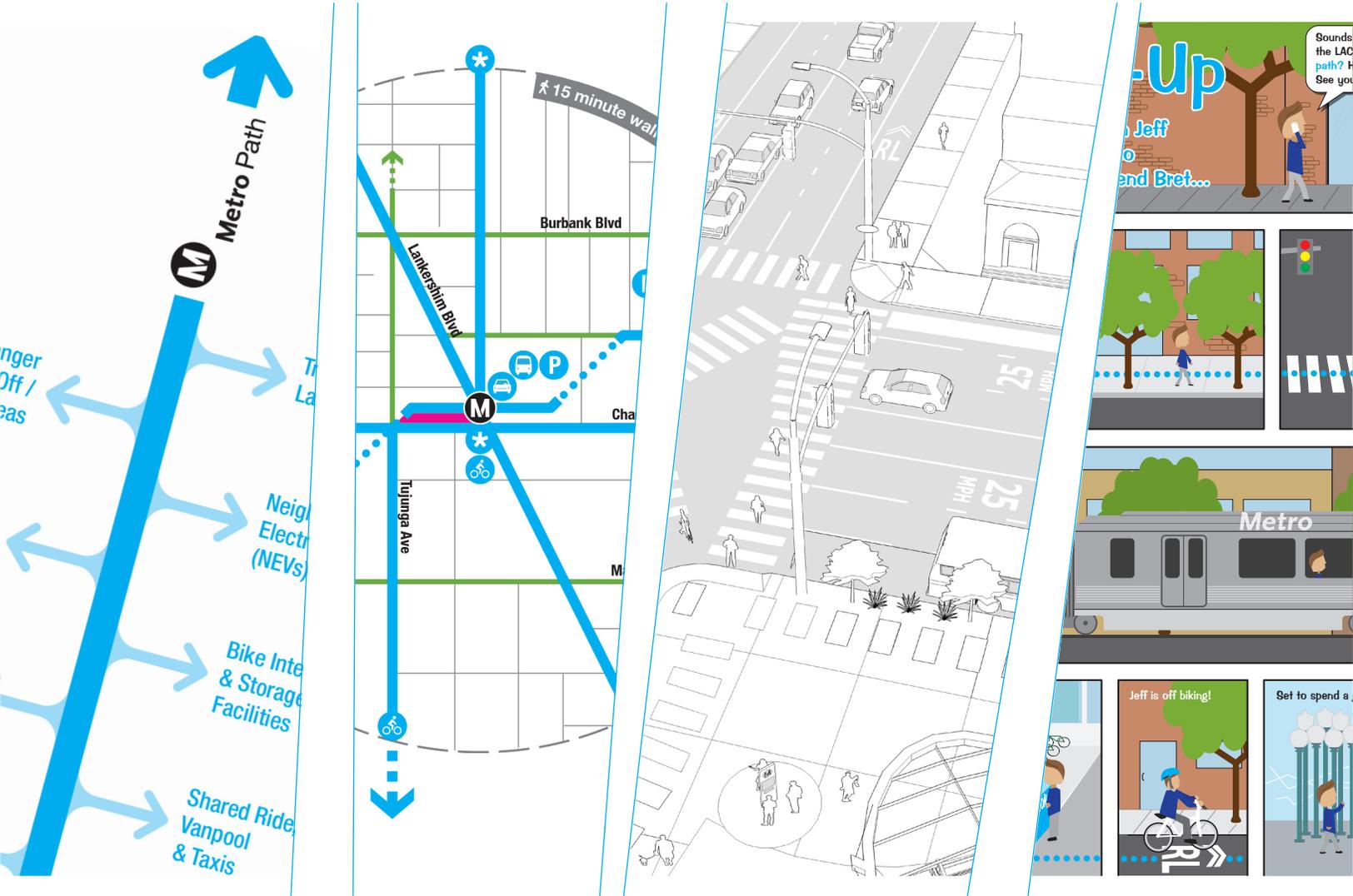




Metro Path

Planning Guidelines





Metro Path

Planning Guidelines

TABLE OF CONTENTS

1	INTRODUCTION	3
2	PATH USERS	13
3	NETWORK IDENTIFICATION, DESIGN, AND IMPLEMENTATION	17
4	PATH COMPONENTS	25
5	CASE STUDIES	57

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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).*

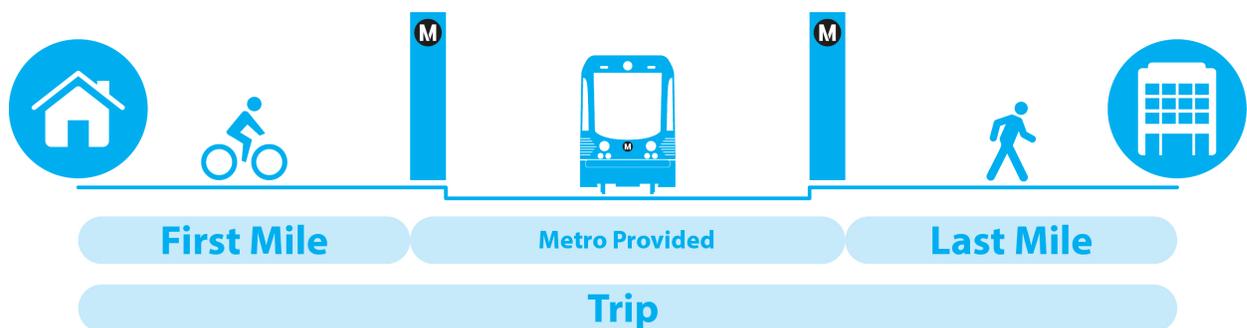
1 INTRODUCTION 

* Los Angeles County Metropolitan Transportation Authority (Metro) is developing a world-class rail system with stations that will be within walking or biking distance of 7.8 million people (nearly 80% of Los Angeles County residents). Overtime, this number will grow even larger as cities re-align their land-use plans to provide more housing and jobs near transit 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 and from rail stations. They introduce a concept herein referred to as the Metro Path (Path), and provide direction on the layout and design 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 funding programs, land-use plans, design guidelines, business models, entitlement processes, and other tools that take advantage of LA County’s significant investment in the public transportation network.

First-Last Mile Strategic Planning

An individual’s ‘trip’ is understood as the entire journey that individual makes from their origin to their destination. An individual may utilize a number of modes of transport to complete their 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, rail and van type services that frame the core of a public transit users trip, but users must complete the first and last portion on their own; they must first walk, drive or roll themselves

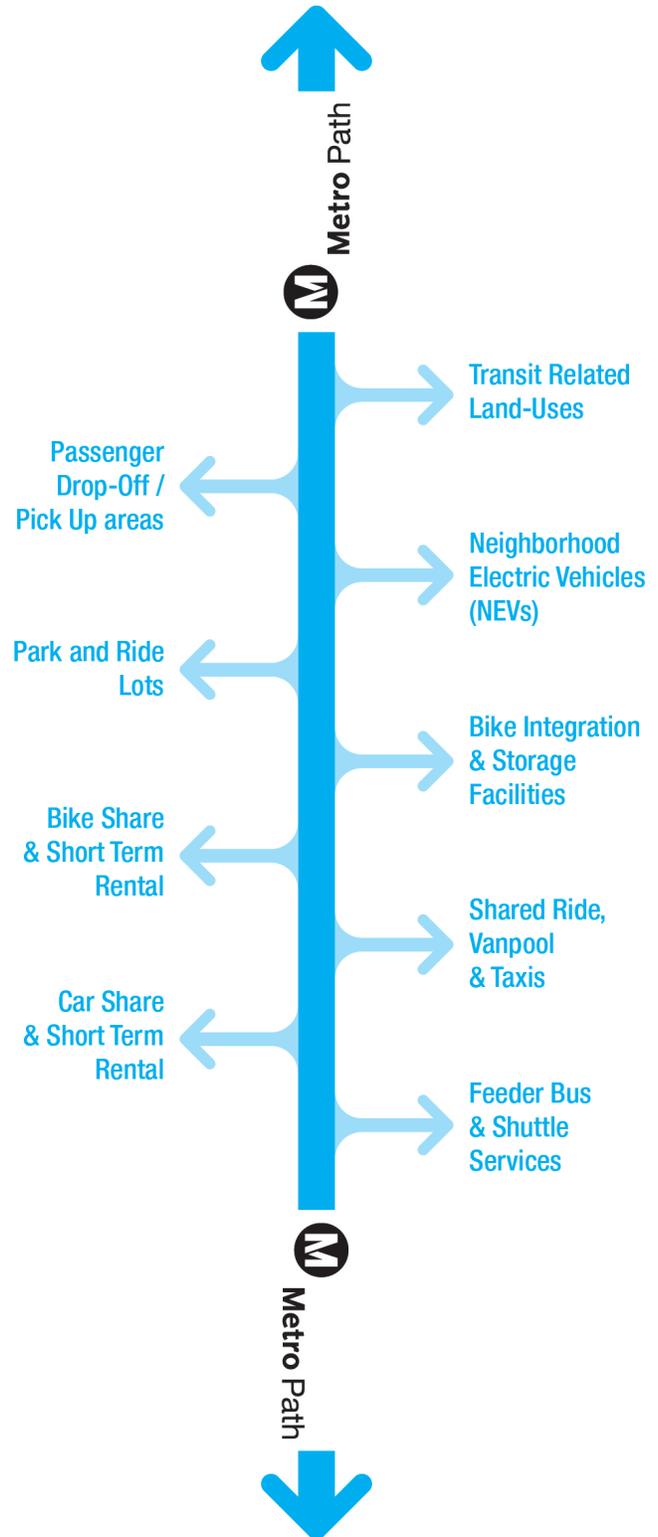
to the nearest station. This is referred to the ‘first-last mile’ of the user’s trip. Though the streets and infrastructure that comprise the first-last mile fall outside the boundaries of Metro’s jurisdiction and control, they remain critical components of an effective public transportation system.



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 very specific (for example providing additional bike racks at stations). The Path allows for the 'coordinated bundling' of first-last mile strategies, by identifying an access network that partner agencies and private transportation solution providers can build off and plug into. It is envisioned to be both uniform and flexible in its design, including standard elements that transit riders will easily identify and associate with accessing Metro while also responding to the context and character of varying communities.



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. The Path focuses on the role active transportation networks play in strengthening explicit links between regional transportation networks, land-uses and healthy living.



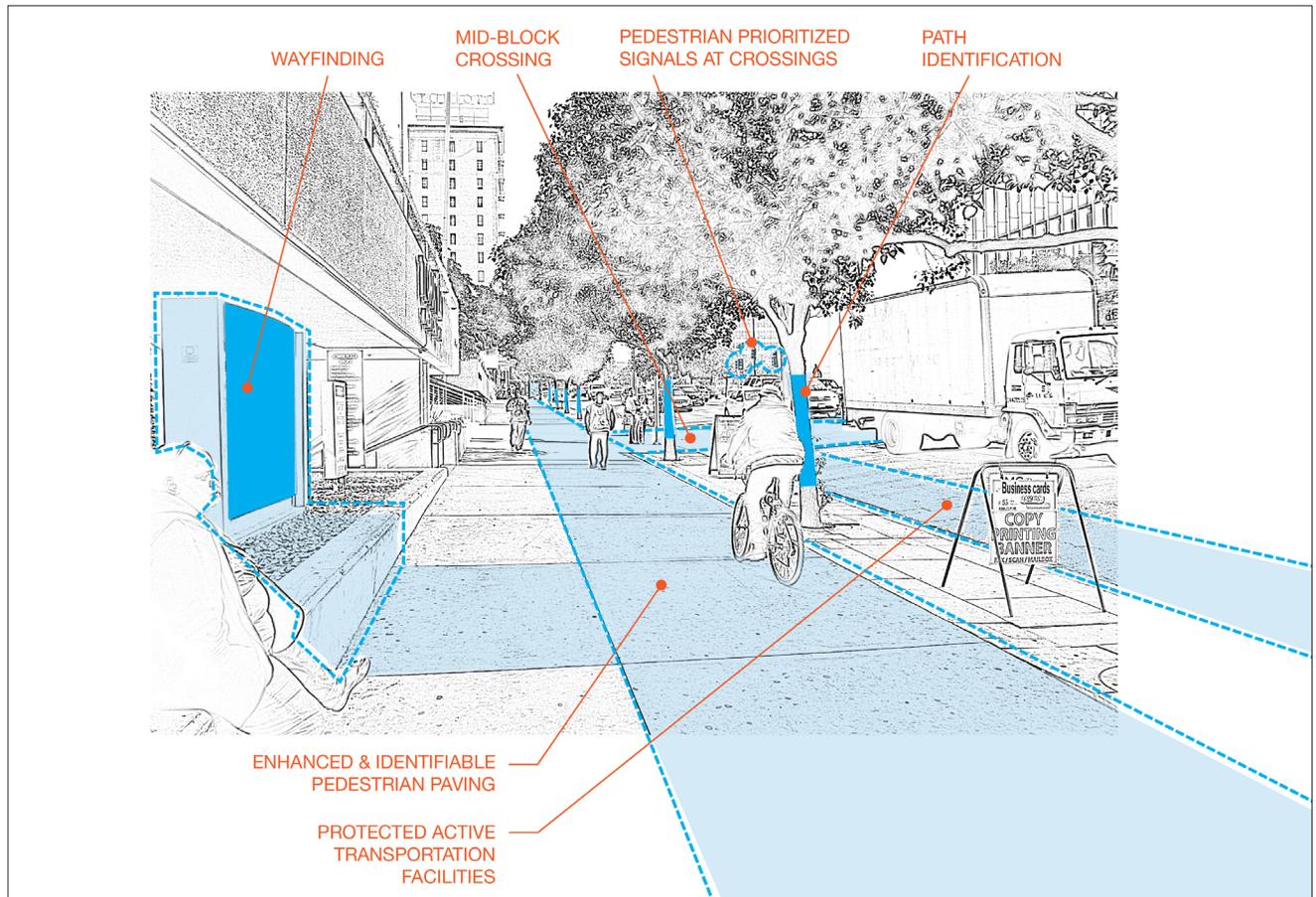
What is the Metro Path?

The Path is a proposed county-wide, transit access network designed to reduce the distance and time it takes people to travel from their homes to stations and from stations to destinations or other mobility options. At its core, the Path is a series of active transportation improvements that extend 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.

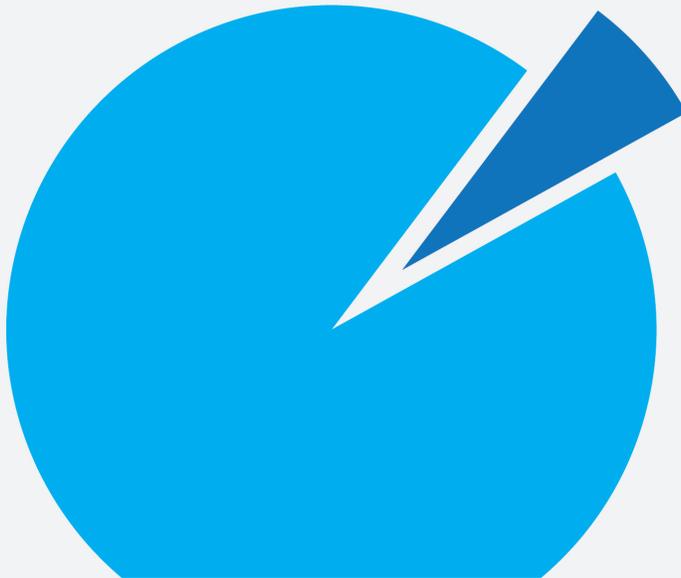
The Path aims to broaden the reach of transit by increasing the size of transit access sheds and by improving access conditions within station areas. The Path extends the positive experience of the transit user, and is thus intuitive, safe, efficient, universally accessible and fun. These guidelines identify users, provide a methodology for the layout of networks within Los Angeles County station areas, and provide guidance for the physical design of integral Path components.

The Path helps integrate the various modes provided by Metro (i.e. Bus and Rail) and also allows the integration of non-Metro provided transit modes into a more seamless transit 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 efficiencies, more people will opt-into public transportation, reducing vehicle miles traveled (VMT's) and green house gas emissions (GHG's) in the process. Incorporating active modes of travel in daily commute patterns can help prevent a number of human health conditions related to inactivity. Providing access to regional transportation networks helps individual's access broader job markets and businesses located along such routes benefit from increased travel activity.

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.



Access Modes *



15%
Drive & Park
or Dropped-Off at Stations
 Roads & Parking Facilities



85%
Walk, Bike, or Roll
to Metro Rail & BRT Stations
 Active Transportation Networks
 2011 Metro On-Board Survey

* Does not include transfer activity.

	Access Distance	VMT	GHG	Calories Burned	Cost

The fact that the vast majority of transit users are already walking or rolling themselves to stations demands a careful consideration of the relationship active transportation has to the regional transportation system. A number of questions must be asked; What is the condition of the existing active transportation network 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 the active transportation network an integral component of the county-wide "transportation system"? The Metro 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.

Active Transportation

The term “active transportation” is used frequently in this document, and includes walking, bicycling, personal mobility devices, such as wheel chairs, and other human powered methods of travel. All transit riders use active transportation modes at some point in their journey. The active transportation portion of the user’s trip may be short—transferring from bus to rail or connecting to a car-share station. Or, it could be much longer—biking from home to a station or skateboarding from a station to school. It is important to note that this is not just an active transportation plan; the scope is much broader and includes station access by bus, car, taxi, shuttle and more. However, active transportation improvements are prominently featured because they are the glue that binds all of these other mobility pieces together.

Active transportation is defined by any self powered mode of transportation. The two modes most often associated with active transportation include pedestrian and bicycle modes. The infrastructure associated with these two modes includes sidewalks and bike lanes. This may be too narrow a definition though, as there are many more active transportation modes observed in LA County that do not fit neatly into these two categories. For example, are children on skateboards pedestrians? What about senior citizens on electric mobility scooters? This second example raises further questions regarding the relationship of electric assisted mobility and active transportation. When planning and designing facilities to support active transportation, should Segways, electric bikes, and electric mobility scooters be included in the review?

The Path is supportive of all active and green (electric assisted) modes of travel, as they all support mobility. These travel modes, when allowed to operate at their design speeds, support the expansion of personal access sheds. For example, it is often assumed a pedestrian will walk up to 15 minutes to access transit, and they can generally cover one half mile in that time. A bicyclist can cover up to three miles in the same amount of time. A teenager on a skateboard can cover almost a mile and a half. A grandmother on an electric mobility scooter can travel twice as far as a young and healthy pedestrian in 15 minutes. These extended access sheds, if realized, have the capacity to significantly increase the reach of transit. Modern manufacturing efficiencies combined with an insatiable demand for personal mobility solutions are together driving a growing market for such devices. All of this innovation is putting tremendous strain on infrastructure designed in the 1800’s – our sidewalks.

Existing planning models sub-divide the sidewalk into three zones; a frontage zone, a pedestrian zone and a planter/ furniture zone bounded by a curb. Pedestrian travel occurs within the pedestrian zone. Bicyclists are assumed to mix with vehicular traffic or travel in a bike lanes provided for beyond the curb.

The right-of-way allocated to our sidewalks is being called upon to service a growing number of active and green modes of personal travel. At the same time, increasing roadway congestion is pushing bicyclists onto sidewalks, even when painted lines timidly carve out space. Sidewalks are not designed to safely accommodate both slower moving pedestrians and faster moving active and green modes.



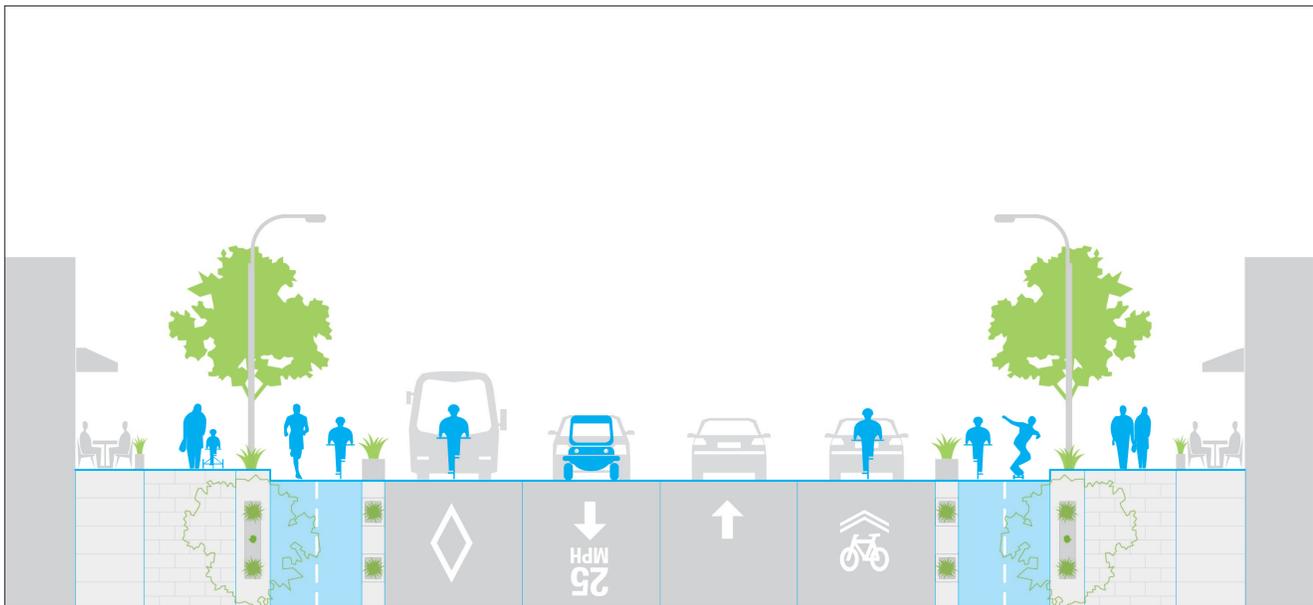
Though bicycles are sometimes afforded exclusive facilities within the roadway, all other active transportation modes (from skateboards to mobility scooters) are typically observed operating within the “pedestrian zone” of sidewalks. Sidewalks offer protected facilities for the young and elderly who benefit from the use of such devices, but they are usually too constrained to safely accommodate slower moving pedestrians with faster moving active mobility users.

