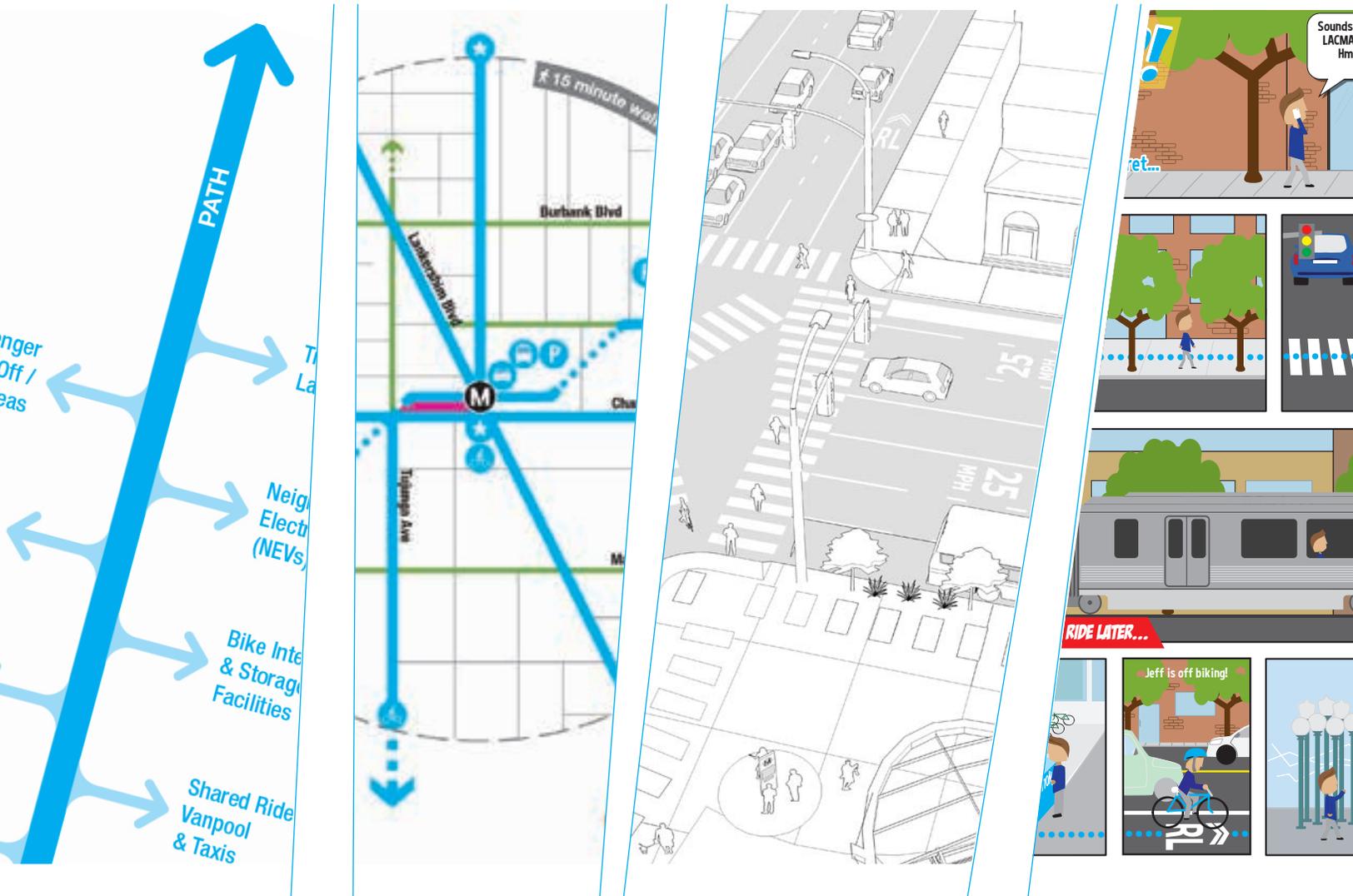


DRAFT

First Last Mile Strategic Plan

PATH PLANNING GUIDELINES





First Last Mile Strategic Plan

PATH PLANNING GUIDELINES

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1 INTRODUCTION

- ✱ Los Angeles County Metropolitan Transportation Authority (Metro) is developing a world-class rail system with stations that will be a short distance (three miles or less) from the homes of 7.8 million people, nearly 80% of Los Angeles County residents. Over time, this number will continue to grow as cities modify their land-use plans to provide more housing and jobs near stations, consistent with market demand and regional goals for more sustainable communities. These planning guidelines begin to outline a specific infrastructure improvement strategy designed to facilitate easy, safe, and efficient access to the Metro system. They introduce a concept herein referred to as ‘the Path’, and provide direction on the layout of Path networks and components within Metro Rail and fixed route Bus Rapid Transit (BRT) station areas. They serve as a resource for Metro and the many public and private organizations throughout the region working to update programs, land-use plans, planning guidelines, business models, entitlement processes, and other tools that take advantage of LA County’s significant investment in the public transportation network.

Metro First-Last Mile Strategic Plan Goals

- 1 *Expand the reach of transit through infrastructure improvements.*
- 2 *Maximize multi-modal benefits & efficiencies.*
- 3 *Build on the RTP/SCS & Countywide Sustainable Planning Policy (multi-modal, green and smart).*

First-Last Mile Strategic Plan Goals

In 2012, the Metro Board adopted the Countywide Sustainability Planning Policy and Implementation Plan and the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Joint Work Program, both of which direct the development of a First-Last Mile Strategic Plan. The goal of this plan is to better coordinate infrastructure investments in station areas to extend the reach of transit, with the ultimate goal of increasing ridership.

These guidelines help facilitate the integration of mobility solutions in a complex, multi-modal environment. Strategies will need to be flexibly deployed to contend with widely varying environments throughout the county; yet will aim to improve the user experience by supporting intuitive, safe and recognizable routes to and from transit stations. This effort will require coordination amongst the many cities and authorities having jurisdiction over the public realm throughout the county.

The Purpose of the Path Planning Guidelines

The purpose of the Path Planning Guidelines is to:

1. *Provide a coordination tool and resource for Metro, LA County, municipal organizations, community groups, and private institutions.*
2. *Serve as a key source of direction for LA Metro when undertaking planning and design efforts aimed at improving first-last mile connections to transit.*
3. *Clearly articulate the Path concept including objectives, characteristics, and the role the Path plays in supporting transit access and regional planning goals.*

How to use these Guidelines

The guidelines are structured around the following sections;



Introduction

The introduction provides an overview of these guidelines, strategic goals and project purpose.



First Last Mile Planning

Chapter 2 defines the first-last mile concept in transportation planning, provides guiding policy context, and reviews challenges specific to transit access in Los Angeles County.



The Path

The Path is introduced in chapter 3 as a strategic response to the first last mile challenge. Path goals, policy context and guiding principles are reviewed. Path users, both today and in the future, are discussed.



Path Network Identification

This chapter provides a methodology and approach for the layout of the Path networks within station areas. Site area definition, existing conditions analysis, network component & layout are all covered.



Path Toolbox

This chapter outlines possible improvements that may occur along identified Path network routes. Each individual improvement includes a visual example, discussion of goals, and guidance on how to integrate the specific improvement with the overall Path system.



Illustrations

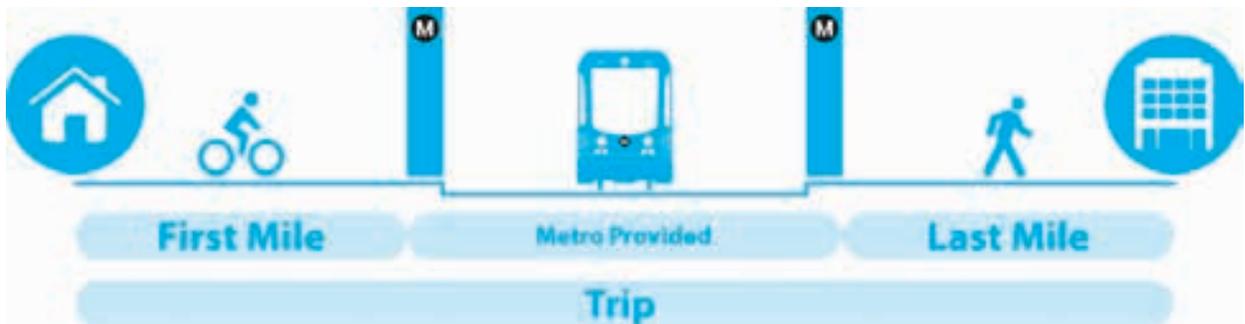
Path networks and component design scenarios are developed utilizing the strategies and tools set forth in these guidelines at three selected stations areas around Metro Rail and BRT stops. This has been done for illustrative purposes only, and is intended to demonstrate key ideas of the Path concept.



Appendix

The Appendix includes blank Station Area Checklist forms for use during field reviews and narrative illustrations that present the concepts of the project for use in outreach efforts.

2 FIRST LAST MILE PLANNING



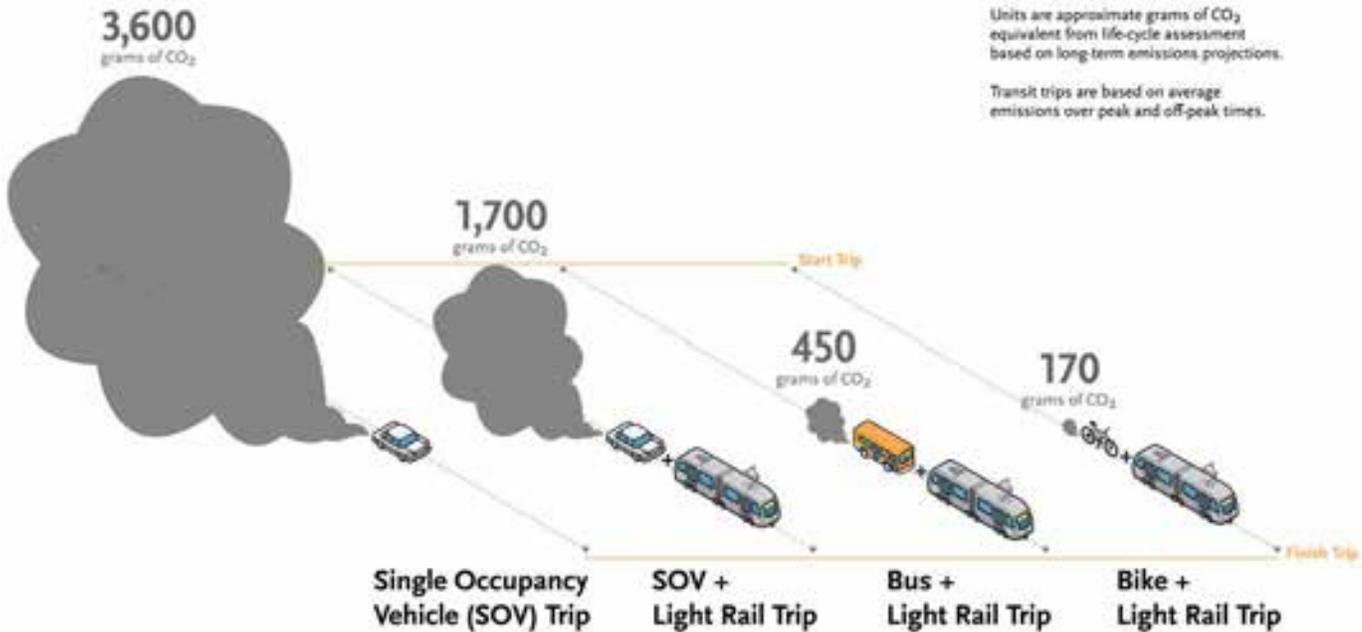
First Last Mile Definition

An individual's 'trip' is understood as the entire journey between origin to destination. Individuals may utilize a number of modes of transport to complete the journey; they may walk, drive, ride a bicycle, take a train, or in many cases combine a number of modes. Public transportation agencies typically provide bus and rail type services that may frame the core of such trips, but users must complete the first and last portion on their own; they must first walk, drive or roll themselves to the nearest station. This is referred to the 'first-last mile' of the user's trip.

Though the streets and infrastructure that comprise the first-last mile fall outside the boundaries of Metro's jurisdiction and control, they remain critical components of an effective public transportation system. Simply put, all Metro riders must contend with the first-last mile challenge, and the easier it is to access the system, the more likely people are to use it.



Greenhouse Gas Emissions Per Person Per Trip



Mikhail Chester et al. "Infrastructure and Automobile Shifts: Positioning Transit to Reduce Life-Cycle Environmental Impacts for Urban Sustainability Goals". *Environmental Research Letters* 8, no. 1 (2013). doi:10.1088/1748-9324/8/1/013041

Policy Context

Federal, state, regional and local policies support increased use of public transportation as a means to ease roadway congestion, reduce greenhouse gas emissions, and to support economic and physical health in communities. The 2012- 2035 Southern California Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) reflects significant progress within Los Angeles County to achieve this policy vision both through transit investment and local land-use planning. By 2035, Metro’s fixed guideway system will have nearly doubled in size. More than half the new housing provided in the region over the next twenty years will be in areas served by high-quality transit.

In 2012, Metro adopted a Countywide Sustainability Planning Policy (CSPP) as a complement to regional planning efforts and to provide the foundation for achieving further greenhouse gas reductions in the 2016 RTP/SCS. The CSPP is particularly notable in the context of first-last mile planning, because it highlights the need to focus on integrated planning and partnerships to optimize the benefits of Metro’s investments. Key concepts include “bundling strategies for greatest impact” which encourages Metro to think beyond a single mode or project in its planning efforts, and “act regionally and locally” which recognizes that local connectivity is paramount to securing the social, economic and environmental benefits associated with the expansion of transit. These guidelines were created in accordance with the principles and priorities outlined in the CSPP.

These guidelines were also developed in consideration of California’s Complete Street law, which requires cities to consider the needs of all users in the circulation element of municipal general plans. In addition to accommodating the efficient flow of vehicles, streets must accommodate safe and efficient multi-modal transfer activity and support a wide range of mobility options. Federal transit law explicitly recognizes the need to ensure active transportation networks connect with public transit. Under Federal Transit Law, pedestrian improvements located within one-half mile and all bicycle improvements located within three miles of a public transportation stop have a de facto physical relationship to public transportation.

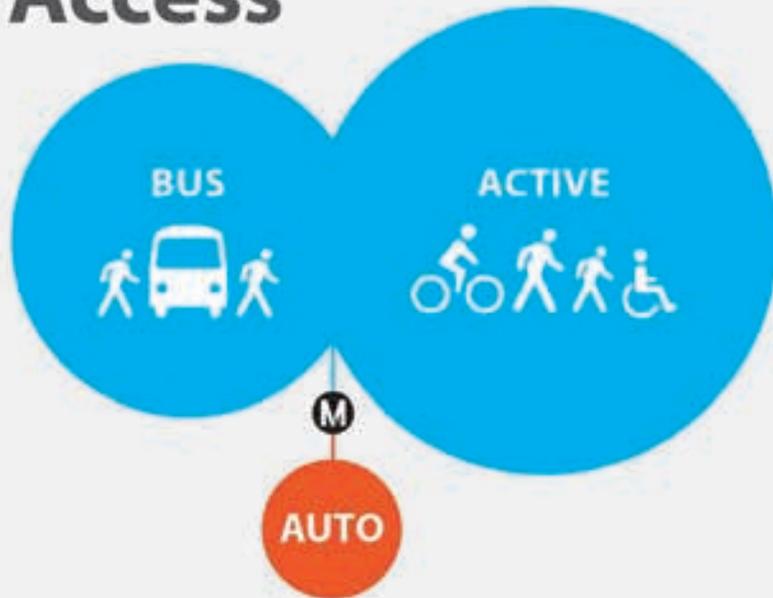


REGIONAL TRANSPORTATION PLAN
2012-2035 RTP
SUSTAINABLE COMMUNITIES STRATEGY
Housing & Land-Use Plan

Southern California Association of Governments
ADOPTED APRIL 2012

The 2012 RTP/SCS outlines a broad and ambitious strategy for sustainably managing regional growth. Mobility, land-use and health inform an integrated approach to achieving regional policy goals related to clean air and economic vitality.

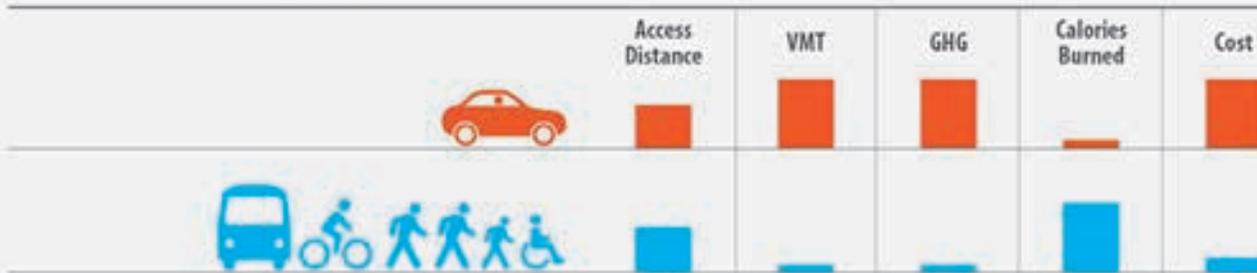
Metro Rail/BRT Access



91%
Walk, Bike, Roll,
and Take Buses to Stations
Active Transportation Networks
2011 Metro On-Board Survey



9%
Drive & Park
or Dropped-Off at Stations
Roads & Parking Facilities



The fact that the vast majority of transit users are already walking or rolling themselves to stations or to complete multi-modal connections demands a careful consideration of the inherent relationship between active transportation and the regional transportation system. A number of questions must be asked; What are the conditions of the active transportation networks in Los Angeles County? Is the network designed to support modern modes of active mobility? Do existing networks seamlessly integrate transit users with transit stations? What part of active transportation networks are integral components of the county-wide “transportation system”? The Path responds to these questions, and proposes a transit access strategy built on rationally developed active transportation networks located around Metro Rail and BRT stations.

Challenges

There are a number of challenges associated with improving first-last mile connections throughout the County. In many situations, especially along higher traveled corridors, right-of-way (ROW) is limited and already overburdened. Providing more robust access facilities could potentially put strain on other complementary travel modes. For example, providing protected bike lanes on a heavily used transit access route may affect vehicular throughput and bus operations in some situations.

Coordination is a challenge; there are many custodians of the public realm throughout the County. Metro is committed to the “continuous improvement of an efficient and effective transportation system for Los Angeles County” but Metro does not own or have jurisdictional control over transit access routes beyond the immediate confines of station facilities.

Funding is limited; there are numerous competing demands on public funds throughout the county. From a user perspective cost is a challenge; pay-for-service access solutions can be promising, but do not help those already struggling to pay for basic transit services.

There are a range of site specific physical challenges faced by individual transit users. For some, stations remain too far to access in a reasonable amount of time. Others don't move fast or nimbly enough to comfortably contend with broken sidewalks and hazardous street crossings. Some are afraid to make the short walk from stations in the dark. All of these challenges can be addressed through thoughtful consideration, strategic planning, engineering, design and most importantly - active coordination.

Metro Users

Metro goes to great lengths to better understand county transit riders in order to improve operations and service. Metro conducts on-board passenger surveys as part of this effort. A review of the Metro 2011 System Wide On-Board Origin-Destination Study provides insights into transit users at a demographic level, some key findings include;

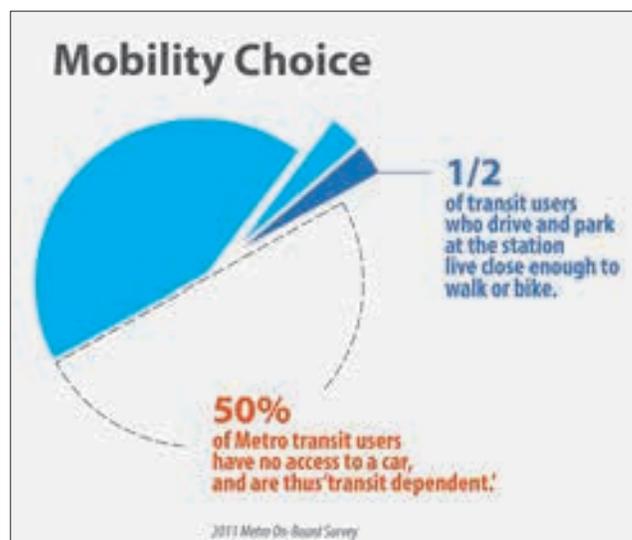
- **75% of transit riders belong to households earning less than \$25,000.**
- **Half of all transit riders are transit-dependent, i.e., they belong to households that do not own any vehicles.**

- **Transit dependency increases as age increases, and/or as income decreases.**
- **Active transportation modes (walking/biking/wheelchair/etc.) are the dominant access and egress modes for all riders; representing 85% of system access/egress at Rail/BRT stations and over 95% total system access.**
- **Nearly 64% of riders make at least one transfer to complete their one-way trip.**

One of the more surprising findings from the Metro survey data is the small number of transit riders parking at stations. Though highly visible in communities, parking facilities support only 6.2% of Metro Rail users, and only 3.8% of Metro BRT users. Of this relatively small user group half live close enough to walk or bike to stations.

Transfer Activity

The Metro system is witness to a significant amount of transfer activity; nearly 64% of riders make at least one transfer to complete their one-way trip. Transfer activity, when not happening within a station is reliant on active transportation networks in the immediate vicinity of the subject stations. Active transportation networks are comprised of sidewalks, bike lanes (where existing), street crossings, signals, signs, curb returns, lighting, furnishings and landscaped elements. These networks support multi-modal access and transfer activity.



User Safety along Access Routes

Transit users depend on safe and efficient routes when accessing stations and while making multi-modal transfers. They rely on existing active transportation networks. A review of recent collision statistics for both pedestrians and bicyclists in LA County suggests there are significant challenges in terms of safety.

The provision of a safe transportation system is a cornerstone of Metro's Vision, and given the fact that most transit users are pedestrians during the first, last and transfer components of their trips, pedestrian safety is a major concern. Pedestrians are at risk within environments surrounding transit stations, primarily from automobile traffic. LA County has an alarming incidence of fatality rates, especially amongst some of the more transit dependent populations (the very young and very old). Risks can be significantly mitigated through design and vehicular speed control measures, and should be done so along prioritized access routes within station catchment areas.



Existing Conditions

Knowing that active transportation networks play such a significant role in enabling transit access and transfer activity, a deeper understanding of existing active transportation networks is required to better understand challenges currently faced by users. As part of the First-Last Mile Strategic Plan Study, project team members selected 12 station sites throughout the County and reviewed the existing transit access conditions within these sites. It was observed that current active transportation networks serving access routes to Metro stations present a number of access challenges to transit riders.

In some cases sidewalks were physically constrained or literally broken and heaved, or even more surprisingly discontinuous. Long blocks and large parking lots create circuitous access routes for pedestrians. Lack of adequate lighting, dark freeway underpasses and general neglect all challenge user's sense of personal security. In some areas of the county, the existing right-of-way is severely constrained. Transit rider wayfinding is often challenged just a few blocks from transit stations due to the lack of, or in other areas the total overabundance of, street signage.

All of these noted existing conditions represent challenges to transit system access, system efficiency, user experience and safety. A strategy that addresses these issues directly will increase transit ridership, improve user experience, and work towards meeting Metro, regional and state policy goals relating to sustainability, clean air, and health.

Top 6 L.A. County Transit Access Barriers

	
<p>1 Long Blocks – Transit riders prefer direct routes to their destination – long blocks often equate to unnecessarily long routes, or unsafe crossing activity.</p>	<p>2 Freeways – Freeways carve our region into a number of ‘pedestrian islands’. Links between these islands are effectively broken by dark and unpleasant underpasses or equally challenging overpasses.</p>
	
<p>3 Maintenance – Many of our basic walking and rolling surfaces are buckled, broken and generally impassable to all but the nimble footed.</p>	<p>4 Safety and Security – Pedestrians in LA County are victim to some of the highest pedestrian fatality rates in the country. The neglect of infrastructure also adds to concerns over personal security.</p>
	
<p>5 Legibility – It is too easy to get lost in LA County. Effective transit systems utilize sophisticated yet simple signage and way-finding strategies. These strategies do not currently extend much beyond station boundaries</p>	<p>6 R.O.W Allocation & Design – Traffic congestion along some streets crowd out all but the most fearless bike riders – on other streets wide roads are underutilized, and all active modes are relegated to a 4 foot wide broken strip of concrete. A more holistic and integrated approach is needed to provide equitable mobility along access routes.</p>

3 THE PATH

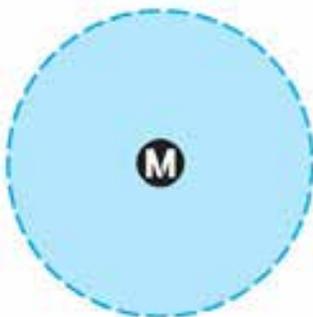


Metro First Last Mile Strategy

Metro survey data tells us that the vast majority of transit users in the county are utilizing active transportation networks to access the overall system, and field observation confirms that there are a number of obvious challenges being faced by current users of existing networks. These challenges reduce overall system utilization (ridership) in two important ways; they artificially decrease the size of transit access sheds around stations, and they reduce discretionary use within current access sheds.

Access sheds are defined by the distance people travel in a set duration of time. For example, if pedestrians are willing to walk up to fifteen minutes to a given station, and they walk at four miles per hour, the access shed can be defined by a half mile radial circle centered on the station. In reality this access shed is compromised by the street grid, breaks in the access network, location and number of street crossings, and fluctuations in average speed of pedestrians due to crossing characteristics and sidewalk conditions. An effective strategy will work to increase the size of access sheds around transit stations while improving access conditions within those sheds.

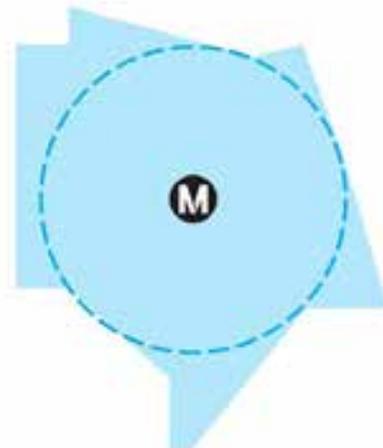
Policy:



Reality:



Goal:



There are a wide range of approaches to addressing the first-last mile challenge, ranging from high level policies (for example supporting mixed-use density in station areas) to specific infrastructure investments (for example providing additional bike racks at stations). Metro’s plan can allow for the ‘coordinated bundling’ of first-last mile strategies by identifying access networks that partner agencies and alternative transportation providers can build from and/or plug into.

