

# WEST GLENDALE

SUSTAINABLE TRANSPORTATION STUDY

FINAL DRAFT PLAN



## ACKNOWLEDGEMENTS



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# 1.0 INTRODUCTION



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# THE NEXT BIG THING

The West Glendale Sustainable Transportation and Land Use Study provides recommendations to support transit use, walking and bicycling. These recommendations would help reduce vehicle miles traveled and greenhouse gas emissions while enhancing the quality of life for the West Glendale community.

## STUDY AREA

The West Glendale Sustainable Transportation and Land Use Study area generally extends from the westerly City limits at Alameda Avenue and Allen Avenue to Brand Boulevard on the east. The northern boundary is generally Glenwood Road and southerly boundary is Highway 134, the Glendale Narrows Riverwalk, and Riverside Drive. Key employers in the study area include Disney Imagineering, Dreamworks Studio, Avery Dennison Headquarters, and Whole Foods Regional Office. Public schools within the study area include Franklin Elementary, Thomas Jefferson Elementary, Keppel Elementary, and Toll Middle School. The study also includes Griffith Manor, Pelanconi, and Fremont Parks. Regional automobile and truck access is provided by Interstate 5 and Highway 134. Future transit improvements include the North Hollywood to Pasadena Bus Rapid Transit (BRT) route through the study area on Glenoaks Boulevard and Central Avenue. Future stations are planned at Alameda Avenue, Western Avenue, Pacific Avenue, and a station at Grandview Avenue.

## THE PLANNING PROCESS

The West Glendale Sustainable Transportation and Land Use Study kicked off in December 2019 and concluded in December 2020. Information concerning the project is available at [www.westglendalestudy.com](http://www.westglendalestudy.com)

The Study included engagement of city agencies to shape the Study work tasks actively. Technical Advisory Working Group Meetings were facilitated by the consultant, information was presented, and feedback was gathered at key project milestones.

The design of the protected bikeways, complete streets and corridor land use concepts was informed by an extensive review of existing and future conditions, including applicable corridor policy framework and planning studies, transportation analysis, and land use analysis. The West Glendale Existing Conditions Report is included in the appendix of this Study.

## STUDY OUTCOMES

Short-term, the study can serve as a guide to inform ongoing parallel and future planning and design studies. Long-term, the outcomes of the Study is intended to inform policies prepared as part of the West Glendale Community Plan.

FIG 1.01 STUDY AREA



## KEY STUDY ELEMENTS

Protected bike lanes are recommended to be constructed as part of the Glenoaks Boulevard segment of the North Hollywood to Pasadena BRT project. Two Glenoaks Boulevard protected bikeway configurations have been identified for further design refinement, analysis, and potential public input as part of BRT project or other City-initiated planning and design efforts.

A complete streets transportation framework has been completed. The framework includes walking and biking recommended routes and design concepts for 4 corridors.

An implementation strategy 'action plan' comprised of 3 priority projects has been completed. The action plan— identifies responsibilities, timelines, preliminary cost estimates, and potential financing strategies that can be folded into the West Glendale Community Plan and other relevant City plans in the future

# PROTECTED BIKE LANES

Protected bike lanes have become a hallmark of forward-looking modern cities worldwide. The West Glendale Study proposes protected bike lanes that can equitably increase bicycle use, overcoming barriers that limit ridership.

Concepts are proposed that best meet the needs of the physical context, existing or proposed adjacent land use, and contribute to a complete and connected City of Glendale bicycle network. Moreover, equitable Glenoaks Boulevard protected bike lane concepts focus on the needs of all riders, especially lower-income residents and people of color, so that they can travel quickly and safely. Other benefits include improved health and quality of life for those most in need.

## WHAT IS A PROTECTED BIKE LANE?

Planters, curbs, parked cars, or posts combined with colored pavement markings, textures, and signage to provide a physical separation between the bike lane and auto traffic. The protected bike lane may be:

- One-way or two-way routes
- At street level, at sidewalk level, or at an intermediate level.

## PROTECTED INTERSECTIONS

The greatest safety challenge in designing a bike lane is through intersections and mid-block crossings where a host of competing motor vehicle, transit, and walking routes converge with the bike lane. The Glenoaks Boulevard protected bike lane concepts include effective techniques that can reduce or eliminate bike collisions with motor vehicles and walkers and improve access to transit and neighborhood destinations.

## WHY BUILD PROTECTED BIKE LANES?

Survey after survey has found that the number one reason people do not ride bicycles is safety—the fear of riding with dangerous auto traffic. Because protected bike lanes provide physical separation from congested or high-speed roadway traffic conditions, they attract those ‘capable but cautious cyclists’ who will not ride in traffic along with existing ‘strong and fearless’ cyclists that will ride both on the road or these facilities. Because of their unmatched ability to increase biking to as much as 40% of all daily trips when integrated into a dense, mixed-use land use framework, they are a must-have to equitably increasing bicycle ridership.

FIG 1.02 PROTECTED BIKE LANE EXAMPLES



FIG 1.03 POTENTIAL BIKE LANE RIDERS



## COMPLETE STREETS

Complete street concepts for corridors have been created based upon best practice multi-modal corridor design guidelines that have resulted constructed complete streets in Southern California and throughout the United States and Canada.

### WHAT IS A COMPLETE STREET?

Complete streets equitably balance the needs of walkers, bicyclists, transit riders, and drivers, along with other users who arrive on wheels—whether by wheelchair or by an emerging transportation option such as electric scooters. At a minimum, a network of complete streets provides safe, direct, and convenient ‘first and last mile’ connections between destinations and transit stops throughout West Glendale.

### MOVING PEOPLE NOT CARS

The essential strategy to create complete streets is to rethink the street network, focusing on moving people, not cars. This means identifying a hierarchy of ‘active transportation’ routes where sidewalks and crosswalks, then bike lanes and busways are prioritized over auto and truck lanes. It also means that along these routes, at key intersections, design and performance metrics that measure roadway congestion and travel time are reassessed and prioritization is given to walkers and bikers, even if it means some loss of performance or level of service for buses and automobiles.

### DESIGN FOR THE MOST VULNERABLE

‘Incomplete streets’ are characterized by a range of conditions such as excessive speed or lack of adequate safe and comfortable biking and walking infrastructure that may result in walkers and bikers being either killed or severely injured. On the other hand, well-designed complete streets are designed for those most at risk—the young, elderly, and differently-abled. Great complete street design results in the reduction of the level of stress, and reducing collisions between vehicles and walkers, as well as vehicles and bikers.

FIG 1.04 COMPLETE STREET HIERARCHY

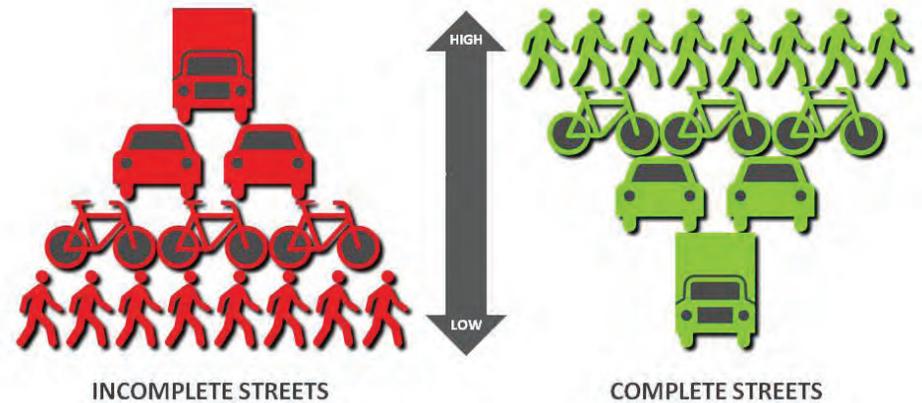


FIG 1.05 DESIGN FOR THE MOST VULNERABLE



### FIRST AND LAST MILE TRIPS

Complete street walking and biking improvements are intended to increase future bus rapid transit ridership by providing linkages to either existing or future destinations.

'First- and last-mile trips' are the biking and walking trips that transit users must take between their starting or ending destination and a BRT station. When transit users have difficulty making the first- or last-mile connection due to distance, unsafe conditions, or other barriers, BRT use may be less practical.

The area within a quarter-mile of the station is typically accessible within a five-minute walk. A five-minute bike ride can typically access the station from the area within one mile of the station. These five-minute areas are the 'transit rider-shed', the source of 80% of the station's riders.

### COMPLETE STREETS CREATE PLACES

Complete streets are the 'DNA' of economically successful and livable communities. A grid of urban roads, alleys, bike lanes, sidewalks, and pathways can comprise up to 40% of the district in some areas of West Glendale. Complete streets must function as conduits for travel, and 'places' that improve the livability and economic value of adjacent land uses. In particular, the character of the streets, sidewalks, and intersections directly adjacent to BRT stations will play an essential role in establishing transit-oriented development. At BRT stations, the street should create a transit 'threshold' where arrival and departure are emphasized. This means that the station environment should be designed for commuters to congregate, linger, and safely access transit platforms.

- Safe stations are highly visible— providing eyes on the station ensures that transit riders are seen from the street and surrounding buildings, reducing the potential for crime.
- Active stations are vibrant throughout 18 hours of the day, creating a new and unique identity that currently does not exist along Glenoaks Boulevard.

FIG 1.06 FIVE MINUTE FIRST AND LAST MILE TRIPS

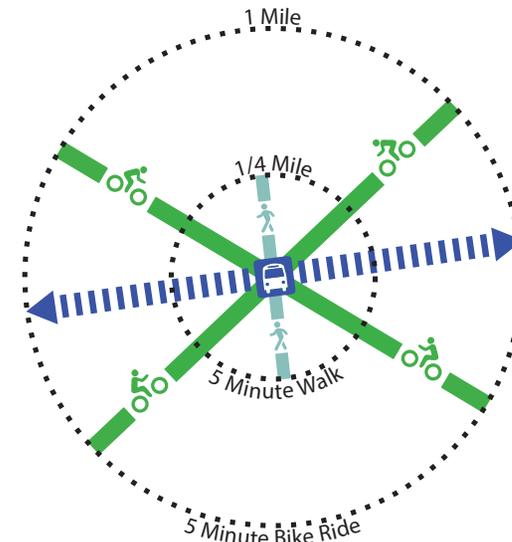


FIG 1.07 IMPROVED LIVABILITY AND ECONOMIC VALUE



# PROJECT GOALS AND OBJECTIVES

The following goals and objectives have been used to guide the creation of protected bike lane concepts, complete street concepts, and implementation strategies. The project goals and objectives have been used as a tool to address issues and conditions that ensure that transit use, walking and bicycling are supported. The project goals and objectives are a distillation of seven big ideas that will ensure the vehicle miles traveled and greenhouse gas emissions are reduced while enhancing the quality of life for the West Glendale community.

FIG 1.08 PROJECT GOALS & OBJECTIVES

GOALS	OBJECTIVES
 <b>EQUITY</b>	<ul style="list-style-type: none"> <li>• Universal design creates inviting streets. Design for those most at risk to offer enhanced mobility regardless of mode, age, ability race, ethnicity, gender, or economic stature.</li> <li>• Discourage displacement and gentrification. Support and strengthen existing businesses and residences. Maintain or improve housing affordability and identify wealth creation opportunities for existing residents and businesses.</li> <li>• When considerations such as vehicle delay/capacity and safety of vulnerable road users are in conflict, make decisions that prioritize safety and conditions for vulnerable road users.</li> <li>• Provides opportunities for new living-wage jobs</li> </ul>
 <b>BIKING</b>	<ul style="list-style-type: none"> <li>• Design for all ages and abilities. Separate bike lanes on high traffic volume streets and minimize conflicts where possible, to attract riders that are fearful of riding on busy streets.</li> <li>• Connected network with convenient routes that provide direct access and minimize travel time to activity generating daily/weekly uses (e.g. transit stops/stations, grocery stores, Disney Campus, Narrows Riverwalk Trail, and schools)</li> </ul>
 <b>WALKING</b>	<ul style="list-style-type: none"> <li>• 'Pedestrian-friendly' sidewalks that are safe and comfortable. Provide continuous walking routes with adequate width to support adjacent land use needs</li> <li>• Safe crosswalks. Minimize crossing distances and conflicts with motor vehicles and bicycles, improve existing crossings, and evaluate opportunities for new crossings, including midblock, that can minimize out of direction travel distances to key corridor destinations (e.g. schools)</li> </ul>
 <b>TRANSIT</b>	<ul style="list-style-type: none"> <li>• Support planned NOHO to PAS BRT and Glendale Streetcar transit proposals. Incorporate alignment and station design concepts.</li> <li>• Foster transit ridership. Provide a safe, active, and comfortable environment at stations during all hours of transit operation and evaluate opportunities to enhance existing service.</li> <li>• Provide permanent or temporary amenities. Provide areas for bike parking and storage, parklets, or other transit-supportive uses that make transit more convenient.</li> </ul>
 <b>AUTO AND TRUCK</b>	<ul style="list-style-type: none"> <li>• Preserve truck routes for goods movement delivery needs to local businesses and implement policies for existing and new development that encourage this activity to take place on side streets and back of house (i.e., not on Glenoaks Boulevard)</li> <li>• Ensure adequate parking continues to be provided for residential and commercial uses</li> <li>• Improve safety through targeted improvements that lower speeds, minimize conflict points, and enhance visibility and work toward eliminating motor vehicle and walker/biker collision deaths</li> </ul>
 <b>ECONOMIC DEVELOPMENT</b>	<ul style="list-style-type: none"> <li>• Maximize all redevelopment and/ or enhancement opportunity sites. Identify the 'highest and best use' for infill or redevelopment sites that meet existing and future real estate market conditions while enhancing and strengthening West Glendale.</li> <li>• Create an 'investment environment' that draws investors and reduces development risk. Provide recommendations for policy and regulatory recommendations that create approval process predictability and certainty for developers</li> <li>• Return on investment. Ensure that any City investment in infrastructure results in sustained high-quality private sector development</li> </ul>
 <b>EASE OF IMPLEMENTATION</b>	<ul style="list-style-type: none"> <li>• Cost effective. Provide a high-quality design that is affordable, durable, and minimizes maintenance requirements.</li> <li>• Review proposed infrastructure for consistency with adopted plans policies such as the General Plan, Bike Plan, and Pedestrian Plan. Specific areas of focus may include considerations related to safety, enhancing conditions for all modes, and expectations for peak hour vehicular operations.</li> <li>• Constructable – minimizes impacts; can be phased/built incrementally</li> <li>• Community stakeholder support – property owners, businesses, residents, advocates, commissions, and elected officials</li> </ul>

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## 2.0 PROTECTED BIKE LANES



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## INTRODUCTION

**Protected bike lanes on Glenoaks Boulevard can result in a safe, direct, and convenient world-class bicycle route designed for cyclists of all ages and abilities.**

They will not only attract the 'strong and fearless' dedicated cyclists but more importantly, attract the 'capable but cautious' cyclists that will ride on Glenoaks Boulevard when given this safe facility. Moreover, the protected bike lanes are intended to improve regional and local bicycle mobility and serve as a viable auto-alternative commuting transportation facility.

### RANGE OF CONCEPTS

A range of bike lane concepts was developed and assessed. The concepts range from minor roadway changes to existing bike lanes to more substantial changes that incorporate planned BRT infrastructure and protected bike lanes. Two concepts, an 'Enhanced Existing Bike Lane' option and a 'BRT Bike Lane' Option assume, that the existing bike lane location between parked cars and travel lanes is unchanged. The Technical Working Group recommended that these concepts should not be advanced for further refinement and analysis.

Two other bike lane concepts were developed and analyzed – a parking protected bike lane and a protected center-running, two-way separated median adjacent bikeway. These concepts were recommended by the Technical Working Group for further refinement and analysis.

### TRANSPORTATION ANALYSIS SUMMARY

The preliminary conceptual design and operational review found that both protected bike lane alternatives are feasible based on available right-of-way evaluation of intersection operations. A transportation analysis summary the Glenoaks protected bike lane concepts is provided in chapter 3. A full transportation analysis of protected bike lanes is provided in the appendix. A benefits and challenges assesment at the end of this chapter addresses qualitative transportation benefits of each protected bike lane option.

FIG 2.01 ENHANCED EXISTING BIKE LANE (NO BUILD) OPTION

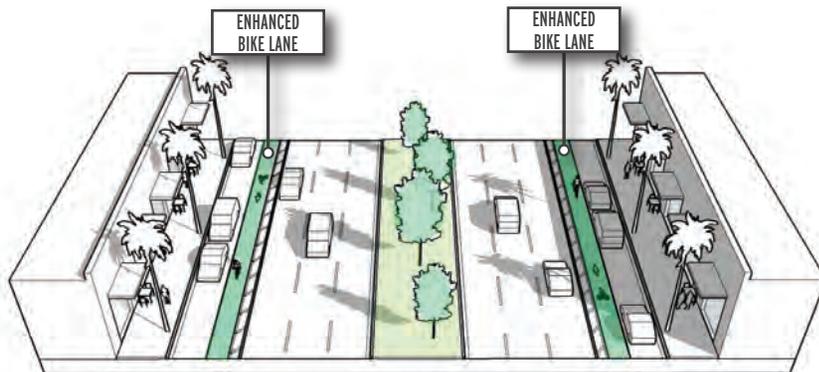


FIG 2.03 BRT EXISTING BIKE LANE OPTION

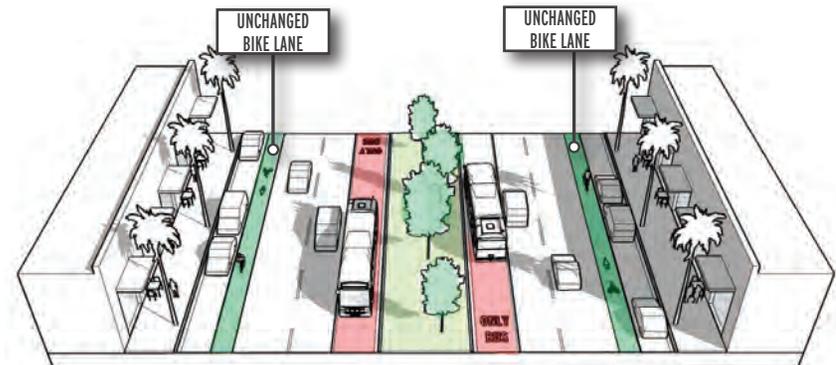


FIG 2.02 PARKING PROTECTED BIKE LANE OPTION

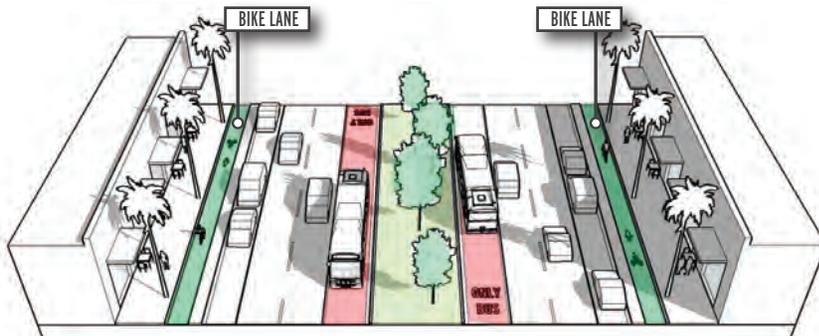
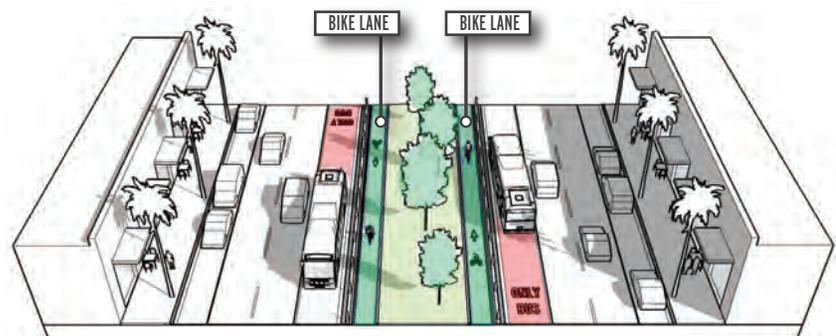


FIG 2.04 CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY OPTION



## OPTIONS NOT ADVANCED - ENHANCED EXISTING BIKE LANES

This concept was presented to the Technical Working Group. The Technical Working Group recommended that this concept should not be advanced because it does not adequately meet project goals and objectives.

### CONCEPT SUMMARY

The existing bike lane location between the existing curbside parking and travel lanes would not change. However, there are a number of enhancements that can improve the safety and comfort of the existing facility, including:

**Buffered bike lanes**—The existing bike lanes safety could be improved by adding adjacent buffer roadway striping to the existing lane. The wider lane would improve biking safety and comfort by reducing ‘dooring’ by drivers exiting parked cars and provide additional distance between cars, trucks, and buses (should the BRT operate in mixed travel lanes).

**Colored pavement** — Could be utilized as a corridor-long treatment similar to how it is utilized today on Sonora Avenue, to clearly delineate ‘ownership’ of road space by bikers and help reduce conflict with turning and parking motor vehicles by increasing the visibility of the facility. At a minimum, it should be used across intersections to provide clarity and priority of routes for bikers.

**Intersection improvements** — A suite of improvements should be provided that improve access and safety by heightening the level of visibility with competing modes. These could include bike boxes, two-stage turn queue boxes, and median refuges. Where warranted, bike signal phases should also be considered.

### ENHANCED EXISTING BIKE LANES KEY

- ① No changes to 12' Sidewalks in commercial areas. No changes to 8' wide with 4' landscaped parkway in residential areas
- ② Curbside parking — no changes
- ③ Buffered or Enhanced Bike lanes located between curbside parking and travel lanes.
- ④ Three travel lanes in each direction — mixed traffic bus lane
- ⑤ 22' (varies) median with landscaping — no changes

FIG 2.05 EXISTING BIKE LANE

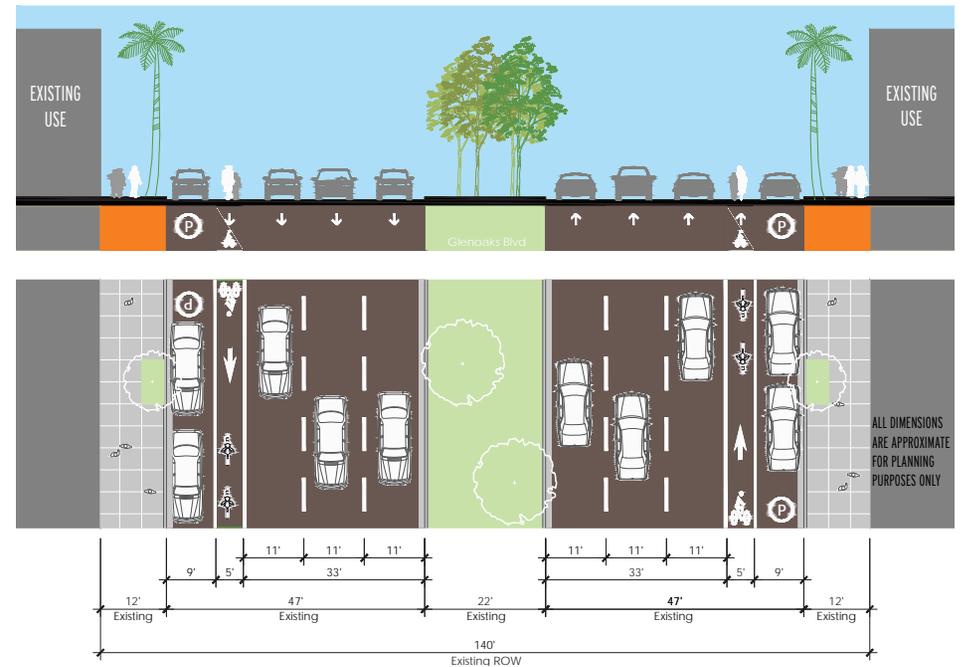
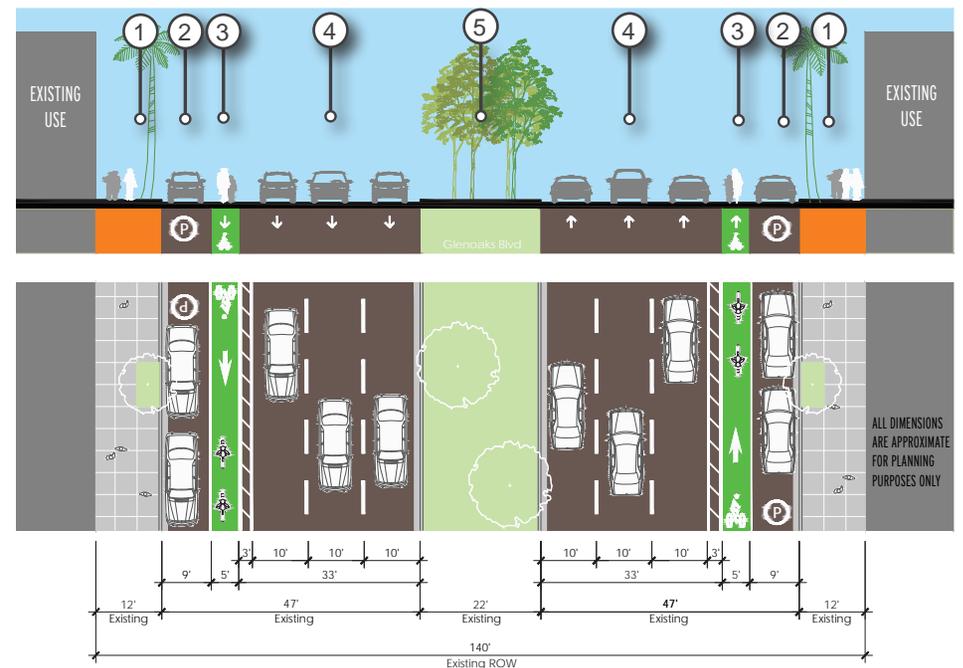


FIG 2.06 ENHANCED EXISTING BIKE LANE (NO BUILD) OPTION



## OPTIONS NOT ADVANCED - BRT EXISTING BIKE LANE OPTION

City staff and project and team members met with Metro in December 2019 to discuss the BRT project concept and in November 2020 to discuss the status of the North Hollywood to Pasadena Environmental Impact Report (DEIR) written comments provided for submittal to Metro in December. It was recommended in May of 2021 that this concept will not be advanced because it does not adequately meet project goals and objectives.

