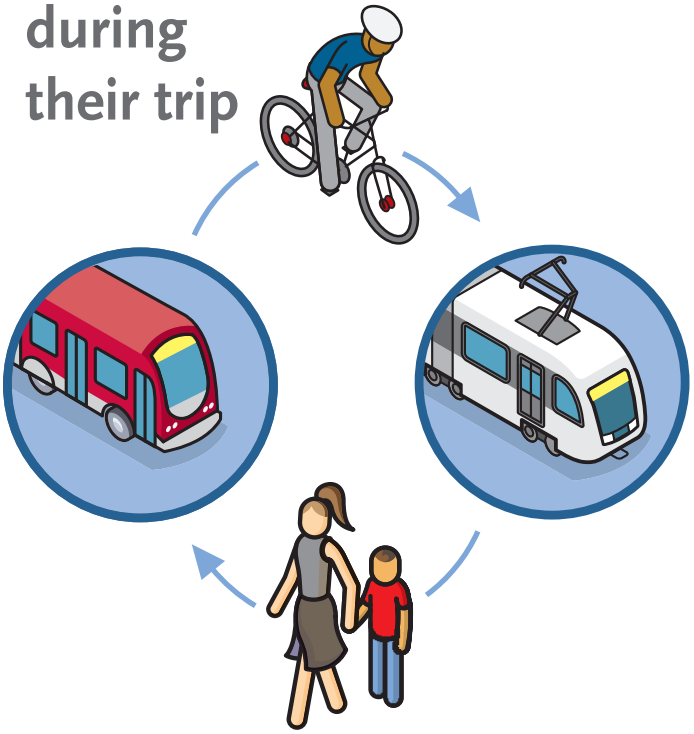
Metro's existing design standards for transit stations and bus stops do not fully address connectivity between bus, rail, and bus rapid transit (BRT) stops and stations. Without proper guidance and multi-jurisdictional coordination, transfers can be confusing, inefficient, and uncomfortable for riders.

This Transfers Design Guide builds upon Metro's First/Last Mile (FLM) Strategic Plan (2014) and recently funded FLM improvement efforts (2016) to improve access to transit and create more seamless trips for customers from start to finish.

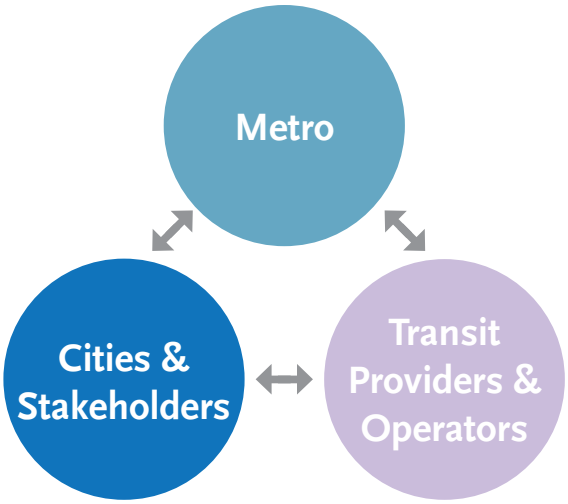
With changing mobility patterns and demographics, increased development in the region, and Metro's ambitious expansion plans under Measure M, there is an opportunity to update Metro's goals, standards, and practices to prioritize connectivity and the customer experience for future corridor planning, station design, and infrastructure improvements.

This Guide intends to elevate the transfer experience by providing a user-friendly Design Checklist and flexible Design Toolbox that can be used to assess and develop improvements for a range of transit conditions across Los Angeles (LA) County.

64%
of **Metro riders**
TRANSFER
at least
ONCE
during
their trip



Source:
First/Last Mile Strategic Plan (2014)



Goals of This Guide

This Metro Transfers Design Guide (Guide) aims to:

- **Improve connectivity** between transit lines in LA County for more direct and efficient trips and transfers.
- **Enhance the customer experience** by providing design measures to improve safety, security, accessibility, and comfort with relation to how people move, make decisions, wait for, and/or board transit.
- **Build upon Metro's First/Last Mile Strategic Plan (2014) and Policy (2016)** to improve the complete journey for customers from start to finish, including any transfers that occur along the way.
- **Encourage inter- and intra-agency coordination** to address the roles and responsibilities of the many stakeholders involved in the planning, design, operations, and maintenance of transfer zones.
- **Plan for the future** by offering a Design Checklist and Design Toolbox to improve existing, and plan for new, transfer stops and stations.
- **Support local and regional growth** by making the Metro transit system easier to use, and a reliable choice for traveling within LA County.

Who Should Use This Guide?

This Guide is intended to serve as a resource for a variety of audiences, including:

Metro Staff
To aid the planning, design, construction, operations, and maintenance of transit stations, stops, and improvements, and to inform strategic planning efforts.

Local Transit Operators
To provide guidance on improvements to transit facilities, information, and scheduling. And to recommend how to improve connectivity between routes and to consider the customer experience when making decisions.

Local Municipalities
To inform capital projects within the public right-of-way and to help prioritize public benefits considered as part of development projects near transit.

Developers and/Property Owners
To inform the design and maintenance of public spaces and street furniture adjacent to transit.

Metro Customers
To understand design best practices that Metro is using and developing to improve the transit system.

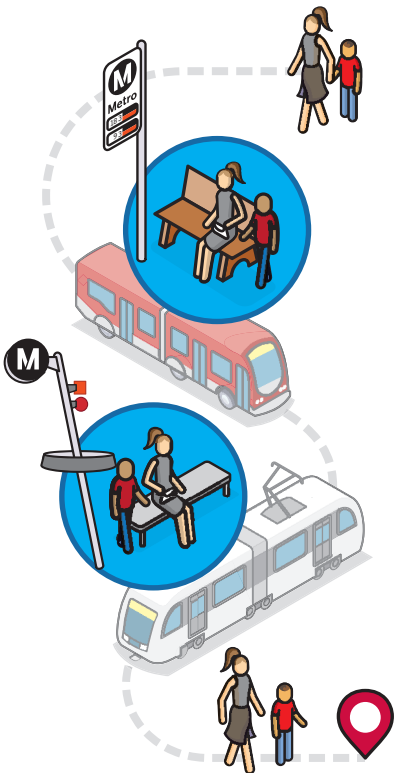
What Do We Mean by a Transfer?

Making a transfer requires a rider to move between two transit vehicles. This movement could involve transferring between buses, trains, streetcars, shuttles, and emerging transit options (i.e. on-demand ride-sharing services like Uber, Lyft, microtransit). Most transfers occur within the public right-of-way (e.g. streets and sidewalk), which Metro does not control, or a station (property owned or leased by a transit operator). Thus, coordination between agencies is critical to making improvements.

Making a transfer includes three key things:

- **Moving** from one connection to the next,
- **Making decisions** on how to navigate and use the transit system, and
- **Waiting** for one's next bus or train.

Seamless Trip



First Mile
Plan your route and begin trip to transit stop or station

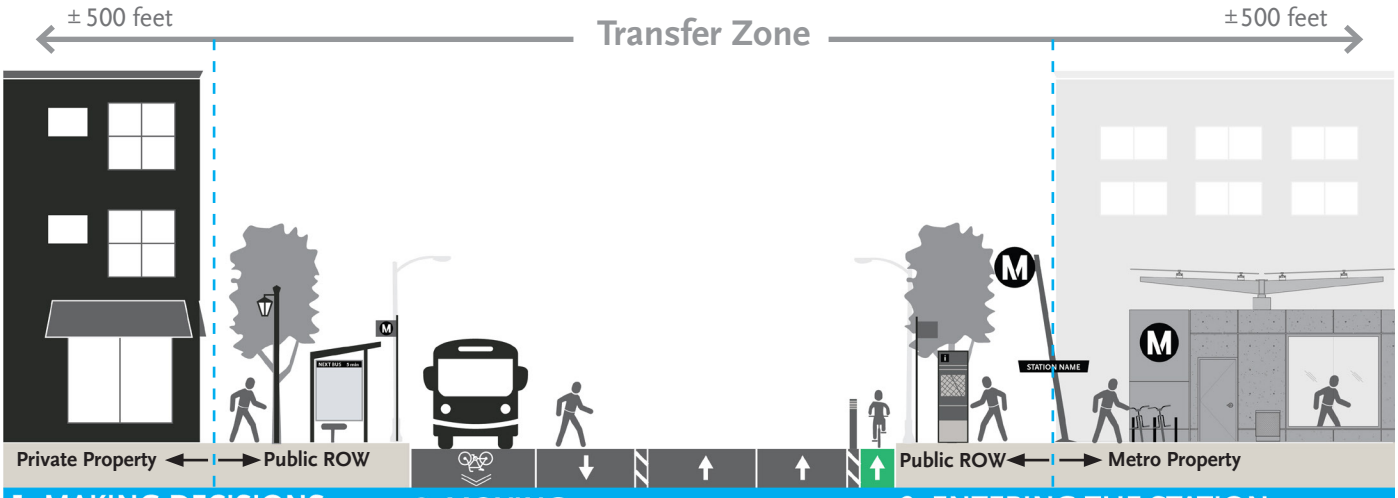
Begin Transit Trip
Enter sidewalk stop/station & wait to board

Transfer
Make decisions to move to next stop or station, & wait to board

Last Mile
Leave sidewalk stop/station & walk, ride, or scoot to final destination

What is the Transfer Zone

The transfer zone spans the area from where a rider gets off one bus or train and moves to board the next. Transfer zones can vary in size. To keep recommendations for improvements focused, this Guide defines the transfer zone as an approximate 500-foot diameter around a cluster of connecting sidewalk stops and/or rail or BRT Stations, typically adjacent to an intersection.



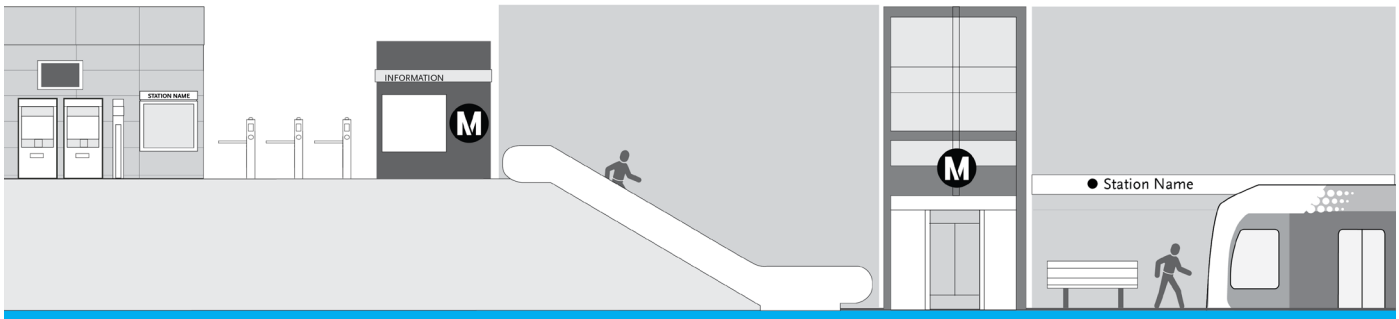
Private Development	Sidewalk Stop	
» Owned privately » Coordination needed with local jurisdiction for permitting and other private entities	» Located on public right-of-way (ROW) at street level » Owned by local jurisdictions » Supports buses, streetcars, shuttles – Sidewalk stops can have associated bike share, rideshare, taxi, vanpool » Coordination needed with local jurisdiction departments: – Planning – Transportation – Bus Operations – Public Works/Engineering – Cultural Affairs – Facilities & Maintenance – Legal (Advertising Contractors for Transit Shelters) – Business Relations (Local BID)	

Who Owns the Transfer Zone?

The transfer zone includes many stakeholders, who are responsible for designing, constructing, and maintaining transit infrastructure, which can vary greatly in size and scale from bus shelters to multi-level stations. Key "owners" of the transfer zone include:

- **Metro and other local transit operators**
- **Local jurisdictions who own public streets and sidewalks**
- **Adjacent property owners**
- **Other parties** be who may be responsible for maintenance (e.g. Business Improvement Districts, neighborhood groups, or advertising contractors for bus shelters).

Within each entity, there may be multiple departments and/or disciplines that need to be involved (see graphic below). Hence, coordination is critical.



4. TICKETING
Ticket Machine, Fare Gates, Customer Information

5. VERTICAL CIRCULATION
Escalators, Stairs, Elevator

6. WAITING TO BOARD
Maps, Real-time Info, Seating, etc.

Station

» Located at, below, or above street level along public right-of-way or private property
» Owned or leased by transit operator
» Supports buses, bus-rapid transit (BRT), rail transit, Metrolink, Amtrak, High-Speed-Rail
» Coordination needed with multiple departments, often includes:
  – Planning
  – Program Management
  – Operations (Rail and Bus)
  – Facilities & Maintenance
  – Active Transportation
  – Art & Design
  – Communications
  – Joint Development
  – Safety & Security

What Makes a Good Transfer Zone?

Guiding Principles

Metro seeks to improve transfers and create a seamless experience for customers traveling across a multi-jurisdictional region. The following principles frame the idea of a "good transfer" throughout the document. These principles can be used as a quick checklist when evaluating transfer improvements.

Safety and Security Above all, the transit journey should be safe and feel secure for all riders.

Efficiency relates to the rider's path between connections (i.e. proximity between stops and directness of path).

Accessibility addresses an unobstructed path and boarding area for customers of all abilities and the variety of ways in which they travel (e.g. alone or with a bike, wheelchair, stroller, etc).

Clarity relates to clear information and wayfinding, presented in accessible formats to navigate the transit network.

Comfort addresses the quality of the overall transit environment (e.g. transit amenities, artwork, cleanliness, maintenance) and experience.

Consistency relates to reliable elements at each stop or station that help create a comfortable journey.

Importance of Safety & Security

Metro has increased its security presence on buses and trains to address customer concerns. Recent surveys reported that 21% of past Metro riders stopped taking transit because they felt unsafe[1]. The City of Los Angeles also has embarked on safety measures with an ambitious program (Vision Zero) to address pedestrian safety. In 2016, traffic deaths increased by almost 43% in the City of Los Angeles. Pedestrians make up nearly half of these fatalities, even though they are involved in only 14% of the total number of collisions[2]. These efforts, along with the recommendations in this Guide, will help improve safety and security for customers.

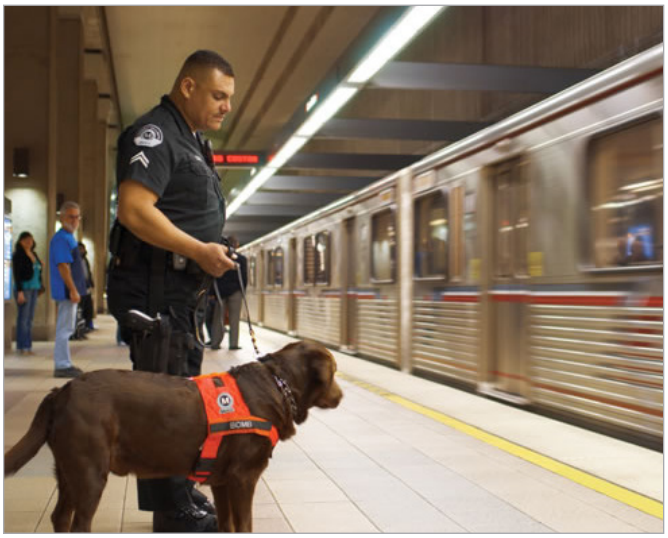
1 *Los Angeles Metropolitan Transportation Authority, 2008-2015 Quality of Life Report, http://media.metro.net/docs/report_qualityoflife.pdf (May 31, 2016).*

2 *Laura J. Nelson and Dakota Smith, The number of pedestrians, cyclists and drivers killed in L.A. traffic rose sharply in 2016, http://www.latimes.com/local/lanow/la-me-ln-2016-traffic-deaths-20170403-story.html (April 3, 2017).*

Maintenance and Operations

Maintaining the transfer zone is essential to assuring a good customer experience. A clean and well-maintained waiting environment can improve the customer's sense of comfort and security when taking transit. Although this Guide focuses on the design and needed coordination for good transfer experiences, and less on transit vehicle or schedule operations, improved operations is strongly tied to reliability and convenience of transfers. Metro's *Transit Service Policy (2016)* offers guidance for improving service.

Safety *Paths for transferring should be safe, especially where riders are near vehicular traffic (Gold Line Soto Station, East LA)*



Security *Riders said they are more comfortable when they have a sense of safety and security (Red/Purple Line, LA)*

Design *Design of paths and boarding areas should create a consistent rider experience (Orange Line Pierce College Station, San Fernando Valley)*

Maintenance *Maintenance of station plazas and bus stop waiting areas is critical for upholding a good transfer experience (Hollywood and Vine Station, LA)*

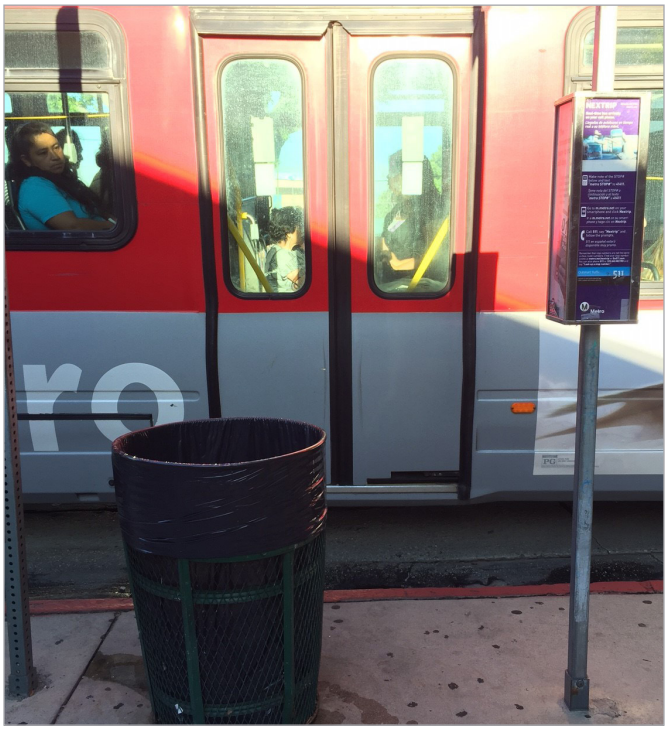
Challenges for Improving Transfer Zones

Metro and the other local transit operators and jurisdictions face several challenges to improve the design and function of transfer zones. Many comments from focus groups and stakeholders during interviews pointed to the challenges listed below. The recommendations in this Guide acknowledge these issues and seek to overcome them, where possible, through design strategies and policies.

Expansive & Diverse Transit Environment. Metro's bus and rail service spans over 1,400 square miles. Ridership and the built environment vary greatly, from low-density neighborhoods with less than a dozen riders a day, to bus stops in major urban centers where close to 100,000 riders move through the 7th/Metro Center station in Downtown LA. Planning for this vast and diverse area is challenging and requires flexible design standards that can be adapted to fit unique site conditions.

Jurisdictional Coordination. Multiple parties "own" and maintain the transit infrastructure and amenities in the transfer zone. Making improvements requires the lead agency to communicate plans and goals within its own departments, as well as to departments of all involved jurisdictions and transit operators. Dozens of transit

Limited Space *Limited sidewalk space along Wilshire, a major transit hub and transfer area (Westwood, LA)*



Sidewalk Clutter *Elements can crowd boarding zone along narrow sidewalk (Los Feliz, LA)*

operators provide services within LA County and each have their own standards and protocols. The lead agency is tasked with navigating through different approval processes, coordinating priorities, and compiling various funding sources.

Limited Space. Many transfers occur along city sidewalks. In many parts of LA County, sidewalks are narrow and space for transit improvements is limited.

Inaccessible Transit Environment. Narrow pathways, lack of curb ramps, and constrained boarding spaces are challenges for Metro and other local transit operators to provide reliable, accessible transit service to all customers. Upgrading the public realm to meet current Americans with Disabilities Act (ADA) standards should be prioritized across LA County.

Maintenance. Transit infrastructure must stand up to heavy wear and tear. Maintaining equipment and amenities that are not designed for durability can be huge task. Similarly, keeping up with changing technology is not easy. Technology may be obsolete soon after installation. Dirty and/or vandalized bus stops and stations can detract customers from taking transit altogether, which is a barrier to increasing transit ridership in LA County.

Limited Resources. Obtaining money for public improvements is often a challenge and the competition for public funds and staff allocation is stiff. Transit planners must be strategic in identifying partnerships to pool money or apply for grants to make improvements.

When Should Transfer Improvements be Made?

While transfer improvements can be implemented at any time, they will most commonly be done:

- When introducing a new transit service (e.g. new bus route, rail extension)
- When relocating a sidewalk stop or station
- When investing in streetscape improvements
- When new development occurs and transit improvements can be incorporated
- As part of Metro's "State of Good Repair" efforts

Gathering Information

To develop the recommendations in this Guide, Metro:

- Held focus groups with Metro customers
- Reviewed current standards
- Studied best practices from around the world
- Surveyed a variety of transit facilities around LA County
- Analyzed ridership and safety data
- Gathered input from local jurisdictions, local transit operators, and other stakeholder/advisory groups

See page 25 for a summary of the feedback received.