The Path

The Path is a proposed county-wide, transit access network designed to reduce the distance and time it takes people to travel from their origins to stations and from stations to destinations, while simultaneously improving the user experience. At its core, the Path is a series of active transportation improvements that extend to and from Metro Rail and BRT stations. The Path is proposed along specific access routes selected to shorten trip length and seamlessly connect transit riders with intermodal facilities. Intermodal facilities may include bus stops, bike hubs, bike share, car share, parking lots, or regional bikeways, depending upon the location and context of the station.

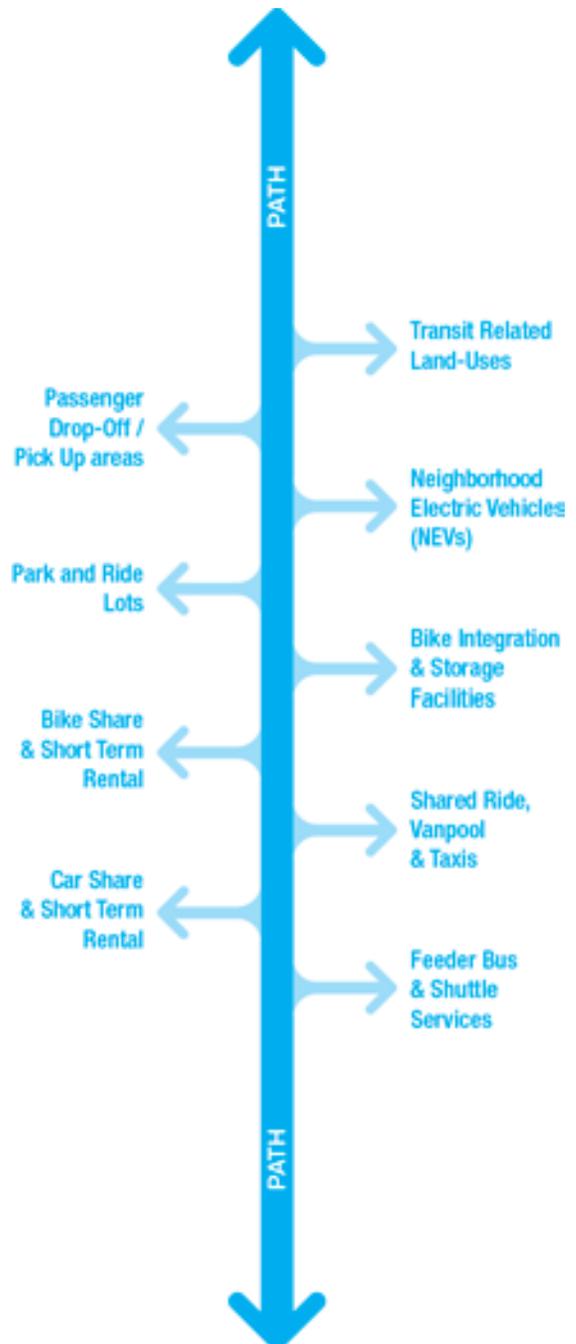
The Path is envisioned to include standard elements that support an association with the overall transit experience, and more flexible elements that respond to the context and character of varying communities and site specific challenges.

The Path aims to broaden the reach of transit and improve the transit experience by increasing the size of transit access sheds and by improving access conditions within station areas. The Path extends the positive experience of the transit user. It is intuitive, safe, efficient, universally accessible and fun.

The Path and Regional Policy

The Path helps integrate the various modes provided by Metro (i.e. Bus and Rail) and also allows the integration of non-Metro provided solutions into a more seamless user experience. In so doing, the Path aims to support broader policy directives related to clean air, health, and economic sustainability. By improving transit access and effectiveness, more people will likely opt-into public transportation which in turn will; reduce vehicle miles traveled (VMT’s) and green house gas emissions (GHG’s); integrate physical activity into daily commute patterns; and improve economic vitality by connecting people to regional markets.

The Path is a bold concept that takes into consideration the pressing need for mobility solutions against a backdrop of population growth, demographic shifts, increased concern and awareness of human health and safety, and a rapidly expanding public transportation system.



The Path – Improving the User Experience

In addition to expanding access sheds for transit users, the Path supports overall ridership by improving the quality of access conditions *within* access sheds. Personal sense of safety, security, and comfort along access routes all play a role in an individual's choice to utilize public transportation. A dark, unlit sidewalk is a deterrent to many when considering a short walk to or from a station after dark, and can be improved utilizing a number of design strategies. The lack of pedestrian facilities at street crossings poses undue risks to transit users, and can be mitigated by improved signalization strategies and painted crossings. For transit riders wanting to use, or requiring the use of, any form of wheeled access device something as simple as a broken sidewalk or missing curb ramp is a significant barrier; maintenance and provision of well designed sidewalks and curb ramps improves the experience for these users.

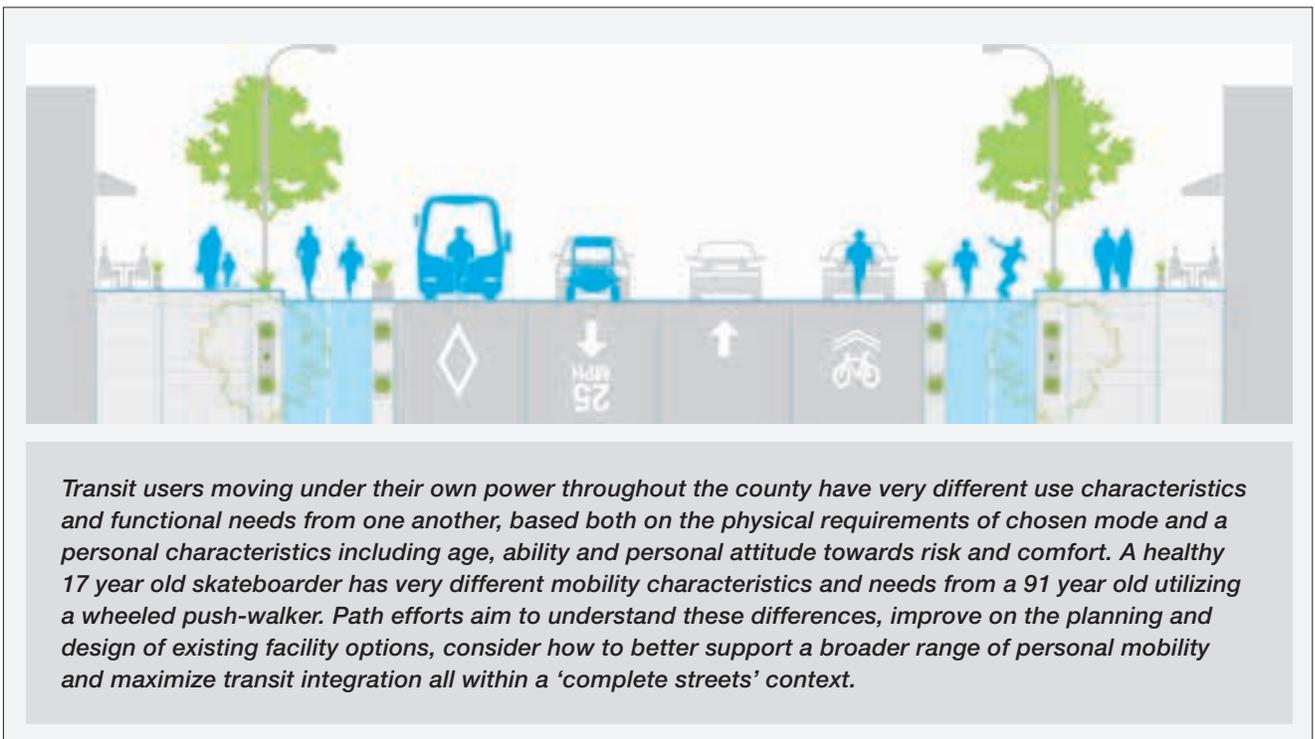
Path Users - Today and Tomorrow

Path users are understood as being broadly representative of county transit users, who in turn are broadly representative of county residents. Various demographic and social trends give good insight into *future* path users. Demographic trends suggest the population is aging, and

as average-age increases, transit dependency increases. Many people are choosing to “age-in-place” and have an opportunity to do so within dense mixed-use station areas where amenities and services are easily accessible. This is a good sustainable model and relies on the support of senior aged universally accessible mobility options. In the future there will be many more senior aged Path users, thus planning for senior aged mobility and access is critical.

Another trend witnessed over the last ten years is the reduction in automobile use and ownership by the Millennial Generation (those born between 1982 and 2004). There are many hypotheses presented to explain this trend, including the recent recession which has reduced the number of commute trips.

Others argue that there is a structural shift occurring with regards to lifestyle, and the allure of suburban living is not as strong for a young demographic that shows preference for more compact amenity-rich urban environments offered by city and town centers. The costs of vehicle ownership may also be affecting consumer behavior, especially in regions with viable mobility options. Whatever the cause of these trends, mobility solutions are required for those who cannot afford, cannot operate, or choose to forego vehicular ownership. The Path, by expanding the reach of transit and by improving the user experience, helps discretionary transit users' opt-into multi-modal transit solutions.



Path – Guiding Principles

These guidelines outline an approach for planning Path networks at Metro Rail and BRT stations and present a toolbox of strategies that can be considered when implementing Path networks. The Path could be further developed through a focused design effort, which would help identify and further refine specific items that would remain consistent system wide and benefit from economies of scale.

The following attributes define the Path and provide a basis for design;



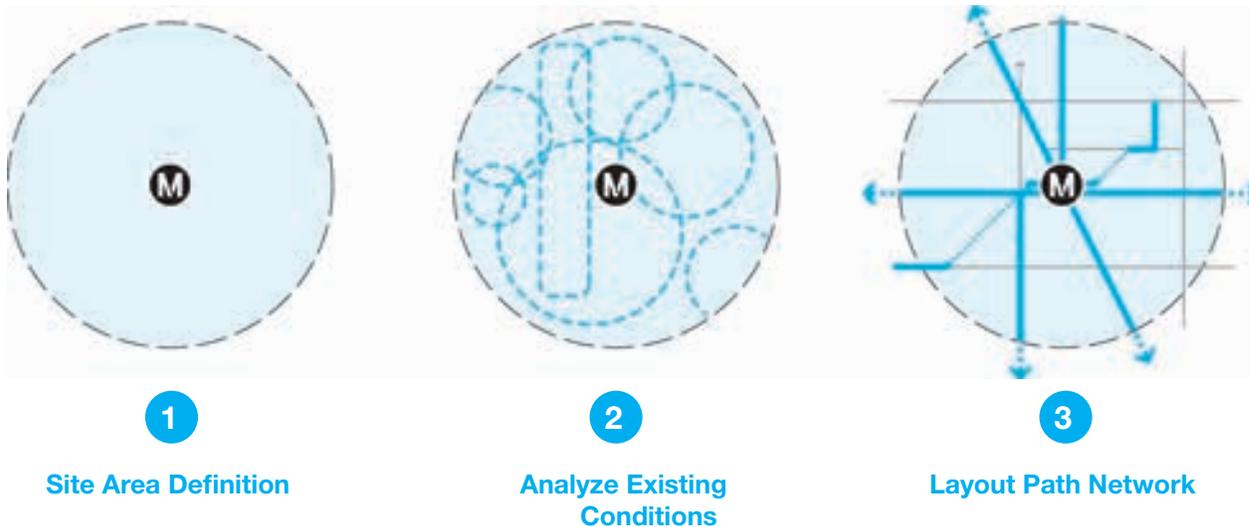
- 1 The Path is **Safe** – Safety is a key concern, and is supported by protected facilities, improved street crossings, strategic lighting and vehicular speed mitigation.
- 2 The Path is **Intuitive** – Traveling along the Path is an extension of the transit user's experience, and their ability to navigate to and from destinations is assisted by way-finding strategies that support seamless multi-modal journeys.
- 3 The Path is **Universally Accessible** – The Path supports all modes of active transportation and remains accessible to individuals dependent on mobility support devices – from white-canes to wheeled push walkers and electric mobility scooters.
- 4 The Path is **Efficient** – Greater distances are traveled in a given amount of time along the Path. Rolling and walking surfaces are smooth and free of obstacles, routes are direct, and signals reduce waiting times at street crossings.
- 5 The Path is **Fun** – People opt out of cars, and hop on scooters, skateboards and bikes to get to where they want to go, save money, burn calories and along the way, have fun.



To see how Jeff and three others use the Path to complete their trips, refer to the appendix...

4 NETWORK IDENTIFICATION, DESIGN & IMPLEMENTATION

This chapter outlines a methodology for planning Path networks at transit stations. The three steps include;



- * As stated in the introduction, the Path aims to extend the reach of transit in a number of ways. The Path consists of physical active transportation network improvements that allow the bundling of a broad range of first-last mile strategic efforts. At its core, the Path aims to address the challenge of the vast majority of transit users accessing the station, namely their ability to physically do so in an efficient and safe manner. The vast majority of transit users are either rolling or walking themselves to stations, and they are limited by the distance they can realistically walk or roll. Furthermore, many make discretionary choices based on qualitative decisions, such as do they feel safe walking home from a station in the dark? The Path aims to expand the transit access shed, and to improve the quality of access within the shed.

Site Area Definition (Step 1)

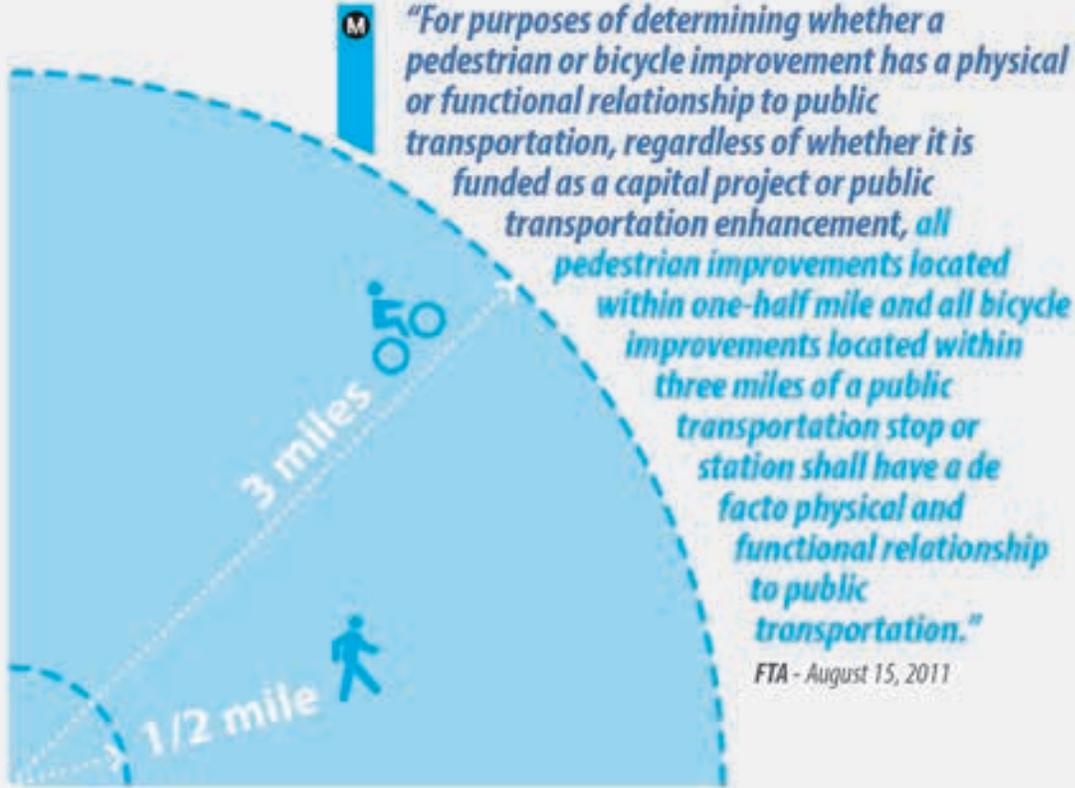
The first step in planning for the Path in any given station area is to determine the location and limits of the network. There are current active transportation networks throughout the county, comprised of sidewalks, roadways, street lights, signing, striping, signals and a number of other elements. The Path will build upon these existing conditions within pre-determined zones and along specific routes, which emanate from Metro Rail and BRT stations.

The center of the site area where the Path network will be located is the transit station itself, Metro Rail or BRT. Maintaining consistency with FTA policy, one-half mile and three mile (pedestrian and bicycle) circles can be drawn around the station which will correspond to important

potential thresholds of the Path. The first threshold occurs at the half mile mark, measured as the crow flies, and corresponds to how far a person will walk to access transit. The second three mile threshold corresponds to how far an individual will bike to access transit. The three mile shed, gives a good limit for all other active transportation users (i.e. skateboarders, mobility scooter riders) as bicycles operate at the upper range of observed speeds across active transportation devices. These thresholds correspond to a number of funding mechanisms given FTA's stated policy.

FTA Policy

**Final Policy Statement on the Eligibility of Pedestrian and Bicycle Improvements Under Federal Transit Law*



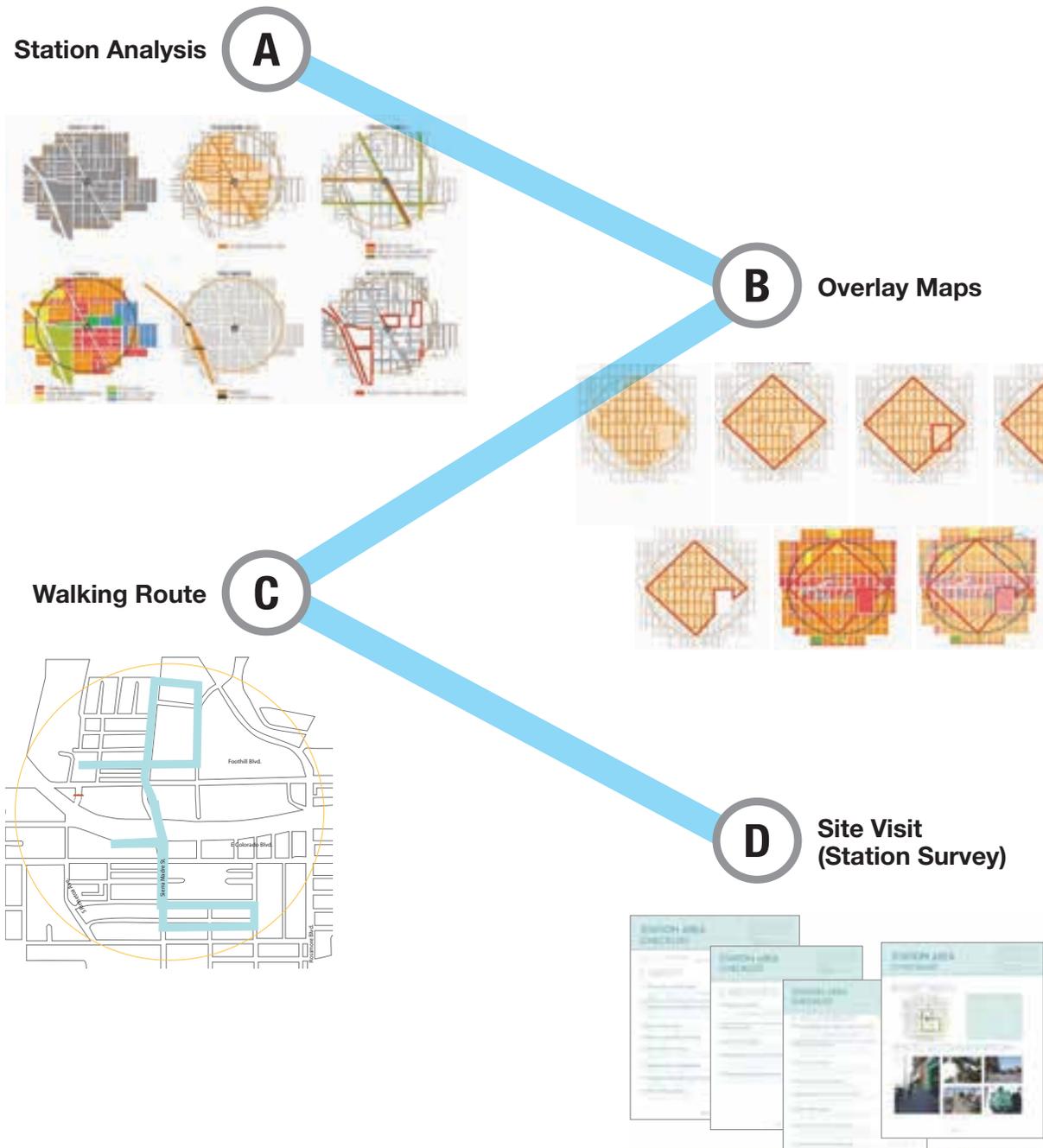
New FTA Bicycle and Pedestrian Catchment Areas for Los Angeles County MTA Existing and Proposed BRT and Rail Facilities



Analyze Existing Conditions (Step 2)

To better understand the unique challenges of an individual station area chosen for Path network development, the subject site should be reviewed at both a macro and micro level. The intent of the analysis is to evaluate the existing condition and characteristics of the station area, and inform the layout of Path network routes. The analysis includes mapping, compiling, and overlaying various layers of station-

specific data that together highlight conditions within half mile of the station portal; and regional planning context and adjacent station area improvements to three miles of the station portal. The analysis steps include;



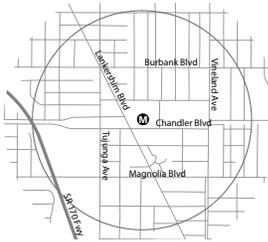
A. Preliminary Station Analysis



The following access-related station area characteristics can be analyzed utilizing data available to Metro:

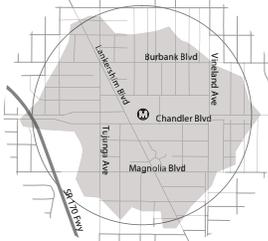
Points of Interest

The Points of Interest map highlights key sites located within the 1/2-mile radius of the station and infers logical routes between the station area and these interest points. Analyzing these routes better define potential transit users. Key points of interest included schools, event centers, public institutions, parks, and any other local attractions to the transit catchment area. These maps should also include a review of the three mile access shed.



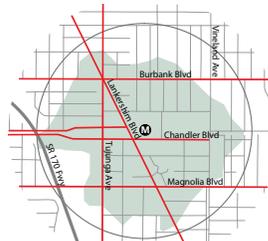
Street Grid

The Street Grid map presents the street and block network surrounding station areas. This grid shows areas that lack connectivity, logical pathways, and/or create obstacles for site navigation. The map also doubles as a base map for the station analysis that follows.



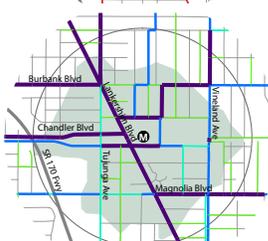
Pedestrian Shed

The Pedestrian Shed map graphically displays the level of pedestrian accessibility for each station area. With the transit station as a starting point, all 1/2-mile routes based on the street grid were mapped and then consolidated into a larger catchment shape. The pedestrian shed begins to call out limitations to access as a result of each station's unique street grid.



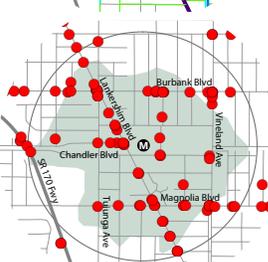
High Vehicular Speeds

The High Vehicular Speeds map shows potential areas that would cause safety concerns for pedestrians and bicyclists. Speeds that average higher than 35 mph are shown.



Key Transit Access Corridors

Key Transit Access Corridors are graphic depictions of Metro's Origin/Destination study. These maps graphically represent the logical pedestrian routes frequently utilized by transit users.



Collision Severity and Location

The Collision Severity and Location map begins to show key intersections where high rates of pedestrian and bicycle collisions exist.



Land Use Map

The Land Use Map depicts concentrations of land use within each 1/2-mile radius. The land use map highlights the types and characteristics of users that are able to comfortably access the locations surrounding the station.



Bicycle Connections

All infrastructure dedicated to bicycles in the roadway are shown in the Bicycle Connections map. This generally includes: existing bike lanes, sharrows, separated bike facilities, bike 'friendly streets' (in some areas where cities have defined this as a category), future bike routes, etc. These maps should also include a review of the three mile access shed map.



Transit Connections

Using Metro and other transit agency data, routes of all transit modes are mapped within the 1/2-mile radius. This includes: all bus lines, light and heavy rail, and any other transit lines serving the station area. These maps should also include a review of the three mile access shed.

Statistics

The following statistics were extracted from each station area to provide an overview of the site: average block length, intersection density, walk score, overlay zones, density, employment, and journey to work.

B. Access Barriers Overlay Map

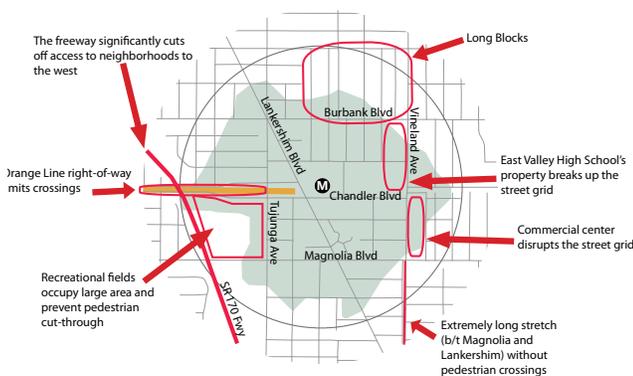
After compiling the information collected during the macro-level station area analysis, the maps described above can be overlaid to show potential areas of intervention. The overlays described below provide substantial information that inform on-the-ground analysis.

Overlay of land use map with pedestrian shed map

To begin, the station land use map can be overlaid with the pedestrian shed map. Here, any holes that exist within the 1/2-mile radius that would provide a logical origin/destination route for potential users can be highlighted. For example, where heavy residential land uses on an area of the map do not connect to the 1/2 mile pedestrian shed, a note can be made, and the area highlighted.

Overlay land use map with bike connections map

The second step is to overlay the station land use map with the bicycle connections map. The holes shown in these maps account for areas that are missing connections for bike riders.



Additional Overlays

A number of other overlays should be reviewed using the approach described above to gain a better perspective of access volumes relative to safety and traffic speed, access routes relative to feeder bus services and stop locations, and access shed relative to street grids to name a few examples.

All highlighted areas can then be synthesized. These maps inform the basis for routing site visit for on-the-ground evaluation and Path network layout.

C. Determine walking route

Pulling from all highlighted areas from the overlay maps described above, walking routes can be drawn that address potential improvement areas. As such, the walking route directly responds to potential problems or opportunity areas seen in the macro-level analysis and allows for a more detailed on-the-ground analysis.