In order to accommodate the full range of active and green modes of travel, a fourth protected zone must be considered, a zone that will accommodate faster modes of travel, retains the safety and security features afforded by sidewalks, and is supportive of a wide range of mobility devices. The Path proposes such infrastructure along designated routes within a 'complete street' context.

The networks themselves are comprised of sidewalks, bike lanes (where existing) street crossings, signals, signs, curb returns, lighting, furnishings and landscaped elements. These networks exist throughout the County, and in general are in poor shape. There are breaks in the network, elements in many areas are in a poor state of repair, and the network is failing to protect exposed individuals from vehicular collision hazards.

The Path and Complete Street Design

The vast majority of transit users in LA County walk or roll themselves to bus stops and rail stations. These people are doing so utilizing active transportation modes of travel and are utilizing corresponding active transportation networks.



A new model is required as part of a complete street concept, to take advantage of the mobility afforded by a wide range of mobility devices. Road speeds must be controlled to allow for the integration of confident bicyclists and neighborhood electric vehicles. Protected facilities are required to support fast moving personal active transportation modes. Sidewalks must be maintained to provide maximum safety and accessibility for the slowest moving pedestrian modes.

Top 6 L.A. County Station Access Barriers



1 Long Blocks – Pedestrians prefer direct routes to their destination – long blocks often equate to unnecessarily long walks.



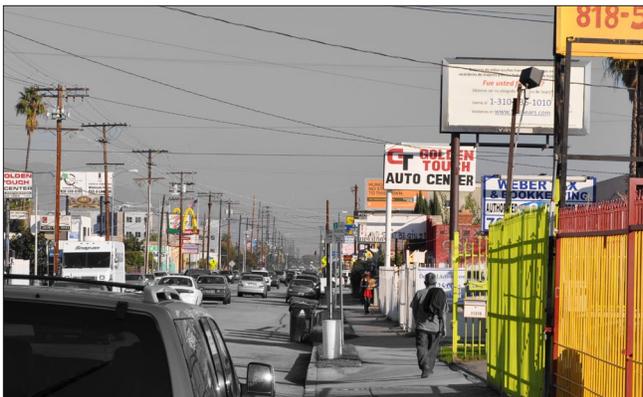
2 Freeways – Freeways carve our region into a number of ‘pedestrian islands’. Links between these islands are effectively broken by dark and unpleasant underpasses or equally challenging overpasses.



3 Maintenance – Many of our basic pedestrian walking surfaces are buckled, broken and generally impassable to all but the nimble footed.



4 Safety and Security – Pedestrians in LA County are victim to some of the highest pedestrian fatality rates in the country. The neglect of our pedestrian infrastructure also adds to concerns over personal security.



5 Legibility – It is too easy to get lost in LA County. Effective transit systems utilize sophisticated yet simple signage and way-finding strategies. How do these apply to pedestrians accessing stations?



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 balanced allocation is needed.

The almost exclusive focus on improving or optimizing regional automobile movement and capacity has failed to respond to the needs of all street users. This has become a growing concern, especially given the disproportionate cost paid by transit-dependent and vulnerable population segments (including the elderly, the infirm and the poor). This concern is fuelling a re-investigation of our public roadways and a consideration of 'complete streets' which are designed to support multi-modal access, safety, and community sustainability.

The Path is focused on providing safe and efficient mobility and transit access within a complete street framework. These guidelines will help Metro coordinate efforts with cities as they re-evaluate and re-imagine their roadway networks to better align with complete street principles.

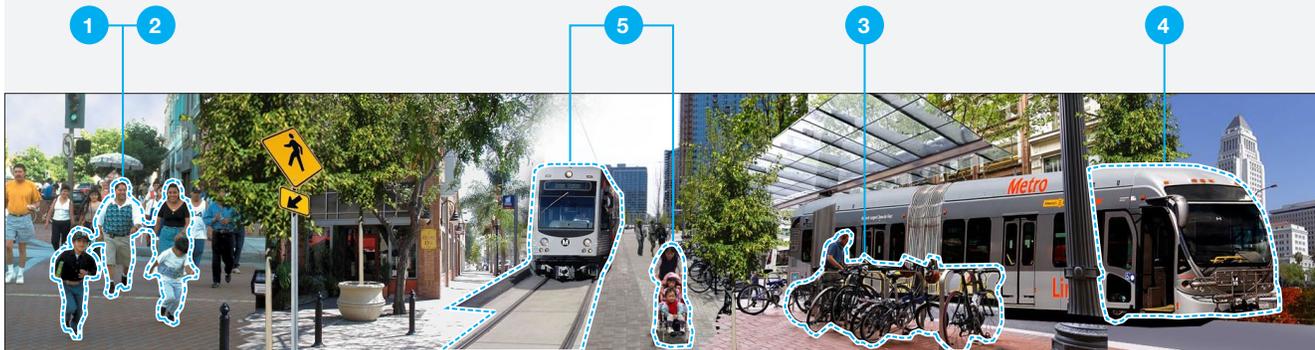
What are Complete Streets?

Roads are designed for cars, Complete Streets are designed for people. They are designed to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street. Complete Streets make it easy to:

- 1 *cross the street,*
- 2 *walk to shops,*
- 3 *bicycle to work,*
- 4 *allow buses to run on time, and*
- 5 *make it safe for people to walk to and from transit stations.*

Benefits of Complete Streets

- *Safety*
- *Health*
- *Economic Vitality*
- *Environmental Sustainability*



Metro Path Guiding Design Principles

The following attributes define the Metro 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.*

The purpose of the Metro Path Planning Guidelines

The purpose of the Metro Path Planning Guidelines is to:

1. Clearly articulate the Path concept including objectives, characteristics, and the role the Path plays in supporting transit access and regional planning goals.
2. Become a tool and coordination resource for Metro, LA County, municipal organizations, community groups, and private institutions.
3. 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.

The guidelines are structured around the following sections;

Introduction

Presents the Path concept, and its relationship to first-last mile planning context.

Path Users

Defines the functional requirements and considerations of users, which in turn will help guide design direction and considerations.

Path Network Identification

Provides a methodology and approach for the layout of the Path network within station areas.

Path Components

Outlines planning and integration strategies for improving first-last mile connections in LA County, specifically to Metro Rail and fixed-route BRT stations.

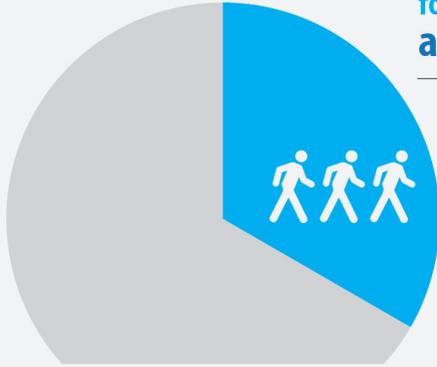
Illustrations

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. Sites were chosen to review a range of conditions.

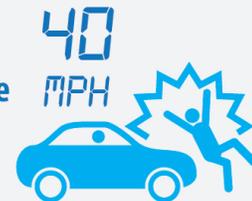
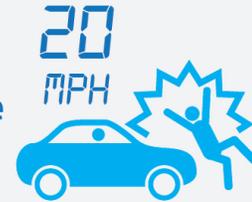
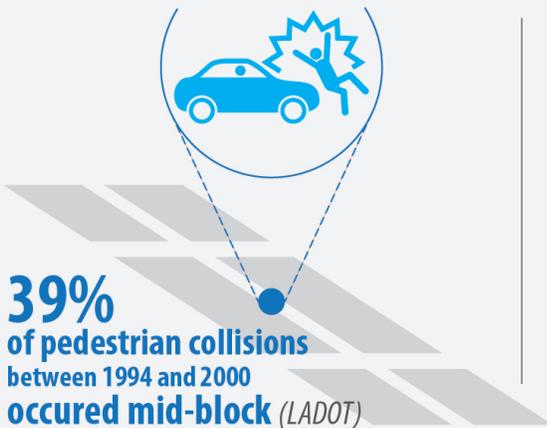
Pedestrian Safety



Pedestrian fatality rates for children under age 4 and seniors over age 70 in L.A. are double the national standard.



Pedestrian fatalities represented **36.8%** of all traffic fatalities between 1994 & 2000 in L.A. (LADOT)



The provision of 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 for Metro. Pedestrians are at risk in the environments around 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.

(tag the illustration above...)

2 PATH USERS

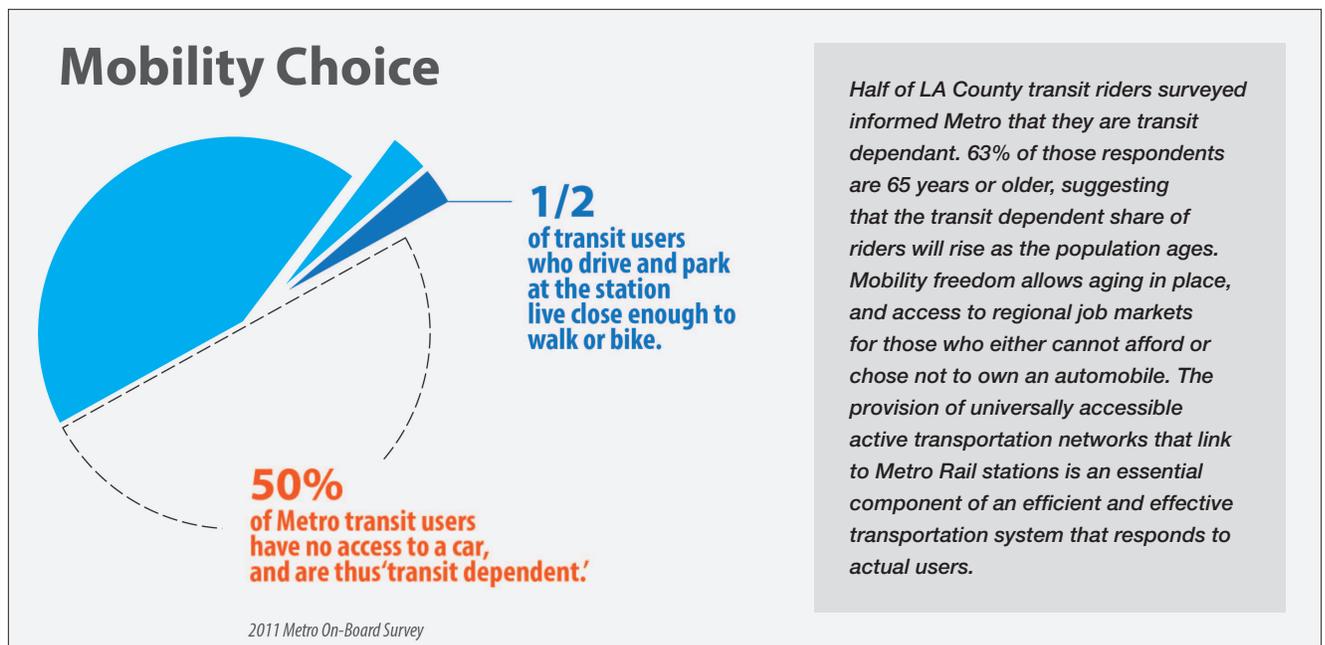
Who Uses The Path?

Planning guidelines for a transportation element must begin with an understanding of the transit user. 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 Rail/BRT access and over 95% total system access.
- Nearly 64% of riders make at least one transfer to complete their one-way trip.

The Metro survey data supports the notion that station access solutions must focus on active transportation mode integration as a foundation to an overall strategy, as the vast majority of people accessing transit are doing so on foot. Additionally, many of those who rely on transit have no other option, they either have no access to an automobile, or they cannot afford costly access options such as taking a taxi cab.

Many transit users must access rail stations via local bus services. All of these users rely on active transportation networks while making their transfer as they must walk or roll themselves from the bus stop to the station. Better planned and designed active transportation networks that explicitly support station access, help improve overall operational efficiencies by improving transfer efficiencies, and by allowing for greater flexibility in service planning. For example, multi-modal facilities such as bus stops and park-and-ride lots tend to locate as close to rail station portals as possible, which in turn can lead to congestion at transit nodes. The provision of better, clearly identifiable, safe and intuitive access routes will allow such multi-modal facilities greater latitude and flexibility in their geographic placement, potentially leading to a better realization of high valued property immediately adjacent to stations.



Path users are encouraged to walk, bike, or use any one of a number of active transportation devices. The design of the Path supports the use of active transportation modes that allow the expansion of individual's personal access sheds, so that more people will be able to access the public transportation system.

The Path expands the reach of transit by;

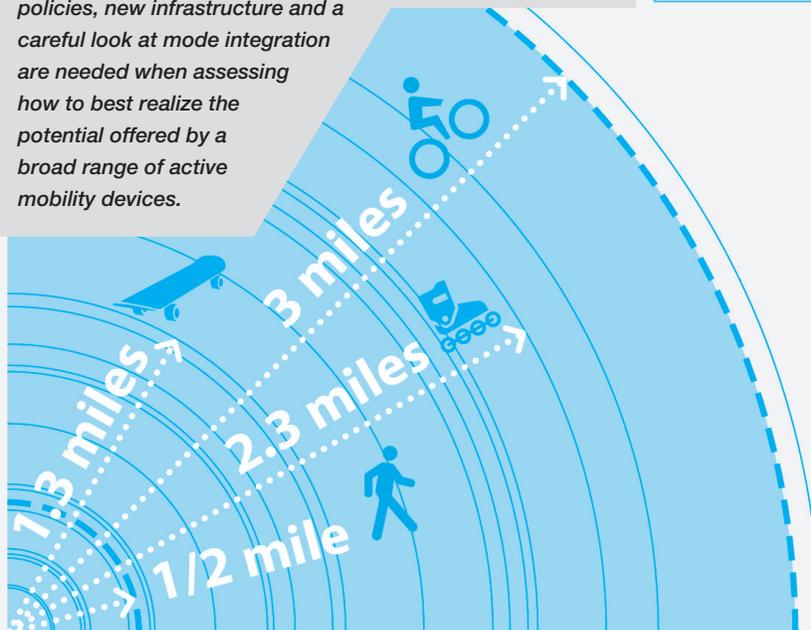
1. Increasing the average speed of active transportation users – This can be achieved by decreasing wait times at intersections and by increasing speed and capacity along walking/rolling routes. Pedestrian prioritized Signal timing improvements decrease waiting and times for pedestrians, reduced crossing distances reduce average street crossing time, and the provision of improved walking and rolling surfaces can increase average movement speeds.

2. Decreasing point to point distances – This can be achieved through the utilization of strategic short cuts and increased crossing opportunities. Diagonal routes through large parking lots or parks and mid block crossings can be used to significantly reduce point to point distances.

In addition to expanding the access shed for transit users, the Path can support overall ridership and improve sustainable mode splits by improving the quality of access conditions within existing access sheds. Personal sense of safety, security, and comfort all play a role in an individual's choice of access mode. Many factors affect these variables, and range from adjacent traffic speeds to lighting design to general urban conditions. Multi-agency coordination will be required to review traffic patterns along designated Path routes, specifically traffic speeds as they have such a profound relationship to pedestrian safety.

Access Sheds

The proliferation of personal mobility devices by all age groups, from wheeled shoes to Segways, presents a tremendous opportunity to extend the reach of public transit investments. It is well known that the time it takes to walk to a station in the metric by which access sheds are realized, supporting personal mobility devices that allow an aggregate increase to average personal mobility speeds can dramatically increase regional access sheds. Better policies, new infrastructure and a careful look at mode integration are needed when assessing how to best realize the potential offered by a broad range of active mobility devices.

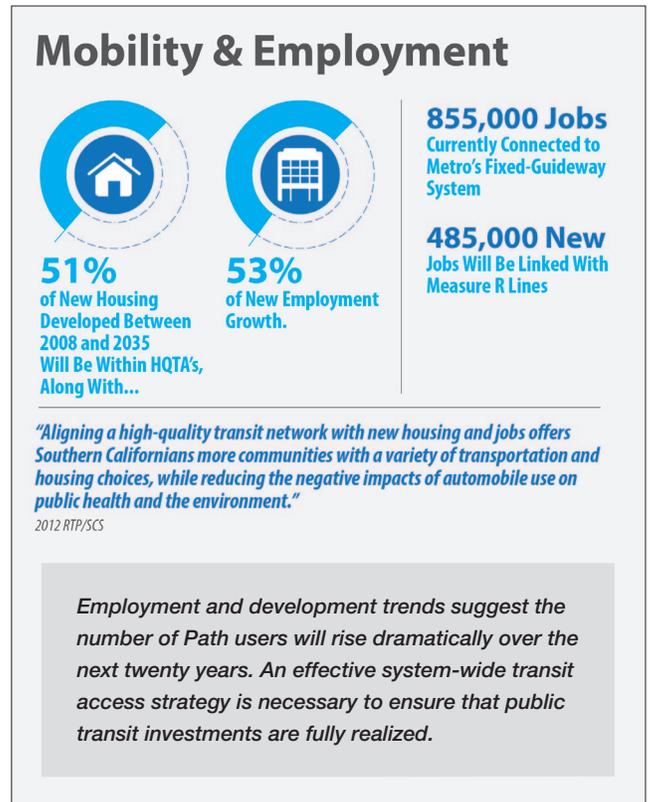
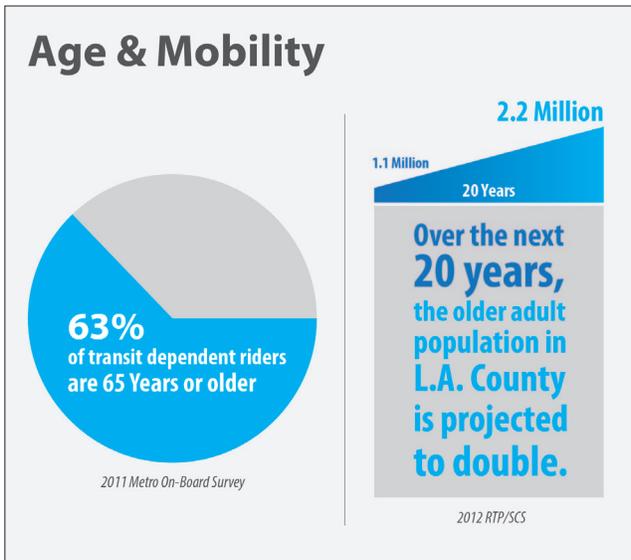


Transit users moving under their own power throughout the county have very different use functional characteristics and needs, based both on the physical requirements of their chosen mode and a number of personal characteristics including age, ability and personal attitude towards risk and comfort. A 21 year old jogger has very different mobility characteristics and needs from a 91 year old utilizing a wheeled push-walker. Likewise, a 6 year old riding their bicycle to school has very different mobility characteristics from a bike messenger. As part of the First Last Mile Strategic Plan, taxonomy of active and green mobility devices was prepared. General descriptions, trends, functional speeds and dynamic envelope dimensions were noted, along with other important data points relating to health and functional use. The taxonomy provides planners a more complete picture of transit user's mobility characteristics.