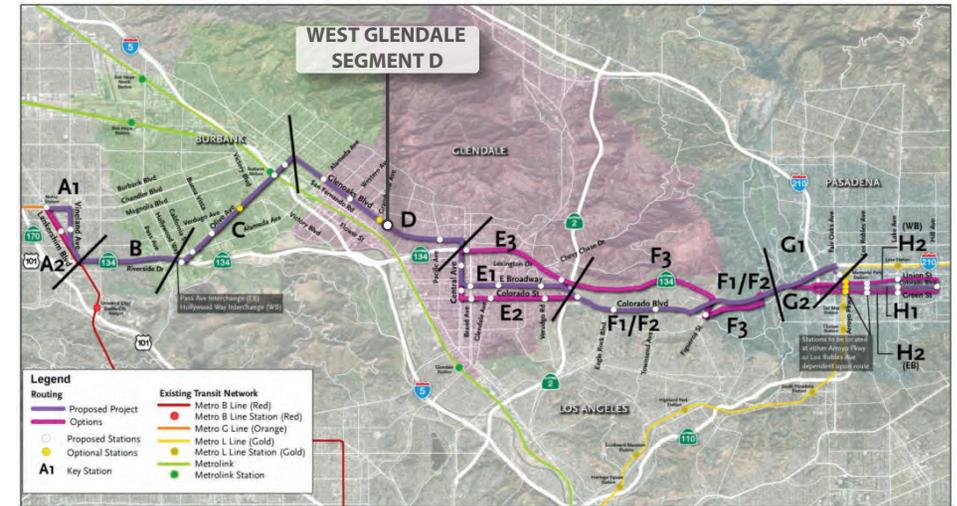
### CONCEPT SUMMARY

This concept describes bike lane conditions proposed for the West Glendale Segment D identified in the draft DEIR, released for comment from October 26, 2020 to December 28, 2020. The existing bike lane location between the existing curbside parking and travel lanes would not change location or treatment. However, there are a number of enhancements that can improve the safety and comfort of the existing facility, including:

**Colored pavement** – Due to space constraints, lanes cannot be buffered, however a corridor-long colored lane treatment similar to how it is utilized today on Sonora Avenue to clearly delineate ‘ownership’ of road space by bikers and help reduce conflict with turning and parking motor vehicles should be provided. Moreover, colored pavement should be used across intersections to provide clarity and priority of routes for bikers.

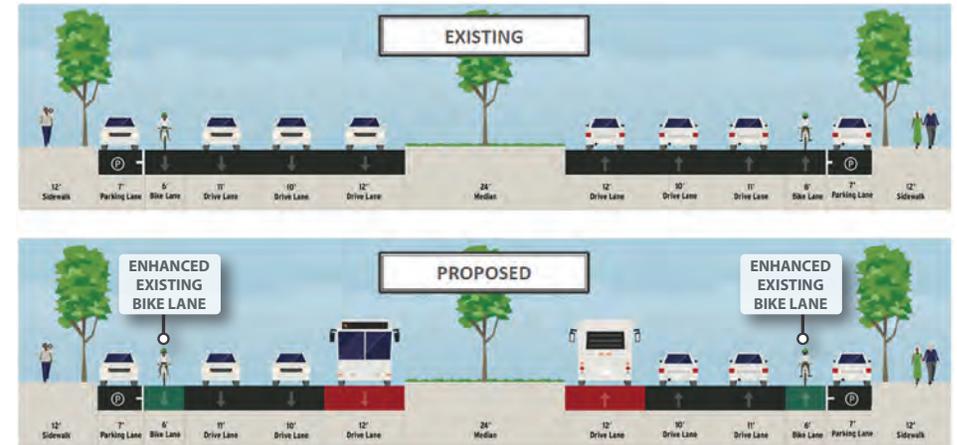
**Intersection improvements**— A suite of improvements should be provided that improve access and safety by heightening the level of visibility with competing modes. These could include bike boxes, two-stage turn queue boxes, and median refuges. Where warranted, bike signal phases should also be considered.

FIG 2.07 DEIR PROPOSED BRT PROJECT – WEST GLENDALE (SEGMENT D)



SOURCE: METRO

FIG 2.08 DEIR PROPOSED GLENOAKS BOULEVARD CONCEPT WITH POTENTIAL ENHANCEMENTS



SOURCE: METRO

## GLENOAKS BOULEVARD PROTECTED BIKE LANE FRAMEWORK

The protected bike lane framework applies to both parking protected bike lane and center running (median-adjacent) concepts.

### COMPONENTS

The Framework concept has been crafted to attract ‘capable but cautious’ riders. The Framework address West Glendale’s community character, land use context, unique physical conditions, and multi-modal operational requirements. Moreover, it incorporates adopted City-wide walking and biking plans and policies, and the North Hollywood to Pasadena BRT DEIR busway and station location concepts.

Framework protected bike facilities have been designed to address the needs of the bicycle riders who are either traveling through or within the district. The Framework includes distinct segments where minimizing biking travel time is most important and segments where local biking access is of greater importance:

- **Destination Segments.** Within these segments, the corridor is recommended to be re-imagined as areas of ‘arrival and departure’ characterized by high walking, biking, transit activity throughout the day. These segments should improve 5-minute trip local access between West Glendale neighborhoods and BRT station platforms and should also improve local access to weekly or daily destinations such as grocery stores, office buildings, schools, and high-density residential apartments adjacent to stations. Where existing commercial development fronts destination street segments, ‘curbside management’ of the road— addressing the needs of competing uses such as on-street parking, loading zones, driveways, or other permanent or temporary uses such as street cafes must ensure that a stress-free biking lane is not compromised.
- **Mobility Segments.** Within these segments, safe, fast, and comfortable bicycle access through the entire West Glendale corridor should be prioritized. To achieve this, bicycle rider ‘traffic stress points’ should be minimized. Safety can be improved by eliminating as many bike lane auto and truck collision points as possible and comfort can be improved by minimizing bicyclist exposure to high volume and fast moving auto and truck traffic. Where the roadway width is constrained or additional motor vehicle travel lanes are required, on-street parking should be removed if necessary to ensure that a continuous, uninterrupted physical barrier between bike lanes and traffic lanes is maintained throughout the length of the corridor.
- **Mid-Block Crossings.** Throughout the Glenoaks Boulevard corridor, widely spaced mid-block walking and biking crossings currently exist. Additional access is recommended to shorten trip lengths by reducing out-of-direction travel. Recommended maximum mid-block crossing spacing should not be in excess of 750 feet.

FIG 2.09 TYPICAL DESTINATION SEGMENT – EXISTING COMMERCIAL CONDITIONS



FIG 2.10 TYPICAL MOBILITY SEGMENT – EXISTING RESIDENTIAL CONDITIONS



- **Multi-modal Connecting Routes.** These cross-street points provide access to intersecting existing and planned multi-modal corridors that provide linkages to West Glendale destinations such as the Brand Library, Kenneth Village, and Schools. ‘Protected Intersection’ design that has a strong design bias toward walkers and bikers is recommended at a minimum at all station intersections, and should be considered for all other identified locations.



# PARKING PROTECTED BIKE LANE OPTION

## CONCEPT SUMMARY

The concept illustrates a typical one-way protected bike lane configuration that addresses typical safety and awareness conditions that a biker currently encounters traveling along the street. The design anticipates that there are 'zones' in which cyclists will feel exposed and vulnerable if design elements are not included that increase the awareness of a cyclist to competing modes. The design incorporates elements that are generally accepted as best practice elements that have been constructed elsewhere, and reflect Federal standards of the Manual on Uniform Traffic Devices (MUTCD). The concept provides general, high-level design guidance for one-way 'cycle track' bike lanes, driveways and intersection of cross-streets and alleys.

## KEY FEATURES:

- No changes to BRT platform or BRT lanes
- Parking protected bikeway on north and south sides of Glenoaks Boulevard.
- Maintain on-street parking. Relocate on-street parking away from curb line
- Enhanced median landscaping and lighting.
- Enhanced existing walking and biking mid-block crossing. Includes median open space improvements.
- Protected bike intersections at transit stations and multi-modal connecting route intersections
- Maintain existing driveways

FIG 2.12 PARKING PROTECTED BIKE LANE OPTION CONCEPT SUMMARY



## KEY

- ① Protected bikeway — located on the north side and south side of Glenoaks Boulevard. Green pavement markings are suggested throughout. They are supplemented by a linear buffer consisting of striping and bollards wherever parking is adjacent to bike lanes.
- ② Busway — is located next to the median, consistent with the BRT concept plan.
- ③ Two travel lanes — consistent with the BRT plan
- ④ Parking — is relocated between the bike lane and travel lanes
- ⑤ Enhanced Sidewalk — Existing Sidewalks width is not changed, but should be enhanced with additional canopy trees, street furniture, and sidewalk lighting.
- ⑥ Enhanced median — Additional landscaping
- ⑦ Striping at driveways and intersections. Continuous lane markings raise awareness of potential conflict zones. Striping is applied wherever cars must cross through the protected bike lanes.
- ⑧ Striping and bollards where on-street parking is absent

FIG 2.13 TYPICAL PARKING LANE PROTECTED BIKE LANE

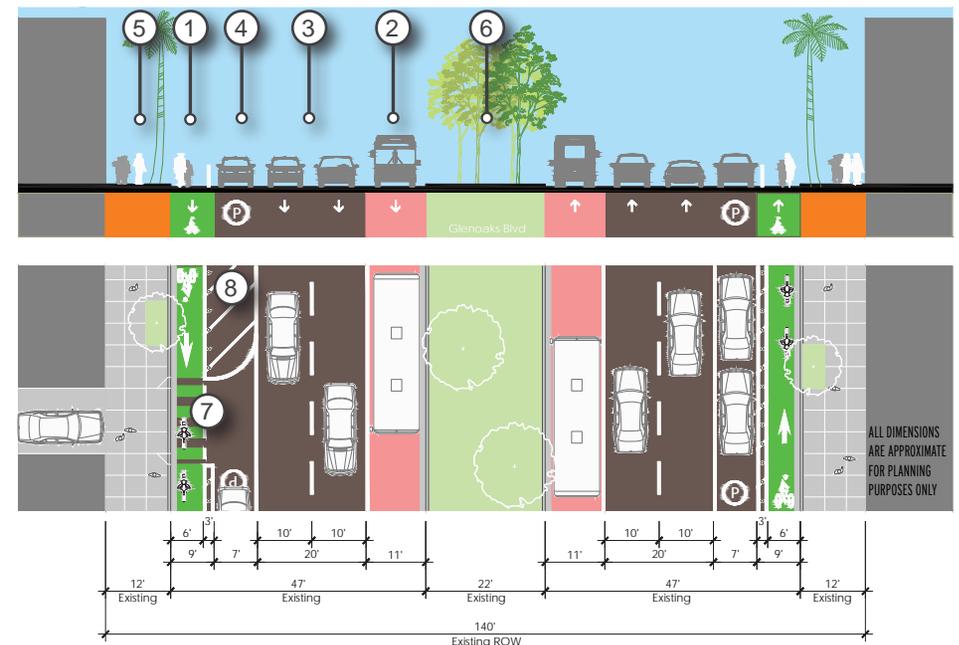


FIG 2.14 GLENOAKS CORRIDOR PARKING PROTECTED BIKE LANE CONCEPT – THOMPSON AVENUE TO SONORA AVENUE (WESTERN STATION)

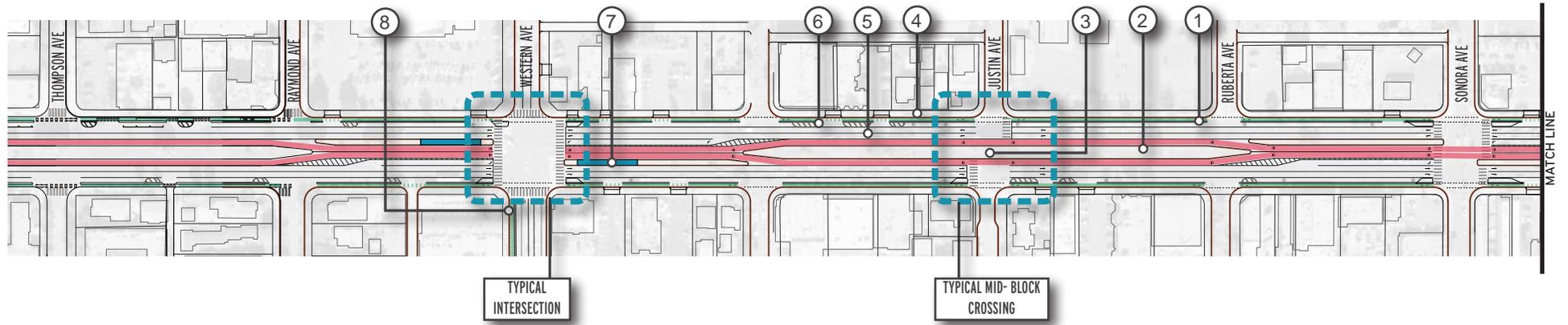
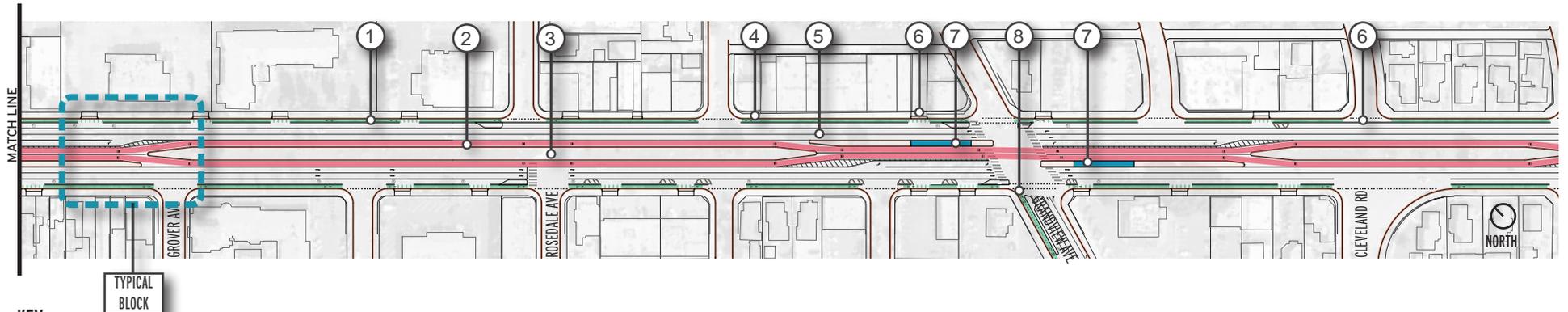


FIG 2.15 GLENOAKS CORRIDOR PARKING PROTECTED BIKE LANE CONCEPT – SONORA AVENUE TO CLEVELAND AVENUE (GRANDVIEW STATION)



KEY

- ① Parking protected bikeway — on north and south sides of Glenoaks Boulevard.
- ② Busways — consistent with the BRT plan.
- ③ Enhanced median — existing walking and biking mid-block crossing improvements. Includes passive open space and lighting improvements and bicycle striping.
- ④ Enhanced Sidewalk — Existing Sidewalks width not changed but should be enhanced with additional canopy trees, street furniture and sidewalk lighting.
- ⑤ Two travel lanes — consistent with the BRT plan.
- ⑥ Striping at driveways and intersections — Continuous lane markings raise awareness of potential conflict zones.
- ⑦ BRT platform — consistent with BRT plan.
- ⑧ Proposed Western and Grandview Avenue protected bikeways on west side of the street.

KEY MAP



## PARKING LANE PROTECTED BIKE LANE OPTION – TYPICAL BLOCK

### INTENT

The intent of the parking protected bike lane typical block concept is to identify the minimum components that provide the essential separation and awareness to attract 'capable but cautious' riders. Moreover, the concept is intended to be practical, cost-effective, and flexible:

- The concept is envisioned to be constructed as part of the BRT corridor project.
- A portion of the corridor from Western Avenue to Grandview Avenue could be constructed along with improvements along Western Avenue and Grandview Avenue as a pilot project to demonstrate the benefits of the envisioned "First and Last Mile Loop" identified in the Complete Streets chapter of this document. The effectiveness of the segment could be documented and design adjustments that could improve the performance of subsequent phases.
- Design elements could be upgraded if the budget permits. Proposed design elements such as flex bollards and roadway striping are low-cost infrastructure that could be upgraded over time without concern of lost investment costs.
- The concept is adaptable. The concept makes assumptions that roadway space includes all current uses—parking, lanes, travel lanes, and bus lanes. Should ridership levels increase or the operations of the corridor change, the bike lane and buffer width could be increased. In particular, where parking is not necessary, the bike lane and buffer could be increased by removing on-street parking.

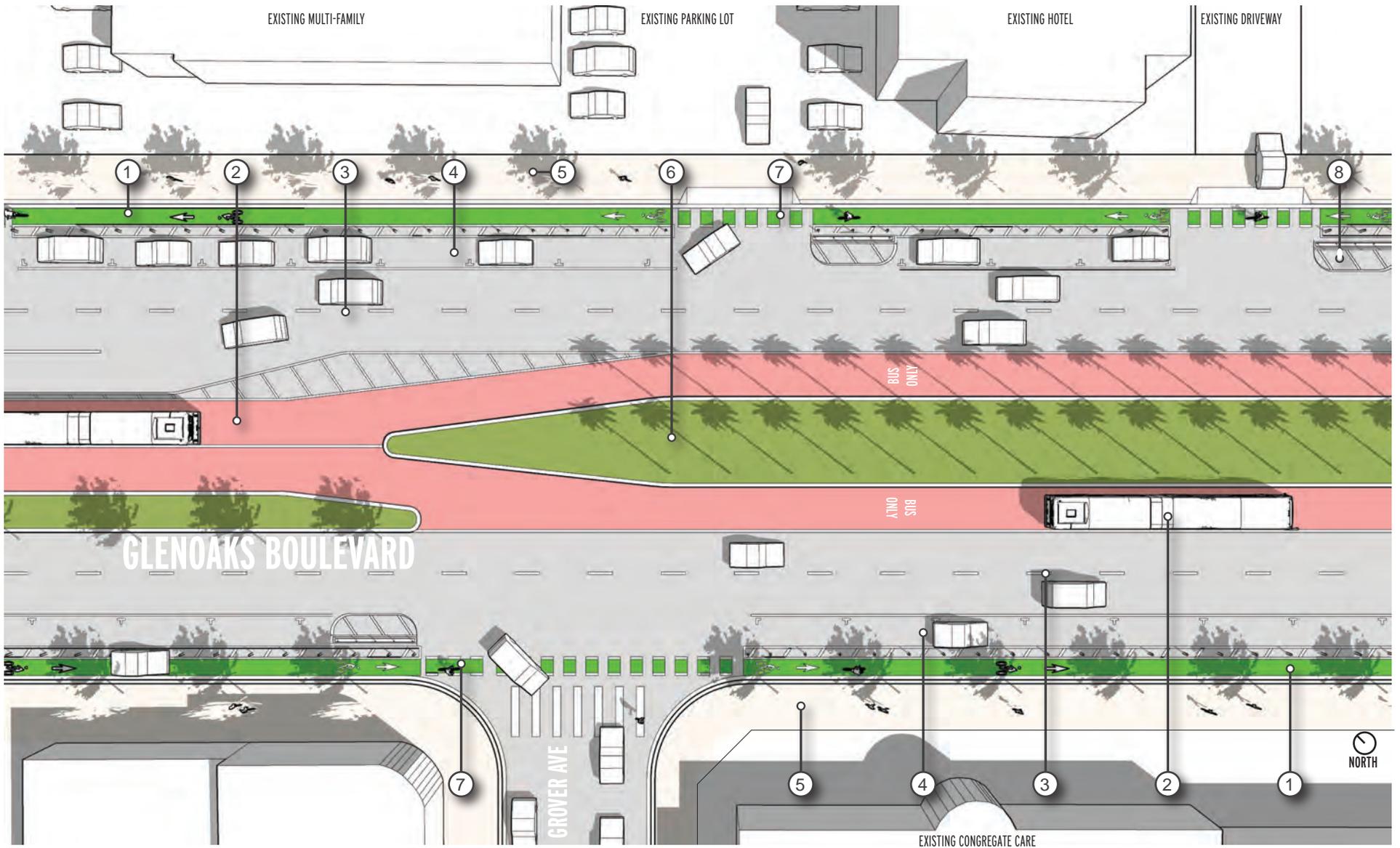
### KEY

- ① Protected bikeway — located on the north side and south side of Glenoaks Boulevard. Green pavement markings are suggested throughout. They are supplemented by a linear buffer consisting of striping and bollards wherever parking is adjacent to bike lanes.
- ② Busway — is located next to the median, consistent with the BRT concept plan.
- ③ Two travel lanes — consistent with the BRT plan
- ④ Parking — is relocated between the bike lane and travel lanes
- ⑤ Enhanced Sidewalk — Existing Sidewalks width is not changed, but should be enhanced with additional canopy trees, street furniture, and sidewalk lighting.
- ⑥ Enhanced median — Additional landscaping
- ⑦ Striping at driveways and intersections. Continuous lane markings raise awareness of potential conflict zones. Striping is applied wherever cars must cross through the protected bike lanes.
- ⑧ Striping and bollards where on-street parking is absent

FIG 2.16 TYPICAL BLOCK EXISTING CONDITION (GLENOAKS BOULEVARD AND GROVER AVENUE)



FIG 2.17 PARKING LANE PROTECTED BIKE LANE – TYPICAL BLOCK PLAN



## PARKING LANE PROTECTED BIKE LANE OPTION – TYPICAL BLOCK DETAILS

Protected Bike lanes— Include 6’ (minimum) wide lanes that accounts for a 12” gutter that results in an effective 5’ riding lane. The proposed lane includes a 3 foot door zone parking buffer due to roadway width constraints. While not ideal, the buffer will lessen the ‘chute’ feel between cars and the curb, allows bicycle passing and avoidance of potential barriers (e.g., people exiting cars).

Consistent application of colored lane color, bike lane word, symbol, and arrow markings placed at the beginning and end of blocks and periodic intervals along the protected bike lane should be applied throughout. Bollards need to be spaced closely so that motorists and delivery vehicles cannot park in the lanes.

Driveways and Alleys — Stress caused by crossing driveways should be lessened by combining or removing driveways wherever possible. Where driveways do occur, parking should be prohibited at least 1 space from each side of the crossing, to ensure sight lines from drives are unobstructed by cars, trees or street furniture. On heavily-used driveways, color yield lines and “yield to bikes” signage should be provided. Other safety measures could include raised speed humps or textured warning pavement.

FIG 2.18 EXISTING TYPICAL BLOCK



### KEY

- ① Protected bikeway — located on the north side and south side of Glenoaks Boulevard. Green pavement markings are suggested throughout. They are supplemented with a linear buffer consisting of striping and bollards wherever parking is adjacent to bike lanes.
- ② Busway — is located next to the median, consistent with the BRT concept plan.
- ③ Two travel lanes — consistent with the BRT plan
- ④ Parking — is relocated between the bike lane and travel lanes
- ⑤ Enhanced Sidewalk — Existing Sidewalks width is not changed, but should be enhanced with additional canopy trees, street furniture, and sidewalk lighting.
- ⑥ Enhanced median — Additional landscaping
- ⑦ Striping at driveways and intersections. Continuous lane markings raise awareness of potential conflict zones. Striping is applied wherever cars must cross through the protected bike lanes.
- ⑧ Striping and bollards where on-street parking is absent

FIG 2.19 PARKING PROTECTED BIKE LANE TYPICAL BLOCK

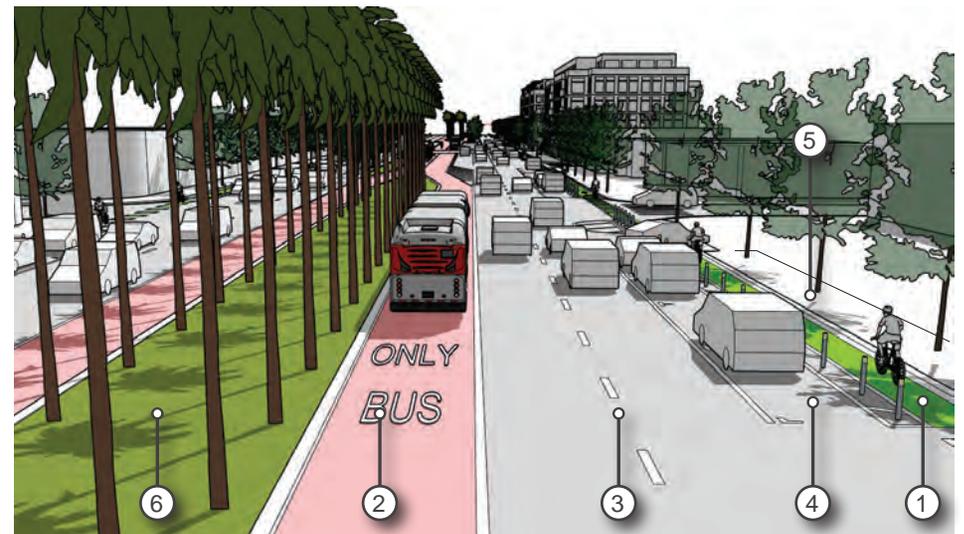


FIG 2.20 EXISTING INTERSECTION AND DRIVEWAY



FIG 2.22 EXISTING DRIVEWAY AND INTERSECTION



FIG 2.21 TYPICAL PARKING LANE PROTECTED BIKEWAY AT INTERSECTION AND DRIVEWAY

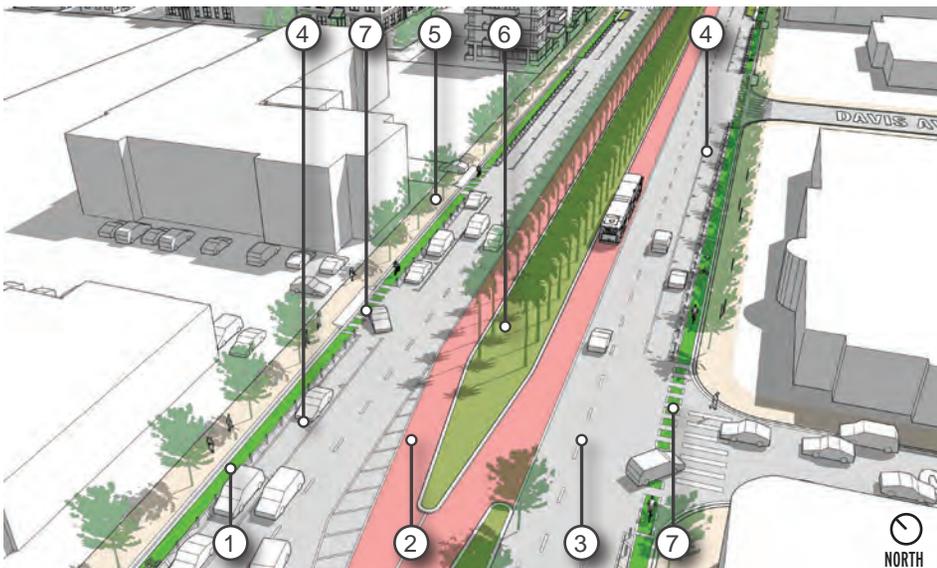
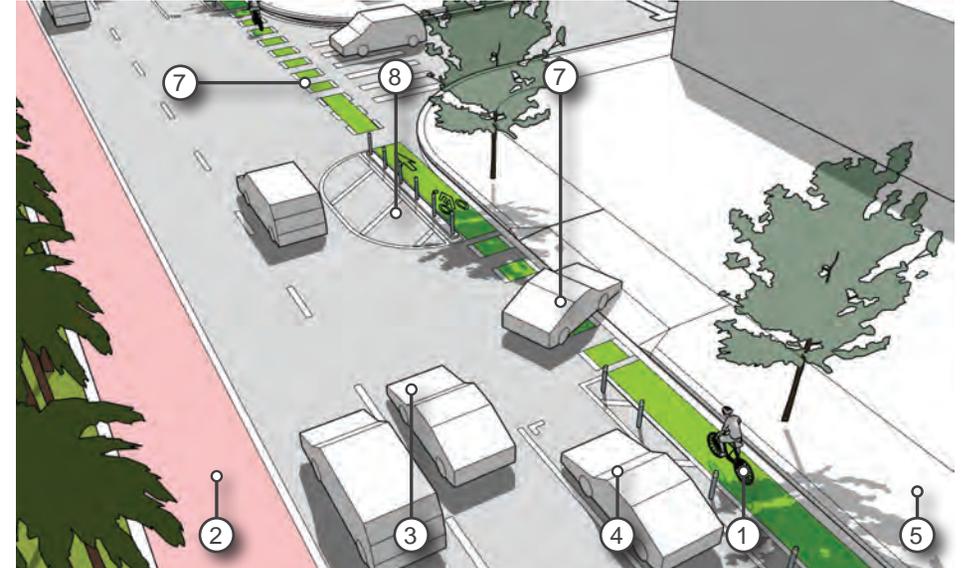


FIG 2.23 TYPICAL PARKING LANE PROTECTED BIKEWAY AT DRIVEWAY AND INTERSECTION



## PARKING LANE PROTECTED BIKE LANE OPTION – TYPICAL INTERSECTION

### INTENT

The intent of protected intersection is to extend the physical separation that occurs along typical blocks through the intersection. With this concept, bicycle riders will not feel stranded, exposed, or unsure how to move through the intersection. Protected intersections could be a significant improvement for intersections at future BRT transit stations and other intersections where multi-modal crossings and conflicts occur.