D. Site Visit - Station Survey

The site visit offers the opportunity to begin micro-level analysis, and to begin to assess areas of intervention.

For station specific analysis, a set of evaluation criteria and questions can be written to consider current and future access needs and opportunities at each representative

station/stop area. These questions can be written as a survey checklist form. Mainly qualitative, these checklists measure performance of each station/stop area. With the end goal of increasing transit ridership and user comfort, urban design elements that are most important for rider comfort and system function were added to the survey tool.

The sample checklist (see Appendix) was prepared as a guide for on-the-ground analysis at each station area. While initially prepared for the case sites selected for the First/ Last Mile Strategic Plan as an evaluation tool, the format of the checklist is broad, and touches upon a range of issues faced by most station areas in the study region. As such, this checklist can be used to evaluate a wide range of stations in the county.

The checklist is designed to broadly assess: 1) safety elements, 2) aesthetics, and 3) accessibility within a station area. Each of these categories account for multi-modal experiences for all types of transit users. The results are keyed to a scoring tool that allows for comparison between stations. The scoring matrix below outlines the ranking system for each station area.

In addition to assessing the physical conditions of the environment, overall observations can also be made that record how people move to and from the stations themselves. This analysis is supplemented by photo documentation, and an open-answer area for additional information gathered during the site visit.

Scoring Matrix

1-1.99	Poor
2-2.99	Fair
3-3.99	Good
4-5	Excellent

Checklist (see Appendix)

Layout Path Network (Step 3)

Network Components

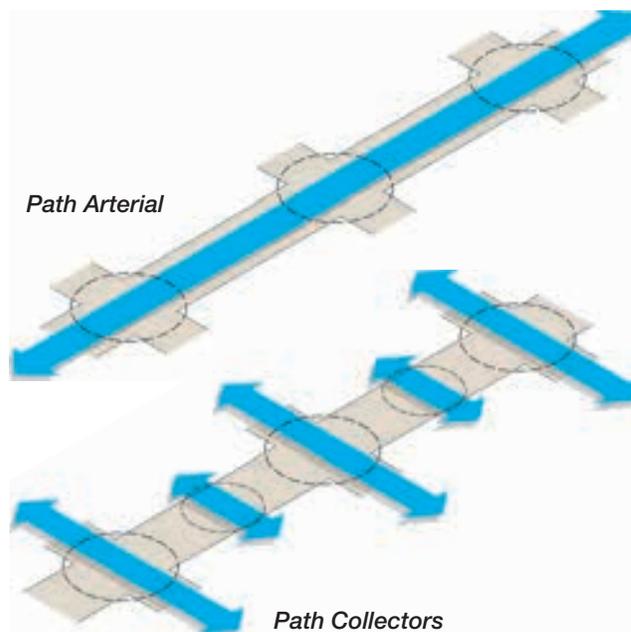
The Path is proposed as including a hierarchy of routes that extend out from the transit station. These routes take into consideration the existing street network, key destinations, feeder transit services, the existing and planned bike network, pedestrian/bike access volumes and surrounding land uses. These items are augmented by additional findings in the field such as opportunities to provide active transportation short-cuts, or to complete breaks in the network (physical or qualitative) not made apparent in maps. The network is defined by main branches (Path Arterials) and feeder routes (Path Collectors), each having the following characteristics;

Path Arterials – Path arterials are the main branch lines that extend from stations and support maximized throughput and efficiency for active transportation users. Path arterials accommodate the highest use active transportation corridors that lead to station portals, and are designed to accommodate a broad range of users. It is useful to organize Path users by their functional speed;

- Slow (0-5 mph) – Slow moving, predominantly pedestrian based modes, including slower moving wheel-chair and cart/stroller push/pull users. Universal access is a critical concern, and accommodation of small wheeled access assist devices (i.e. wheeled push walkers) must be considered.
- Medium (5-15 mph) – Broad range of users that move faster than pedestrians but still require physical separation from vehicles. Children on push-scooters, senior citizens using mobility scooters, skateboarders, casual bike riders and joggers all fall into this group.
- Fast (15-35 mph) – Fast moving, aggressive bicyclists and drivers of neighbourhood electric vehicles (NEVs) form this user group. Bikes and NEVs can mix with vehicular traffic when supported by specific design elements and vehicular speed controls.

Path Arterials aim to provide improved facilities for all three of these primary groups. Phased approach may be required to realize this goal due to constrained ROW. Separated active transportation lanes, signal and crossing improvements, way-finding and plug-in component (i.e. bike share) integration are important considerations in the design of Path Arterials.

Path Collectors – Path collectors include streets and routes within the station zone that both feed into arterials, and support crossing movements and general station area permeability. Collectors also consider the three primary active transportation groups noted above, but are more focused on supporting station area permeability on feeder routes, that will allow people access to the main arterials. Path Collectors work to reduce travel distances for non-motorized users by focusing on crossing movements and support Path Arterial function by providing efficient access to Arterial routes. Collectors frame the lesser traveled routes along the network, and help bridge gaps caused by high traveled and/or high speed vehicular roadways within station areas. Improved street crossing opportunities are essential to Collectors, including improved intersection function and the provision of mid-block crossings.



Network Layout

To plan a Path Network around a Metro Rail or BRT Station, the following steps should be taken;

1. **Locate Path Arterials** – Arterials should radiate out from the station portal in at least 4 directions, and should correspond to the highest volume of pedestrian and rolling access to the station. Arterials must extend out at a minimum ½ mile from the station, to an upper limit of 3 miles from the station. Path arterials should integrate into the regional bike network at opportune points beyond the ½ mile access shed. Coordination with other station Path networks within 3 mile shed required.

Key Mapping Inputs:

Access Volumes, Key Destinations, Land Use, Bike Routes

2. **Locate Path Collectors** – Path collectors include streets within the ½ mile access shed that run perpendicular to station access desire lines, or feed into the main branch lines of Arterials.

Key Mapping Inputs:

Feeder transit lines, access sheds

3. **Identify site specific opportunities and constraints** – Identify opportunities to provide ‘cut-throughs’ (i.e. across parking lots or through parks, where such cut-throughs shorten access routes. Also identify specific constraints that will require special attention (i.e. freeway underpasses). Focus on area within 1 mile of transit station.

Key Mapping Inputs:

Aerial imagery + Site Evaluation (Aesthetics, Safety, Accessibility)

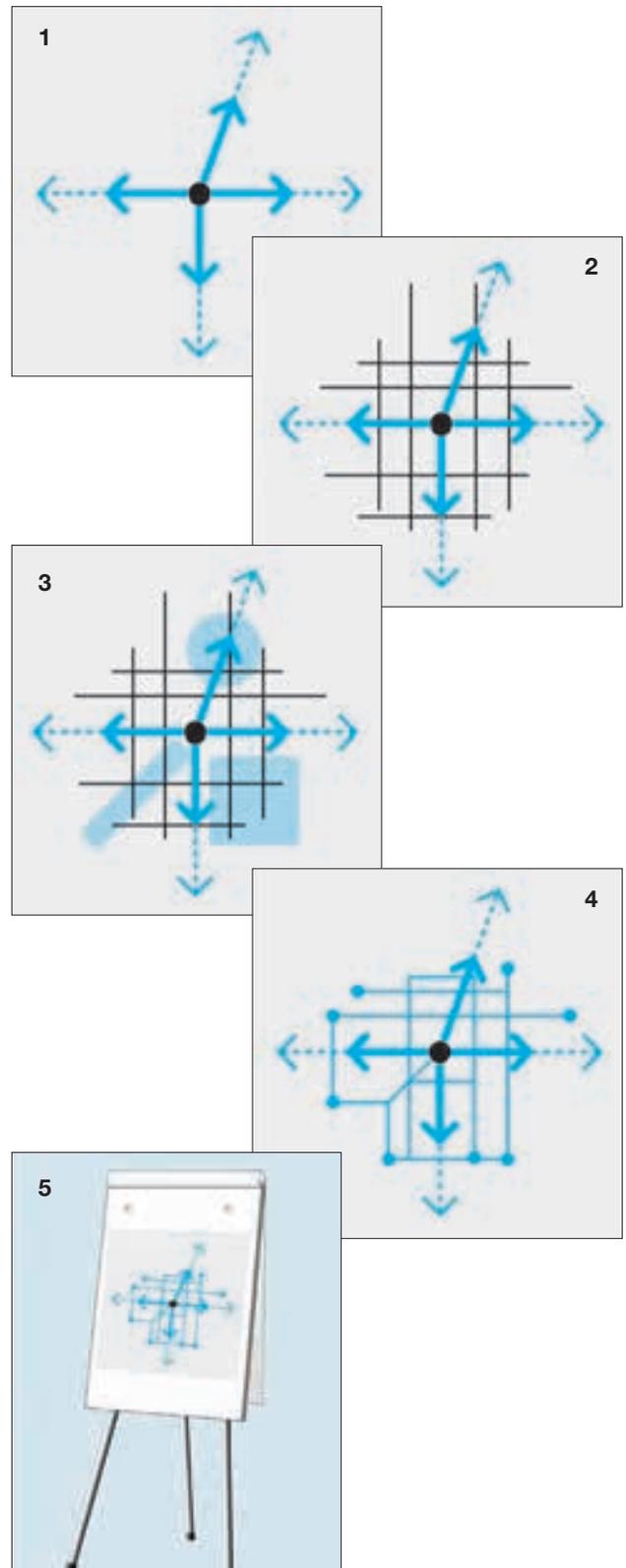
4. **Evaluate Network** – Review Path network relative to qualitative and quantitative inputs.

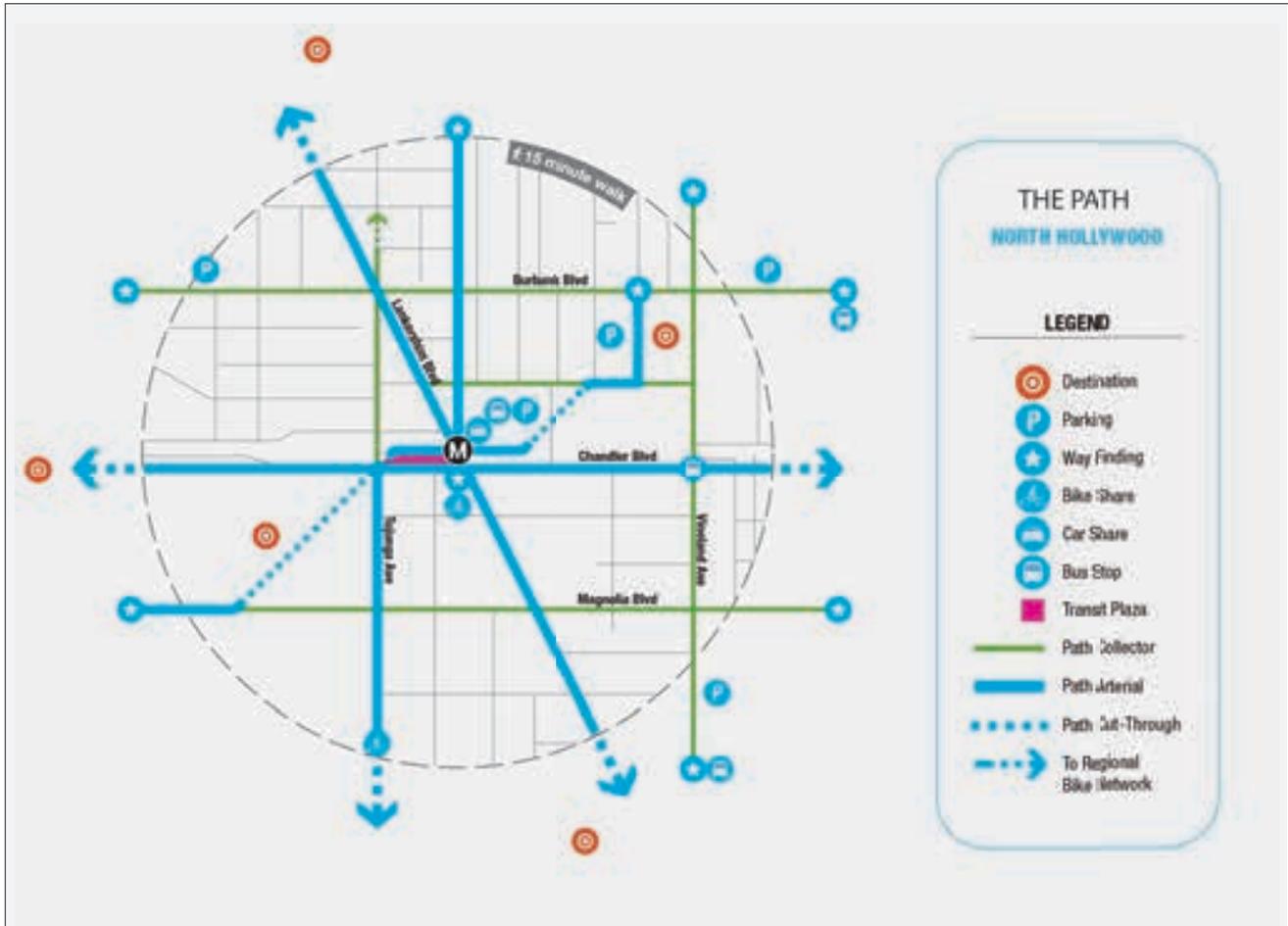
Key Mapping Inputs:

Collision data, Access Sheds, high speed roads + Site Evaluation (Aesthetics, Safety, Accessibility)

5. **Review and Refine Path Network** – Review network with key agency stakeholders and local representatives. This process will help inform design team of ongoing local efforts, strengthen knowledge of key local destinations and concerns, and inform the public of access improvement efforts.

Stakeholder and public outreach





This map illustrates the Path network at the North Hollywood Metro Station, developed utilizing the process outlined in this chapter. The fifteen minute walk equates to a one-half mile radius around the station portal. The map is depicted in the style of a transit map, to suggest that for the user, the Path would be understood as an extension of the transit experience. Certain access components, such as bike share, car share, parking, and location of wayfinding stations are presented to illustrate the concept that a range of access and mobility solutions could be strategically bundled around Path networks.

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5 PATH TOOLBOX

- ★ This Chapter presents a set of components that directly relate to the development of the Path concept. This is not an exhaustive list of what makes for a great public realm, and more components may be added on to this list as this concept is developed. The components chosen respond to our specific challenges here and now, and how we can make a more dignified transit-to-destination link, one that is safer and better maintained, more intuitive, efficient, and inviting, effectively expanding the transit station outward.

Introduction

The planning components presented in this chapter focus on improving access to and from Metro stations, in particular Metro Rail and fixed route BRT stations throughout Los Angeles County along identified Path networks and within the confines of defined station areas. The Path aims to overcome critical access barriers through flexible deployment of a number of design components, while following the Metro Path Guiding Principles noted in the first chapter.

The components focus on five categories of improvements as part of the Path:

1. *Crossing Enhancements and Connections*
2. *Signage and Wayfinding*
3. *Safety and Comfort*
4. *Allocation of Streetspace*
5. *Plug-in Components*

Not all Path Components directly relate to one another, but they work in concert to support the overall goals and guidelines of the Path. For example, traffic calming and curb-extensions are very different tools with respect to planning, design and implementation, but utilized together they enhance transit user safety, comfort and access ability.

Applying the Toolbox to Real Places

Components presented in this chapter aim to:

- *Expand the station's sphere of influence and improve the transit rider experience*
- *Contribute to a hierarchy of improvements that are more concentrated, visible, and frequent as transit users approach transit stations*
- *Be flexible in order to fit into diverse settings around stations*

Components presented in this chapter were developed with the recognition that Path Networks need to be responsive to local context and variations that exist both across and within station areas. The following **key considerations** are intended to support local jurisdictions in selecting treatments along Path networks:

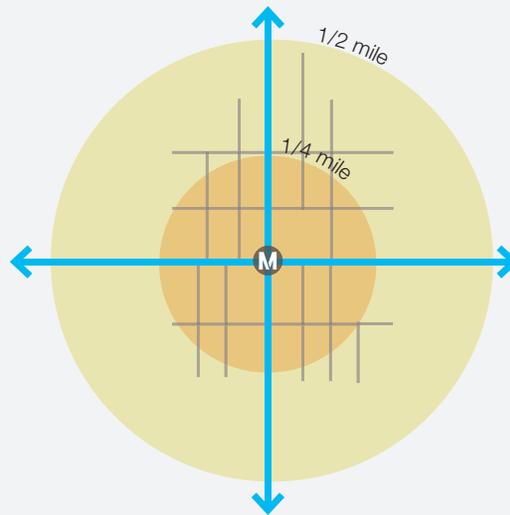
Sphere of Influence: The types and intensity of components deployed along Path Networks will differ depending on proximity to station. The “Extended Station Zone” is defined as roughly 1/4 mile radius from the station portal. The larger “Transit-Friendly Zone” extends out to an approximate 1/2 mile radius; this area would include active transportation infrastructure, but to a lesser extent than in the Extended Station Zone. Path Arterials may extend out farther still and link up with regional bike and pedestrian networks. The goals for these different spheres are noted in the graphic and provide guidance for prioritizing improvements.

A Hierarchy of Improvements: Paramount to a clear and navigable transit environment is a system of cues that help the transit rider intuit which direction the station is, how best to get there, and how long it will take. The frequency of access improvements should increase and be made more prominent as the transit rider approaches a station. For example, farther from the station within the Transit-Friendly Zone, crosswalks may be designed with a simpler and more traditional double stripe. In the Extended Station Zone, closer to the transit station, crosswalks should become more visible, prominent, and frequent, with continental or “zebra” stripes, colored paint, and wider in width.

Flexibility in Design: The contextual diversity of Los Angeles warrants a place-specific approach that does not stifle the individual identity of each location, allows for a flexible approach in design of the Path, and simultaneously provides a legible and intuitive system-wide strategy. Each component can be applied where appropriate depending on the urban condition. Illustrative examples of how Path components may be realized in different locations are presented in the “Illustrations” chapter.

Branding and Identity Building: The Path, whether named or not, will be most effective if it is recognizable and visually consistent, both within station areas and across communities served by Metro. For example, some Path elements could use standard / consistent messages, font, style, placement, material and colors while others may be informed by the identity of community in which they are located. The intent is to support seamless system navigation for the user, while allowing for the expression of local identity. These considerations should be made as part of further design development. Development of standard components would rely both on inter-jurisdictional coordination throughout the Metro region and coordination with state and federal standards.

Expanding the Sphere of Influence



- Metro Station
- Path Collector
- Path Arterial

EXTENDED STATION ZONE (AREA 1)

5-Minute Walk / 2-Minute Bike

- Path is more visible
- Enhanced safety features
- Larger, more prominent Path signage
- Directional markers with time-to-station signage
- Frequent crossings
- Train time arrival/departure digital displays

TRANSIT-FRIENDLY ZONE (AREA 2)

10-Minute Walk / 5-Minute Bike

- Less overt, more passive wayfinding & Path markers
- Address the most pressing safety & access improvements, such as:
 - New crossings
 - Curb ramps
 - Maintenance
 - Lighting & landscaping

How to Use this Guide

Category Labels each Component with one of the six categories: Crossing Enhancements and Connections; Signage and Wayfinding; Safety & Comfort; Allocation of the Streetspace; and Integrated Transit Access Solutions.

Component Name of Component.

Goal Describes what the Component should aim to do and who it should serve.

Guidelines and Resources Defines the Component. Guidelines presented focus on those aspects of design and planning that are particularly transit-supportive, rather than describing the full universe of good design standards or common best practices. References are included for other design and planning guidance. See the end of this chapter for a full list of references.

Transit Integration Identifies elements that can be used to identify or “brand” the Component as part of the Metro System, recognizable to the transit rider.

Path Network Compatibility Identifies which path type - whether Collector, Arterial, or Cut-Through - the Component should go, along with which sphere of influence - Area 1, the “Extended Station Zone” or Area 2, the “Transit Friendly Zone.”

Issues Addressed Shows how the Component responds to the six critical Station Access Barriers, that identify which problem(s) it helps solve.

CROSSINGS AND CONNECTIONS

Cut-Throughs and Shortcuts



Goals

- » Provide more direct routes to and from the station

Guidelines & Resources

- » Design shortcut paths with special paving, lighting, furnishings, and shade so that they are inviting to pedestrians of varying ages and abilities
- » Design shortcut paths to accommodate bicyclists and other active transportation users with a sufficiently wide pathway and smooth surface
- » Use directional signage to the stations at entrances to shortcuts
- » If located in the middle of the block, design shortcut paths that lead to a mid-block crossing for easier access across streets
- » Make sure that pathways are well-maintained, well-lit, and located in “people-friendly” places, i.e. places that are well-traveled, highly-visible, and pedestrian-oriented
- » Maintain existing cut-throughs and add safety enhancements

Transit Integration

- » Use Metro signage at entrances and decision points
- » Regularly place branded Metro medallion signage for the length of the pathway, every 60-100 ft approx

Station Access Barriers Addressed:

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

CROSSINGS AND CONNECTIONS

Enhance Existing Crosswalks



Goals

- » Protect pedestrians and active transportation users when crossing vehicular traffic
- » Enhance the visual presence of crosswalks to slow approaching vehicles

Guidelines & Resources

- » Paint stripes on existing crosswalk (or use special paving or paint). Stripes may be perpendicularly- or diagonally-placed
- » Incorporate advance stop bar or yield lines for on-coming vehicular traffic to give pedestrians more room to cross
- » Where feasible, incorporate special paving at intersections to call further attention to the crosswalk
- » Where feasible, install in-road warning lights or rectangular rapid-flashing beacons - Improve crosswalk lighting
- » Use leading pedestrian intervals on transit-adjacent crossings, which give pedestrians a head start across the intersection
- » Improve crosswalk lighting
- » Resource: Manual on Uniform Traffic Control Devices Best Practices

Transit Integration

- » Where feasible and applicable, paint stripe or edges of crosswalks to identify with Path network access route
- » Couple crosswalks with directional signage

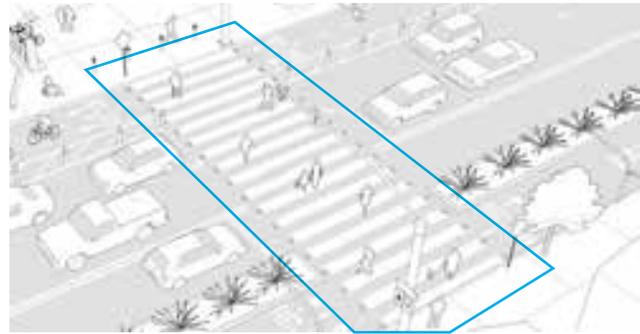
Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Mid-Block & Additional Intersection Crossings



Goals

- » Break up long blocks by allowing pedestrians to safely cross, thereby traveling shorter distances
- » Provide visual cues to allow approaching motorists to anticipate pedestrian activity and stopped vehicles

Guidelines & Resources

- » At mid-block crossings, or currently unsignalized intersections, introduce new crosswalks and vehicular control, such as pedestrian-oriented flashing beacons, in-road flashers, or HAWK (High-intensity activated crosswalk) signals, which are activated by a pedestrian push button
- » Provide a crossing at least every 300 ft on average, as a good rule of thumb
- » Add crossings around and adjacent to freeway overpasses/underpasses, so that pedestrians can navigate these areas more easily
- » Resource: Safety Effectiveness of the HAWK Pedestrian Crossing Treatment

Transit Integration

- » Where feasible and applicable, paint stripe or edges of crosswalks to identify with Path network access route.
- » Couple crosswalks with directional signage
- » Incorporate medallion signage or related branding on new crossing signal posts

Station Access Barriers Addressed

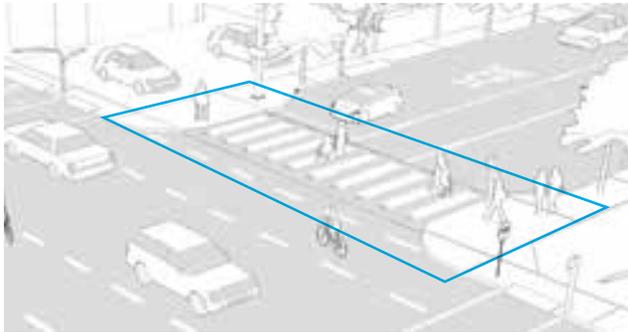
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

CROSSINGS AND CONNECTIONS

Raised Crossings



Goals

- » Calm traffic at intersections along high-speed streets
- » Visibly prioritize the pedestrian at key crossing locations

Guidelines & Resources

- » Raise crossings to be flush with the sidewalk and use special paving material to differentiate them from the roadway
- » Place raised crosswalks in areas with significant amounts of pedestrian traffic
- » Entire intersections may also be raised
- » Raised crosswalks may not be appropriate on streets with bus routes as they can slow and impede bus flow

Transit Integration

- » Where feasible and applicable, paint stripe or edges of crosswalks to identify with Path network access route
- » Key signage to intersection

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

[Case Study] Raised Crosswalks in Boulder & Cambridge

Raised Crossings Aid in Pedestrian Safety

Boulder, Colorado¹

In response to “poor driver compliance with crosswalk yield laws”, designers in Boulder embarked on a mission to increase comprehensive crosswalk compliance. Raised crosswalks were implemented throughout the city to test driver compliance. The raised pedestrian crossings were installed at right-turn islands, and were found to “increase compliance from 69% to 91%.” Accompanied by a number of other additional crossing enhancements, Boulder saw an overall increase of motorist crosswalk compliance by 43%.

Cambridge, Massachusetts²

Similar results were seen in Cambridge, where “raised crossings tripled the number of drivers yielding to pedestrians.” Community surveys revealed that 69% of nearby residents felt that raised crossing enhancements were a better solution than the introduction of a traffic signal.



Cambridge, MA

On one street in Cambridge, MA, motorists yielding to pedestrians crossing at the raised devices went from approximately 10% before installation of to 55% after.