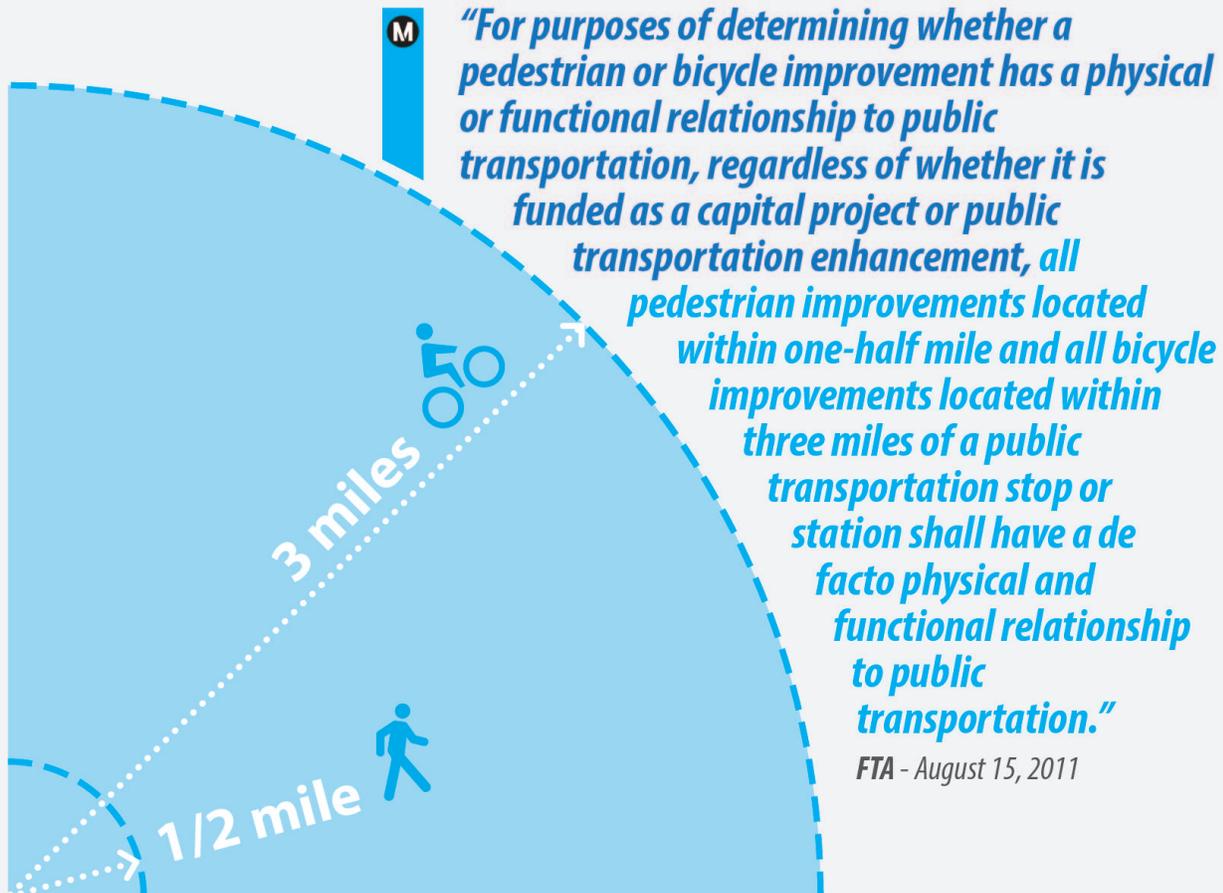
Existing Path users are understood as being broadly representative of county residents and visitors to the county. Various demographic and social trends give good insight into future path users. Demographic trends suggest the population is aging, and as average age increases, so does transit dependency. 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 hypothesis presented to explain this trend, including most notably the recent recession which has reduced the number of commute trips. Others argue that there is a structural shift occurring with regards to lifestyle. The growth of on-line communication tools has reduced the need for face-to-face encounters and static employment locations. Meanwhile, it is possible that lifestyle choices are changing, and the draw of suburban living is not as strong for a young demographic that shows preference for more compact amenity rich urban environments. The costs of vehicle ownership may also be affecting consumer behaviour, especially in regions with viable mobility options. Whatever the cause of these trends is, mobility solutions are required for those who cannot afford, cannot operate, or chose to forego vehicular ownership. The Path, by expanding the reach of transit and by improving the user experience, helps encourage discretionary riders to opt into multi-modal transit solutions.



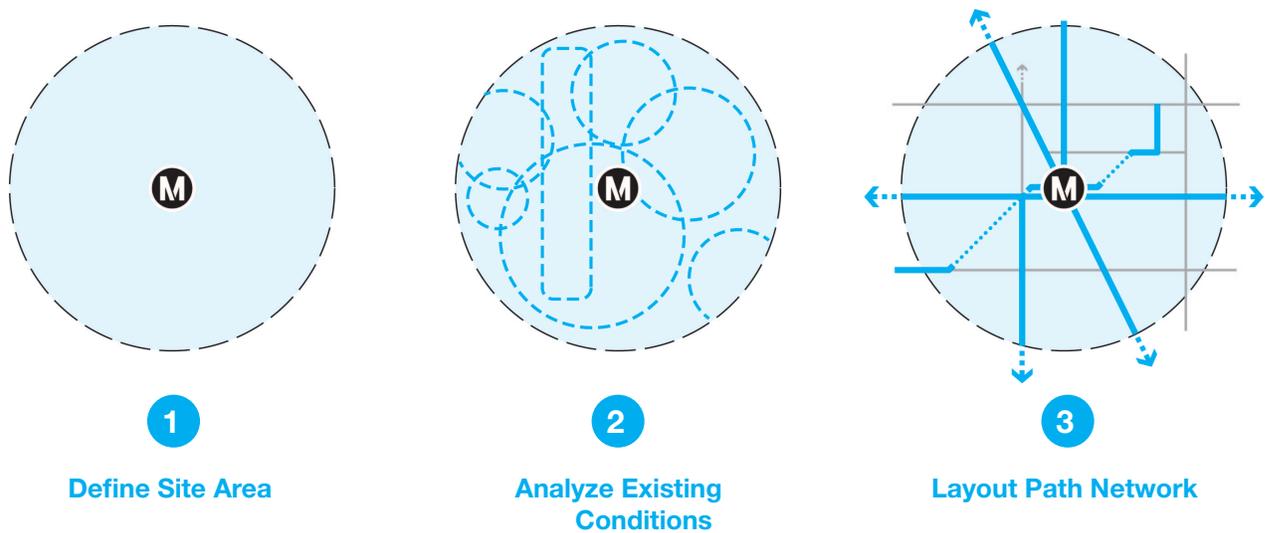
FTA Policy



FTA policy clearly defines physical components of active transportation networks within prescribed distances of transit stations as being inclusive of the broader public transportation system. This is an important point of reference with regards to aligning improvement plans with funding opportunities, and also provides some definition of the ‘transportation system’ itself. This second point is important relative to defining Metro’s role in the public realm beyond station boundaries given their stated mission; “Metro is responsible for the continuous improvement of an efficient and effective transportation system for Los Angeles County” - <http://www.metro.net/about/agency/mission/>

3 NETWORK IDENTIFICATION & DESIGN

This chapter outlines a methodology for designing the Path network at transit stations. The three steps include;



1. Define Site Area

This first step in designing the Path in any given station area is to identify the location and limits of the network. There is a current active transportation network throughout the county, comprised of sidewalks, roadways, street lights, signing, stripping, signals and a number of other elements. The Path will build upon these existing conditions within pre-determined zones, which emanate from selected transit stations. The Path focuses on pre-determined access routes bounded by identified access sheds.

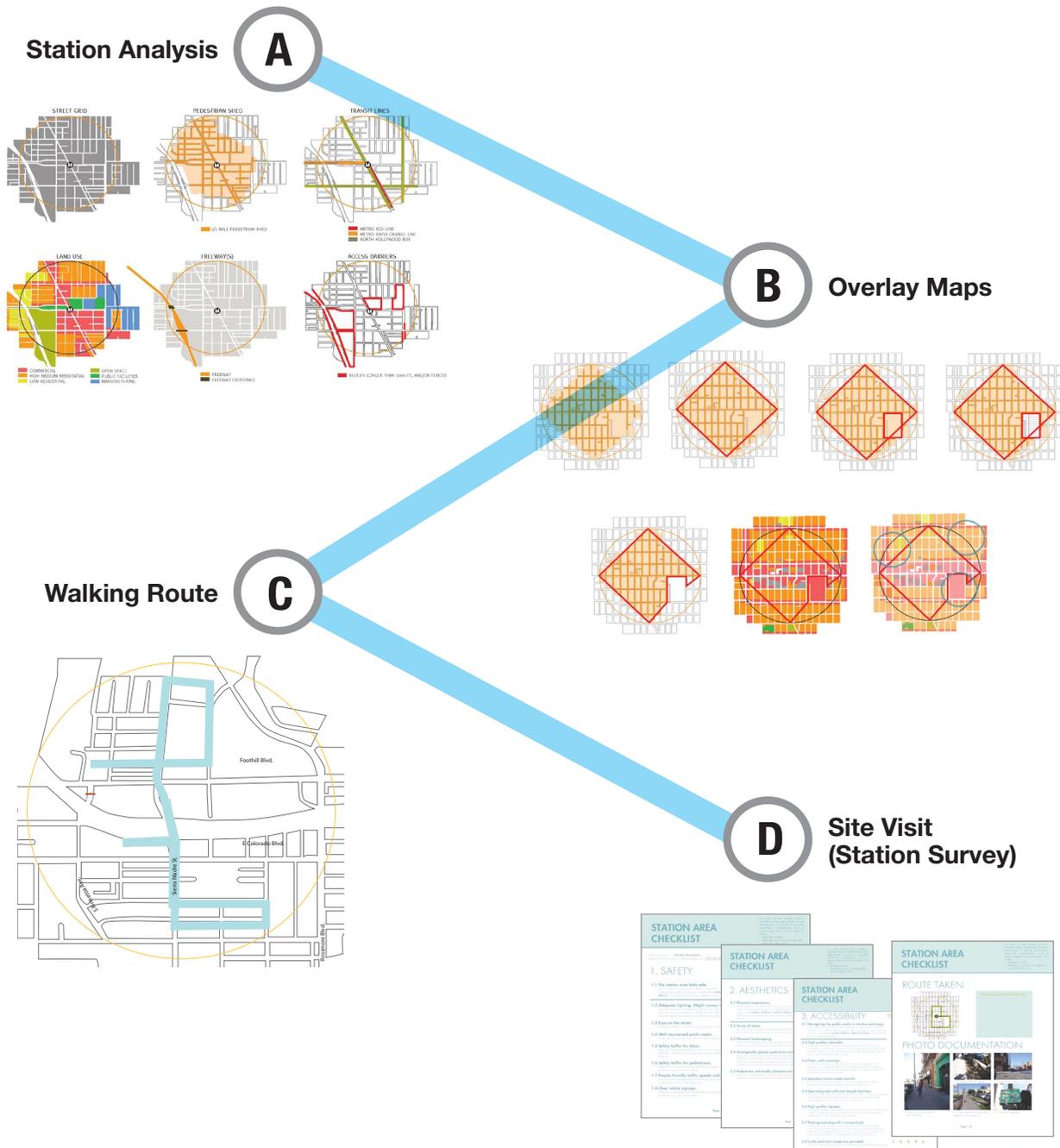
The center of the site area where the Path network will be located is the transit station itself, Metro Rail or BRT. Maintaining consistency with FTA policy, one-half mile and three mile (pedestrian and bicycle) circles can be drawn

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. The limits of fully integrated Path active transportation improvements align with FTA policy.

2. Analyze Existing Conditions

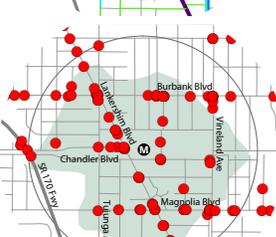
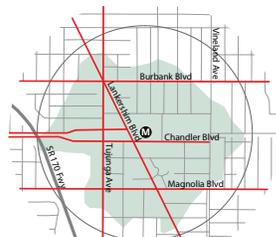
To better understand the unique challenges of an individual station area chosen for Path network development, the subject site should be reviewed at both a macro and micro level. The intent of the analysis is to evaluate the existing condition and characteristics of the station area, and inform the layout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

mapping, compiling, and overlaying various layers of station-specific data that illuminates 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 illuminates 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

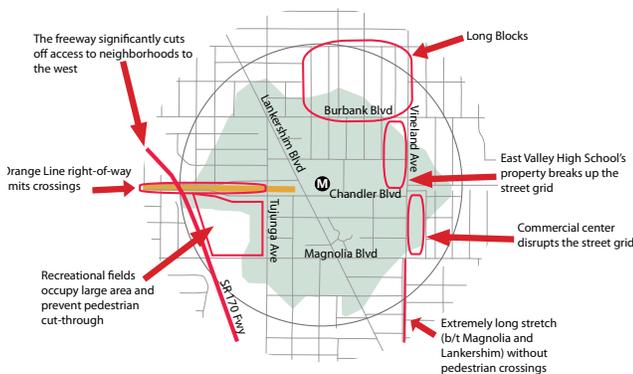
After compiling the information collected during the macro-level station area analysis, the maps described above can be overlaid to show potential areas of intervention. The overlays described below provided substantial information that inform on-the-ground analysis.

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)

The checklist pages include the following sections:

- 1. SAFETY**
 - 1.1 The station area feels safe.
 - 1.2 Adequate lighting. (Night survey required)
 - 1.3 Eyes-on-the-street.
 - 1.4 Well maintained public realm.
 - 1.5 Safety buffer for bikes.
 - 1.6 Safety buffer for pedestrians.
 - 1.7 People-friendly traffic speeds and signage.
 - 1.8 Clear safety signage.
- 2. AESTHETICS**
 - 2.1 Pleasant experience.
 - 2.2 Sense of place.
 - 2.3 Pleasant landscaping.
 - 2.4 Strategically placed pedestrian amenities.
 - 2.5 Pedestron unfriendly elements are minimized.
- 3. ACCESSIBILITY**
 - 3.1 Navigating the public realm is intuitive and easy.
 - 3.2 High quality sidewalks.
 - 3.3 Clear, safe crossings.
 - 3.4 Seamless transit mode transfer.
 - 3.5 Operating and sufficient bicycle facilities.
 - 3.6 High quality signage.
 - 3.7 Parking and drop-off is streamlined.
 - 3.8 Curbs and curb ramps are provided.

The 'ROUTE TAKEN' page features a map of the station area and a grid of photo documentation points.

Path Network Components and Layout

As stated in the introduction, the Path aims to extend the reach of transit in a number of ways. The Path is proposed as a physical active transportation network improvement that will allow the bundling of a broad range of first-last mile strategic efforts. At its core though, 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 Metro Path aims to expand the transit access shed, and to improve the quality of access within the shed.

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;

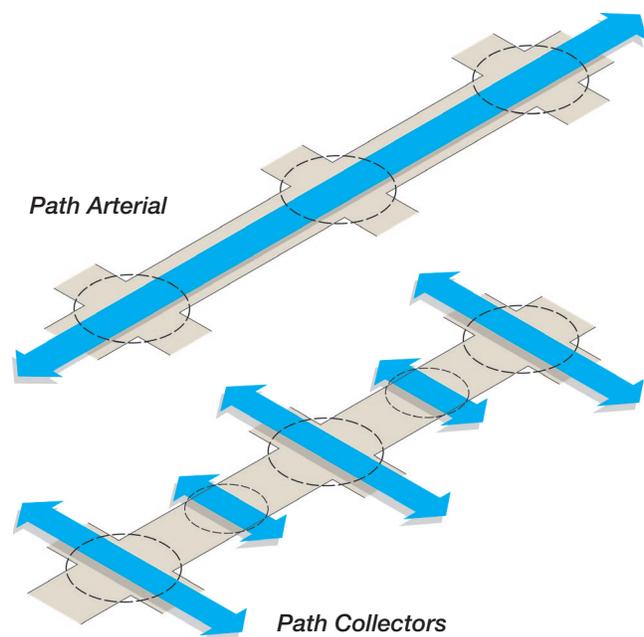
Path Arterials – Path arterials are the main branch lines that extend from stations and support maximized throughput and efficiency for active transportation users. Path arterials accommodate the highest use active transportation corridors that lead to station portals, and are designed to accommodate 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 approaches 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)

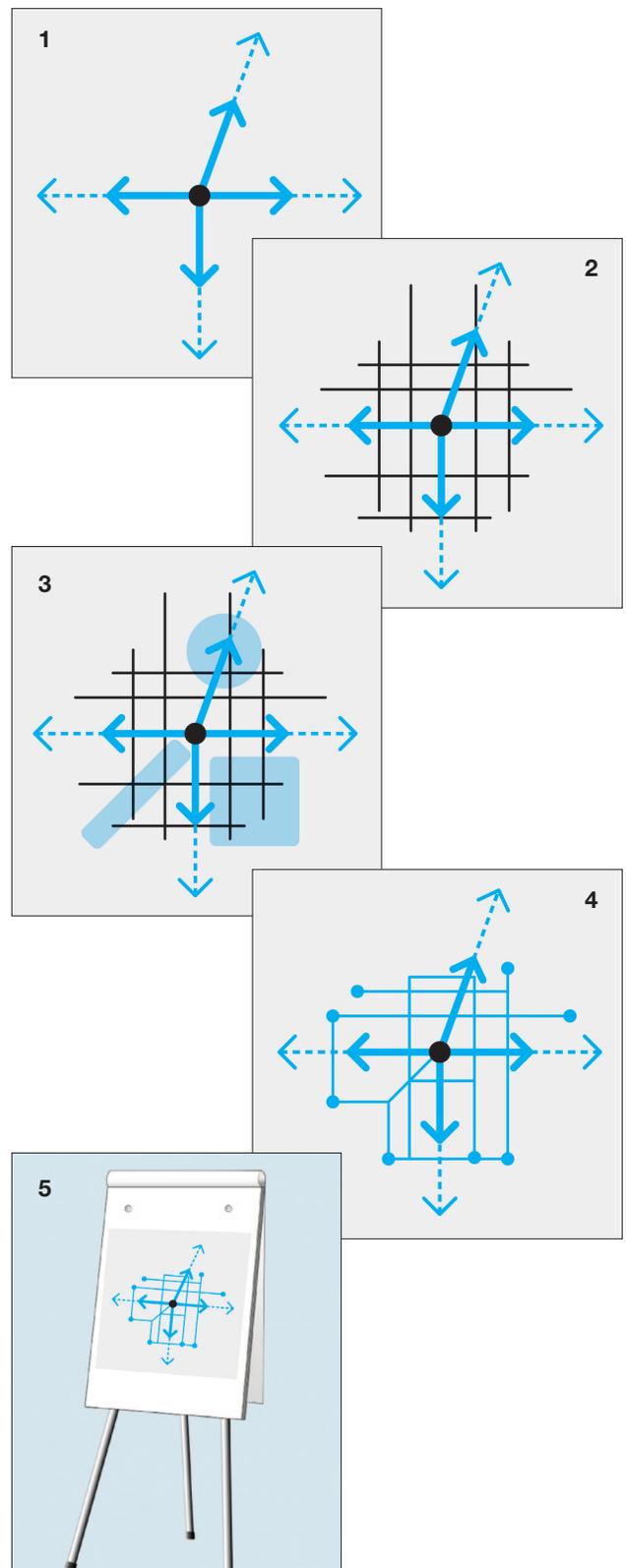
- 4. Evaluate Network** – Review Path network relative to qualitative and quantitative inputs.

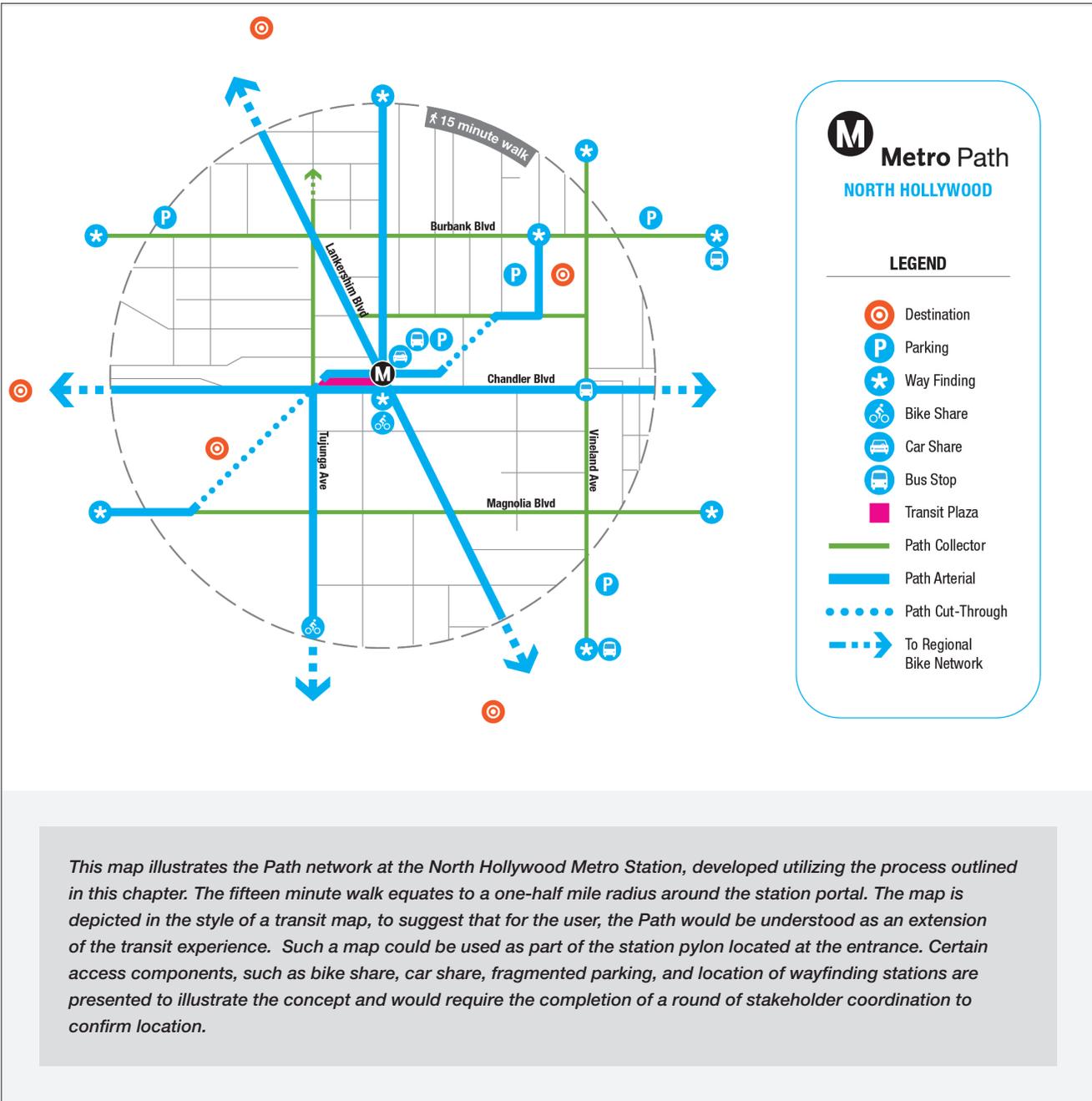
Key Mapping Inputs:

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





4 PATH COMPONENTS

- ★ This Chapter presents a curated set of design components that directly relate to the development of the Metro 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

Over the last decade, urban design guidance for improving and managing public space has proliferated. From an increased emphasis on promoting walkability and active living for people of all ages and abilities, to a renewed interest in biking and other “alternative modes” of transportation, cities, transit agencies, and stakeholders are demanding, and planning for, a more responsive and flexible urban environment.