The concept illustrates protected one-way configurations that improve safety and awareness where right-turning interaction occurs between bicycles and vehicles. The bicyclists cross each leg of the intersection parallel to pedestrians and wait in corner refuge areas that provide protection from turning vehicles.

Key elements include:

- Corner 'refuge islands'— Bring the protection into the intersection by providing an extended curb that directs auto turning movements. They also provide bike riders a place to wait when turning during a red light phase.
- Forward stop bars— Increase visibility by placing cyclists in view of cars waiting at red lights. They also give bikers a head start when signals change to green. Moreover, they reduce the distance bikers (and walkers) need to cross.
- Setback biking and walking crossings (horizontal offsets)— Bike lanes may bend back slightly to increase awareness of biking, walking, and auto movement. With this design, visibility of bikers and walkers is increased because auto drivers turn 90° to face the crossing.
- Bicycle signal phases— Provide signal control and guidance how and when biker riders proceed through the intersection. Various types of signal designs that can protect bikers from right auto turning movements. Including separate signal phases, leading bicycle intervals, or other techniques. Additional design and analysis is required to determine the appropriate approach.

FIG 2.24 EXISTING TYPICAL INTERSECTION (GLENOAKS BOULEVARD AND WESTERN AVE)



FIG 2.25 PARKING LANE PROTECTED BIKE LANE – TYPICAL INTERSECTION

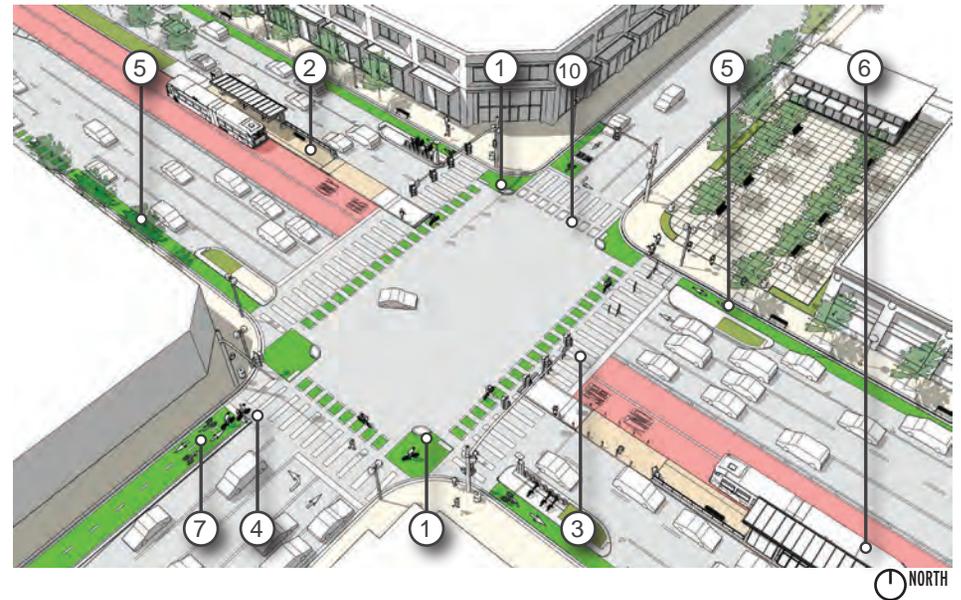
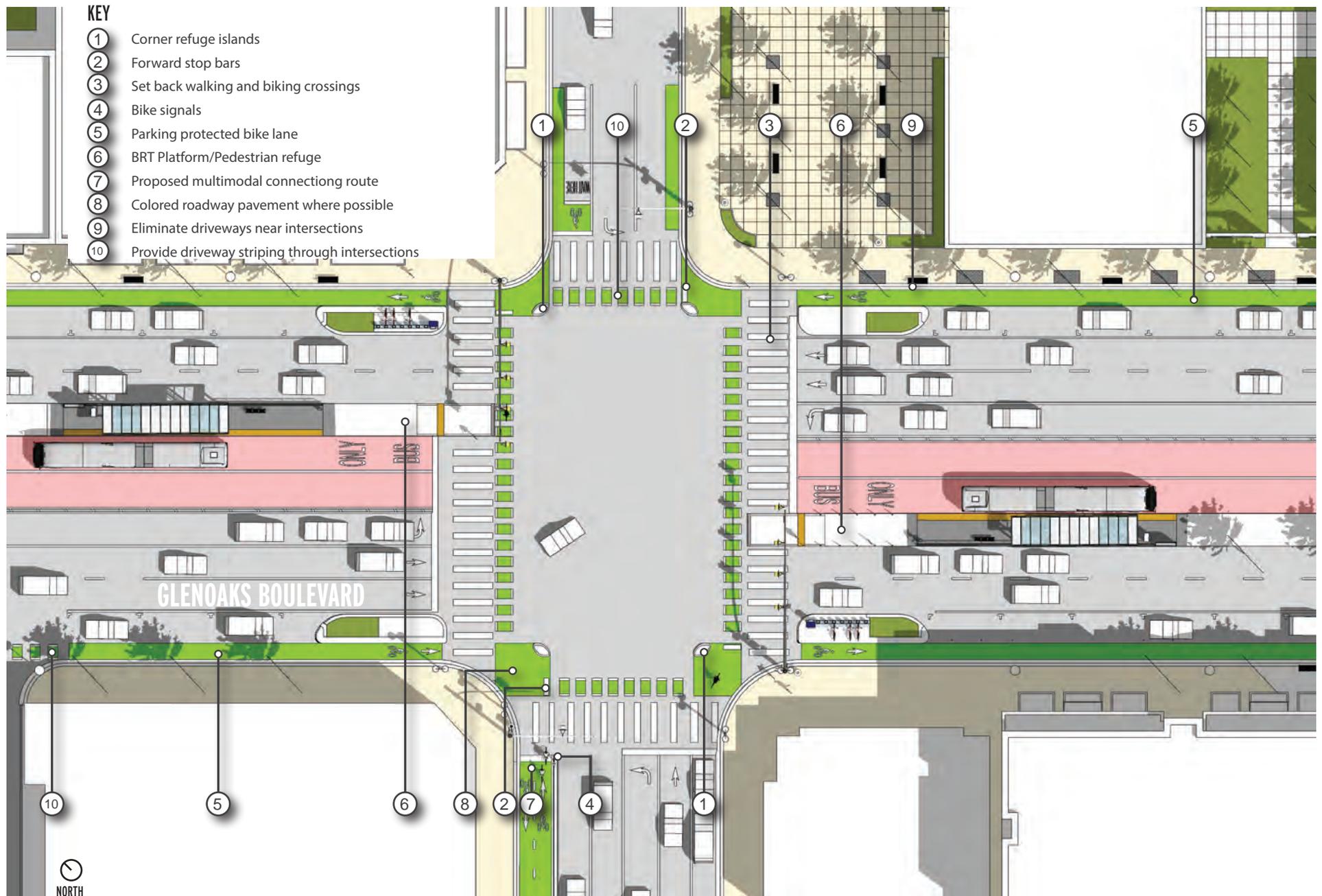


FIG 2.26 PARKING LANE PROTECTED BIKE LANE PLAN VIEW



## PARKING PROTECTED BIKE LANE OPTION – TYPICAL MID-BLOCK CROSSING

### INTENT

The existing median barrier creates a one-way bike lane couplet that results in u-turn travel routes that significantly increases biking travel distances. The intent of the mid-block crossing concept is to maintain existing and add additional crossings where equitable access does not currently exist.

Regular spacing of mid block crossings is recommended. Crossings should be spaced between 500-750 feet maximum.

Proposed changes include:

- Relocating the crossing at Irving Avenue to Thompson Avenue.
- Adding additional signalized or unsignalized crossings between Pacific Avenue and Grandview Avenue at Cleveland Road, Pelanconi Avenue, and Estelle Avenue.

The medians can also serve as crossing refuges. Crossings may include passive public open space amenities such as seating, ornamental lighting, wayfinding signage, public art, and water elements. Active uses such as play structures are not recommended.

Changes should make bikers and walkers more visible to car drivers and cars more visible to bikers and walkers. This may be accomplished by providing:

- Signage to identify crosswalks and islands to drivers.
- Installing curb extensions.
- Additional street lighting
- Bike boxes at the head of the traffic lane on signalized cross streets. They provide bikers with a safe and visible way to get ahead of queuing traffic during red signal phases.
- Two stage queue boxes that allow bikers to turn from the protected bike lane to the mid-block crossing. Providing the queue boxes prevents conflicts arising from bikers queuing in crosswalks or in the protected bike lane.
- Colored intersection crossing markings that indicate the path of the bicyclists.

FIG 2.27 EXISTING TYPICAL MID-BLOCK CROSSING (GLENOAKS BOULEVARD AND JUSTIN AVENUE)

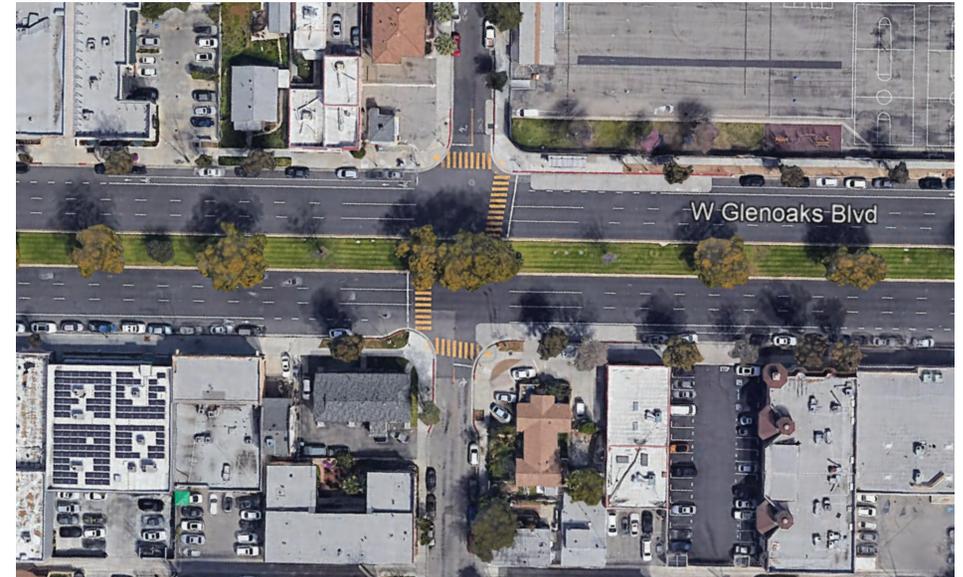


FIG 2.28 PARKING LANE PROTECTED BIKE LANE – TYPICAL MID-BLOCK CROSSING

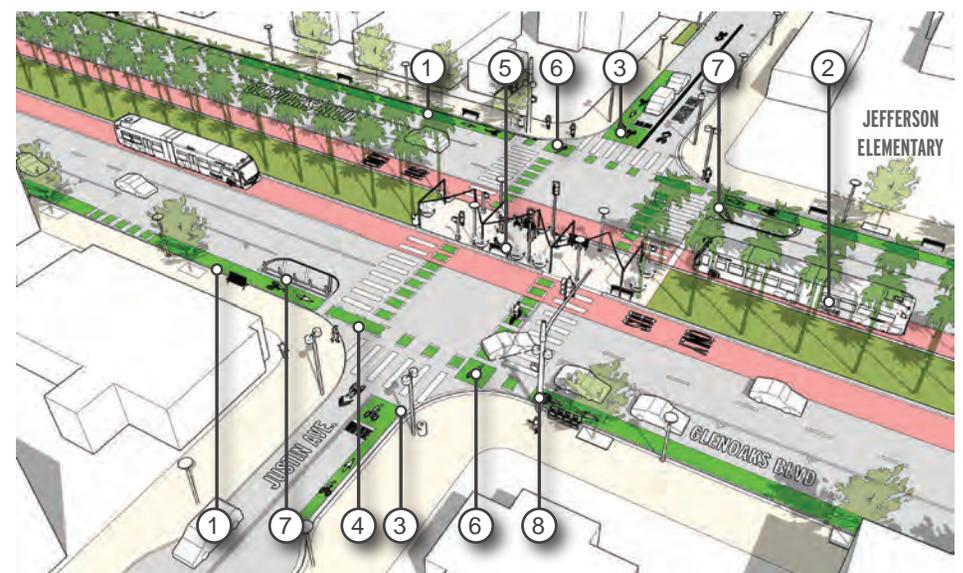
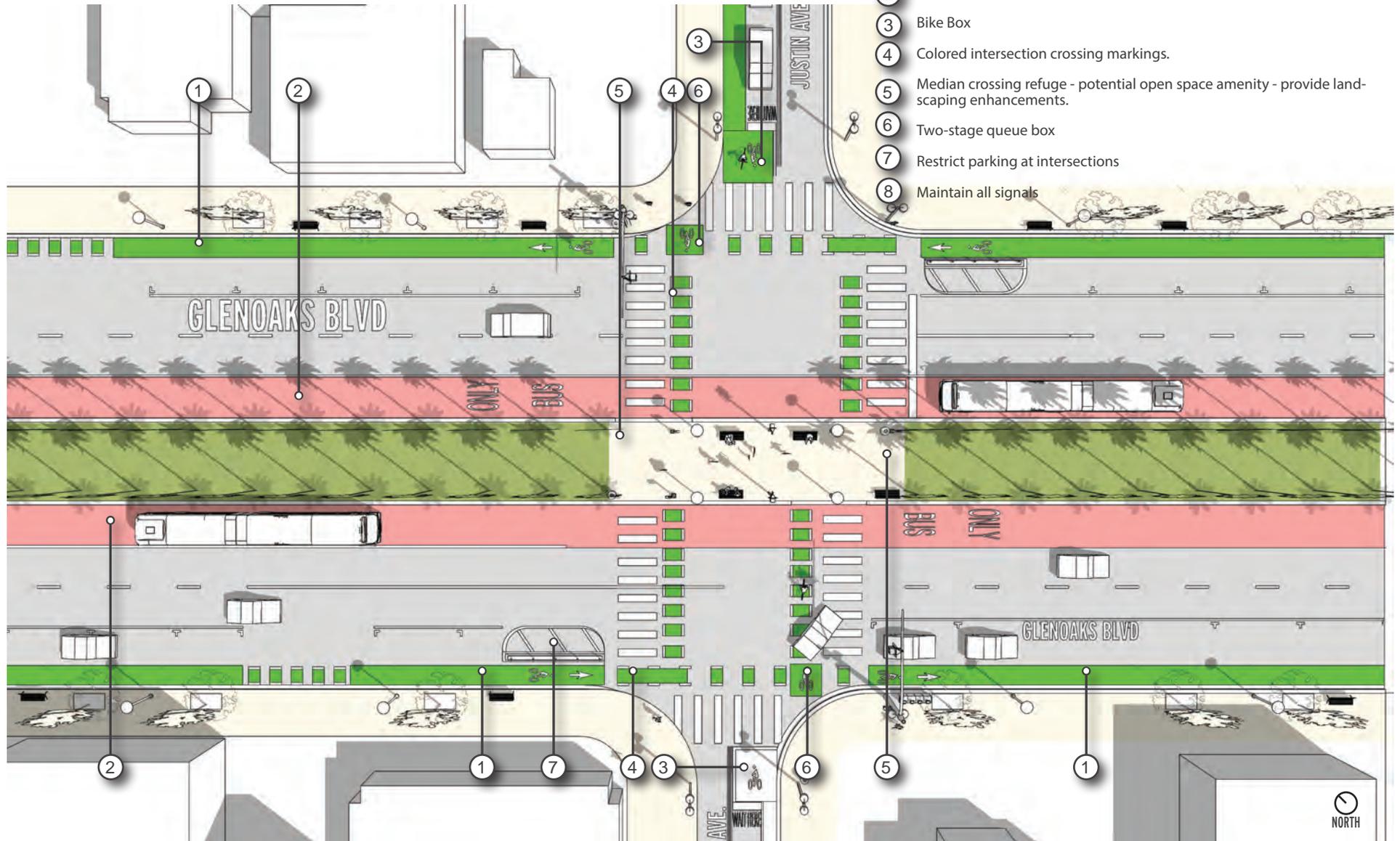


FIG 2.28 PARKING LANE PROTECTED BIKE LANE - TYPICAL MID-BLOCK CROSSING



**KEY**

- ① Protected bike lanes - lettering/symbols at beginning/end of intersections.
- ② Busway - consistent with Metro's BRT concept.
- ③ Bike Box
- ④ Colored intersection crossing markings.
- ⑤ Median crossing refuge - potential open space amenity - provide landscaping enhancements.
- ⑥ Two-stage queue box
- ⑦ Restrict parking at intersections
- ⑧ Maintain all signals

# CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY

## CONCEPT SUMMARY

The center running (median adjacent) bikeway concept proposes a hybrid one-way and bi-directional configuration that improves safety conditions for bicyclists traveling along the street. The design minimizes conflict zones in which cyclists will feel exposed and vulnerable. Except at intersections and mid-block crossings, cyclists are physically separated from other modes. The proposed design incorporates many elements that have been constructed elsewhere successfully and reflect standards of the MUTCD.

## KEY FEATURES:

- No changes to BRT platform or BRT lanes
- Protected bikeway between busway and existing median
- Bi-directional protected bikeway between median and busway at intersections
- No changes to on-street parking
- Maintain all existing driveways
- Enhanced median landscaping and lighting
- Enhanced existing walking and biking mid-block crossing.
- Protected bike intersection design at transit stations and multi-modal connecting route intersections

## KEY

- ① Protected Bike Lanes provided on the north and south sides of the median. Where medians are not present, at intersections, bike lanes form of a bi-directional bikeway.
- ② Busways provided consistent with the BRT plan but located approximately 8' outboard of existing median on both sides.
- ③ Two travel lanes consistent with the BRT plan — Consider adding Class III (Sharrow) shared lane markings between transit stations and mid-block crossings.
- ④ Curbside parking unchanged from the present configuration.
- ⑤ Existing Sidewalks width not changed but should be enhanced with additional canopy trees, street furniture and sidewalk lighting.
- ⑥ Existing median is not changed but would have enhanced landscaping.

FIG 2.30 CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY OPTION CONCEPT SUMMARY



FIG 2.31 TYPICAL CENTER RUNNING PROTECTED BIKEWAY

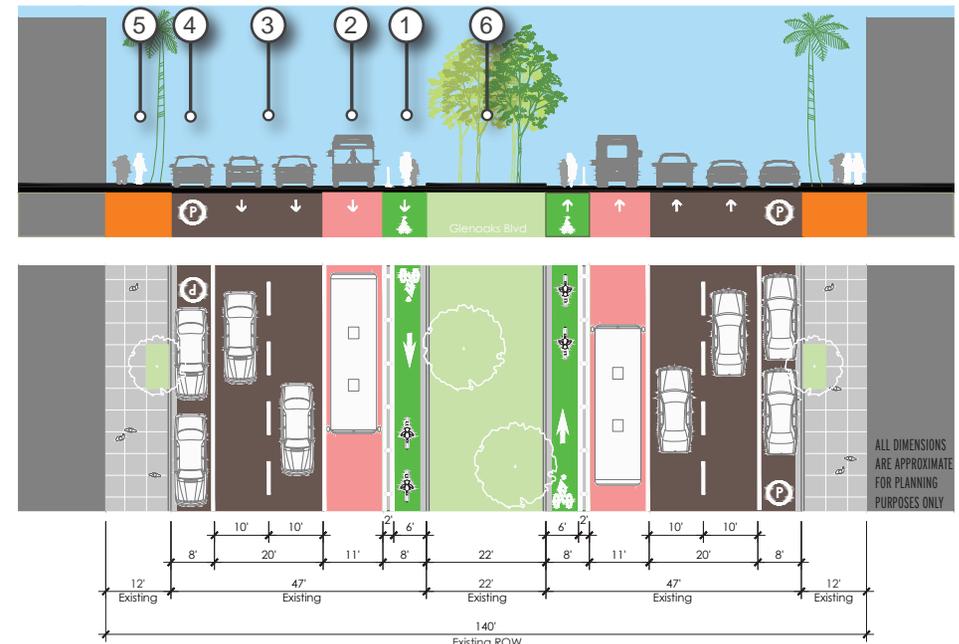


FIG 2.32 GLENOAKS CORRIDOR CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY CONCEPT – THOMPSON AVENUE TO SONORA AVENUE (WESTERN STATION)

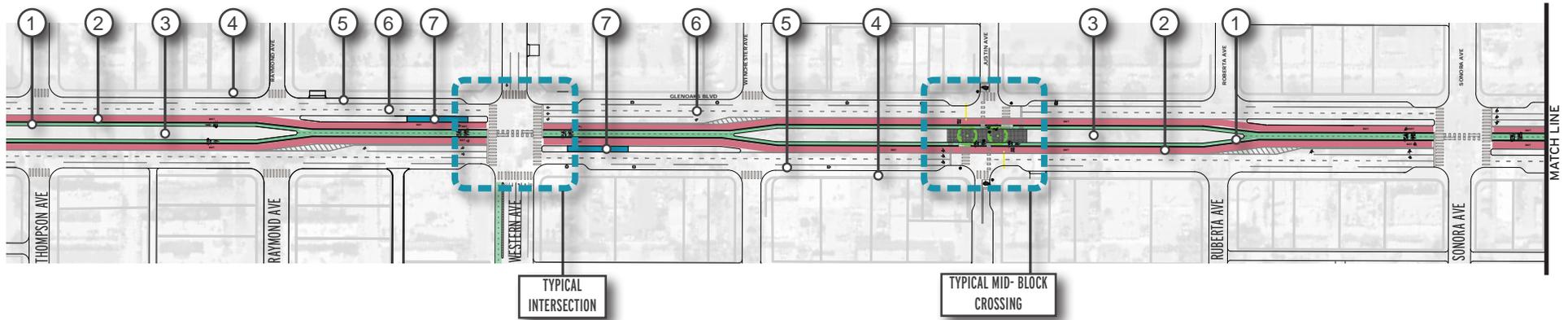
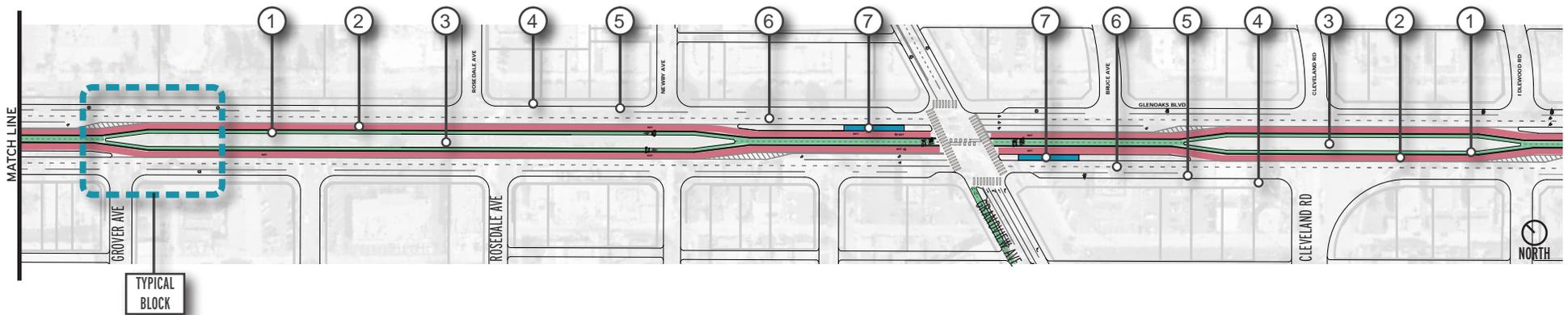


FIG 2.33 GLENOAKS CORRIDOR CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY CONCEPT – SONORA AVENUE TO CLEVELAND AVENUE (GRANDVIEW STATION)



KEY

- ① One-way protected bike lanes provided between the busway of the median. Where medians are not present, at intersections, bike lanes form of a bi-directional bikeway.
- ② Busway design is generally consistent with the BRT plan but located approximately 8' outboard of existing median on both sides to accommodate the protected bike lane and buffer.
- ③ Existing median is not changed except as dictated in the BRT Plan. Enhanced landscaping is recommended.
- ④ Existing sidewalks width not changed. Sidewalks should be enhanced with additional canopy trees, street furniture, and sidewalk lighting is recommended.
- ⑤ Curbside parking, driveways, alleys, and intersections unchanged from present configuration.
- ⑥ Two travel lanes consistent with the BRT plan — Consider adding Class III (Sharrow) shared lane markings between transit stations and mid-block crossings.
- ⑦ BRT platform, consistent with BRT plan.