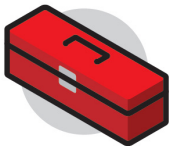
Making Improvements

The recommendations in this Guide are organized by transfer type (e.g. sidewalk stop or station) to address the different and common challenges for each facility. Sidewalk stops are owned by local jurisdictions and often are constrained with limited space to expand. Stations, owned by Metro or other transit operators, are larger facilities with more equipment, amenities, and vertical circulation elements (e.g. stairs, elevators) to design and configure to meet customer and operational needs.

Recommendations to improve these two transfer types focus on three key transfer behaviors: decision-making, moving, and waiting to board.

To inform transfer improvements, this Guide offers:

A Process-Oriented Design Checklist to guide the planning and design process for new stops, stations, and improved transfer zones. See pages 59 – 63.



Flexible Design Toolbox, which is adaptable to respond to a variety of site conditions across LA County. The Toolbox provides design considerations for the improvement type, location, and level of difficulty to install. This section also provides guidance on complex transfer sites, such as narrow sidewalks and Terminus Stations. See pages 65 – 96.

Application Strategies

In addition to informing the planning and design of transfer stops and stations, this Guide can serve as a tool for policy discussions on transit planning and connectivity.

Applications Strategies (see pages 51 – 56) provides a road map with strategies to apply the guiding principles and design considerations in this Guide to:

1. **Inform current and future Metro projects** to prioritize the customer experience for more seamless transfers.
2. **Guide discussions and decision-making** for major strategic planning efforts (e.g. Metro Strategic Plan, Long Range Plan, and NextGen Bus Study) to prioritize connectivity across the LA County transit network.
3. **Share transfer improvement ideas** with local jurisdictions and transit operators to improve transfer zones and the customer experience.

Making Decisions *Riders using maps at a sidewalk stop to make decisions on how to use the transit system* *(Big Blue Bus, Santa Monica)*

Waiting to Board *Riders at a light rail Station waiting to board their next transit vehicle* *(Expo Line, Santa Monica)*

Moving *Riders moving between two Stations* *(Red/Orange Line, North Hollywood)*


SHERIFF
LASD
Santa Monica

2 Background

Understanding

What Works & What Doesn't

Prior to developing recommendations, The Transfer Design Guide Team (the Team), composed of Metro staff and consultants, engaged in six background tasks to understand the current physical environment and customer experience, and how to approach designing transfers. Tasks included:

- Literature review
- Best practices research
- Ridership data analysis
- Collisions data analysis
- Site visits
- Interviews with Metro/agency staff and customers & briefing advisory groups

What Did We Learn from the Literature Review?

Within the Region

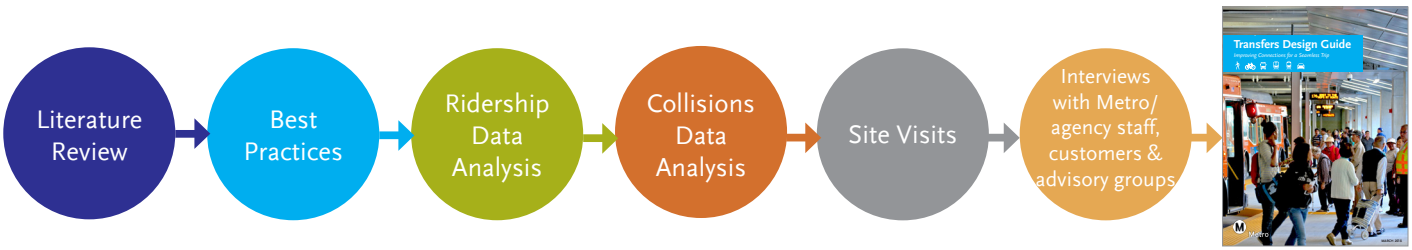
There is a lack of multi-jurisdictional or County-wide guidance on how to design stops/stations for transferring customers. While there is overwhelming support for transit investment across LA County evident with passage of Measure M (2016) and Measure R (2008) there are no standards or guidelines to address how agencies and local jurisdictions within LA County should work together to create an effective transfer environment.

Within Metro

The literature review revealed that Metro's guiding documents, such as the Metro Rail Design Criteria (MRDC) and the Metro Transit Service Policy (2015) **do not provide sufficient design guidance on connectivity between modes, nor identify which departments must come together to effectively address transfer issues.**

On a positive note, Metro is working on several efforts that will improve the transfer experience and environment. Metro is beginning a strategic plan to restructure the bus network to better serve customers, providing a good opportunity to consider improvements at transfer points. In 2016, Metro's Board passed a motion to complete First/Last Mile walk audits for more than 250 bus and rail stations illustrating the agency's commitment to improve movement to/from sidewalk stops and stations.

Metro's Office of Extraordinary Innovation encourages private-sector companies to submit unsolicited proposals that may jump-start initiatives to improve the transfer experience. The unsolicited proposal process provides opportunities for creative solutions to integrate advances in technology that may improve a range of transfer-related issues (e.g. safety, maintenance, clarity of information).

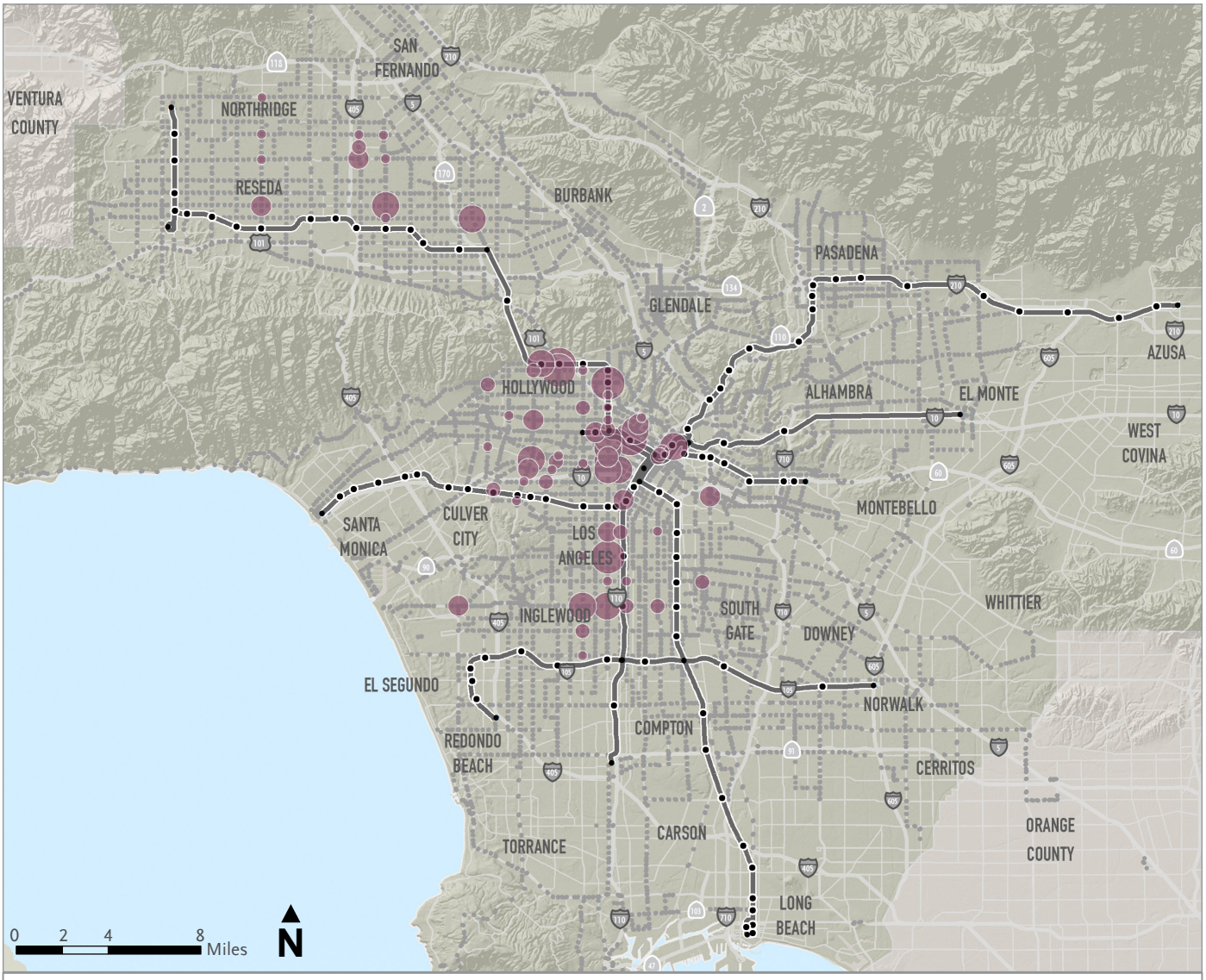


What Did We Learn from Best Practices?

The Team learned a lot from studying best practices from other transit systems. The Team discovered good examples from San Francisco, Dallas, Denver, Seattle, Portland, Washington D.C., and the US nation-wide. In addition, two international documents from Ontario (Canada) and London (UK) were reviewed.

In particular, the *Transport for London Interchange Best Practice Guidelines (2009)* provided valuable insight about transfers with a focus on the user experience. This document focused on the customer experience and identified the types of spaces a transferring customer must travel through (decision spaces, movement spaces, and opportunity spaces). The document provided recommendations on how to improve each space for efficiency, understanding and quality.

Best Practices *The Transport for London Interchange Best Practices Guidelines highlighted station tools and clearly illustrated how they should be laid out*



Prioritize Improvements *Lead agencies should prioritize transfer improvements at sidewalk stops and stations with a high number of collisions. Source: Estey & Bomberger, LLP (2016)*

What Did We Learn from Collision Data?

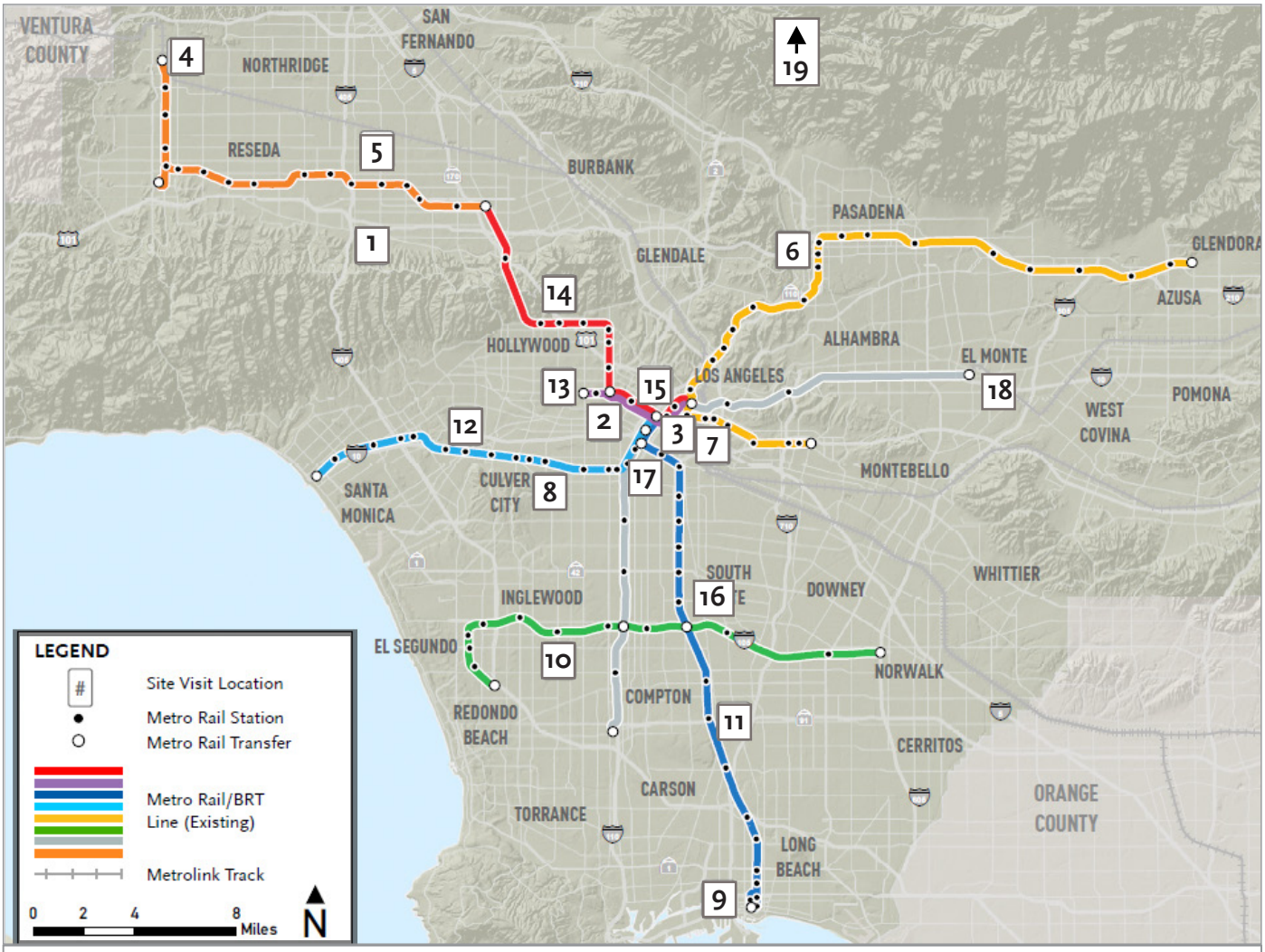
In California, 67 of the 450 most dangerous intersections are within 500 feet of Metro's sidewalk "high ridership" stops/stations. It is imperative that agencies prioritize transfer improvements at these locations. A 2016 collision study[3] by California Highway Patrol analyzed pedestrian-involved crashes, injuries, and fatalities at intersections across California. All 67 of these intersections had at least 25 crashes/injuries, with the most dangerous having 65 crashes/injuries. Of the 67 intersections, 84% were intersections with only bus stops, and the remaining 16% had bus stops and were within a quarter-mile of a rail station. *See the Appendix for a list and map of most dangerous intersections.*

What Did We Learn from Ridership Data?

As mentioned before, almost two-thirds (64%) of Metro customers transfer as part of their trip. Prioritizing sidewalk stops/stations with high ridership will improve the transfer experience for a majority of Metro's customers. The Team analyzed ridership data and found that of more than 15,000 Metro sidewalk stops and stations, 8% have high ridership (500 or more total boardings and alightments per day), accounting for 61% of Metro's daily boardings. Virtually all of these high ridership sidewalk stops/stations supported transfers to at least one other transit line.
See the Appendix for a map of these locations.

With the exception of areas in Downtown Los Angeles, Metro rail stations have a higher number of daily boardings and alightings than bus stops. Some Metro bus stops see thousands of boardings and alightings per day while Metro's busiest rail station, 7th Street/Metro Center, sees nearly 100,000 riders each day.

3 *Estey & Bomberger, LLP. 2015. Accessed November 11, 2016. Most Dangerous Intersections in California [New Study], available at http://www.ebtrialattorneys.com/dangerous-intersections-california/.*



Site Visit Locations *Over 20 different sites around LA County were reviewed to help understand the range of transfer issues and to test preliminary evaluation criteria for this Guide. The locations represent a diversity of transit environments found across LA County.*

1. Sepulveda / Ventura *(bus-to-bus)*
2. Vermont Ave / Pico Blvd *(bus-to-bus)*
3. 7th Street / Broadway *(bus-to-bus)*
4. Chatsworth Station *(BRT-to-rail)*
5. Van Nuys Station *(bus-to-BRT)*
6. Del Mar Station *(bus-to-rail)*
7. Soto Station *(bus-to-rail)*
8. Expo / Crenshaw Station *(bus-to-rail)*
9. Downtown Long Beach Station *(bus-to-rail)*
10. Crenshaw Station *(bus-to-rail)*
11. Artesia Station *(bus-to-rail)*
12. Culver City Station *(bus-to-rail)*
13. Wilshire / Western Station *(bus-to-rail)*
14. Hollywood / Vine Station *(bus-to-rail)*
15. 7th St / Metro Center Station *(rail-to-rail)*
16. Willowbrook Station *(bus-to-rail)*
17. Pico Station *(bus-to-rail)*
18. El Monte Station *(bus-to-bus)*
19. North County *(bus & rail facilities* in Lancaster, Palmdale, McBean Regional Transit Center, and Santa Clarita*)*

What Did We Learn from Site Visits?

Over 20 site visits were done to observe several criteria:

- Proximity between stops and walking distance.
- Pathway (i.e. how direct, efficient, clear).
- Quality of transit information and wayfinding signage.
- Amenities (shade, seating, etc).
- Comfort of environment (cleanliness, "State of Good Repair").
- Amenities for other transit connection (bike, parking, rideshare).

See the Appendix for the Site Survey Documentation.

Based on the above criteria, the site visits allowed the Team to glean several lessons for improving the transfer zone, namely the following:

1. **Transfer improvements were only made within Metro-owned property, although the transfer zone often included paths beyond Metro's property boundaries.** Metro's design criteria does not address anything beyond its property.
2. **The location and number of amenities varied greatly, providing a lack of consistency for customers.** Tools such as closed circuit television (CCTV), ADA access, bike facilities, parking, and elevators are present, but could be placed in more convenient locations to be more efficient for customers.
3. **Sidewalk stops and stations are sometimes located far from each other and not within a visible distance.** This causes customers to become confused when looking for their next boarding area.
4. **Effective wayfinding is lacking or hidden at many Stations.** When signs and/or cues for visually impaired are not present and conveniently located, customers are missing the information they need to find their path and boarding area.

Outreach *Focus group participants were shown photos of various transfer situations and discussed their expectations for a good transit experience*

What Did We Hear from Interviews and Advisory Groups?

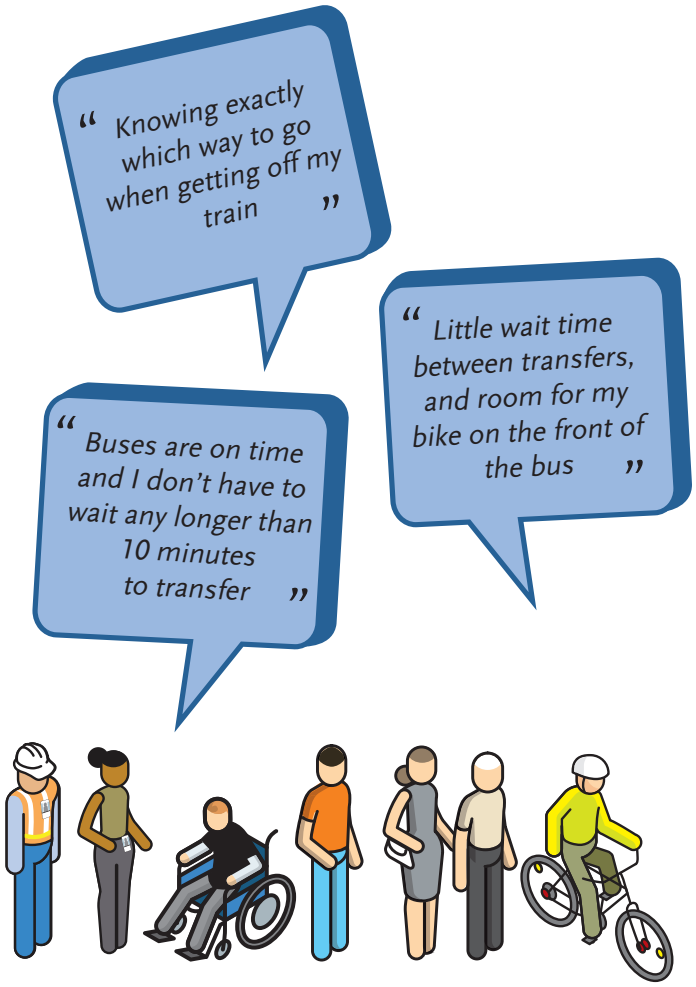
Between March 2016 and October 2016, the Team discussed existing barriers and opportunities for transfer improvements with focus groups (English and Spanish speaking Metro customers). The Team also met with Metro staff, the Metro Technical Advisory Committee and subcommittees, the Metro Accessibility Advisory Committee, and staff from local transit operators and jurisdictions to represent those who design, plan, operate, and/or maintain transit service. Each group was asked to evaluate and suggest improvements for the efficiency, clarity, access and quality. The table on page 25 summarizes the main points from these interviews and meetings, organized by the three transfer components (making decisions, moving, and waiting to board).

The key suggestions centered on the following themes:

1. **Clarity of Transit Information and Navigation** between transfer points including clear signage, customer service, and real-time information.
2. **Comfort of Transit Spaces & Amenities** including lighting, cleanliness, and safety.
3. **Multi-Modal Access** including access by bike, car, and for people with disabilities.
4. **Reliable Service** including on-time performance, wait time, and transfer fare cost.

Refer to the Appendix for the full Focus Group Report.

My perfect transfer experience...