The planning components presented in this chapter focus on improving one core piece of this ‘new’ urbanism – access to and from Metro stations, in particular Metro Rail and fixed route BRT stations throughout Los Angeles County which face a distinct set of transit access barriers. The Path aims to overcome these critical access barriers through flexible deployment of a number of design components, while following the Metro Path Guiding Design Principles noted in the first chapter.

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

1. Crossing Enhancements and Connections
2. Signage and Wayfinding
3. Dignity and Design
4. Reallocation of the Streetspace
5. Integrated Transit Access Solutions
6. Traffic Calming

Each component has been chosen based on how broadly it responds to the needs of different types of transit riders, in terms of age, abilities, gender, and mode of travel - e.g. on foot, scooter, bike, bus, shared vehicle, etc.

Refer to Chapter 3 for information on how the Metro Path is defined at station areas and what street type and connections the Metro Path consists of.

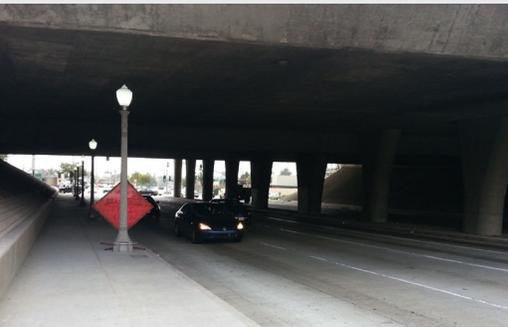
Not all Path Components directly relate to one another, but they work in concert to support the overall goals and guidelines of the Path. For example, traffic calming and pylon signage are very different tools with respect to planning, design and implementation, but utilized together they begin to form a powerful access improvement.

Critical Access Barriers in Los Angeles

Long Blocks – Pedestrians prefer direct routes to their destination – long blocks often equate to unnecessarily long walks. A typical walkable block is 300-400 ft, while many blocks throughout Los Angeles stretch over 1,000 ft long without crossings.



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. Addressing this problem means addressing the safety concerns and the experience of the pedestrian as he or she passes over or under this vehicular space.



Maintenance – Many of our basic pedestrian walking surfaces are buckled, broken and generally impassable to all but the nimble footed. Improving the first and last mile connection includes upkeeping current infrastructure, repainting, fixing sidewalks, cleaning, etc.



Safety and Security – Pedestrians in Los Angeles are victim to some of the highest pedestrian fatality rates in the country. The neglect of our pedestrian infrastructure impacts personal security as does a dearth of eyes on the street. Also of critical importance is the user’s *perception of safety*.



Legibility – It is too easy to get lost in Los Angeles. Effective transit systems utilize sophisticated yet simple signage and way-finding strategies to let people know how to get to their destinations, where and how to get to the station itself, and how to complete multi-modal trips.



Right of Way Allocation (ROW) and Design – Traffic congestion along some streets crowds 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 balanced ROW allocation is needed. Similarly, the emphasis put on the design and human experience of the urban realm is lacking.



Identifying the Metro Path

If implemented, each of the components presented in this chapter will:

- Expand the station's sphere of influence
- Contribute to a hierarchy of improvements that are more concentrated, visible, and frequent closer to the station
- Be flexible in order to fit into diverse settings around stations

Expanding the Station's Sphere of Influence

The station's sphere of influence - that is to say the area where the transit rider recognizes that he or she is close to the station, where it is safe, friendly, and transit-supportive - needs to be expanded outward into the neighborhood around the station. This is accomplished by introducing elements that are currently sited only at station entrances farther out into the surrounding area, such as pedestrian and bike amenities, identity signage, and paving enhancements. This "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.

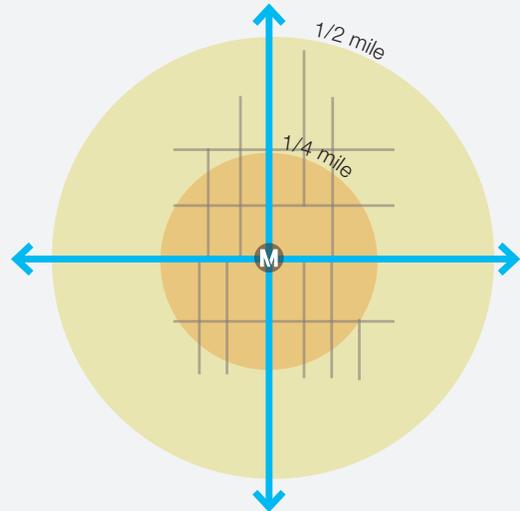
A Hierarchy of Improvements

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 the access improvements should increase and be made more prominent as the transit rider approaches a station, through placement and the use of color and markings. 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 component planning guidelines in this chapter are intended as a toolbox rather than a defined set of improvements for each station area. 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 Metro Path, and simultaneously provides a legible and intuitive system-wide strategy. Each component can be "plugged in" where appropriate depending on the urban condition. See Chapter 5 for case study examples of how the Metro Path components can be applied in different locations.

Expanding the Sphere of Influence



- M** Metro Station
- Metro Path Collector
- ↔ Metro Path Arterial

EXTENDED STATION ZONE (AREA 1)

5-Minute Walk / 2-Minute Bike

- Metro Path is more visible
- Enhanced safety features
- Larger, more prominent Metro 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 & Metro Path markers
- Address the most pressing safety & access improvements, such as:
 - New crossings
 - Curb ramps
 - Maintenance
 - Lighting & landscaping

Metro Path Components

Metro Path Components include:

Crossing Enhancements and Connections

- Enhancement of existing crossings
- Mid-block and additional crossings
- Raised crossings
- Cut-throughs and shortcuts
- Curb extensions at intersections
- Scramble crossings

Signage and Wayfinding

- Pylon signage
- Medallion signage
- Curb-edge banding
- Time-to-station notation
- Real-time signage, next train/bus
- Smart technologies

Dignity and Design

- Street furniture
- Landscaping / shade
- Lighting
- Enhanced freeway underpasses / overpasses
- Enhanced bus waiting areas
- Universal Access

Re-Allocation of the Streetspace

- The “Green Zone”
- Sidewalk widening
- The “Rolling Lane”

Integrated Transit Access Solutions

- Bike share / Bike station
- Car share
- Neighborhood Electric Vehicles (NEVs)
- Kiss and Ride
- Micro Park and Ride
- Van pool / feeder bus

Traffic Calming

- Signal modification
- Other traffic calming

Locating the Components

Extended Station Zone (Area 1)

ARTERIAL

Pylon signage
 Medallion signage and real-time transit information
 Colored continental crosswalks
 Curb-edge banding
 “Rolling Lane”
 Widened sidewalks / bulb-outs
 Frequent signalized crossings
 Maintenance
 Dual curb ramps
 Lighting, landscaping, furniture
 Flashing beacons at mid-block or raised crossings

COLLECTOR

Medallion signage
 Well-marked crosswalks
 “Rolling Lane”
 Frequent signalized crossings
 Maintenance
 Dual curb ramps
 Lighting, landscaping
 Mid-block crossings
 Bulb-outs

Transit-Friendly Zone (Area 2)

ARTERIAL

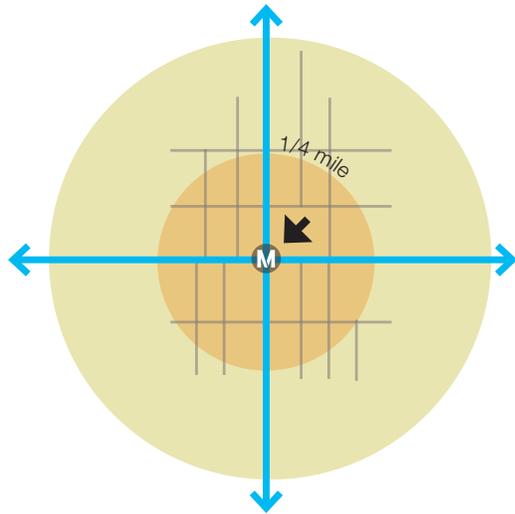
Medallion signage with time-to-station notation
 Continental crosswalks
 “Rolling Lane”
 Maintenance
 Dual curb ramps
 Lighting, landscaping
 Mid-block crossings

COLLECTOR

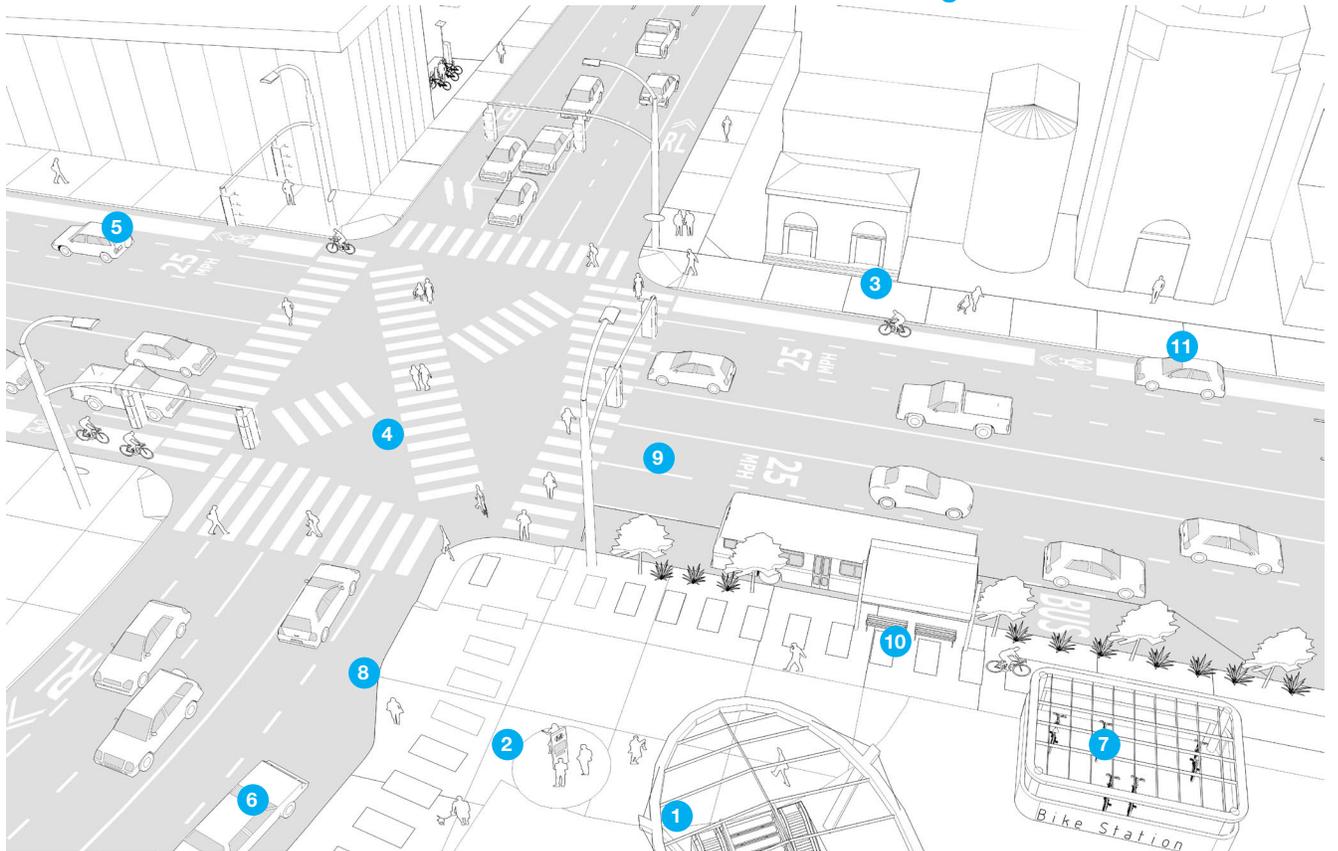
Crosswalks
 Maintenance
 Curb ramps
 Lighting, landscaping

EXAMPLE METRO PATH COMPONENTS

Extended Station Zone

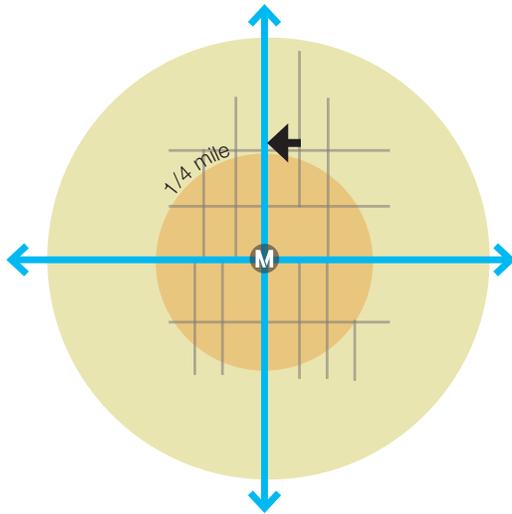


- 1 Metro Station Portal and Plaza
- 2 Pylon Signage with Real-Time Transit Information
- 3 Medallion Signage and Curb-Edge Banding
- 4 Colored Scramble Crossings
- 5 Advisory Bike Lane (see “Rolling Lane”)
- 6 “Green Zone” and Kiss-and-Ride
- 7 Bike Share / Bike Station
- 8 Bulb-outs at Intersections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

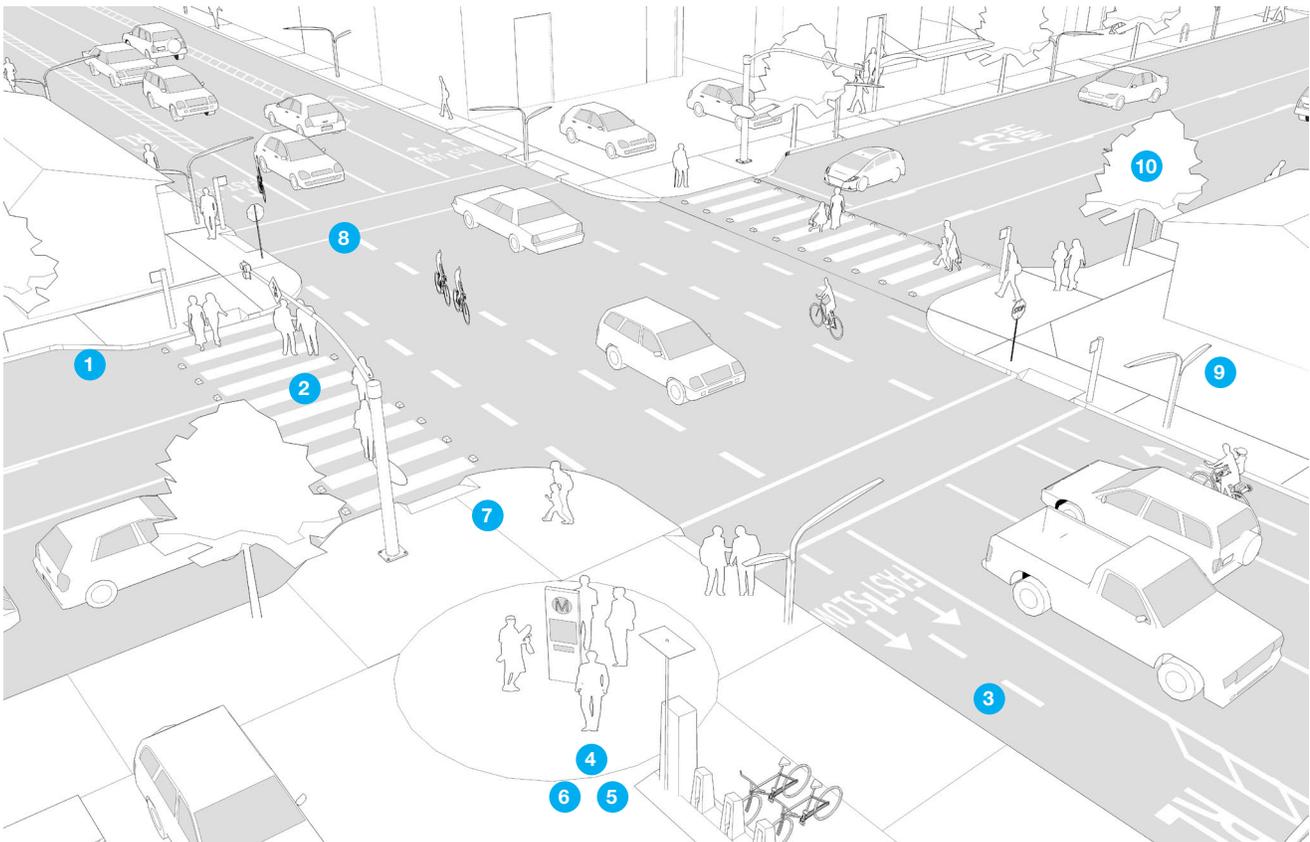


EXAMPLE METRO PATH COMPONENTS

Transit-Friendly Zone

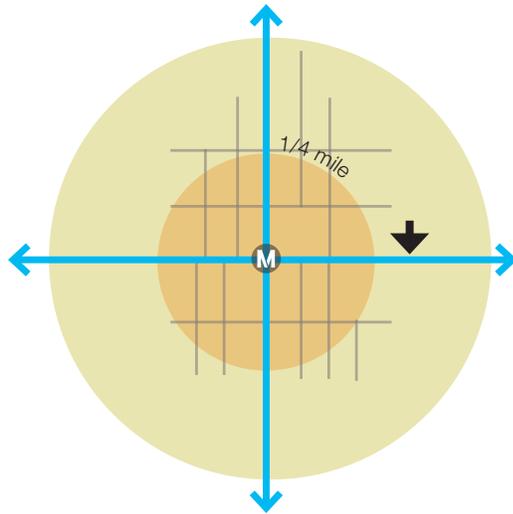


- 1 Medallion Signage and Curb-Edge Banding
- 2 Continental Crosswalks
- 3 "Rolling Lane"
- 4 Car Share
- 5 Micro Park-and-Ride
- 6 Van Pool
- 7 Dual Curb Ramps
- 8 Signal Modifications
- 9 Pedestrian Lighting
- 10 Landscaping

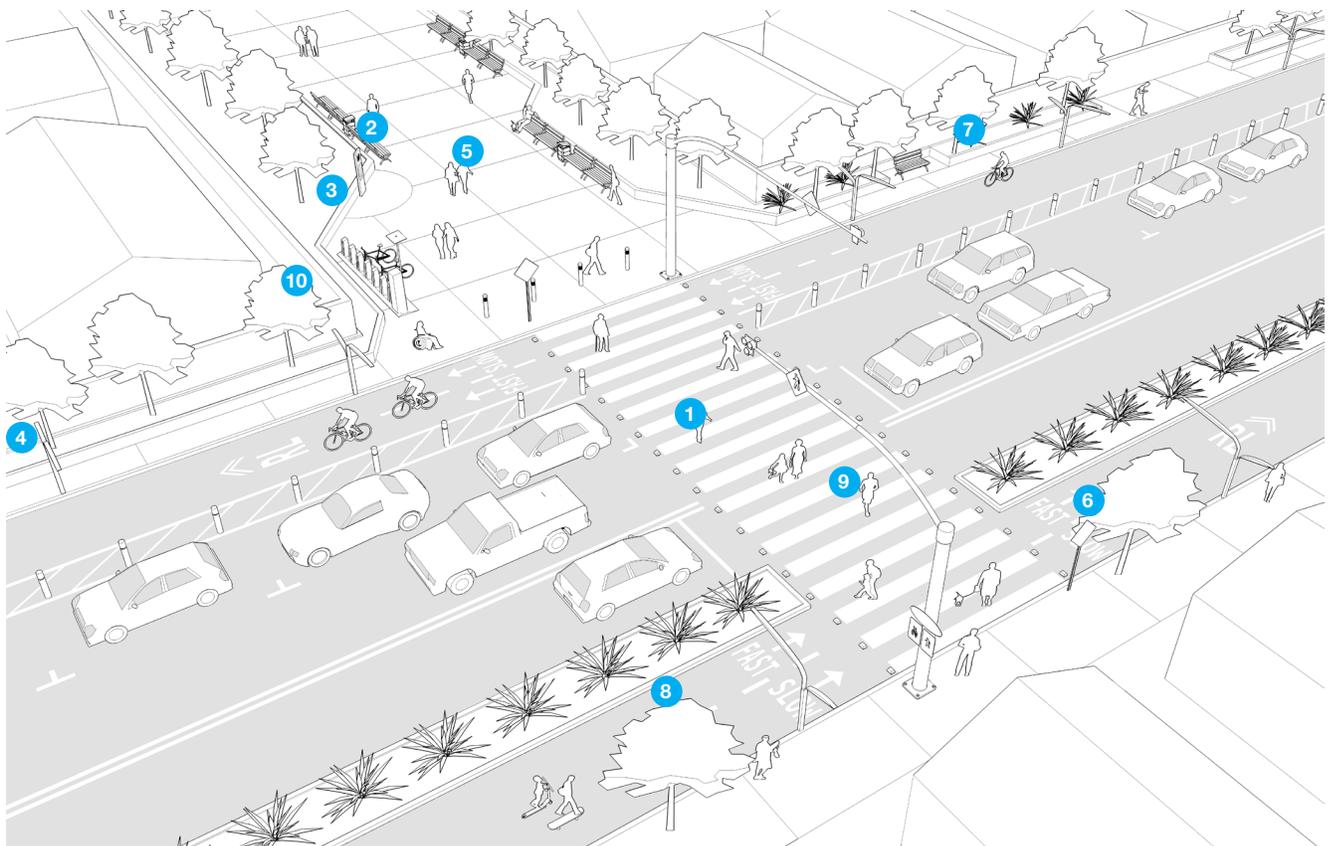


EXAMPLE METRO PATH COMPONENTS

Mid-Block Crossing



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



Branding and Identity Building

The Metro Path should be recognizable and visually consistent, yet flexible so that it can respond to and respect the changing communities that Metro serves. For example, Metro Path elements should use standard / consistent messages, font, style, placement, and family of colors but may be made from various materials and exhibit various designs as appropriate for the city in which they are located.