KEY MAP



## CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY – TYPICAL BLOCK

### INTENT

The intent of the concept is to eliminate as many conflict points with autos, trucks and buses as possible. Moreover, the concept:

- Allows existing businesses to operate as they do today. It does not impact existing on-street parking, driveways, alleys, and intersecting streets.
- Has flexibility. Should ridership levels increase, the bike lane design could be revised. In particular, the bike lane width could be increased by incorporating it into the median.
- May be able to incorporate potential emerging transportation innovations. Autonomous (driverless) microtransit shuttles and delivery vehicles are limited by safety constraints that limit their current use. A shared bikeway would have fewer conflict points that may, in turn, be a means to accommodate these vehicles. Doubling up the use of the bikeway for these vehicles may provide an opportunity to maximize use of constrained public rights-of-way.

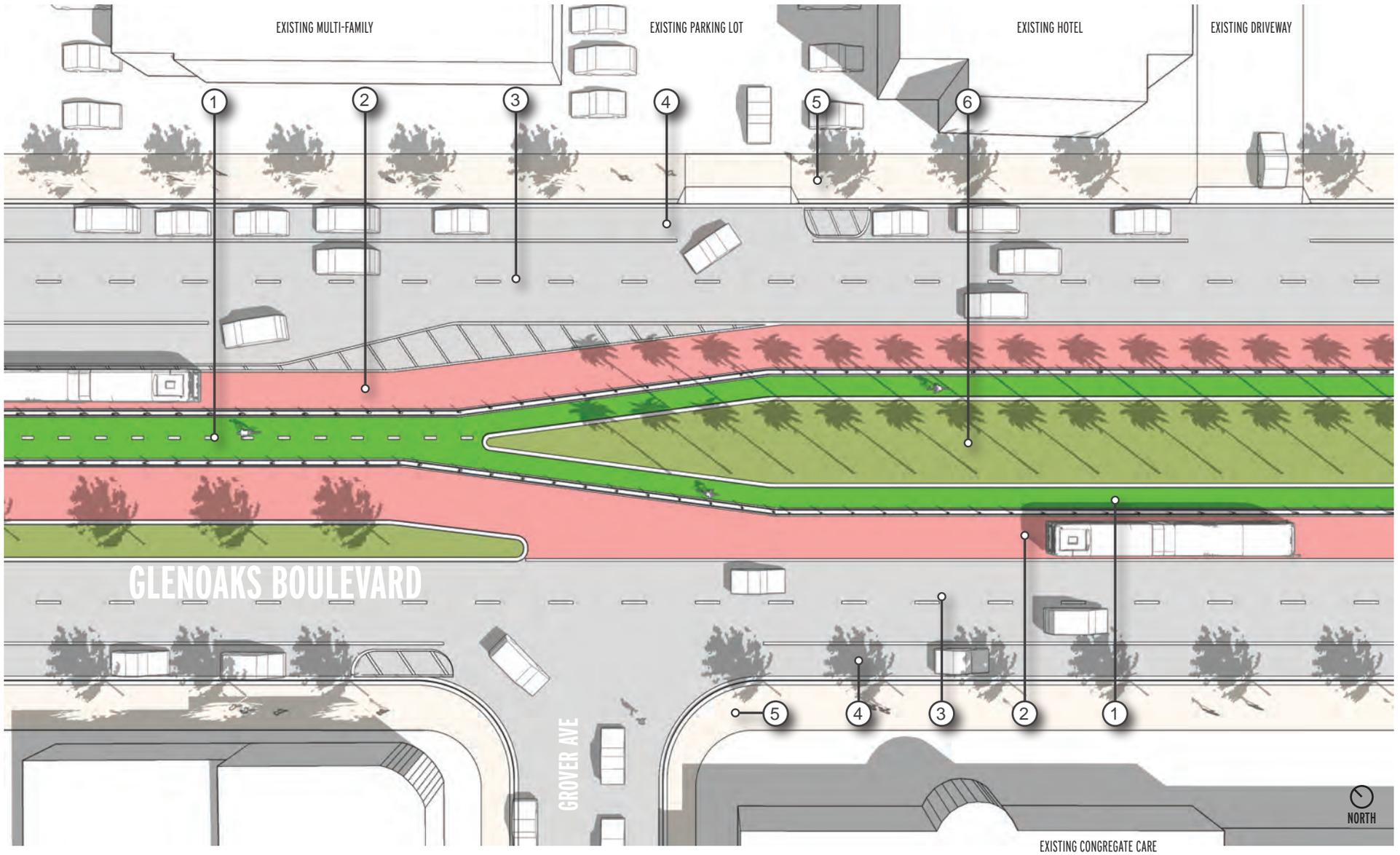
### KEY

- ① Protected Bike Lanes provided on the north and south sides of the median. Where medians are not present, at intersections, bike lanes form of a bi-directional bikeway.
- ② Busways provided consistent with the BRT plan but located approximately 8' outboard of existing median on both sides.
- ③ Two travel lanes consistent with the BRT plan — Consider adding Class III (Sharrow) shared lane markings between transit stations and mid-block crossings.
- ④ Curbside parking unchanged from the present configuration.
- ⑤ Existing Sidewalks width not changed but should be enhanced with additional canopy trees, street furniture and sidewalk lighting.
- ⑥ Existing median is not changed but would have enhanced landscaping.

FIG 2.34 TYPICAL BLOCK EXISTING CONDITION (GLENOAKS BOULEVARD AND GROVER AVENUE)



FIG 2.35 CENTER RUNNING PROTECTED BIKEWAY – TYPICAL BLOCK PLAN



## CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY – TYPICAL BLOCK DETAILS

Protected Bike lanes — Width is 6' (minimum) that includes the 12" gutter that results in an effective 5' riding lane. If possible, the width should be increased to reduce the 'chute' feel between the busway and the curb, allowing bicycle passing and avoidance of crossing into the busway or the median. A wider lane will ease the ability to fit maintenance sweepers or emergency vehicles into the lane.

Consistent application of colored lane color, bike lane word, symbol, and arrow markings placed at the beginning and end of bikeway and periodic intervals along the protected bike lane should be applied throughout. Closely spaced bollards (or a low fence) and extruded curb need to be placed so that bikers and BRT vehicles are separated throughout.

FIG 2.36 EXISTING GLENOAKS BOULEVARD



### KEY

- ① Protected Bike Lanes provided on the north and south sides of the median. Where medians are not present, at intersections, bike lanes formed of a bi-directional bikeway.
- ② Busways provided consistent with the BRT plan, but located approximately 8' outboard of existing median on both sides.
- ③ Two travel lanes consistent with the BRT plan — Consider adding Class III (Sharrow) shared lane markings between transit stations and mid-block crossings.
- ④ Curbside parking unchanged from the present configuration.
- ⑤ Existing Sidewalks width not changed but should be enhanced with additional canopy trees, street furniture, and sidewalk lighting.
- ⑥ Existing median is not changed but would have enhanced landscaping.

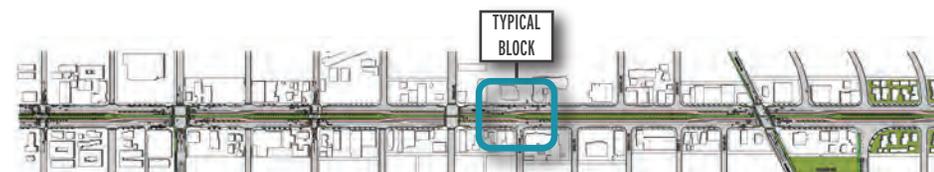


FIG 2.37 CENTER RUNNING PROTECTED BIKEWAY – TYPICAL BLOCK

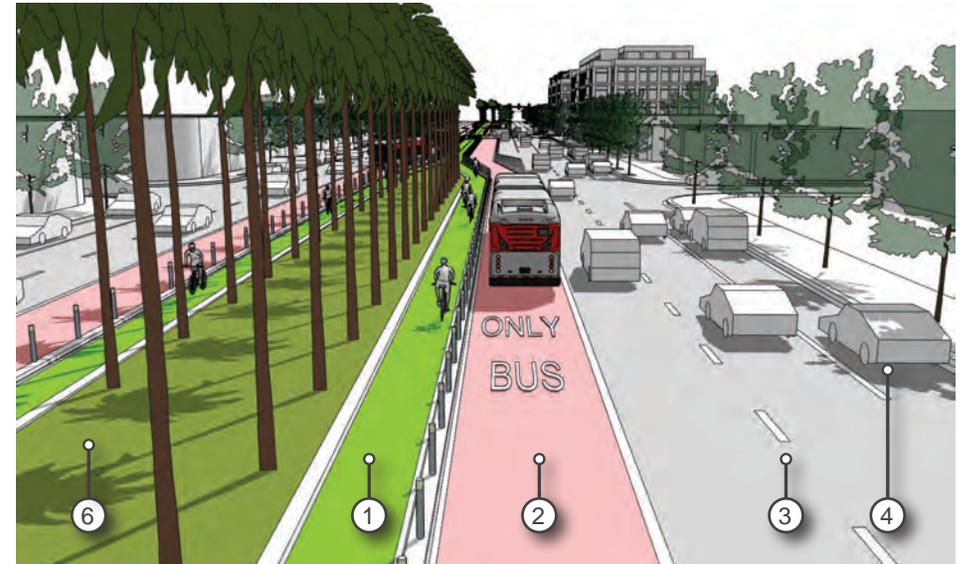


FIG 2.38 EXISTING TYPICAL BLOCK

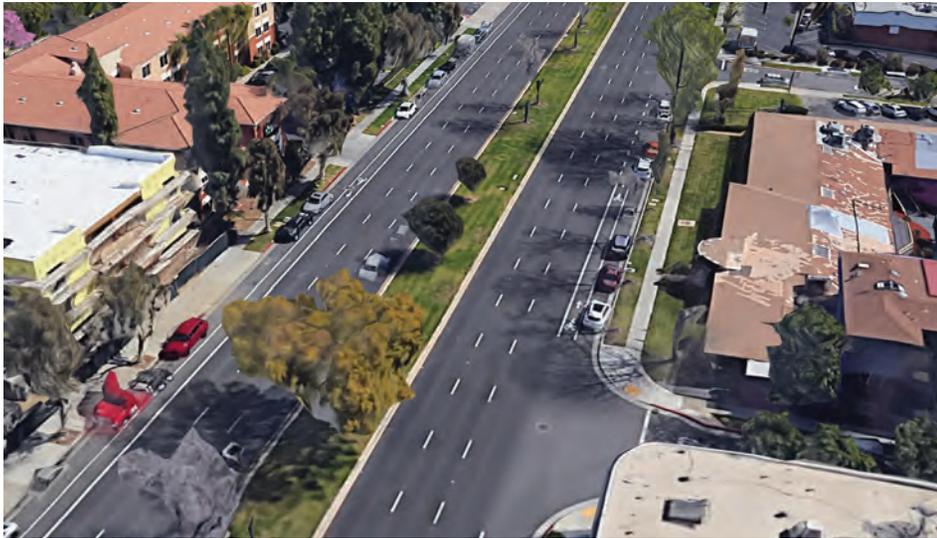


FIG 2.40 EXISTING TYPICAL BLOCK

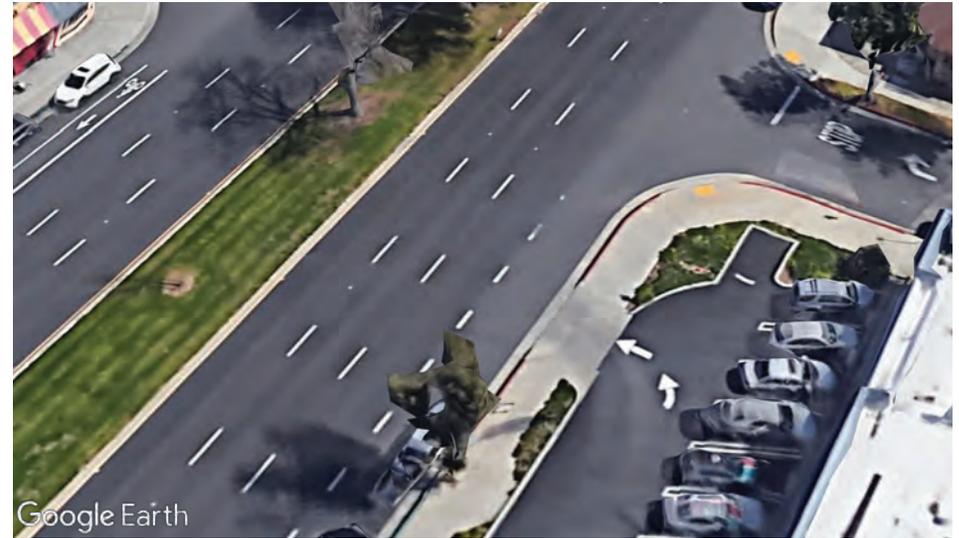


FIG 2.39 CENTER RUNNING PROTECTED BIKEWAY – TYPICAL BLOCK

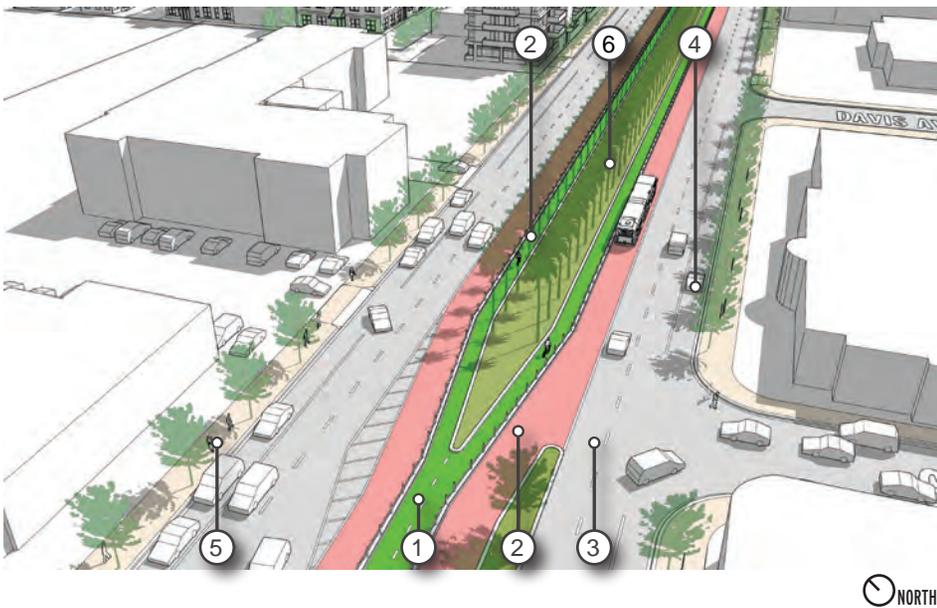
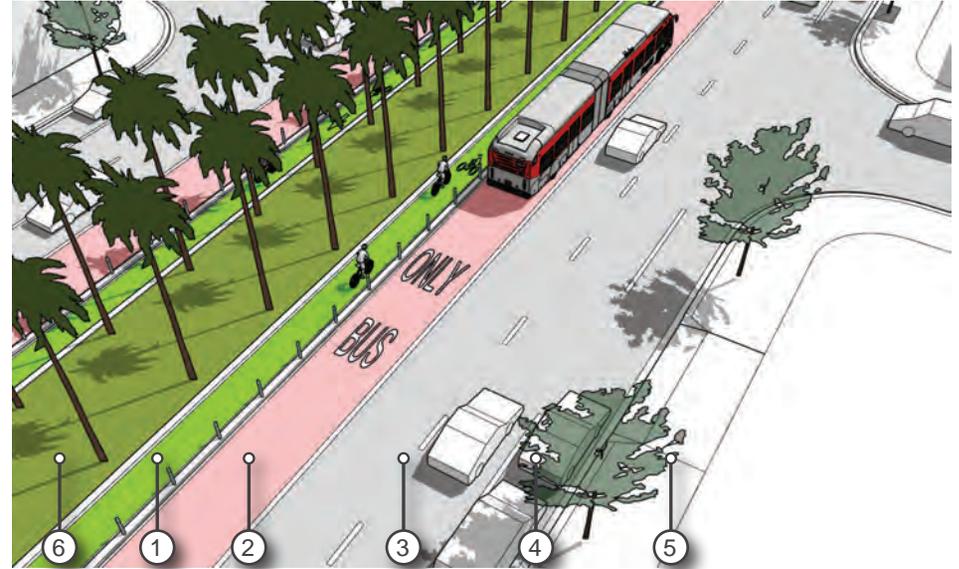


FIG 2.41 CENTER RUNNING PROTECTED BIKEWAY – TYPICAL BLOCK



## CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY – TYPICAL INTERSECTION

### INTENT

The intent of the intersection concept is to extend the physical separation that occurs along typical blocks through the intersection. With this concept, bicycle riders will not feel stranded, exposed, or unsure how to move through the intersection. Protected intersections could be a significant improvement for intersections with BRT transit stations and intersections where multi-modal crossing conflicts may occur.

The protected intersection concept illustrates a two-way, east-west crossing through the center of the Glenoaks Boulevard intersections, and protected one-way configurations at intersecting streets. The concept addresses the need to improve bicyclist safety and driver awareness where right-turning interaction occurs between bicycles and vehicles. The concept identifies how the bicyclist crosses each leg of the intersection parallel to pedestrians and waits in corner refuge areas that are protected from turning vehicles.

### Key elements:

- Corner 'refuge islands'- Bring the protection into the intersection by providing an extended curb that directs auto turning movements. They also provide bike riders a place to wait when turning during a red light phase.
- Forward stop bars- Increase visibility by placing cyclists in view of cars waiting at red lights. They also give bikers a head start when signals change to green. Moreover, they reduce the distance bikers (and walkers) need to cross.
- Setback biking and walking crossings (horizontal offsets)- Bike lanes may bend back slightly to increase awareness of biking, walking, and auto movement. With this design, visibility of bikers and walkers is increased because auto drivers turn 90° to face the crossing.
- Bicycle signal phases- Provide signal control and guidance how and when biker riders proceed through the intersection. Various types of signal designs that can protect bikers from right auto turning movements. Including separate signal phases, leading bicycle intervals, or other techniques. Additional design and analysis is required to determine the appropriate approach.

FIG 2.42 EXISTING TYPICAL INTERSECTION (GLENOAKS BOULEVARD AND WESTERN AVENUE)



FIG 2.43 CENTER RUNNING PROTECTED BIKEWAY – TYPICAL INTERSECTION

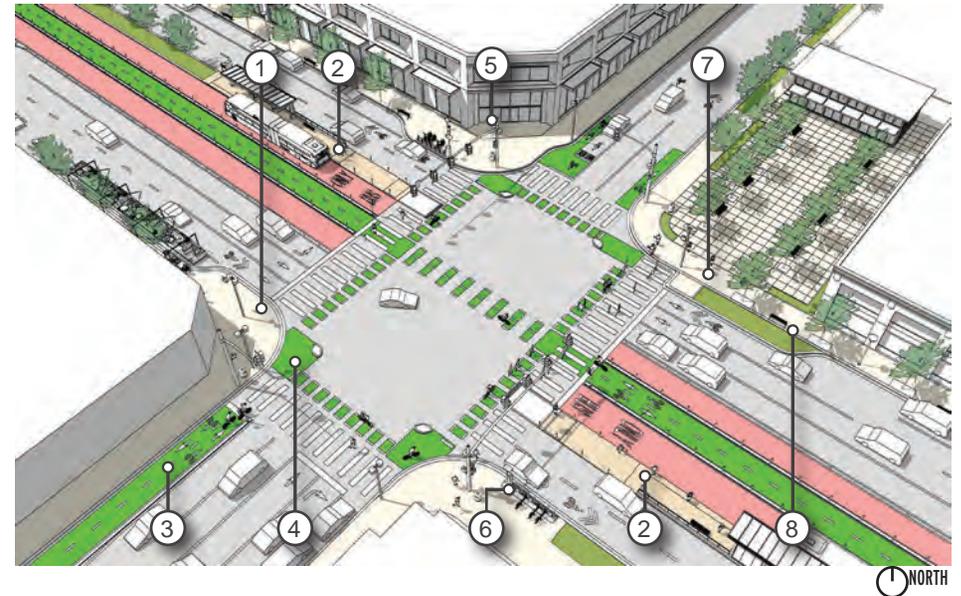
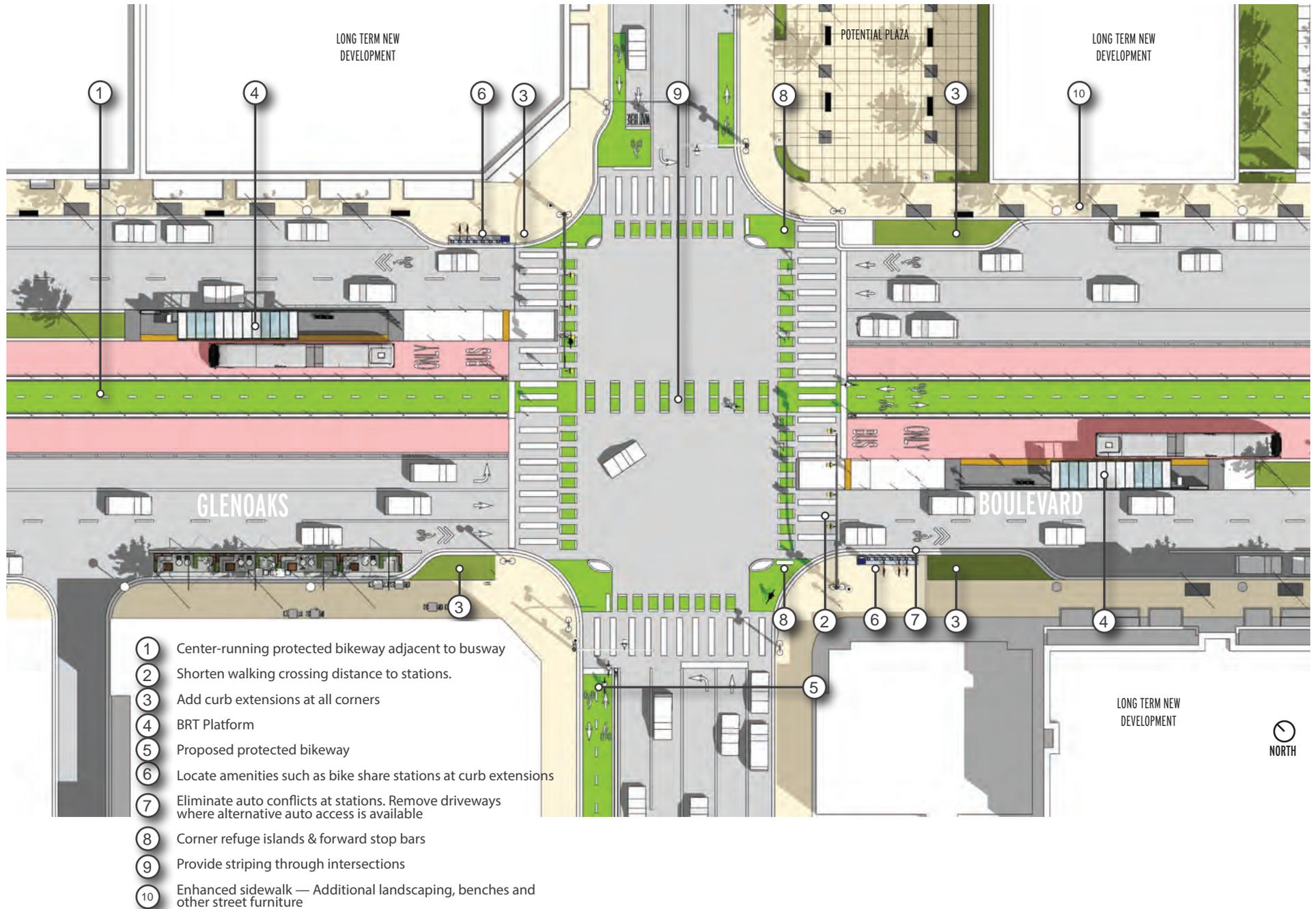


FIG 2.44 CENTER RUNNING PROTECTED BIKEWAY – TYPICAL INTERSECTION PLAN



## CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY – TYPICAL MID-BLOCK CROSSING

### INTENT

Midblock crossings provide essential points of access to the bikeway. The intent of the mid-block crossing concept is to maintain all existing crossings and add additional crossings to improve substandard conditions that currently exist.

Regular spacing of mid block crossings is recommended. Crossings should be spaced between 500-750 feet maximum.

Proposed changes include:

- Relocating the crossing at Irving Avenue to Thompson Avenue.
- Adding additional signalized or unsignalized crossings between Pacific Avenue and Grandview Avenue at Cleveland Road, Pelanconi Avenue, and Estelle Avenue.

The medians can also serve as crossing refuges. Crossings may include passive public open space amenities such as seating, ornamental lighting, wayfinding signage, public art, and water elements. Active uses such as play structures are not recommended.

Changes should make bikers and walkers more visible to car drivers and cars more visible to bikers and walkers. This may be accomplished by providing:

- Signage to identify crosswalks and islands to drivers.
- Installing curb extensions.
- Additional street lighting
- Bike boxes at the head of the traffic lane on signalized cross streets. They provide bikers with a safe and visible way to get ahead of queuing traffic during red signal phases.
- Two stage queue boxes that allow bikers to turn from the protected bike lane to the mid-block crossing. Providing the queue boxes prevents conflicts arising from bikers queuing in crosswalks or in the protected bike lane.
- Colored intersection crossing markings that indicate the path of the bicyclists.