CROSSINGS AND CONNECTIONS

Cut-Throughs and Shortcuts



Goals

- » Provide more direct routes to and from the station

Guidelines & Resources

- » Design shortcut paths with special paving, lighting, furnishings, and shade so that they are inviting to pedestrians of varying ages and abilities
- » Design shortcut paths to accommodate bicyclists and other active transportation users with a sufficiently wide pathway and smooth surface
- » Use directional signage to the stations at entrances to shortcuts
- » If located in the middle of the block, design shortcut paths that lead to a mid-block crossing for easier access across streets
- » Make sure that pathways are well-maintained, well-lit, and located in “people-friendly” places, i.e. places that are well-traveled, highly-visible, and pedestrian-oriented
- » Maintain existing cut-throughs and add safety enhancements

Transit Integration

- » Use signage at entrances and decision points
- » Regularly place medallion signage for the length of the pathway, every 60-100 ft approx

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Curb Extensions at Intersections



Goals

- » Improve safety by shortening crossing distances, increasing pedestrian visibility, slowing turning vehicles, and visibly narrowing roadway for high-speed traffic
- » Provide more room for walking/active transportation, along with seating areas, expanded access for transit waiting areas, and opportunities for bioswales, stormwater management, and other planted areas

Guidelines & Resources

- » Place curb extensions on streets with high pedestrian volumes or pedestrian emphasis, or wide streets that are difficult to cross
- » Incorporate bioswales, bollards, planters, or other objects along street edge to protect pedestrians
- » Resource: Designing Sidewalks and Trails for Access, Best Practices Design Guide
- » Design curb extensions at bus stops so that bus waiting areas are made larger and the bus does not have to pull out of the travel lane to pick up passengers

Transit Integration

- » Couple curb extensions with established signage

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

CROSSINGS AND CONNECTIONS

Scramble Crossings



Goals

- » Prioritize the pedestrian at the intersection
- » Increase safety and visibility for pedestrians
- » Shorten crossing times for pedestrians

Guidelines & Resources

- » Place scramble crossings in dense areas with a lot of commercial and pedestrian activity
- » Paint continental striping or highly-visible pattern / color fully across all four legs and both diagonal paths of the crosswalks
- » Install informational signage that instructs pedestrians of appropriate crossing movements at scramble crossings
- » Resource: Oakland Chinatown Pedestrian Scramble: An Evaluation
- » Resource: Exclusive Pedestrian Phasing for the Business District Signals in Beverly Hills

Transit Integration

- » Where feasible and applicable, paint stripe or edges of crosswalks to identify with Path network access route
- » Key signage to intersection

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

[Case Study] Scramble Crossings in Beverly Hills³

In Beverly Hills’ “Business Triangle” where daytime pedestrian activity is very high, there had been a high number of pedestrian / vehicle collisions. In the late 1980s the City modified traffic signals at eight locations to include scramble crossings. As Bijan Vaziri of the City of Beverly Hills Engineering Department notes, “after implementation, it seemed that people quickly became accustomed to the new operation. Public opinion has been very favorable...”

Safety was improved after installation of the scramble crossings as a study of collision data showed. Collision data from 10 years prior and 10 years after was compared and pedestrian / vehicle collisions decreased significantly, by up to 63%. Furthermore, overall collisions in the Business Triangle were also reduced by 20%.



Scramble Crossings in Shabuya Crossings Tokyo, Japan

Beverly Hills saw an overall decrease in pedestrian / vehicle collisions by as much as 63% after a series of scramble crossings were installed.

SIGNAGE AND WAYFINDING

Metro Signage & Maps



Goals

- » Increase legibility of the urban landscape
- » Increase visibility and awareness of proximity to transit station
- » Display paths of travel to station and to local destinations

Guidelines & Resources

- » Place signs on/near corners and decision points, regularly-spaced along a route approximately 200-300 ft. apart
- » Use signs that relate to Metro's established family of signage
- » Ensure that signs are pedestrian-scaled and oriented
- » Use arrows and maps on these signs to highlight station location, common destination areas, and routes
- » Consider the potential to stamp or stencil the Metro 'M' at corners on the sidewalk
- » Resource: Legible London; A Wayfinding Study

Transit Integration

- » Coordinate with Metro signage and branding efforts

Medallion Signage

4



Goals

- » Increase visibility and awareness of proximity to transit station
- » Display paths of travel to station and to local destinations; pulls people along the Path
- » Increase legibility of the urban landscape
- » Help identify the Path with repetitive elements that are recognizable

Guidelines & Resources

- » Place medallion signs on existing and new infrastructure such as light poles at heights that are visible to both pedestrians and active transportation users
- » Place signs with a consistent rhythm down the Path, approximately every 2 or 3 blocks

Transit Integration

- » Coordinate with Metro signage and branding efforts.
- » Carry the color of the medallion sign to the ground plane where feasible

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Station Access Barriers Addressed

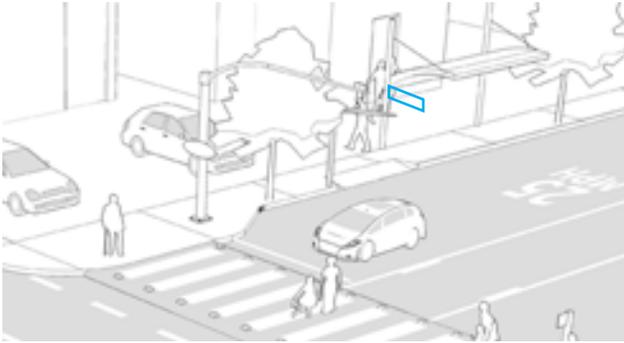
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

SIGNAGE AND WAYFINDING

Time-to-Station Signage



Goals

- » Increase awareness of active transportation, transit, and transit-proximity
- » Encourage people to use active transportation modes
- » Provide helpful navigation and information on distance and time to get to the station via alternative transportation

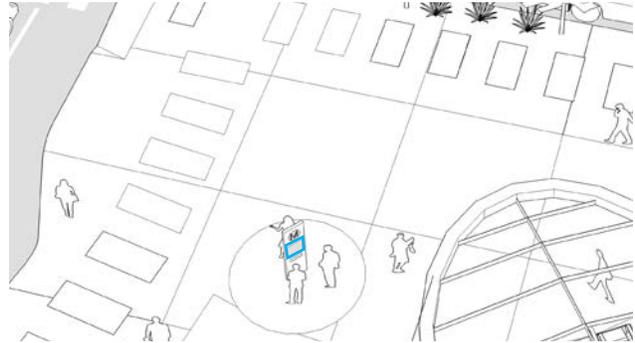
Guidelines & Resources

- » Include pedestrian and bicycle times with directional arrows
- » Consider the travel times for other active transportation users

Transit Integration

- » Place notation on or adjacent to Path medallion signage

Real-Time Signage Adjacent to Station



Goals

- » Facilitate a bus to rail transfer and allow active transportation users to pick the best transit option in real-time
- » Warn user of expected delays
- » Encourage use for first-time transit users

Guidelines & Resources

- » Introduce dynamic signage that shows expected arrival times for buses, trains, etc.
- » Place signs at or immediately adjacent to bus stops and subway portals (above ground)
- » Maintain and update real-time signage as technological capabilities improve

Transit Integration

- » Place real-time signage on or adjacent to Path medallion signage or other Path components, using consistent Path logo and design

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

SIGNAGE AND WAYFINDING

Smart Technologies



Goals

- » Increase the ease of use of alternative transportation modes
- » Encourage first-time users
- » Integrate with Metro NExttrip service

Guidelines & Resources

- » Provide real-time information and expected transit arrival times on mobile devices
- » Provide detailed service advisories for delayed transit, and safety issues
- » Assist new users in finding stations using geospatial software
- » Run marketing campaign for initial launch
- » Design smart technologies to be used on all platforms
- » Resource: Smart Cities Applications and Requirements White Paper

Transit Integration

- » Integrate transit access into existing and planned smart technologies

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

N/A

[Case Studies] Non-Signage Wayfinding

In-Pavement Trails and Markings

Wayfinding and signage are not always synonymous. Wayfinding can take the shape of any sort of consistent clue that helps someone understand where they are going. These clues can be more or less literal and are usually accommodated through a change in materials such as pavement or ground plane differentiation, lines and graphics imbedded in the pavement, raised symbols, changes in lighting, or a coordinated family of streetscape amenities.

The Freedom Trail in Boston, MA

Boston's Freedom Trail is a red path through downtown that leads pedestrians to key sites. The design of the path material changes as it passes through different areas, but the family of materials used are always consistent.

Melbourne

Decades ago, Melbourne installed pavement markers along various pedestrian walks around the City. The trail includes red granite and brass pavement inlays to demarcate it.



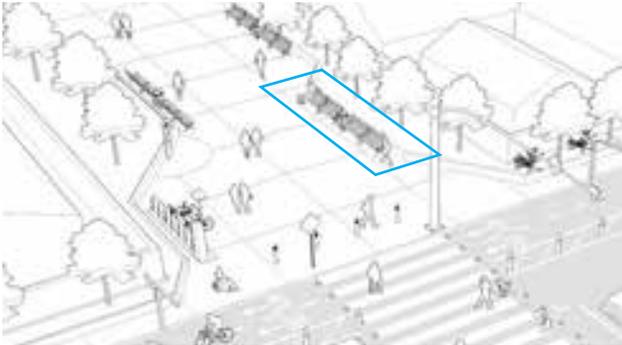
Freedom Trail, Boston, MA



Melbourne's Pedestrian Trail System

SAFETY & COMFORT

Street Furniture



Goals

- » Provide amenities to make active transportation users comfortable while travelling
- » Increase number of eyes-on-the-street by providing places for people to sit comfortably

Guidelines & Resources

- » Along streets with heavy pedestrian traffic, place street furniture and pedestrian amenities, such as benches, bike parking, skateboard parking, charging stations, etc.
- » Place street furniture regularly and rhythmically
- » Maintain clear paths of travel around furniture with enough clearance to accommodate active transportation users along the sidewalk
- » Maintain and clean existing street furniture along Path networks
- » Install parking areas for bikes, scooters, and other active transportation mobility devices along Paths, near destinations and front doors
- » Where feasible, use environmentally sustainable materials

Transit Integration

- » Street furniture may respond to the street furniture family already in place at that particular location

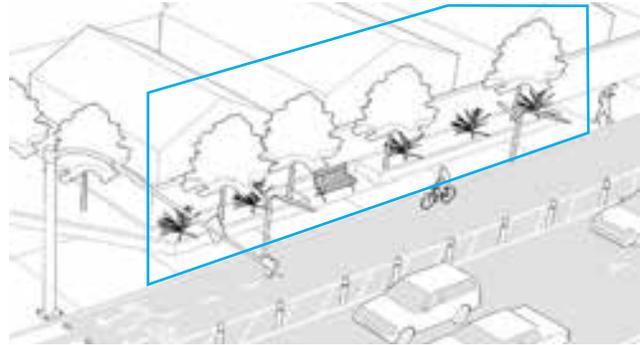
Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Landscaping & Shade



Goals

- » Provide refuge from the sun
- » Provide pleasant and safe pathways and resting spaces for transit users

Guidelines & Resources

- » Plant shrubs, trees, etc. along sidewalk edges of Paths with heavy vehicular traffic, to buffer active transportation users and filter the air
- » Maintain and enhance existing landscaping
- » Provide shade structures in areas where pedestrians gather and along pathways

Transit Integration

- » Landscaping along Path networks may respond to the landscape identity already in place at that particular location.

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

SAFETY & COMFORT

Lighting



Goals

- » Increase safety and aid in night navigation for active transportation users along the Path

Guidelines & Resources

- » Provide pedestrian-oriented light fixtures along sidewalks, spaced as needed, approximately every 30 feet on center
- » Install lighting rhythmically and consistently, in coordination with existing street light pattern
- » Assure that lights are not located within tree canopies, which may block the light
- » Maintain existing light fixtures on street
- » Consider installing lights that are efficient and/or motion activated / self powered in areas where constant light is not needed
- » Provide uniform light levels along the sidewalk and assure that other paths of travel for active transportation users are also well-lit
- » Install lighting around bus stops and bus to rail transfer paths

Transit Integration

- » Closer to the station, wrap pedestrian light poles with stripes and/or Metro color palette so that visually the poles guide the active transportation user to or from stations

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

[Case Study] Active Lights¹⁰

Motion Activated, Solar Pedestrian Lighting

Quality pedestrian lighting ensures a safe environment for pedestrians and active transportation users alike. With regularly spaced pedestrian lighting comes increased visibility, perception of safety, and eyes-on-the-street.

New pedestrian lighting strategies involve creative ways to light up the active transportation path network. For example, a number of cities in Sweden have been using “Active Lights”. The design incorporates an LED lighting system that is motion activated to provide security and lighting for those who pass by. “Using solar energy, this system is self-powered and extremely cost effective.”



Active Lights in Sweden



Active Lights Illustration

Studies of the Active Lights show a 65% reduction in nighttime fatal accidents, a 30 % reduction in nighttime injury accidents, and a 15 % reduction in nighttime property-damage-only accidents.

SAFETY & COMFORT

Freeway Underpass & Overpass Enhancements



Goals

- » Increase pedestrian safety and comfort
- » Incorporate visually-engaging elements at freeway crossings that make for a more friendly street and pull active transportation users along the Path, by giving them compelling things to look at

Guidelines & Resources

- » Provide lighting that illuminates the overpass/underpass at all hours of the day and night
- » Where feasible incorporate public art in the tunnel or on the overpass
- » Maintain existing overpasses / underpasses
- » Improve the experience and perception of safety along the sidewalk with special paving and bollards along the curb edge. On overpasses, introduce trees in planters where space permits along curb edges or growing vines along edge fences
- » Take advantage of underutilized space in the roadway to expand the sidewalk where feasible

Transit Integration

- » Incorporate Metro elements such as lighting, signage, and paving treatments along the sidewalk to direct pedestrians and active transportation users across the freeway

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Enhanced Bus Waiting Areas



Goals

- » Enhance transit riders' level of comfort
- » Improve safety for users at night by improving facility visibility

Guidelines & Resources

- » Increase seating options and provide bus shelters at bus stops where space permits
- » Provide shading, lighting, and public art where space permits
- » Couple street furniture (e.g. lighting, trash cans, and parking for varying mobility devices) with enhanced bus stops
- » Add real-time transit signage that displays next bus and train estimated arrival / departure time
- » Incorporate informational wayfinding signage, route maps, and a push-to-talk assistance button
- » Maintain existing bus waiting area facilities
- » Introduce a transit boarding island or bulb-outs to allocate more space for bus boarding, where feasible

Transit Integration

- » Use signage at bus waiting areas

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

SAFETY & COMFORT

Traffic Calming



Goals

- » Decrease speeds along heavily trafficked streets to protect multi-modal users on Path networks
- » Reduce collisions and conflicts between modes
- » Increase awareness of transit stations
- » Begin to establish safe 'transit-zones' around Metro transit areas
- » Allow for NEV integration within Transit Friendly Zone

Guidelines & Resources

- » Paint reduced speed MPH signs in and along roadway for vehicular travellers
- » Use narrow travel lanes that naturally cause motorists to slow. Use 11ft as a good maximum width for outside lanes and 10ft as a good average width for inside lanes
- » Use physical measures such as curb extensions to narrow the roadway
- » Promote police enforcement of new 'transit-zone' friendly speeds
- » When calming traffic, consider impact on bus service; while the goal is to increase safety for active transportation users, the usability and convenience of the Metro bus service should not be compromised

Transit Integration

- » N/A

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Sidewalk Paving & Surface Enhancements



Goals

- » Make it easier and smoother to walk and roll along the sidewalk
- » Make areas for different modes on the sidewalk, apparent and obvious, for improved safety

Guidelines & Resources

- » In areas where multiple modes are converging, consider using paving, pavers, and other ground plane treatment differentiation in linear zones along the sidewalk to help people understand where they should be walking or rolling, so that conflicts are avoided
- » Use enhanced paving to highlight pedestrian facilities, edges, and sidewalk amenities, for example along curb edges, around tree wells, in seating areas, or at corners or crossings. These treatments make the sidewalk a nicer place to be and an easier place to navigate.
- » Use appropriate, slip resistant paving and surfaces. If people are expected to roll or bike across the surface, make sure that it is smooth, without bumps.

Transit Integration

- » Consider coordinating the color and style of the surface treatment with bundled improvements
- » Use color, pattern, or texture to provide cues to transit riders that they are approaching a station or stop

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

ALLOCATION OF STREETSPACE

Reduced Lane Width



Goals

- » Narrow vehicular lane widths, where possible, to help promote slower driving speeds, reduce the severity of vehicular crashes, and reduce crossing distances.
- » Gain under utilized space that can be used for more transit-friendly uses, such as bus access, extended sidewalks, buffer zones, protected bicycle lanes, and bulb-outs.

Guidelines & Resources

- » In urban areas where traffic volumes and bus usage permits, do not use lanes that are wider than 11 feet, ideally 10 feet.
- » Use striping to channelize traffic, and create buffer zones or delineate parking from travel lanes (pictured).

Transit Integration

- » Confirm Lane width requirements for efficient bus operations.

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Enhanced Bike Facilities



Goals

- » Provide bike facilities that are separated and/or protected from vehicular traffic

Guidelines & Resources

- » Convert existing standard bike lanes or sharrows into protected facilities where feasible, to protect cyclists from vehicular traffic
- » On streets that have heavy traffic, multiple lanes, lots of parking turnover, double parking, and existing or potential high bicycle ridership, consider installing separated cycle tracks to protect cyclists and make cycling more comfortable and inviting
- » On streets with high speeds, few driveways or cross streets, and high demand for bicycle access, consider installing raised cycle tracks - at the same level as the sidewalk
- » On streets where cyclists are already riding the wrong way, where direct access is very difficult for cyclists, where two way connections are needed, and where traffic is low-speed and low volume, consider installing contraflow bike lanes or bike routes that cut-through blocks
- » Other protected facilities and bike enhancements recommended for transit zones include: buffered bike lanes, bike boxes, bike signal heads, and bike signal detection

Transit Integration

- » For separated facilities use paint on the street surface to conform with bundled improvements
- » Consider signage, both directional and wayfinding

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

ALLOCATION OF STREETSPACE

Bus Enhancements



Goals

- » Provide dedicated space and more direct access for buses, which facilitates travel by bus and makes transfers easier for bus riders.

Guidelines & Resources

- » Use bus-only lanes and design lights for buses, along long transit corridors
- » Consider the application of contra-flow bus lanes where streets are one-way, but short, efficient connections could be made for buses
- » Consider the use of dedicated bus lanes and bus stops bulbs that make it easier for bus drivers to pick up passengers and re-enter traffic
- » Consider the application of “far-side” bus stops - stops that are past the intersection rather than before it - which are safer in terms of pedestrian crossing and easier in terms of bus traffic flow
- » See ‘Enhanced Bus Waiting Area’ Tool

Transit Integration

- » Integrate these improvements into the Metro brand, in terms of signage, wayfinding, and any special treatments to the ground plane

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

The “Green Zone”



Goals

- » Prioritize “green” vehicles and active transportation uses at or very near the station area

Guidelines & Resources

- » Dedicate a “Green Zone” within the parking lane, parking area, or outside travel lane adjacent to station areas, which is marked with paint and identity/ safety signage and which allows area for “green” transportation such as pick up / drop off for shared rides, parking for electric vehicles, bus stops, car share parking, etc.
- » Configure the Green Zone as space allows in each particular condition; sometimes the Zone may best serve as a bus waiting area or a kiss-and-ride location, while in others car share or electric vehicle parking might be most appropriate

Transit Integration

- » Use eye-catching paint and graphics on the street pavement and on signage to help brand the Green Zone as part of the Metro system

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

ALLOCATION OF STREETSPACE

[Case Study] Rolling Lanes

The idea of “Rolling Lanes” is to reorganize the streetspace to accommodate a wide spectrum of active transportation users, giving both more and better space and safer facilities. Internationally, cities are introducing their own versions of “Rolling Lanes.” Read below for precedents.

Copenhagen¹¹

In 2010, the City of Copenhagen introduced the “Conversation Lane”, a throughway that aims to solve conflicts that arise as a result of varying mobility speeds. Citing the increase in electric bicycle sales and the ever-expanding range of mobility ‘rolling’ options, designers have called the Conversation Lane a “social cycle path”, which will allocate more space for alternative transit modes.

Given the natural, self-organizing tendency of bicycle movements (faster traffic moves to the left while slower traffic shifts to the right), designers chose to allow “unusually wide social cycle paths” to accommodate a wider range of users. Additionally, the proposed program utilizes advancements in information technology by incorporating speed detecting signs that direct users to shift lanes depending on their independent speeds.

Conversation lanes are designed to give cyclists room to travel comfortably beside each other and will be designed alongside a ‘fast lane’; a separated bicycle facility for cyclists wishing to pass or move faster than ‘normal’ speed cyclists.



Conversation Lanes, Copenhagen

The Netherlands¹²

Similarly, in the Netherlands, the Dutch Ministry for Infrastructure and the Environment allocated €21million to build wide, “high-capacity” cycle routes to reduce overall cycling trip time. Named “Fiets Filevrig” (Queue-Free Cycling), the program is aimed to attract cyclists that experience congestion on cycle routes.



Queue-Free Cycling in the Netherlands

Copenhagen has committed to the goal of providing conversation lanes alongside 80% of their already established cycle routes, ultimately encouraging riders of all speeds and levels to embrace the city’s cycling culture.

ALLOCATION OF STREETSPACE

United States ^{13,14}

In the United States, a number of cities are implementing their own versions of a Rolling Lane.

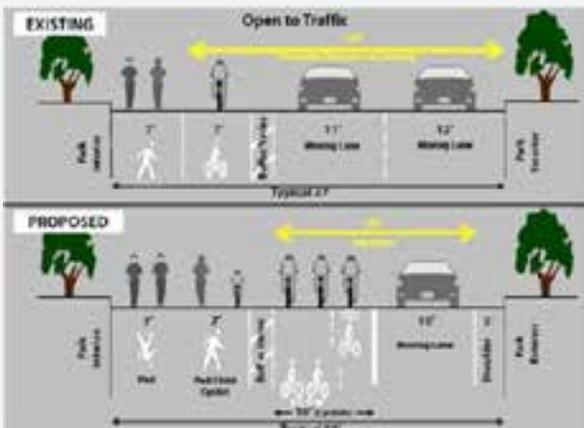
Portland and Chicago have both introduced passing lanes for cyclists at key conflict points. In Portland the new markings expand the bike lane to 10 feet, and include side-by-side bike lane symbols that separate slow and fast lanes. New striping was completed to allow easier and safer passing on an uphill segment of one of Portland's heavily congested bikeways.

The Park Slope neighborhood of Brooklyn is also gearing up for some proposed changes in response to an increase in collisions between pedestrians and bicyclists. The plan introduces a new "Ped/Child Cyclist" lane, a widened "slow" bike lane, and a sharrow lane for faster cyclists. Vehicular traffic is shifted into one lane.

In March 2010, San Diego State University opened a dual skateboard/bike lane.

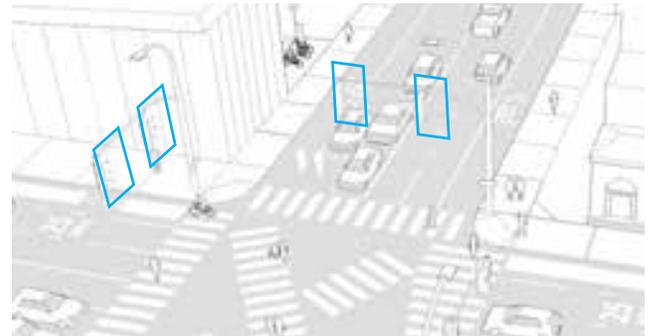


Portland, Oregon's Passing Lanes



Proposed Configuration of Prospect Park Loop, Park Slope, Brooklyn

Signal Modifications



Goals

- » Slow vehicular speeds within transit zones
- » Give crossing priorities to pedestrians and active transportation users
- » Time signals to ease traffic and minimize conflicts between pedestrians and vehicles
- » Begin to establish safe 'transit-zones' around Metro transit areas

Guidelines & Resources

- » Set vehicular signal timing for moderate progressive speeds, rather than aggressive speeds along Path routes
- » Time signals to provide pedestrians and other active transportation users lead time for crossing before vehicular travel
- » Use bus and bike detection at traffic signals for prioritization of active transportation devices
- » Add pedestrian-actuated signals for crossings

Transit Integration

- » N/A

Station Access Barriers Addressed

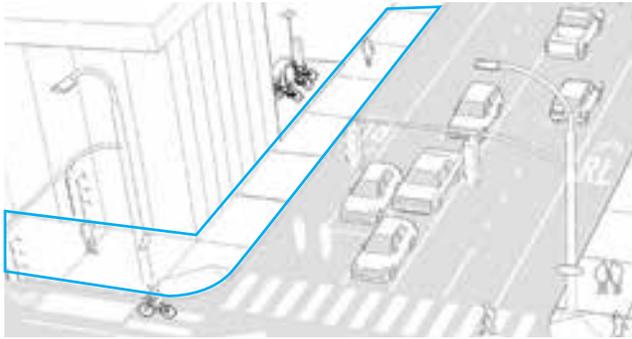
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

ALLOCATION OF STREETSPACE

Sidewalk Widening



Goals

- » Shift the balance of the roadway so that it caters more to active transportation users of all types within station areas and transit zones
- » Increase safety and comfort on the sidewalk for active transportation users
- » Provide enough room on the sidewalk for active transportation users of varying speeds, ages, abilities, using varying mobility device types

Guidelines & Resources

- » Couple sidewalk widening with the provision of amenities such as street furniture, lighting, and landscaping
- » Maintain existing sidewalks, fix buckling sidewalks, pick up trash, etc.
- » Assure that utility boxes and other auxiliary infrastructure is placed secondarily to through movement and does not impede access of pedestrians and other active transportation users
- » Where space permits, introduce parklets in underutilized right of way
- » If more permanent solutions are untenable, consider using temporary installations to test sidewalk improvements. Examples of these may include temporary extensions of the pedestrian realm into the right-of-way, through parklets and temporary plazas.