Design Development

A critical next step for the Metro Path is design development that focuses on how the Metro Path can establish both consistency and flexibility. The goal of this phase would be to define a family of elements that are useful, memorable, predictable, and navigable for the transit user. At the same time, elements would be required to contribute to the image of the city and the unique character of the neighborhood within which they would be developed.

Each municipality has standards and guidelines when it comes to signage, placement and design of street furniture, and street improvements. Also, the Manual of Uniform Traffic Control Devices (MUTCD) guides street markings, signs, and signals. Development of the Metro Path would rely both on inter-jurisdictional coordination throughout the Metro region and coordination with state and federal standards.

Key Considerations

The Metro Path Colors

As always, color is an important consideration. Currently Metro uses colors for line identity; currently each transit line has its own color. Colors chosen for the Metro Path will need to work within this existing palette for purposes of mapping, and color will also play an important way-finding role when used on signs and on streets and sidewalks.

Quality and Timelessness

Los Angeles faces another key challenge when it comes to identity building and branding: the profusion of existing signs already on the streets. The Metro Path elements need to use high-quality materials that convey timelessness.

Nobody Walks in Los Angeles

Branding and messaging can help combat the perception that walking in Los Angeles is uncomfortable because of long distances and a lack of pedestrian amenities.

Maintenance of Existing Infrastructure

A Metro Path that merely adds new infrastructure to the street space would not be successful. Maintenance of existing infrastructure is critical, including benches and other street furniture, sidewalks, bus shelters, landscaping, and crosswalks. The maintenance of facilities is an important component of branding a system.

The Metro “Look”

In 2008, LA Metro and the Metro Design Studio won a REBRAND 100® Global ‘Best-Of’ Award for the re-brand of its logo and collateral. At that time the Metro “M” logo carried an 83% recognition rate; after the re-brand public recognition and regard increased and discretionary ridership rose from 22% to 29%, an increase that was more than twice the national average. The highly recognizable logo, along with the branded messaging has established Metro in the Los Angeles market. The Metro ‘M’ can be added with directional arrows, to existing signs around Los Angeles, such as the LA Walks signage or the LA River signage (see far right).



Metro identity graphics and materials



Existing signs around Los Angeles, such as the LA Walks signs (top) and LA River signs (bottom) can be retrofitted with the Metro ‘M’ along with directional arrows

How to Use this Guide

Category Labels each Component with one of the six categories: Crossing Enhancements and Connections; Signage and Wayfinding; Dignity and Design; Reallocation of the Streetspace; Integrated Transit Access Solutions; and Traffic Calming.

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.

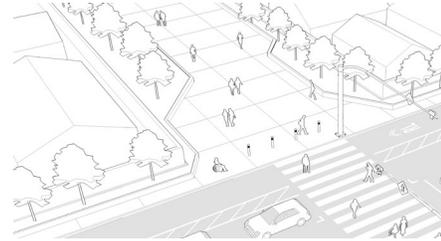
Metro Path Integration Identifies elements that can be used to identify or “brand” the Component as part of the Metro Path, recognizable to the transit rider.

Metro 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

Metro Path Integration

- » Use Metro Path 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:

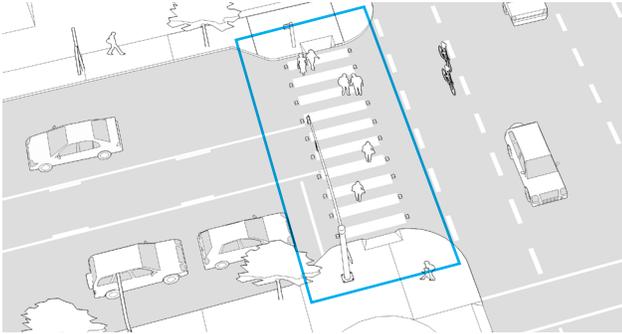
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

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

- » Utilize embedded pavement flashing lights
- » 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
- » Resource: Manual on Uniform Traffic Control Devices Best Practices

Metro Path Integration

- » Where feasible and applicable, paint stripe or edges of crosswalks with Metro Path color or otherwise highlight crosswalks to increase visual presence
- » Couple crosswalks with directional Metro Path signage

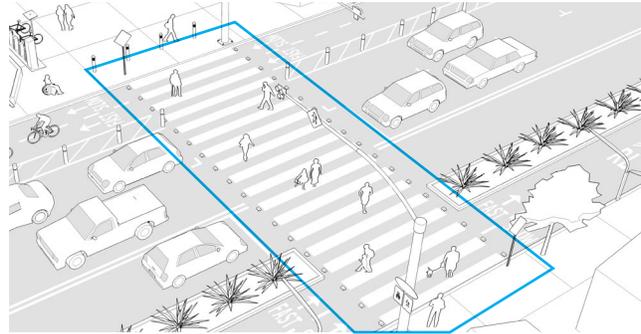
Station Access Barriers Addressed

- 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

Metro Path Integration

- » Where applicable, paint stripe or edges of crosswalks with Metro Path color or otherwise highlight to increase visual presence
- » Couple crosswalks with directional Metro Path signage
- » Incorporate Metro Path medallion signage and related branding on new crossing signal posts

Station Access Barriers Addressed

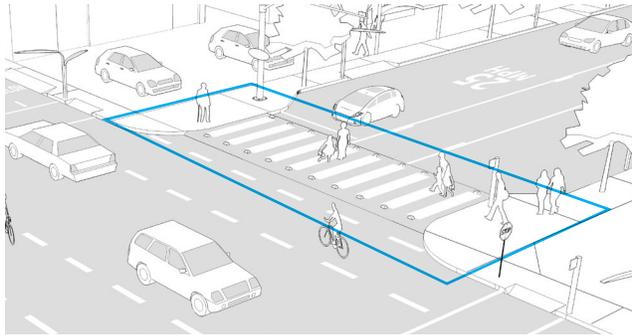
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

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

Metro Path Integration

- » Paint the raised crossing with a Metro Path color or use painted lines through the crosswalk to help identify the intersection as part of the Metro Path
- » Key Metro Path 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 the “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.

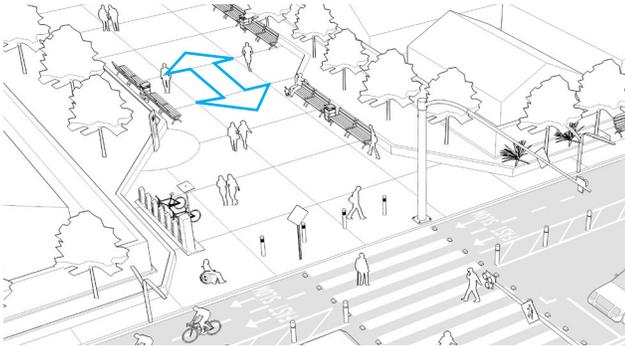


Cambridge, MA

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

Metro Path Integration

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

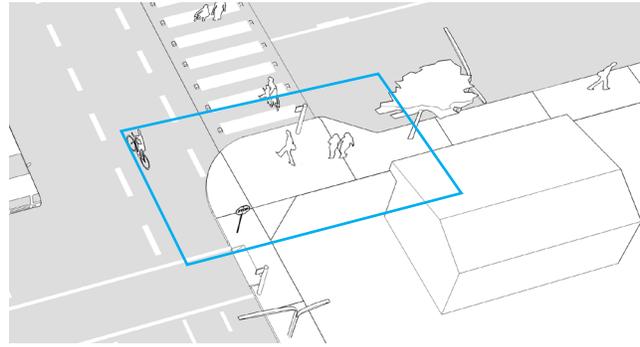
Station Access Barriers Addressed

- 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

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

Metro Path Integration

- » Couple curb extensions with established Metro Path signage
- » Add edge banding along the edge of the curb extension

Station Access Barriers Addressed

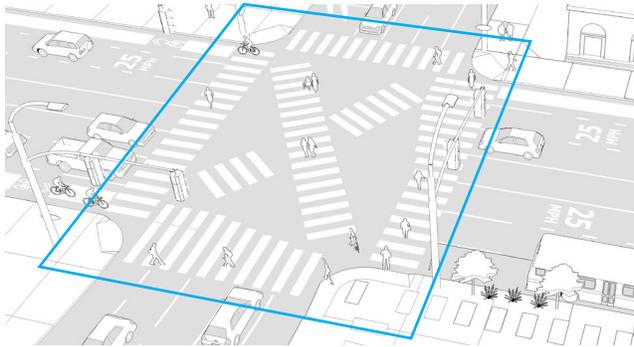
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

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: Exclusive Pedestrian Phasing for the Business District Signals in Beverly Hills
- » Resource: Oakland Chinatown Pedestrian Scramble: An Evaluation

Metro Path Integration

- » Paint the scramble crossing with a Metro Path color or use painted lines through the crosswalk to help identify the intersection as part of the Metro Path
- » Key Metro Path 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 slew 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 reduced significantly, by up to 63%. Furthermore, overall collisions in the Business Triangle were also reduced by 20%.

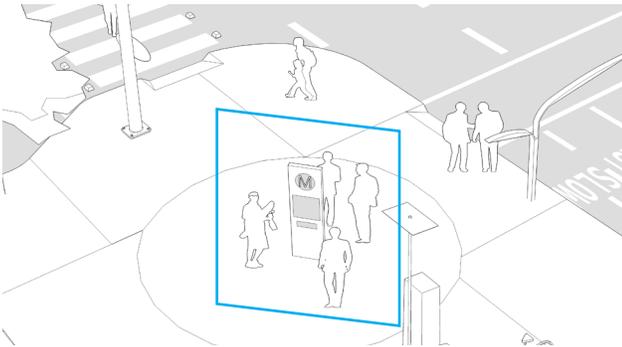


Scramble Crossings in Shabuya Crossings Tokyo, Japan

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

Pylon Signage



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
- » Help brand the Metro Path with repetitive elements that are recognizable

Guidelines & Resources

- » Place pylons on/near corners and decision points, regularly-spaced along a route approximately 200-300 ft. apart
- » Use pylons that relate to Metro's established family of signage
- » Ensure that pylons 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

Metro Path Integration

- » Use colors and pylon design that reflect the Metro Path brand 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

[Case Study] Legible London⁴

Legible London is a city-wide, comprehensive, and intuitive wayfinding strategy in the city of London. Along with clear pylon signage, the program is coupled with simple navigational maps that depict average distances to and from key destinations and streets. The success of Legible London has made it an international model for wayfinding design. After an initial roll-out of the system in strategic locations in the heart of the city, a complete survey of the program has shown that it has had positive and impactful results. Select statistical findings confirm that:

- 83% of users acknowledge that the wayfinding system has helped them navigate the city
- The reported number of pedestrians getting lost on a journey fell by 65%
- 87% of users support a full roll-out of Legible London throughout the city

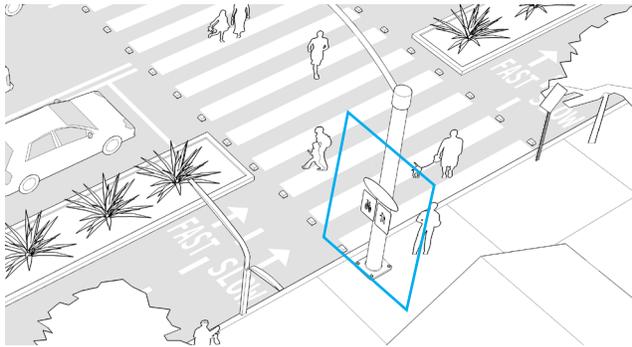
Legible London has also introduced new wayfinding tools that increase user legibility. Large key maps are complimented by in-road placard signage, traditional 'finger-posts', and taller, narrow posts that are placed in heavily congested areas.



Rather than orienting north to the top, Legible London uses "heads-up" mapping, a system that orients maps to face the same way the user is facing.

SIGNAGE AND WAYFINDING

Medallion Signage



Goals

- » Increase visibility and awareness of proximity to transit station
- » Display paths of travel to station and to local destinations; pulls people along the Metro Path
- » Increase legibility of the urban landscape
- » Help brand the Metro 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 Metro Path, approximately every 2 or 3 blocks

Metro Path Integration

- » Use colors and sign design that reflects the Metro Path brand and design
- » Carry the color of the medallion sign to the ground plane, linking with curb edge banding, so that the signs are easier to see
- » Closer to the station wrap poles with highly-visible stripes and/or Metro Path color palette so that the poles visually guide the active transportation user down the pathway to and from the station

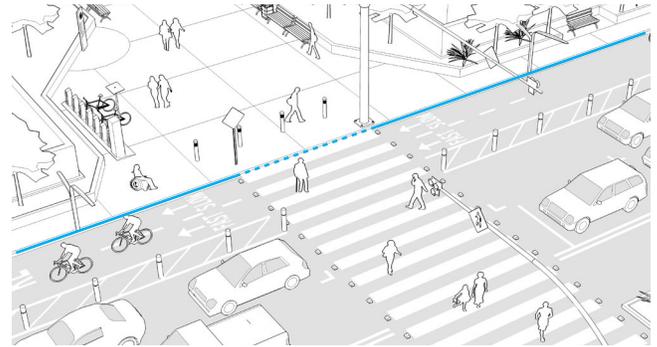
Station Access Barriers Addressed

- 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

Curb-Edge Banding



Goals

- » Increase visibility of the Metro Path along highly trafficked routes to indicate close proximity to transit station
- » Draw the active transportation user and eye along the Metro Path

Guidelines & Resources

- » Install banding (e.g. special paving) along curb edges within a 1/4 mile radius or immediately adjacent to the station to help identify the Metro Path
- » Apply this treatment to edges of sidewalks on major streets, or commercial or mixed-use districts
- » If not applied consistently along the entire length of the block, apply curb banding underneath / adjacent to Metro Path sign poles, pylon signage, and other path features so that they read as an ensemble
- » Expand curb-edge banding in strategic locations to highlight multi-modal transit areas (e.g. expand banding around bus boarding areas)

Metro Path Integration

- » Allow flexibility of materials and design within a defined Metro Path color palette and family of materials

Station Access Barriers Addressed

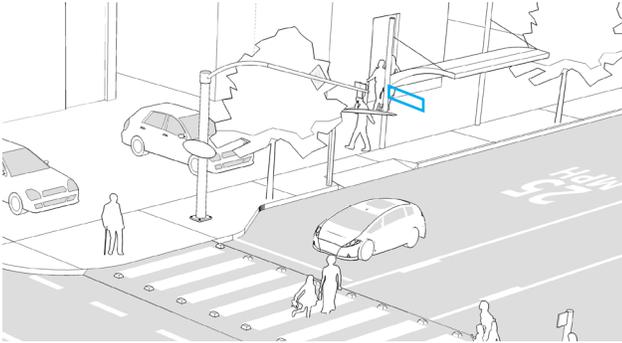
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

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

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

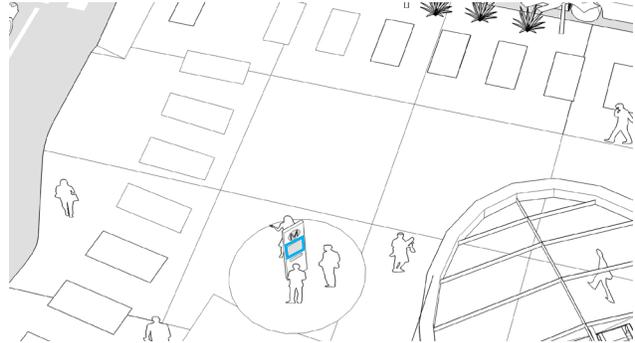
Guidelines & Resources

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

Metro Path Integration

- » Place notation on or adjacent to Metro Path medallion signage, using consistent Metro Path logo and design

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

Metro Path Integration

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

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

Metro Path Integration

- » Brand new smart technology as part of the Metro Path strategy (e.g. name, look, contents)

Station Access Barriers Addressed

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

Component Appropriate For Use On:

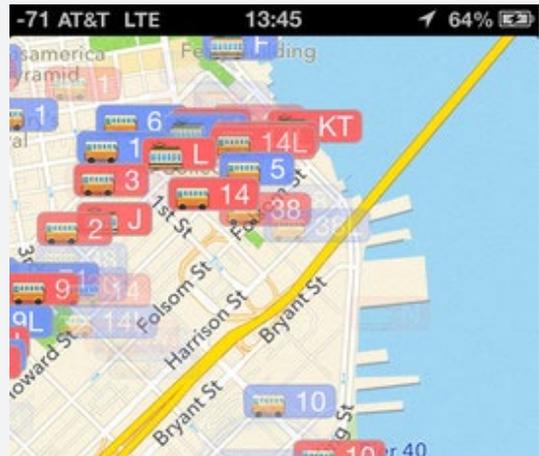
- Arterial 1
- Collector 1
- Arterial 2
- Collector 2
- Cut-Through

N/A

[Precedents] Smart Technologies⁵

SF Live Bus,⁶ Chicago Transit Authority App Center,⁷ Detroit Textmybus,⁸ Los Angeles Metro Nextrip⁹

Since 2008, cities and local governments have been utilizing smart technologies to enhance public transit experiences for city dwellers. Smart technologies increase reliability and understanding of local transit options and connections. SF Live Bus is an example dynamic smart phone app that displays real-time buses travelling along city corridors. With the ever-growing development of mobile geographical positioning systems, trip planning applications create the opportunity to expand the reach of transit. Chicago, Detroit, and London have also pushed smart technology application campaigns aimed at connecting users to varying transit modes. Refer to the resources located in the bibliography for additional examples.



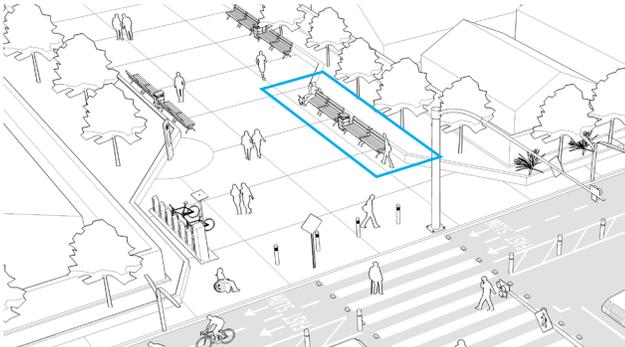
SF Live Bus App



Los Angeles Metro, Nextrip

DIGNITY AND DESIGN

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 Metro Paths
- » Install parking areas for bikes, scooters, and other active transportation mobility devices along Metro Paths, near destinations and front doors
- » Where feasible, use environmentally sustainable materials

Metro Path Integration

- » Street furniture may not be designed using Metro Path brand, rather may respond to the street furniture family already in place in that particular location

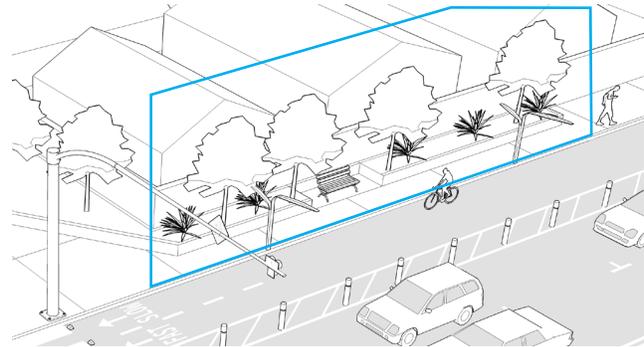
Station Access Barriers Addressed

- 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 sidewalks edges of Metro 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

Metro Path Integration

- » Landscaping along Paths may not be designed using Metro Path brand, rather may respond to the landscape identity already in place in that particular location

Station Access Barriers Addressed

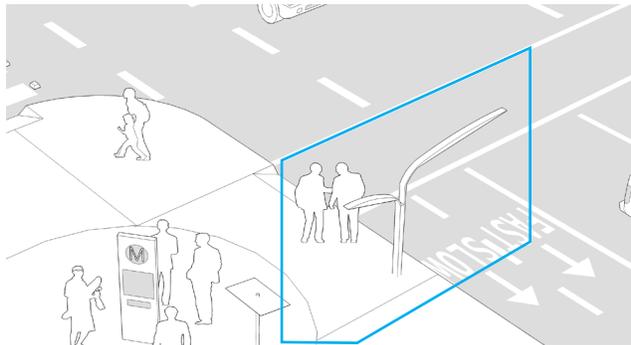
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

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

DIGNITY AND DESIGN

Lighting



Goals

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

Metro Path Integration

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

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.

