

Metro First/Last Mile Training Workshop

Collaboration in Diverse Settings

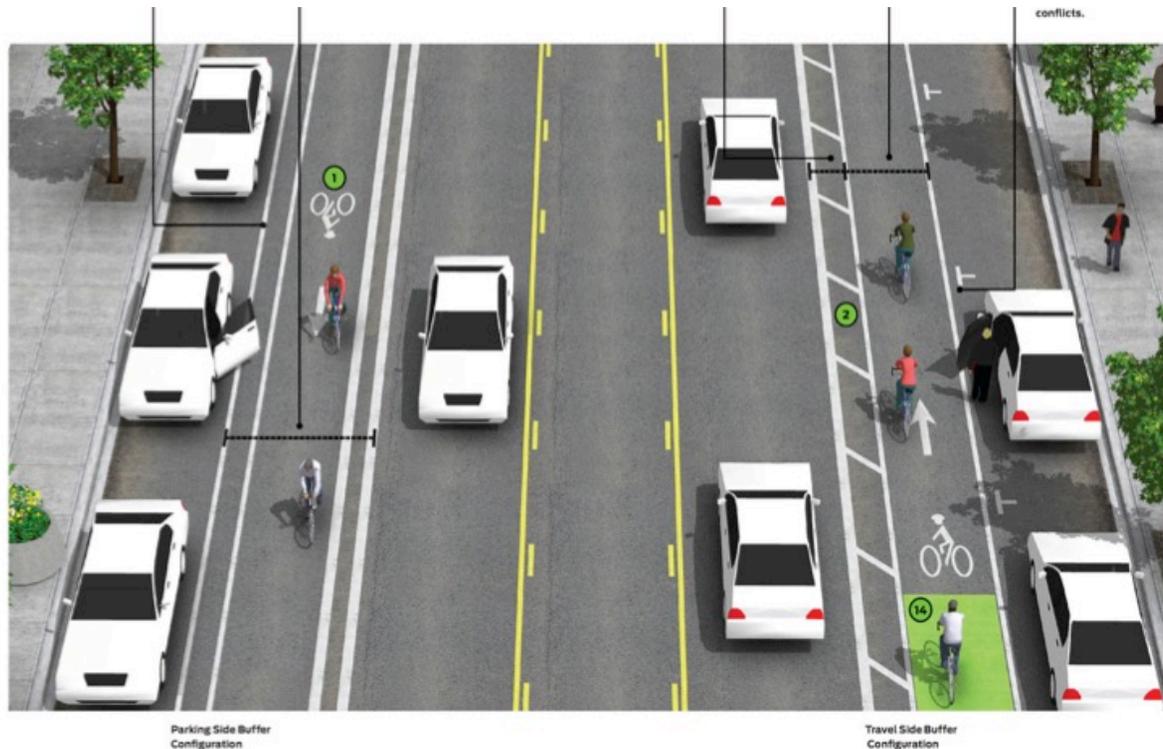
April 10, 2018 – Part B



Workshop Agenda



PHASE 2A: Review Pathway Toolbox Improvements and Case Studies



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First/Last Mile Pathway Toolbox



- **CROSSINGS AND CONNECTIONS:** Pedestrians, Cyclists, Disabled
- **SIGNAGE AND WAYFINDING:** Convenience, Legibility
- **SAFETY AND COMFORT:** Personal/Traffic Safety, Lighting, Traffic Calming, Sidewalk Paving
- **PLUG-IN COMPONENTS:** Bike Share/Station, Car Share, Van Pool, Kiss n' Ride
- **ACCESSIBILITY:** Elderly, Disabled Access
- **AESTHETICS:** Attractiveness, Comfort, Visual Interest
- **ALLOCATION OF STREET SPACE AND PARKING:** Cyclist/Sidewalk/Vehicle

Crossings and Connections



High Visibility Crosswalks – does your city use these?



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Crossings and Connections



Mid-Block Crossings and Pedestrian Safety Islands



Have these added to pedestrian safety in your cities?

Crossings and Connections

Pedestrian Scramble Crosswalks – evidence of success in your city?



Crossings and Connections



Corner Curb Extensions

Are curb extensions successful in both residential and commercial districts?



Signage and Wayfinding

Directional Signage



Signage and Wayfinding

Metro Rail Signage and Maps



Safety & Comfort

Enhanced Bus Waiting Areas



Safety & Comfort



Seating, Landscaping & Shade



Safety & Comfort



Pedestrian-scale Lighting



Safety & Comfort



Street Furniture - Seating & Outdoor Dining



Safety & Comfort



Traffic Calming - Raised Mid-Block Crossing



Safety & Comfort



Traffic
Calming

Speed
Table

Market St,
Inglewood



Safety & Comfort

Sidewalk Paving & Surface Enhancements



Allocation of Streetspace



Landscaped Parkways and Medians



Bicycle Improvements



Buffered Bike Lanes with Door Zone Buffer



18" Min. /
3' Preferred

5' Min. / 7'
Preferred

Door Zone
Buffer



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Bicycle Improvements



Buffered
Bike
Lanes



Bicycle Improvements



Protected Bicycle Lane/ Cycle Track with bollards and median separation



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Bicycle Improvements: Protected Lanes