– Quotes from focus group interviews

Summary of Interview and Meeting Comments by Participant Group and Topic

Participant	Making Decisions	Moving	Waiting to Board	Other
Metro Staff	• Consolidate and streamline signage. • Provide real-time info online. • Provide info in multiple formats (e.g. pictograms, audio cues, tactile). • Provide customer service kiosks with staff.	• Work with cities to ensure pedestrian path to bus stops and boarding areas are ADA accessible. • Ensure bicycle facilities are well-located and do not block pedestrians or buses.	• Ensure bus shelters are placed at high ridership stops/station. • Provide more consistent amenities (e.g. lighting, seating, shade). • Provide public restrooms at major transfer points.	• Co-locate retail and convenience stores near stops/stations. • Maintenance and cleaning around bus stops is needed. • Coordinate with cities on bus shelter/advertising agreements.
Accessibility Advisory Committee	• Provide real-time info. • Increase use of audio announcements. • Provide directional signage between rail and bus stops. • Ensure signage is legible (bright sun and dark night).	• Need clear path of travel and boarding area. • Ensure ADA path is short and direct. • Improve reliability and cleanliness of elevators. • Improve crossings (curb ramps, signal timing).	• Ensure electrical outlets are working to charge mobility devices. • Seating is lacking. • Restrooms are lacking. • Quality of bus stops and amenities vary greatly.	• Need greater consistency and standardization of transit facilities and wayfinding elements (e.g. tactile, audio) across County.
Metro Technical Advisory Committees and Subcommittees	• Provide real-time info. • Share transit data between transit operators. • Provide more digital messaging signs for emergencies or updates. • Create best practices for signage and transit info across providers.	• Widen sidewalks at transit stops/stations. • Provide pedestrian recall buttons and scrambles at busy intersections. • Increase enforcement vehicles blocking bus stops. • Integrate Complete Streets policies to avoid conflicts between modes.	• Prioritize safety and security when making improvements. • Prioritize maintenance of sidewalks in station areas. • Ensure stops and stations are well-lit and clean. • Provide shade at bus (trees and shelter). • Staff stations customer service ambassadors.	• Improve coordination between agencies. • Identify universal transit furniture for providers. • Provide incentives for developers to make improvements. • Include maintenance in advertising contracts. • Add more parking and drop-off zones at stations.
Local Jurisdictions, Municipal Transit Operators, Community Organizations	• Provide real-time info. • Develop best practices on signage for multiple operators. • Create universal system to number bus stops for multiple operators. • Pursue open data between operators and equipment. • Share data to prioritize vision zero projects. • Consider passenger/peer education on transfer rules/ fares.	• Clarify hierarchy of pick-up/ drop-off curb space. • Add more parking and pick-up/drop-off space. • Improve timing of bus-to-bus transfers for safety. • Implement pedestrian recall strategies (e.g. signal prioritization, scrambles). • Increase enforcement vehicles blocking bus stops. • Offer mobile fares to speed up ticketing/boarding. • Design stations for short transfer path.	• Address acoustic issues at rail stations with sound barriers. • Retrofit stations with fare gates to improve security. • Prioritize WiFi on vehicles, rather than at stops. • Ensure landscaping provides shade and does not block access or sight lines. • Ensure bus shelter design provides shade. • Use concrete lanes and bus pads to reduce road repairs. • Provide bus hubs where multiple operators connect.	• Increase enforcement of bus stops. • Bus layover space needed at rail stations. • Ensure document addresses diverse conditions. • Funding is needed for these improvements. • Cost estimates for improvements are helpful.
Metro Riders (Focus Groups)	• Provide real-time info and updates. • Improve audio systems on buses and trains. • Place maps of surrounding areas at bus stops. • Improve signage (signs can be small, hard to see).	• Provide more assistance to the disabled and elderly. • Provide additional parking and bicycle facilities.	• Keep stations clean and maintained. • Provide more security staff. • Design stations with more open space (e.g. courtyards, trees, shade, benches). • Provide public restrooms. • Provide bus shelters, more seating at stations, and WiFi.	• Increase headways. • Expand fare options. • Implement consistent fares and transfer policies countywide.

Overall Lessons Learned

Based on review of literature, best practices, data, site visits, and interviews, the main takeaways were:

1. **Prioritize highest ridership** sidewalk stops/stations and those with high collision statistics when making transfer improvements.
2. **Provide policy and design guidance**.
3. **Provide consistent information and amenities** for customers.
4. **Minimize the distance between transfer points** to improve customer safety and experience.
5. **Improve sense of security** at stations and stops with improved lighting, customer service and/or security staff presence, and well-maintained transit environment.
6. **Greater coordination** between transit operators, cities, and local organizations offers opportunities to maximize resources for transfer improvements and maintenance.

Opportunities to Inform

Since the passage of Measure M (2016), Metro has engaged in a handful of strategic planning efforts to guide and leverage upcoming transit investments. The recommendations in this report have the opportunity to guide critical discussions to set priorities for the following efforts:

1. **Long Range Transportation Plan** sets framework for planning and funding of 40 years of infrastructure.
2. **Metro Strategic Plan** sets goals and policies for the Agency for the next ten years.
3. **NextGen Bus Study** will identify strategies to re-envision bus service in LA County to better serve customers and connect to the expanding rail and BRT system.

Consistent Amenities Needed *Transit customers wait for bus next to cafe to find shade (Sunset Blvd, LA)*

Inform Standards *Metro Design standards can be updated to inform many new stations as part of Measure M (Crenshaw/LAX Line, LA)*

3 Three Steps to Improve Transfers

Follow

Three Steps

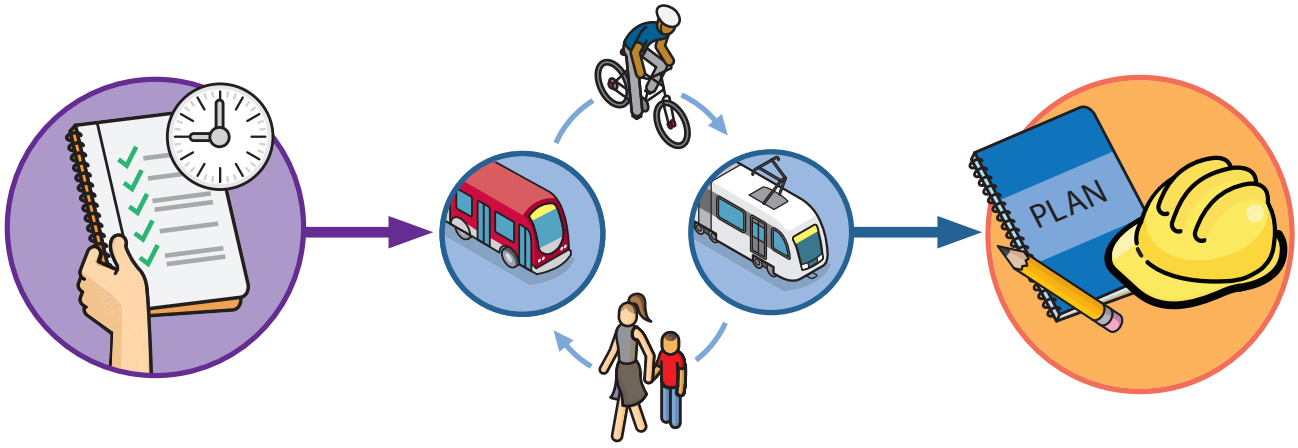
to improve the customer's transfer experience:

Step 1

What's My Timeline?

The greater the infrastructure investment, the earlier planning must begin. The process for designing a successful multimodal transfer environment cannot be done overnight. It requires early and on-going coordination between you (the planning/design lead), local transit operators, and the local jurisdiction, with enough time to accommodate changes that may arise due to other forces that affect the transfer environment (adjacent development projects, code changes, infrastructure modifications).

There are essentially two types of transfer points, Sidewalk Stops and Stations, and each has its own planning and design steps. **The timeline and process will vary depending on if you are designing a Stop along public sidewalk, or planning a more comprehensive Station,** mainly because of *where the transfer activity occurs* and *how much space and infrastructure are required* to create a good transfer environment. The recommendations that follow apply to new Stops and Stations, as well as upgrades and improvements to existing facilities.



1 What's my Timeline?

2 Where are Customers Transferring To/ From?

3 How Do I Design a Good Transfer Experience?

Sidewalk Stops

Sidewalk Stops are transfer points typically located along the street on public sidewalk in space controlled by the local jurisdiction. In some cases the Sidewalk Stop may be set back onto private property and integrated into the development. In most cases a Sidewalk Stop requires planning at least a year in advance of construction, but can require more depending on the scope of the endeavor. Sidewalk Stops serve buses, shuttles, rideshare, microtransit and/or streetcars with curbside boarding. Your timeline should accommodate the following activities:

1. Plan. Identify the scope of the transfer experience at the Sidewalk Stop, who needs to be involved, and what future plans should be considered when designing it. Establish your overall time-frame.

2. Walk Audit. Get out in the field and observe how the existing Sidewalk Stop is being used, document transfer behavior, and start to identify which tools might be appropriate. Ideally, the planning/design lead, and a representative from the transit agency and local jurisdiction can conduct the walk audit together. The Metro First/Last Mile Audit is a helpful walk audit tool.

3. Design. Confirm which tools will enhance and fit at the Sidewalk Stop, making sure to prioritize the pedestrian experience when determining the Sidewalk Stop design and identify potential conflicts between modes (e.g. does bus loading conflict with bike parking access?) to resolve. Summarize relevant agency standards and codes that must be addressed. Try to anticipate field conditions and resolve site specific issues (e.g. underground utilities) in this phase. See Section 5: Design Toolbox for and Design Checklist and more information on design tools.

4. Get Approvals. Seek early review and approvals, then finalize your design documents with the local jurisdiction and transit agency.

5. Construct. Implement your transfer improvements. You may need to address site-specific issues that arise during implementation. Consider construction impacts and minimize disruption to the transfer experience with adequate notification and signage while construction is underway.

Public ROW *Wider sidewalks can accommodate larger furniture and more tools, as well as provide more comfortable paths and waiting spaces for transferring customers*
(Portland, OR)

Physical Constraints *Customers and passing pedestrians share the limited sidewalk space, which can be narrow*
(Westwood, LA)

Physical Constraints *Aerial Station platforms have unique constraints that require standards for locating transit amenities (Expo Line Expo/La Cienega Station, LA)*

Stations

Stations are transfer points typically located on dedicated property controlled by a transit agency or used by a transit operator via shared agreement with a private property owner. Stations are usually designed as part of a transit corridor project and can require planning up to 10 years in advance before construction depending on their level of complexity, parties involved and environmental clearance requirements. The improvement of the transfer experience should be considered through the entire planning and design process of building new or improving existing Stations, which typically involves the following phases:

1. Feasibility Study. This first level of study evaluates potential transit routes for engineering and general viability. Connectivity between transit lines and easy access to the Station should be a screening criteria for alignment selection.

2. Alternative Analysis/Major Investment Study. This next level of study considers alternative routes to result in at a Locally Preferred Alternative (LPA). During an Alternatives Analysis or Major Investment Study, the planning team will conceptually identify Station locations that serve the highest volume of riders and facilitate transfers between transit lines. Providing a convenient transfer for customers should be a key criteria for selecting and siting Station locations. This study should identify opportunities, constraints, and strategies to accommodate convenient transfers between new and existing lines. Selecting and siting Station locations should be highly tied to the customer's transfer experience.

3. Preliminary Engineering and Environmental Clearance. This phase analyzes environmental impacts and typically takes Station plans to a 30% level of design. The Station's location, configuration, access points, adjacency to Sidewalk Stops, and upgrades to connecting Stations are defined in this stage. This is a critical stage to accommodate transfers and map out circulation between transfers and potential streamlining of vertical circulation (e.g. stairs, elevators) between Stations and lines.

New Stations implemented via **design-build** combine the next two phases, otherwise for the more traditional **design-bid-build process**, have two distinct phases that may take longer due to the need for an additional procurement process.

4. Final Design. This phase completes all engineering and architectural design refinements and Station design details up to Approved for Construction (AFC) packages level of completion.

5. Construction. Time-frames for implementation of Stations are driven by magnitude of the overall project and require an understanding of when transfer-related aspects may undergo site-specific modifications, and when oversight of final placement of transfer tools is required.

6. Operations and Maintenance. All projects (new and upgrades) should identify strategies and funding sources to maintain a "State of Good Repair".

Convenient Paths *At-Grade Stations are typically located near intersections for easy connections between street crossings and Station entrance pathways (Gold Line APU/Citrus College Station, Azusa)*

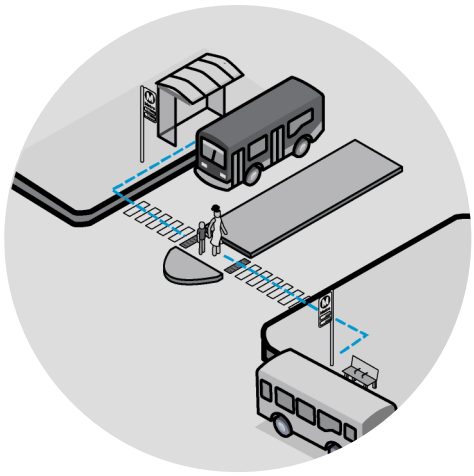
Efficiency *This major underground Station enables customers to efficiently transfer between Red, Purple, Blue and Expo Lines (7th St/Metro Center, LA)*

Step 2

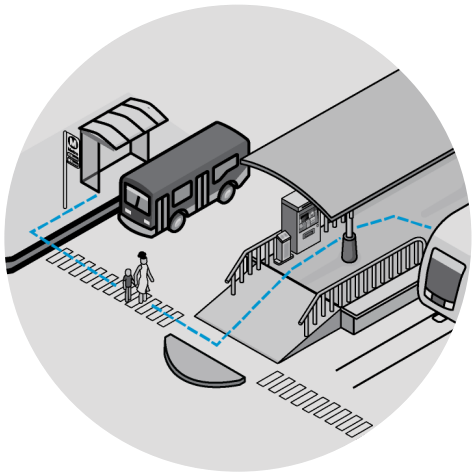
Where are Customers Transferring To/From?

After understanding your timeline, the next step is to evaluate the physical space you have to work with and the movement needed between Sidewalk Stops and/or Stations. Perform a walk audit to understand the type of transfer and space you have to work with.

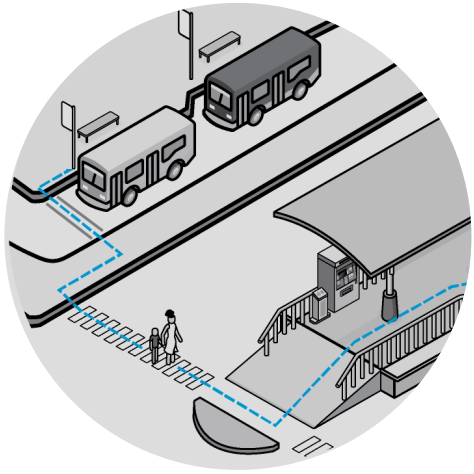
There are three types of transfer movements: Sidewalk Stop to Sidewalk Stop, Sidewalk Stop to Station, and Station to Station. During this step, you'll need to address challenges specific to the transfer point's context and coordinate with entities (public and/or private) who control the path right-of-way and space available.



Sidewalk Stop to Sidewalk Stop



Sidewalk Stop to Station



Station to Station

Sidewalk Stop to Sidewalk Stop

Transit Services

Bus, shuttle, streetcar (could include bike share, ride-share and emerging transit services).

Path

Public sidewalk, crosswalk, possibly private/public right-of-way.

Entities

Transit Agencies typically install and operate Sidewalk Stop information (e.g. bus pole and blade).

Local Jurisdictions typically control where transfer movements will occur and how they function (sidewalk or street, traffic signals, street lighting). They can also control outdoor advertising-based transfer tools such as shelters and kiosks, and the amenities provided at the bus Stop (e.g. benches, trashcans, bike racks, etc.).

Local Business Improvement District (BID) may exist to implement and maintain public realm amenities that can enhance the transfer experience on the sidewalk (e.g. landscaping, lighting, security).

Challenges

- Walk distances between Sidewalk Stops.
- Complexity of path and number of street crossings.
- Signal priority for pedestrians.
- Narrow sidewalks that limit space for transfer amenities and circulation.
- Cost to make substandard sidewalks and access ramps ADA-compliant.
- Information/sign clutter.
- Low ridership may not justify cost.
- Coordinating with various entities responsible for the installation and maintenance for Stop amenities transfer amenities.

Crosswalks *For safe movements between Sidewalk Stop to Sidewalk Stop, high visibility crosswalks are essential (Westwood Blvd, LA)*

Direct Connections *Ideally, transfers are direct and do not require crossing any streets, driveways or other points of conflict with vehicles (Long Beach Transit Mall, Long Beach)*

Median Station *Stations may be located in the medians of streets, increasing the number of street crossings customers must cross between transfer points (Regional Transit Authority, Cleveland)*

Sidewalk Stop to Station

Transit Services

Bus, shuttle, streetcar, light rail, commuter rail, heavy rail, and/or high-speed rail. Also can include bike share and ride-share.

Path

Public sidewalk, crosswalk, private/public right-of-way, Station area and any vertical transitions to platform.

Entities

Transit Agencies typically install and operate Sidewalk Stop information (e.g. bus pole and blade). They also build and maintain Stations and related property or structures.

Local Jurisdictions typically control where transfer movements will occur and how they function: sidewalk or street, traffic signals, street lighting. They can also control outdoor advertising-based such as shelters and kiosks, and the amenities provided at the Stop (e.g. trashcans, bike racks).

Local Business Improvement District (BID) or Joint Development Owner may be involved to implement and maintain public realm amenities that can enhance the transfer experience on the sidewalk. Transit agencies can partner with private developers to lease land at Stations and share maintenance responsibilities of public areas.

Challenges

- Walk distance between Sidewalk Stop and Station.
- Complexity of path, street crossings and vertical transitions.
- Prioritizing pedestrians in a busy multi-modal environment.
- Narrow sidewalk or Station site that limits possible transfer tools.
- Cost to make substandard sidewalks and access ramps ADA-compliant.
- Consistency of transfer information.
- Proper siting of transfer tools given multiple entry/exit points.
- Balancing space needed for bus boarding and bike amenities.

Direct Connections *Ideally, Sidewalk Stops are located directly at Stations, reducing number of street crossings and walking distances (Expo Line, Santa Monica)*

Station Layout *Bus boarding is located below the rail platform (BART San Leandro Station, San Francisco)*

Station to Station

Transit Services

Bus, shuttle, light rail, commuter rail, heavy rail, and/or high-speed rail. Also can include bike center/hub, bike share, ride-share, taxi, etc.

Path

Station area with likely vertical transitions between platforms (typically does not involve leaving paid area and crossing a street).

Entities

Transit Agencies control all Station information and amenities.

Local Jurisdictions may be involved.

Joint Development: Transit agencies may partner with private developers and lease land for development at Stations and share maintenance responsibilities of public areas.

Challenges

- Complexity of path and vertical transitions between Station platforms.
- Proper siting of multiple entry/exit points and avoiding long walk and pinch points.
- Consistency of transfer information and signage across multiple transit operators.
- More likely to need more space and tools to accommodate higher volume of riders.
- Adequate wayfinding to transit connections, streets and destinations.
- Difficult to prescribe improvements for this transfer type due to variety of Station layouts and context; each will be unique.
- Providing intuitive and direct paths when retrofitting mid-line rail Stations that will become a rail-to-rail transfer Station as the system expands.

Direct Connections *Transfer paths may need to go from street level to underground facilities (Red/Orange Line, North Hollywood)*

Signage along Paths *Clear signage between Stations is critical to help customers make decisions on where to go (MTA Fulton Street Station, New York City)*

Consolidated Signage *Clear signage at the entrance of the Station directs customers to their appropriate platform and provides real-time information (Union Station, LA)*

Step 3

How Do I Design a Good Transfer Experience?

The transfer experience involves three components. First, a customer must **make decisions** as to how they will reach their desired Sidewalk Stop or Station. Second, a customer must **move** from one transfer point to the next. Third, a customer will **wait to board** their next transit vehicle. The recommendations that follow are organized into these three components – if addressed to their greatest degree, the transfer experience should be consistently clear, efficient, and comfortable. The following pages describe the guidelines for each component.

Refer to the **Design Checklist** in Section 5: Design Toolbox for the general steps in chronological order you should go about designing your Sidewalk Stop or Station.

Then refer to the **Design Toolbox** in Section 5: Design Toolbox for more information on the recommended tools in each component.

If the sidewalk space you're working with is narrow, refer to the **Strategies for Narrow Sidewalks** in Section 5: Design Toolbox.

When designing or improving a Terminus Station (a complex transfer point), refer to **Strategies for Terminus Stations** in Section 5: Design Toolbox.