DIGNITY AND DESIGN

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 Metro 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

Metro Path Integration

- » Incorporate Metro Path elements such as lighting, signage, and curb edge banding 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

Metro Path Integration

- » Use branded Metro Path signage at bus waiting areas

Station Access Barriers Addressed

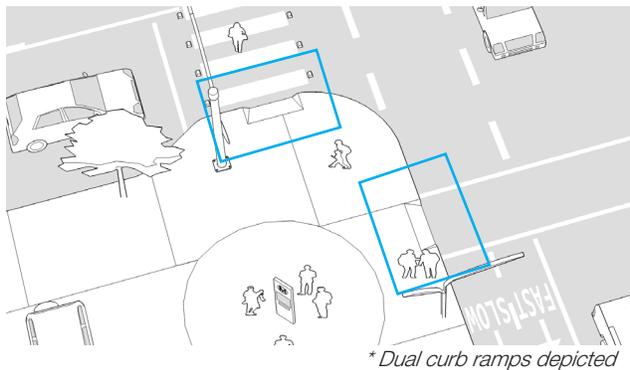
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

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

DIGNITY AND DESIGN

Universal Access



Goals

- » Provide access enhancements and cues for people with disabilities
- » Make it easier to get to the station and find the station for people in rolling/wheeled mobility devices, or who are using a cane, walker, wheelchair, etc.

Guidelines & Resources

- » Assure that the Path is free of barriers and intuitive to use
- » Chose paving and surface for the Path that are slip resistant, stable, and firm
- » Install dual curb ramps at crossings adjacent to stations and within the Extended Station Zone (two curb ramps at each corners instead of one ramp that serves both crossing directions)
- » Couple curb ramps with dedicated and well-marked crosswalks
- » Design curbs with pedestrian-friendly curb return radii
- » Install truncated dome tiles on curb ramps for tactile cues
- » Install auditory signals for crossings
- » Assure adequate walk time at crosswalks
- » Maintain existing accessible transportation equipment and infrastructure already in place

Metro Path Integration

- » Use Metro Path colors for tactile warning devices
- » Use appropriate color contrast and meaningful icons on Metro Path 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

[Precedents] Dignity and Design



Enhanced underpass, Glasgow



Enhanced underpass, England



Example of dual curb ramps



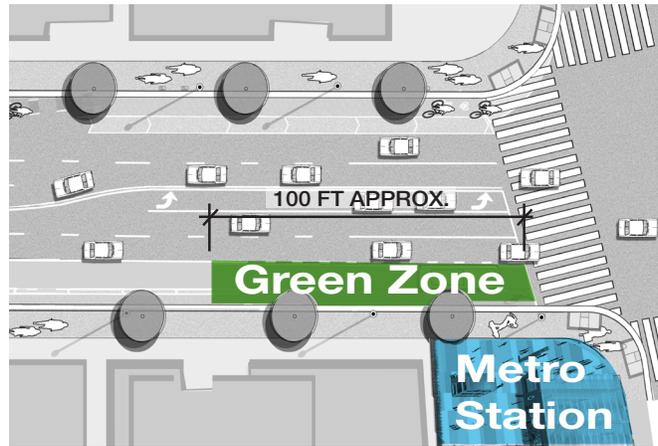
Example of bike parking near enhanced bus waiting area

RE-ALLOCATION OF THE STREETSPACE

SHIFTING THE BALANCE

A key component of this First / Last Mile Strategy is a shift in the balance of the street space from vehicular-dominated to one that is more focused on people / riders and welcoming to people using multiple modes. This can mean an expansion of the sidewalk area, the addition or enhancement of a dedicated active-transportation zone within the roadway, and/or a mixing of active transportation mobility devices into regular vehicular traffic. The desire is to provide more room in the street for active transportation. The desire is to provide more room in the street for active transportation. Immediately adjacent or nearby the station a “Green Zone” can be dedicated, which prioritizes access for green vehicles such as Neighborhood Electric Vehicles (NEVs), kiss and ride pick-up/drop-off, van pool waiting areas, and car share parking. The Green Zone brings active transportation front and center, giving priority in the street space to people choosing to use these sorts of mobility devices.

The “Green Zone”



Goals

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

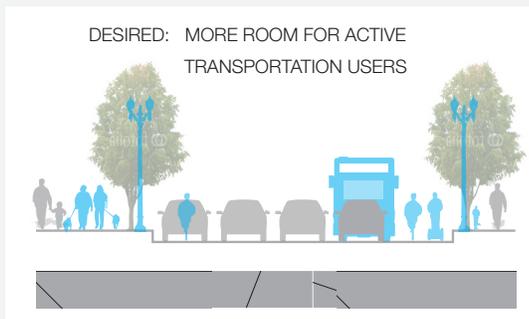
Guidelines & Resources

- » 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

Metro Path 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 Path

Shifting the Balance



MULTIPLE MODES WELCOME
 VEHICLES WELCOME

Station Access Barriers Addressed

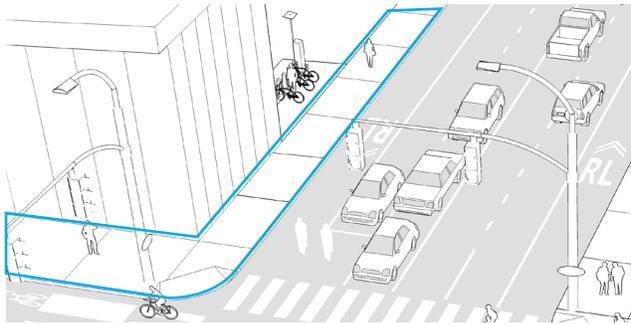
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

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

RE-ALLOCATION OF THE 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 sidewalk, 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 on the sidewalk
- » Where space permits, introduce parklets in underutilized right of way

Metro Path Integration

- » Add curb edge banding along the edge of the extended sidewalk

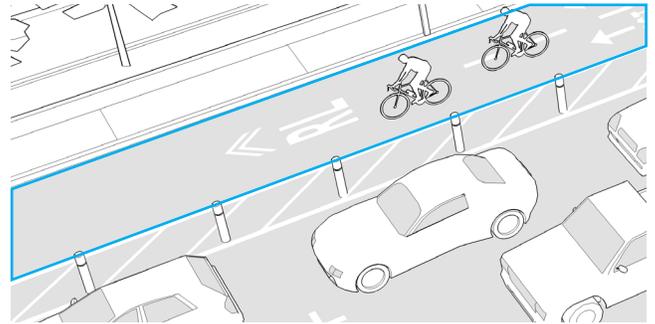
Station Access Barriers Addressed

- 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

Metro Path Integration

- » At conflict zones, apply paint on street using Metro Path color palette and look

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

RE-ALLOCATION OF THE 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 €21 million 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.

RE-ALLOCATION OF THE 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, pictured below.



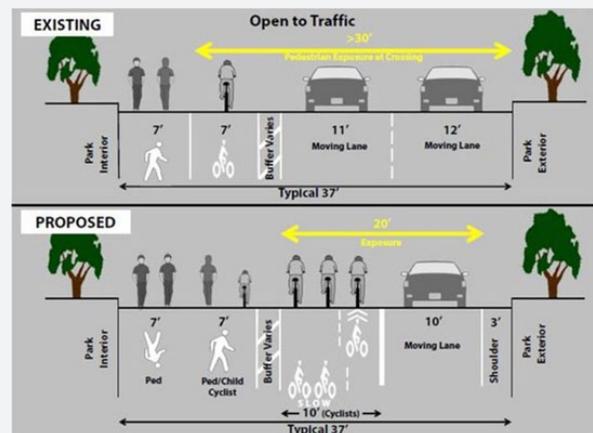
Portland, Oregon's Passing Lanes



Chicago, IL Passing Lanes



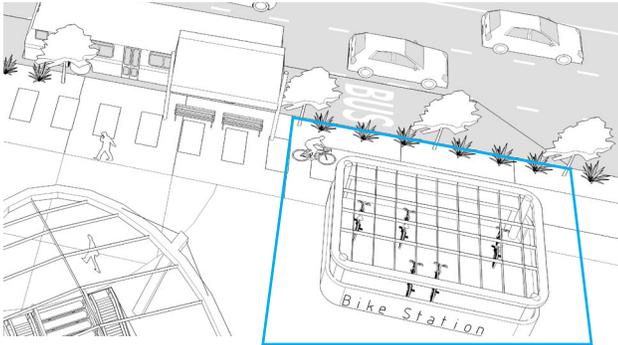
Skate/Bike Lane at San Diego State University



Proposed Configuration of Prospect Park Loop, Park Slope, Brooklyn

INTEGRATED TRANSIT ACCESS SOLUTIONS

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

Metro Path Integration

- » Use Metro Path 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, France¹⁵

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 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.



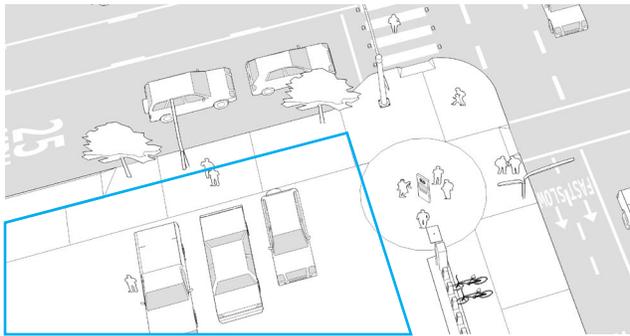
Paris Velib Bike Share



New York City Citibike Share

INTEGRATED TRANSIT ACCESS SOLUTIONS

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

Metro Path Integration

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

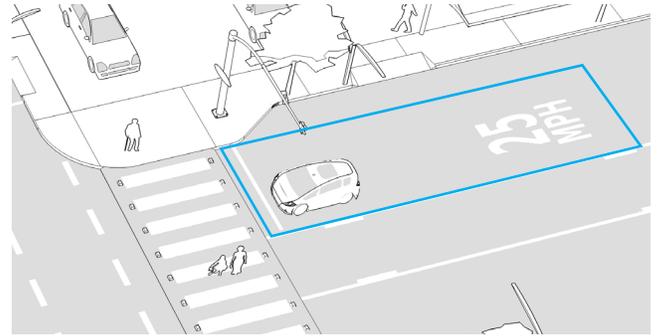
Station Access Barriers Addressed

- 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

Metro Path Integration

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

Station Access Barriers Addressed

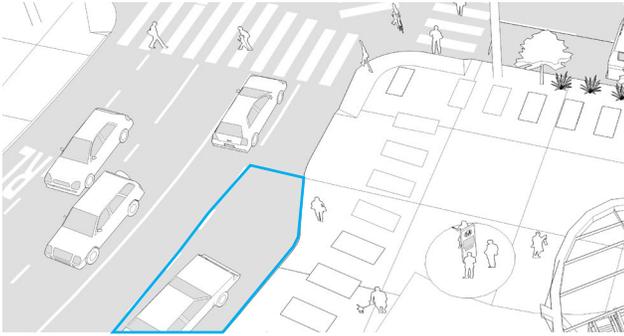
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

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

INTEGRATED TRANSIT ACCESS SOLUTIONS

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

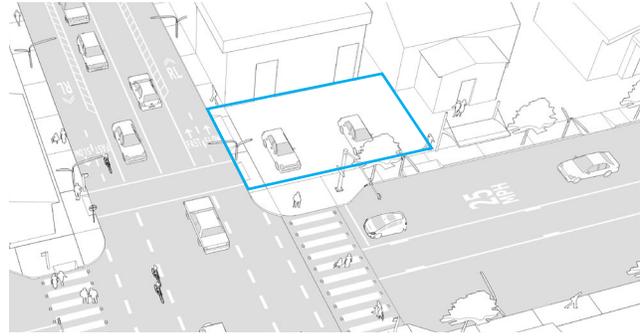
Guidelines & Resources

- » 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

Metro Path Integration

- » Use Metro Path 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

Metro Path Integration

- » Use Metro Path 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

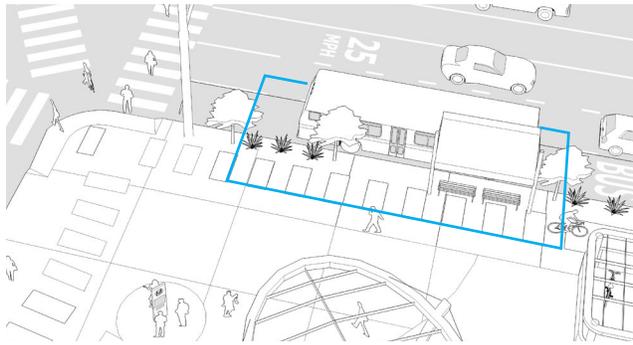
- Long Blocks
- Freeways
- Maintenance
- Safety and Security
- Legibility
- ROW Allocation and Design

Component Appropriate For Use On:

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

INTEGRATED TRANSIT ACCESS SOLUTIONS

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 Metro Path signage
- » Resource: See Emery Go-Round or LA DASH

Metro Path Integration

- » Use Metro Path 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



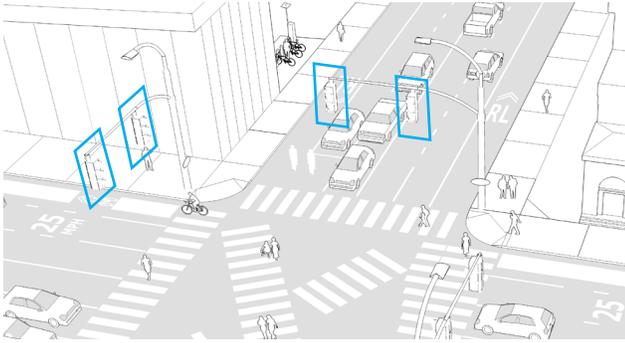
Curbside electric Vehicle charging station, Portland, OR



Feeder Bus: Emery Go-Round, Emeryville, CA

TRAFFIC CALMING

Signal Modifications



Goals

- » Slow vehicular speeds within transit zones
- » Give crossing priorities to pedestrians and active transportation users
- » Time lights 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 Metro 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

Metro Path Integration

- » N/A

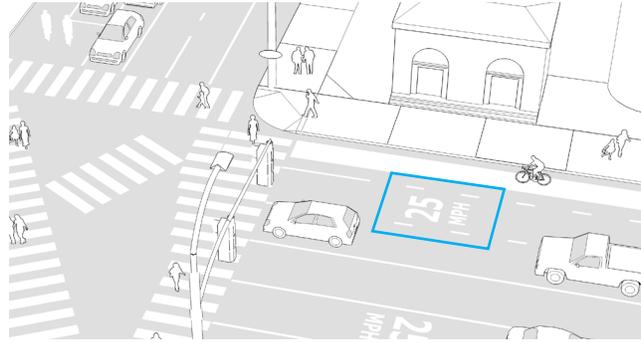
Station Access Barriers Addressed

- 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

Other Traffic Calming



Goals

- » Decrease speeds along heavily trafficked streets to protect multi-modal users on Metro Paths
- » Reduce collisions and conflicts between modes
- » Increase awareness of transit stations
- » Begin to establish safe 'transit-zones' around Metro transit areas

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

Metro Path 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

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/rfcdgb/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
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- » 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
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- » 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>

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- » 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

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- » 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

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- » 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>

- » 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/>

End Notes

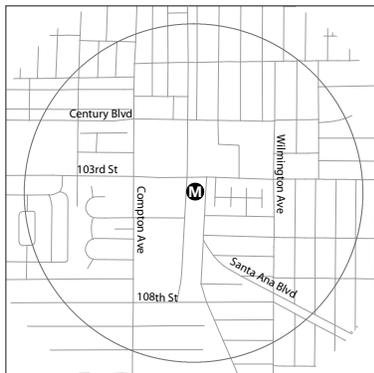
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5 CASE STUDIES

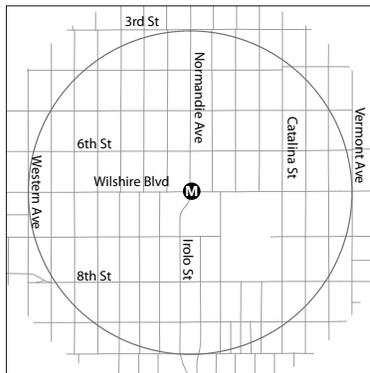
★ This section applies the Path Network concept to three case study sites, Wilshire/Normandie (Metro Purple Line), North Hollywood (Metro Red Line / Orange Line), and 103rd/Watts (Metro Blue Line). The intent of this section is to explain from a planning perspective, how Path networks can be developed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

The Case Study Sites

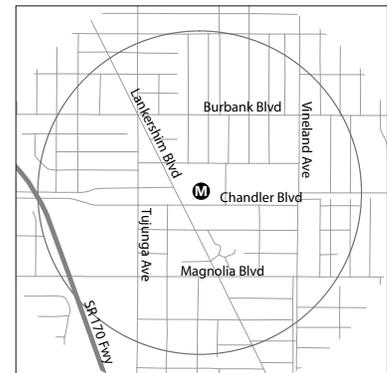
The 103rd/Watts station area is characterized by low- to mid- residential density, wide arterials, and long blocks, with minimal pedestrian or multi-modal amenities. The Watts Towers is located within walking distance from the station. There are a substantial amount of modal-transfers in the station 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 Metro Path

The case study location, 103rd Place and Wilmington Avenue, is located mid-block on a wide arterial. The Metro 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 Metro Path can grow and change over time.