Transit Integration

- » Consider identifiable paving treatments

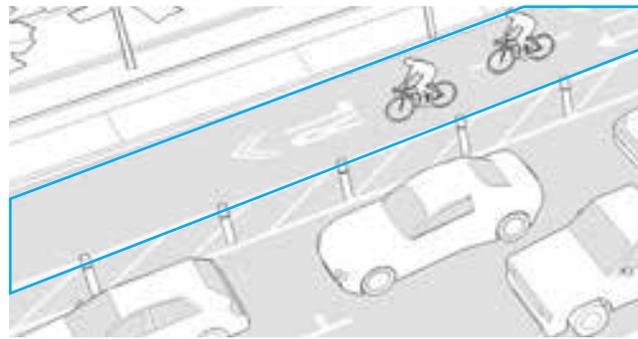
Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Rolling Lane



Goals

- » Shift the balance of the roadway so that it caters more to active transportation users of all types within station areas and transit zones
- » Increase safety and comfort in the roadway for active transportation users
- » Provide a passing lane for faster riders

Guidelines & Resources

- » Convert existing bike lanes into Rolling Lanes and add new Rolling Lanes within a 1/4 or 1/2 mile radius of the station, where feasible. Rolling lanes are dedicated lanes, wider than standard bike lanes, which welcome users of varying speeds beyond bicyclists such as scooter riders, electric bicycles, skateboarders, etc.
- » Paint fast / slow indicators in the Lane, giving ample room for passing at conflict points such as crosswalks and hills.
- » Ideally provide buffer (painted or raised, e.g. planter, parking, or bollards) to separate active transportation users comfortably from vehicular traffic.
- » Couple with informational signage, traffic markings, and dedicated signalization through intersections
- » Allow cyclists to also travel outside of the Rolling Lane, contrary to current regulation regarding bike lanes.
- » Coordinate Rolling Lane design/placement with bus operations needs and stop locations; the bus/bike interface should be coordinated for maximum impact
- » Resource: Urban Bikeway Design Guide

Transit Integration

- » At conflict zones, apply paint on street

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

PLUG-IN COMPONENTS

Car Share



Goals

- » Increase connectivity to Metro stations
- » Encourage multi-modal options and modal transfers
- » Increase transportation flexibility
- » Expand modal opportunities for those that are transit dependent
- » Reduce Vehicle Miles of Travel (VMT) and Greenhouse Gas (GHG) emissions
- » Reduce traffic by decreasing the number of cars on the road

Guidelines & Resources

- » Locate pick-up / drop-off spaces for car share in the “Green Zone” or in another highly-visible and convenient location
- » Incorporate signage near station areas that informs the transit rider of car share options
- » Contract with private company to begin car share program
- » Resource: See Zip Car, LAX Car Share, City Carshare, Philly Carshare

Transit Integration

- » Use signage at car share stations and as directional indicators to the stations

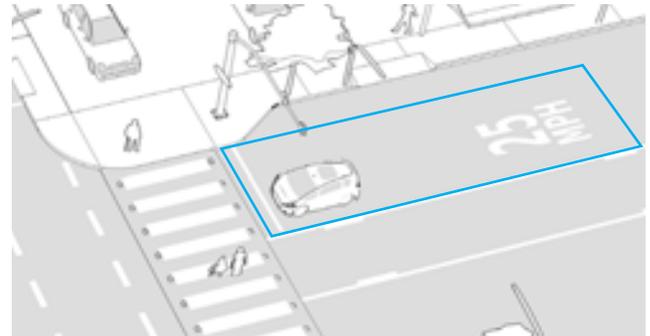
Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Neighborhood Electric Vehicles (NEVs)



Goals

- » Increase connectivity to Metro stations
- » Encourage the use of electric and alternative mobility devices that are zero emissions
- » Increase transportation flexibility

Guidelines

- » Introduce NEV charging stations within designated “Green Zone”
- » Provide NEVs (and other low-speed, electric vehicles) priority parking stalls in micro park-and-ride facilities, which are closer to the entrances / exits
- » Allow compact NEV’s to travel in Rolling Lanes, when traveling at reduced speeds

Transit Integration

- » Use signage at NEV parking locations and to and from these areas as directional indicators to the station

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

PLUG-IN COMPONENTS

Bike Share & Bike Station



Goals

- » Increase connectivity to Metro stations
- » Increase low-cost public transportation options
- » Reduce Vehicle Miles of Travel (VMT) and Greenhouse Gas (GHG) emissions
- » Reduce traffic by decreasing the number of cars on the road
- » Encourage physical activity
- » Increase retail exposure and enhance nearby commercial areas

Guidelines & Resources

- » Locate bike share / bike stations in highly-visible areas near or at Metro transit stations
- » Strategically locate bike share / bike stations along transit corridors, existing or proposed bikeways, popular destinations, and retail / job centers, to ensure that users can pick-up/drop-off bikes conveniently
- » Couple bike share with smart technologies that help active transportation users navigate the system

Transit Integration

- » Use signage at bike share stations and as directional indicators to the stations

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

[Precedents] Bike Share

Paris, France

Paris, France, is home to Velib – one of the largest bike share programs in the world. Boasting 20,000 bicycles and more than 1,800 bike-stations, Velib is available 24/7, with stations located every 1000 feet, allowing for convenient pick-up and drop-off. Station density typically increases around transit hubs, and stations vary in size depending on demand. Interactive maps and competitive rates have made the program one of the most accessible bike share programs in the world. Velib was one piece of Paris' city-wide strategy to dramatically increase active transportation specific infrastructure, prioritizing the expansion of alternative modes over vehicular modes.

United States

Bike share programs are becoming increasingly popular in the United States. In 2013, New York City introduced CitiBikes, adding to the growing list of U.S. cities that are implementing comprehensive bike share programs. Other bike share programs include Washington D.C.'s Capital Bike Share, Boston's Hubway, Denver's B-cycle, Miami Beach's Deco Bike and Minneapolis' Nice Ride.



Paris Velib Bike Share



New York City Citibike Share

PLUG-IN COMPONENTS

Van Pool & Feeder Bus



Goals

- » Increase connectivity to Metro stations
- » Increase low-cost public transportation options, especially for commuters
- » Reduce Vehicle Miles of Travel (VMT) and Greenhouse Gas (GHG) emissions
- » Reduce traffic by decreasing the number of cars on the road

Guidelines & Resources

- » Locate pick-up / drop-off areas for van pool and feeder bus in the “Green Zone” or in another highly-visible and convenient location
- » Retrofit existing feeder bus stops and van pools with Path signage
- » Resource: See Emery Go-Round or LA DASH

Transit Integration

- » Use signage at van pool / feeder bus pick up / drop off locations and to and from these areas as directional indicators to the station

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

[Precedents] Integrated Access Solutions



Philly CarShare, Philadelphia, PA



Curbside electric Vehicle charging station, Portland, OR



Feeder Bus: Emery Go-Round, Emeryville, CA

PLUG-IN COMPONENTS

High-Visibility Bicycle Parking



Goals

- » Provide easy-to-access and easy-to-see bicycle parking (may be located on-street), adjacent to building front doors, sidewalks, and crossings.

Guidelines & Resources

- » Locate bike parking within easy walking distance to main building entrances, and in highly visible locations that are well-lit and secure
- » Where sidewalk space is limited and where cycling demand is high, consider installing “bike corrals” (pictured above) on the street
- » Bike corrals need not remove existing parking stalls if placed creatively, for example immediately adjacent to crosswalks where the curb is already painted red
- » Protect bike corrals from vehicular traffic at edges
- » Regularly maintain existing bike corrals and bike parking areas
- » Typical bike corrals that replace a parking space accommodate parking for 16 bicycles

Transit Integration

- » Include signage at bike parking locations and at decision making points, which points riders to the parking areas

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Electronic Bicycle & Pedestrian Counters



Goals

- » Gather information on bicycle and pedestrian usage, pre- and post-improvement to understand usage patterns, help justify investments, assess impacts, rank sites, and plan maintenance

Guidelines & Resources

- » Use electronic counters to sense both pedestrians and bicyclists at critical locations along transit routes
- » Show counts and locations online to raise awareness and so that people can participate in the data gathering
- » Coordinate with LA County Bike Coalition and other local groups to publicize counters and strategically use the data that is collected

Transit Integration

- » Use signage on counters and in related publicity materials

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

PLUG-IN COMPONENTS

[Case Studies] Electronic Bicycle & Pedestrian Counters

Make the Need Visible with Electronic Bicycle Counters

Popularized in Copenhagen and brought to the US first in Portland, OR, electronic bicycle counters help to gather data and improve measurements of progress toward increasing bike ridership.

Seattle, WA

In 2013, Seattle’s City Council voted to install 7 additional bike counters (added to the 2 they already have).

San Francisco, CA

In 2013, San Francisco started using California’s first bike traffic counter on Market Street .

Arlington, VA

Arlington County has set up a system of permanent automatic counters that monitor both bicycle and pedestrian numbers, 24 hours a day at selected locations.



Findings from the bike counter in San Francisco are shared online



One of Seattle’s bike counters

Reward System - Zap Readers

The Minneapolis and St. Paul Transportation Management Organizations promote sustainable transit and transportation systems and work directly with employers to encourage the use of active transportation.

The Organizations installed a “Zap” system that detects bikes as they pass and then reports the data received at each station. The system uses RFID tags on the front wheel of registered bikes and 20 meters on major bicycle routes in a ring around downtown Minneapolis and St. Paul. Any commuter can participate in the program and putting an RFID tag on their bike and the program is free to use. People who participate receive rewards and information tailored to them.

Pedestrian Counting in Melbourne

The City of Melbourne has a website that depicts the information gathered from 18 pedestrian counting sensors located around the central business district. The system is giving the City a better understanding of how people use the streets and how they can be better managed to cater to pedestrian needs.



Pedestrians in downtown Melbourne are monitored by the pedestrian counter (upper right corner of image)



Installing the RFID tag in the bike wheel, for tracking and counting purposes; Zap Minneapolis and St. Paul.

PLUG-IN COMPONENTS

Kiss & Ride



Goals

- » Increase connectivity to Metro stations
- » Provide drop off areas that are safe and convenient to the station in order to encourage shared-rides
- » Reduce Vehicle Miles of Travel (VMT) and Greenhouse Gas (GHG) emissions
- » Reduce traffic by decreasing the number of cars on the road

Guidelines & Resources

- » Designate pick-up / drop-off areas within the “Green Zone” or in another highly-visible and convenient location
- » Coordinate design and placement of drop off facilities with bus operations and bus stop locations

Transit Integration

- » Use signage at pick-up / drop-off locations and as directional indicators between this area and the station

Micro Park-and-Ride



Goals

- » Provide parking areas for transit users that are uncoupled from the station area, thereby freeing up valuable land immediately at the station for development potential and joint-use

Guidelines & Resources

- » Design “micro park-and-ride” areas within 3 blocks (or 1/4 mile) from the transit station
- » Choose compact parking typologies, from parking structures with retail integrated into the ground floor, to smaller surface lots and automated parking facilities
- » Include waiting and parking areas for “green” vehicles such as shared ride vans, car shares, etc.
- » Generate revenue from existing park-and-ride facilities by charging for parking

Transit Integration

- » Use signage and colors throughout parking area

Station Access Barriers Addressed

- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

Station Access Barriers Addressed

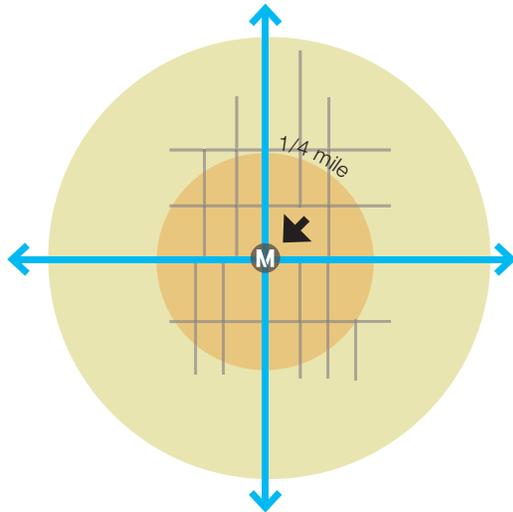
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

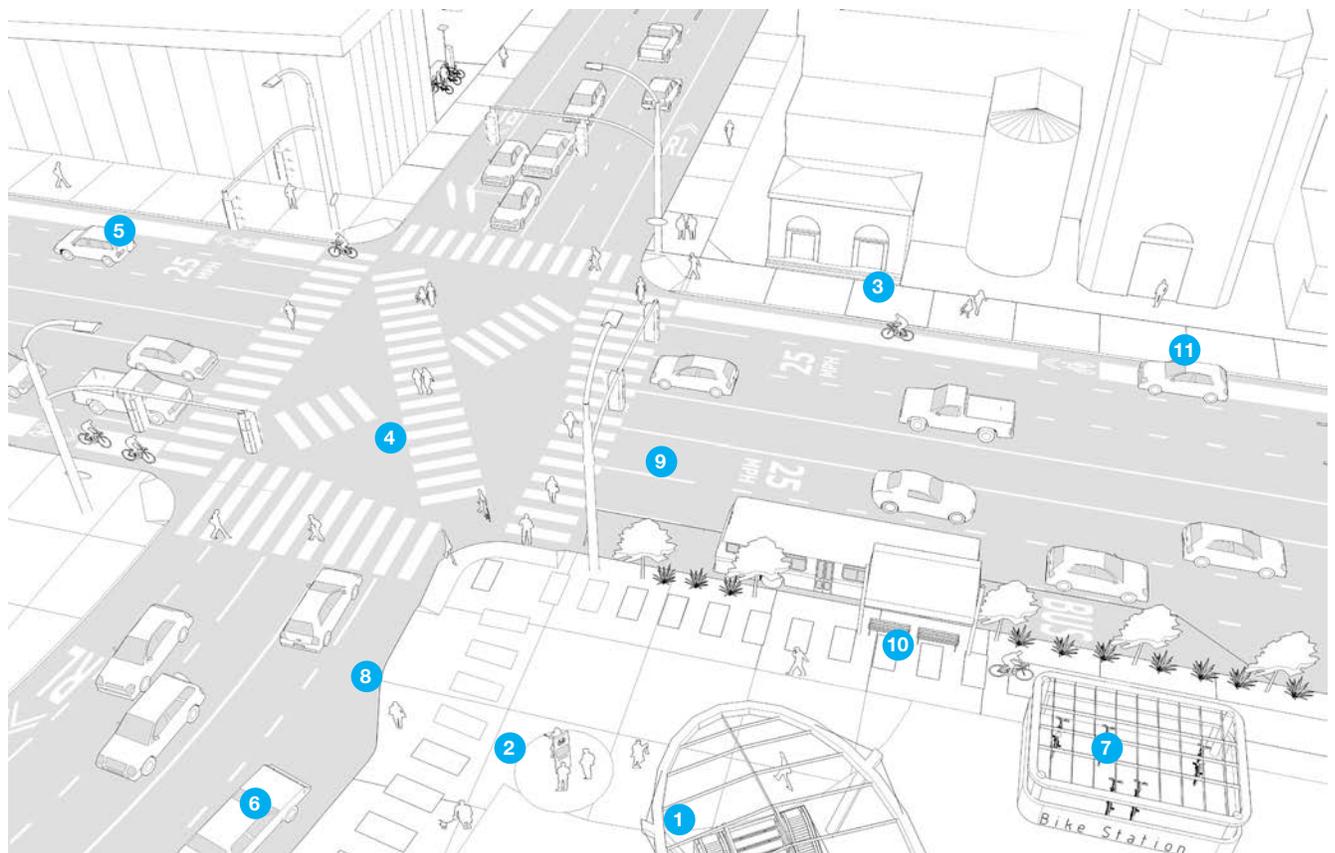
- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

PUTTING IT TOGETHER - ILLUSTRATION

Extended Station Zone

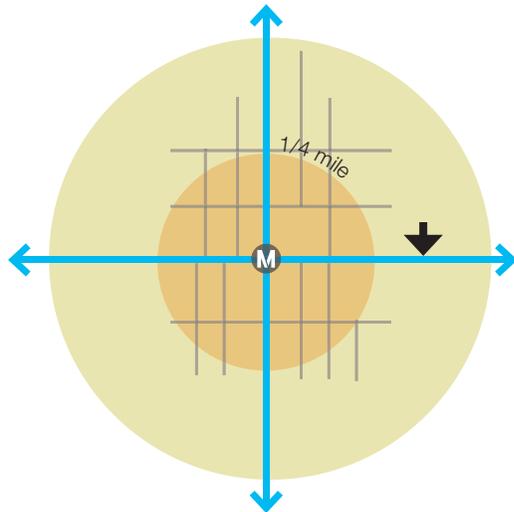


- 1 Metro Station Portal and Plaza
- 2 Signage with Real-Time Transit Information
- 3 Medallion Signage and Curb-Edge Banding
- 4 Colored Scramble Crossings
- 5 Advisory Bike Lane (see “Rolling Lane”)
- 6 “Green Zone” and Kiss-and-Ride
- 7 Bike Share / Bike Station
- 8 Bulb-outs at Intersections
- 9 Traffic Calming
- 10 Enhanced Bus Facilities
- 11 Sidewalk Widening

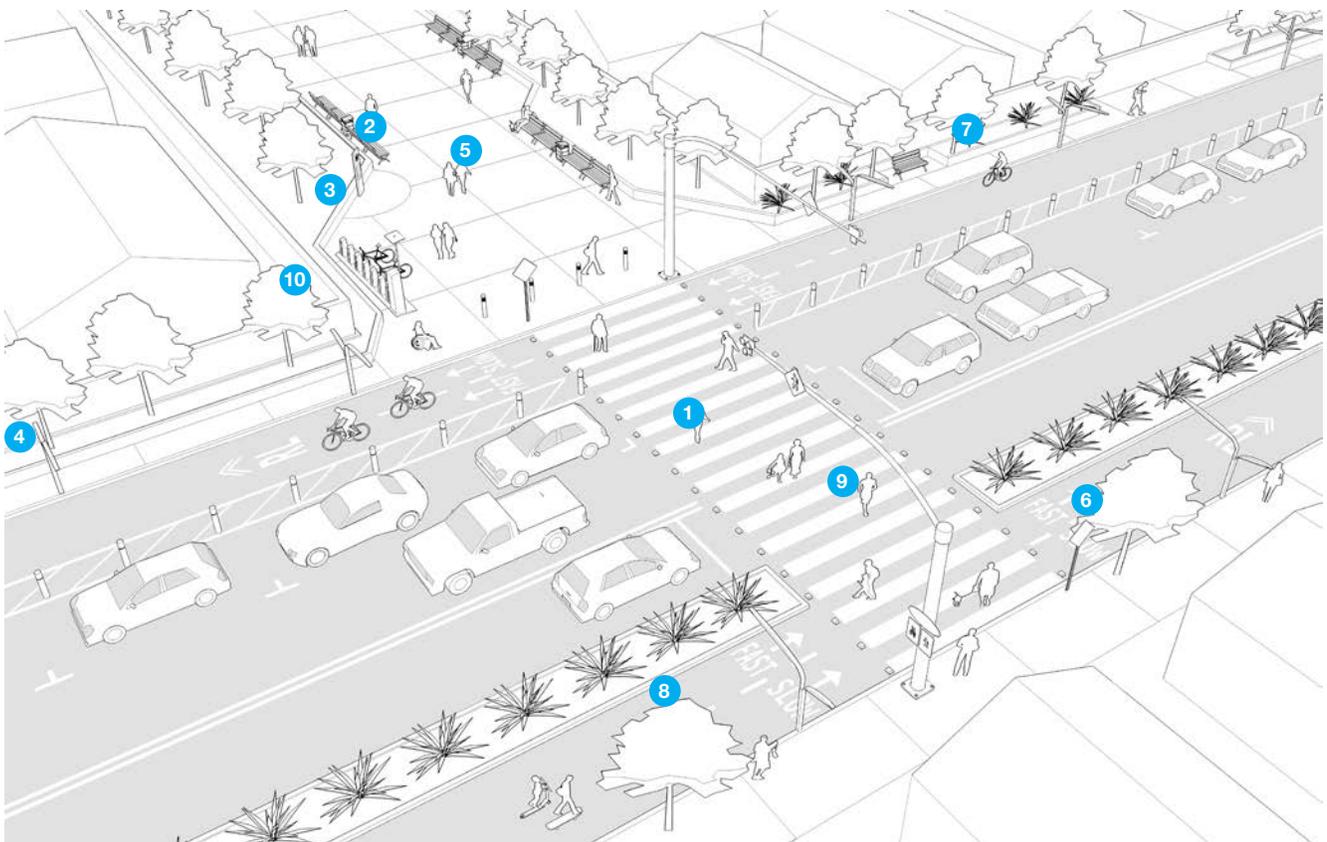


PUTTING IT TOGETHER - ILLUSTRATION

Mid-Block Crossing

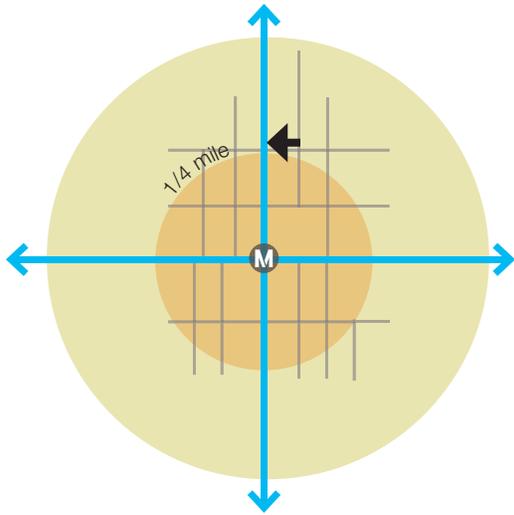


- 1 Added Mid-Block Crossing
- 2 Cut-Through / Shortcut
- 3 Signage with Directional Arrows
- 4 Medallion Signage and Paved Treatments
- 5 Street Furniture
- 6 Landscaping
- 7 Lighting
- 8 "Rolling Lane" / Protected Bike Lane
- 9 Signal Modifications
- 10 Bike Share

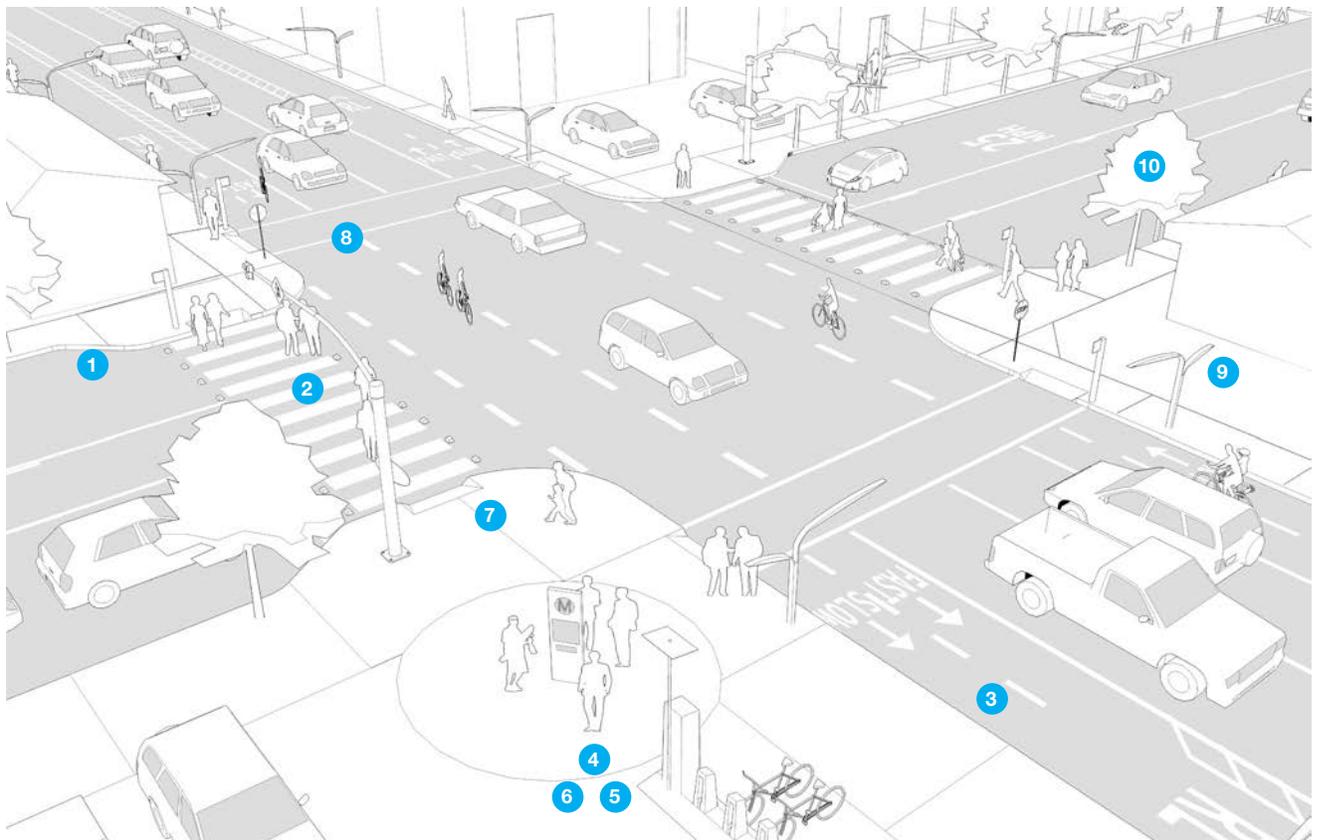


PUTTING IT TOGETHER - ILLUSTRATION

Transit-Friendly Zone



- 1 Medallion Signage
- 2 Continental Crosswalks
- 3 "Rolling Lane"
- 4 Car Share
- 5 Micro Park-and-Ride
- 6 Van Pool
- 7 Dual Curb Ramps
- 8 Signal Modifications
- 9 Pedestrian Lighting
- 10 Landscaping



RESOURCES

General and Best Practices

- » Active Design Guidelines: Promoting Physical Activity and Health in Design, City of New York, 2010: http://www.nyc.gov/html/ddc/html/design/active_design.shtml
- » Are We There Yet? Creating Complete Communities for 21st Century America, Reconnecting America, 2012: <http://www.reconnectingamerica.org/resource-center/books-and-reports/2012/reconnecting-america-releases-are-we-there-yet-creating-complete-communities-for-21st-century-america/>
- » Beautiful Places: The Role of Perceived Aesthetic Beauty in Community Satisfaction, Working Paper Series, Martin Prosperity Research, Richard Florida, University of Toronto; Charlotta Mellander, Jönköping International Business School; Kevin Stolarick, University of Toronto, 2009: <http://www.creativeclass.com/rfcgdb/articles/Beautiful%20places.pdf>
- » Boston Complete Streets: <http://bostoncompletestreets.org>
- » Case Study Compendium, Pedestrian and Bicycle Information Center, 2009: http://www.bicyclinginfo.org/case_studies/
- » Complete Street Design Guidelines, Tennessee Department of Transportation, 2009: <http://www.tdot.state.tn.us/bikeped/CompleteStreets.pdf>
- » Complete Streets Chicago, Department of Transportation, 2013: <http://www.cityofchicago.org/content/dam/city/depts/cdot/Complete%20Streets/CompleteStreetsGuidelines.pdf>
- » Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities, Institute of Transportation Engineers, 2006: <http://www.ite.org/bookstore/RP036.pdf>
- » Designing Sidewalks and Trails for Access, Best Practices Design Guide, Federal Highway Administration, Part II of II, 2001: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/contents.cfm
- » Good Design: The Fundamentals, Commission for Architecture and the Built Environment, 2008: http://www.rudi.net/files/paper/optional_file/good-design.pdf
- » Inclusion by Design: Equality, diversity, and the built environment, Commission for Architecture and the Built Environment, 2008: http://www.humancenterreddesign.org/sites/default/files/ABX2012/CABE_inclusion_by_design.pdf
- » Manual for Streets, Department for Transport, London, 2007
- » Manual on Uniform Traffic Control Devices, Best Practices, 2012
- » Measuring the Street: New Metrics for 21st Century Streets, New York Department of Transportation, 2012: <http://www.nyc.gov/html/dot/downloads/pdf/2012-10-measuring-the-street.pdf>
- » Paved with Gold: The real value of good street design,