Protected
Bike Lanes/
Cycle Tracks

Class IV
Bikeway



Slow Lane and Bike Lanes



Fast Bicycle Lanes and Slow Rolling Lane for a variety of users



Bicycle Improvements



Pedestrian/Cyclist Esplanades



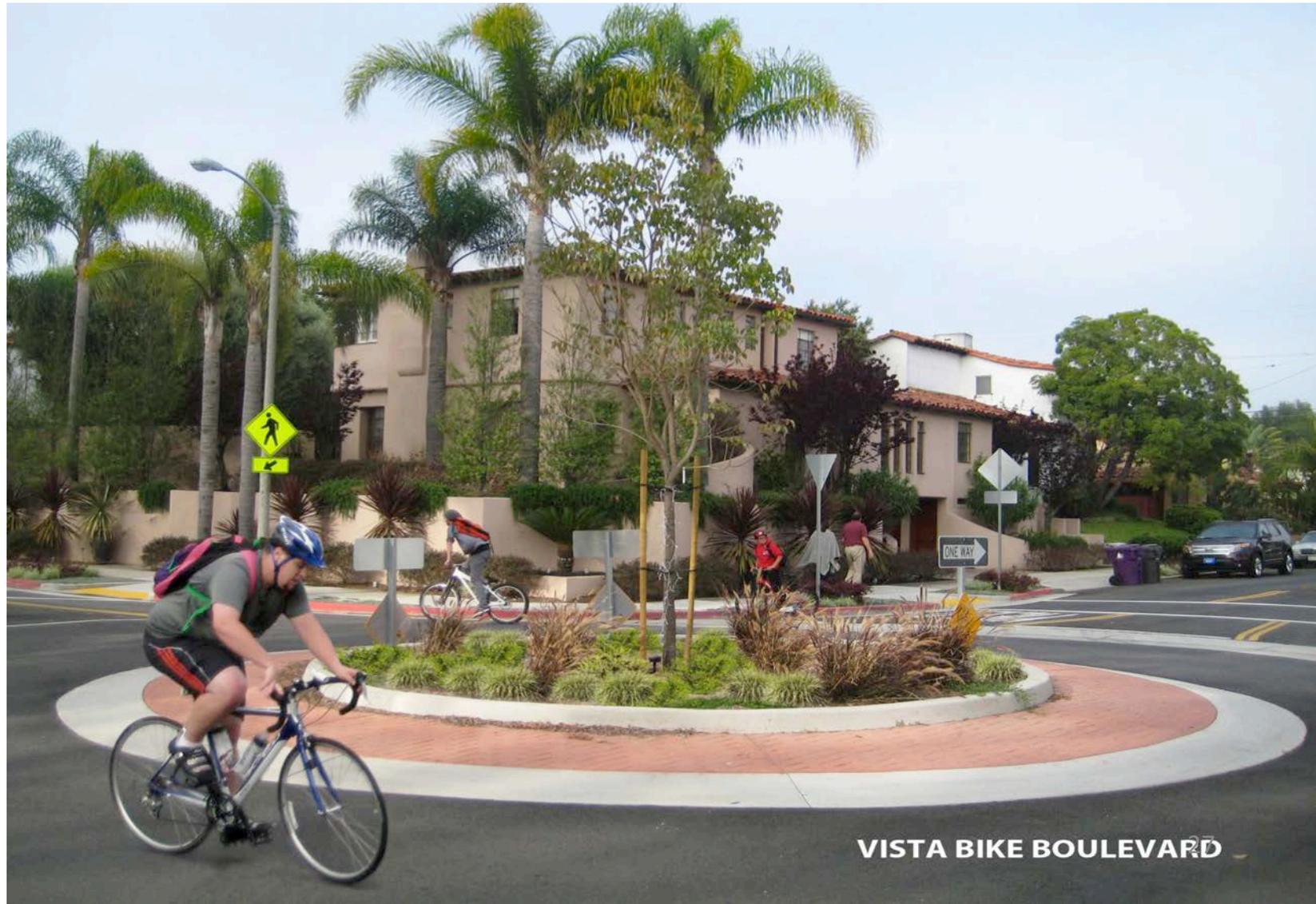
Bicycle Improvements: Signalization

Intersection Bicycle Signalization



Bicycle Improvements: Roundabouts

Traffic Circles slow auto traffic to provide safer streets for walking and cycling



Bicycle Improvements: Limited Access

Limiting auto access to provide traffic calmed bicycle and walking routes.



Yucca Street, Los Angeles
Class III Enhanced – Bicycle Boulevard w/
Physical Traffic Calming

Bicycle Improvements: Bike Racks

Bicycle Parking

- Convenient
- Secure
- Allow U lock through tires and frame



Secure Bicycle Parking



Bicycle Lockers at
Downtown
Azusa Station



Secure Bicycle Parking



Bike Center in Downtown Santa Monica: 400 bikes in 27 car spaces, lockers, showers, bike repair and bike rental



Bicycle Improvements: Repair



Bicycle Repair Stations



Bicycle Improvements: Bike Share

Bike Share



Neighborhood Electric Vehicles



Corporate Campuses



Local Trips



Local Trips: Businesses



NACTO Design Guidelines

Design Guidance

Buffered Bike Lanes

Required Features

1 Bicycle lane word and/or symbol and arrow markings (MUTCD Figure 9C-3) shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists.⁹

2 The buffer shall be marked with 2 solid white lines, with diagonal hatching if 3 feet in width or wider. White lines on both edges of the buffer space indicate lanes where crossing is discouraged, though not prohibited. For clarity, consider dashing the buffer boundary where cars are expected to cross at driveways.¹⁰

3 The buffer area shall have interior diagonal cross hatching or chevron markings if 3 feet in width or wider.¹¹

Recommended Features

4 If used, interior diagonal cross hatching should consist of 4 inch lines angled at 30 to 45 degrees and striped at intervals of 10 to 40 feet. Increased striping frequency may increase motorist compliance.¹²

5 The combined width of the buffer(s) and bike lane should be considered "bike lane width" with respect to guidance given in other documents that don't recognize the existence of buffers. Where buffers are used, bike lanes can be narrower because the shy distance function is assumed by the buffer. For example, a 3 foot buffer and 4 foot bike lane next to a curb can be considered a 7 foot bike lane. For travel side buffered lanes next to on street parking, a 5 foot minimum width is recommended to encourage bicyclists to ride outside of the door zone.

6 Where bicyclist volumes are high, bicyclist speed differentials are significant, or where side-by-side riding is desired, the desired bicycle travel area width is 7 feet.

7 Buffers should be at least 18 inches wide because it is impractical to mark a zone narrower than that.

8 On intersection approaches with right turn only lanes, the bike lane should be transitioned to a through bike lane to the left of the right turn only lane, or a combined bike lane/turn lane should be used if available road space does not permit a dedicated bike lane.

9 On intersection approaches with no dedicated right turn only lane the buffer markings should transition to a conventional dashed line. Consider the use of a bike box at these locations.