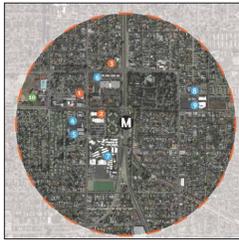
Wide arterials prioritize the vehicle



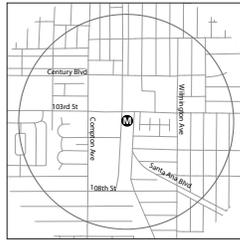
Park and Ride Station is underutilized



Narrow sidewalks with few pedestrian amenities



Points of Interest



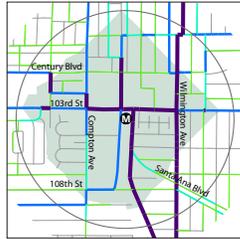
Street Grid



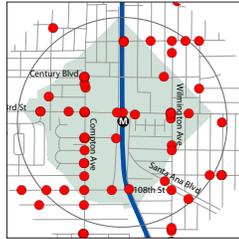
Pedestrian Shed



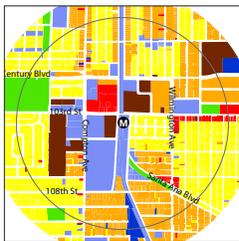
High Vehicular Speeds



Key Transit Access Corridors



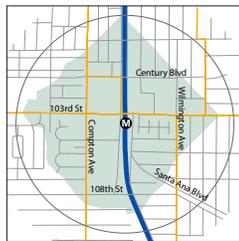
Collision Severity and Location



Land Use Map



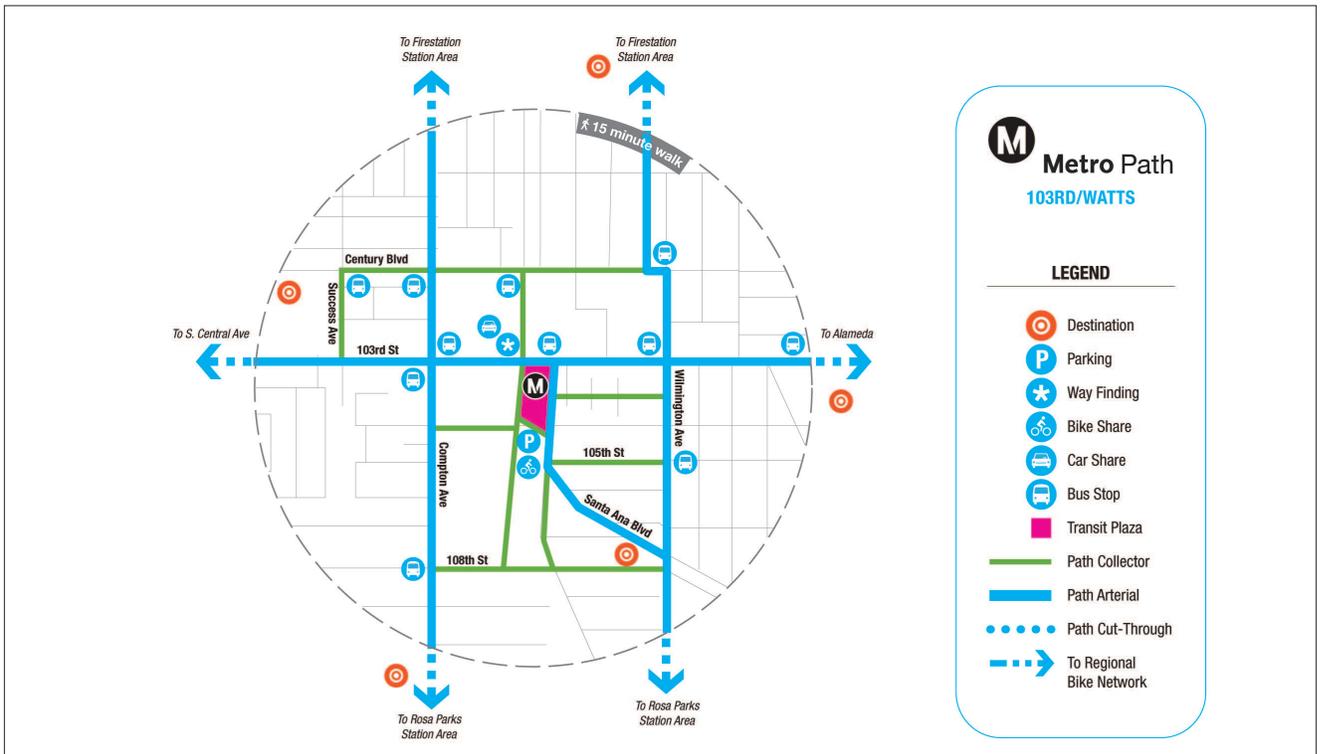
Bicycle Connections



Transit Connections

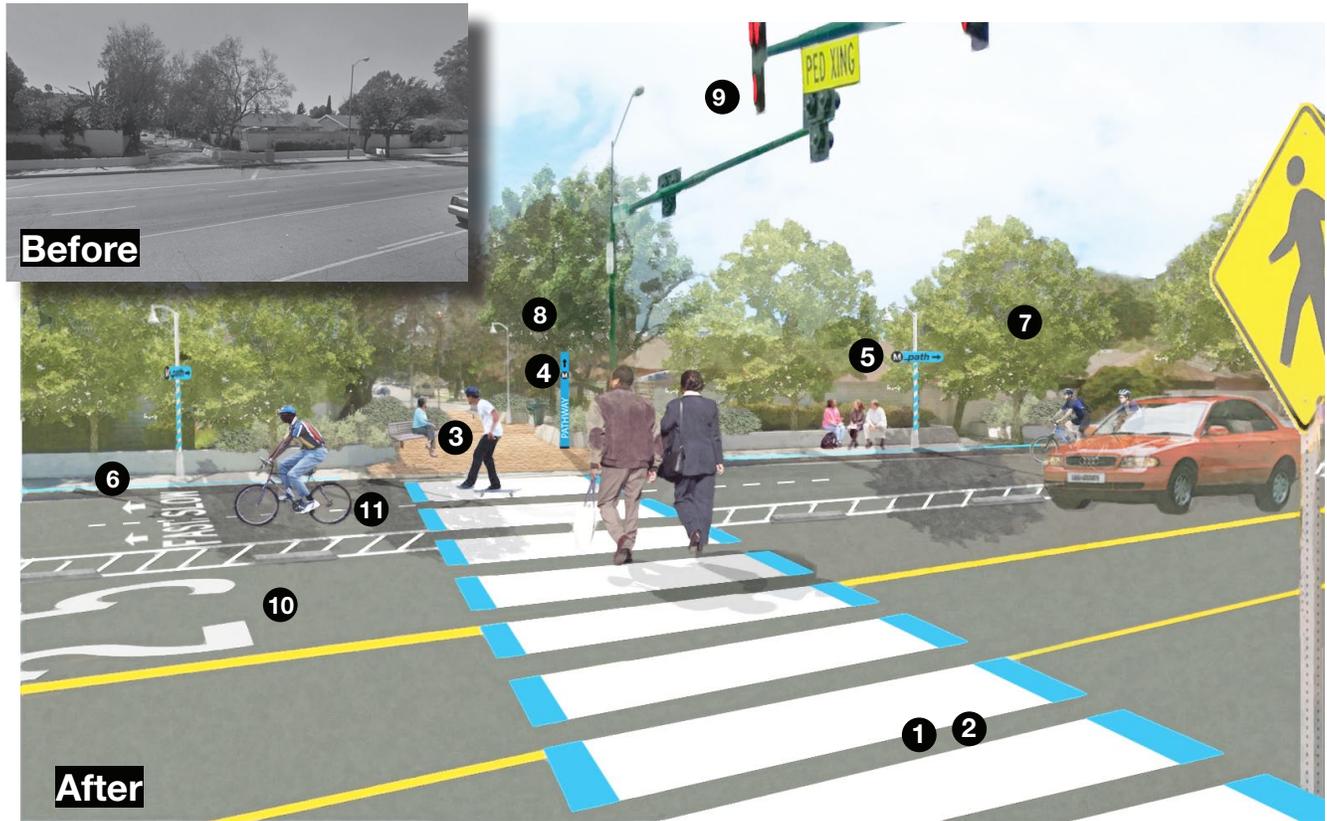
103rd/Watts Station Network Design

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 half been proposed along Compton Ave and Wilmington Ave. An additional Arterial is proposed connecting 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 Pylon signage
- 5 Medallion signage
- 6 Curb-edge banding

Dignity and Design

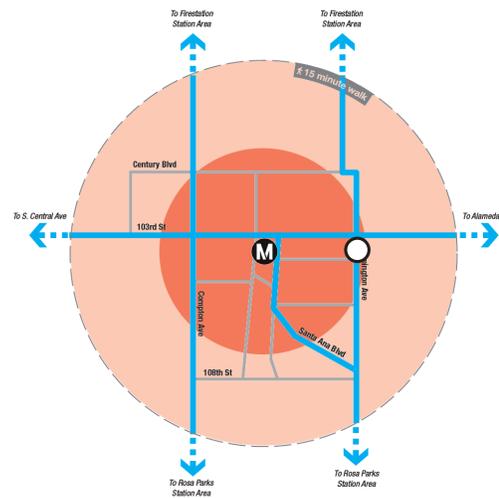
- 7 Landscaping / Shade
- 8 Lighting

Re-allocation of the Streetspace

- 11 Rolling Lane (Buffered)

Traffic Calming

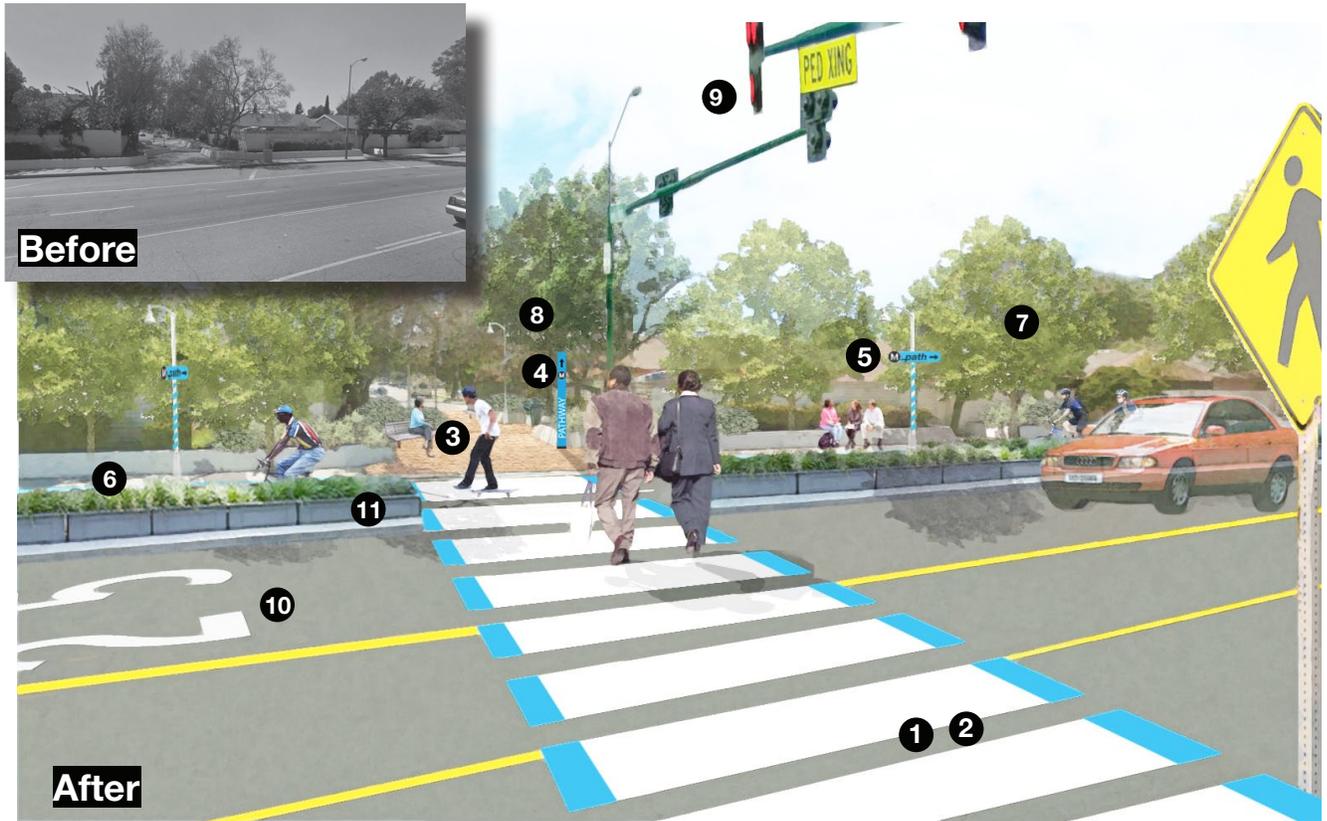
- 9 Signal modification
- 10 Traffic calming



- 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 Pylon signage
- 5 Medallion signage
- 6 Curb-edge banding

Dignity and Design

- 7 Landscaping / Shade
- 8 Lighting

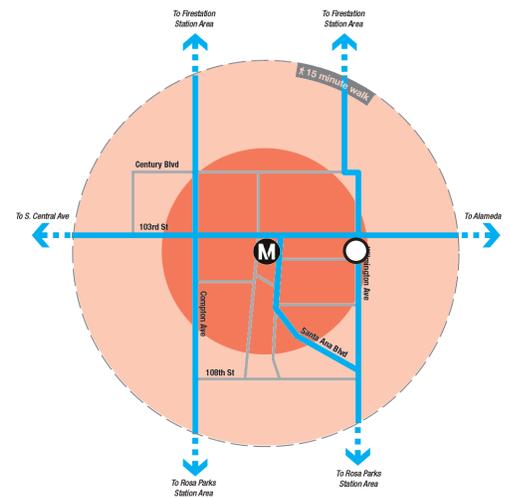
Re-allocation of the Streetspace

- 11 Rolling Lane (vertical separation)

Traffic Calming

- 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 Metro Path Components

Two case study sites are presented at Wilshire/Normandie. Location 1 is immediately adjacent to the

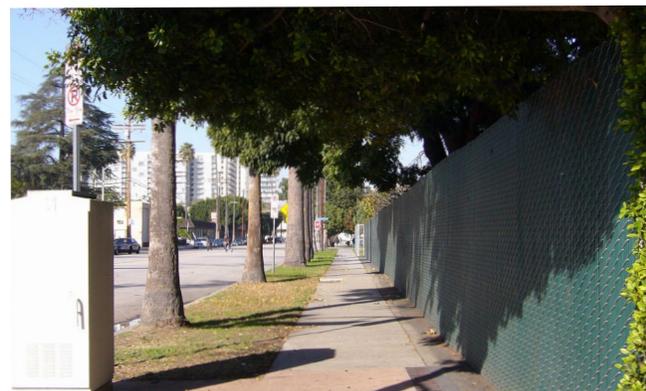
station on the southeast corner of Wilshire Boulevard and Normandie Avenue. Location 2 is farther from the station at 8th Street and Fedora Street.

Location 1 shows how transit infrastructure can be retrofitted to include Metro 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 Metro 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 Metro Path components are appropriate for the Extended Station Zone, Area 1.

Location 2 includes prominent Metro 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.



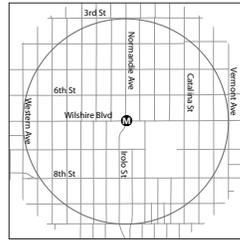
Lack of bicycle facilities



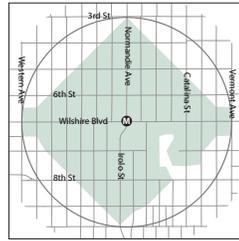
Narrow sidewalks



Points of Interest



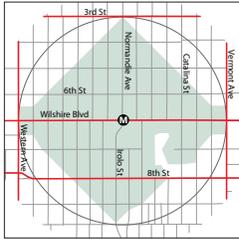
Street Grid



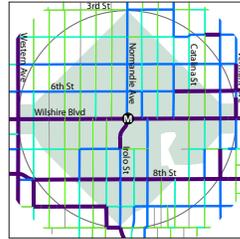
Pedestrian Shed

Wilshire/Normandie Station Network Design

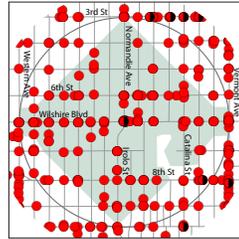
Utilizing the approach outlined in Chapter 3 of these guidelines, a Path network design was developed for the Wilshire / Normandie Station Area. The Metro Red Line runs east – west along this corridor underground, thus it is beneficial to run a Path Arterial north – south along Normandie. To the south, 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. 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.



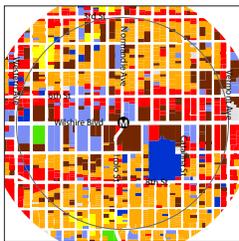
High Vehicular Speeds



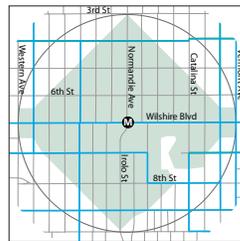
Key Transit Access Corridors



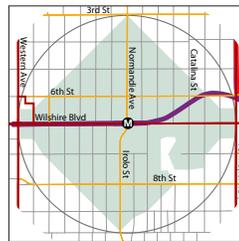
Collision Severity and Location



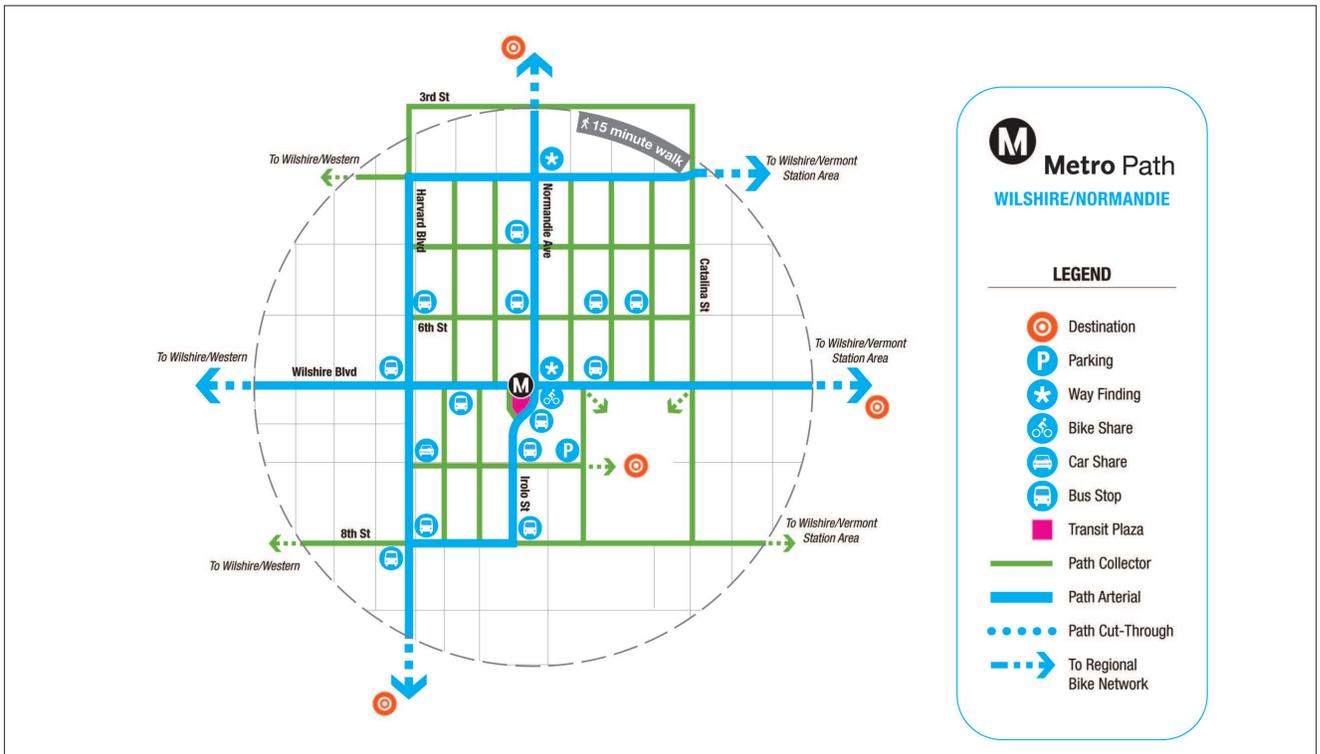
Land Use Map



Bicyc;e Connections

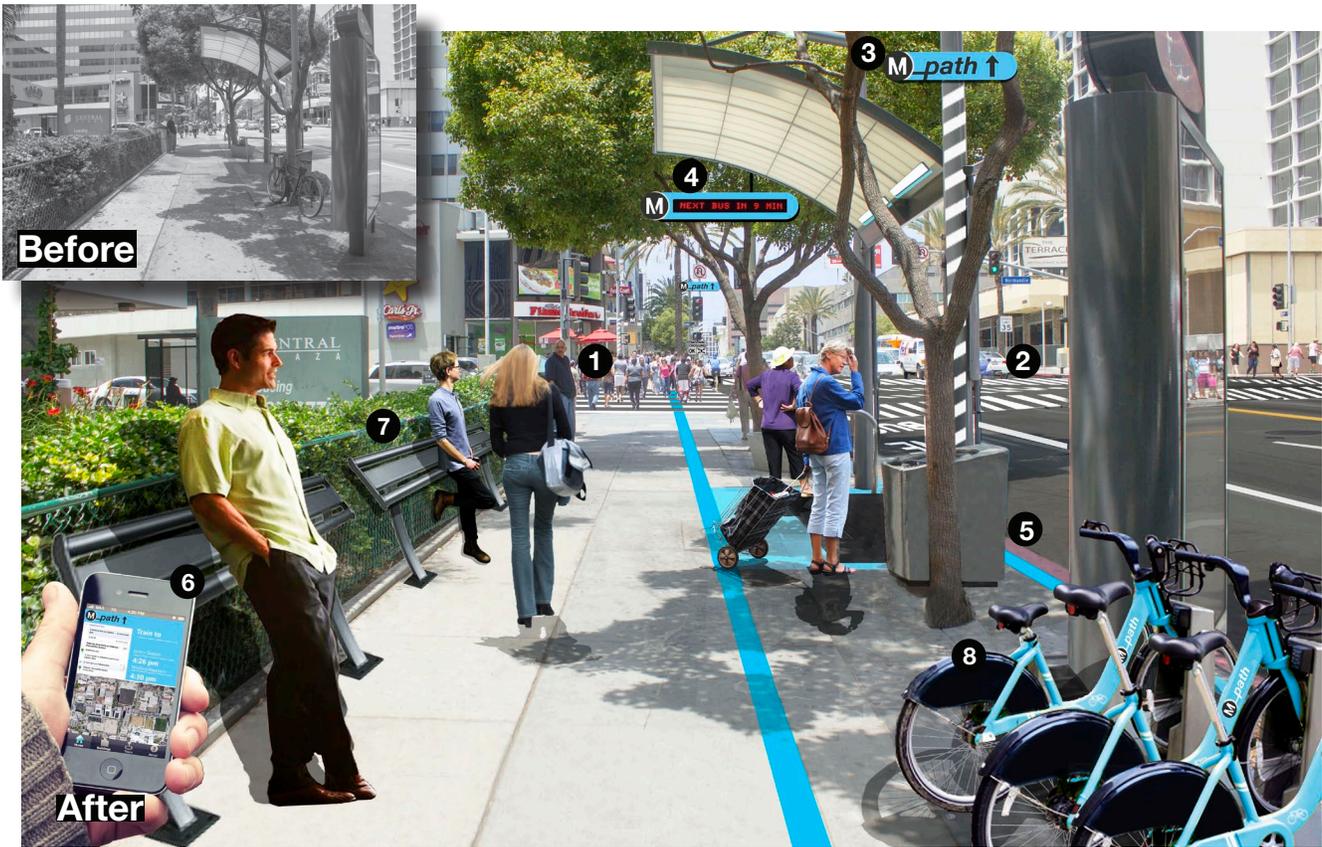


Transit Connections



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

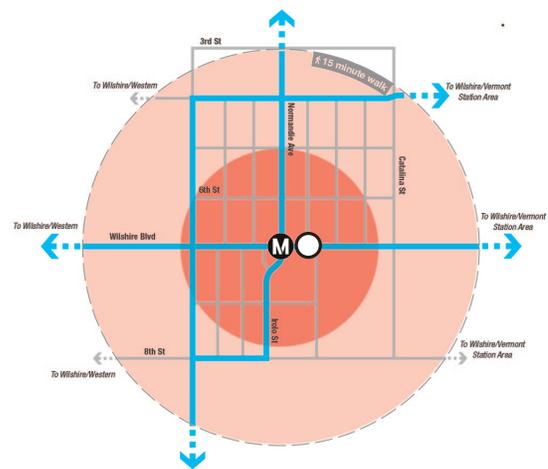
- 3 Medallion signage
- 4 Real-time signage, next train/bus
- 5 Curb-edge banding
- 6 Smart technologies