- Design Better Streets, Commission for Architecture and the Built Environment, 2007: <http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/publications/paved-with-gold>
- » Paving the Way: How we achieve clean, safe and attractive streets, Commission for Architecture and the Built Environment, 2002: <http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/files/paving-the-way.pdf>
- » San Francisco Better Streets Plan, City of San Francisco, 2011: <http://www.sf-planning.org/ftp/BetterStreets/index.htm>
- » Street Design Manual, New York City Department of Transportation, 2009: <http://www.nyc.gov/html/dot/html/pedestrians/streetdesignmanual.shtml>
- » Smart Growth America, Complete Streets Resources, <http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/resources>
- » The Value of Urban Design, Commission for Architecture and the Built Environment, Department of the Environment, Transport and the Regions, 2001: <http://www.designcouncil.org.uk/Documents/Documents/Publications/CABE/the-value-of-urban-design.pdf>
- » Urban Street Design Guide, National Association of City Transportation Officials (NACTO), forthcoming in summer 2013: http://nacto.org/wp-content/uploads/2012/10/NACTOUrbanStreetDesignGuide_Highrez.pdf
- » Walking the Walk: How Walkability Raises Home Values in U.S. Cities, CEO for Cities, 2009: <http://www.ceosforcities.org/research/walking-the-walk/>

First and Last Mile Best Practices

- » Mobility Hub Guidelines: For the Greater Toronto and Hamilton Area, Metrolinx, Ontario, 2011: http://www.metrolinx.com/en/projectsandprograms/mobilityhubs/mobility_hub_guidelines.aspx

Los Angeles-Specific Resources

- » Downtown Design Guide, City of Los Angeles, 2009: http://urbandesignla.com/downtown_guidelines.htm
- » Final Report: Recommended TDM Strategies and Actions for the City of Los Angeles, Transportation Demand Strategies, Southern California Association of Governments and Los Angeles Department of Transportation, 2011: http://www.scag.ca.gov/publications/pdf/2011/cityofla_tdmstrategies_finalreport.pdf
- » Maximizing Mobility in Los Angeles- First and Last Mile Strategies Final Report, City of Los Angeles and Southern California Association of Governments, 2009: <http://www.scag.ca.gov/nonmotorized/pdfs/LA-Maximizing-Mobility-Final-Vol1.pdf>

- » Model Design Manual for Living Streets, University of California Los Angeles, Luskin Center for Innovation, 2011: <http://www.modelstreetdesignmanual.com/>
- » Short Range Transportation Plan for Los Angeles County, Los Angeles County Metropolitan Transportation Authority, 2003: http://ebb.metro.net/projects_studies/images/2003_S RTP.pdf
- » System-Wide On-Board Origin-Destination Study, Final Report, Los Angeles County Metropolitan Transportation Authority, 2011
- » Walkability Checklist, City of Los Angeles Department of City Planning, 2008: <http://urbandesignla.com/walkability.htm>
- » Safety Effectiveness of the HAWK Pedestrian Crossing Treatment, Federal Highway Administration, HRT-10-042, 2010
- » Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations, Final Report and, Recommended Guidelines, Federal Highway Administration, HRT-04-100, 2005: <http://www.fhwa.dot.gov/publications/research/safety/10042/10042.pdf>

Universal Design

- » Universal Design and Visitability from Accessibility to Zoning, the John Glenn School of Public Affairs, National Endowment for the Arts, 2007: <https://kb.osu.edu/dspace/bitstream/1811/24833/2/>

Branding, Signage, and Wayfinding

- » Legible London Wayfinding Study Report - Transport for London, AIG, Central London Partnership, 2006: http://www.tfl.gov.uk/assets/downloads/businessandpartners/Legible_London_report.pdf
- » See New York City Wayfinding Program designed by Pentagram

Smart Technologies in the City

- » Smart Cities Applications and Requirements White Paper, Net!Works European Technology Platform, 2011: http://www.networks-etp.eu/fileadmin/user_upload/Publications/Position_White_Papers/White_Paper_Smart_Cities_Applications.pdf
- » See TextMyBus App from Detroit, SF Live Bus, Chicago Transit Authority App Center, LA Metro Home Nextrip Service

Bike Share Programs

- » The Case for Bike Share in NYC, 2009: http://www.nyc.gov/html/dcp/pdf/transportation/bike_share_part2.pdf

Bikeways

- » Fundamentals of Bicycle Boulevard Planning and Design, Initiative for Bicycle and Pedestrian Innovation, 2009: <http://ashlandtsp.com/system/datas/51/original/BicycleBoulevardGuidebook.pdf>
- » Urban Bikeway Design Guide, National Association of City Transportation Officials (NACTO), 2011: <http://nacto.org/cities-for-cycling/design-guide/>

Crossings

- » Analyzing Raised Crosswalks Dimensions Influence on Speed Reduction in Urban Streets, 3rd Urban Street Symposium, June 2007: <http://trid.trb.org/view.aspx?id=850990>
- » Oakland Chinatown Pedestrian Scramble: An Evaluation, Safe Transportation Research & Education Center, Institute of Transportation Studies, UC Berkeley, 2003: <http://www.escholarship.org/uc/item/3fh5q4dk>

End Notes

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2. Watkins, Katherine. Cambridge's Traffic Calming Program Pedestrians are the Focus: Institute of Transportation Engineers, 2006. Web. 25 July 2013
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4. Central London Partnership. Legible London: A Wayfinding Study. London N.p., 2006. Web. 25 July 2013
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15. NYC Dept. of City Planning. "Bike Share Opportunities in New York City." New York N.p., 2009. Web. 25 July 2013

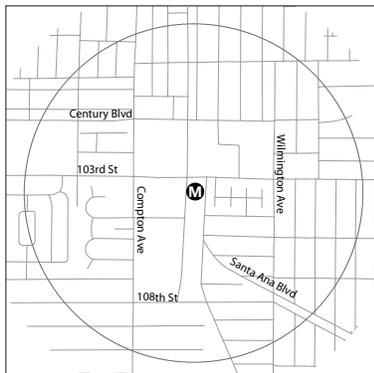
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6 ILLUSTRATIONS

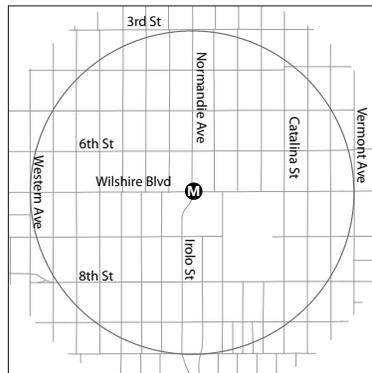
★ This section applies the Path Network concept to three case study sites, Wilshire/Normandie (Metro Purple Line), North Hollywood (Metro Red Line / Orange Line), and 103rd/Watts (Metro Blue Line). The intent of this section is to explain from a planning perspective, how Path networks can be developed and how components can be selected and applied in different urban settings. Final route maps and images are meant for illustrative purposes only.

The Case Study Sites

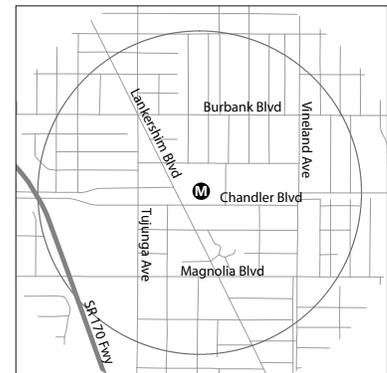
The 103rd/Watts station area is characterized by low- to mid- residential density, wide arterials, and long blocks, with minimal pedestrian or multi-modal amenities. The Watts Towers is located within walking distance from the station. There is a substantial number of modal-transfers in the station area, along with a transit-dependent population, and an underutilized park-and-ride lot.



The Wilshire/Normandie station area is the closest of the three to downtown Los Angeles and is characterized by high density residential, mixed-use, commercial, and civic land uses. Taller mixed-use and commercial buildings along Wilshire Boulevard step down to shorter structures, mainly residential, on the streets behind it. There is a significant amount of multi-modal and transfer activity in the area.



The North Hollywood station area is a dense urbanized and mixed-use transit node, adjacent to the NoHo Arts District, an active commercial area to the south of the station, and mid-to high density residential areas closer to the station with residential density decreasing away from the station. Long blocks without crossings, an at-grade bus transit way, and an adjacent freeway pose challenges for active transportation users' station access. There is a significant amount of multi-modal and transfer activity in the area.



103rd/Watts Blue Line Station

The Watts/103rd Station is surrounded by a large residential population. The station, which directly connects residents in South L.A. to the Downtown 7th/ Metro terminus station, creates potential for first/last mile commuters originating in Watts. The 103rd/Watts station is located adjacent to the Watts Towers, which attract approximately 300,000 visitors annually, and are designated as a U.S. National Historic Landmark and a Los Angeles Historic-Cultural monument.

Station Access Barriers

Safety

- Buckling sidewalks and minimally maintained pathways
- Unsafe traffic speeds, wide arterials
- Lack of pedestrian lighting
- Lack of pedestrian buffers along sidewalk edge
- Limited safety signage

Aesthetics

- Lack of pedestrian amenities like shade and landscaping
- Lack of maintenance - trash is abundant

Accessibility

- Unclear transit mode transfer
- Lack of bicycle facilities
- Potential shortcut paths are not maintained, unmarked, and feel unsafe

Overview of Path Network

The case study location, 103rd Place and Wilmington Avenue, is located mid-block on a wide arterial. The Path in this area uses signage and curb-edge banding to direct transit users through the shortcut and along the street. A new mid-block crossing splits up the long block and is signalized for safety. The wide street right of way is divided into a Rolling Lane, which caters to active transportation users. Two alternate studies are shown: the first uses a painted buffer to differentiate between the travel lanes and the Rolling Lane, while the second takes it a step further with a vertical separation between the two, showing how the Path can grow and change over time.



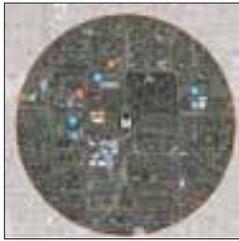
Wide arterials prioritize the vehicle



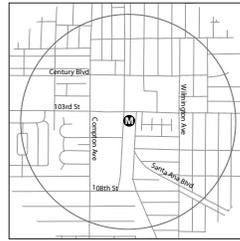
Park and Ride Station is underutilized



Narrow sidewalks with few pedestrian amenities



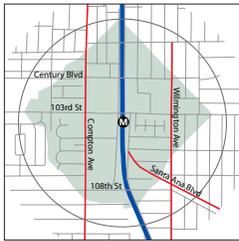
Points of Interest



Street Grid



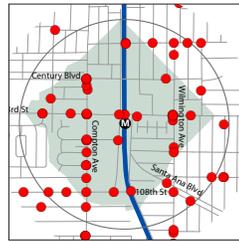
Pedestrian Shed



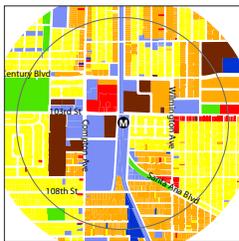
High Vehicular Speeds



Key Transit Access Corridors



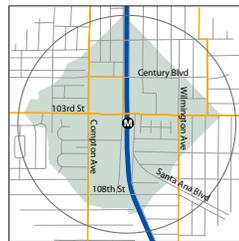
Collision Severity and Location



Land Use Map



Bicycle Connections



Transit Connections

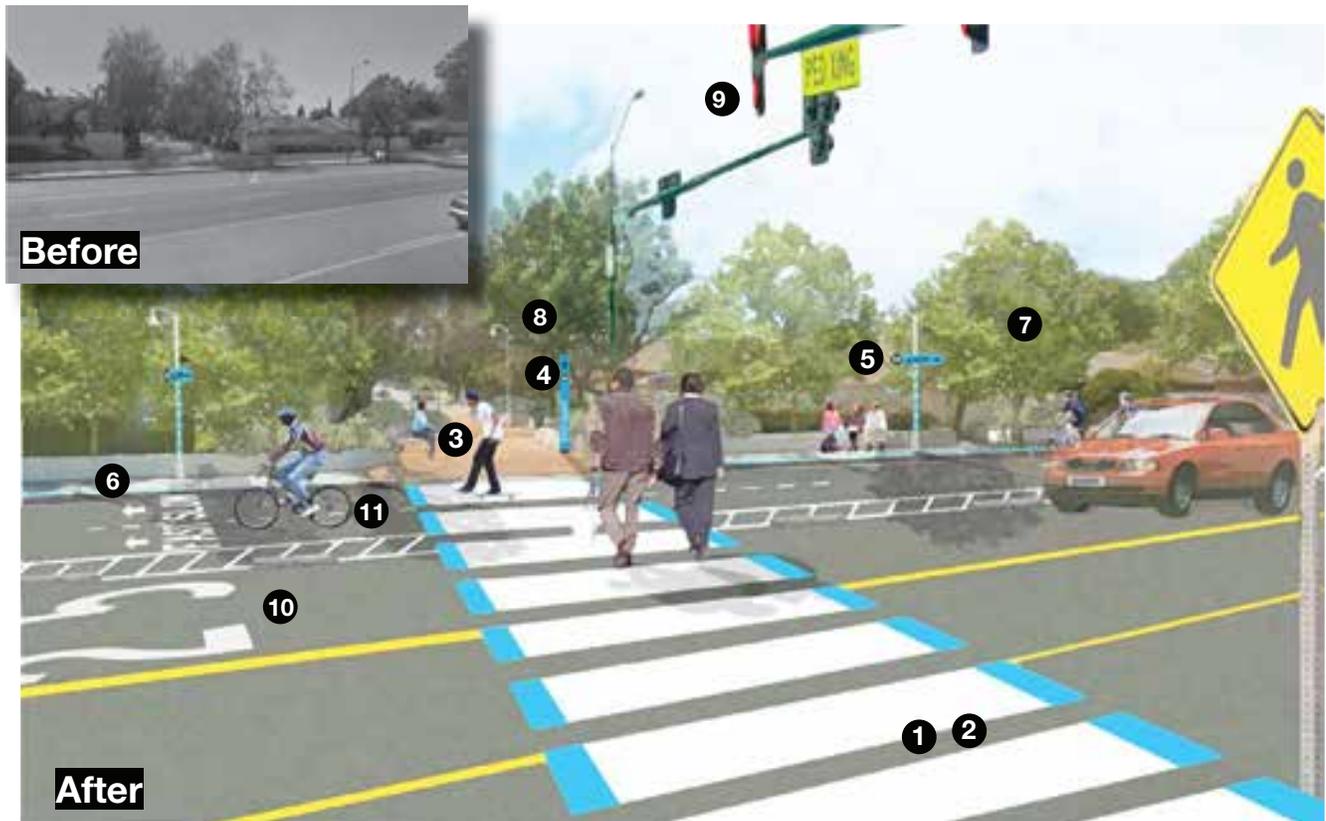
103rd/Watts Station Network Design

Utilizing the approach outlined in Chapter 3 of these guidelines, a Path network design was developed for the 103rd / Watts station area. The Metro Blue Line runs north – south along this corridor at grade, thus running one Path Arterial north – south is not effective, as it would only service half the corridor catchment. In this case two north – south arterials are required, and have been proposed along Compton Ave and Wilmington Ave. An additional Arterial is proposed connecting the station to Watts Towers, a major regional destination within the station area. An east – west Arterial is proposed along 103rd. Two existing cut-throughs are enhanced and provide a short-cut for pedestrians accessing the station from Wilmington Ave.



103rd/Watts Station, Location 1

103rd Place and Wilmington Avenue - Less-intensive variation, non-seperated Rolling Lane



Components Used at Case Study Site

Crossings Enhancements and Connections

- ① Continental crosswalks
- ② Mid-block and additional crossings
- ③ Cut-throughs (multi-modal pathway through pedestrian paseo)

Signage and Wayfinding

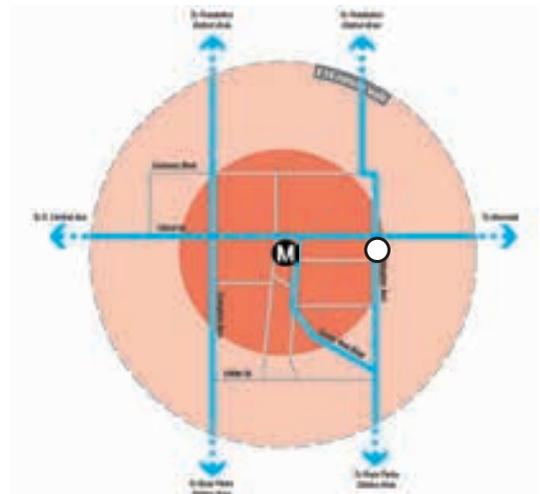
- ④ Signage
- ⑤ Medallion signage
- ⑥ Curb-edge banding

Safety & Comfort

- ⑦ Landscaping / Shade
- ⑧ Lighting

Allocation of the Streetspace

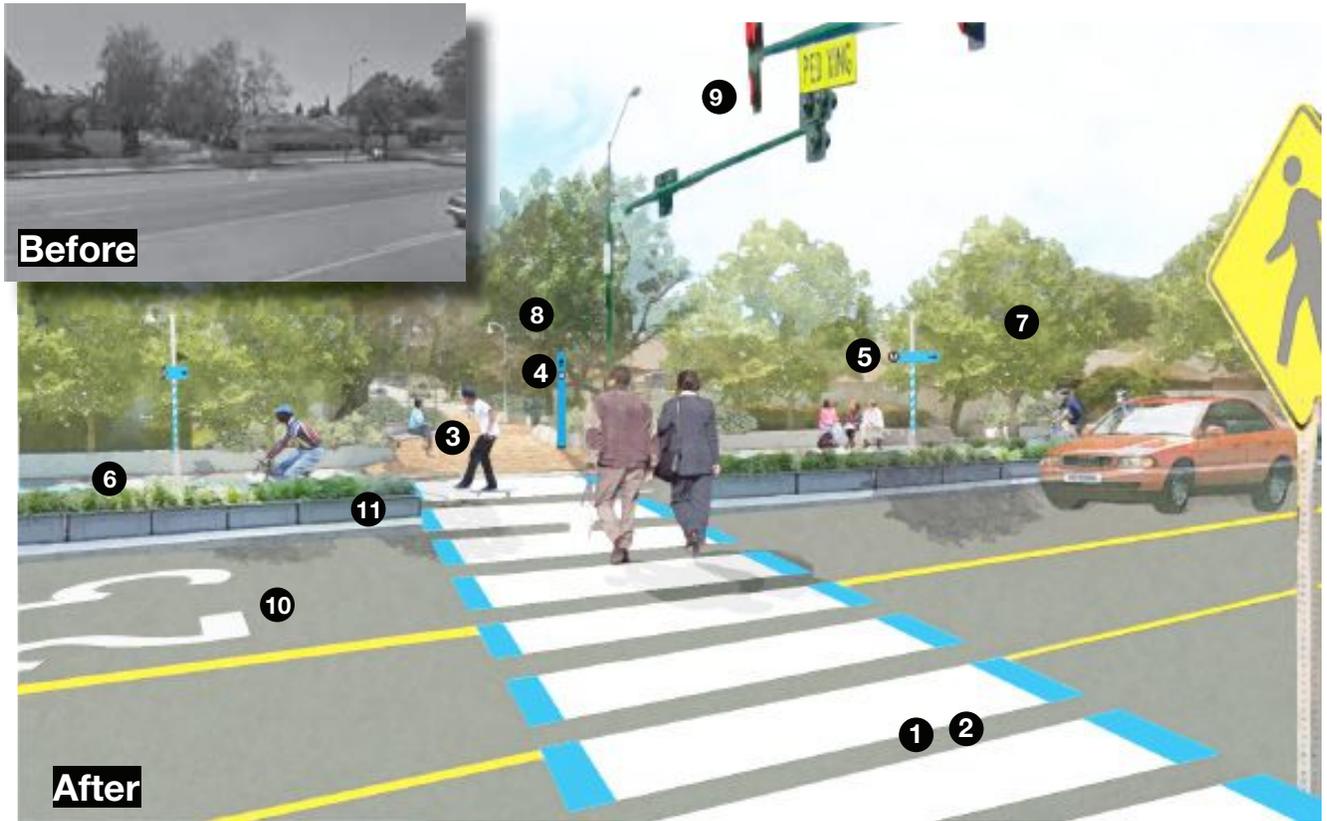
- ⑪ Rolling Lane (Buffered)
- ⑨ Signal modification
- ⑩ Traffic calming



- M** Metro Station Location
- Visualization Location
- EXTENDED STATION ZONE (Area 1)**
5-Minute Walk / 2-Minute Bike
- TRANSIT-FRIENDLY ZONE (Area 2)**
10-Minute Walk / 5-Minute Bike

103rd/Watts Station, Location 1 (enhanced)

103rd Place and Wilmington Avenue - More-intensive variation, vertical separation along Rolling Lane



Components Used at Case Study Site

Crossings Enhancements and Connections

- 1 Continental crosswalks
- 2 Mid-block and additional crossings
- 3 Cut-throughs (multi-modal pathway through pedestrian paseo)

Signage and Wayfinding

- 4 Signage
- 5 Medallion signage
- 6 Curb-edge banding

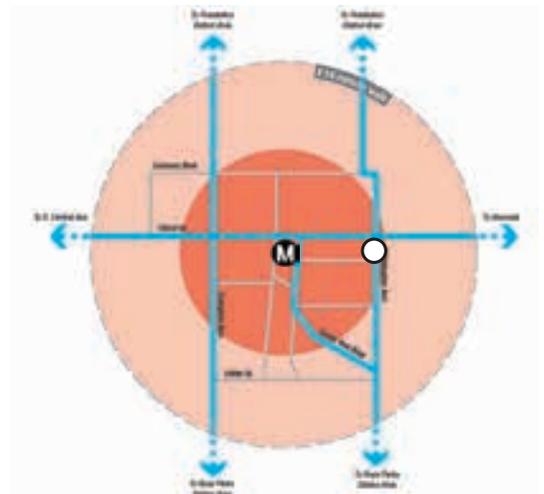
Safety & Comfort

- 7 Landscaping / Shade
- 8 Lighting

Allocation of the Streetspace

- 11 Rolling Lane (vertical separation)
- 9 Signal modification
- 10 Traffic calming

*Note: Components depicted are the same as previous visualization with the exception of the added vertical separation between the Rolling Lane and vehicular path of travel.



- M** Metro Station Location
- Visualization Location
- EXTENDED STATION ZONE (Area 1)
5-Minute Walk / 2-Minute Bike
- TRANSIT-FRIENDLY ZONE (Area 2)
10-Minute Walk / 5-Minute Bike

Wilshire/Normandie Station

Located along the Wilshire Corridor (a key connector throughout Los Angeles County) the Wilshire/Normandie Station is situated in the midst of an active commercial zone and a regular street grid. Additionally, adjacent to the site are a number of educational facilities, including Robert F. Kennedy Community Schools, a 26-acre facility that hosts six independent public schools. Serving over 4,200 students at this campus alone, the site hosts students of all ages within a 9-block radius.

Wilshire's commercial corridor is surrounded by a dense residential population. Bicycle-friendly streets parallel Wilshire Boulevard and allow ample room for non-vehicular traffic to the north of the station, but Wilshire itself is less friendly to active transportation users. Metro has proposed a regional Bus Rapid Transit that will run along Wilshire Boulevard, connecting regional and local users to the Wilshire/Normandie Station.

Station Access Barriers

Safety

- Located along a high-speed traffic corridor
- Lack of pedestrian lighting within 1/2 mile radius
- Unmarked crossings

Aesthetics

- Sparse landscaping along residential connector streets
- Trash strewn along streets/lack of overall maintenance

Accessibility

- Crowded sidewalks
- Long crossing wait time and long distances between crossings
- Unclear transit transfer / directional signage
- Lack of bicycle lanes - bicyclists riding on crowded sidewalks

Overview of Path Components

Two case study sites are presented at Wilshire/

Normandie. Location 1 is immediately adjacent to the station on the southeast corner of Wilshire Boulevard and Normandie Avenue. Location 2 is farther from the station at 8th Street and Fedora Street.

Location 1 shows how transit infrastructure can be retrofitted to include Path elements, including static identification signage and real-time signage with next-bus/next-train information on the existing Metro Rapid bus shelter. Bike share facilities are added along the Path along with seating and amenities for transit riders. The intersection is painted with an all-way, scramble crossing for enhanced access. All of these more intensive Path components are appropriate for the Extended Station Zone, Area 1.

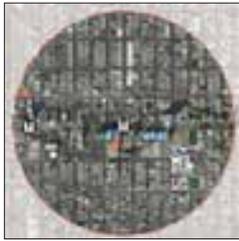
Location 2 includes prominent Path signage showing time-to-station, along with sidewalk enhancements for transit-user comfort, including new street trees and lighting. A Rolling Lane is added to the street with room for multiple speeds of active transportation users. Crossings are enhanced with Continental stripes.



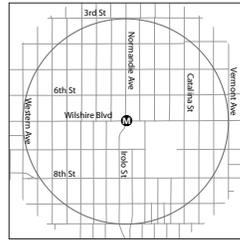
Lack of bicycle facilities



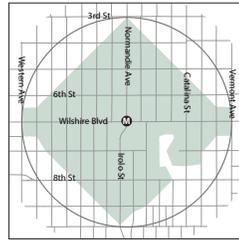
Narrow sidewalks



Points of Interest



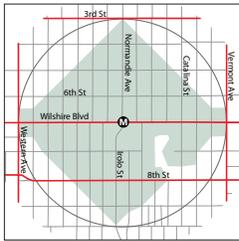
Street Grid



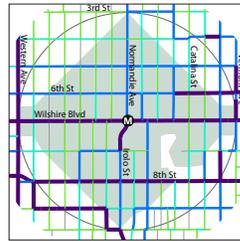
Pedestrian Shed

Wilshire/Normandie Station Network Design

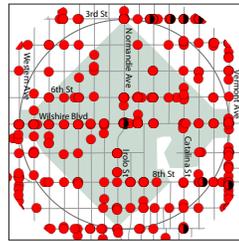
Utilizing the approach outlined in Chapter 3 of these guidelines, a Path network design was developed for the Wilshire / Normandie Station Area. The Metro Red Line runs east – west along this corridor underground, thus it is beneficial to run a Path Arterial north – south along Normandie. To the south, the Arterial jogs over to Harvard Blvd, to coordinate with the current bikeway planned along that street. The major east – west Arterial runs along Wilshire, given the high level of bike and pedestrian access volume along this major street. Vehicular volumes are also very high along this corridor, requiring careful consideration of how best to utilize available ROW.