A

Making Decisions

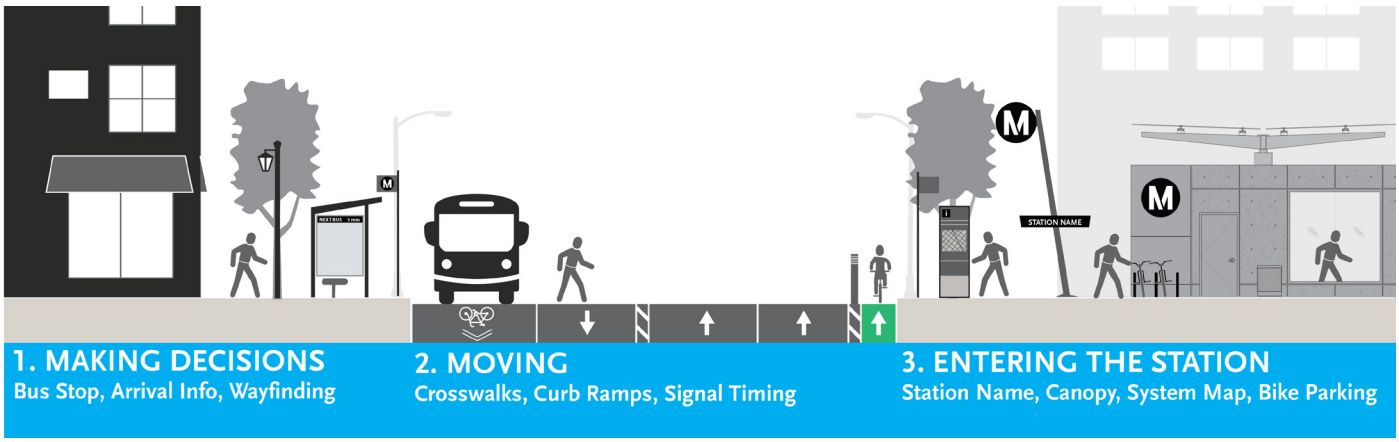
B

Moving

C

Waiting to Board

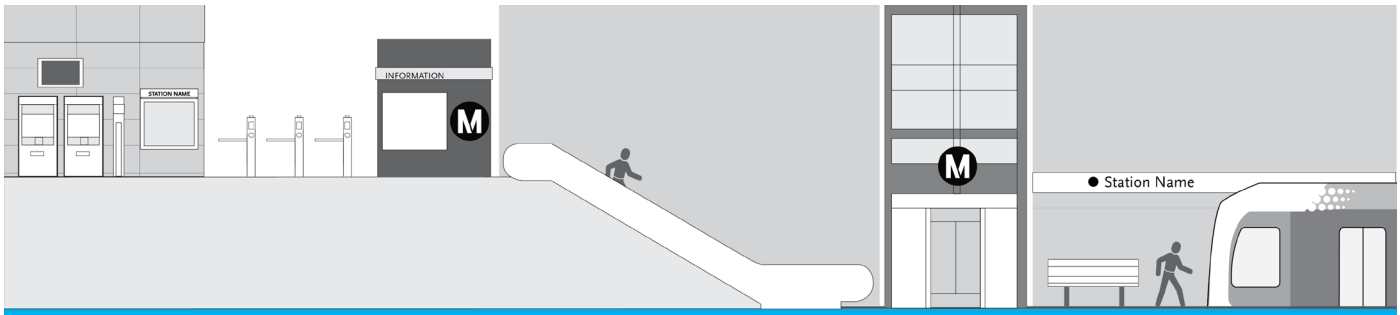
Typical Sidewalk Stop to Station Transfer Experience...



1. MAKING DECISIONS
Bus Stop, Arrival Info, Wayfinding

2. MOVING
Crosswalks, Curb Ramps, Signal Timing

3. ENTERING THE STATION
Station Name, Canopy, System Map, Bike Parking

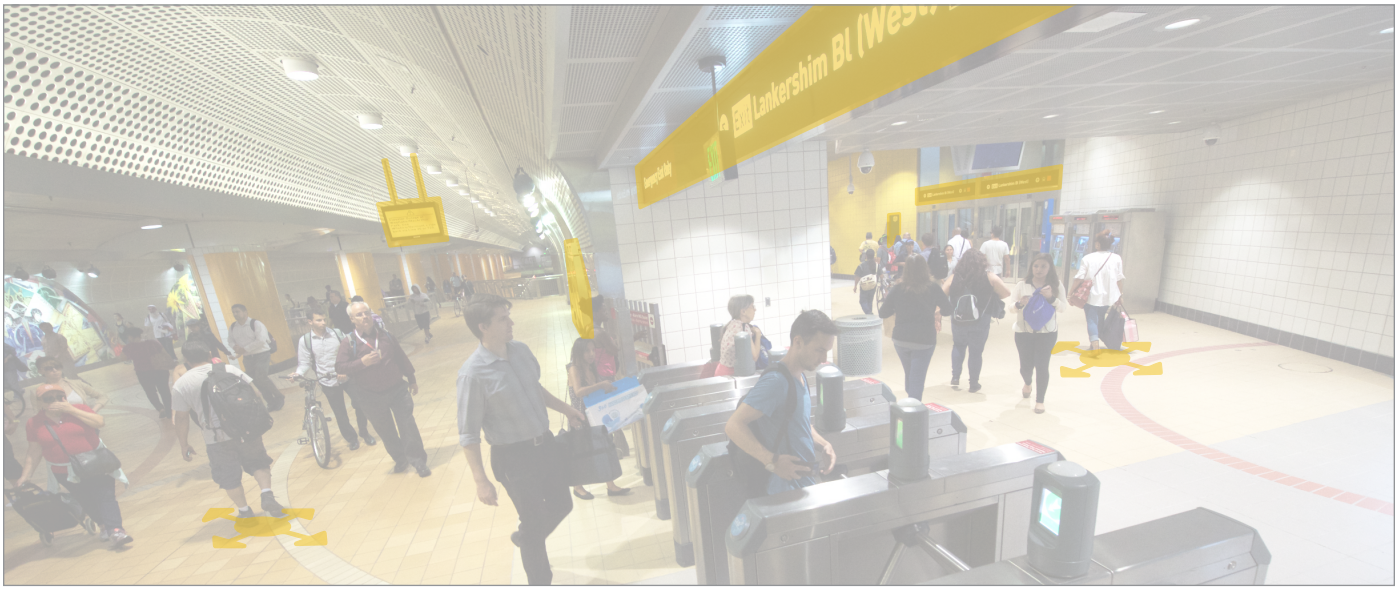


4. TICKETING
Ticket Machine, Fare Gates, Customer Information

5. VERTICAL CIRCULATION
Escalators, Stairs, Elevator

6. WAITING TO BOARD
Maps, Real-time Info, Seating, etc.

A Making Decisions



Customers Often Ask Themselves:

Where do I need to transfer to arrive at my destination?

Will I be able to find the next vehicle in time?

What is the shortest and fastest path between transfer points?

Well-designed Sidewalk Stops and Stations provide **clear information** in locations that can be found intuitively and help customers find their next transfer point at key **decision points**. Well-placed signage and information are key to making a smooth and seamless transfer experience.

Recommendations

What types of information are needed?

- Stop or Station identifier (including subway portal design).
- Maps (e.g. system, routes and vicinity).
- Schedules.
- Real-time information.
- Wayfinding to connecting transit services, nearby destinations, bike facilities (bike center/hub, bike share, bike parking, bike routes) and auto facilities (parking, loading, ride-share).

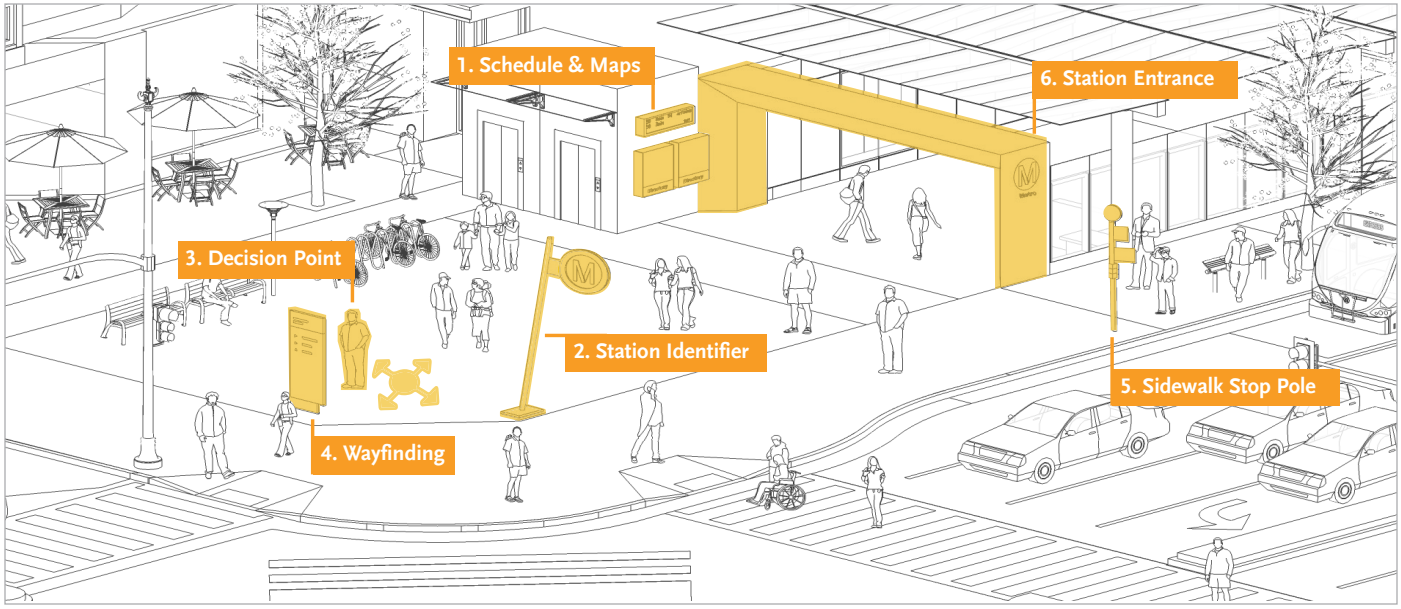
Where should I place this information?

- **Wayfinding** should be immediately visible at decision points such as when alighting off the vehicle, between automobile or bicycle facilities, along the path at points of potential confusion such as turns or corners, transitions to vertical circulation and/or areas with multiple boarding areas and multiple lines operate.
- Place **schedules and maps** on transit vehicles and in boarding areas in shelters, map cases, or digital displays such as **digital information kiosks**.
- All information can be available at **customer service kiosks**, which can be staffed or interactive.
- All information can be provided on a mobile transit application where it can be accessed by anyone at anytime.

How can I maximize clarity for customers?

- Transfer points should be visible from each other, or otherwise supplemented with clear wayfinding.
- Consolidate multi-jurisdictional information on a single **Sidewalk Stop pole** for clear and convenient access.
- Present information in several forms (e.g. audio, pictograms, braille) to serve people of all abilities: customers with visual impairments, limited mobility, low literacy, and disabilities.
- Install **real-time information** and digital displays at all Sidewalk Stops and Stations to provide most up-to-date information to pedestrians.
- Assure that display is visible at all times of day/night (accounting for sun movement and glare).
- Locate **station identifier** (e.g. Metro Pin) for maximum visibility from the public right-of-way as a customer approaches the Station.
- Use **wayfinding** to direct customers between platforms and out of the Station at their desired exit point (when there are multiple).
- Clearly mark boarding areas/paid fare zones.

A Making Decisions



See the Section 5: Design Toolbox for more information on these design tools and how to apply them.

1. Schedule & Maps

1. Schedule & Maps

2. Station Identifier

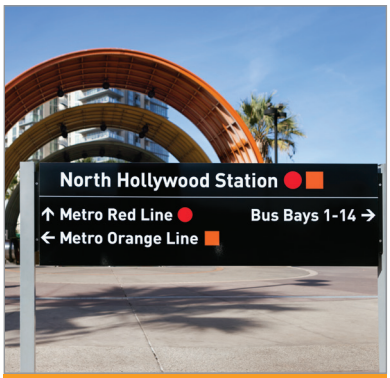
3. Decision Point

3. Decision Point

4. Wayfinding

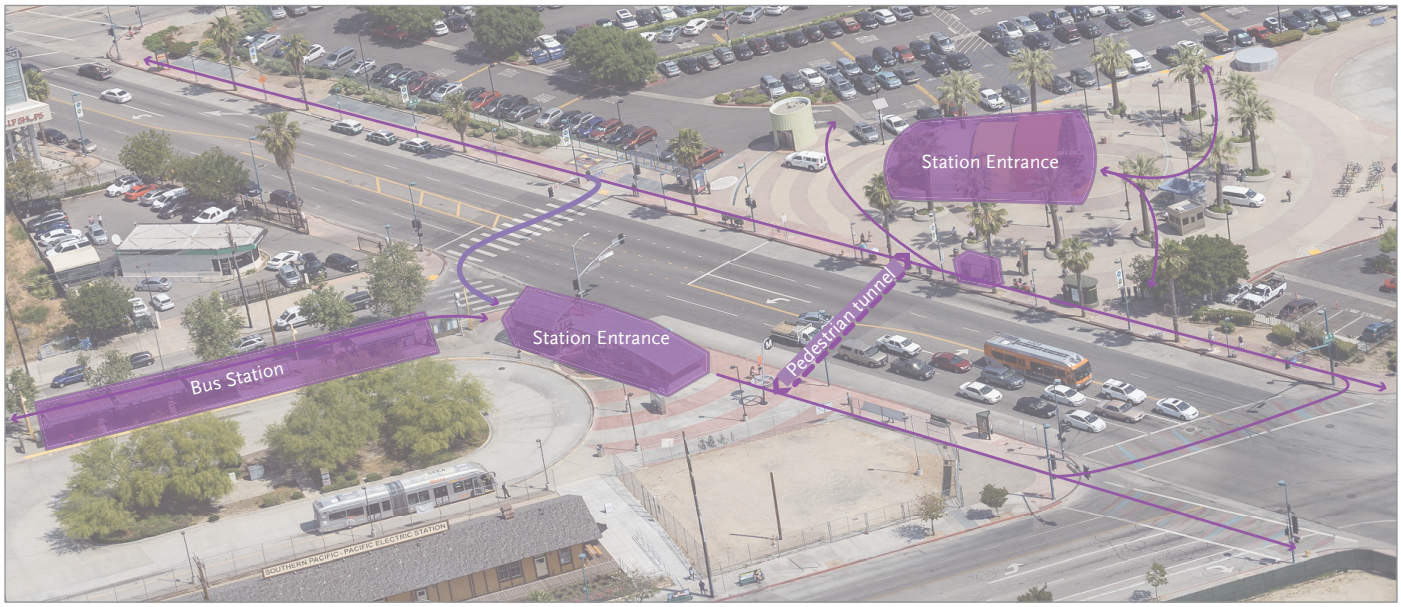
4. Wayfinding

5. Sidewalk Stop Pole



6. Station Entrance

B Moving



Customers Often Ask Themselves:

Am I on the shortest and fastest path between transfer points?

Do I feel comfortable and safe when moving between transfer points?

Moving between Sidewalk Stops and Stations can involve a number of path types (sidewalks, street crossings, vertical transfers via ramps, elevator, stairs, or escalator) often controlled by different entities. These entities must work together to design paths that are not only safe but short and fast.

PEDESTRIANS FIRST! Everyone is a pedestrian when he/she is getting on or off a transit vehicle. For this reason it's critical that good pedestrian design principles are integrated at every stage of the transfer experience. A "pedestrian first" policy includes prioritizing space for buses at transfer points. After pedestrians, bicyclists and human-powered wheels should be accommodated so the first/last mile connections are optimized. This is consistent with local and state "Complete Streets" mandate. To assure accessibility, design in compliance with Americans with Disabilities Act (ADA). Thirdly, auto-access can be addressed after the first two are done properly.

Recommendations

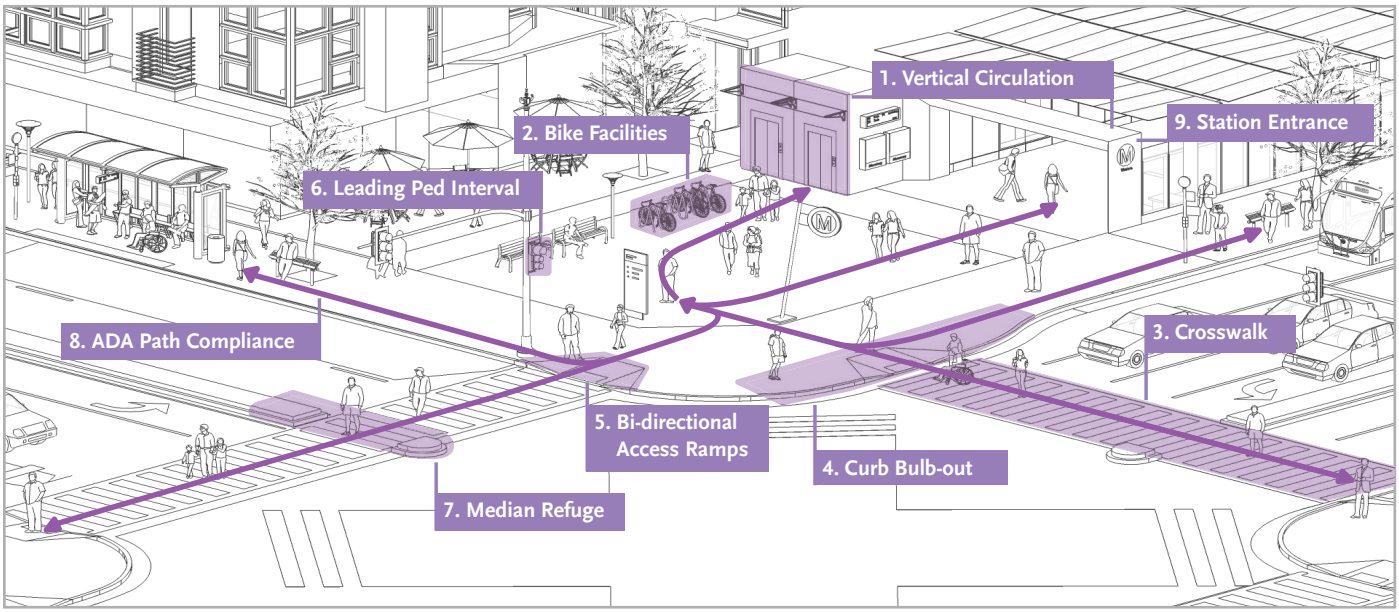
How can I design the shortest transfer path?

- Reduce the number of street crossings between transfer points by consolidating multiple Sidewalk Stop or locate Sidewalk Stops adjacent to Station entry point(s).
- Minimize walk distance between transfer points, especially crosswalk distance where potential pedestrian-vehicle and bike-vehicle conflicts occur. Install **curb bulb-out**, sidewalk widening, or painting of unused roadway.
- Locate Sidewalk Stops on far side of a street where there is signal priority to facilitate on-street transit vehicle movement. Where there is no signal priority, place Sidewalk Stops on the same side of the street.
- Station transfer paths should be as direct as possible vertically, minimizing the number of times a customer has to locate and use **vertical circulation** (stairs, escalators or elevators).

How can I create a comfortable and safe path?

- For convenient wheelchair access, provide a minimum 5 foot clear pedestrian path to the boarding area.
- Provide **continental crosswalks** and **bi-directional access ramps** at intersections between transfer points. At high ridership transfer points consider **scramble crosswalks** (all pedestrians cross at once).
- Avoid placing pedestrian crossings along rail tracks.
- Adjust signal timing as pedestrian volumes increase. Provide **pedestrian lead interval** signal timing and/or automatic walk (no push) signals near Sidewalk Stops and Stations, especially at transfer points with high ridership.
- Implement a **median refuge** where crossings are long and intimidate customers.
- Adjust curb radii when installing **curb bulb-outs** at intersection corners. Smaller curb radii can reduce vehicle turning speeds. Determine ideal radii with traffic engineer to accommodate vehicle turn movements while not compromising pedestrian comfort and safety.
- **Minimize curb cuts** by narrowing or removing driveways all together. This reduces the potential for pedestrian-vehicle conflict, making moving safer.
- Provide walkways, when possible, rather than ramps. However, ramps over 7% require a great amount of energy for a customer in a manual chair.
- Surfaces can have a maximum incline of 2% and ramps can have an maximum incline of 8%.
- Provide stairways and ramps that are weather-protected and have adequate **lighting**.
- Provide minimum of 10 feet of sidewalk/platform **clear zone** for loading onto transit vehicles; up to 20 feet at high ridership Stations; or greater if required by code.
- Install escalators adjacent to stairways to provide customers a more comfortable and efficient option **(vertical circulation)**.
- Elevators should be easy to find, transparent for added security, and well-integrated into Station.
- Integrate **bike channels/ramps** along side of stairways to make bicycle transfers more efficient. (Note: Bike channels are not well suited for existing stairs as the slope is often steep and handrails interfere with leaning and balancing). ADA ramps are also usable by bicycles.
- Identify all **bike and auto-access facilities** and assure they do not interfere with pedestrian paths at Sidewalk Stops or Stations, even if this means longer walking distances for customers moving between bike/auto-access facilities to boarding areas.

B Moving



See the Section 5: Design Toolbox for more information on these design tools and how to apply them.

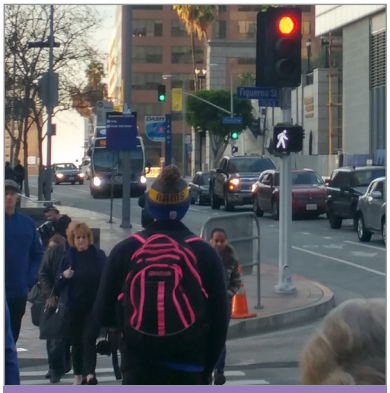
1. Vertical Circulation

2. Bike Facilities

3. Crosswalk

4. Curb Bulb-out

5. Bi-directional Access Ramps



6. Leading Pedestrian Interval

7. Median Refuge

8. ADA Path Compliance

9. Station Entrance

C Waiting to Board

Customers Often Ask Themselves:

When is the next transit vehicle arriving?