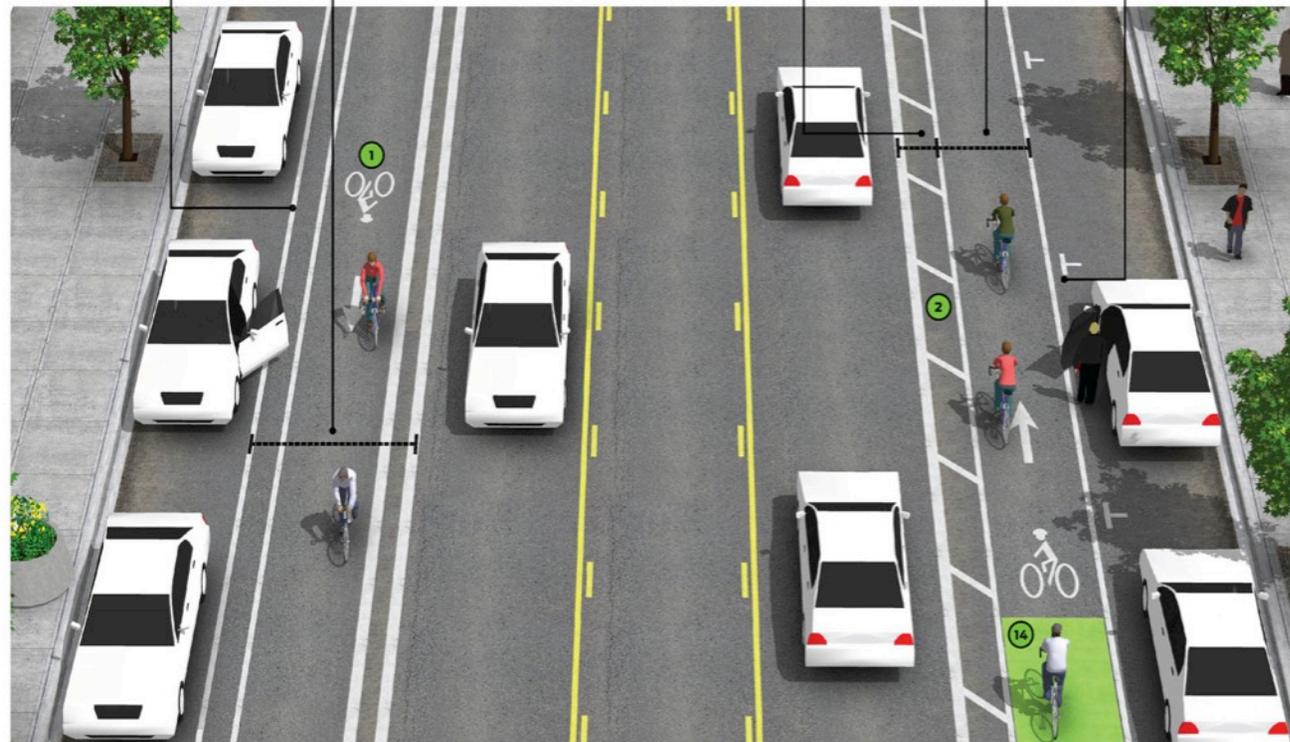
2 The buffer shall be marked with 2 solid white lines. Minimum buffer width: 18 inches

5 The combined width of the buffer(s) and bike lane should be considered "bike lane width" with respect to other guidance.

3 The buffer area shall have interior diagonal cross hatching or chevron markings if 3 feet in width or wider

5 Desired minimum next to on street parking: 5 feet

11 Separation may also be provided between bike lane striping and the parking boundary to reduce door zone conflicts.

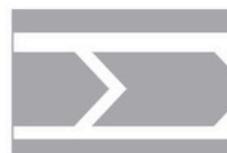


Parking Side Buffer Configuration

Travel Side Buffer Configuration



MUTCD FIGURE 3B-24



MUTCD FIGURE 3B-24



MUTCD FIGURE 3D-2

Optional Features

10 Like a conventional bike lane, a wide (6 to 8 inch) solid white line may be used to mark the edge adjacent to a motor vehicle travel lane. For a parking side buffer, parking T's or a solid line are acceptable to mark between a parking lane and the buffer.

11 For travel lane buffer configurations, separation may also be provided between bike lane striping and the parking boundary to reduce door zone conflicts. This creates a type of parking-side buffer.

12 On wide one-way streets with buffered bike lanes, consider adding a buffer to the opposite side



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Resource Guide for future reference



CASE STUDIES
METRO PATHWAY IMPROVEMENTS
North Hollywood,
Wilshire Boulevard,
Downtown Santa Monica

North Hollywood Existing Conditions



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North Hollywood Metro Pathway Draft Concept Illustration



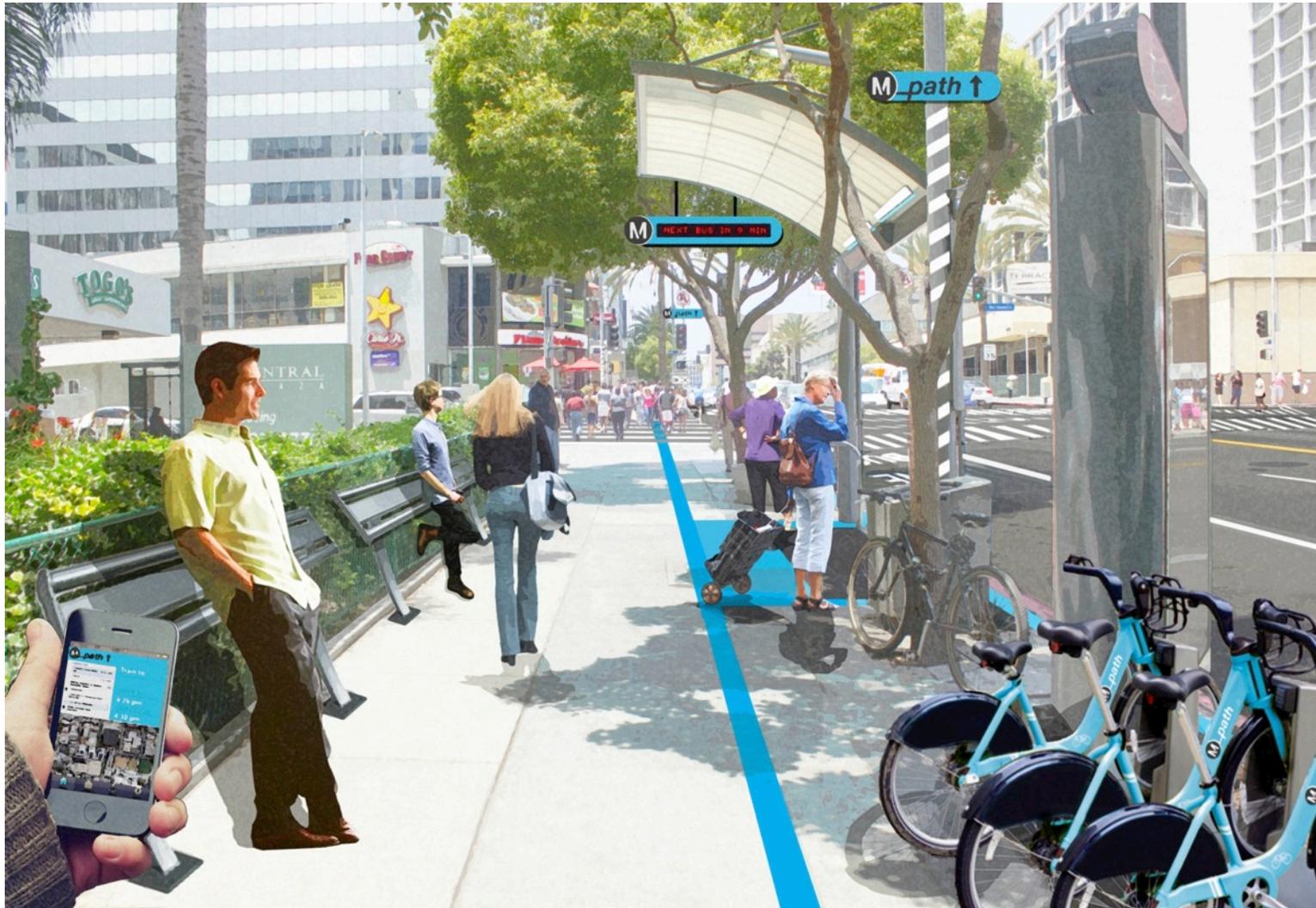
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Wilshire Blvd Existing Condition