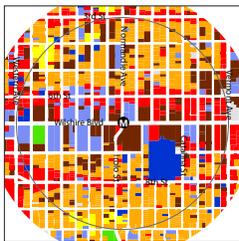
High Vehicular Speeds



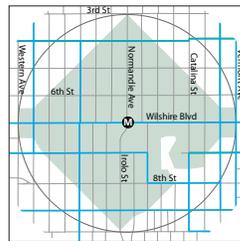
Key Transit Access Corridors



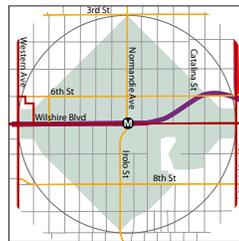
Collision Severity and Location



Land Use Map

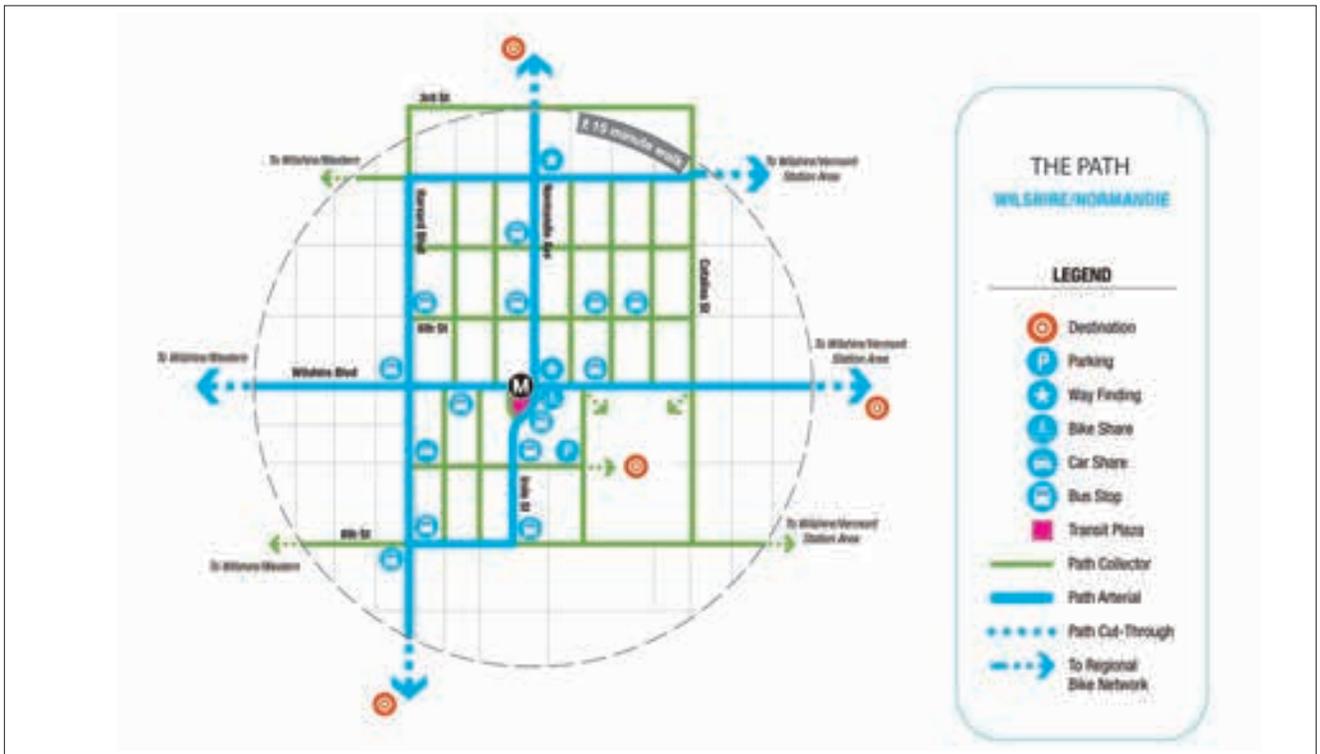


Bicycle Connections



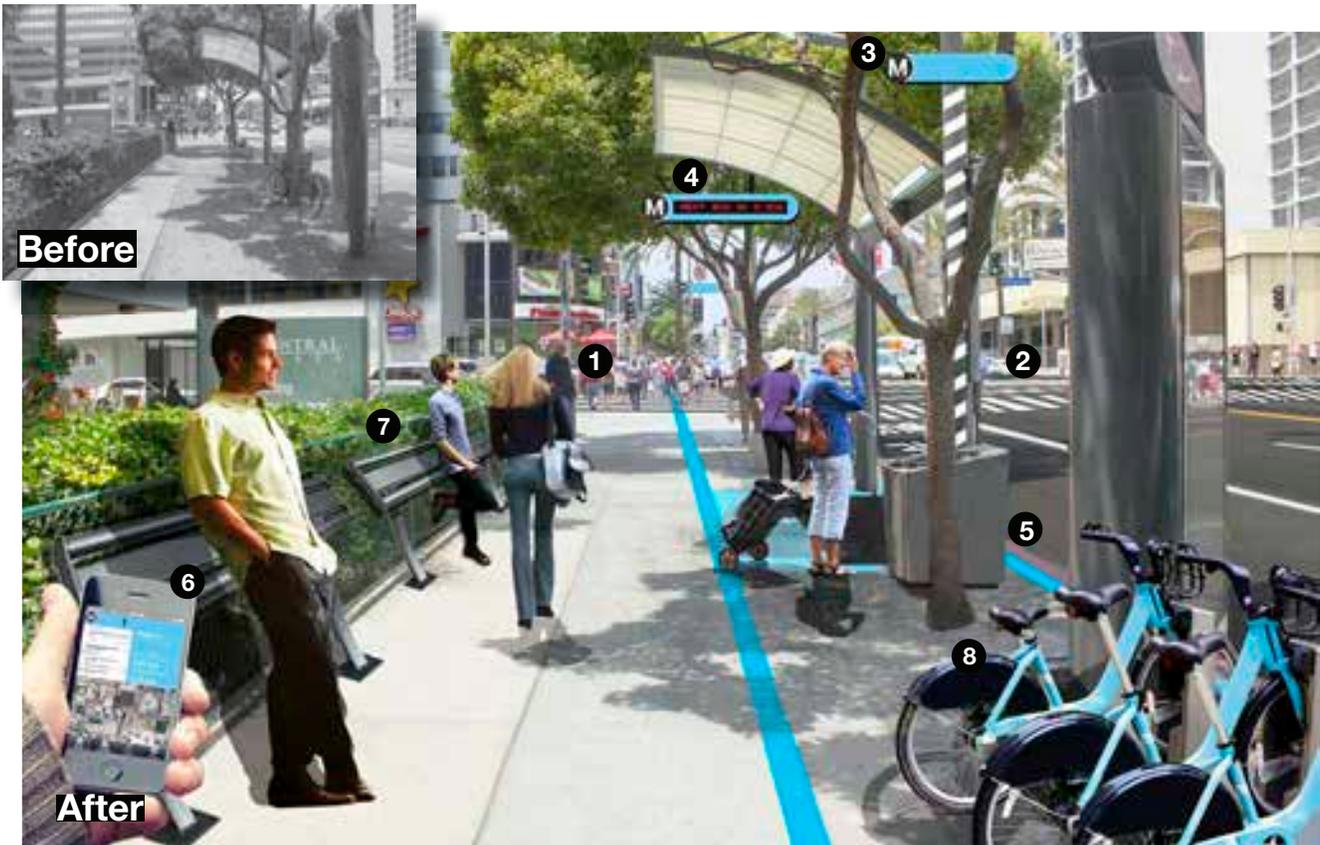
Transit Connections

A dense network of Collectors is provided within the station area as extensive mitigation is required to mitigate the high incidence of pedestrian collisions and overall access volumes.



Wilshire Normandie Station, Location 1

Wilshire Blvd. and S. Normandie Ave.



Components Used at Case Study Site

Crossings Enhancements and Connections

- 1 Continental crosswalks
- 2 Scramble crossings

Signage and Wayfinding

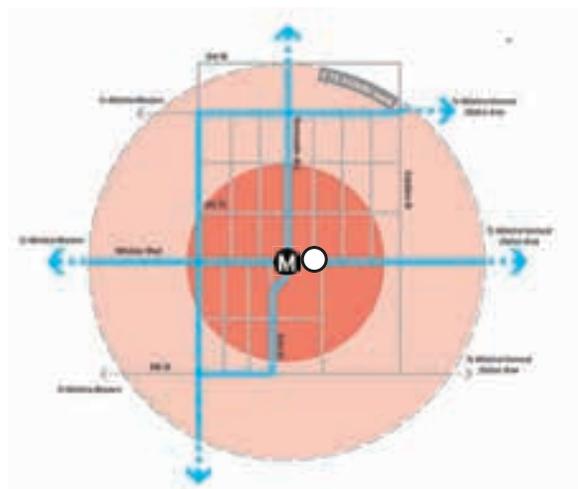
- 3 Medallion signage
- 4 Real-time signage, next train/bus
- 5 Curb-edge banding
- 6 Smart technologies

Safety & Comfort

- 7 Street furniture

Integrated Transit Access Solutions

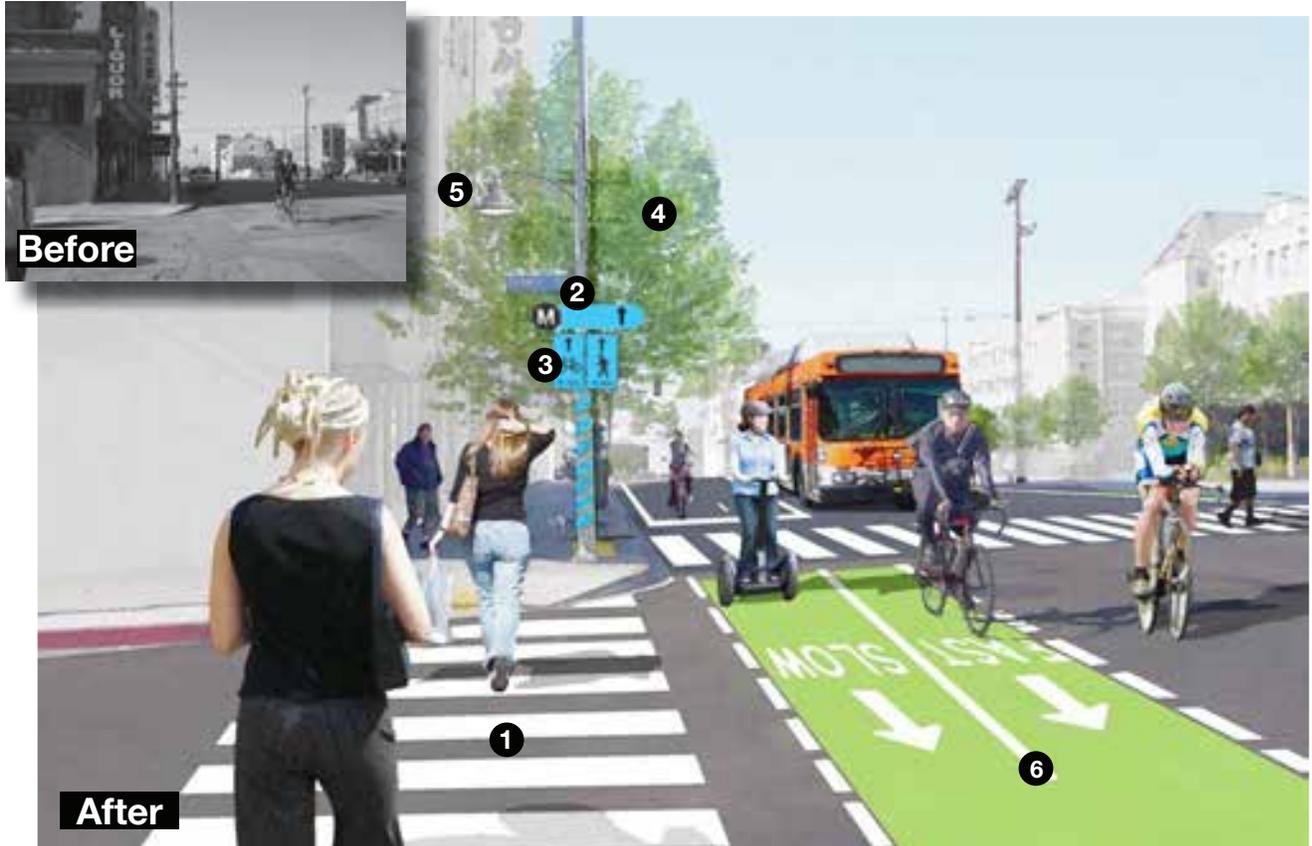
- 8 Bike Share



- M** Metro Station Location
- Visualization Location
- EXTENDED STATION ZONE (Area 1)
5-Minute Walk / 2-Minute Bike
- TRANSIT-FRIENDLY ZONE (Area 2)
10-Minute Walk / 5-Minute Bike

Wilshire Normandie Station, Location 2

8th St. and Fedora St.



Components Used at Case Study Site

Crossings Enhancements and Connections

- 1 Continental crosswalks

Signage and Wayfinding

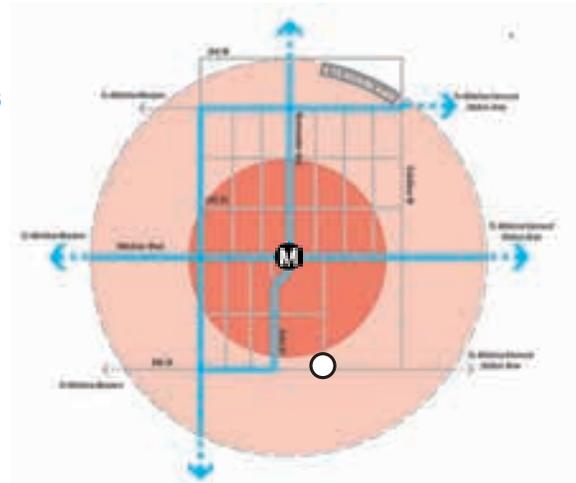
- 2 Medallion signage
- 3 Time-to-station notation

Safety & Comfort

- 4 Landscaping / Shade
- 5 Lighting

Allocation of the Streetspace

- 6 Rolling Lane



- M** Metro Station Location
- Visualization Location
- EXTENDED STATION ZONE (Area 1)**
5-Minute Walk / 2-Minute Bike
- TRANSIT-FRIENDLY ZONE (Area 2)**
10-Minute Walk / 5-Minute Bike

North Hollywood Station

The North Hollywood Station serves as a critical connector for the Metro Red Line and the Orange Line Bus. The Red Line directly connects to the Downtown Los Angeles terminus, while the Orange Line Bus Terminal connects directly east to Ventura. The station lies in the center of the North Hollywood (NoHo) Arts District.

Additionally, the station is adjacent to the Hollywood Art Institute campus and a lively retail and housing district. The North Hollywood Station serves a vast demographic and has significant catchment potential within the surrounding region. Also located within the 1/2 mile pedestrian shed is NoHo Park, which draws daily visitors. Currently, the park does not offer enough seating and does not have a welcoming street-edge nor clear pathways through it.



No cut through / direct access to station from adjacent neighborhoods

Station Access Barriers

Safety

- Lack of separated bicycle infrastructure along main roads
- Superblocks with minimal pedestrian crossings

Aesthetics

- Sometimes unpleasant pedestrian environment

Accessibility

- Orange and Red Lines stops face different directions and connections between the two are unclear
- There is potential for alternative mode enhancement: bicycle racks and Park-and-Ride are often full
- Limited station signage or directional signage
- Large park and ride facility is hard to get through on foot, bike, or via other active transportation mode.



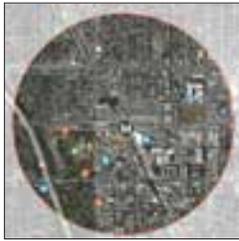
Lack of crossings along superblocks and bike facility without special markings or enhancements

Overview of Path Components

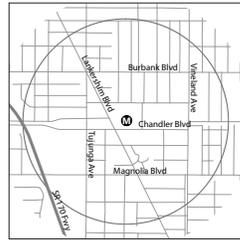
Four case study locations are depicted for the North Hollywood station. Location 1 depicts enhancements to the park-and-ride lot at the station. Location 2 depicts the intersection of Klump Avenue and Burbank Boulevard, which is located in the Transit Friendly Zone, along the intersection of a Path Collector and a Path Arterial. Location 3 depicts the Path in an underpass condition at Magnolia Avenue and Location 4 includes a Path shortcut at NoHo Park, also along Magnolia.



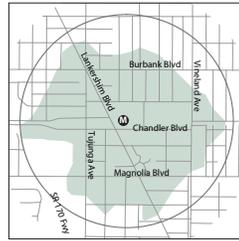
No station signage or directional cues



Points of Interest



Street Grid



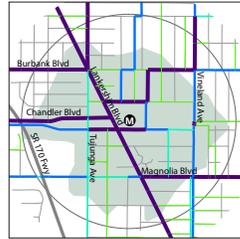
Pedestrian Shed

North Hollywood Station Network Design

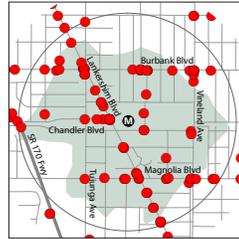
Utilizing the approach outlined in Chapter 3 of these guidelines, a Path network design was developed for the Wilshire / Normandie Station Area. The Metro Red Line runs east – west along this corridor underground, thus it is beneficial to run a Path Arterial north – south along Normandie. To the south, the Arterial jogs over to Harvard Blvd, to coordinate with the current bikeway planned along that street. The major east – west Arterial runs along Wilshire, given the high level of bike and pedestrian access volume along this major street. A dense network of Collectors is provided within the station area as extensive mitigation is required to mitigate the high incidence of pedestrian collisions and overall access volumes.



High Vehicular Speeds



Key Transit Access Corridors



Collision Severity and Location



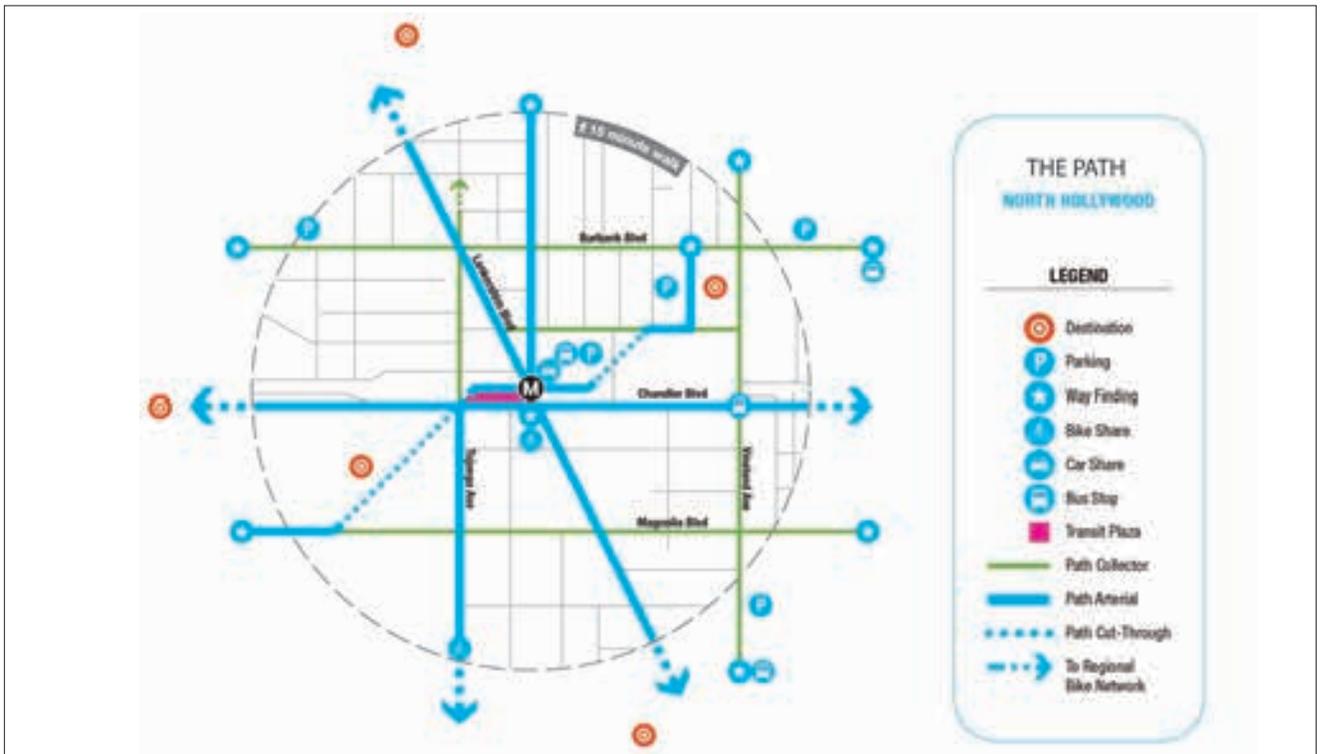
Land Use Map



Bicycle Connections



Transit Connections

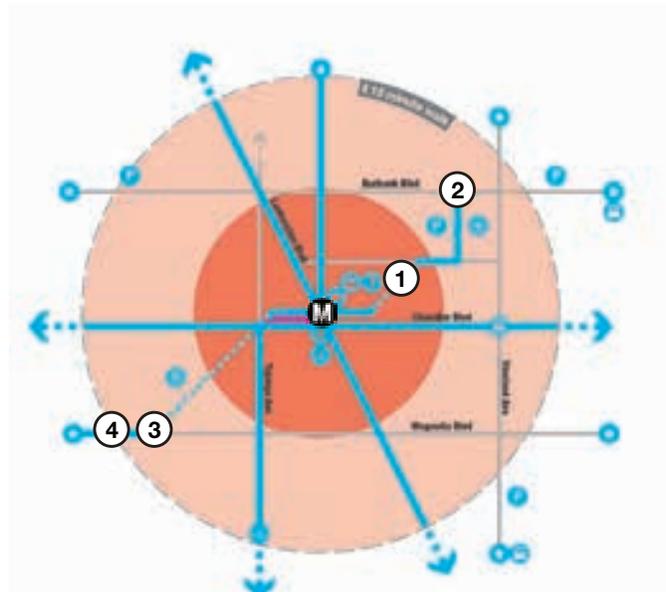


Location 1 is the closest to the station itself and illustrates how an existing park-and-ride lot can be made more friendly to active transportation users, with the addition of pedestrian and active transportation cut-throughs that allow people to come in to the facility at multiple entrances, whereas currently access is limited to the vehicular entrance on the north and east sides only. The cut-through paths are designed with trees and lighting for safety and comfort, and special paving to demarcate the active transportation space. A new crossing at Klump Avenue facilitates pedestrian movement into the station from the neighborhood.

Location 2 along Burbank Boulevard illustrates an enhanced intersection with bulb-outs at corners and new signalized crossing. Currently the space between crossings along this stretch of Burbank Boulevard is over 1,700 feet while a comfortable distance between crossings is around 300 feet. Adding crossings in this area will help to expand the reach of transit for the neighborhoods immediately to the north. Path signage directs transit riders down Klump Avenue, which connects directly to the station.

At Location 3, the freeway underpass is fairly typical of current conditions around Los Angeles; narrow sidewalks and a wide street are dimly-lit and no pedestrian amenities are provided. The Path would improve this situation, providing a widened sidewalk and bollards along the curb edge for an enhanced perception of safety. Public art, new lighting, and special paving are also added, along with Path signage with time-to-station notation.

Location 4 depicts an area of NoHo Park that has a short-cut to the Metro station, which is currently unsigned. The Path enhancements chosen for this area include easily-visible signage directing people through the park toward the station, new lighting for nighttime safety, and repairs to the sidewalk.



Visualization Locations:

- ① Park and Ride Lot
- ② Burbank Blvd and Klump Ave
- ③ NoHo Park
- ④ Magnolia Ave

North Hollywood Station, Location 1

Park and Ride Lot



Components Used at Case Study Site

Crossings and Connections

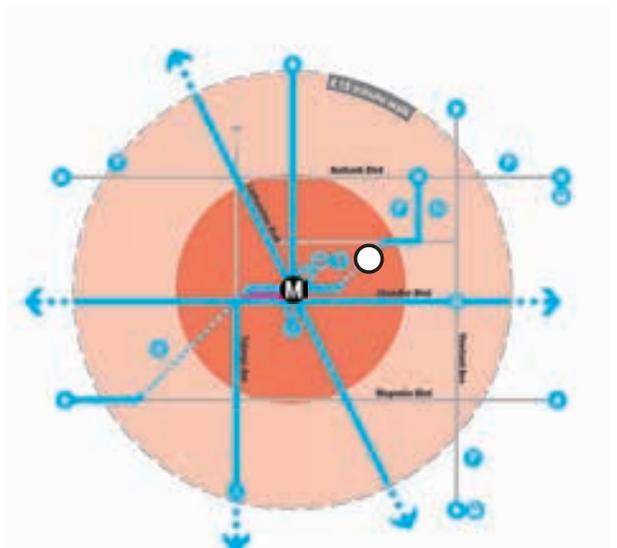
- 1 Continental crosswalks
- 2 Mid-block and additional crossings
- 3 Cut-throughs (multi-modal pathways through existing parking lot)

Safety & Comfort

- 4 Landscaping / Shade
- 5 Lighting

Allocation of the Streetspace

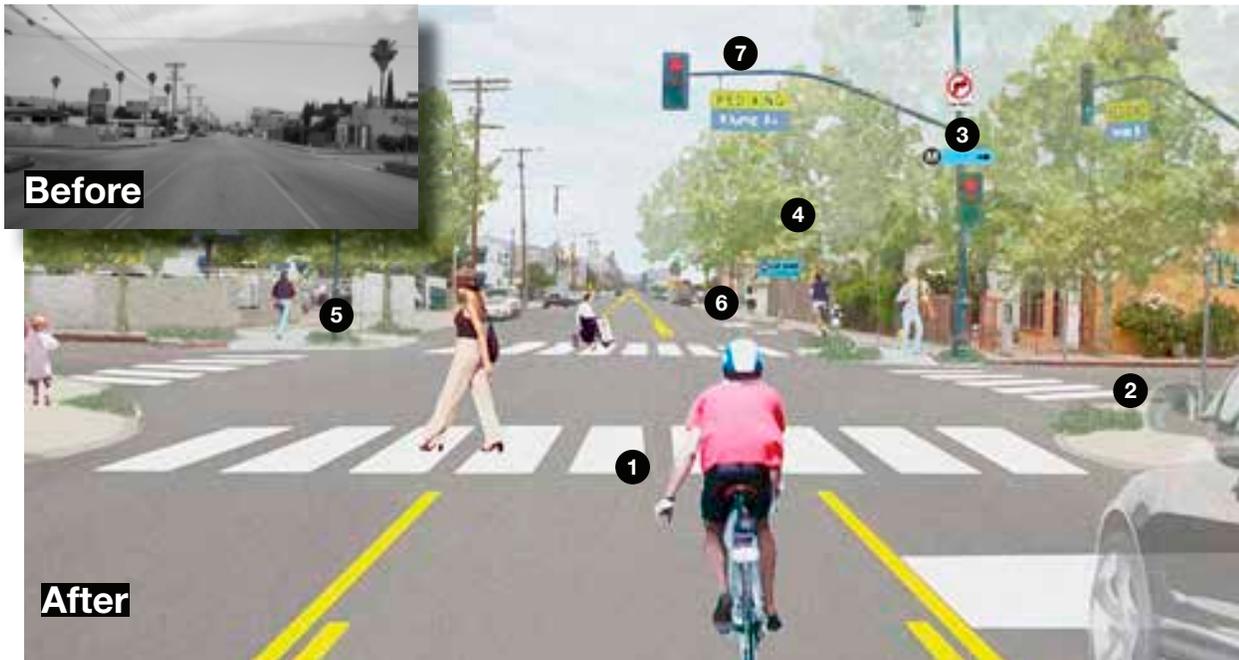
- 6 Sidewalk widening (through parking lot)



- M** Metro Station Location
- Visualization Location
- EXTENDED STATION ZONE (Area 1)
5-Minute Walk / 2-Minute Bike
- TRANSIT-FRIENDLY ZONE (Area 2)
10-Minute Walk / 5-Minute Bike

North Hollywood Station, Location 2

Burbank Blvd. and Klump Ave.