Is this a clean and safe environment to wait for and board my vehicle?

Are there amenities that improve my waiting experience?

The transit boarding area should feature basic amenities that make a customer's experience waiting to board safe, comfortable and convenient. First you'll need to plan and design adequate waiting space for customers to stand or sit, then with any remaining space amenities should be integrated. Where Sidewalk Stops have limited sidewalk space, accommodation should be made for pedestrian paths first, clear waiting area next, and then amenities. Once pedestrian paths and boarding areas are accommodated, bicycle facilities can be sited.

Recommendations

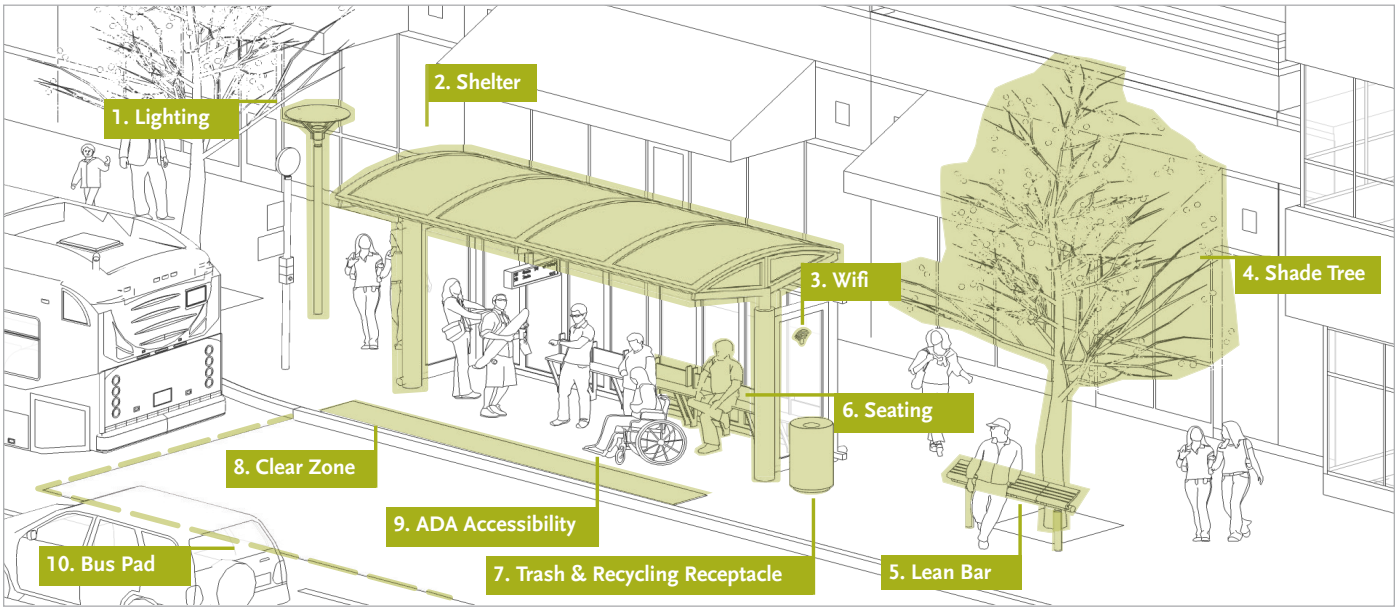
How do I design for safety and comfort?

- Coordinate transit schedules to reduce waiting time transfers and link bus time points to rail Stations.
- Provide adequate waiting space (assume 6 square feet per person) based on average wait times, passenger volumes, and service frequency.
- Similarly, consider travel patterns and times to determine shading, lighting, and special security needs.
- Provide minimum of 10 feet in length for boarding in front of transit shelters where possible, or greater if required by code.
- Establish a **clear zone** of at least 5 feet width between the curb edge and Sidewalk Stop/Station furniture for unobstructed movement and ADA compliance.
- Avoid clutter of street amenities within the boarding area, including the required 5'x 8' ADA pad at the bus door entrance.
- Consider providing tactile cues/elements at bus Stop pole and bus boarding locations.
- Provide **seating** with backrest (as required by ADA code) and intermediate arm rests that will not invite graffiti or sleeping.
- Provide **lean bars** where sidewalks space is limited as alternative to seating.
- Provide **trash receptacles** (and recycle receptacles if appropriate).
- Install concrete **bus pads** to minimize maintenance of streets that Sidewalk Stop vehicles travel on for boarding/alightings.
- Where sidewalk space allows, provide **shelter, or shade tree** as an alternative to protect from elements and sun if orientation allows.
- Capitalize on opportunities to request an adjacent developer provide amenities such as **shade** structures or waiting area on private property (e.g. plaza or promenade) adjacent to Sidewalk Stop or Station entrance(s).
- Evaluate **lighting** to reduce issues for persons with disabilities (*See Metro Office of Civil Rights Station Lighting Design Handbook*).
- Provide **WiFi**. About 38% of Metro bus riders and 47% of Metro rail riders own a smart phone[4]. As Metro transit riders tend to have lower incomes than the County average, the ability to retrieve information through WiFi could be especially valuable for those with limited cellular data plans[5].
- Integrate **public art** for visual interest and to create a sense of place.
- Assess collision data to improve design measures to improve safety at Stops. If high number of collisions, consider additional protection barriers for people waiting at Stops.
- Budget for regular maintenance and cleaning.
- Consider strategic access improvements (e.g. broken curbs, cracked sidewalk) around path and boarding area.
- Locate **ticketing** close to the path to keep movement unobstructed. Locate **fare collection** devices on the vehicle instead of at Sidewalk Stops. At Stations, place devices in close proximity to ticketing machines.
- Consider placing a **security kiosk** or other ways to have a security presence (local law enforcement, transit agency or adjacent development).
- Evaluate demand and ability to maintain a secure public **restroom** for customers and transit agency. Locate restrooms within the paid boarding area so customers do not need to exit and re-enter the boarding area.
- Where transfer points (including Stations) are noisy, install **sound barriers** to shield customers from noises outside the areas waiting to board.

4 *Metro Annual On-Board Customer Service Satisfaction Survey, Spring 2015*

5 *US Census 2010-2014 American Community Survey 5-Year Estimates*

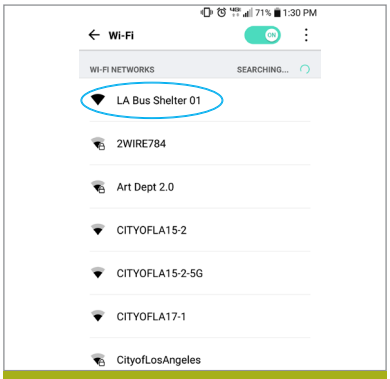
C Waiting to Board



See the Section 5: Design Toolbox for more information on these design tools and how to apply them.

1. Lighting

2. Shelter



3. WiFi

4. Shade Tree

5. Lean Bar

6. Seating

7. Trash & Recycling Receptacle

8. Clear Zone

9. ADA Accessibility


19

4 Application Strategies

Recommended

Application Strategies

The last section of the Metro Transfers Design Guide provides a road map with strategies to apply the guiding principles and design considerations in this document to Metro's current and future work efforts.

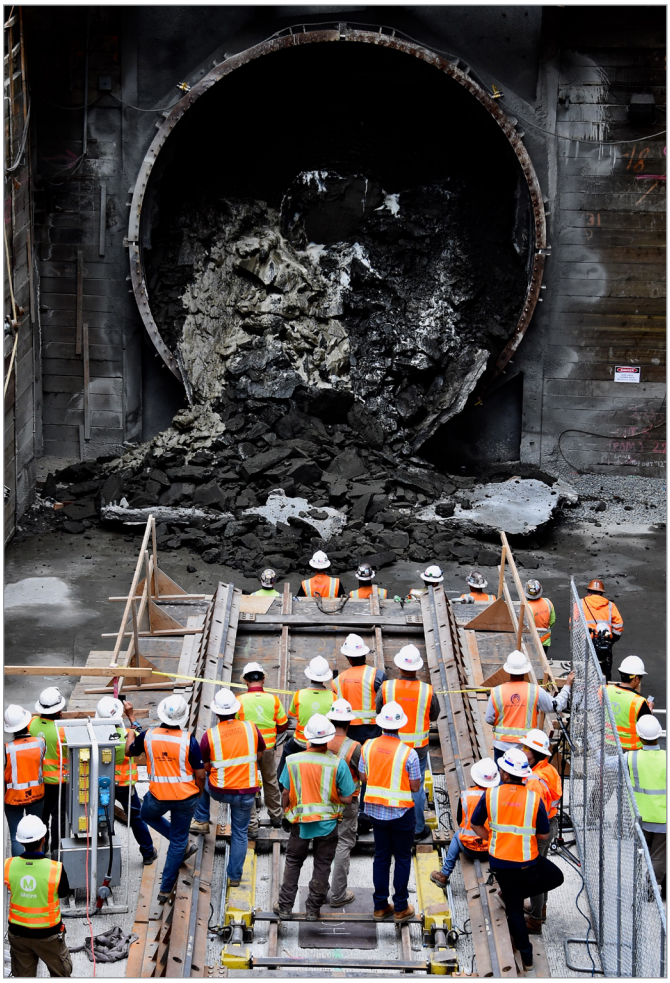
As such, this Guide will serve as a resource to Metro staff, contractors, and partner agencies to:

1. **Inform current and future infrastructure** projects to improve connectivity for more seamless transfers.
2. **Guide discussions and decision-making** for major strategic planning efforts, which will set long-term priorities for transit improvements across LA County.
3. **Share improvement ideas** with local jurisdictions and transit operators to consider in support of maximizing the value of Measure M transit investments and leveraging the benefits of regional growth and development near transit in LA County.

Application Strategy #1: Inform Current & Future Metro Projects

To maximize the value of current and future transit investments, this Guide will aid multiple departments and disciplines within Metro with the following list of internal efforts to carry out Measure M projects. Inter-department coordination and collaboration will be critical to effectively complete this work.

- **Plan new transit corridors** for a convenient and well-connected transportation network.
- **Design new stations** (with updated standards and guidelines) to accommodate easy transfers.
- **Prepare first/last mile improvement plans** for new transit stations and 100+ major bus Stops in LA County to improve safe paths to transit, on foot and/or by bike.
- **Integrate transfer improvements** as part of capital improvement and joint development projects.
- **Manage mobility programs** (e.g. bike share, commuter parking, microtransit).
- **Enhance and expand transit information and communication tools** (e.g. maps, signs, wayfinding, apps) to improve navigation and decision-making.
- **Expand TAP card payment and management options**, as well as expand the number of providers that use TAP cards for customer ease.



New Transit Corridors *As part of Measure M, Metro is tunneling to build three underground rail lines (Los Angeles)*

Application Strategy # 2: Inform Strategic Planning Efforts

Since the passage of Measure M (2016), Metro has initiated three major strategic planning efforts to guide upcoming transit investments. The recommendations in this report have the opportunity to inform critical discussions, which will help set priorities for future transit improvements.

1. **Metro Long Range Plan** creates a framework for long-term planning efforts for 40 years of transportation investments.
   - » Consider how connectivity could help prioritize project funding, sequencing, and resource allocation for transit improvements and programs over the next several decades, as well as maintenance for "State of Good Repair".

2. **Metro Strategic Plan** sets goals and policies for the Agency for the next ten years.
   - » Address how connectivity and the customer experience are integrated into the Strategic Plan's actions and policies.

3. **NextGen Bus Study** reimagines bus service in LA County to better serve customers and connect bus service to the expanding rail and BRT system. Explore strategies to:
   - » Link the bus and rail network for convenient trip planning
   - » Analyze how fare structures impact trip planning and transfers
   - » Reduce the number of transfers customers need to make to complete a trip
   - » Reduce average wait times for transfers
   - » Prioritize transfer improvements

Long Range Planning Projects *Station under construction along Crenshaw Line, one of many new transit stations funded by Measure M (Los Angeles)*

Bus Service *Metro buses, as well as tour buses Stop in front of Red Line Station at Hollywood/Highland (Hollywood, LA)*

Application Strategy # 3 Transfer Improvement Opportunities for Local Jurisdictions & Transit Operators

The following list outlines opportunities to coordinate with local jurisdictions and transit operators on transfer improvement initiatives that are beyond Metro's immediate purview, but impact the customer experience and quality of transit in LA County.

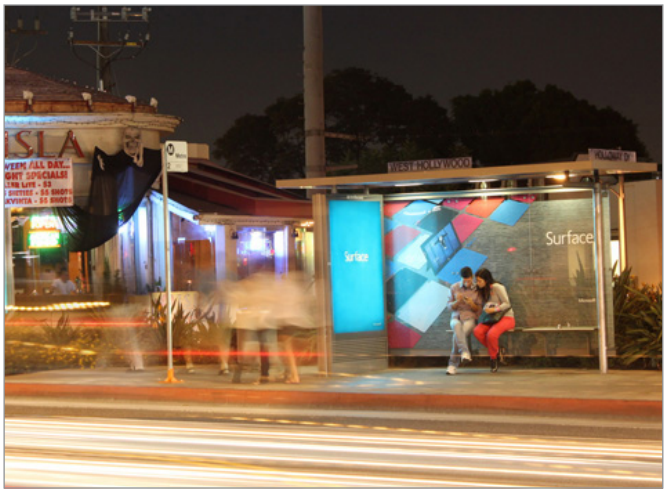
Regional and Local Transit Operators

1. **Transit Data.** Develop a set of best practices to collect and share transit data across jurisdictions and transit operators.
2. **Transit Signage.** Develop a set of best practices to display transit information and signage across LA County.
3. **Transit Fares.** Develop potential strategies to simplify fare structures between transit operators to make it easier for customers to transfer between operators as part of their trip.

Local Jurisdictions

1. **Street & Capital Improvements Projects.** Use this Guide to inform the planning and design of capital improvement projects that are within the public ROW to improve safety, accessibility, and comfort for riders. Prioritize safety and accessibility improvements along streets and sidewalks that serve transit.
2. **Public Benefits for Development Projects.** Identify transfer improvements that could be included in public benefit packages for development projects at, or near, major transfer points.
3. **Enforcement of Bus Stops.** Increase enforcement of bus Stops to maintain clear zones, and prevent non-permitted vehicles from blocking bus Stops. This will improve safety and reliability of bus service.
4. **Advertising Agreements for Transit Amenities.** Prioritize transit customer needs in agreements with advertising companies by: prioritizing high ridership locations for the installation of bus shelters and other transit amenities in the near term, and requiring bus shelters at all or most bus Stops in the longer term.

Public-Private Partnership *Metro partnered with The Bloc and local businesses, resulting in direct access to private businesses from the Station (7th St/Metro Center Station, LA)*



Advertising *An advertising company owns and maintains most of the bus Stop furniture in West Hollywood (e.g. Stop identity pole, shade structure, real-time bus information, ADA upgrades, WiFi access, etc) (West Hollywood)*


26th St Bergamot Station E
Must Validate Fare Here
Debe validar su pasaje aquí
Platform
1
Westbound
to Santa Monica

5 Design Toolbox

Design Checklist

The Design Checklist is a guide that can be used when embarking on a planning and design process to improve the transfer experience.

Whether you're designing just one Stop, making improvements to an existing one, or planning for an entirely new transit line with multiple Stations, this Design Checklist will walk you through the decision-making process, from data collection to understanding the travel paths, then agency coordination and safety considerations, and lastly to design.

Depending on what type of project is being undertaken (Sidewalk Stop, Station, major investment, modest remodel) the checklist can be used in part or in whole to assure you considered key aspects, with the goals of achieving an effective transfer experience for the customer traveling anywhere in LA County.

There are a number of **open data sites and portals** that could be useful to reference as part of the data collection process, including:

- **Metro First/Last Mile Strategic Plan and Walk Audit** (https://www.metro.net/projects/sustainability-first-last/)
- **Metro Active Transportation Strategic Plan Data** (http://gis.fehrandpeers.com/metroatsp/)
- **City of Los Angeles Vision Zero data** (http://visionzero.lacity.org/map/)

1 DATA
Collect relevant data to understand design issues

- ◯ **RIDERSHIP DATA.** How many customers use/will use the Sidewalk Stop or Station? How many will be transferring?
- ◯ **COLLISION DATA.** Are there a high number of collisions in the area (pedestrian/auto, bike/auto)? Is the Stop/Station on the Vision Zero Network?
- ◯ **TRANSIT SERVICE DATA.** What is the frequency of service (and average wait time)?
- ◯ **USER SURVEY DATA.** Have any recent user surveys been conducted at the Stop/Station?
- ◯ **MULTIMODAL DATA.** Are there pedestrian and bicycle counts or other active transportation data to inform design?
- ◯ **CRIME DATA.** Does this area have special security needs to ensure customers feel comfortable waiting for trains and buses?
- ◯ **STAKEHOLDERS.** Are there other parties who help oversee or maintain the area (e.g. Business Improvement District, Merchants Association) that possess relevant data?

2 TRANSFER POINTS AND PATHS
Identify the transfer points and transfer paths within the transfer zone

- ◯ **STOPS AND STATIONS.** Where are all the Sidewalk Stops and Stations within the transfer zone?
- ◯ **TRANSFER PATHS.** What is/are the ideal path(s) for customers to arrive at the desired Stop or Station? Where is the shortest and safest route?
- ◯ **WALK AUDIT.** What opportunities and constraints has the Walk Audit revealed? Document with photos.
- ◯ **RELEVANT PROJECTS.** Are there current or future planning and development projects to be coordinated with (e.g. active transportation, streetscape, access compliance)?
- ◯ **PARTNERSHIPS.** Is new development planned at a Sidewalk Stop or Station that can integrate transfer tools into their site (e.g. shade structure, seating or standing space, bike racks, etc)?
- ◯ **TRANSIT-ORIENTED DEVELOPMENT.** Are there opportunities for a Station TOD or other joint-development agreement that affects how the transfer environment should be designed?

3 AGENCY COORDINATION
Coordinate with transit operators with public agencies that oversee the transfer environment

- ◯ **COMMUNICATING GOALS WITH TRANSIT AGENCY.** Is connectivity included as a project goal and communicated with the transit agency providing service and their affected departments (e.g. Planning, Operations, Active Transportation, Communications, etc)?
- ◯ **COMMUNICATING GOALS WITHIN CITY.** Have project goals been communicated to the local jurisdictions' departments?
- ◯ **CONSOLIDATION.** Can Sidewalk Stop locations be consolidated, or at least minimize the number of street crossings needed to make a transfer?
- ◯ **SIGNAGE.** Can signage been consolidated to improve clarity and avoid street clutter?
- ◯ **SCHEDULING.** Can line schedules be refined to minimize wait times between transfers?
- ◯ **REVIEW AND APPROVALS.** Has the review and approval process needed for each agency been mapped out? Is there an ability to streamline the process?
- ◯ **COMPLIANCE.** Is the Stop, Station and path code compliant at a local, state and federal level?
- ◯ **MAINTENANCE.** Do all the involved parties understand who is responsible for maintenance of each tool?
- ◯ **FUNDING.** Which agencies or stakeholders can contribute to improving and maintaining the transfer zone?

4 SAFETY & SECURITY
Identify site specific issues to address

- ◯ **PEDESTRIAN SAFETY.** How can pedestrian safety be improved within the transfer zone? Does it require adjusting traffic signal synchronization, or installing more visible crosswalks, median refuges and/or lead pedestrian intervals? Or reducing rail crossings?
- ◯ **LIGHTING.** Is there adequate lighting so the transfer zone is comfortable for customers to use at night?
- ◯ **CPTED.** Consider crime prevention through environmental design (CPTED) for placement of amenities.
- ◯ **SECURITY STAFF.** Is there a need for security personnel at certain times of day/night or locations?

5 DESIGN

As presented in Section 3: Three Steps to Improve Transfers, and the Design Toolbox included in this Section 5, there are three aspects of design that must be addressed to create a successful transfer environment:

A Making Decisions

Information.
Have types and locations been identified?

Is information accessible to all customers (e.g. braille, audible, tactile, pictograms)?

- Stop or Station Identifier
- Maps
- Schedules
- Real time information
- Wayfinding to transit services and destinations

B Moving

Paths.
What are the shortest and safest paths?

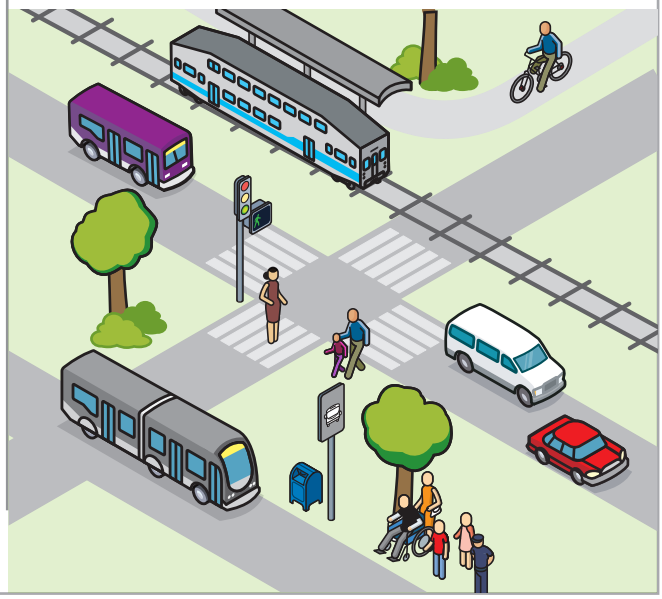
Can improvements/modifications be made to provide the most direct accessible route?