Metro

Wilshire Blvd Metro Pathway Draft Concept Illustration



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Downtown Santa Monica to Pier Metro Pathway Precedent



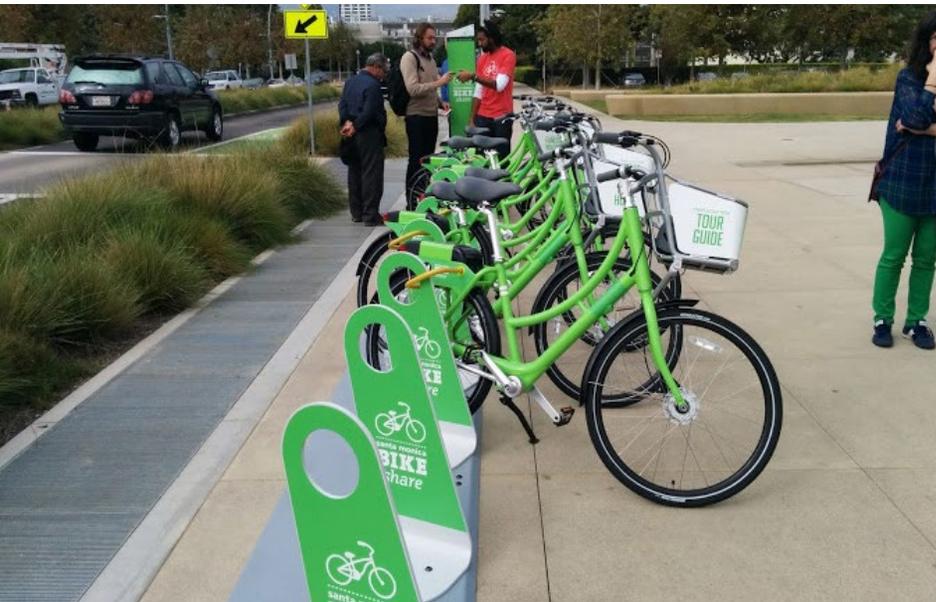
Downtown Santa Monica to Pier Metro Pathway Precedent



Bike Share and Bike Lanes

Best Practices: Santa Monica

- Active Transportation Connections
- Signage
- Parking Management



Best Practices for First/Last Mile



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Portland: Low Floor Light Rail, Curbside Boarding

Best Practices for First/Last Mile



Seattle: Merging Protected Bike Lanes at Intersections, Signage
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Best Practices for First/Last Mile



Oakland: Bicycle Access to Amtrak and Bay Bridge

Best Practices for First/Last Mile



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Long Beach: Integrated Light Rail, Open Space

Workshop Agenda



PHASE 2B: CHARRETTE Map and List Pathway Improvements



Review Access Barriers + Strengths

Review Access Barriers (RED) and Strengths (GREEN)

PHASE 2 | Map Access Barriers and Strengths, Recommend Pathway Improvements

PHASE 2B: CHARRETTE - ACCESS BARRIERS & STRENGTHS MAP PLANNING CHARRETTE INSTRUCTIONS



WALK AUDIT OBSERVATION		Status: Being Used
		Date of Use
		Observer's Name
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
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21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

Review Access Barriers & Strengths (10 mins)

Review your Walk Audit Observations and Walk Audit Maps, and discuss them with your Team:

- Barriers:** Make sure each Barrier you identified during your Walk Audit is numbered in Red at the appropriate location on the Access Barriers Map: **e.g., B-12**
- Apply Red Barrier markings from Walk Audit to the Location, Street or Area affected by the barrier.
- Describe the Barrier on Walk Audit Observation notes same Barrier Number
- Strengths:** Number in Green on the map based on your Walk Audit: **S-2**
- Add Green “Strength” markings (spot, linear condition or area condition) to map the targeted area
- Add to map Blue Numbers for “Observations” from Walk Audit **O-2**.
- Describe the observation in blue near location **“O-2 Bicyclist on sidewalk”**
- Discuss with your group patterns of strengths, observations or barriers along streets or throughout areas and show the corridor or area affected.