FIG 2.45 EXISTING TYPICAL MID-BLOCK CROSSING AERIAL (GLENOAKS BOULEVARD AND JUSTIN AVENUE)



FIG 2.46 TYPICAL CENTER RUNNING PROTECTED BIKEWAY – MID-BLOCK CROSSING

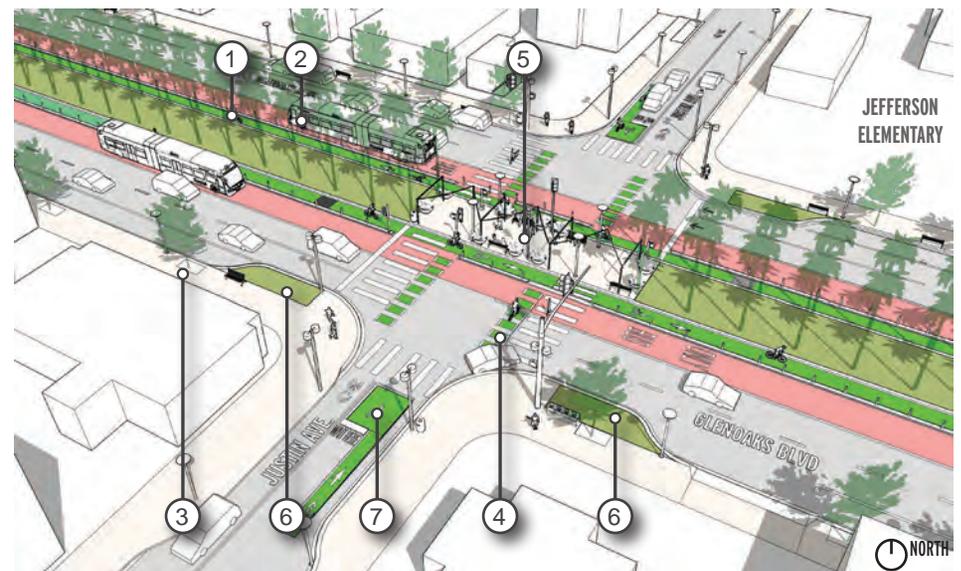
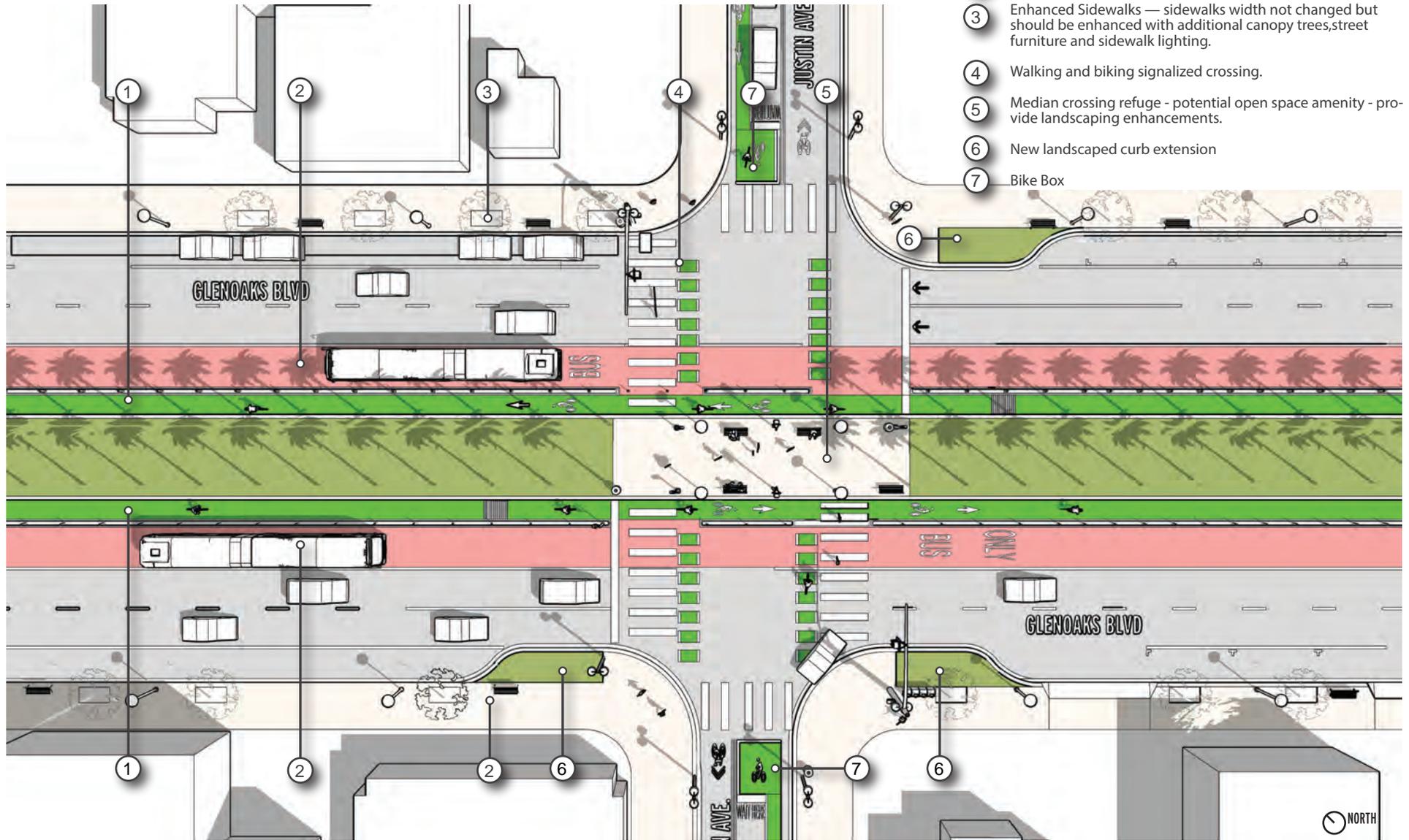


FIG 2.47 CENTER RUNNING PROTECTED BIKEWAY – TYPICAL MID-BLOCK CROSSING



KEY

- ① Protected bikeway - lettering/symbols at beginning/end of intersection.
- ② Busway — consistent with Metro's BRT concept.
- ③ Enhanced Sidewalks — sidewalks width not changed but should be enhanced with additional canopy trees, street furniture and sidewalk lighting.
- ④ Walking and biking signalized crossing.
- ⑤ Median crossing refuge - potential open space amenity - provide landscaping enhancements.
- ⑥ New landscaped curb extension
- ⑦ Bike Box

# PARKING PROTECTED BIKE LANE OPTION – BENEFITS & CHALLENGES SUMMARY

## BENEFITS SUMMARY

The primary benefit of a curb adjacent bike lane is that it allows easy, direct access to commercial and residential uses fronting the street. The protected bike lanes:

- Require no change to planned bus rapid transit design of bus lanes or station platforms.
- Eliminates risk and fear of collisions with over-taking vehicles along busy travel lanes.
- Reduces risks of ‘dooring’ compared to a bike lane and eliminates the risk of a doored biker being run over by a motor vehicle.
- If well designed, it eliminates double parking, which often occurs in standard bike lanes.
- Relatively easy to implement. Implementation costs are low because they utilize existing pavement and require no changes to roadway drainage gutters and catch basins. However, because of the narrow width of the bike lane, gutter seams and inlet grates should be designed so as not to reduce bicyclist safety.
- Provide opportunities to incorporate long-term streetscape enhancement strategies. As the corridor evolves, redevelopment of adjacent properties could include ‘premium’ protected bike lane enhancements along development site frontages. Premium elements may include raising the protected bikeway to sidewalk level, adding more robust physical barriers along door zones, additional lighting, additional landscaping, and curb extensions at intersections and at mid-block locations.

## CHALLENGES SUMMARY

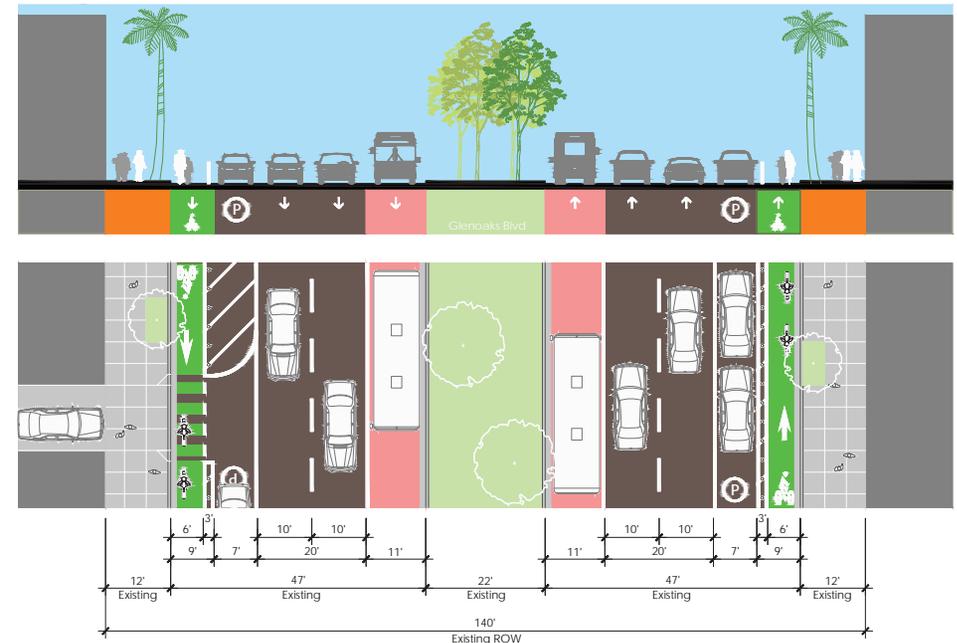
The primary challenge is to minimize or eliminate multiple existing auto and pedestrian conflict points and obstructions along the curblines that will be present despite the creation of a protected bike lane. Specific challenges that need to be addressed and overcome include:

- Balancing the needs of bikers and commercial businesses. Along destination segments, maintaining on-street parking for street-oriented businesses will likely be demanded. Providing a safe protected lane will likely require the removal of some on-street parking to provide minimum sightline distances from driveways and intersections. Other street changes such as curb extensions will also be needed to provide more equitable access by walkers to the stations.
- Driveways, alleys, and intersections. Because the current corridor has an auto-oriented nature, a considerable number of driveways occur along each block face. At a minimum, along mobility segments and blocks with fronting transit stations, driveways should be eliminated where alternative access is available from cross streets or alleys. Elsewhere, driveways should be combined and shared wherever possible.
- Minimum standards for bike lane buffer width is not provided. 3 foot wide parking buffers are narrower than a suggested best practice 5 foot width. The narrow width may lead to an increase in collisions with car passengers exiting vehicles along the buffer. In addition, there may be additional bollard maintenance costs

due to damage caused by drivers maneuvering vehicles into parking spaces. As the BRT corridor design is refined, opportunities to increase the buffer width should be pursued.

- ADA access. Currently, those in wheelchairs can access sidewalks at-grade from car passenger doors. Relocated parking away from the curb will likely require additional mid-block ramps to ensure equitable access is preserved for those with physical disabilities.
- Enforcement. Drivers, in particular those providing deliveries, are conditioned to park next to the curb regardless of the presence of a painted-on-the-street bike lane and bollards. Supplemental signage that indicates parking in the bike lane is prohibited may be required to increase awareness.
- Curb management. There is a growing desire to use parking lanes as ‘flex spaces’ that accommodate permanent or temporary uses such as café seating. The ability to safely access flex spaces requires crossing the bike lane. Awareness of conflict zones should be provided through lane markings, signage, or other means.
- Impact of existing uses. Current auto-oriented commercial and low-density residential uses require vehicle access across bike lanes and parking adjacent to bike lanes. This access will need to be accommodated for the foreseeable future. As a result, the stress level of cyclists will be high until land use plans can be created and implemented that replace auto-oriented uses with uses that do not require driveways or on-street parking.

FIG 2.48 PARKING LANE PROTECTED BIKE LANE



# CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY – BENEFITS & CHALLENGES SUMMARY

## BENEFITS

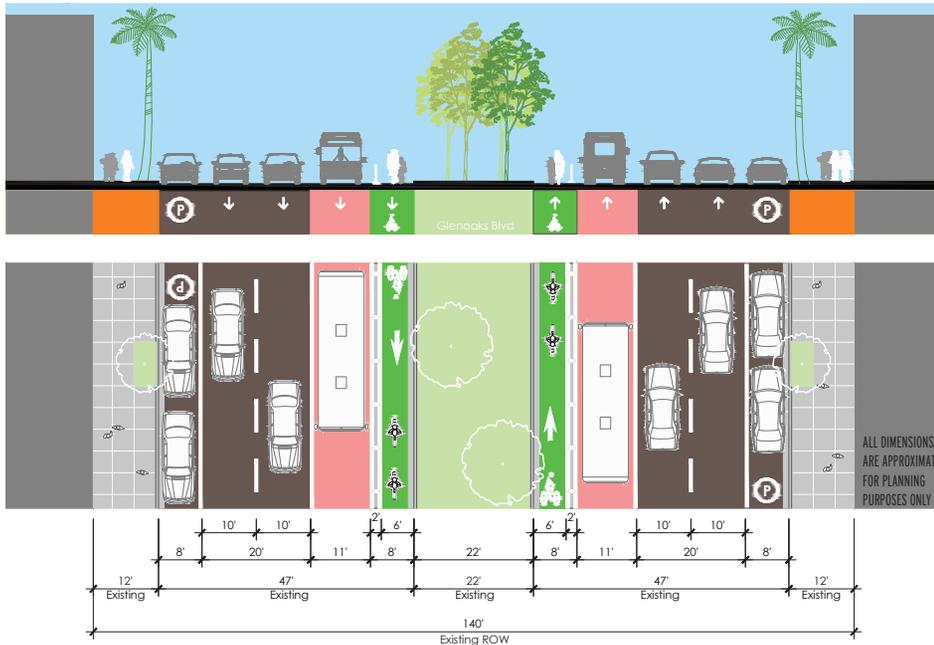
The primary benefit of a center running bikeway minimizes or eliminates auto and pedestrian conflict points and obstructions. The protected bikeway:

- Is relatively easy to implement. It requires minimal changes to the planned bus rapid transit design of bus lanes or station platforms.
- Has no impact on existing curbside parking and driveways.
- Has no impact on existing adjacent uses that are auto-oriented or include numerous driveways.
- Has no impact on temporary or permanent parking lane use as café seating or other 'flex' uses.
- Can accommodate users that are not currently present such autonomous vehicles. Because there are fewer conflict points, this location may be more attractive for safety reasons.

## CHALLENGES

The primary challenge of a center running bikeway is that access between the bikeway commercial and residential uses fronting the street is limited to intersections and mid-block crossings, which is significantly poorer than the parking lane protected bike lane option. Accessing adjacent uses that are not directly adjacent to intersections or mid-block crossings would require bicyclists to either ride with motor vehicles in traffic lanes or walk their bicycles on sidewalks. Strategies to mitigate this could include increasing the number of mid-block crossing, providing traffic lane bike sharrows markings, or permitting sidewalk bike riding between crossings.

FIG 2.49 TYPICAL CENTER RUNNING PROTECTED BIKEWAY



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# 3.0 COMPLETE STREETS CONCEPTS



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## INTRODUCTION

The complete streets concept represents an opportunity to provide equitable walking and biking access by addressing street-specific characteristics, adjacent land use, neighborhood context, and adopted policies and plans, while incorporating best practices for complete street design.

### INCREASING TRANSPORTATION CHOICES

The network provides residents, employees, clients, and visitors within West Glendale a viable transportation alternative to auto travel. The network:

- **Improves Local Access** — by providing convenient ‘five-minute’ routes between destinations that are frequented on a daily weekly basis— schools, apartments, grocery stores, and office buildings.
- **Improves regional mobility** — by providing cyclists an unimpeded ‘super bike highway’ mobility option between downtown Glendale and downtown Burbank
- **Improves regional transit access** — by providing access to future Glenoaks BRT Alameda, Western, Grandview, and Pacific stations that provide premium transit access to Hollywood, Pasadena, and the greater Metro transit system.
- **Improves Livability** — Provides green space access to study area parks, the Glendale Narrows Riverwalk, and the Los Angeles River trail that would serve as both transportation and recreation facilities.

### COMPLETE AND CONNECTED NETWORK

Safe, direct, convenient walking, biking, and transit access is provided throughout the West Glendale Study area. Equitable walking and biking access is provided by:

- **Reducing out-of-direction travel** by removing barriers and filling in the gaps of existing incomplete routes or improving substandard routes
- **Providing additional biking and walking opportunities** by adding new routes that complement and strengthen the existing network.

### ROAD SPACE ALLOCATION

All improvements are within the public right-of-way. No changes to private property are proposed. However, within the right-of-way:

- Roadway space from curb-to-curb has been reallocated to add or improve bicycle and walking facilities.
- In some instances, travel lanes’ widths have been reduced or removed, and parking lanes have been removed or relocated.
- Where routes cross busy intersections, safety and convenience improvements have been provided to meet needs of all modes equitably, not just autos and trucks.

### NETWORK LEGIBILITY

The concepts propose a uniform biking facility ‘kit of parts’ that includes:

- Lane types, locations, intersection treatments, signalization, and other design elements that address local and national standards and employ cutting-edge best practice design features are applied consistently throughout.
- Consistent application of design features that eliminate or reduce crashes by providing an intuitive and predictable sense of awareness for both cyclists and motorists of where each mode ‘is’ along roadways and at intersections.

### PLACEMAKING AND ECONOMIC DEVELOPMENT

The network sets the stage for:

- Creating a unique West Glendale identity and a catalyst for new walking and biking-oriented land uses.
- Additional amenities — landscaping, street lighting, street furniture, and way-finding can be part of a comprehensive streetscape design that improves the beauty of the streets and livability of West Glendale.

# COMPLETE STREETS FRAMEWORK

## CONCEPT SUMMARY

**For the West Glendale study area, a variety of complementary walking and biking routes are planned. The network includes a web of interconnected 5-minute trip routes that provide access between outlining areas and destinations.**

When completed, the entire network is intended to significantly increase walking and biking trips in and through the district, contribute to relieving auto traffic congestion, reduce greenhouse gas emissions, and lead to healthier active lifestyles for West Glendale residents and employees. The framework includes the following routes:

### FIRST AND LAST MILE LOOP

The loop forms the primary structure of the network and is the most fundamental component of an equitable car-free West Glendale-serving transportation network. Moreover, the loop is envisioned as an economic development catalyst that will draw new transit and bicycle-oriented development to a pedestrian-friendly setting.

The loop consists of all-new walking and biking routes between future BRT stations, potential new development sites, existing office, and park land uses south of Glenoaks Boulevard and the Glendale Narrows Riverwalk. Long-term, a Verdugo Wash bike route should be integrated into this network.

The character of the loop route is envisioned as a landward extension of the existing Glendale Narrows Riverwalk. Generally, the route is comprised of walking and biking enhanced intersections and bi-directional protected bike lanes and multi-use paths with the exception of a portion of Flower Avenue where bike lanes were designed previously to this planning study.

### GLENOAKS MULTIMODAL REGIONAL ROUTE

Active transportation improvements include the North Hollywood to Pasadena BRT busway and stations at Alameda Avenue, Western Avenue, Grandview Avenue, and Pacific Avenue as planned by Metro. Supplementing the transit improvements are protected bike lanes between Alameda Avenue and Brand Avenue. The components of this network are fully described in Chapter 2.

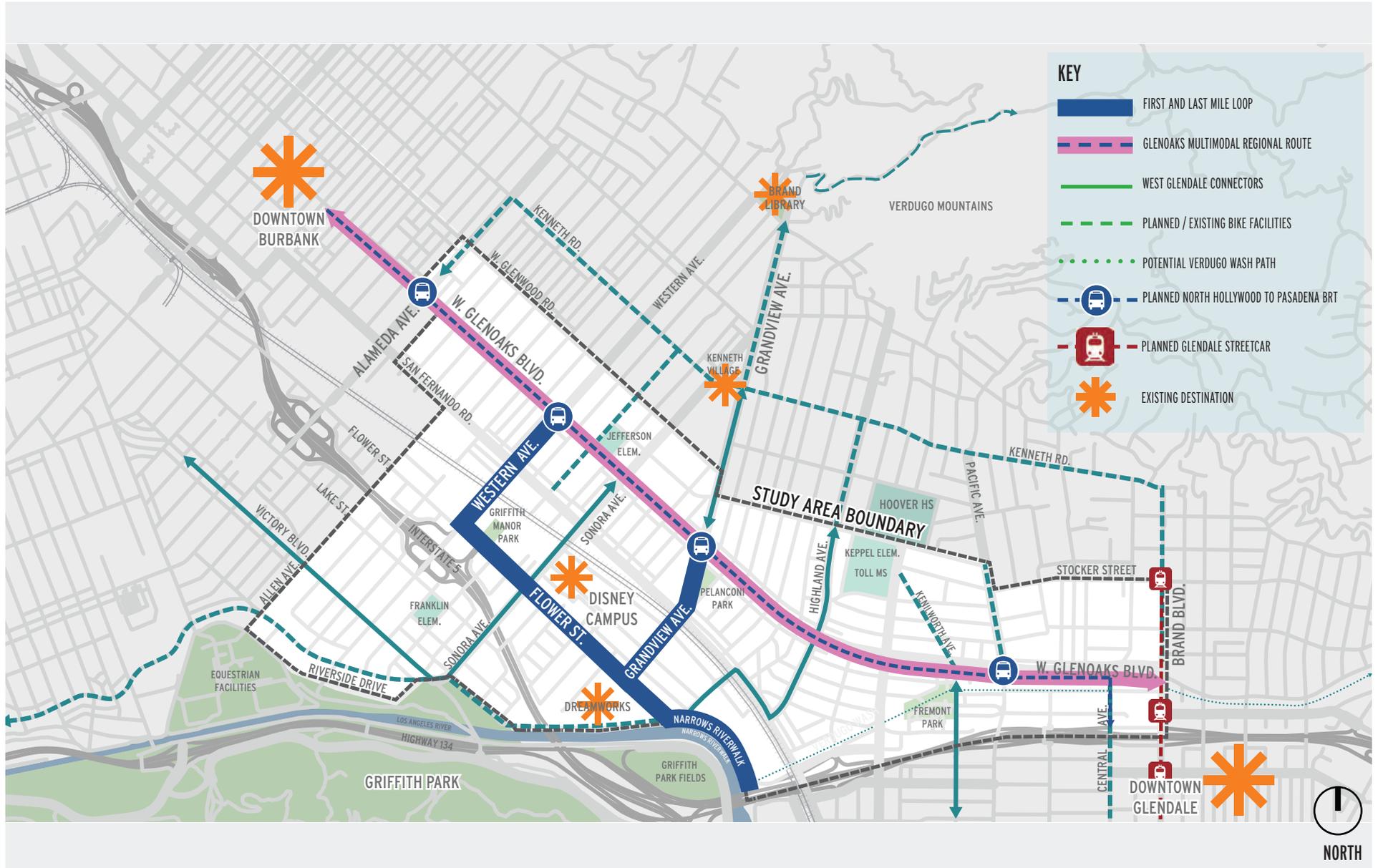
The routes are intended to serve as means of local (5 minute trip) walking and biking access to adjacent high density neighborhoods, existing businesses, and envisioned mixed-use transit-oriented development hubs at Western Avenue, Glenview Avenue, and Pacific Avenue stations. In addition, it can also serve as a regional direct, convenient, and quick 'super highway' bicycle commuter route between downtown Glendale and downtown Burbank.

## WEST GLENDALE CONNECTORS

Included are essential routes that fill in the gaps between the first and last mile loop and the Glendale Multi-modal Regional Route. Connectors include enhancements to existing and Glendale Bicycle Plan designated bike lanes (Class II) and bike routes with roadway sharrow markings (Class III). Key route corridor improvements are proposed include:

- Victory Drive — Improvements along Victory Drive include potential protected bike lanes that may provide an extension of complete street improvements that are being advanced by the City of Burbank. Conceptual plans and street sections are provided in the Appendix.
- Sonora Avenue — Improvements along Sonora Avenue which has existing bike lanes but includes gaps in the route that need to be connected at the intersections of San Fernando Road and Flower Street.
- Highland Avenue — Improvements along the Highland Avenue corridor serve as the extension of the existing bike lane infrastructure that is present north of Glenoaks to San Fernando Road. In addition, a walking and biking connection to the Glendale Narrows Riverwalk is envisioned via a combination of a multi-use path along San Fernando and a new bi-directional bikeway along Flower Street to Fairmont Avenue. Conceptual plans and street sections are provided in the Appendix.

FIG 3.01 COMPLETE STREETS FRAMEWORK



# FIRST AND LAST MILE LOOP

## CONCEPT SUMMARY

Four corridors comprise the First and Last Mile Loop. For each corridor,

- Existing conditions have been analyzed using the project goals and objectives as a guide. From this existing conditions analysis, 'project areas' within each corridor have been created to address unique conditions or capitalize upon special opportunities.

For all corridors, typical plans, sections and photo simulation graphics have been provided to describe each improvement. For each corridor project area:

- Conceptual enhancements are suggested for sidewalks, bike lanes, crosswalks, and some instances, mid-block crossings.
- Auto infrastructure, in some cases has been changed where necessary, to ensure that complete streets will be designed to equitably meet the mobility needs of all people not just those in cars.

### GLENOAKS BOULEVARD

- The entire corridor extends from Alameda Avenue to Brand Boulevard. Two alternative protected bike lanes are provided and further described in Chapter 2 of this document.

### WESTERN AVENUE

- Improvements for this corridor segment of the First and Last Mile Loop extend between Glenoaks Boulevard and Flower Street.
- The project comprises two of four project areas. The two project areas include either a bi-directional protected bikeway or a multi-use path walking and cycling improvements. Two project areas, including walking and biking intersection improvement concepts.

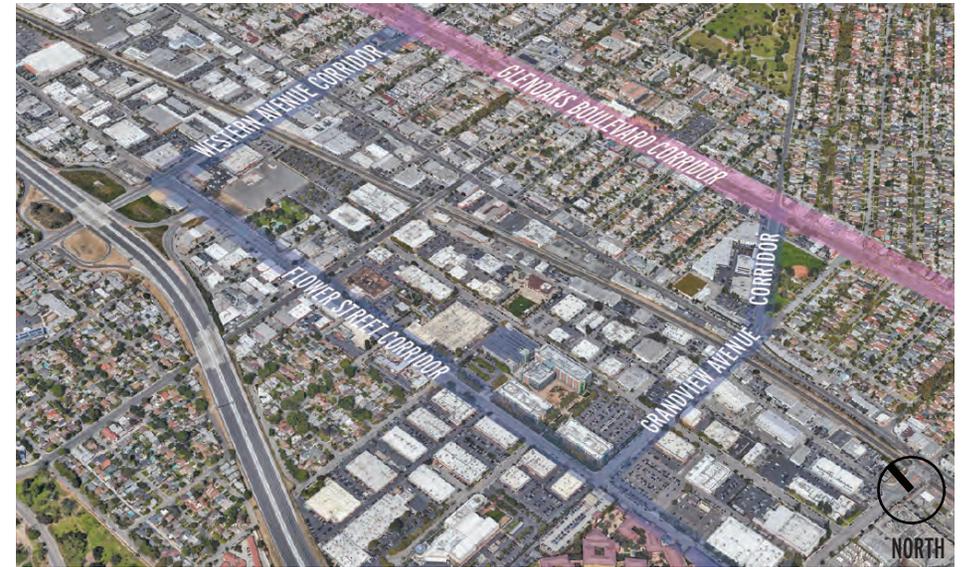
### GRANDVIEW AVENUE

- Improvements for this corridor segment of the First and Last Mile Loop extend between Glenoaks Boulevard and Flower Street.
- The project comprises two of four project areas. Two project areas include a bi-directional protected bikeway.
- Two project areas include walking and biking improvement intersection concepts.

### FLOWER AVENUE

- Improvements for this corridor segment of the First and Last Mile Loop extend between Fairmont Avenue and Western Avenue.
- The corridor comprises two project areas.
- One project area includes bike lane and sidewalk improvements designed prior to the initiation of this Study. The designs have been incorporated into the complete street loop concept.