- Minimized street crossings
- Minimized walk distances and vehicle conflicts
- Sidewalk Stops at far side; or if no signal priority on same side of intersection as other Stop/Station
- Avoided rail crossing
- Lead pedestrian interval
- Continental or scramble crossings, median refuge
- Bi-directional access ramps and curb bulb-outs
- Clear pedestrian pathways (ideally 10' minimum)
- Lighting
- Bike ramps/channels and storage
- Auto drop-off zone, minimized curb cut widths
- Visible and efficient placement of vertical circulation
- ADA compliance and universal design approach

C Waiting to Board

Safety, Comfort and Convenience.
What will be provided to enhance the customer experience when making their transfer?

- Reduce waiting time
- Adequate waiting and boarding space
- Regular maintenance/cleaning
- Amenities by adjacent developer
- Shelter and/or shade tree
- Seating, lean bards, trash receptacles
- Ticketing machine, fare collection close to path
- Public restrooms
- Sound barriers
- WiFi
- Security kiosk
- Public art



6 PRIORITIZATION

- ◯ **REQUIRED.** What type of improvements are required by code and/or by agency standards for transfers?
- ◯ **RANKING.** What are the most important improvements, and in what order are they needed, to enhance the transfer experience?
- ◯ **FUNDING.** What can be implemented based on available funding? What funds can be sought?
- ◯ **TODAY.** What improvements can be installed within existing transfer zone footprint today?
- ◯ **FUTURE.** What improvements are beyond the footprint and immediate control of the planning/design entity that can be phased, or build off of efforts by others? (Future)

7 IMPLEMENTATION

- ◯ **BUILD OUT.** What method of procurement will be used to implement transfer improvements: Design/bid/build, or design/build, or public/private partnership?
- ◯ **CONSTRUCTION.** What measures can be taken to ensure existing service is minimally disrupted during construction? How will information be provided to customers during construction? Where are temporary Stops?

8 ON-GOING

- ◯ **UPKEEP OF ENVIRONMENT.** How will ongoing quality of the transfer zone and experience be maintained?
- ◯ **ON-GOING EVALUATION.** What metrics should be used to assess improvements (e.g. ridership changes, safety improvements, reduction in vandalism, etc) once transfer improvements are implemented?

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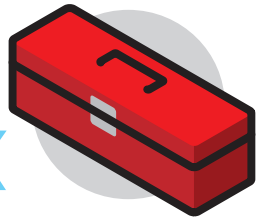
How to Use the Toolbox



The Design Toolbox offers a set of tools to improve the transfer experience so it can be more safe, convenient, and comfortable for customers.

The Design Toolbox can be used for improving existing transfer points and planning new ones. With a collection of tools, the Toolbox is intended to be flexible and adaptable to respond to different site conditions in LA County and transit customer volumes, patterns, and transfer needs.

Each tool is presented with a short summary, which outlines the purpose of each element, design considerations for successful implementation, the anticipated level of difficulty to implement, common maintenance responsibilities, and local precedent examples.

Because the installation and maintenance costs for tools widely vary based on location, material, and related improvements, the Level of Difficulty score reflects an estimated magnitude of costs along with other factors.

Used with the Design Checklist (page 59), the Toolbox aims to improve the customer experience for convenient transfers as part of a seamless trip.

Who Should Use the Design Toolbox?

The Design Toolbox is intended to serve as a resource for:

- Transit agency staff
- Local transit operators
- Planning, Transportation and Public Works staff at local jurisdictions
- Developers with projects adjacent to major transfer points

An example photo of the tool to show an actual installation.

"Design Consideration" includes guidance on appropriate placement of the tool and the amount of space required.

"Description" explains the tool's function and benefit to transfering riders.

Bike Center/Hub

Bike center/hubs are staffed or unstaffed structures that provide bike storage and services where there is a high volume of bicyclists. The center/hub can provide the following services: parking, repair, valet, parts or accessories, bicycle rental or share, showers, and bicycle related classes and activities.

Design Considerations

- Requires a minimum of 1,000 SF space.
- Locate near Stations and Stops with bike parking demand.

Level of Difficulty: *Hard*

Maintenance

Responsible Entities: Bike centers/hubs are located on property owned/leased by a private entity or public agency. Bike center/hubs are staffed by the owner or a contractor.

Local Precedent: Hollywood/Vine Bike Center/Hub, North Hollywood

Metro has bike center/hubs at Union Station, El Monte, Hollywood/Vine and Culver City (under construction). Other bike centers/hubs are operated by Burbank, Covina, Long Beach and Santa Monica.

"Local Precedent" lists locations where the tool has already been installed.

This icon illustrates the tool described.

"Level of Difficulty" scores the ease of implementation based on general assumptions of cost, installation, space requirements, and number of entities needed for approval.

"Maintenance" identifies responsible entities and maintenance considerations.

Recommended

Toolbox

The recommended design elements are listed in alphabetical order and organized by the three key transfer activities: **making decisions, moving, and waiting to board**.

The table provides a hierarchy for consideration for each tool: (P) for priority tools, (R) for recommended tools, or (C) tools for consideration. A dashed line indicates that the tool is not likely applicable for the site condition (e.g. Sidewalk Stop, Station).

Sidewalk Stops and Stations with high ridership, as discussed in Section 2: Background, have 500 or more riders (boardings and alightings) per day. While most of the recommended elements will be placed within the transfer zone (i.e. approximately 500 feet from a transit Stop), some elements may be located beyond this area.

When considering the layout of transfer areas, it is critical to maintain a clear path of travel. See **Section 5: Strategies for Narrow Sidewalks & Terminus Stations** for guidance on how to prioritize placement of design tools along narrow sidewalks and/or constrained spaces.

Toolbox	Sidewalk Stop (<500 Rides per Day)	Sidewalk Stop with High Ridership (500 or More Rides per Day)	Station
A Making Decisions			
Digital Information Kiosk	—	P	P
Customer Service Kiosk	—	C	P
Schedule and Maps	R	P	P
Real-time Arrival Information	R	P	P
Station Identifier	—	—	P
Sidewalk Stop Pole	P	P	P
Wayfinding (e.g. visual, audio, tactile)	R	P	P
B Moving			
Bi-directional Access Ramps	P	P	P
Bike Center/Hub	—	C	R
Bike Lockers	—	C	C
Bike Racks	R	R	P
Bike Channel/Ramp	C	C	C
Bike Share (within service area)	C	R	P
Car Share	—	C	C
Continental Crosswalk	R	P	P
Curb Bulb-out	C	C	R
Leading Pedestrian Interval	C	P	P
Median Refuge	C	C	C
Minimize Curb Cuts	R	R	P
Passenger Loading Zone	—	C	R
Parking Facilities	—	—	C
Scramble Crosswalk	—	C	R
Vertical Circulation *(or multi-level facilities)*	—	—	P
C Waiting to Board			
Bus Pad	R	P	P
Clear Zone	P	P	P
Fare Collection	C	C	P
Lean Bar	C	C	C
Lighting	P	P	P
Public Art	C	C	P
Restrooms	—	C	C
Seating	R	P	P
Security Kiosk	—	C	C
Shade	P	P	P
Shelter	R	P	P
Sound Barrier	—	C	C
Ticketing Machine	—	C	P
Trash & Recycling Receptacles	R	P	P
WiFi	C	R	P

Legend: P = Priority R = Tool Recommended C = Considered — = Likely Not Applicable

Precedent: New York City

Digital Information Kiosk

Touch-screen ad-based digital information kiosks can provide a variety of information such as service updates and maps in one convenient location. Kiosks can be funded by advertising contracts and generate revenue for operators.

Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Warrants high visibility location with ample clear zone to access touch-screen.
- May serve as Station identifiers.
- Requires power and communication lines.
  - Consider ways to make information accessible to persons with disability.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Private entity that installed the kiosk would likely maintain its content and functionality. Consider content-management strategy.

Digital information is easily updated, compared with physical signs that need to be created and installed when information changes.

Precedent: Sanchong Station, Taipei, Taiwan

Customer Service Kiosk

Customer service kiosks typically provide staff to answer questions and can enhance the customer experience. They are especially important for visitors, infrequent transit users, transferring passengers that only have limited use of a smart phone, or for passengers in need of specific assistance or accommodation. Consider translation services to make information accessible to non-English speakers.

Design Considerations

- Priority at Stations.
  - Kiosks must be highly visible and user friendly, either staffed with personnel (preferred) or offered as an interactive intercom.
  - Can provide security presence near fare gates.

Level of Difficulty: *Hard*

Maintenance

Requires friendly staff to operate.

Responsible Entities: Transit agency, local jurisdiction, or vendor contract.

Local Precedent: Red/Purple Line Wilshire/Vermont Station

Schedules and Maps

Schedules and maps (system, line, vicinity, etc) help customers understand transfer points and destinations, allowing them to travel efficiently.

Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Can be physical or digital.
- Smartphone apps can provide same level of information to users of a particular Sidewalk Stop who possess them.
    - Maps and schedules can be placed within a case, bus shelter, or as a stand-alone sign.
    - Maps and schedules can be displayed on digital screens (see Digital Information Kiosk).

Level of Difficulty: *Easy to Medium*

Maintenance

Responsible Entities: Local jurisdiction, vendor contract or transit operator. Area maps are sometimes provided by a local jurisdiction or other major entity (such as a business improvement district) responsible for the area.

Upgrade maps to digital format, wherever possible, to improve reliability and maintenance.

Local Precedent: Santa Monica

Real-time Arrival Information

Real-time arrival information tells customers the predicted arrival times for transit vehicles. Passengers can anticipate and make informed decisions to change their route or mode of transit if service is delayed or affected. Real-time information is currently being implemented at 300 of Metro's busiest bus Stops.

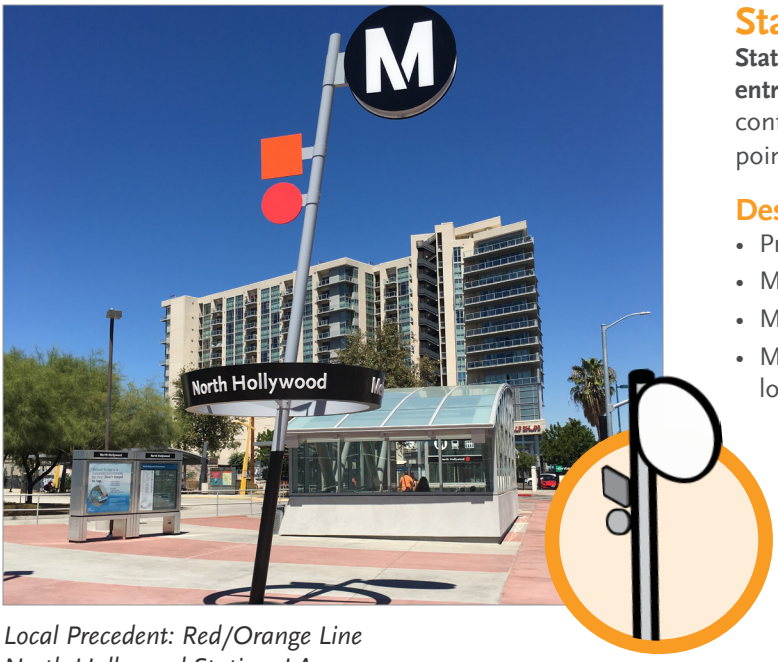
Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Place digital arrival signs at the Sidewalk Stop, or within transit vehicles.
- Provide information through a smartphone application, in addition to physical signs.
    - Can include information on maintenance or other delays.
- Can provide information in audio or visual formats.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: May require coordination between multiple transit operators who control the information and possibly a public or private entity installing/maintaining the infrastructure.



Local Precedent: Red/Orange Line North Hollywood Station, LA

Station Identifier

Station identifiers notify customers of the Station's entrance. Without Station identifiers, customers may be confused where to make their transfer, especially if transfer points are not proximate or visible.

Design Considerations

- Priority at Stations.
- Must be at least 10' tall to be visible from different angles.
- Must identify transit lines the Station offers.
- May be a pole or pylon on street level, or a large sign located above a building entry.
    - Station identifiers on building entrances may require coordination with the building owner and additional approvals.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Transit agency who owns and operates the Station.

Consider graffiti proof surfaces or a more frequent maintenance schedule.

Local Precedent: Broadway/Temple, Downtown LA

Maintenance

Responsible Entities: Maintained by the transit operator.

Requires repair, replacement or relocation. Will be more costly to maintain if customized. Pole finish impacts maintenance.

Sidewalk Stop Pole

Sidewalk Stop poles identify the Stop location and demarcate the vehicle front door. If designed well, poles can consolidate transit information, reduce clutter in the boarding area, and be accompanied by an auditory bus announcement device. Bus bay Stations use Sidewalk Stop poles to identify waiting areas for different lines of service.

Design Considerations

- Priority at all Sidewalk Stops and Stations (bus bays).
- Consolidate multiple line information wherever possible to minimize clutter and confusion of where to board.
- Shared sign poles require coordination between various transit operators.
    - Operator determines placement, but pole may be moved if opposed by local jurisdiction, adjacent building owner, or other affected entity.
    - Requires pole footing. Mount below-surface wherever possible to eliminate exposed surface base and screws.
    - Place pole at the front edge of the Sidewalk Stop per ADA requirements.
    - Consider tactile cues (braille) and push button with audio route information.

Level of Difficulty: *Easy to Medium*

Local Precedent: Expo Line, Santa Monica

Wayfinding

Wayfinding signage is important for customers to understand where they currently are located, decide where they need to go, and determine how to reach their destination. Wayfinding can clarify key landmarks, such as nearby Sidewalk Stops/Stations or institutions. Wayfinding in the form of auditory cues is an imperative substitute for customers that are visually-impaired or have limited literacy. Auditory cues alert passengers to approaching vehicles and direct customers to the appropriate bays/platforms and transit vehicles.

Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Place at decision points, such as adjacent to boarding areas and along transfer paths, especially where customers must change direction or use vertical circulation.
- Should be consolidated with other information as much as possible.
- Consider ways to make information accessible to persons with disability (e.g. tactile/braille).

Level of Difficulty: *Easy to Medium*

Maintenance

Responsible Entities: Transit operator or local business district or jurisdiction. May be provided by adjacent developer.

Wayfinding signage needs to be updated as desired destinations evolve. Determine criteria for what destinations should be included.

Coordinate wayfinding signage with local and regional operators, where possible, to provide consistency among messaging for easy navigation.

Local Precedent: Silver Line El Monte Station, El Monte

Bi-directional Access Ramps

Bi-directional access ramps guide pedestrians and wheelchair users directly onto the crosswalk, rather than the center of the street. This creates a safer path, especially for those using mobility devices or with impaired vision.

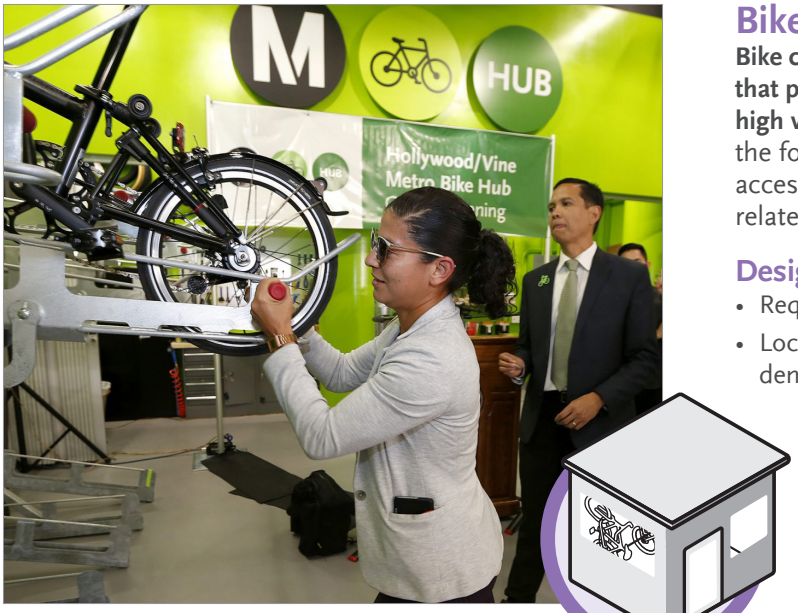
Design Considerations

- Priority at all Sidewalk Stops and Stations.
- Install detectable warning surfaces at the edges of the median refuge and separate by a 2' minimum length of surface without detectable warnings.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local public works or transit operator



Local Precedent: Hollywood/Vine Bike Center/Hub, North Hollywood

Metro has bike center/hubs at Union Station, El Monte, Hollywood/Vine and Culver City (under construction). Other bike centers/hubs are operated by Burbank, Covina, Long Beach and Santa Monica.

Bike Center/Hub

Bike center/hubs are staffed or unstaffed structures that provide bike storage and services where there is a high volume of bicyclists. The center/hub can provide the following services: parking, repair, valet, parts or accessories, bicycle rental or share, showers, and bicycle-related classes and activities.

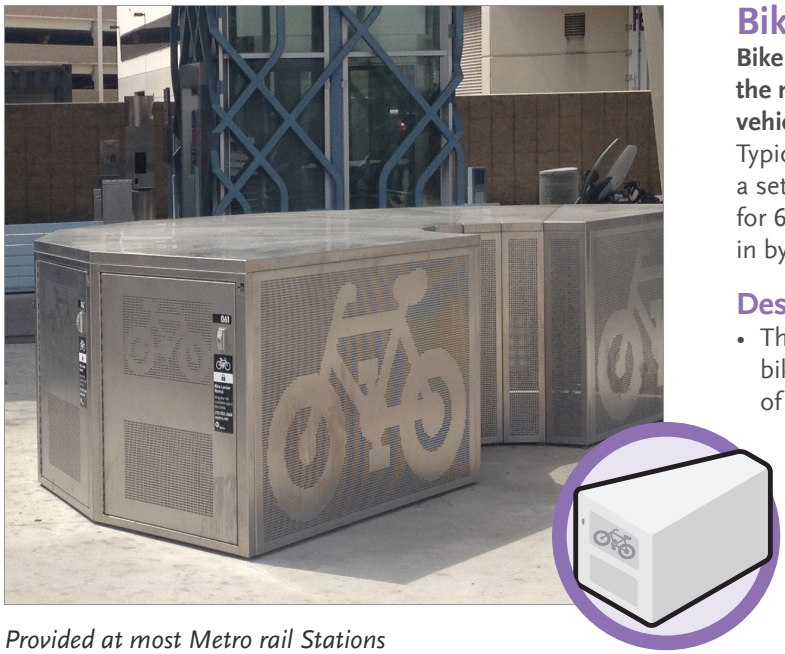
Design Considerations

- Requires a minimum of 1,000 SF space.
- Locate near Stations and Stops with high bike parking demand.

Level of Difficulty: *Hard*

Maintenance

Responsible Entities: Bike centers/hubs are located on property owned/leased by a private entity or public agency. Bike center/hubs are staffed by the owner or a contractor.



Provided at most Metro rail Stations

Bike Lockers

Bike lockers provide enclosed, long-term storage, reducing the need for customers to bring their bikes on transit vehicles and thus speeds up transfers by improving access. Typically, customers rent lockers from the transit agency for a set rental period. Metro allows customers to rent lockers for 6 months at a time, but the length of time can vary in by jurisdiction.

Design Considerations

- The amount of bike parking should respond to local bike activity and needs. Perform a bike count or survey of transit.
    - Sidewalk Stops/Stations with high ridership should consider space-efficient bike centers/hubs instead of lockers.
    - Larger facilities may accommodate multiple bicycles in one locker or a small garage.

Level of Difficulty: *Easy*

Maintenance

Responsible Entities: Metro currently owns and maintains bike lockers at rail and BRT Stations, but considers bike centers/hubs. Non-Metro bike lockers are owned by local jurisdictions and maintained by other operators.

Provided at all Metro rail and BRT Stations

Bike Racks

Bike racks are needed for short-term parking customers who bicycle at the beginning or end of their transit journey.

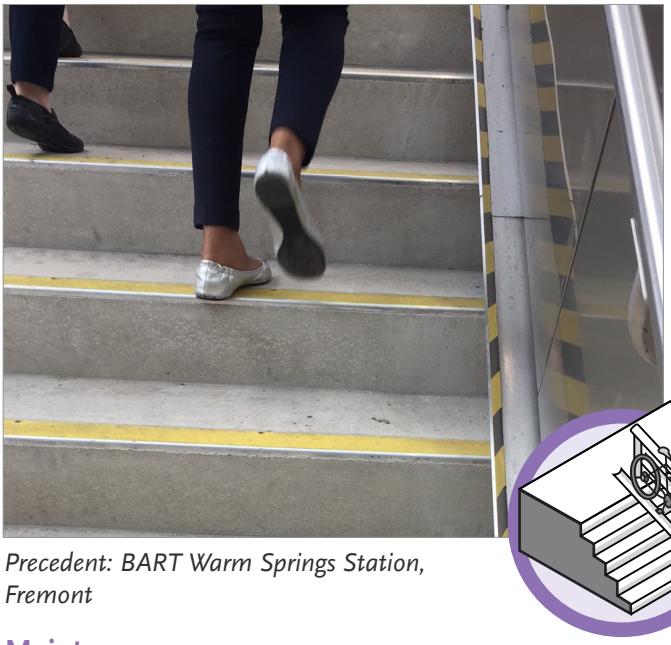
Design Considerations

- Priority at Stations.
- Place in high visibility locations (near Station entrances, businesses, etc) for safety.
- Developers may provide racks on their property or on sidewalks.
- The placement of bike racks should not impede access along major pathways and/or boarding zones.
    - The amount of bike parking should respond to local bike activity and needs. Perform a bike count or survey of transit. *See First/Last Mile Toolkit for more information on placement.*

Level of Difficulty: *Easy*

Maintenance

Responsible Entities: Local jurisdiction, transit operator, or property owner.