Review Barriers and Strengths



GREEN:
Access
Strength

RED:
Access
Barrier



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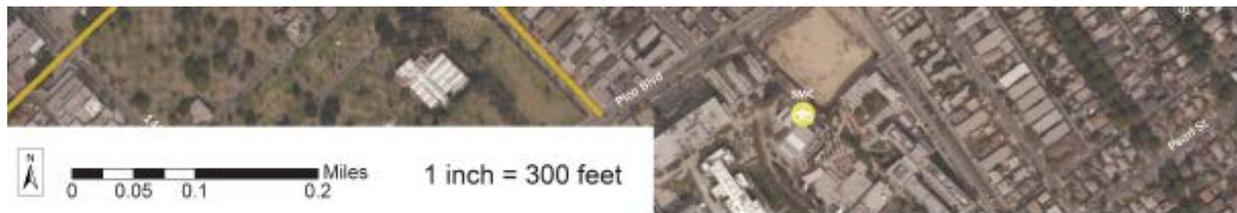
Recommended Improvements Icons

RECOMMENDED IMPROVEMENT ICONS

Use these green icons for recommended streetscape, pedestrian, bicycle and station area improvements to annotate your recommended Improvements Map. If an icon isn't available which reflects your proposed improvement, use

a green dot with a Recommendation Number keyed to the Recommended Improvements List and describe the proposal in the list and on a post it on the map.

-  Sidewalk Widening or Addition
-  Enhanced Pedestrian Crossings
-  Curb Extensions at Intersections
-  Traffic Calming
-  Freeway Underpass and Overpass Enhancements
-  New Connection Across Barrier
-  Medallion Signage
-  Street Furniture
-  Landscaping and Shade
-  Lighting
-  Bike Share Station
-  Enhanced Bicycle Facility
-  Bicycle Services
-  Car Share
-  Enhanced Bus Waiting Areas
-  Park-and-Ride
-  Key Recommendation Along Corridor



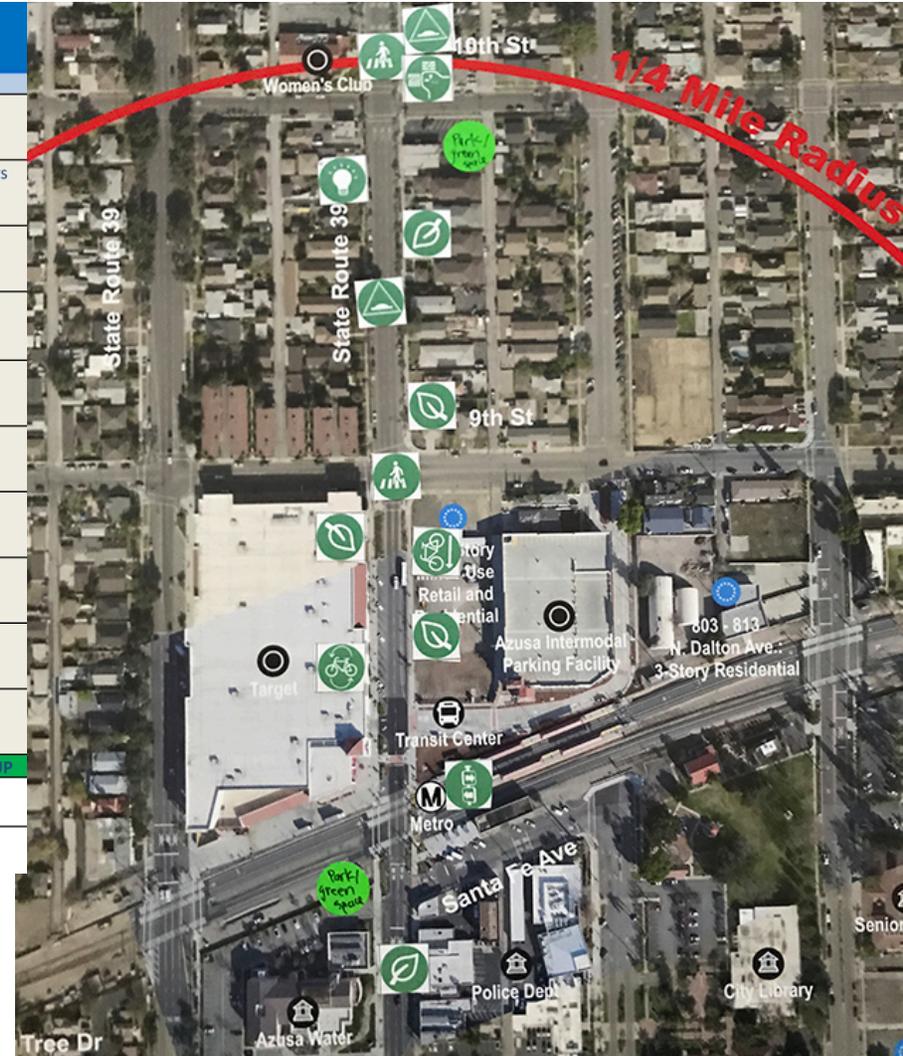
PATHWAY NETWORK AND RECOMMENDED IMPROVEMENTS MAP

SANTA MONICA - 26th St/ BERGAMOT EXPO LINE STATION AREA First/ Last Mile Training Workshop - Westside Cities - September 13, 2017



Map + List Pathway Improvements

WORKSHOP SUMMARY		WALK AUDIT AND CHARRETTE		CASE STUDY LOCATION: Downtown Azusa Station		PARTICIPANTS: TEAM NO. 8 TEAM LEADER: Manny	
BARRIER #	BARRIER TYPE	RECOMM	RECOMMENDED IMPROVEMENT	LOCATION	USER GRP		
8B-1	San Gabriel, high speeds	8R-1	Add speed bumps	San Gabriel Ave b/w Foothill Blvd and 6th Ave	Disabled		
8B-2	Cups in trees	8R-2	Schedule street maintenance, tree trimming with trash cleanup	San Gabriel Avenue b/w Foothill Blvd and 6th Avenue	Transit users		
8B-3	Jaywalking at Mantra Coffee	8R-3	Implement crosswalk	San Gabriel Avenue b/w Foothill Blvd and 6th Avenue	Peds		
8B-4	Out of order speed camera/notice	8R-4	Update streetscape with uninstallation of speed camera, take down notice	San Gabriel Avenue and 6th Avenue	Peds		
8B-5	Failure to yield left turn from auto	8R-5	Review traffic signals and ped crossing buttons	San Gabriel Avenue and 6th Avenue	Peds		
8B-6	Lack of crosswalk	8R-6	Implement crosswalk	Azusa Avenue and 6th Avenue	Peds		
8B-7	Struggling trees	8R-7	Install smart irrigation	Azusa Avenue and 6th Avenue	Peds		
8B-8	Lip at ped crossing	8R-8	Review crossing	6th Street b/w San Gabriel Avenue and Azusa Avenue	Disabled		
8B-9	Crosswalk visibility	8R-9	Restripe crossing and add ground reflective lighting with flashing	San Gabriel Avenue b/w Foothill Blvd and 6th Avenue	Peds		
8B-10	Ambiguous street markings	8R-10	Add N/S bicycle connection on La Brea (arterial) and Market(slower)	San Gabriel Avenue b/w Foothill Blvd and 6th Avenue	Cyclists		
STRENGTH	STRENGTH TYPE			LOCATION	USER GROUP		
8S-1	Foothill and San Gabriel bus shelter and ADA access			San Gabriel Avenue b/w Foothill Blvd and 6th Avenue	Peds		
8S-2	Unique micro-mixed use proposals and existing Mantra Coffee			not mapped	Residents		