FIG 3.02 FIRST AND LAST MILE LOOP CONTEXT



## ANALYSIS AND ASSESSMENT

### Transportation Analysis

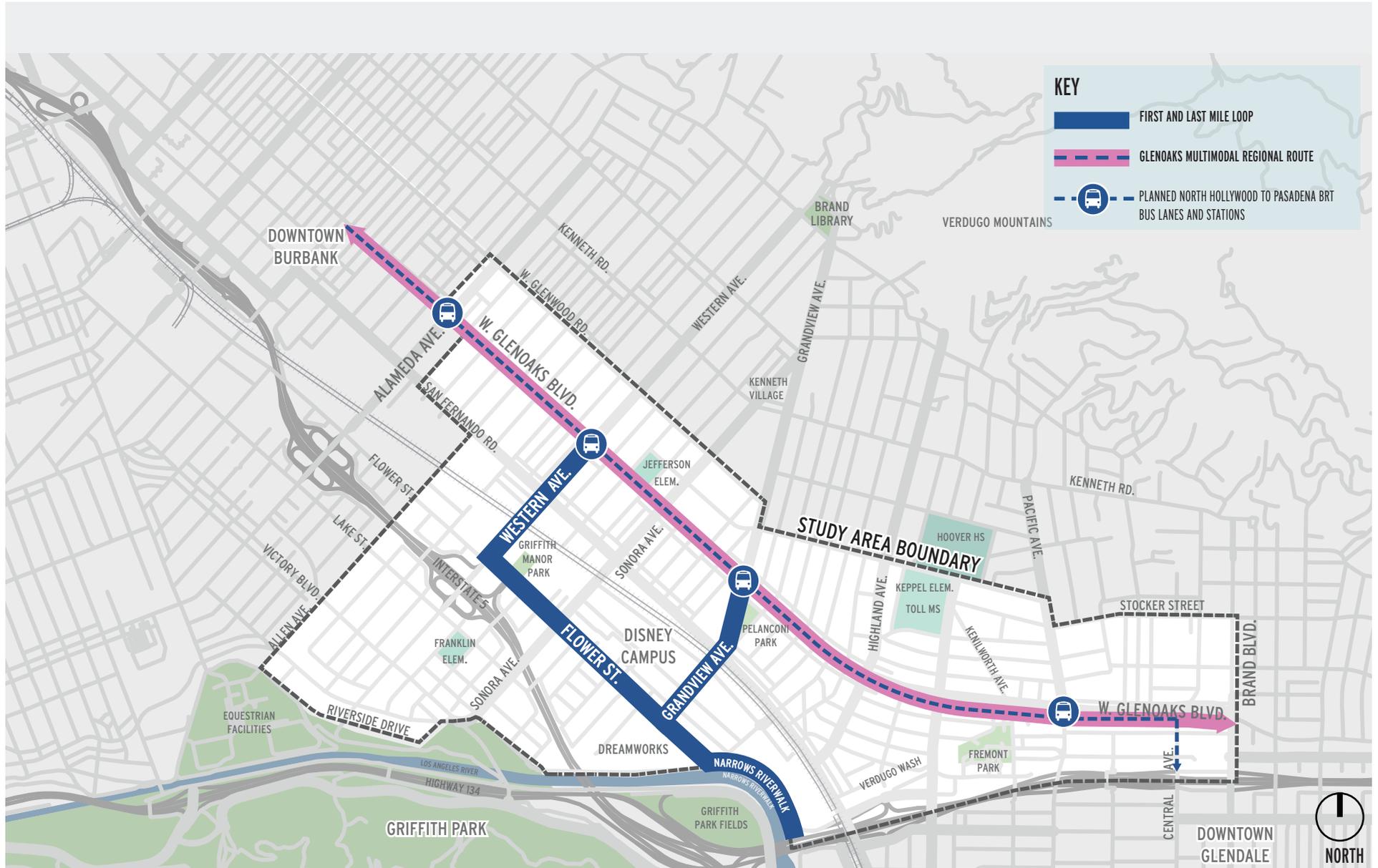
While the proposed concepts are visionary, they are grounded in a transportation feasibility analysis, including:

- Design Feasibility: Spatial analysis and conceptual design were completed at the most constrained locations to demonstrate the design feasibility within the existing right-of-way.
- Roadway Conflicts: Auto turn movements were analyzed to understand potential auto/ bike conflict points.
- Intersection Conflicts: Intersection design and signal timings were developed to minimize conflicts.
- Traffic Diversion and Auto Capacity: A traffic diversion analysis was completed to understand how the overall network would respond to the proposed reduction in auto capacity on Glenoaks, Western, and Grandview.
- Intersection Operations: Existing and future intersection operations were analyzed at select high-volume intersections.

A full Transportation Analysis Memorandum is provided in the appendix of this report.

**Goals and Objectives Assessment** - evaluates how each improvement positively address each project goal and objective.

FIG 3.03 FIRST AND LAST MILE LOOP CONCEPT



# WESTERN AVENUE CORRIDOR EXISTING CONDITIONS ANALYSIS

## PROJECT AREAS

Four districts comprise the half-mile corridor:

- **Project Area 1** — Extends 1,100 feet from Glenoaks Boulevard to San Fernando Road.
- **Project Area 2** — Extend 1,500 feet from San Fernando Road to Flower Street.
- **Project Area 3** — Includes the San Fernando Road intersection and frontage road south of the intersection.
- **Project Area 4** — Includes the Flower Street intersection and frontage road north of the intersection.

## GOALS AND OBJECTIVES ANALYSIS

All project areas existing conditions have been analyzed through the lens of the project goals and objectives:

### EQUITY

- There currently are no existing bicycle facilities, but a future lane is identified in the Bicycle Transportation Plan.
- Adequate ADA access is not provided at the viaduct bridgeheads.

### BIKING

- A high level of stress for cyclists riding in high traffic travel lanes significantly limits existing ridership.

### WALKING

- Continuous (6' wide) curb adjacent sidewalks are present from Glenoaks Boulevard to San Fernando Road. The width provides areas for walking, but not adequate area for any street furniture or landscaping. Multiple driveways on the east side of the roadway interrupt the sidewalk and present potential conflicts with autos entering or exiting off-street parking. Moreover, the cross-sloping sidewalks at driveways provide challenges for those in wheelchairs.
- No pedestrian-oriented street lights are currently present.
- Signalized crosswalks are provided at San Fernando Road and Flower Street. Crossings are wide and are without median crossing 'refuges' that reduces the distance and provide a place to wait.

### TRANSIT

- No existing bus routes run along Western; however, a route runs along San Fernando Road and a stop occurs at the intersection of San Fernando Boulevard.
- A Future BRT Station at Glenoaks intersection is planned.

### EASE OF IMPLEMENTATION

- Bike facilities can be added by reducing the number of lanes from four to three to make room for the facility while maintaining parking and driveway access on both sides of the street from Glenoaks to San Fernando.
- Bike facilities can be added by maintaining four narrowed lanes from San Fernando Road to Flower Street.

FIG 3.04 WESTERN AVENUE EXISTING CONDITIONS

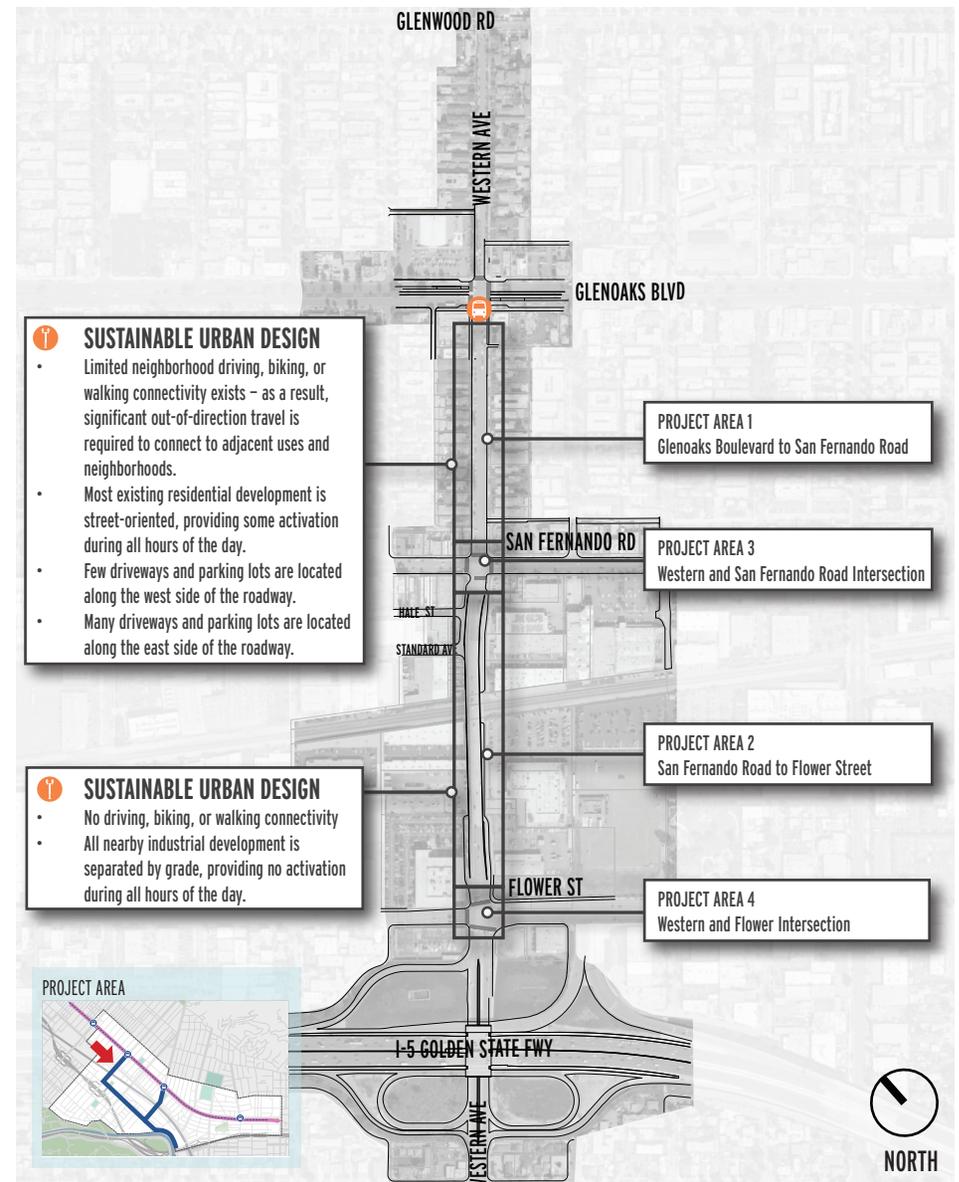


FIG 3.05 EXISTING CONDITIONS PROJECT AREA 1 GLENOAKS BOULEVARD TO SAN FERNANDO ROAD – LOOKING NORTH

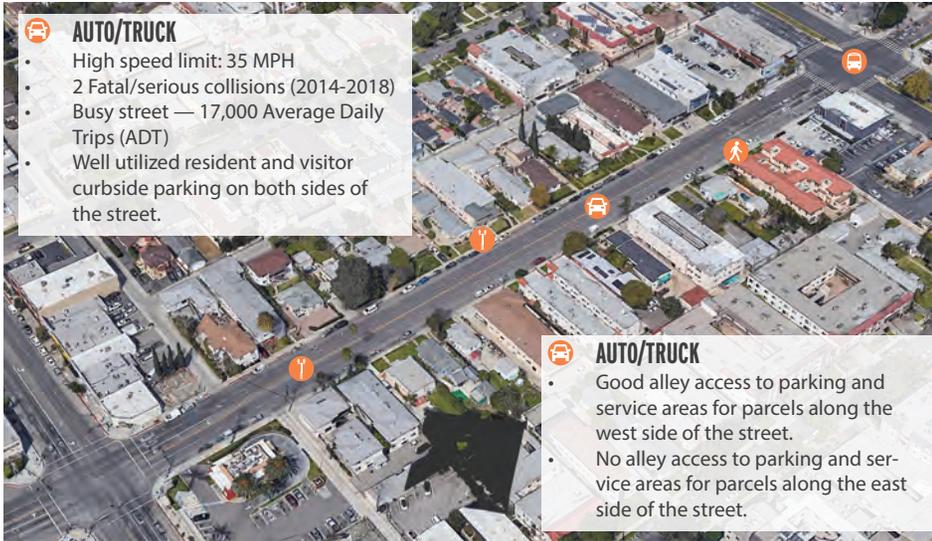


FIG 3.07 EXISTING CONDITIONS PROJECT AREA 2 SAN FERNANDO ROAD TO FLOWER STREET– LOOKING NORTH

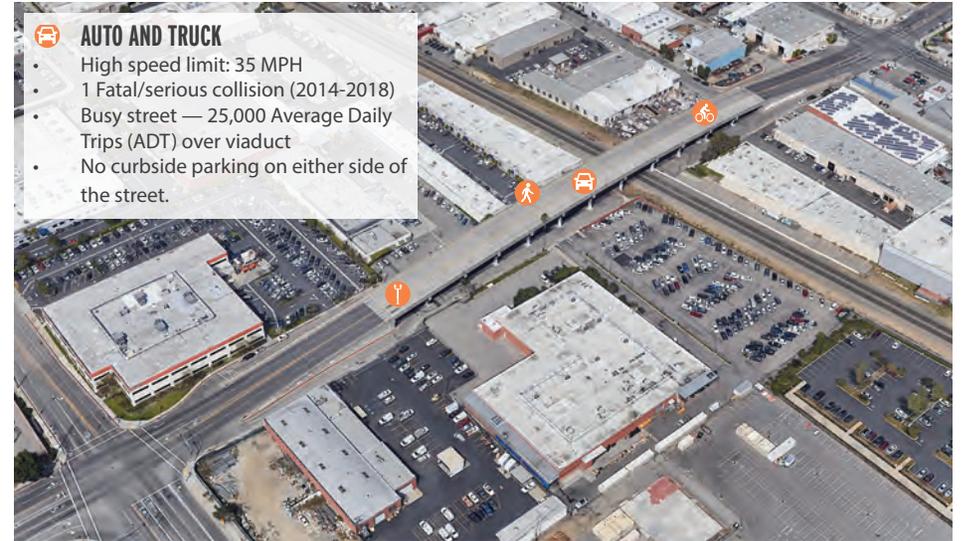
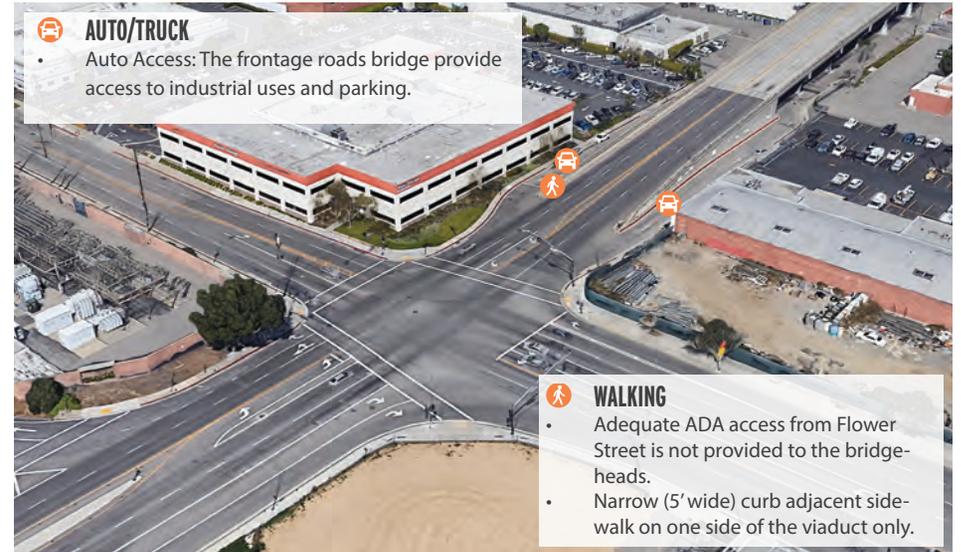


FIG 3.06 EXISTING CONDITIONS PROJECT AREA 3 WESTERN AND SAN FERNANDO INTERSECTION – LOOKING NORTH



FIG 3.08 EXISTING CONDITIONS PROJECT AREA 4 WESTERN AND FLOWER INTERSECTION – LOOKING NORTH



# WESTERN AVENUE CORRIDOR CONCEPT

## FIRST AND LAST MILE COMPLETE STREET CONCEPT SUMMARY

### PROJECT AREA 1

A **two-way protected bikeway** on the west side of the street between Glenoaks Boulevard to Flower Street is proposed. To accommodate the Western Avenue first and last mile complete street concept:

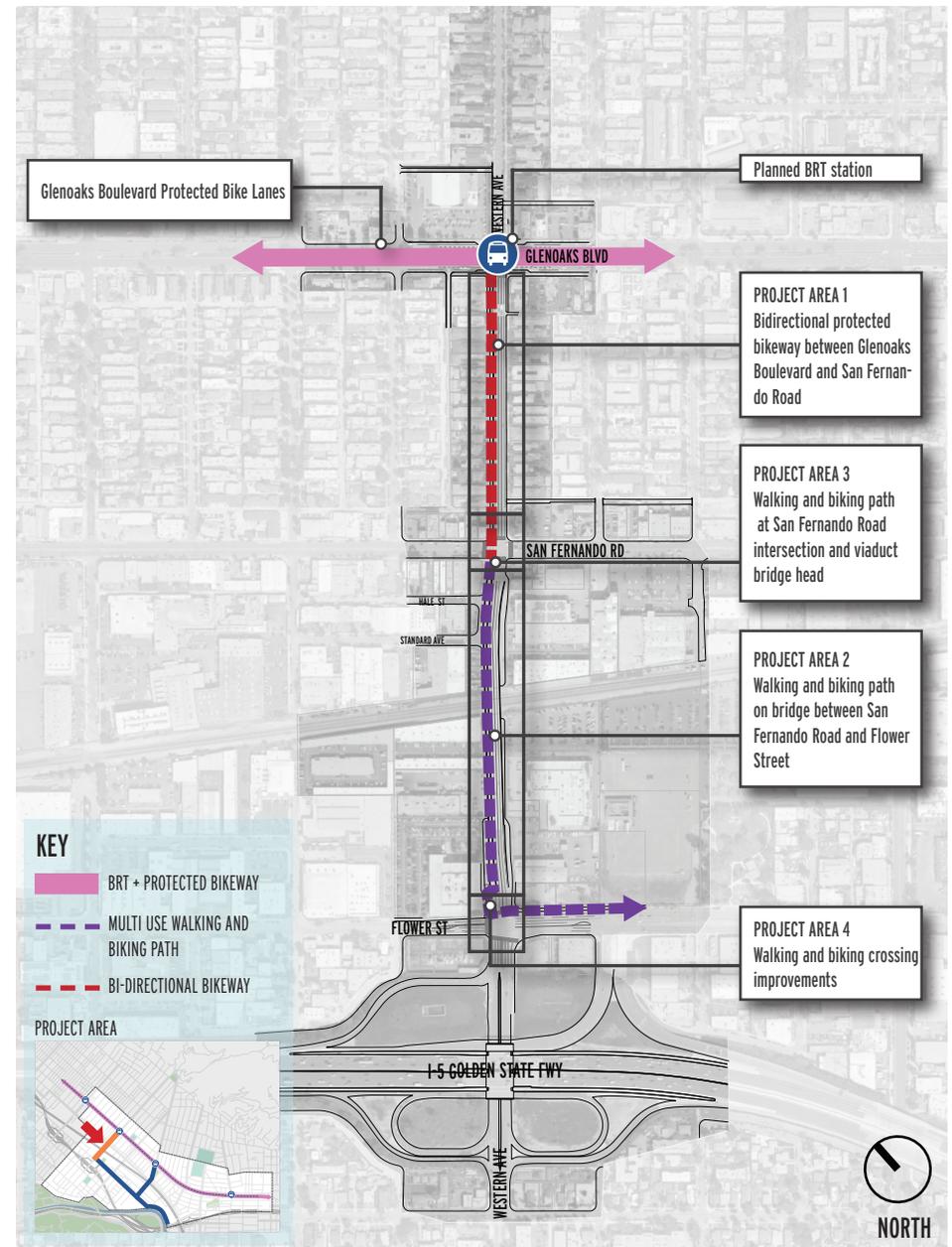
- The number of travel lanes will need to be reduced from four to three. Average daily vehicle volumes suggest that a lane reduction could be applied on this segment with limited impact to auto delay. The center turn lane would improve access to midblock driveways.
- Most on-street parking spaces would be maintained. However, on-street parking spaces on the west side of the street would be relocated away from the curbline. At midblock driveways, on-street parking will need to be removed at both bike approaches to ensure that right- and left-turning autos have adequate sight distance.
- All driveway and alley access on both sides of the street would be maintained.
- Right-of-way allows for a five-foot buffer between the separated bikeway and the parking lane, which will help maintain on-street parking accessibility.
- Bollards and other physical barriers, should be used to minimize the likelihood of autos parking at the curb and blocking the bikeway.

### PROJECT AREA 2

A **two-way multi-use walking and biking path** on the west side of the Western Avenue viaduct from San Fernando Road to Flower Street is proposed. To accommodate this new facility:

- The existing narrow sidewalk would be widened; the existing side railing will likely need to be enhanced to create a safe, comfortable facility, and a traffic buffer is needed along the multi-use path adjacent to autos.
- All four current travel lanes would be maintained; however, each lane would be narrowed to 11' to make room for the walking and biking facility.

FIG 3.09 WESTERN FIRST AND LAST MILE COMPLETE STREET CONCEPT



### PROJECT AREA 3

A **two-way multi-use walking and biking path** on the west side of Western Avenue between the existing viaduct bridgehead and San Fernando Road intersection is proposed. To accommodate this new facility:

- The current frontage road would be closed auto and truck vehicles. Emergency vehicle access should be maintained.
- All current travel and turn lanes would be maintained, but the adjustment to turning lanes and signal phases may need to occur, pending additional traffic analysis.

### PROJECT AREA 4

A **crosswalk between the proposed two-way multi-use walking and biking path** on the west side of Western Avenue and the frontage road sidewalk at the south end of the viaduct is proposed. To accommodate this new facility,

- The current sidewalk would need to be widened to the Flower Street intersection.
- ADA access ramps and crosswalk striping would need to be added.

### POTENTIAL ENHANCEMENT FOR ALL PROJECT AREAS

- Additional street and sidewalk lighting — Fixtures could be located within the door zone between the bikeway and parking lane. (Project Area 1)
- Light poles could include banners, hanging landscape baskets, and wayfinding signage.
- Additional landscaping. Parking spaces could be removed at intersections and mid-block locations to accommodate street trees and planting beds.
- Improved sidewalks. Current narrow sidewalks could be widened incrementally as properties are improved or redevelop in the future.

## PROJECT AREA 1 – GLENOAKS BOULEVARD TO SAN FERNANDO ROAD

### INTENT

Project Area One improvements are intended to rebalance and reallocate road space to provide equitable transit, walking, and biking access without negatively impacting auto and truck traffic operations, existing or future land use economic viability, or neighborhood livability of adjacent residential and commercial uses. The proposed concept represents the results of the analysis of existing conditions, concept development, preliminary traffic analysis, and evaluation of alternatives.

**Biking Improvements** — With the future addition of a new transit station at the intersection of Glenoaks Boulevard and Western Avenue, providing missing bicycle infrastructure to adequately link existing destinations (e.g. Disney) that are outside comfortable walking distance was a primary objective of this project area.

**Walking Improvements** — Ensure that the route is ADA compliant. Long-term, sidewalk improvements should be provided, including additional width and lighting. Moreover, additional landscaping and additional street furniture such as benches or bike racks should be considered.

### CONCEPT DEVELOPMENT PROCESS

**Alternatives** — Two-way and one-way protected bike lane options were considered.

- All concepts addressed the need to maintain on-street parking, driveway, and alley access wherever possible.
- Minimum federal, state, and local design standards for total width, recommended width, preferred buffer options, accessible parking options, and parking loss were addressed.
- One-way protected bike lanes on each side of the street were not advanced due to space constraints. Providing required minimum width would result in either loss of on-street parking or additional travel lanes.
- Two-way options were considered on both sides of the street. Both options are viable, however the westside option was preferred because fronting uses have fewer driveways (most westside parcels have driveway access from the alley). As a result, there less potential collision points between bikers and turning vehicles crossing the bikeway to access existing driveways and alleys.

### ADDITIONAL URBAN DESIGN CONSIDERATIONS

Because the segment is long and has no existing cross street access, walkers and bikers face long out-of-direction trips to access existing sidewalks and proposed bike lanes. A mid-block crossing should be assessed and included if traffic operations are not negatively impacted to a great degree to increase access to residences on the east side of the street.