Precedent: BART Warm Springs Station, Fremont

Maintenance

Responsible Entities: Transit agency will install, repaint, and remove obstructions in bike channel/ramps.

Bike Channel/Ramp

Bike channel/ramps are ramps installed on staircases that enable cyclists roll their bikes up and down staircases, rather than carry them. Bike channel/ramps make it easier for customers to move with their bicycles to their next Sidewalk Stop or Station and are best installed with new Station designs.

Design Considerations

- Located at Stations, where vertical circulation is needed.
- Staircases need to be built above minimum standards, otherwise installing ramps may compromise fire department exiting requirements.
  - Install along outer edges of staircases or place in center of staircase, where handrails do not obstruct the customer's control of his/her bicycle.
  - Generally not suited as a retrofit for existing staircases, as slope is often steep and handrails interfere with leaning and balancing.
  - Discourage alternative uses (e.g. skateboards).

Level of Difficulty: *Medium*

Local Precedent: Downtown LA

Bike Share

Bike share allows customers to check out a bicycle for short trips and facilitates movement between destinations, Stations and Sidewalk Stops. It is especially useful for short trips and first/last mile connections.

Design Considerations

- Priority at Stations.
- Amount of bicycle stations and docks should respond to popular destinations, public transit, and population densities. Perform bike share feasibility study and crowd-sourcing map to determine ideal locations.
- Place in space with high visibility.
  - Can be located on sidewalks, in Station plazas, in open areas, or repurpose car parking spaces, as a "dock" or "station", depending on program model.
  - Consider ease of payment, such as ability to use TAP cards to make travel more convenient.
  - Often have app support.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local jurisdiction, vendor contract or transit operator.

Bikes may need to be balanced across network to avoid under-supply at popular stations.

Car share operates out of about 10 Metro park-and-ride lots or rail Station-adjacent privately owned property lots.

Car share

Car share offers customers the ability to rent a car on an hourly or daily basis to reach destinations or transfer between Stations.

Design Considerations

- May be located at park-and-ride facilities or could use local jurisdiction's street parking or public lots.
- May influence parking meter operations and revenues.
- Car sharing companies usually want to locate at highly visible locations for exposure of their service.
- Can be located within development projects if cities encourage or require it.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Usually owned and operated by a private entity, or joint responsibility with transit agency through a public-private agreement. Agreements may require private entity to pay per space.

Consider how the street will be cleaned. Some companies have special maintenance vehicles that clean underneath the car and do not require the car be moved off the street.

Local Precedent: Westwood, LA

Continental Crosswalk

Continental crosswalks feature distinct, two-foot wide white painted strips that boost safety for pedestrians. Also referred to as zebra crosswalks, continental crosswalks increase pedestrian visibility and can reduce vehicle encroachment into the crosswalk. Stripes are yellow near schools.

Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Place an advanced stop bar perpendicular to the travel lane in advance of the crosswalk to increase pedestrian safety.
- Width of crosswalk should be increased from standard minimum if pedestrian volumes warrant. City of Los Angeles standard is 15' wide.

Level of Difficulty: *Easy*

Maintenance

Responsible Entities: Local public works.

Crosswalks can fade with time and wear. Thermoplastic material is considered most durable and lasting.

Local Precedent: Downtown LA

Curb Bulb-Out

Curb bulb-outs with reduced curb radii make street crossings shorter and safer for pedestrians and cyclists. A curb bulb-out extends the sidewalk into the street, reducing the street crossing distance for pedestrians. The extension results in wider clear zones and more amenities. By keeping buses in the travel lane and removing the need for the bus to turn in and out of Sidewalk Stops, travel times are shortened. While constructing curb bulb-outs, reduce curb radii for more space and reduce vehicle turning speeds, thus improving safety.

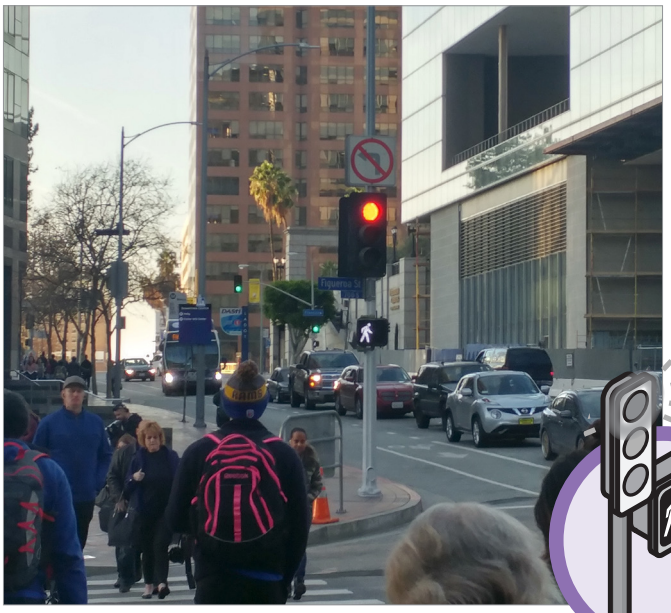
Design Considerations

- May need to reduce curb, lane, or street parking when extending the curb out into the street.
- Curb extension width is typically less than the width of a street parking space. Lengths vary depending on volume of users and Sidewalk Stop length.
- Construction may affect overall street profile and drainage at street corners.
- Provide 10' of space between queuing buses.

Level of Difficulty: *Hard*

Maintenance

Responsible Entities: Local public works. Curb extensions should be cleaned regularly with sidewalk cleaning program.



Local Precedent: 7th St/Figueroa

Leading Pedestrian Interval

Leading pedestrian intervals give pedestrians a head start crossing the street before drivers are given a green light. Thus drivers more easily detect pedestrians in the street, making crossings safer and faster. Pedestrians are typically given up to 10 seconds to start entering an intersection with a corresponding green signal in the same direction of travel.

Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Install where pedestrian volumes and vehicle turning volumes are high (where potential vehicle-pedestrian conflicts are more likely).
  - Requires changes in traffic synchronization.
  - Consider adding audio to signal crossing.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local public works.

Local Precedent: Santa Monica Blvd, West Hollywood

Median Refuge

A median refuge, or pedestrian island, provides a protected space in the center of the street to facilitate safer pedestrian and bicycle crossings. Angled "z-crossings" within the median forces pedestrians, wheelchair-users and cyclists to face and observe on-coming traffic before completing their second leg of their crossing, improving safety.

Design Considerations

- Useful where street crossings are wide and have a center turn lane/median.
- Install detectable warning surfaces at the edges of the median refuge separated by a 2' minimum length of surface without detectable warnings.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local public works.

Landscaping could increase the cost of maintenance but improve overall comfort of transfer path.

Local Precedent: 4th Street, Santa Monica

Minimize Curb Cuts

When making sidewalk and roadway improvements and/or redeveloping a site for a new Station or private development, local jurisdictions should 1) remove unused curb cuts (driveways) or 2) narrow oversized curb cuts. These methods make transfer paths safer, reducing potential conflicts between vehicles and customers. Reductions often extend a Sidewalk Stop boarding area for better circulation and allow more room for transit vehicles to stop.

Design Considerations

- Priority at Stations
- Check that curb cuts are no wider than minimum standard required by local jurisdiction.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local public works or private entity.

Local Precedent: Union Station, LA

Passenger Loading Zone

Passenger loading zones facilitate passenger pick-up and drop-offs. Designating a space for this use reduces conflict with vehicles and transit vehicle operations. As ride-sharing smart phone applications become increasingly common, the role that passenger loading zones play at Stations will likely increase. The zone should accommodate persons with disabilities, paratransit vehicles, microtransit, and shuttle buses.

Design Considerations

- Can create pull-in zone for loading/unloading to avoid conflict with other vehicle circulation.
    - Separate passenger loading areas from bus operations to ensure safety. Prioritize bus loading zones in hierarchy of boarding/drop-off areas.
    - Anticipate demands of ride-sharing vehicles based on nearby land use and points of interest.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local jurisdiction or transit operator.

Local Precedent: Green Line Hawthorne Lennox Station

Parking Facilities

Parking facilities provide long-term parking, increasing access to transit for customers beyond an easy walk or bike distance. Parking facilities are often placed at Terminus Stations or transit hubs along major commuter routes. They may include EV charging stations, van access, solar panels, and retail storefronts, and can be integrated with private development and operated as a shared facility to take advantage of different parking use patterns.

Design Considerations

- Design to accommodate future active uses, should parking demands diminish over time (i.e. surface lots preferred over structures)
    - Include wayfinding, lighting, transit information, and easy payment system.
    - Ensure pedestrian paths between parking and platform are safe, direct, convenient, and accessible.
    - Requires parking enforcement and regulation to manage supply and demand.

Level of Difficulty: *Hard*

Maintenance

Responsible Entities: Local jurisdiction or transit agency.

Note: *Refer to the Metro Parking Design Toolkit*

Local Precedent Hollywood/Highland

Scramble Crosswalk

Scramble crosswalks decrease the number of street-crossing movements needed to transfer by allowing pedestrians to cross diagonally. Scramble crossings are safer because no vehicles can move while pedestrians cross in all directions on one signal phase.

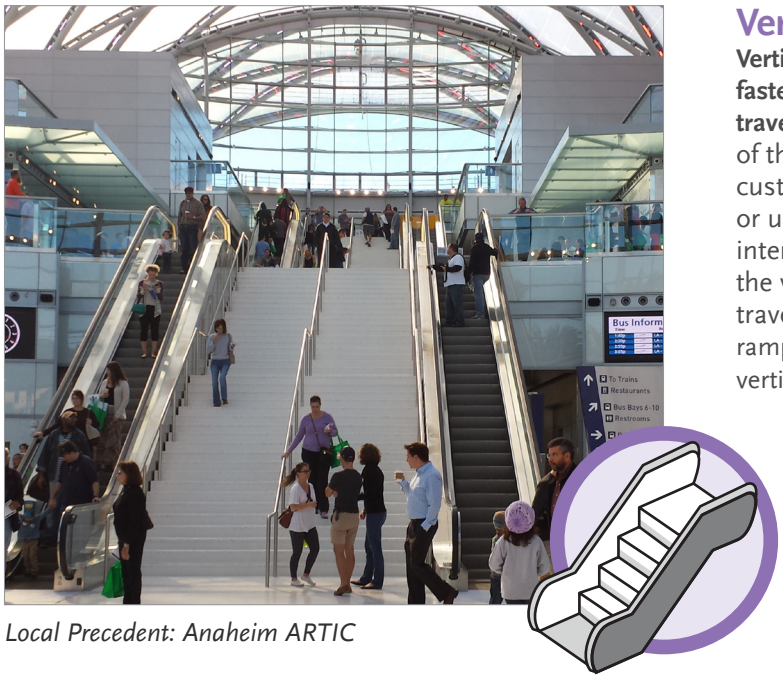
Design Considerations

- Install at intersections with high-transfer activity.
- Requires altering signal phasing or timing.
- Crosswalks can be artistic and contribute to placemaking if local jurisdiction permits.
    - Consider adding audio to signal crossing.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local public works.



Local Precedent: Anaheim ARTIC

Vertical Circulation

Vertical circulation (e.g. stairs, escalators, elevators) allows faster, safer movement for disabled customers, and those traveling with strollers, luggage, bikes, etc. The location of these elements is important for Stations where customers are transferring from street level to elevated or underground connections. Vertical circulation and interface between Stops/Stations should minimize the vertical and horizontal distances a customer must travel to the greatest extent possible. Where bike channel/ramps are not installed, bicyclists may use elevators for vertical circulation.

Design Considerations

- Priority at Stations with grade change.
- Stairs, escalators, and elevators should be visible from boarding platforms and Station entry points to make circulation clear and intuitive and reduce wayfinding signage.
- Elevators should be located in high visibility locations and designed with transparent walls to improve security.
- Bike channel/ramp should be integrated into stairway design to reduce the demand on elevators.

Level of Difficulty: *Hard*

Maintenance

Responsible Entities: Transit agency.

Local Precedent: Los Angeles

Bus Pad

Bus pads require less maintenance than asphalt-surfaced streets and thus improve the transit system's quality of facilities service. Bus pads are reinforced concrete foundations designed to handle the effects of bus movements such as braking, turning, and accelerating.

Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Provide bus pads at Sidewalk Stops. Multiple bus pads may be needed at high volume Stops and/or layover zones.
    - Install concrete bus pads at BRT Stations.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local public works or transit agency.

The initial cost of concrete pads is expensive, but concrete pads need much less maintenance than asphalt and do not need to be replaced as soon.

Local Precedent: Los Angeles

Clear Zone

Establishing a clear zone between the curb edge and street furniture creates uninterrupted space that makes boarding/alighting smoother and faster. The clear zone should facilitate movement for customers of all abilities.

Design Considerations

- Priority at all Sidewalk Stops and Stations.
- Relocate existing furnishings and above-ground street utilities or boxes to establish the clear zone.
- The zone must comply with ADA requirements and provide a 4' minimum width for wheelchairs to move unobstructed.
    - Provide 8' long clear sidewalk if bus provides 8'x5' bus doors.
    - Consider tactile cues for blind/visually impaired.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local jurisdiction or transit operator.

Clear zone should be cleaned regularly with sidewalk cleaning program.

Local Precedent: Silver Line

Fare Collection

Locating fare collection devices (such as TAP validators) within vehicles and allowing all-door boarding access reduces queuing and speeds up boarding. Despite 2-hour free transfers, Metro currently requires transferring passengers to use the TAP validator every time they board a bus or rail vehicle. As technology advances, fare collection tools may change and be phased out over time.

Design Considerations

- Priority at Stations.
- At Sidewalk Stops, locate within vehicles if possible.
    - Expand fare management options to include mobile payment to speed up boarding time and provide more options to customers.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local jurisdiction or transit operator.

Local Precedent: Downtown LA

Lean Bar

Lean bars provide a more comfortable waiting experience by offering optional standing spaces as opposed to seating, especially where space is limited. Positioning lean bars under shade features further enhances comfort to customers.

Design Considerations

- Design with durable surfaces to discourage graffiti and dry faster in wet seasons.
- Consider dirt, graffiti and heat absorption when selecting color.
- Ensure lean bar design complies with ADA requirements for objects in the path of travel.

Level of Difficulty: *Easy*

Maintenance

Responsible Entities: Local public works, vendor contract or transit operator.

Maintenance includes regular cleaning, graffiti-removal and occasional repair.

Local Precedent: Gold Line Southwest Museum Station

Lighting

Lighting design and fixtures that are well-maintained improve safety and security for customers moving or waiting to board.

Design Considerations

- Priority at all Sidewalk Stops and Stations.
- Install lighting along key pedestrian pathways, at Sidewalk Stops, and within Station areas to avoid dark spaces.
- Integrate lighting into bus shelters, existing street poles, and canopy columns to avoid clutter in public ROW an street areas.
- Use LED fixtures to reduce maintenance needs.
    - Design lighting to be pedestrian scale to avoid "gas station" lighting effect.
    - Evaluate lighting to reduce issues for persons with disabilities. *See Metro Office of Civil Rights Station Lighting Design Handbook.*

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local jurisdiction or transit operator.

Local Precedent: Little Tokyo, LA

Public Art

Public art makes the transit experience more inviting and pleasurable, contributing to LA County's artistic vibrancy and fostering a sense of place. Metro Art incorporates artwork into all Metro projects. Cities and local transit agencies may also wish to commission public art into transit elements located adjacent to Metro property.

Design Considerations

- Priority at Stations.
- Engage Art Program staff early in the process to ensure art is well integrated into project.
- Ensure artworks are created especially for their transit sites and fabricated from highly durable materials.
    - Ensure art complies with ADA requirements for objects in the path of travel and walking surfaces.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Maintenance plans are part of the approval process regulated by authorities such as a city's Department of Cultural Affairs.

Precedent: New Zealand

Restrooms

Availability of restrooms at Stations reduces missed connections, provides comfort to transit customer, and minimizes public health concerns. Restrooms are especially important to transferring passengers with long trips.

Design Considerations

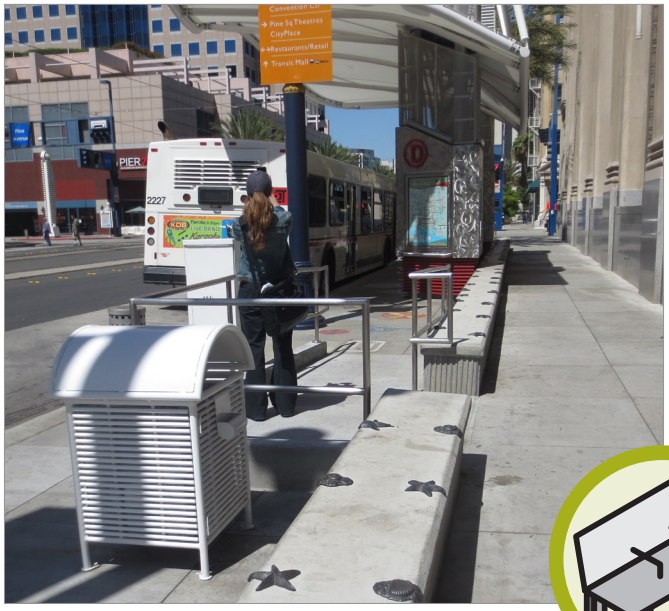
- Should be located at high ridership Sidewalk Stops and Stations with close coordination with security and maintenance departments.
- Locate in paid fare area, where possible, for convenience and security.
- May be provided by adjacent transit-oriented development.

Level of Difficulty: *Hard*

Maintenance

Responsible Entities: Local jurisdiction, vendor contract or transit operator.

Requires ongoing staff to maintain cleanliness of restrooms.



Local Precedent: Downtown Long Beach

Seating

Seating provides customers a more comfortable waiting experience, especially when waiting more than 10 minutes. Ideally seating is sheltered. If additional is needed, shaded or unprotected seating will suffice. Seating can help identify a Sidewalk Stop location where no shelter exists.

Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Should have intermediate armrests to serve disabled passengers and discourage non-transit related uses (e.g. sleeping).
- Folding seats and lean bars can be used when space is limited.
- Provide seating based on need and space available.
- Discourage dirt, graffiti and heat absorption when selecting color and material.
- Design to dry faster in wet seasons.
- Maintain adequate space for wheelchairs within sheltered seating area.

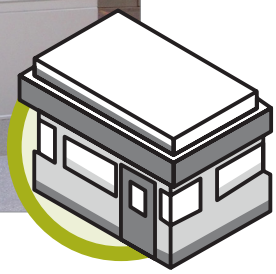
Level of Difficulty: *Easy*

Maintenance

Responsible Entities: Local jurisdiction, vendor contract or transit operator.

Maintenance includes regular cleaning, graffiti-removal and occasional repair.

Local Precedent: RTD Union Station, Denver



Security Kiosk

Security kiosks support law enforcement and security presence at Stations, thus making moving and waiting to board safer. Security kiosks allow for rapid response time when enforcement is needed and provide a sense of comfort for customers.

Design Considerations

- Requires power and communication lines.
- Consider design methods to integrate kiosk into Station in high visibility areas (e.g. fare gates, entrances).
- Integrate into building or stand-alone.
    - Consider the number of staff needed at a kiosk to ensure there is sufficient space.

Level of Difficulty: *Hard*

Maintenance

Responsible Entities: Jurisdiction police authority and/or transit operator security.

Requires ongoing staff to operate or coordinate with jurisdictional policing department.

Local Precedent: Gold Line South Pasadena Station, South Pasadena

Shade

Shade, provided by a transit shelter, street trees, or existing buildings can reduce heat island effects and make waiting more comfortable for customers. In instances where a Sidewalk Stop location may have limited space available for a transit shelter, trees are a viable alternative that can take up less space and may be less expensive to maintain over time. In addition to providing some protection from sun, and light rain, trees help beautify sidewalks and communities.

Design Considerations

- Priority at all Sidewalk Stops and Stations.
    - Set back trees away from the curb to avoid blocking buses and sight lines, as well as damage by passing trucks or transit vehicles.
    - Position trees to avoid blocking the clear zone, sidewalk access, and commercial signage.
    - Consider different tree species based on the amount of shade can provide, ideal spacing, amount of leaf or blossom drop. Street trees often provide more generous cover than canopies with sun moving during the day.
    - Avoid installing tree grates to prevent compaction of soil surface that cause hazardous conditions for the tree if the tree begins to outgrow the grate and for pedestrians if the grates become lifted due to roots.
    - Use permeable material such as decomposed granite for tree wells.
    - Trees placement must comply with Metro's Rail Design Criteria at rail Stations.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Local jurisdiction or property owner.