Dignity and Design

- 7 Street furniture

Integrated Transit Access Solutions

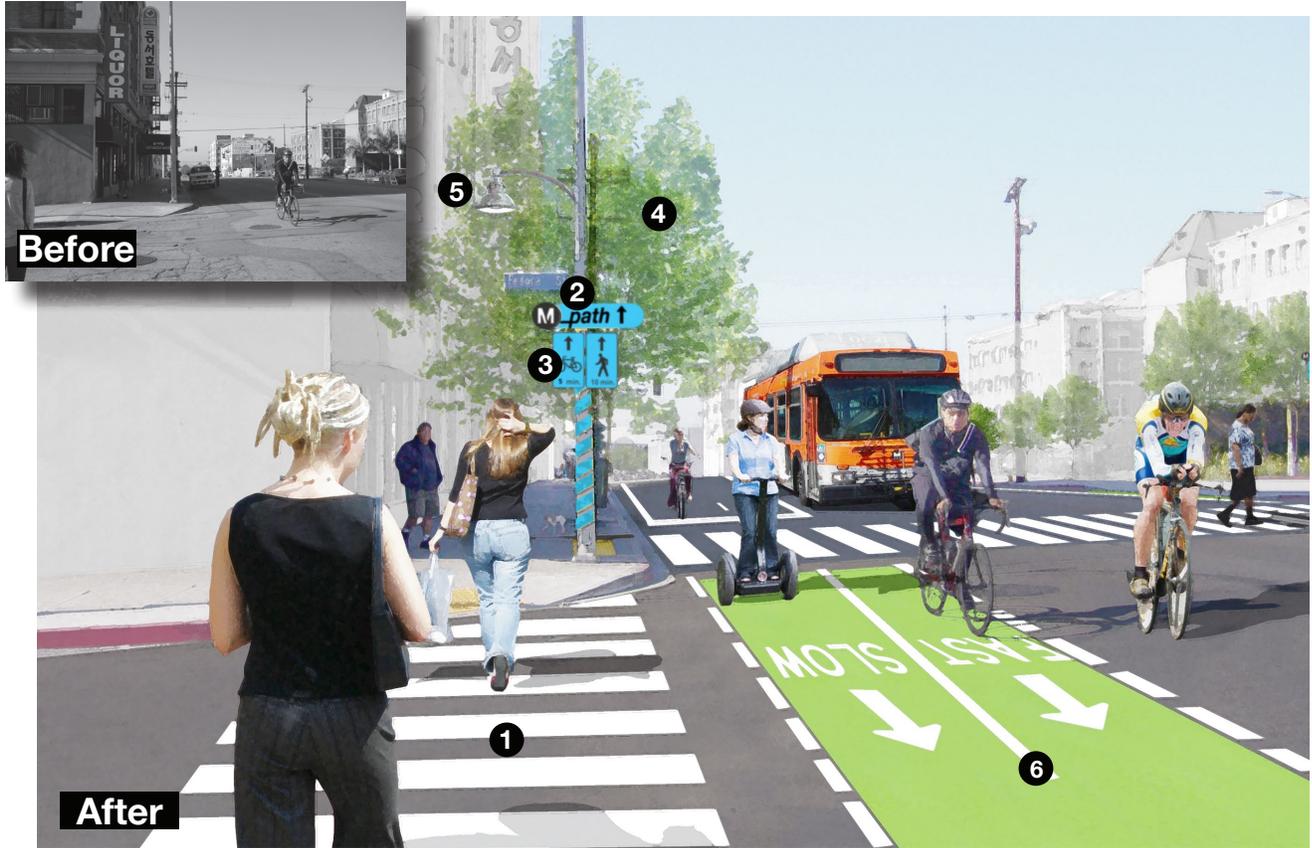
- 8 Bike Share



- M** Metro Station Location
- O** 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

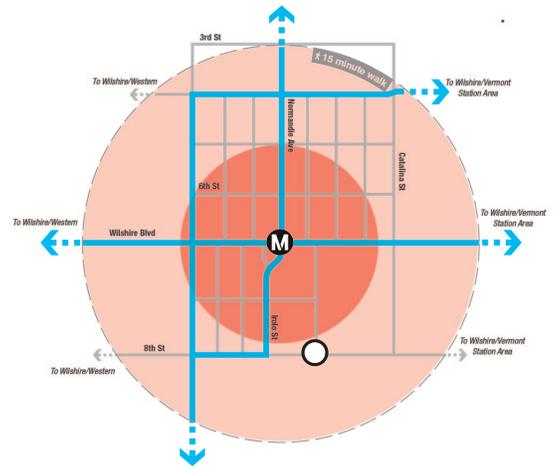
- 2 Medallion signage
- 3 Time-to-station notation

Dignity and Design

- 4 Landscaping / Shade
- 5 Lighting

Re-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.

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.

Overview of Metro 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 Metro Path Collector and a Metro Path Arterial. Location 3 depicts the Metro Path in an underpass condition at Magnolia Avenue and Location 4 includes a Metro Path shortcut at NoHo Park, also along Magnolia.



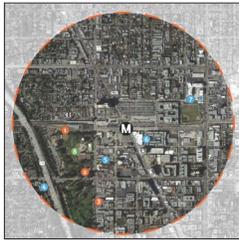
No cut through / direct access to station from adjacent neighborhoods



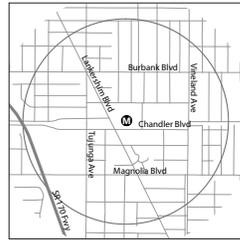
Lack of crossings along superblocks and bike facility without special markings or enhancements



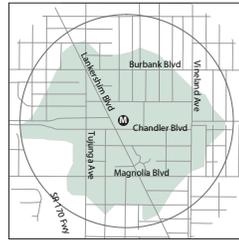
No station signage or directional cues



Points of Interest



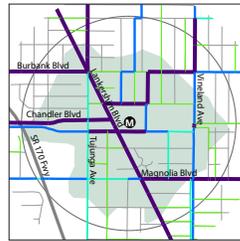
Street Grid



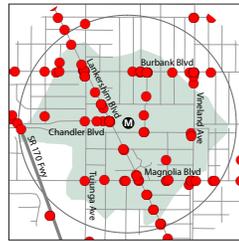
Pedestrian Shed



High Vehicular Speeds



Key Transit Access Corridors



Collision Severity and Location



Land Use Map



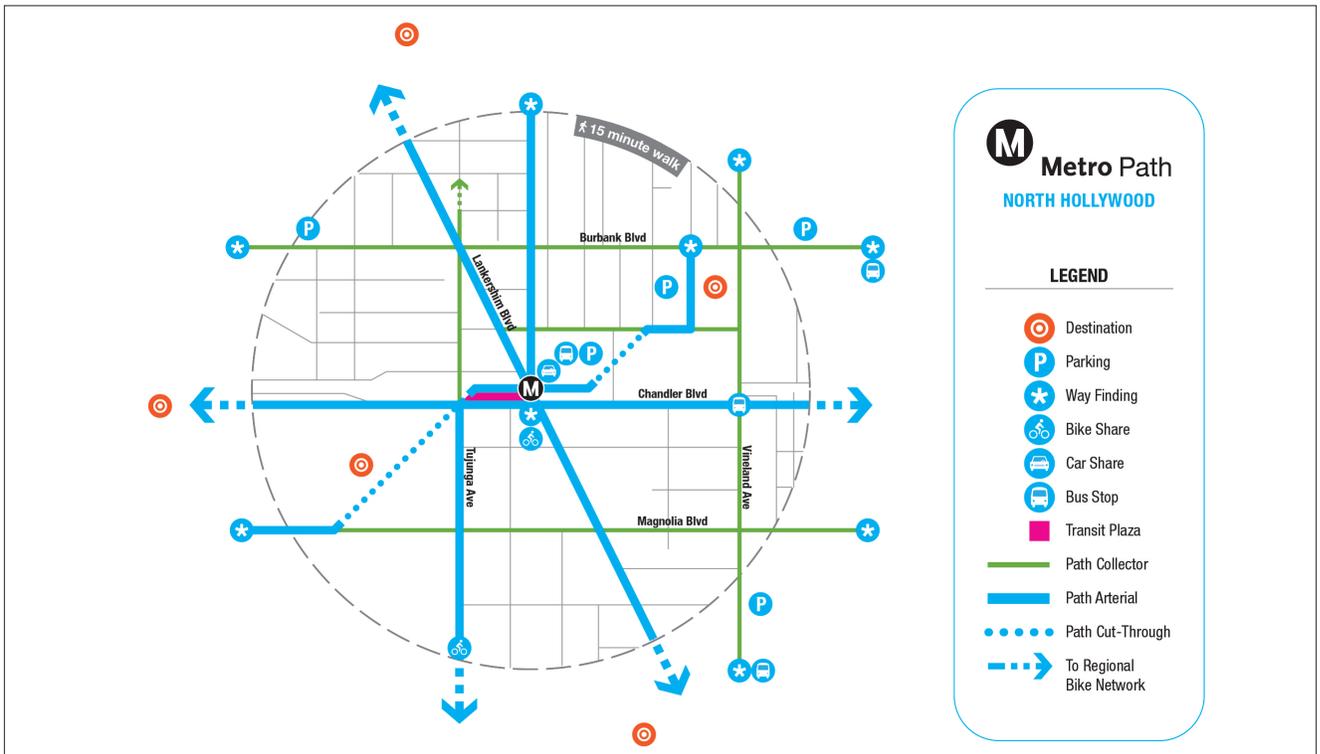
Bicycle Connections



Transit Connections

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.



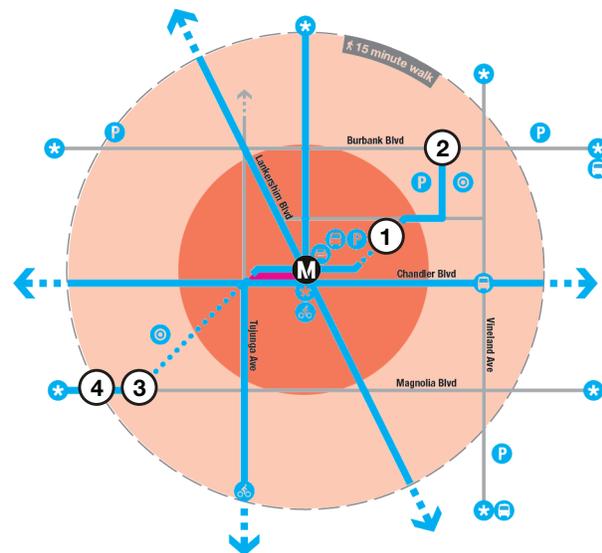
Location 1 is the closest to the station itself and illustrates how an existing park-and-ride lot can be made more friendly to active transportation users, with the addition of pedestrian and active transportation cut-throughs that allow people to come in to the facility at multiple entrances, whereas 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. Metro 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 Metro 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 Metro 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 un-signed. The Metro 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

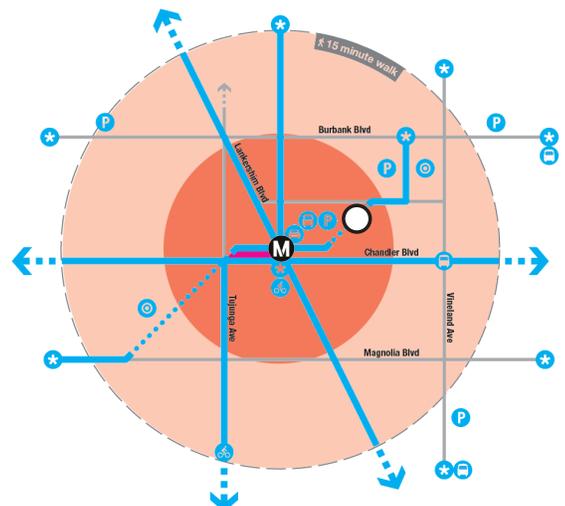
- 1 Continental crosswalks
- 2 Mid-block and additional crossings
- 3 Cut-throughs (multi-modal pathways through existing parking lot)

Dignity and Design

- 4 Landscaping / Shade
- 5 Lighting

Re-allocation of the Streetspace

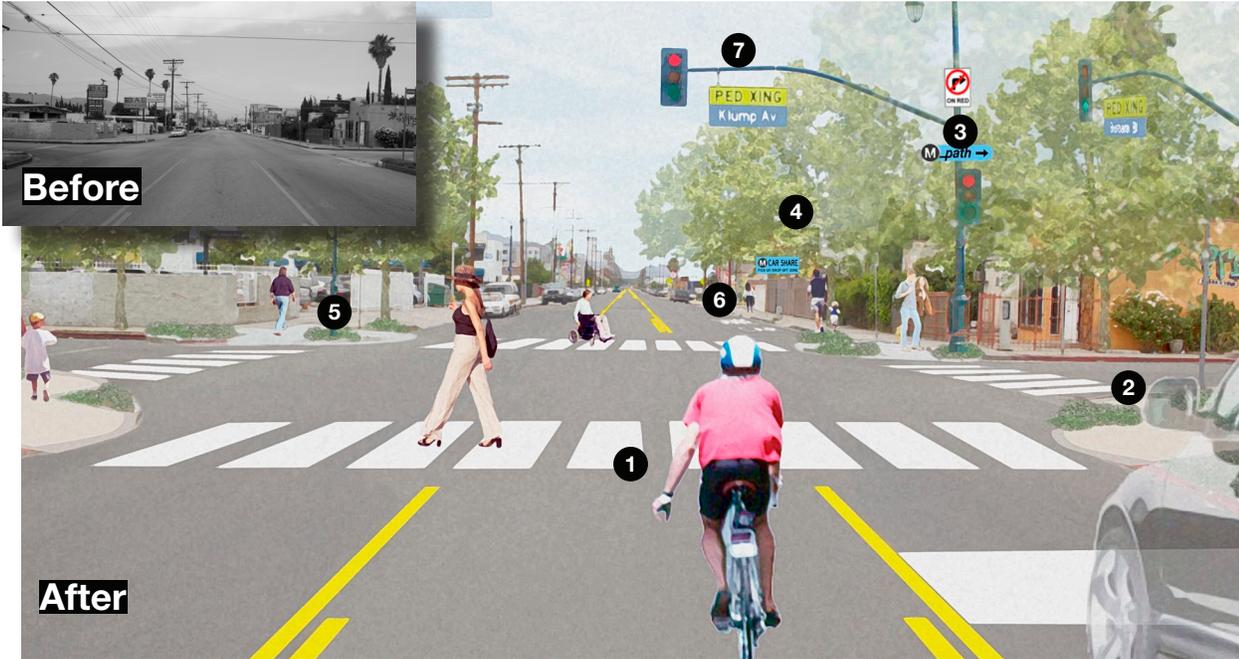
- 6 Sidewalk widening (through parking lot)



- 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

Dignity and Design

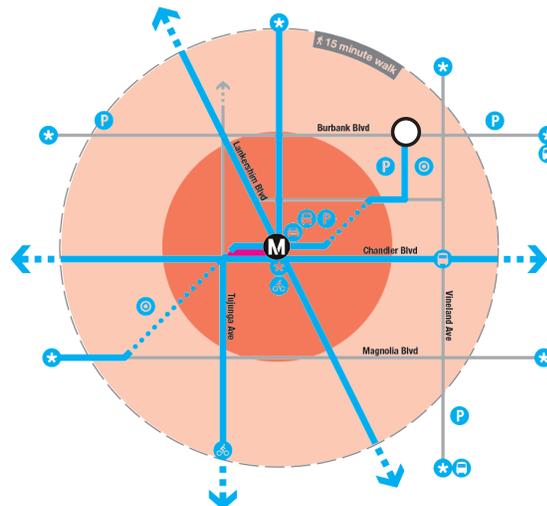
- 4 Landscaping / Shade
- 5 Dual curb ramps

Integrated Transit Access Solutions

- 6 Car share

Traffic Calming

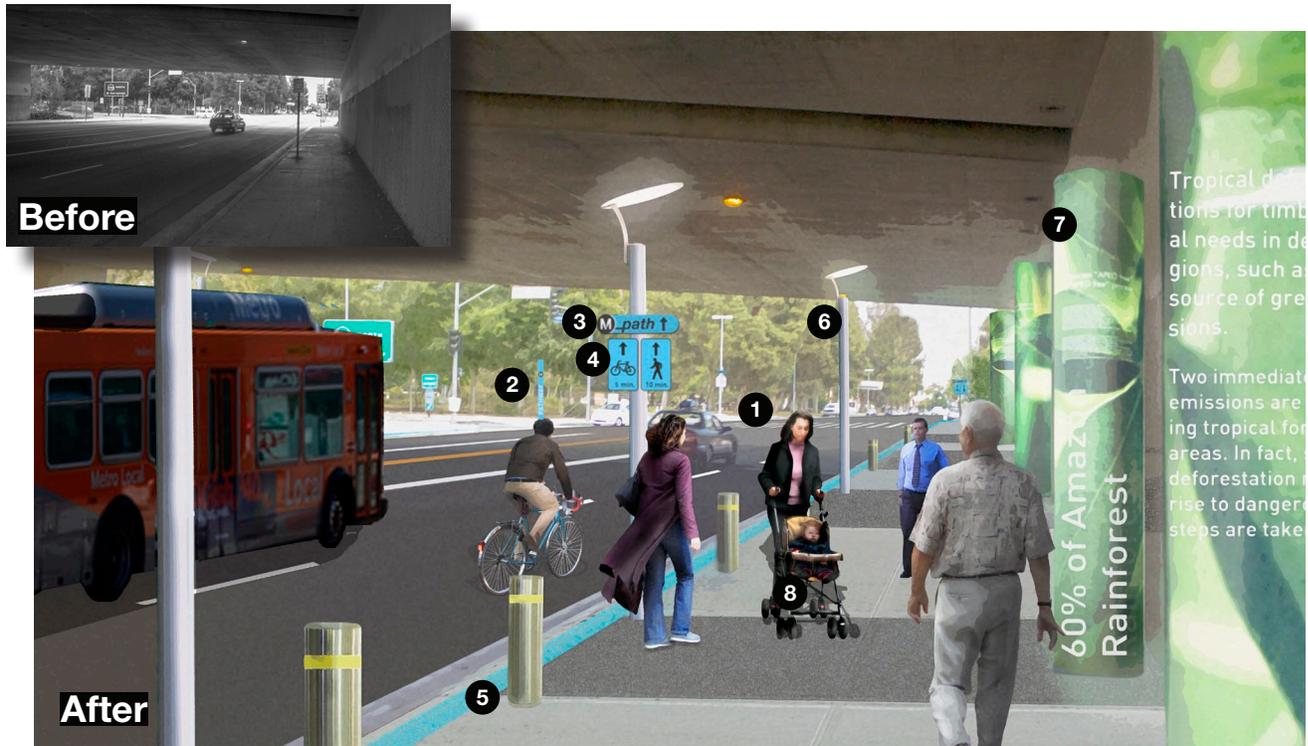
- 7 Signal modification



- 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

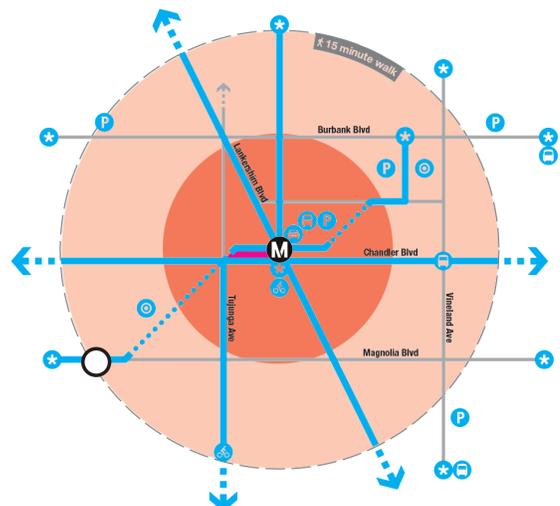
- 2 Pylon signage
- 3 Medallion signage
- 4 Time to station notation
- 5 Curb-edge banding

Dignity and Design

- 6 Lighting
- 7 Enhanced freeway underpass

Re-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



Components Used at Case Study Site

Crossings and Connections

- 1 Continental crosswalks
- 2 Cut-through and shortcuts

Signage and Wayfinding

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

Dignity and Design

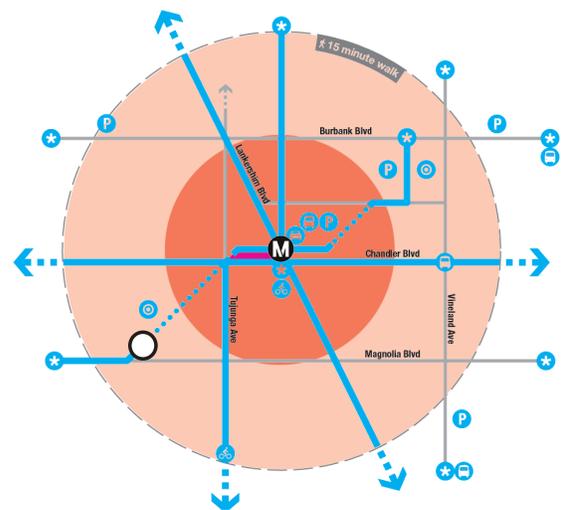
- 6 Street furniture
- 7 Landscaping
- 8 Lighting

Re-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