FIG 3.10 PROJECT AREA 1 COMPLETE STREETS PROJECT CONCEPT

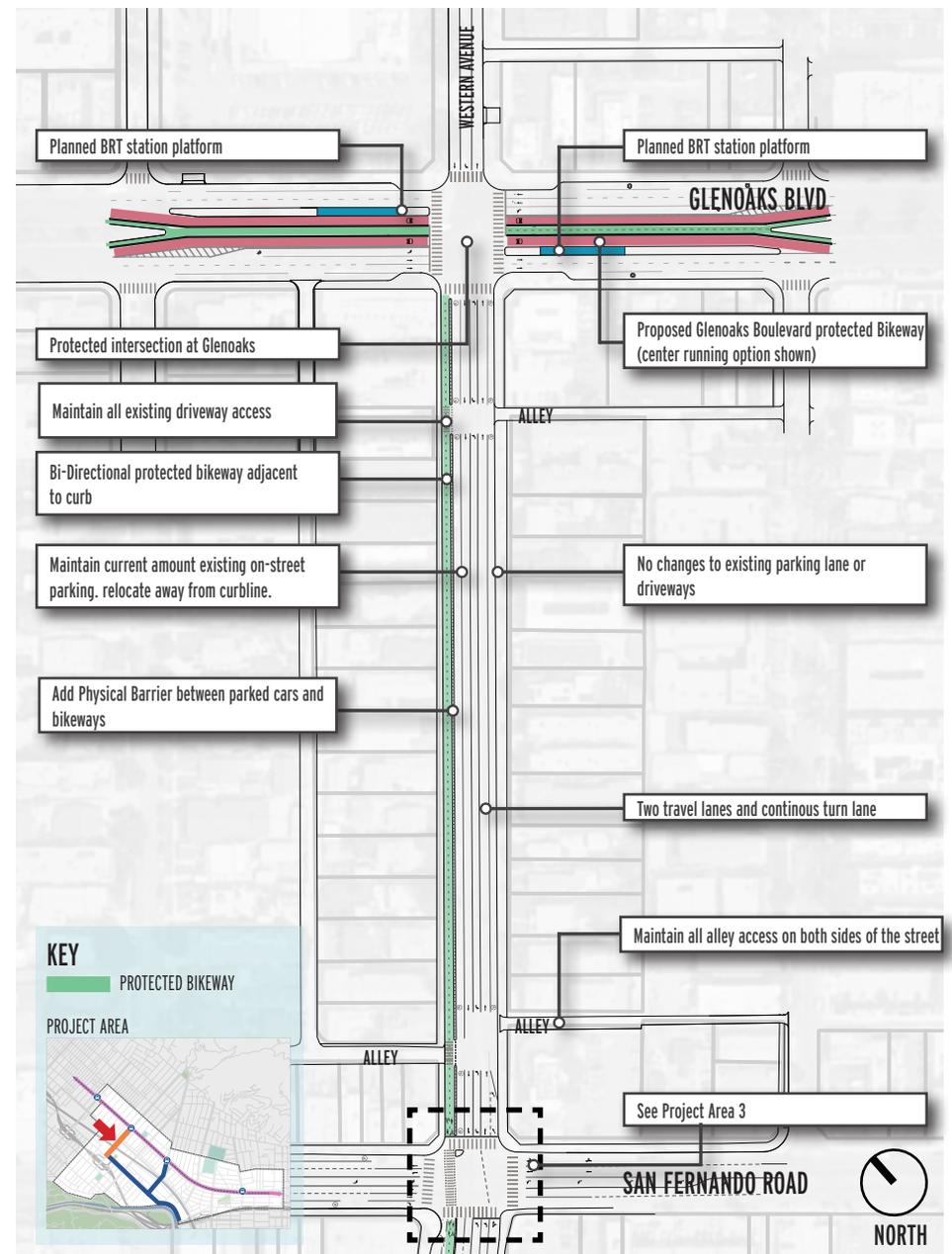


FIG 3.11 EXISTING – PROJECT AREA 1 (GLENOAKS BOULEVARD TO SAN FERNANDO ROAD) – LOOKING NORTH



FIG 3.13 BI-DIRECTIONAL BIKEWAY – PROJECT AREA 1 (GLENOAKS BOULEVARD TO SAN FERNANDO ROAD) – LOOKING NORTH



FIG 3.12 EXISTING – PROJECT AREA 1 (GLENOAKS BOULEVARD TO SAN FERNANDO ROAD) – LOOKING NORTH

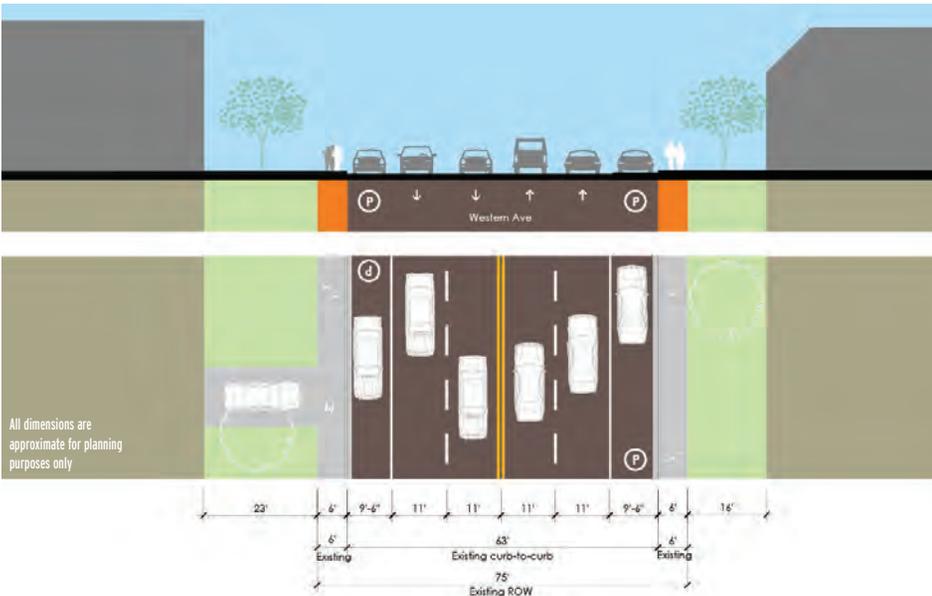
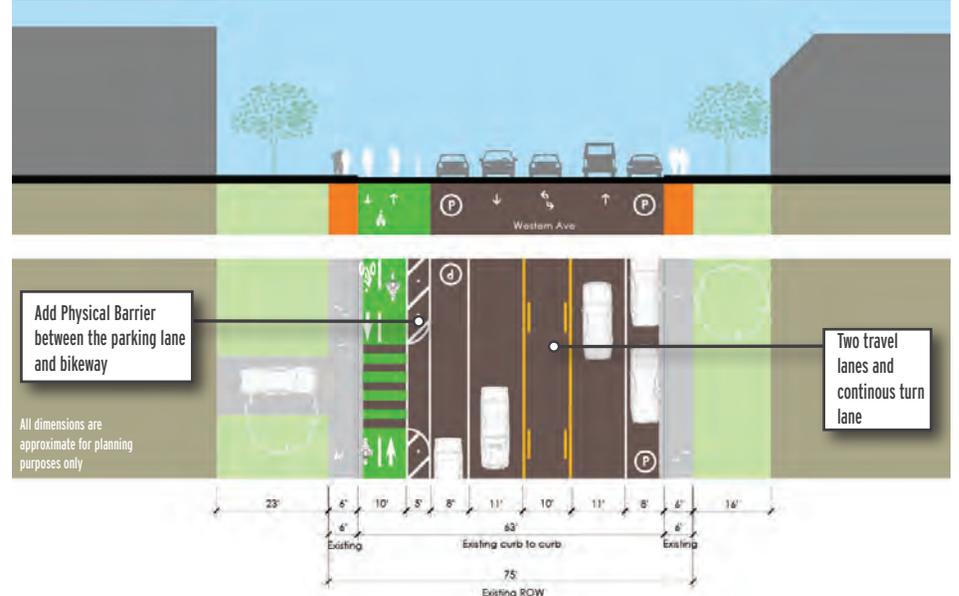


FIG 3.14 BI-DIRECTIONAL BIKEWAY – PROJECT AREA 1 (GLENOAKS BOULEVARD TO SAN FERNANDO ROAD) – LOOKING NORTH



## PROJECT AREA 2 – VIADUCT MULTI-USE PATH

### INTENT

Project Area Two improvements are intended to rebalance and reallocate viaduct road space to provide equitable transit, walking, and biking access without negatively impacting auto and truck traffic operations, existing or future land use economic viability of adjacent industrial and commercial uses. The proposed concept represents the results of the analysis of existing conditions, concept development, preliminary traffic analysis, and evaluation of alternatives.

**Biking Improvements** — With the future addition of a new transit station at the intersection of Glenoaks Boulevard and Western Avenue, providing missing bicycle infrastructure to adequately link existing destinations (e.g., Disney) that are outside comfortable walking distance was a key objective of this project area.

**Walking Improvements** — Currently, limited walking access is provided by a single narrow sidewalk. Providing adequate access that is ADA compliant is an essential component of this project area.

### CONCEPT DEVELOPMENT PROCESS

**Alternatives** — Two-way protected bike lane with sidewalk and multi-use path options were considered.

- All concepts addressed the need to maintain adequate Interstate 5 freeway auto/truck access.
- Minimum federal, state and local design standards for multi-use path recommended width and preferred buffer options were addressed.
- Two one-way protected bike lanes with sidewalks alternatives were not advanced due to space constraints. Providing minimum width would result in a loss of travel lanes.
- Two multi-use path alternatives were considered on both sides of the street. Both alternatives are viable. However, the westside alternative was preferred because of perceived ease of constructability—the presence of the existing sidewalk could possibly be expanded upon rather than removing the existing sidewalk and rebuilding a new multi-use path on the east side of the viaduct. Moreover, the westside alternative would provide a direct linkage to the proposed westside two-way protected bike lanes recommended for Project Area 1.

### ADDITIONAL URBAN DESIGN CONSIDERATIONS

Because the segment is long and has no existing cross street access, walkers and bikers face long out-of-direction trips to access existing sidewalks and proposed bike lanes. Mid-viaduct vertical circulation (elevator/stairs/ramp) should be considered to provide better access to existing or future uses below the viaduct.

FIG 3.15 PROPOSED PROJECT AREA 2 (VIADUCT) MULTI-USE WALKING AND BIKING PATH CONCEPT

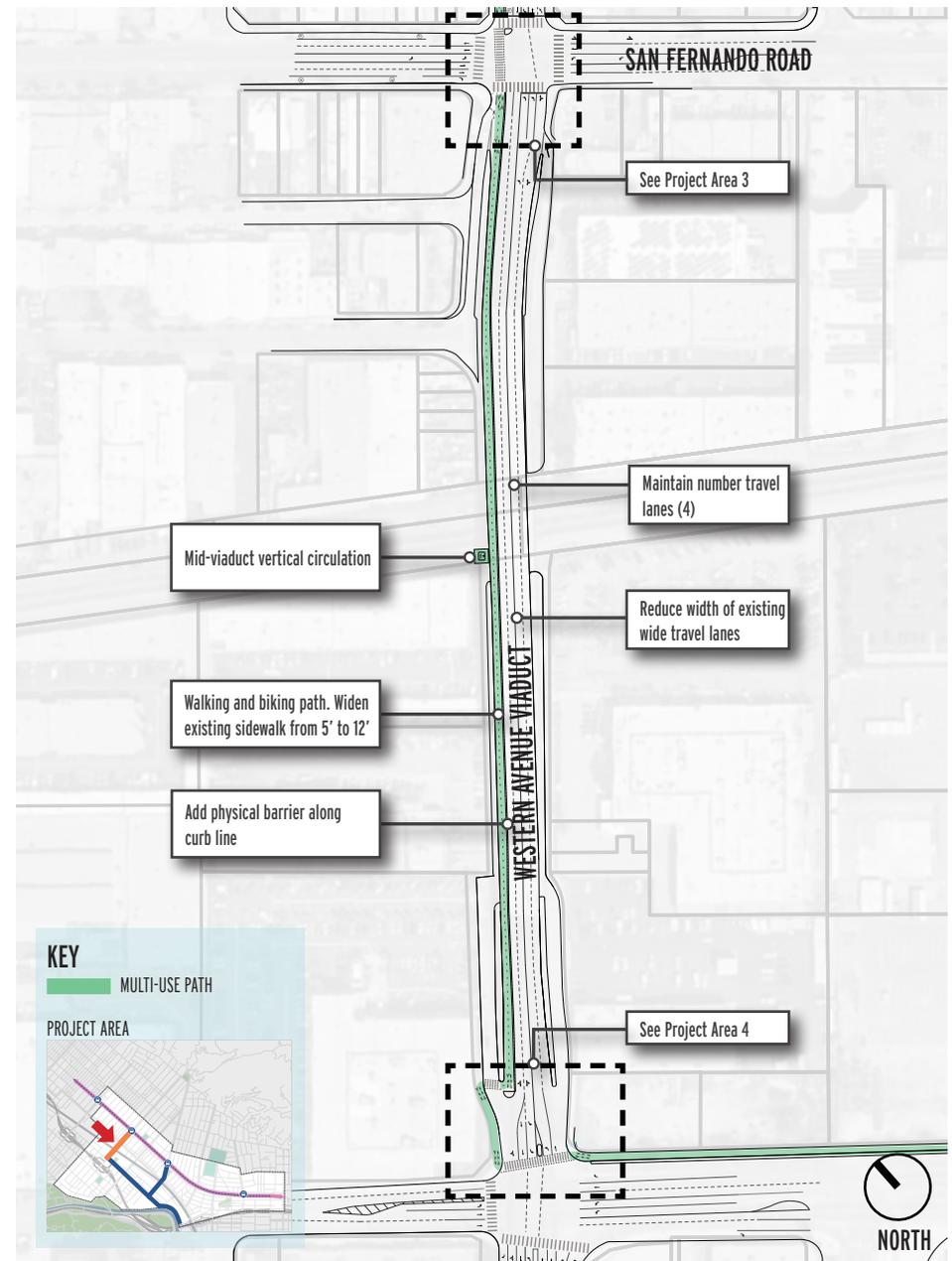


FIG 3.16 EXISTING PROJECT AREA 2 (VIADUCT) – LOOKING NORTH



FIG 3.18 PROPOSED PROJECT AREA 2 (VIADUCT) MULTI-USE PATH – LOOKING NORTH



FIG 3.17 EXISTING PROJECT AREA 2 (VIADUCT) – LOOKING NORTH

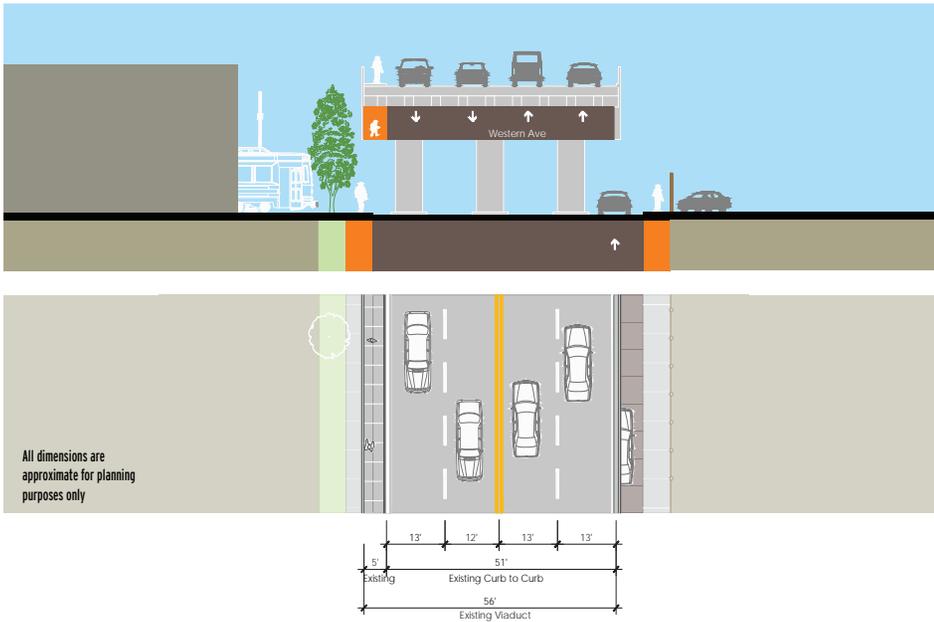
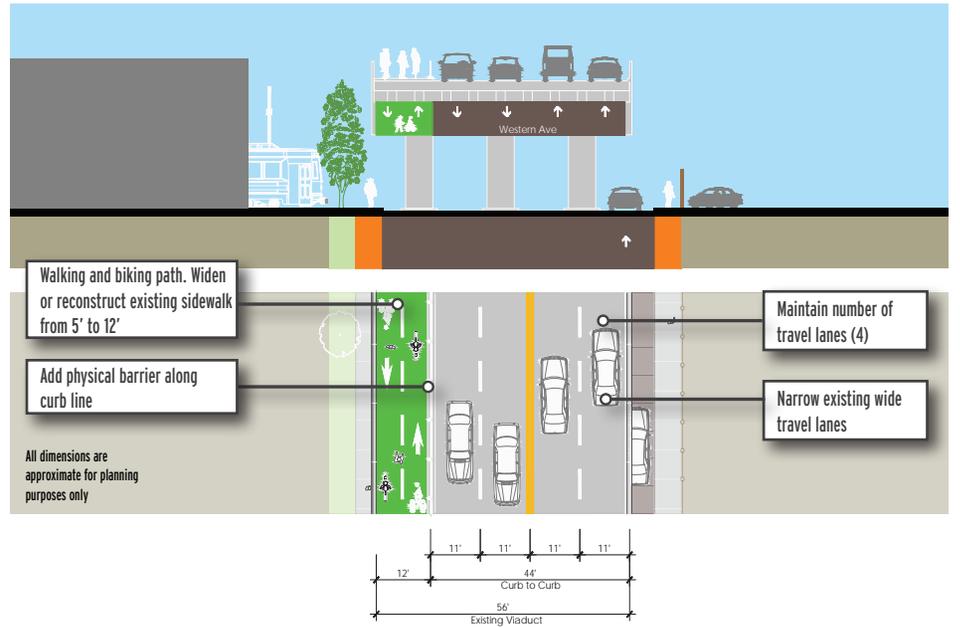


FIG 3.19 PROPOSED PROJECT AREA 2 (VIADUCT) MULTI-USE PATH – LOOKING NORTH



## PROJECT AREA 3 – WESTERN AVENUE AND SAN FERNANDO ROAD INTERSECTION

### INTENT

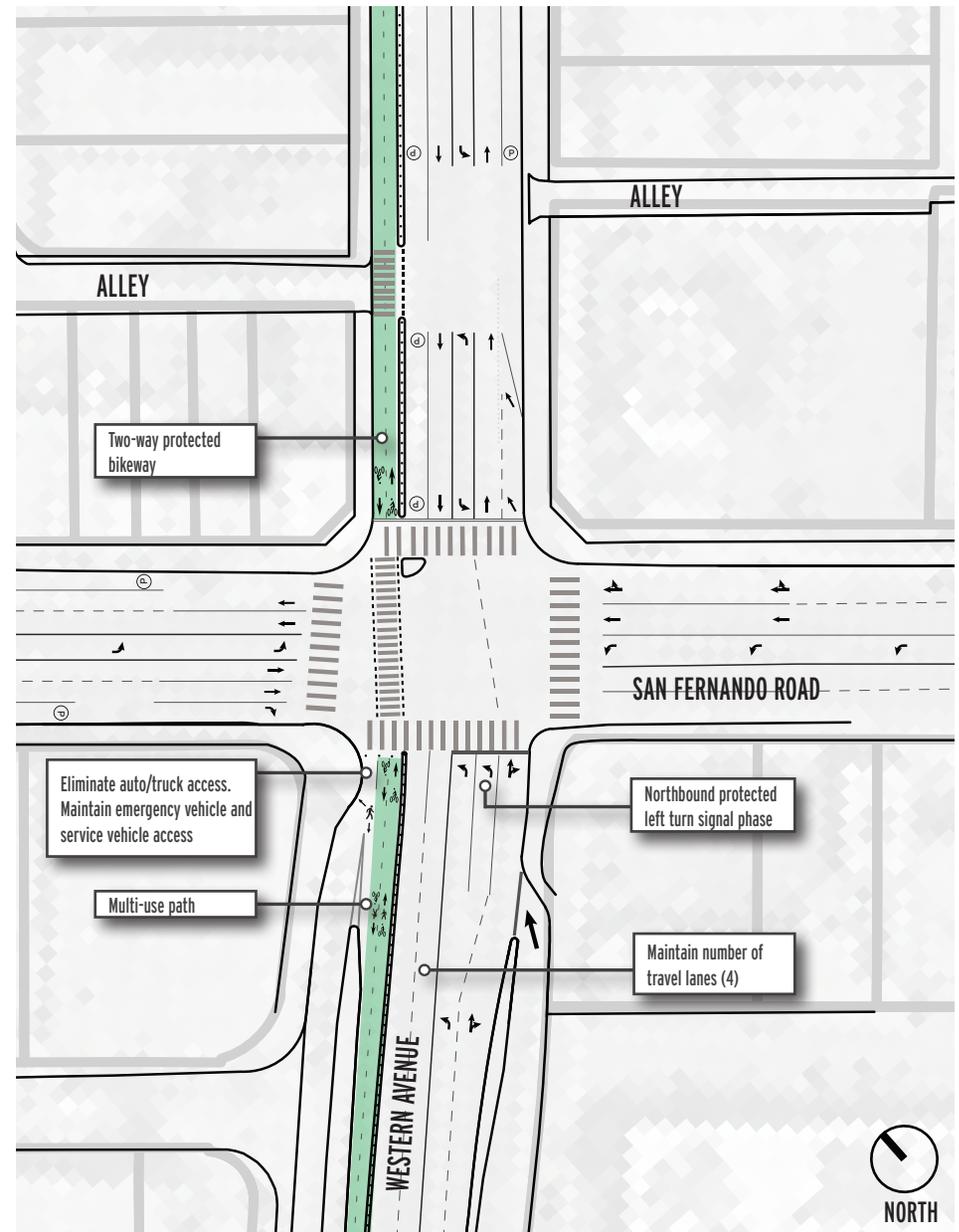
Providing safe, comfortable transitions between bike facilities was an emphasis of design. These preliminary intersection concepts demonstrate the feasibility of providing protected facilities through the intersection on this corridor and act as a starting point for the next phase of design. They were crafted through the lens of signal phasing, and operations:

- **Transitions between Facilities:** At the south leg of the intersection, the two-way separated facility transitions to a multi-use path over the viaduct. The multi-use path is proposed to be at sidewalk grade. Signage, striping, and horizontal offsets, including ramping the protected bikeway up to sidewalk level, should all be explored as means to effectively communicate to walkers and bikers that the facility is shared over the viaduct.
- **Maintaining Auto Access:** Auto access was considered both in providing adequate storage capacity for high-volume turning movements and by confirming the design can accommodate turning radii of larger vehicles. The design vehicle used was a typical local delivery truck (SU-30).

**Southbound Auto Access:** The ramp up to the viaduct is a pivotal access point for the multi-use path. Due to this, frontage road auto access to businesses below the viaduct should be removed to eliminate auto/ped/bike conflicts at the viaduct ramps. Emergency/service vehicle access should be maintained. Auto access would be directed to Thompson Avenue to the west.

**Northbound Auto Access:** It is recommended that the northbound left-turn movement be changed from the existing permissive/protected left-turn phasing to a fully protected left-turn phase to minimize auto/bicycle conflicts. Additional left-turn storage capacity can be added to accommodate the heavy northbound left turn volumes and offset the impact of the change in signal phasing.

FIG 3.20 PROJECT AREA 3 COMPLETE STREETS CONCEPT



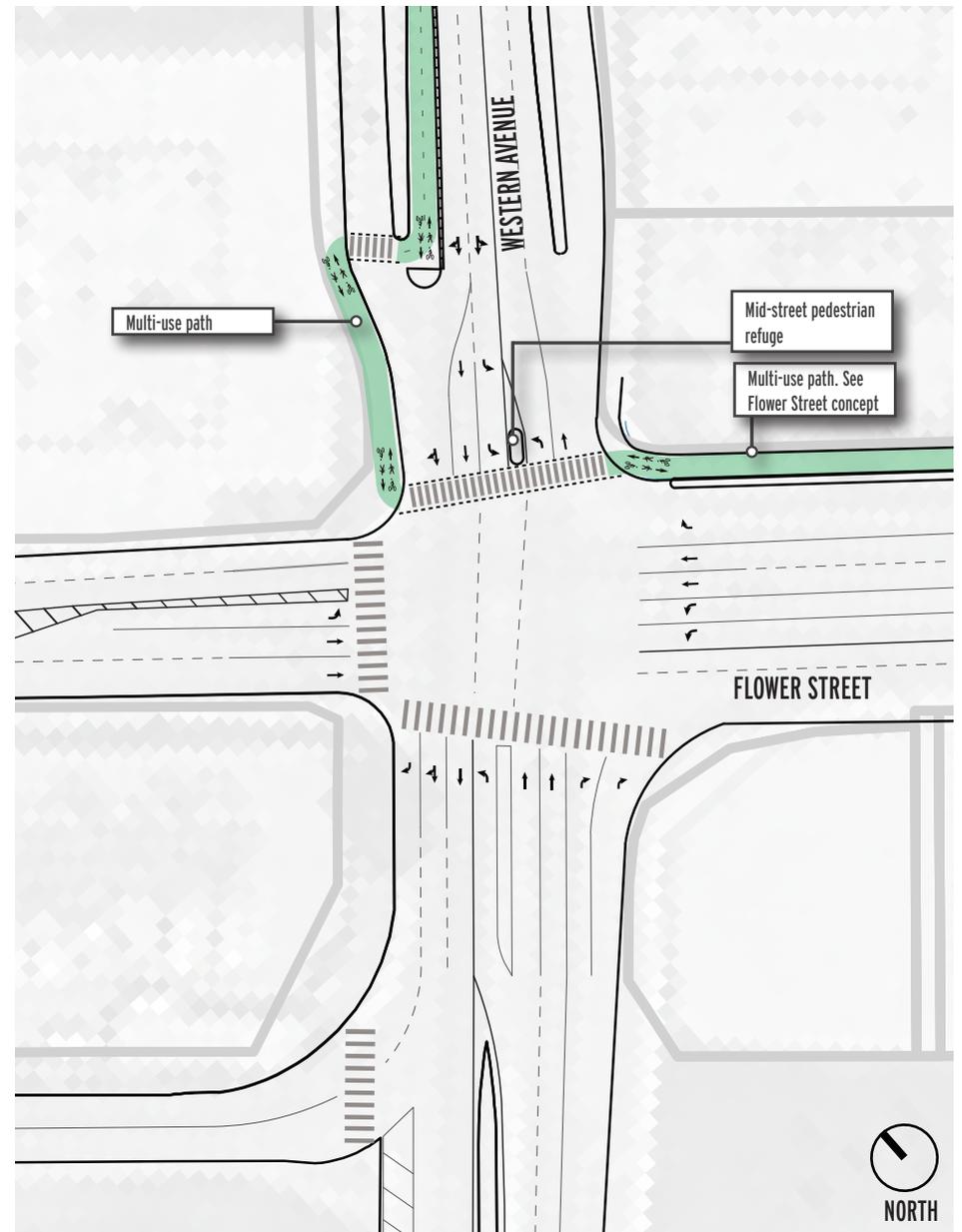
## PROJECT AREA 4 – WESTERN AVENUE AND FLOWER STREET INTERSECTION

### INTENT

Intersection improvements provide a continuous biking and walking connection.

- The viaduct multi-use path and proposed multi-use path improvements on the north side of Flower Street Improvements are linked by a new crosswalk at the westside frontage road: A multi-use path between the proposed crosswalk to the Flower Street intersection, and a pedestrian refuge on the north leg of the Flower Street intersection are proposed.
- No changes are suggested to turn lane storage capacity or changes in signal phasing.

FIG 3.21 PROJECT AREA 4 COMPLETE STREETS CONCEPT



# GRANDVIEW AVENUE CORRIDOR EXISTING CONDITIONS ANALYSIS

## PROJECT AREAS

Four districts comprise the half-mile corridor:

- **Project Area 1** — Extends 1,300 feet from Glenoaks Boulevard to San Fernando Road
- **Project Area 2** — Extends 1,400 feet from San Fernando Road to Flower Street
- **Project Area 3** — Includes the San Fernando Road intersection and Metrolink railroad crossing
- **Project Area 4** — Includes the Flower Street intersection

## GOALS AND OBJECTIVES ANALYSIS

### EQUITY

- A high level of stress for cyclists riding in mixed traffic lanes because no bike lanes currently exist.
- No sidewalk is provided along the east side of the roadway from Pelanconi Park to San Fernando Road.
- There is no current bus route on this segment.

### TRANSIT:

- Future BRT station is planned at the Grandview Avenue and Glenoaks Boulevard intersection.
- Existing bus stops are located at the Glenoaks Boulevard intersection. It is unknown whether this stop will be retained after the BRT project is completed.