Components Used at Case Study Site

Crossings and Connections

- 1 Continental crosswalks
- 2 Bulb-outs

Signage and Wayfinding

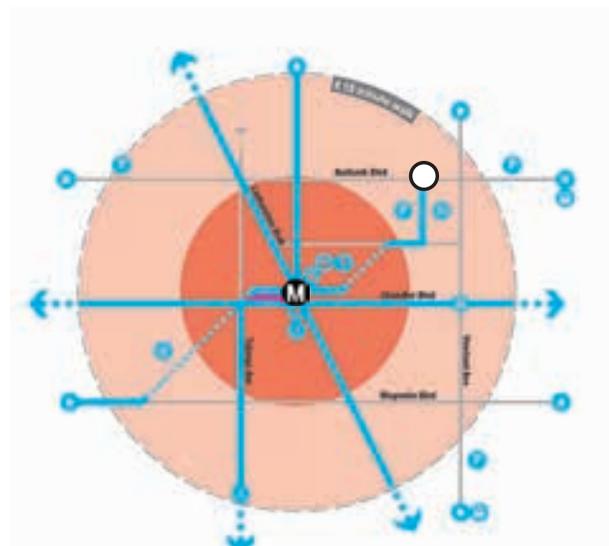
- 3 Medallion signage

Safety & Comfort

- 4 Landscaping / Shade
- 5 Dual curb ramps

Integrated Transit Access Solutions

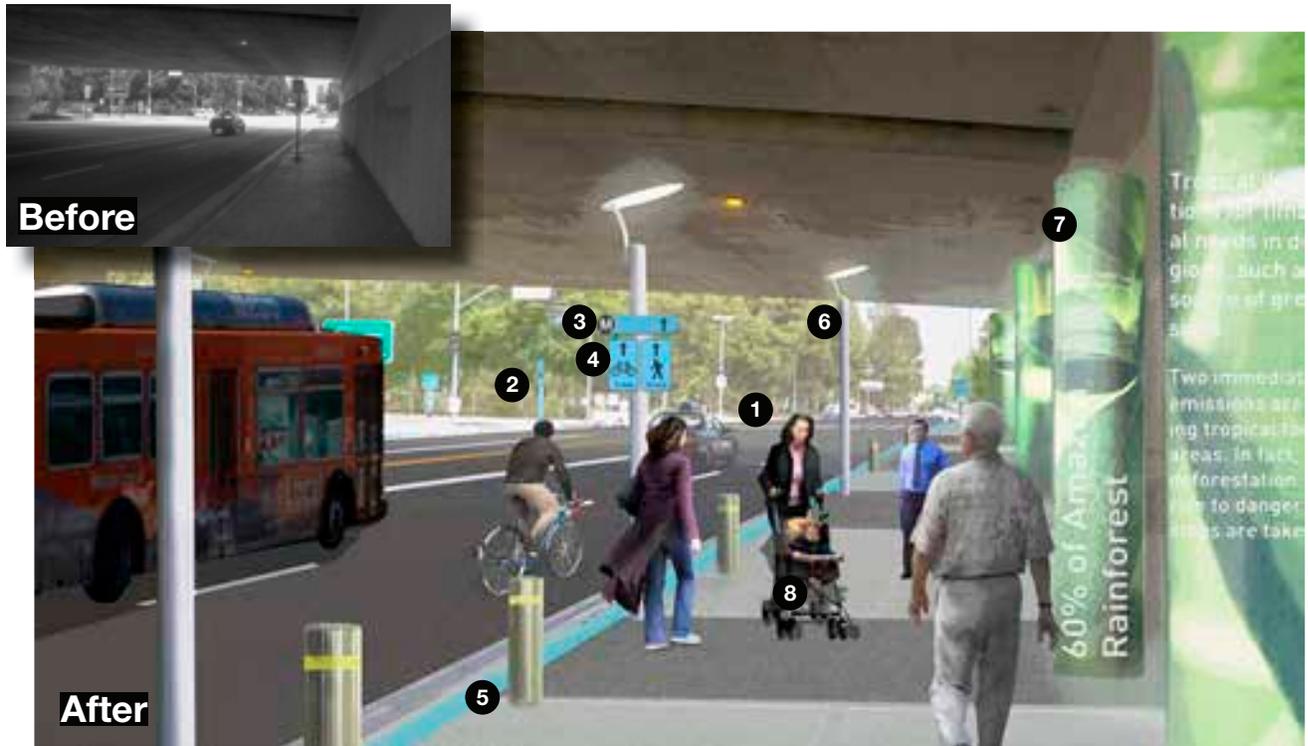
- 6 Car share
- 7 Signal modification



- M** Metro Station Location
- Visualization Location
- EXTENDED STATION ZONE (Area 1)**
5-Minute Walk / 2-Minute Bike
- TRANSIT-FRIENDLY ZONE (Area 2)**
10-Minute Walk / 5-Minute Bike

North Hollywood Station, Location 3

Magnolia Ave. Underpass



Components Used at Case Study Site

Crossings and Connections

- 1 Continental crosswalks

Signage and Wayfinding

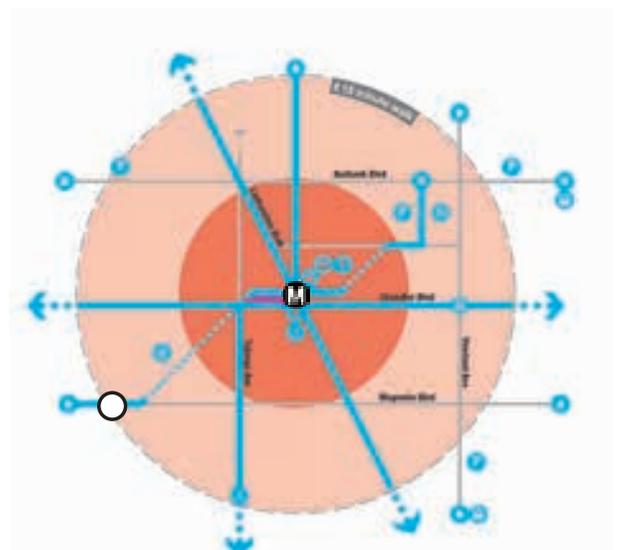
- 2 Signage
- 3 Medallion signage
- 4 Time to station notation
- 5 Curb-edge banding

Safety & Comfort

- 6 Lighting
- 7 Enhanced freeway underpass

Allocation of the Streetscape

- 8 Sidewalk widening



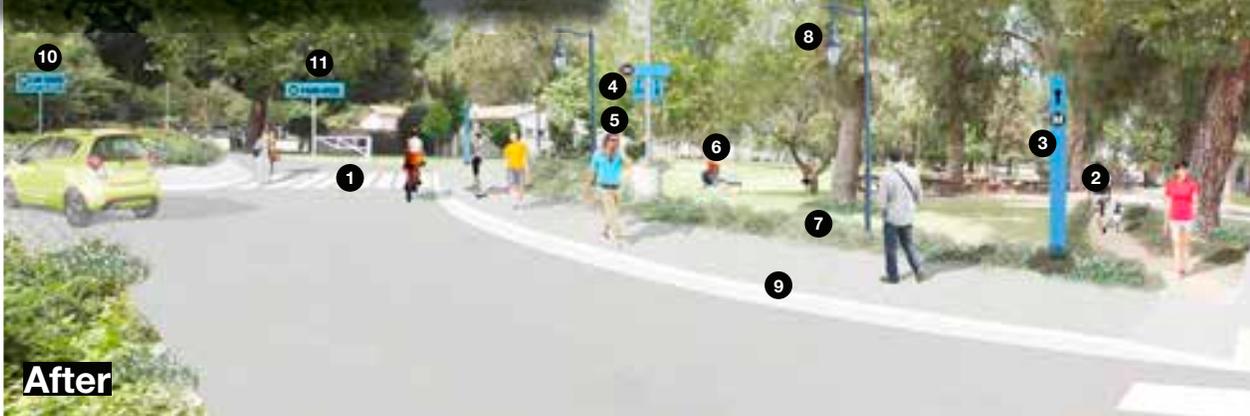
- M** Metro Station Location
- Visualization Location
- EXTENDED STATION ZONE (Area 1)**
5-Minute Walk / 2-Minute Bike
- TRANSIT-FRIENDLY ZONE (Area 2)**
10-Minute Walk / 5-Minute Bike

North Hollywood Station, Location 4

NoHo Park at Magnolia Avenue



Before



After

Components Used at Case Study Site

Crossings and Connections

- 1 Continental crosswalks
- 2 Cut-through and shortcuts

Signage and Wayfinding

- 3 Signage
- 4 Medallion signage
- 5 Time-to-station notation

Safety & comfort

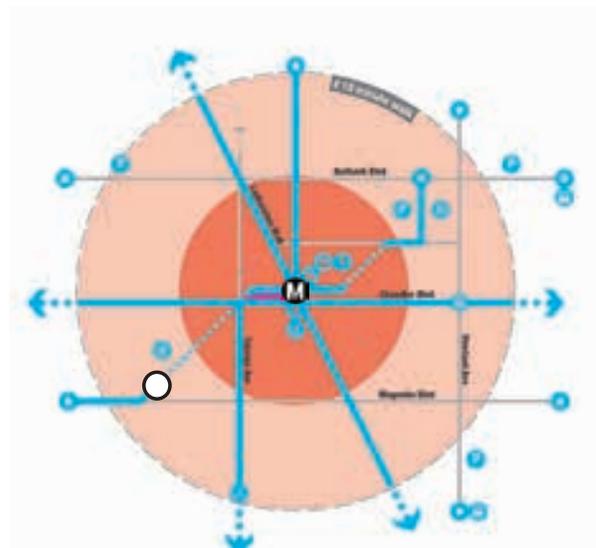
- 6 Street furniture
- 7 Landscaping
- 8 Lighting

Allocation of the Streetspace

- 9 Sidewalk widening

Integrated Transit Access Solutions

- 10 Car share
- 11 Park-and-Ride



- M** Metro Station Location
- Visualization Location
- EXTENDED STATION ZONE (Area 1)**
5-Minute Walk / 2-Minute Bike
- TRANSIT-FRIENDLY ZONE (Area 2)**
10-Minute Walk / 5-Minute Bike

APPENDIX

PATH PLANNING GUIDELINES

STATION AREA CHECKLIST

For each of the quality criteria, rank the station area based on how adequately or poorly it provides amenities, connections, and a transit-supportive environment for riders.

- Multiple modes
- Multiple constituencies (gender, age, abilities, etc.)

Name of station: _____

Date/Time/Weather conditions during visit: _____

Station Typology: _____

1. SAFETY

1.1 Adequate lighting. (Night survey required)

Regularly spaced and frequent lighting that is directed towards the sidewalk and any bikeways, which provides sufficient illumination. Potential obstacles marked with reflectors or lighting.

Disagree/
Lacking Somewhat/
Adequate Strongly
Agree/Ample

1 2 3 4 5

1.2 Eyes-on-the-street.

Presence of highly transparent ground floors, windows, and entries.

1 2 3 4 5

1.3 Well maintained public realm.

Sidewalks are smooth and without cracks, vegetation is trimmed, etc.

1 2 3 4 5

1.4 Safety buffer for bikes.

Bikes are adequately set back from vehicles. Consider type and quality of buffer – sufficient width, painted material, vertical separation, such as bollards.

1 2 3 4 5

1.5 Safety buffer for pedestrians.

Pedestrians set back from travel lanes via ample sidewalk width, landscaping, and street furniture.

1 2 3 4 5

1.6 People-friendly traffic speeds and manners.

Drivers yield to pedestrians and traffic is slowed via narrow roadways, markings, no turn on red lights, etc.

1 2 3 4 5

1.7 Clear safety signage.

Pedestrians set back from travel lanes via ample sidewalk width, landscaping, and street furniture.

1 2 3 4 5

1.8 Overall, the station area feels safe.

Overall, there is a feeling of safety as you walk through the station area. Consider the safety of all users – especially women, children, and the elderly. Consider both day and nighttime safety.

1 2 3 4 5

TOTAL SCORE

_____ / # questions answered

STATION AREA CHECKLIST

For each of the quality criteria, rank the station area based on how adequately or poorly it provides amenities, connections, and a transit-supportive environment for riders.

- Multiple modes
- Multiple constituencies (gender, age, abilities, etc.)

2. AESTHETICS

Disagree/
Lacking

Somewhat/
Adequate

Strongly
Agree/Ample

2.1 Sense of place.

Inclusion of unique street characteristic, landmarks, striping or a navigable streetscape hierarchy that sets this space apart from other areas.

1 2 3 4 5

2.2 Pleasant landscaping.

Consistent landscaping that provides ample shade. Trees are well maintained and all tree wells are planted with street trees.

1 2 3 4 5

2.3 Strategically placed pedestrian amenities.

There are a variety and sufficiently provided pedestrian amenities (seating, trash cans, water fountains) that are well maintained and inviting. Kiosks and vendors are present on pedestrian paths, are visually pleasing and are located in areas that do not interfere with foot traffic.

1 2 3 4 5

2.4 Pedestrian unfriendly elements are limited.

There are a general lack of the following: unpleasant smells, blank walls, vacant lots, fences, noise pollution, unfriendly street conditions, trash.

1 2 3 4 5

2.5 Pleasant experience.

Overall, there is a pleasant ambiance as you walk, bike, or use alternative transit throughout the station area. Consider the experience of all users – especially **women, children, and the elderly**. Consider both day and nighttime amenities. Care has been taken to make a nice environment for all users.

1 2 3 4 5

TOTAL SCORE

_____ / # of questions answered

_____ [Average score on questions]

STATION AREA CHECKLIST

For each of the quality criteria, rank the station area based on how adequately or poorly it provides amenities, connections, and a transit-supportive environment for riders.

- Multiple modes
- Multiple constituencies (gender, age, abilities, etc.)

3. ACCESSIBILITY

3.1 High quality sidewalks

Sidewalks are large enough for pedestrians to walk, pose, and jog comfortably in opposing directions. There are very few disruptions to the sidewalk quality (e.g. smooth surface paving, signage and poles are set back from the pedestrian right-of-way).

Disagree/
Lacking

Somewhat/
Adequate

Strongly
Agree/
Ample

1 2 3 4 5

3.2 Clear, safe crossings.

Signalized intersections allow ample time to cross, frequently allow passage, are a walkable distance (or provide a pedestrian refuge or median), are supplied with functioning push buttons, have minimal street crowns and are painted for safety.

1 2 3 4 5

3.3 Seamless transit mode transfer.

Transferring to alternate modes of transit is streamlined through the presence of well-marked, nearby, and obvious pathways.

1 2 3 4 5

3.4 Operating and sufficient bicycle facilities.

Bicycle facilities allow sufficient room, have a smooth surface, and provide riders with bike lanes, routes, pathways, adequate marking, parking, separated push buttons, bike stations and bike boxes.

1 2 3 4 5

3.5 High quality signage.

Signage is located in clear view for pedestrians, bicyclists, and other transit modes. Signage provides clear directional and locational information, regulatory warnings, and station area identity.

1 2 3 4 5

3.6 Parking and drop-off is streamlined.

Adequate number of parking spaces (in park-and-ride if applicable), room for drop-off (kiss-and-ride) on street parking serves as a buffer for pedestrians, parking time restrictions are in effect where necessary, and vehicles are prohibited from blocking the pedestrian right-of-way.

1 2 3 4 5

3.7 Curbs and curb ramps are provided.

Curbs and curb ramps are present at all crossings and have a gentle slope.

1 2 3 4 5

3.8 Navigating the public realm is intuitive and easy.

Overall, there are a series of passageways that are frequent and well marked as you walk through the station area. Consider the experience of all users – especially **women, children, and the elderly**. Consider both day and nighttime linkages.

1 2 3 4 5

TOTAL SCORE

_____/# of questions answered

STATION AREA CHECKLIST

For each of the quality criteria, rank the station area based on how adequately or poorly it provides amenities, connections, and a transit-supportive environment for riders.

- Multiple modes
- Multiple constituencies (gender, age, abilities, etc.)

ROUTE TAKEN

Include a blank map and note route taken during site visit

Additional opportunities & constraints:

Insert additional narrative from site findings.

PHOTO DOCUMENTATION



Description of photo, keyed to issue number (e.g. 2.5) in checklist



Description of photo, keyed to issue number (e.g. 2.5) in checklist

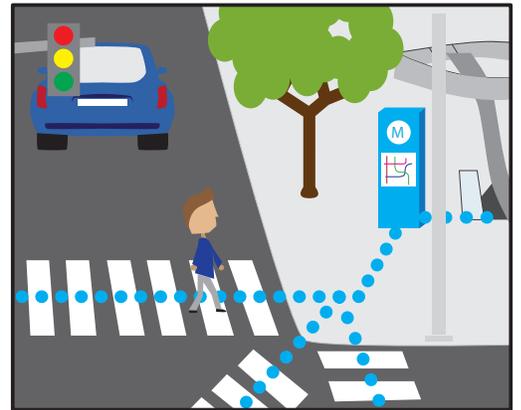
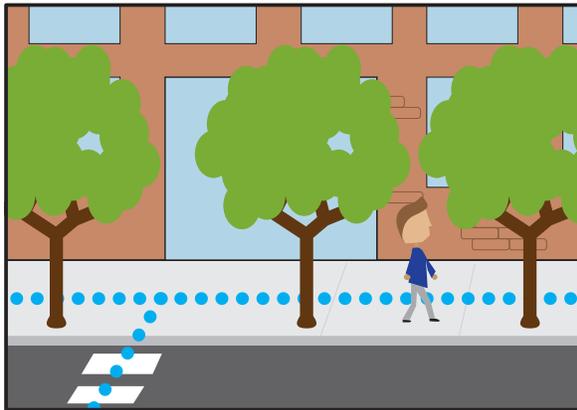
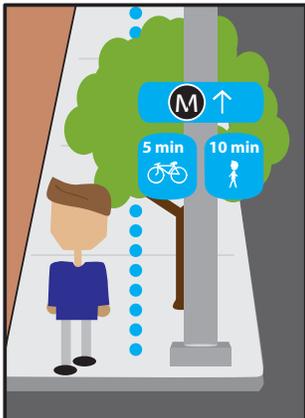
NOTE: Add pages for additional relevant photos

PHOTO DOCUMENTATION CONTNUED

THE MEET-UP!

In sunny downtown LA, we join Jeff in the middle of making plans to catch up with his long-time friend Bret...

Sounds good, I haven't been to LACMA in a while...the Path? Hmm...I'll check it out. See you soon!

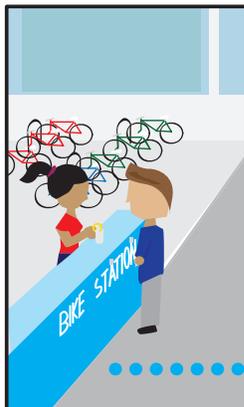
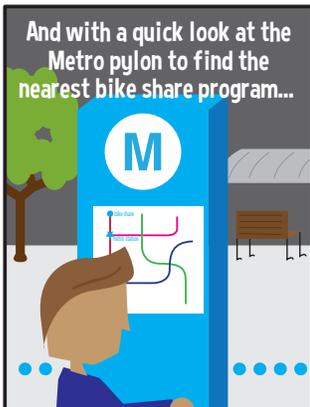


JEFF SETS OFF ON THE PATH, following the signs to get to his nearest Metro station.



A SHORT AND SPEEDY METRO RIDE LATER...

And with a quick look at the Metro pylon to find the nearest bike share program...



READY TO SPEND A GREAT DAY WITH HIS FRIEND!

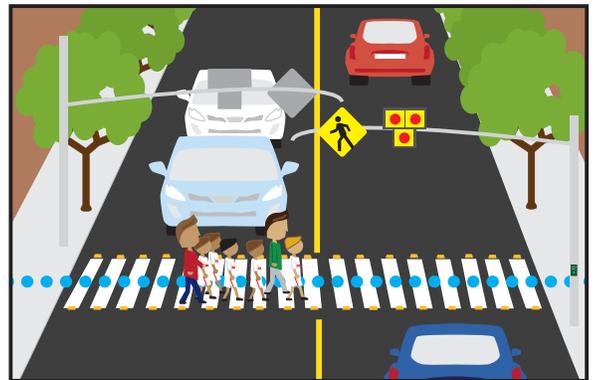


THE TEAM TRIP!

After being named the new junior soccer league champions, the team decides to celebrate with a treat - ice cream!



Even though the game **ENDED A BIT LATE**, the **PATH'S** pedestrian lights provide a **SAFE ROUTE**.



Did you see that goal?!
The goalie didn't stand a chance!

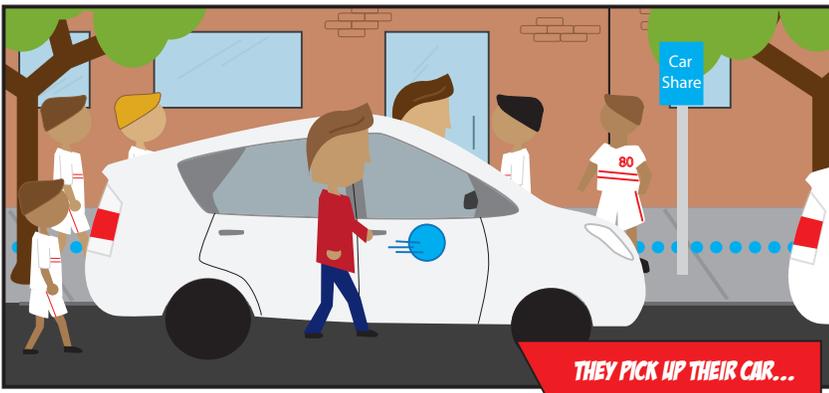
MEANWHILE, COACH MAKES
CAR SHARE RESERVATIONS.



I hope they
have rocky road!

ON THE TRAIN, THE BOYS
STILL CAN'T STOP TALKING
ABOUT THEIR GREAT GAME...

...OR THINKING ABOUT
WHICH FLAVOR ICE CREAM
THEY WANT.



THEY PICK UP THEIR CAR...



...AND GET THEIR SWEET TREATS!

GRANDMA TO THE RESCUE!

A **HARD-HITTING STORY** has just been received at LA Weekly, and Julia won't be able to pick her kids on time.

But she knows **WHO TO CALL...**

Mom!
Can you pick up
the kids?

I'm on my way!

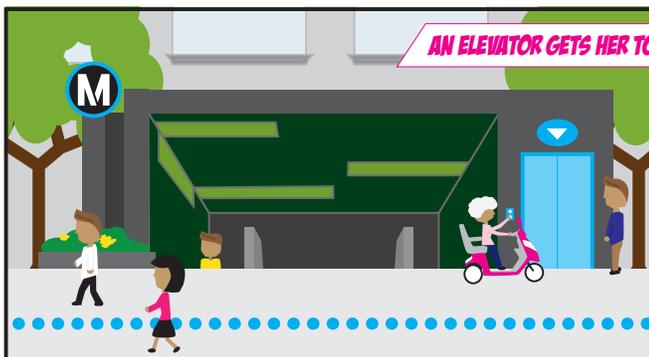
GRANDMA SETS OFF ON HER SCOOTER!



RAMPS AND ELEVATED CROSSWALKS
KEEP HER SAFE AND MOVING



AN ELEVATOR GETS HER TO THE PLATFORM



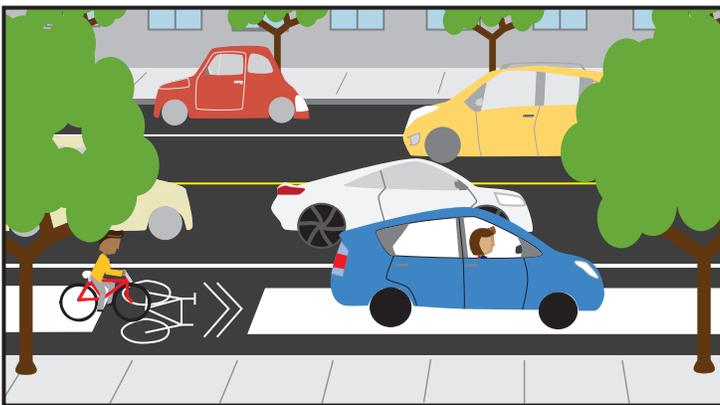
Race you home
Grandma!



POP MEETING!

It's breakfast at the Lim's, and Kate received an **URGENT CALL** from the **OFFICE**...

I need to be in the office in 20 minutes. Can you drop me off at the Metro station?



KATE HAS EXTRA TIME TO PREPARE FOR HER MEETING.