Map Pathways and Consider Users



PATHWAY NETWORK VISUALS

	Symbol	Term
LOCATIONS		Existing Bikeway
		Extension to Regional Active Transportation Network
PATHWAY NETWORK		Pathway Arterial
		Pathway Collector 1
		Pathway Collector 2
		Cut-Through
		Proposed Bikeway
		Extension to Regional Active Transportation Network

Map Pathways and Consider Users (5 mins)

Note the major destinations shown on the map and observed during Walk Audit. How will people get to and from the Metro Station to these destinations?

- Map these Pathways in **blue marker for pedestrians** and **yellow marker for cyclists**. Note if crosswalks, bicycle lanes and other key facilities are provided. If not, show where they should be added and list as Recommended Improvements.
- What specific needs do school students, the elderly, the disabled, cyclists, skateboarders, employees, shopper and residents have? Continue the Recommendation numbering system for Pathway/User related Recommendations. Use Green “Recommendation” Icons to describe them.
- Add notes on the Map and the list of Recommended Improvements keyed to the Map to explain your ideas for Pathway or User related Recommended Improvements.
- Make sure the Barrier and the associated Recommended Improvement is clearly described and mapped for use in explaining your Group’s work.
- Select a **Reporter** from your team to present two important recommended improvements. Describe the barriers, pathways and users they address.



Map Pathways and Consider Users



Use Green
Improvements
Icons
Blue:
Pedestrian
Improvement
Yellow:
Bicycle
Improvement
Consider
Pathway and
Potential Users



Planning Charrette



CHARRETTE REPORTERS

Describe 1 Access Barrier, Affected Users
and 2 Proposed Improvements



Planning Charrette



Inglewood: Calm High Speed Boulevards



Planning Charrette

Van Nuys: Add Bike Lanes and Median LRT

Recommended Project



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Planning Charrette



Van Nuys: Add Bike Lanes and Median LRT



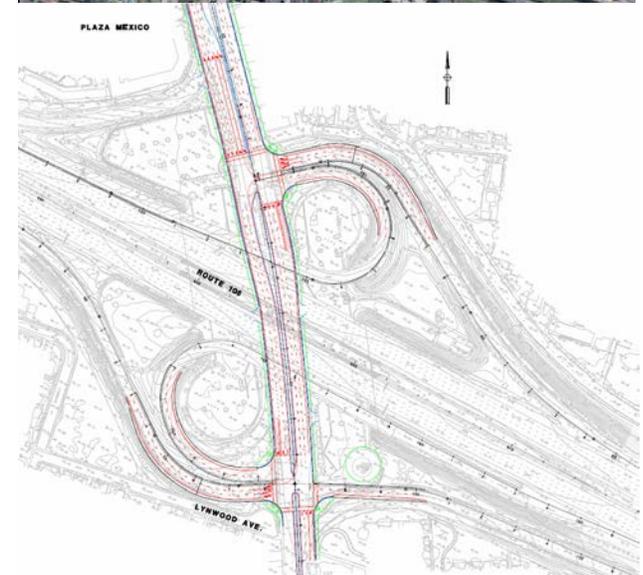
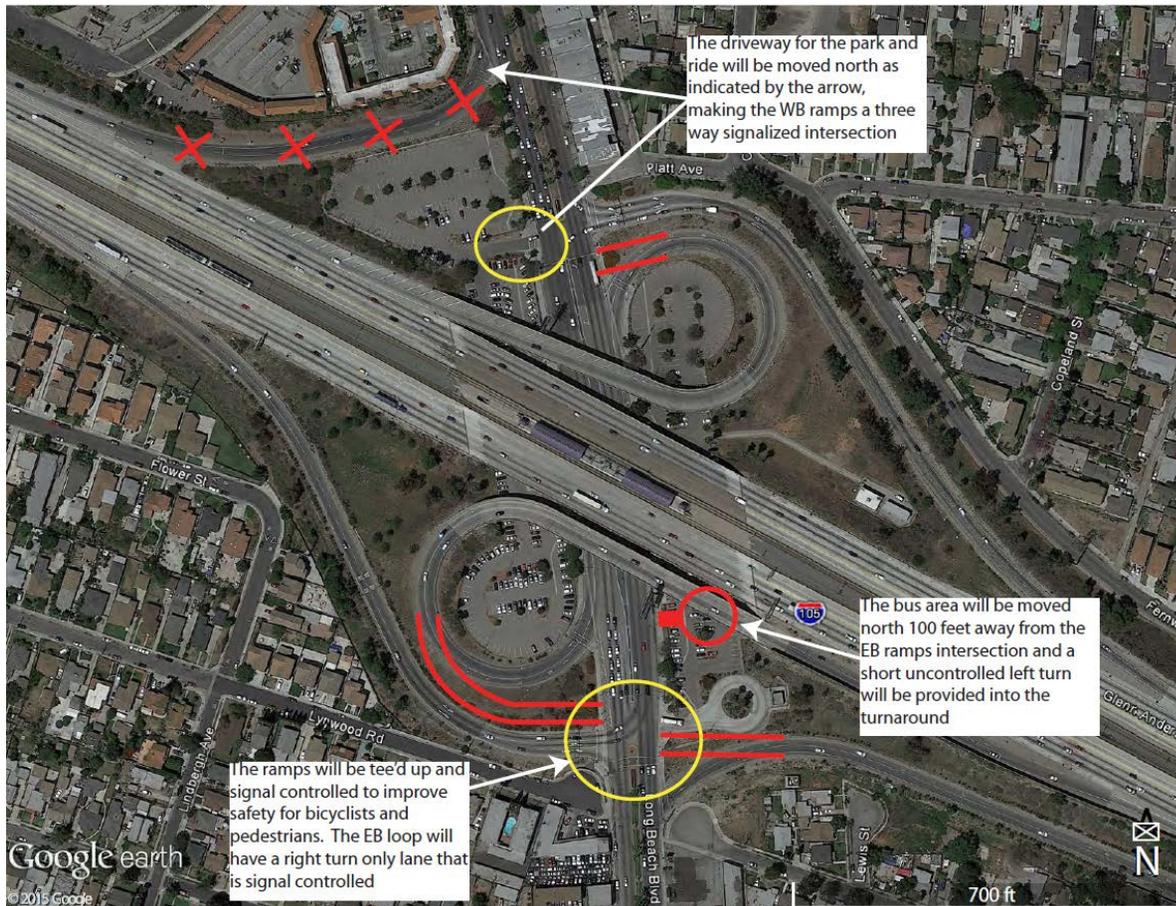
Planning Charrette