Maintenance includes regular pruning, replacement, maintenance of tree well surface and irrigation. Trees require bubblers, or in some locations, an agreement with adjacent property owner to assure trees are watered adequately, especially during their initial few years.

Local Precedent: Riverside, CA

Shelter

Transit shelters improve the waiting experience by protecting transit users from natural elements such as rain, sun and wind. Shelters are an important amenities for customers waiting in Southern California's warm climate.

Design Considerations

- Priority at high ridership Sidewalk Stops and Stations.
- Shelters should accommodate standing, seating or lean bars, real-time information and lighting.
- A semi-transparent back screen provides a sense of enclosure and can help block noise and wind.
    - The framework of the shelter can also support information such as system maps, district information, bus schedules, integrated trash bins.
    - Consider where ridership and waiting times warrant them, wherever sidewalk space allows, and where they can be maintained.
    - Shelters can be an important identity element for transit system, specific line or district.
- Locate clear of curb and sidewalk pathways to reduce conflicts.
- Requires a clear space within the shelter per ADA requirements (2.5 'x 4' minimum).
- Avoid advertising that reduces sight lines.

Level of Difficulty: *Medium*

Maintenance

Responsible Entities: Shelter owner/provider or vendor contract. In some cases a private developer agreement may include adjacent shelter if on their property.

Maintenance includes regular cleaning, graffiti removal, repairs, trash removal and light replacement.

Local Precedent: Silver Line 37th St Transitway Station along the I-110, LA

Sound Barriers

Sound barriers help reduce noise for elevated Stations and Sidewalk Stops where traffic noise and vibration create an unpleasant waiting environment. This design element is particularly important for Stations along freeways. New transit lines should avoid locating along freeways, if possible.

Design Considerations

- Should be transparent for customer safety and visibility.
- Install large objects, such a high-backed benches, to help block noise from the freeway lanes.
- Installing enclosed shelters can reduce noise levels by 7 or 8 decibels.
- Locate sound walls along the outside border of the Station for the most effective reduction of noise, with reductions of up to 13 decibels (Passenger Exposure To Noise At Transit Platforms In Los Angeles, UCLA Luskin Center for Innovation, July 2012).

Level of Difficulty: *Medium to High*

Maintenance

Responsible Entities: Local jurisdiction, Caltrans or transit agency. Installation must be coordinated with the owner of the roadway or highway on which the Sidewalk Stop is located.

Local Precedent: Red Line Universal City Station, Los Angeles

Ticketing Machine

Ticketing machines shorten boarding times by allowing transit users to purchase fares in advance. They should be located conveniently along paths to transit platforms or at Sidewalk Stops with high ridership. As technology advances, current ticketing machines may be changed or phased out over time.

Design Considerations

- Priority at Stations.
- Provide at least 30" x 48" in front of the Ticket Vending Machine.
- Provide 6' minimum of queuing distance.

Level of Difficulty: *Easy*

Maintenance

Responsible Entities: Transit operator.

Local Precedent: Santa Monica

Trash & Recycling Receptacles

Providing trash receptacles is crucial for keeping the Sidewalk Stops/Station boarding area clean and minimizing litter on transit vehicles.

Design Considerations

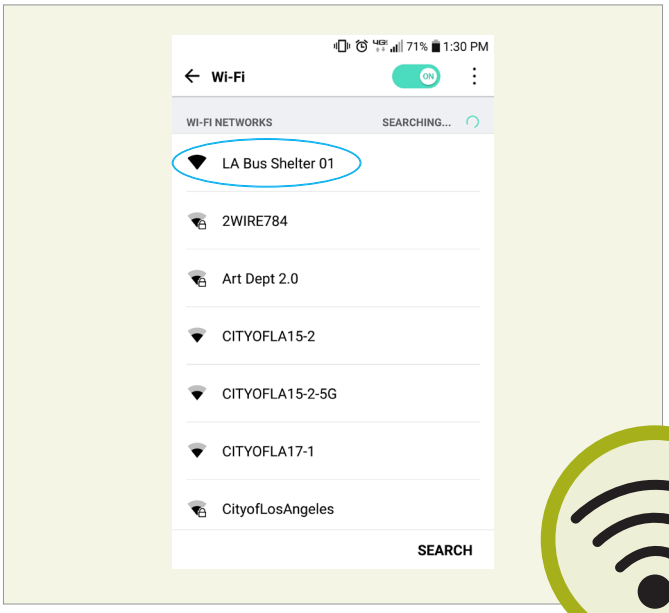
- Priority at high ridership Sidewalk Stops and Stations.
- Bolt down receptacles to avoid removal.
- If possible, avoid placing bins in direct sunlight to minimize foul smells.

Level of Difficulty: *Easy*

Maintenance

Responsible Entities: Local jurisdiction, vendor contract or transit operator.

Regular maintenance needed so overflow of receptacles does not deter from the transfer experience.



Local Precedent: Los Angeles City Hall

WiFi

WiFi provides customers with Internet access to information such as maps and schedules on their mobile devices, which enhances decision making and the experience while waiting to board.

Design Considerations

- Priority at Stations.
- Provide on transit vehicles and at Stations.
- May be ad-based and therefore cost nothing to the transit operator.

Level of Difficulty: *Hard*

Maintenance

Responsible Entities: Local jurisdiction or transit operator.

Usually owned and operated by a private entity through a public-private agreement.

Strategies for

Narrow Sidewalks & Terminus Stations

This section provides guidance for complex transit conditions, including narrow sidewalks (defined as less than 12 feet in width) and Terminus Stations, which require a great deal of coordination between transit operators for good circulation and space planning. Precedent images and illustrative diagrams are included to demonstrate best practices.

The narrow Sidewalk Stop efficiently provides customers with seating, lean bars, shade trees, and Sidewalk Stop identification and transit information integrated on a light pole (Sepulveda Blvd, Sherman Oaks)

El Monte Station is the terminus of the Metro Silver Line and provides connections to multiple transit operators and services. (El Monte Station, El Monte)

NARROW SIDEWALKS

What are some challenges of narrow sidewalks?

- Along a narrow sidewalk, competition for throughway space and boarding space limits the size and scale of possible design tools.
- After accounting for street furnishings, light poles, utility boxes, trash receptacles, and signs, there is limited space to improve transfers.

Who is vying for sidewalk space?

- Transit riders use Sidewalk Stops to queue, board, alight, or wait for their transit vehicle.
- Transit riders walk along sidewalks to reach their next Sidewalk Stop or Station.
- Pedestrians walk along sidewalks to reach their destinations.
- Businesses use sidewalks for building entries, outdoor dining, displays, and overhanging elements such as awnings or signs.

What do I need to have at my Sidewalk Stop?

- An unobstructed **clear zone** that is at least 5 ft wide for customers to board and alight vehicles (or as current codes dictate).
- For a bus Sidewalk Stop: a **landing area** for disabled customers measuring at least 5 ft parallel to the street and 8 ft perpendicular to the street at the front of bus to meet ADA requirements for boarding and alighting, and at least 10 ft parallel to the street and 8 ft perpendicular to the street at the back of the door.
- Stop pole and sign(s) with a minimum 7 ft overhead clearance.

How do I design the Sidewalk Stop to improve transfers?

- **Prioritize tools that are most necessary and beneficial for pedestrians** of all abilities per ADA. There must be space for people to pass through, as well as space for them to wait for their next vehicle.
- **If feasible, separate customers and passing pedestrians**. This may not be as practical where bus Stops are busier and the volume of waiting and queuing customers is higher.
- **Extend the sidewalk** with curb bulb-outs by obtaining the adjacent street lane or parking space(s) to create additional space for Sidewalk Stop amenities and reduce crowding.
- **Place street furniture and shelters along the curb line** and oriented toward the sidewalk to consolidate the "boarding zone" and pedestrian path, but only when safety and a clear path for circulation is reserved. Furniture can become a barrier/hazard, depending on the location.
- **Reduce clutter** by consolidating street furniture such as sign poles, trash bins, and information on shelters. Minimize the number of poles at shared bus Stops. Transit operators must coordinate the placement of signs. Trash and recycling bins can be a combined design to reduce the number of items on the sidewalk.
- **Provide narrow shelters** that have a limited "footprint" or explore shelters without columns (e.g. larger building overhang).
- **Try lean bars** if there is inadequate room for shelters or standard seating.
- **Select appropriate species of trees,** if space allows, and use for shade if narrow shelters won't fit.
- **Use hard surfaces** (e.g. grates, decomposed granite) for tree planter, so pedestrians can walk on this area.
- **Coordinate lighting** with existing street lighting to reduce poles along the sidewalk.

There is no zone separating the Sidewalk Stop and throughway (Westwood, LA)

There are two distinct zones: the Sidewalk Stop and a throughway for passing pedestrians (Westwood, LA)

Specially designed shelters have a small footprint and serve as Sidewalk Stop identifiers (Santa Monica)

The Sidewalk Stop does not provide customers with seating or shelter (Alameda St, LA)

Where space for shelters and seating is limited, smaller shelters and lean bars are good alternatives (Westwood, LA)

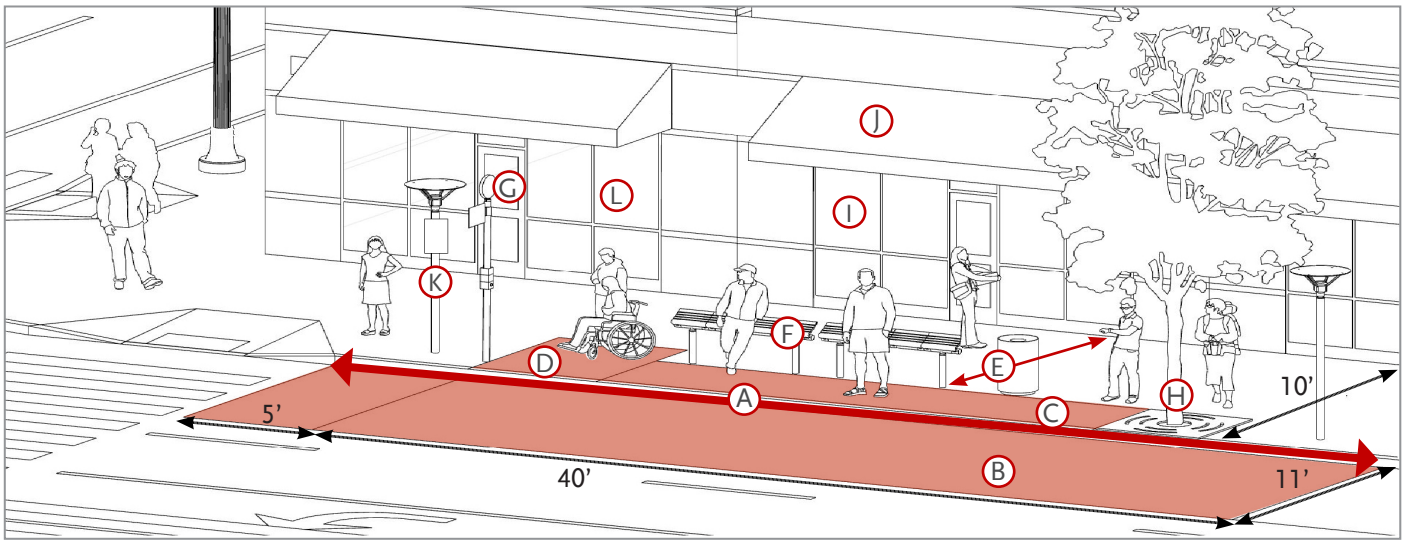
Narrow shelters can integrate "flip seating" and still separate the customers from passing pedestrians (San Bernardino)

Multiple sign/operator poles clutter the Sidewalk Stop (Downtown LA)

Multiple transit operators coordinated to place all their information on one shared pole (Artesia Station, LA)

Clear, consolidated signage reduces sidewalk clutter and minimizes confusion for customers (Downtown LA)

Constrained/Narrow Sidewalk (10 ft wide) with Bus Stop



A. **Red Curb Bus Zone.** 40 – 60 ft red curb length (40 ft for standard bus, 60 ft for articulated bus, measured 5 ft from crosswalk).

B. **Concrete Bus Pad.** 11 ft wide concrete pad in travel lane at bus Stop to support weight of buses and reduce wear and tear on pavement.

C. **Clear Zone.** Unobstructed path to access bus (5 ft preferred as measured from curb face to street furniture, or other vertical obstructions).

D. **Accessible (ADA) Landing Area.** Unobstructed area (8 ft x 5 ft) for wheelchair accessibility.

E. **Clear Path.** Pedestrian path along sidewalk, between buildings and street furnishing zone (4'-2" minimum, 5 ft+ preferred).

F. **Lean Bar.** Provides support for customers while waiting in constrained area.

G. **Bus Pole with Sign.** 7 ft overhead clearance needed from sidewalk surface to bottom edge of sign blade.

H. **Street Trees.** Planted in a hard even surface (e.g. grate, decomposed granite) around transfer area.

I. **Transparent Building Frontages.** Provide natural surveillance for waiting transit customers.

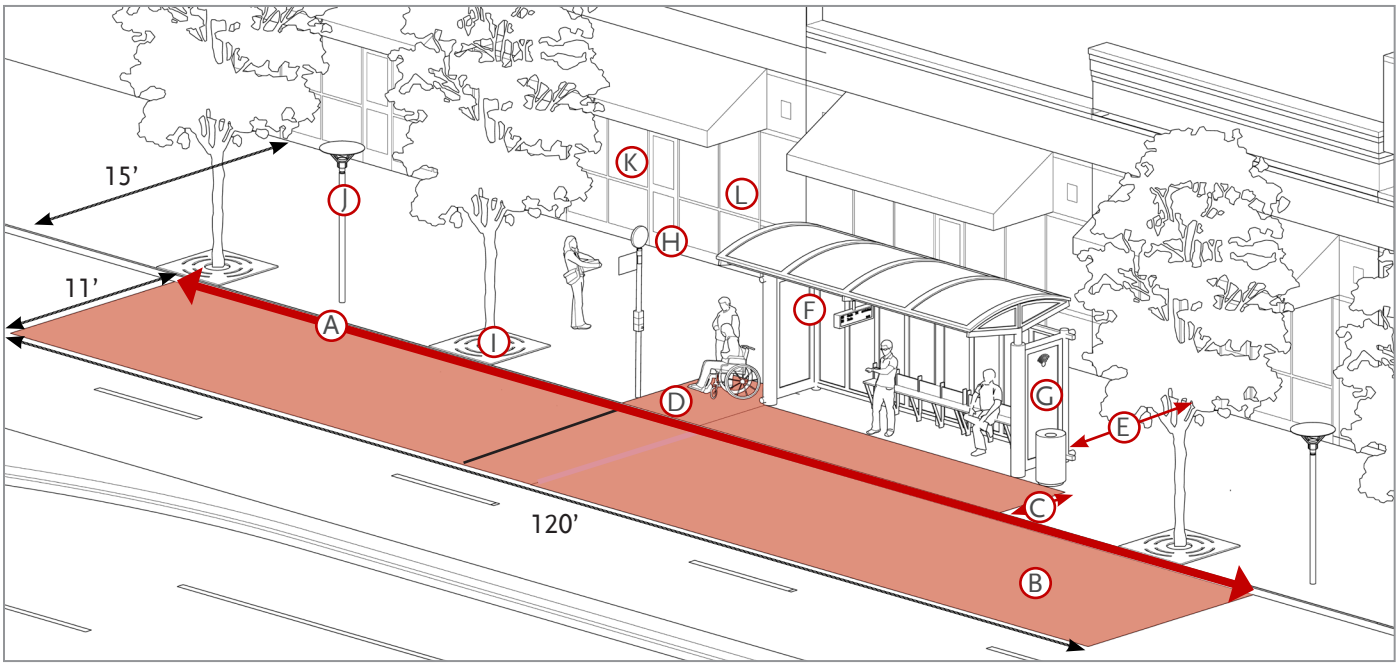
J. **Awnings.** Provide shade and rain protection in constrained transfer area.

K. **Wayfinding.** Placed on lighting to direct customers to transfers.

L. **Transit Info.** Businesses adjacent to transfer zones are encouraged to display real-time transit information in the shopfront window. Transit customers are more likely to patronize businesses when they know when the next bus/train arrives.

Narrow Sidewalks *For conditions where the sidewalk is very constrained (<10 ft in width), slender shelters and/or street furnishings may be placed near (within one foot) from the curb line to consolidate the boarding area (C, above) and clear path (E, above) into a single unobstructed area for circulation and waiting.* *(London, UK)*

Generous Sidewalk (15+ ft wide) with High Bus Activity



A. **Red Curb Bus Zone.** 80 – 120 ft red curb length (40 ft for standard bus, 60 ft for articulated bus) to accommodate two buses, set back 5 ft from crosswalk. See "constrained" diagram.

B. **Concrete Bus Pad.** 11 ft wide concrete pad in travel lane at bus Stop to support weight of buses and reduce wear and tear on pavement.

C. **Clear Zone.** Unobstructed path to access bus (5 ft preferred as measured from curb face to street furniture, or other vertical obstructions).

D. **Accessible (ADA) Landing Area.** Unobstructed area (8 ft x 5 ft) for wheelchair accessibility.

E. **Clear Path.** Pedestrian path along sidewalk, between buildings and street furnishing zone (4'-2" minimum, 5 ft+ preferred).

F. **Bus Shelter.** Provides shade, seating, real-time arrival information, and trash receptacle. Provide a clear space within the shelter per ADA requirements (2.5' x 4' minimum).

G. **Maps, Wayfinding & WiFi.** Integrated into bus shelter to aid transfer decisions.

H. **Bus Pole with Sign.** 7 ft overhead clearance needed from sidewalk surface to bottom edge of sign blade.

I. **Street Trees.** Planted in a hard even surface (e.g. grate, decomposed granite) around transit area.

J. **Pedestrian-scale Lighting**. Around transit area.

K. **Transparent Building Frontages.** Provide natural surveillance for waiting transit customers.

L. **Transit Info.** Businesses adjacent to busy transfer zones are encouraged to display real time transit information in the shopfront window. Passengers are more likely to patronize businesses when they know when the next bus/train arrives.

TERMINUS STATIONS

Terminus Stations typically have the largest footprint of transfer Stations and involve connections between multiple operators and a variety of modes (e.g. car share, bike share, shuttles, etc). They often offer a variety of amenities for customers (e.g. transit parking, bicycle storage, customer service, etc).

What are some challenges of Terminus Stations?

- **Balancing spatial needs** for different modes of transit (e.g. rail, bus, bike, parking).
- **Accommodating large maintenance facilities** (e.g. turn-back tracks, rail-car storage, bus layover zones).
- **Designing intuitive navigation** through large sites with long walking distances.
- **Coordinating different design needs** (e.g. branding, signage, payment systems) for various operators.
- **Reducing conflicts** between pedestrians and vehicles with high pick-up/drop-off activity.
- **Integrating Terminus Stations into the urban fabric** of the community with safe and direct pedestrian and bicycle connections to the Station to reduce auto trips.
- **Planning for future** (e.g. terminus becomes mid-line Station, commuter lots are replaced by development).

Who is vying for space?

- Metro rail and bus
- Regional rail providers (e.g. Metrolink, Amtrak)
- Local and regional bus operators
- Neighborhood shuttles
- Employer shuttles
- Car-share/car rental
- Commuter parking
- Long-term bicycle facilities
- Passenger pick-up/drop-off
- Customer service/ticketing center
- Retail/convenience services
- Development

What are typical programming needs?

Major Transit Infrastructure

- Tail (turnaround) rail tracks
- Rail-car storage and/or maintenance yard
- Multiple bus bays and layover space
- Commuter parking
- Passenger pick-up/drop-off
- Large bicycle storage/repair center
- Safe pedestrian pathways to neighborhood
- Safe bike facilities connecting to Station
- Carshare/car rental
- Power substation

Primary Passenger Needs

- Payment/ticketing
- Customer information/security
- Wayfinding and transit information
- Circulation/transfer area
- Shade/shelter for waiting area
- Restrooms
- Convenience retail (food/beverage)
- WiFi/cell service

What should be considered for the future?

- **Design signage to be flexible** (i.e. digital) for changing transit service patterns and operators.
- **Reserve footprint** for anticipated future uses or transit growth (e.g. bus bays, waiting areas, retail).
- **Include knock-out panels** in design of underground Stations to allow for future entrances.
- **Build surface parking lots** rather than parking structures to allow land to be "banked" for future transit-supportive uses. If parking structures are necessary, design structures with helix ramps and level parking floors could be adapted to other uses, should demand change over time.
- **Program adjacent development** with transit-supportive uses to reduce auto-use and support transit ridership.

Lack of shade for waiting area
(North Hollywood Bus Stop)

Supergraphics show bus bays
(Harbor Gateway)

Wayfinding between rail Station and bus area (Palmdale Metrolink Station)

Bus layover zone sign looks similar to bus Stop sign, which could be confusing to customers

Metro logo is out of date. Budget ongoing maintenance to ensure design is current at transit facilities.

Wayfinding signage directing customers to other transit operators

Customer service kiosk within train Station waiting area

Public library kiosk
(Anaheim ARTIC Station)

Integrated ticketing and customer service kiosk (Anaheim ARTIC Station)

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