Santa Monica: Improve Pedestrian+Bike Network



Planning Charrette

Lynwood: Reconfigure Freeway Interchange



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Proposal to reconfigure Interchange to slow traffic and reduce wasted land area

Planning Charrette

Lynwood: Improve Station Conditions



CONCEPTUAL I-105 INTERCHANGE RECONFIGURATION



FIGURE 3.4 ITASP TDM PROGRAM COMPONENTS

Planning Charrette



Lynwood: Reduce Station Noise, Pollution



A 2012 Luskin Center report examines the noise levels at all 16 highway-centered transit stations in the Los Angeles area. This landmark study found that the **Green Line stations** suffer the most from noise, while the Gold Line stations are generally the quietest. The report recommends how transit agencies could reduce noise exposure for their riders.



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UCLA Luskin School of Public Affairs
**Luskin
Center**
FOR INNOVATION

Passenger Exposure
to Noise at
Transit Platforms in
Los Angeles

By:
Alexander
Schaffer

July 2012



Planning Charrette



Azusa: Reduce High Speed Roads+ Add Bikeways

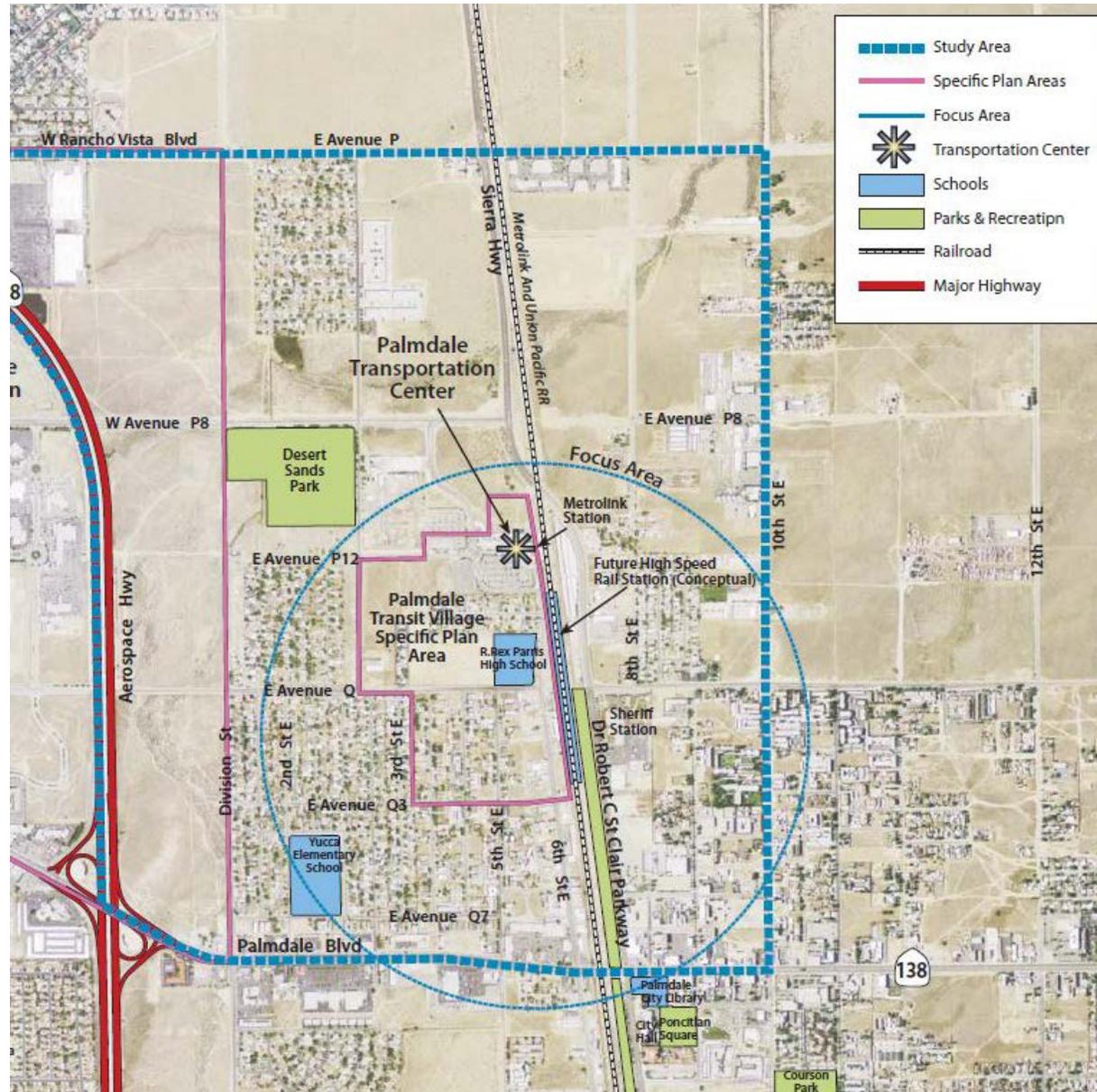


Planning Charrette



Palmdale High Speed Rail:

- Reduce barrier effect of High Speed Rail
- Infill TOD near station
- Improve bicycle and pedestrian network + safety
- Reduce speeds



Planning Charrette



Palmdale High Speed Rail:

- Reduce barrier effect of High Speed Rail
- Infill TOD near station
- Improve bicycle and pedestrian network + safety: Complete streets
- Reduce vehicle speeds



Prepared for the
City of Palmdale by
DYETT & BHATIA
Urban and Regional Planners

Primary Funding from
 **Metro**

First/Last Mile Planning: Phase 1



Today's Workshop

Morning:
PHASE 1

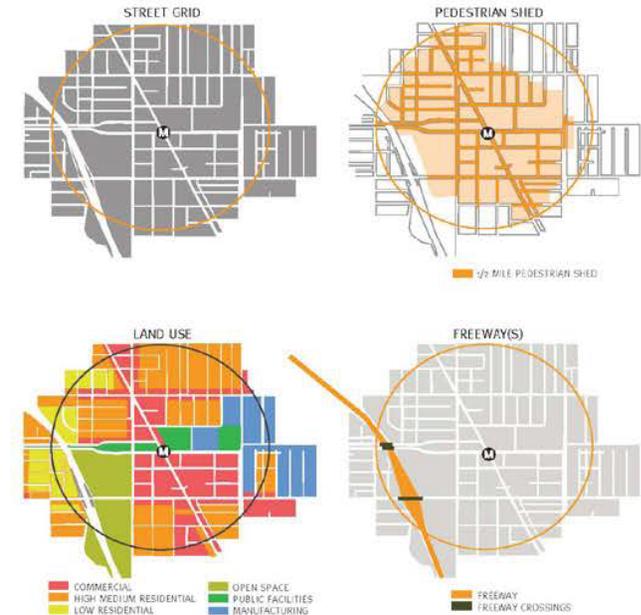
ANALYZE ACCESS BARRIERS + STRENGTHS

- GIS MAP + DATA ANALYSIS
- WALK AUDIT

Phase 1: Analyze Access Barriers and Strengths

PHASE 1A: DATA ANALYSIS + MAPPING

- GIS Mapping Tools
- ATSP Station Analysis of Walkshed and Bikeshed
- Transportation Injury Mapping System (TIMS)



PHASE 1B: WALK AUDIT TO OBSERVE CONDITIONS

- Station Area Checklists
- Transit, Bicycle and Pedestrian Facilities
- Micro-scale, Ground Truthing
- Note Strengths as well as Access Barriers

STATION AREA CHECKLIST		Rating
Name of Station:	Date:	Observer:
1. SAFETY		
1.1 Adequate lighting. Regularly inspect and maintain lighting and street lighting. Provide public lighting.		1 2
1.2 Eye-on-the-street. People are walking, which makes bike and stroller use easier or observed if needed or if needed or if needed.		1 2
1.3 Well maintained public realm. Streets are smooth and without cracks. There is a safe and clear pedestrian route.		1 2
1.4 Safe buffer for bikes. Bike lanes/buffers are separated from sidewalks and other traffic.		1 2
1.5 Safe buffer for pedestrians. Pedestrians are clearly separated from other traffic by sidewalks, crosswalks, or other measures.		1 2
1.6 People-friendly crosswalks. Crosswalks are clearly marked with markings, no sign or lighting, etc.		1 2
1.7 Clear safety signage. Signage is clear, legible, and visible to all users, including those with disabilities and those who are visually impaired.		1 2
2. AESTHETICS		
2.1 Sense of place. Inclusion of unique street furniture, landscape, or other place-making elements.		1 2
2.2 Pleasant landscaping. Landscaping is well maintained and provides shade, reduces noise, and improves air quality.		1 2
2.3 Strategically placed public art. Public art is well placed and enhances the public realm.		1 2
2.4 Attractive kiosks & vendor areas. Kiosks and vendor areas are well placed and do not obstruct the public realm.		1 2
2.5 Pedestrian-unfriendly elements are limited. Elements such as utility poles, signs, and other elements are well placed and do not obstruct the public realm.		1 2
2.6 Overall, station area feels pleasant & is attractive. Overall, the station area is well maintained and provides a pleasant and safe environment for all users.		1 2
2.7 Walking Areas: From the Station and Stops. Walking areas are well maintained and provide a pleasant and safe environment for all users.		1 2
2.8 Cleanliness and Maintenance. Streets and public spaces are well maintained and free of litter.		1 2



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First/Last Mile Planning: Phase 3



Phase 3: Refine First/Last Mile Pathway Network Improvements

3A: COMMUNITY ENGAGEMENT

PHASE 3A: COMMUNITY ENGAGEMENT IN REFINE PATHWAY

- Pedestrian, Cyclist, Transit User, Driver Concerns
- Show Safety Data to Support Improvements
- Include Features for Wide Range of Stakeholders



3B: TECHNICAL REVIEW

PHASE 3B: TECHNICAL INPUT TO CUSTOMIZE IMPROVEMENTS

- Review Nearby Best Practice Improvements
- Identify Unique Conditions and Local Concerns
- Adapt Proposed Improvements to Local Concerns
- Develop Before/After Performance Measures



First/Last Mile Planning: Phase 4



Phase 4: Developing Costs, Phasing and Funding Options

4A: PHASING AND PRIORITY SETTING



PHASE 4A: DEVELOP IMPROVEMENT PHASING AND PRIORITIES

- Integrate Improvements with New Development Projects
- Combine Bicycle Lanes, Crosswalks and Roadway Striping
- Prioritize Projects with Supportive Property Owners
- Set Performance Measures: Safety, Mode Shift, Tax Revenue

4B: COSTS AND FUNDING OPTIONS

PHASE 4B: DETERMINE COSTS AND FUNDING OPTIONS

- Metro Technical Assistance with Estimating Unit Costs
- Metro First/Last Mile Planning & Implementation Funds
- Metro Call for Projects, Prop C, Measures R & M
- Cal EPA Cap + Trade including AHSC
- Caltrans Active Transportation & CalTrans Regional Surface Transportation Program



Metro TOD Planning Grant Awards



Comprehensive Transit Area Planning

10 Elements of Transit-Supportive Places



1
Compact Design



2
Complete Neighborhoods



3
Street & Network Connectivity



4
Site Layout,
Parking Layout &
Building Design



5
Affordable Housing



6
Commercial Stabilization,
Business Retention
& Expansion



7
Transit Prioritization,
Accessibility
& Area Design



8
Parking Management



9
Transportation
Demand Management



10
Pedestrian & Bicycle
Circulation



FIRST/LAST MILE PLANNING

What was most useful?

Chance to learn what other communities are doing

Discussion with diverse perspectives and expertise

Walk Audit and Planning Charrette

What do you need to proceed with FLM Planning?

Techniques to address resident/business opposition

Funding, political support and technical assistance