### EASE OF IMPLEMENTATION:

- This project will likely be exempt from California Environmental Quality Act requirements due to its focus on reducing auto capacity to accommodate active transportation facilities. Further, Grandview Avenue's relatively low average daily vehicle volumes can be easily accommodated with the reduced lane capacity. These two considerations will significantly minimize the level of additional analysis needed to implement the project, allowing for the project to move into final design and construction at a much quicker pace.

FIG 3.24 GRANDVIEW AVENUE EXISTING CONDITIONS

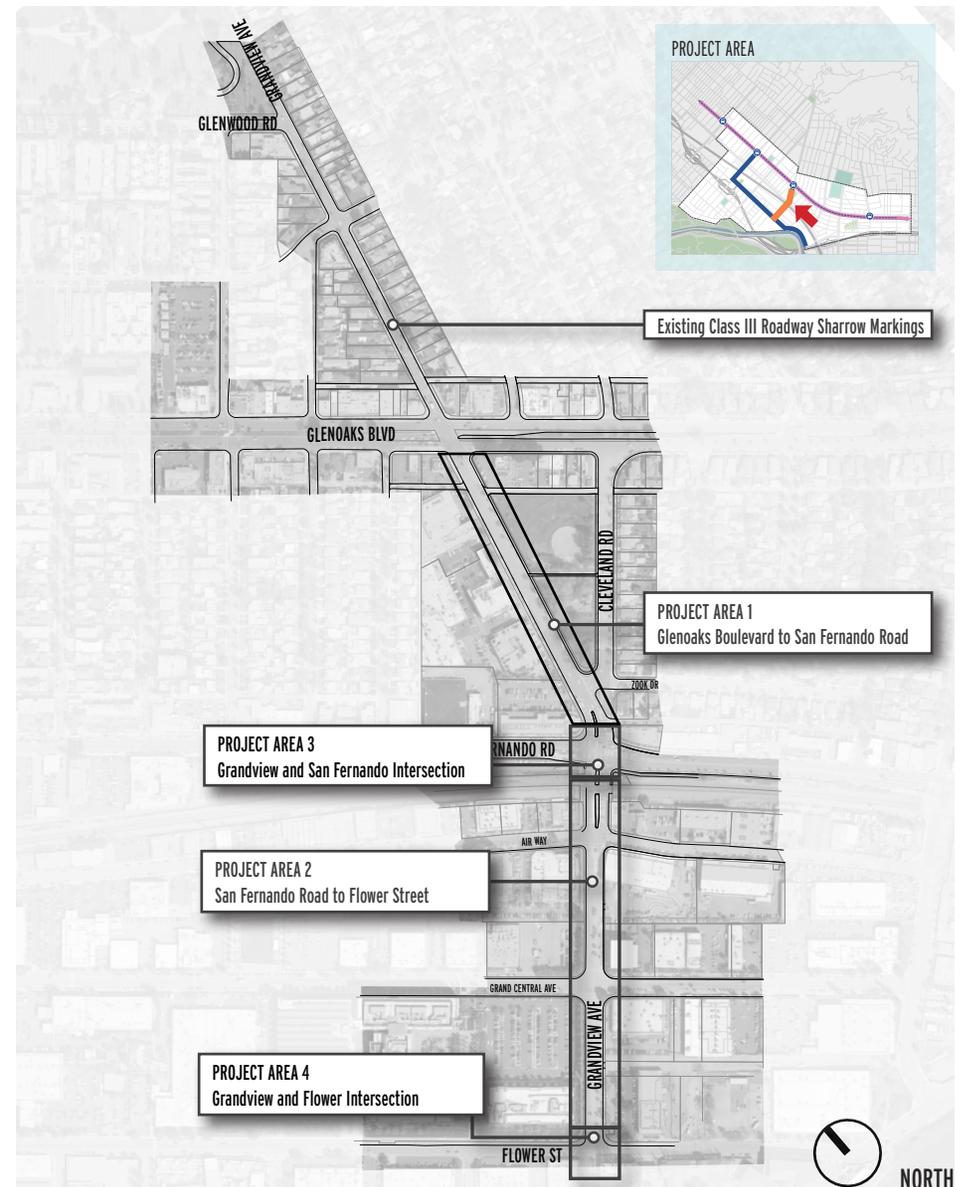


FIG 3.25 EXISTING PROJECT AREA 1 GLENOAKS BOULEVARD TO SAN FERNANDO ROAD – LOOKING NORTH



FIG 3.27 EXISTING PROJECT AREA 2 SAN FERNANDO ROAD TO FLOWER STREET – LOOKING NORTH

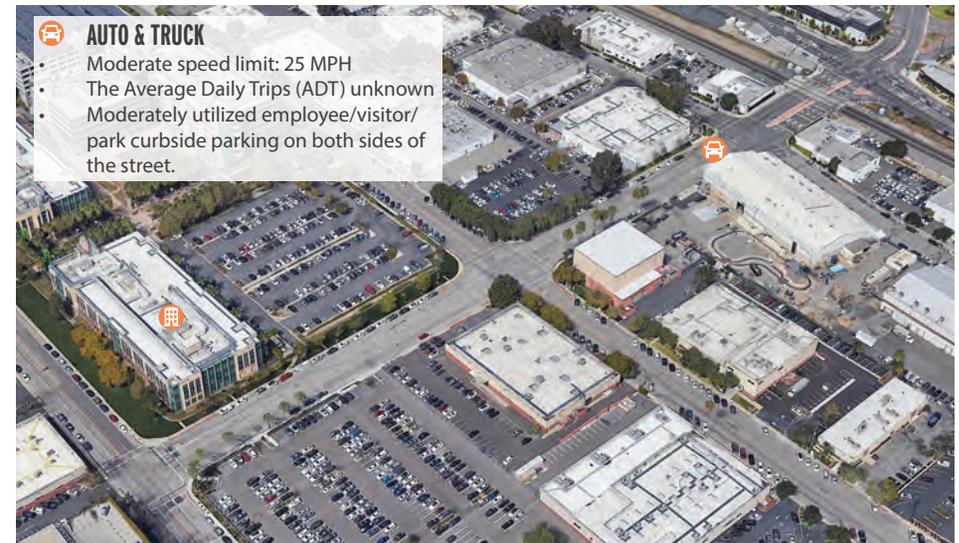
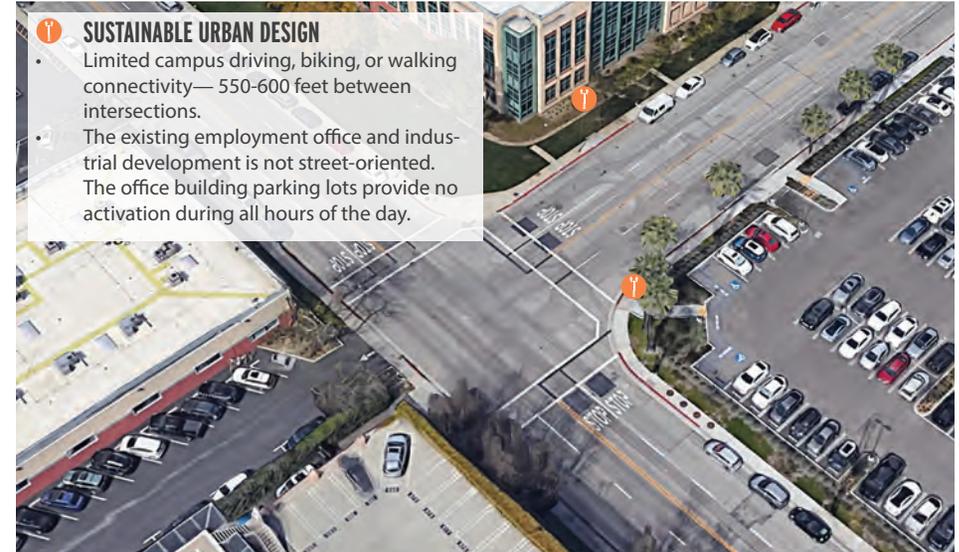


FIG 3.26 EXISTING PROJECT AREA 3 WESTERN AVENUE AND SAN FERNANDO ROAD INTERSECTION – LOOKING NORTH



FIG 3.28 EXISTING PROJECT AREA 4 WESTERN AVENUE AND FLOWER STREET INTERSECTION – LOOKING NORTH



# GRANDVIEW AVENUE CORRIDOR CONCEPT

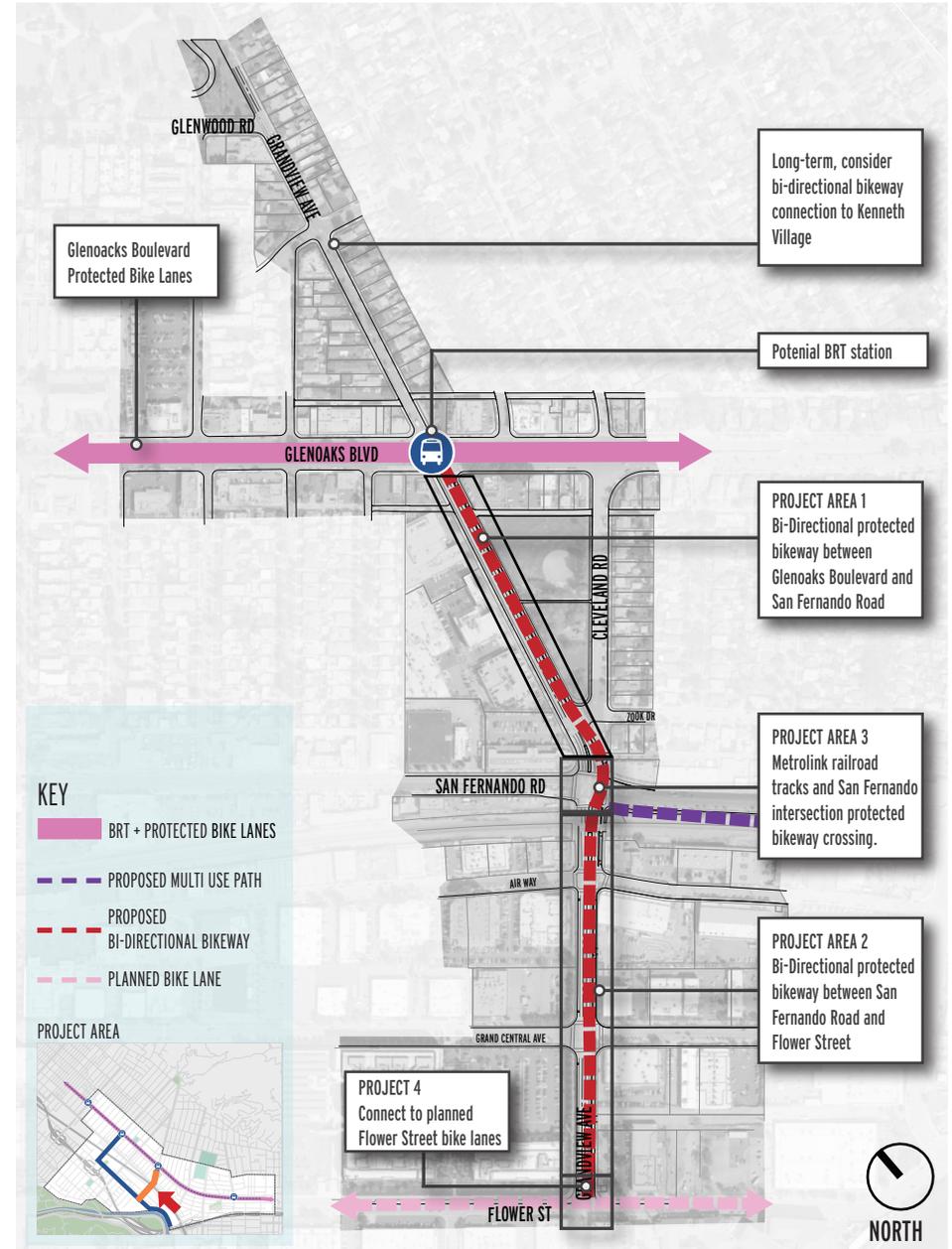
## FIRST AND LAST MILE COMPLETE STREET CONCEPT SUMMARY

### PROJECT AREA 1

A two-way protected bikeway on the west side of the street between Glenoaks Boulevard to San Fernando Boulevard is proposed. To accommodate this new facility,

- The number of travel lanes will need to be reduced from four to two. Low average daily vehicle volumes on Grandview support the proposed four- to two-lane reduction.
- All on-street parking spaces would be maintained. However, on-street parking spaces on the west side of the street would be relocated away from the curbline.
- Right-of-way allows for a five-foot buffer between the separated bikeway and the parking lane, which will help maintain parking accessibility. A door zone sidewalk or striped lane with bollards would provide a separation between the bikeway and the on-street parking.
- All driveway and alley access on both sides of the street would be maintained. At midblock driveways, parking will need to be removed at both bike approaches to ensure that right- and left-turning autos have adequate sight distance.
- A crosswalk that provides access between Pelanconi Park and uses on the west side of the street is suggested at the southern point of the park at the confluence of Cleveland Street and Grandview Avenue.
- The proposed project includes a midblock crosswalk across Grandview providing access to Pelanconi Park. Based on the roadway features and guidance in FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, the uncontrolled crosswalk treatments recommended for this location include, at a minimum, high-visibility crosswalk markings, advanced yield striping and signage, curb extensions, and pedestrian refuge islands. Vehicle speed data could be collected to determine whether a rectangular rapid-flashing beacon or pedestrian hybrid beacon should also be considered. The exact location of the midblock crosswalk could be determined through community engagement and field observations of desire lines.
- Physical barriers should be used to minimize the likelihood of autos parking at the curb and blocking the bikeway.

FIG 3.29 GRANDVIEW FIRST AND LAST MILE COMPLETE STREET CONCEPT



## PROJECT AREA 2

A two-way protected bikeway on the west side of the street between San Fernando Boulevard and Flower Street is proposed. To accommodate this new facility,

- The number of travel lanes will need to be reduced from four to three.
- All on-street parking spaces would be maintained. However, on-street parking spaces on the west side of the street would be relocated away from the curbline. A door zone sidewalk or striped lane with bollards would provide a separation between the bikeway and the on-street parking.
- All driveway and alley access on both sides of the street would be maintained.
- Wider right-of-way between Air Way and Flower present an opportunity for up to seven feet of sidewalk widening. Community input should be sought on the best use of this space

## PROJECT AREA 3

A two-way protected bikeway on the west side of the street of Grandview Avenue from the intersection of San Fernando Road over the Metrolink railroad crossing is proposed. To accommodate this new facility,

- All current northbound travel and turn lanes would be maintained, but adjustments to turning lanes and signal phases may need to occur, pending additional traffic analysis.
- One southbound travel lane would be removed between the Metrolink railroad tracks and the San Fernando Road intersection.

## PROJECT 4

Potential additional enhancements:

- Biking improvements could include new crossing markings and two-stage turn queue boxes.
- Walking improvements could include crosswalks and mid-street refuges.

## POTENTIAL ADDITIONAL ENHANCEMENTS

- Street and sidewalk lighting — Fixtures could be located within the door zone between the bikeway and parking lane. Light poles could include banners, hanging landscape baskets, and wayfinding signage.
- Landscaping — Parking spaces could be removed at intersections and mid-block locations to accommodate street trees and planting beds.
- Improved sidewalks — Current narrow sidewalks could be widened incrementally as properties are improved or redevelop in the future. A sidewalk could be added to the curb line along Pelanconi Park.

## PROJECT AREA 1 – GLENOAKS BOULEVARD TO SAN FERNANDO ROAD

### INTENT

Project Area One improvements are intended to rebalance and reallocate the over-scaled road space to provide equitable transit, walking, and biking access without negatively impacting auto and truck traffic operations, existing or future land use economic viability of adjacent park, employment, and commercial uses. The proposed concept represents the results of the analysis of existing conditions, concept development, preliminary traffic analysis, and evaluation of alternatives.

**Bikeway Improvements:** A two-way facility is proposed on Grandview Avenue to adequately link existing destinations (e.g., Disney and Dreamworks) that are outside comfortable walking distance to the planned BRT station.

### CONCEPT DEVELOPMENT PROCESS

**Alternatives** — Two way protected bikeway options were considered on both sides of the street. The outcomes of this assessment indicated that the west side being the preferred alternative at this point in the design process.

- **Business Access:** Most businesses on this corridor have primary access points on the west side of the street. A west-side facility would allow for easy access between the facility and those businesses.
- **Park Access:** Pelanconi Park is located on the east side of the street. This is a major destination on the corridor, and the proposed crosswalk on this block would help with access if the facility is placed on the west side. An additional mid-block crossing at the north end of the park should also be considered.

FIG 3.30 PROJECT AREA 1 COMPLETE STREETS CONCEPT

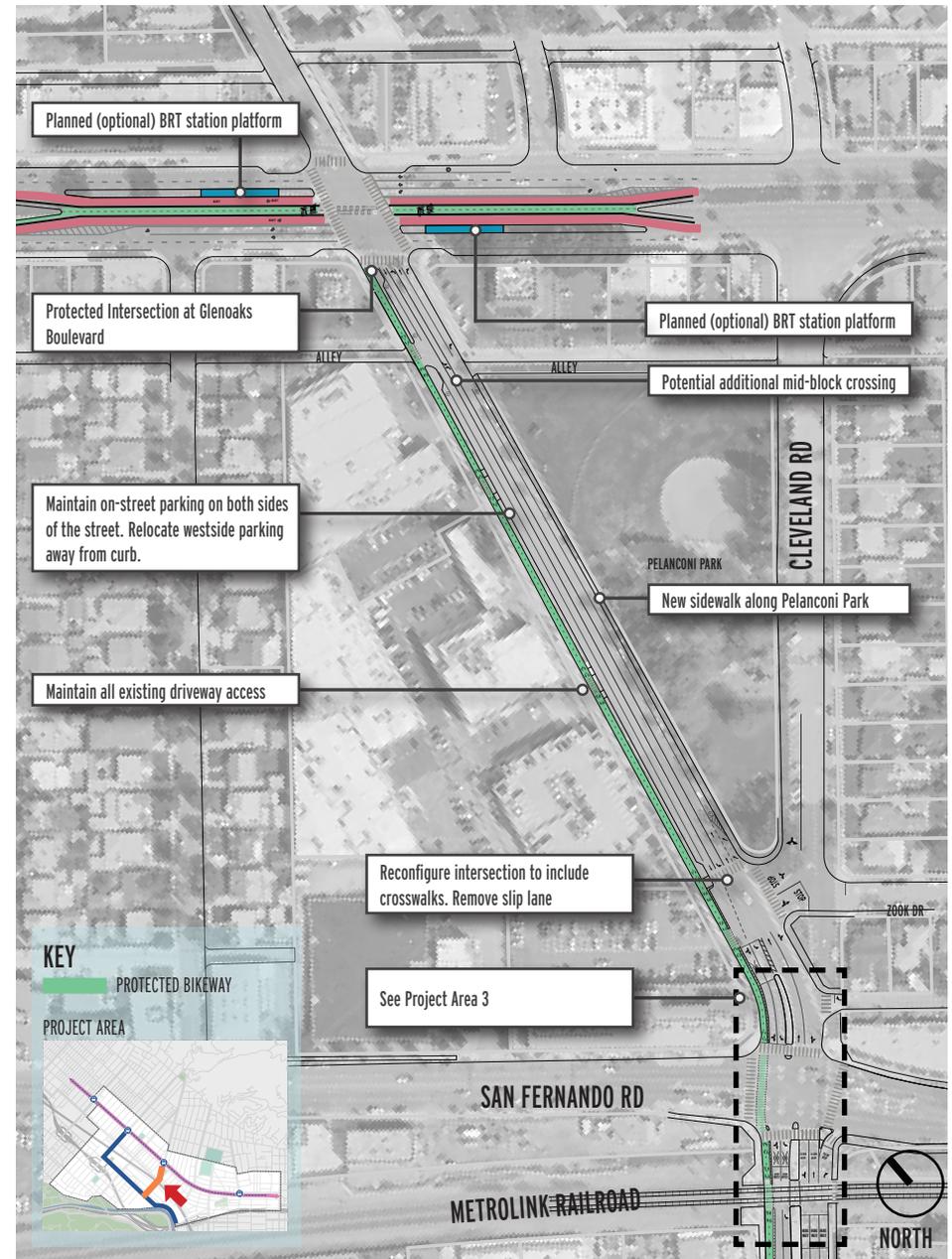


FIG 3.31 EXISTING – PROJECT AREA 1 (GLENOAKS BOULEVARD TO SAN FERNANDO ROAD) LOOKING NORTH



FIG 3.33 BI-DIRECTIONAL BIKEWAY – PROJECT AREA 1 (GLENOAKS BOULEVARD TO SAN FERNANDO ROAD) LOOKING NORTH



FIG 3.32 EXISTING – PROJECT AREA 1 (GLENOAKS BOULEVARD TO SAN FERNANDO ROAD) LOOKING NORTH

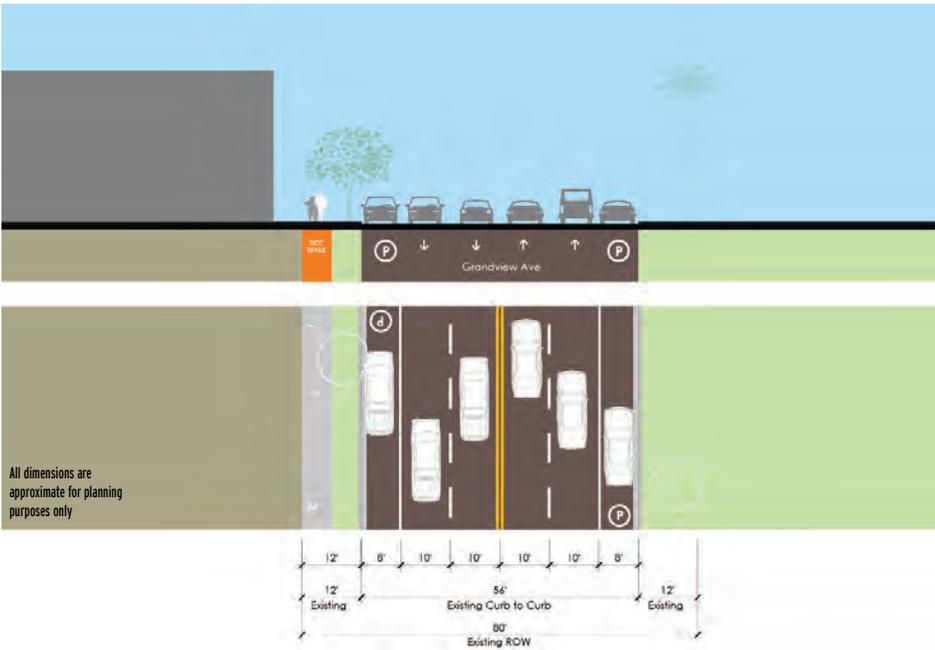
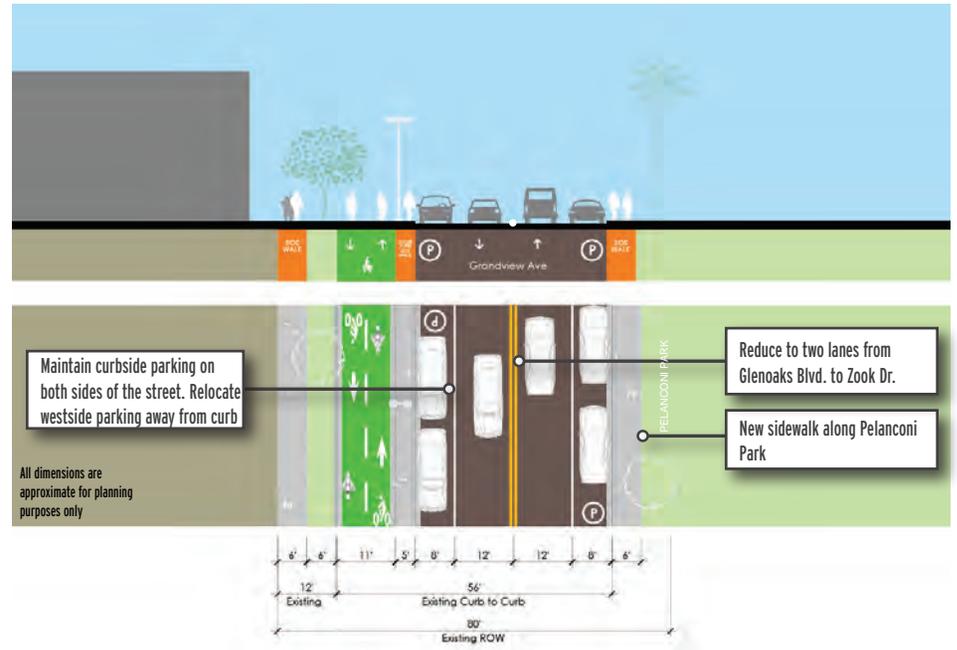


FIG 3.34 BI-DIRECTIONAL BIKEWAY – PROJECT AREA 1 (GLENOAKS BOULEVARD TO SAN FERNANDO ROAD) LOOKING NORTH



## PROJECT AREA 2 – SAN FERNANDO ROAD TO FLOWER STREET

### INTENT

Project Area Two improvements are intended to rebalance and reallocate the overscaled road space to provide equitable transit, walking, and biking access without negatively impacting auto and truck traffic operations while strengthening existing and enhancing future land use economic viability of adjacent Disney campus employment and commercial uses. The proposed concept represents the results of the analysis of existing conditions, concept development, preliminary traffic analysis, and evaluation of alternatives.

**Biking Improvements** — Providing the thousands of employees at the Disney and Dreamworks campuses a safe, direct, and convenient protected bikeway connection to a new transit station at the intersection of Glenoaks Boulevard and Grandview Avenue is essential to meet project transit goals and objectives. Moreover, providing the missing bicycle infrastructure connection to the Glendale Narrows Trail for residents north of Glenoaks Boulevard is also a key component of a complete and connected West Glendale biking network.

**Walking Improvements** — Currently, walking access is provided by narrow sidewalks. Long-term, sidewalk improvements should be provided, including additional width, curb extension bulb-outs at intersections, and pedestrian-oriented lighting.

### CONCEPT DEVELOPMENT PROCESS

**Alternatives** — Two-way protected bike lane were considered for both sides of the street.

- Both options are viable. However, the westside option was preferred because of perceived ease of access to existing adjacent Disney campus office building destinations. However, the eastside option would provide a direct linkage to potential long-term parking lot redevelopment areas at the intersection of Grandview Avenue and Flower Street.
- The westside option was also considered preferable because the current intersection at Air Way experiences heavy southbound left turns from Grandview Avenue. Preliminary traffic analysis indicates that the westside placement may minimize auto/truck delay at the intersection with traffic signal phasing improvements (split phases).

### ADDITIONAL CONSIDERATIONS

Additional landscaping and additional street furniture such as benches or bike racks should be considered as not only walking and biking enhancements but also as a means to increase corridor beauty and enhance livability.

FIG 3.35 PROJECT AREA 2 COMPLETE STREETS CONCEPT

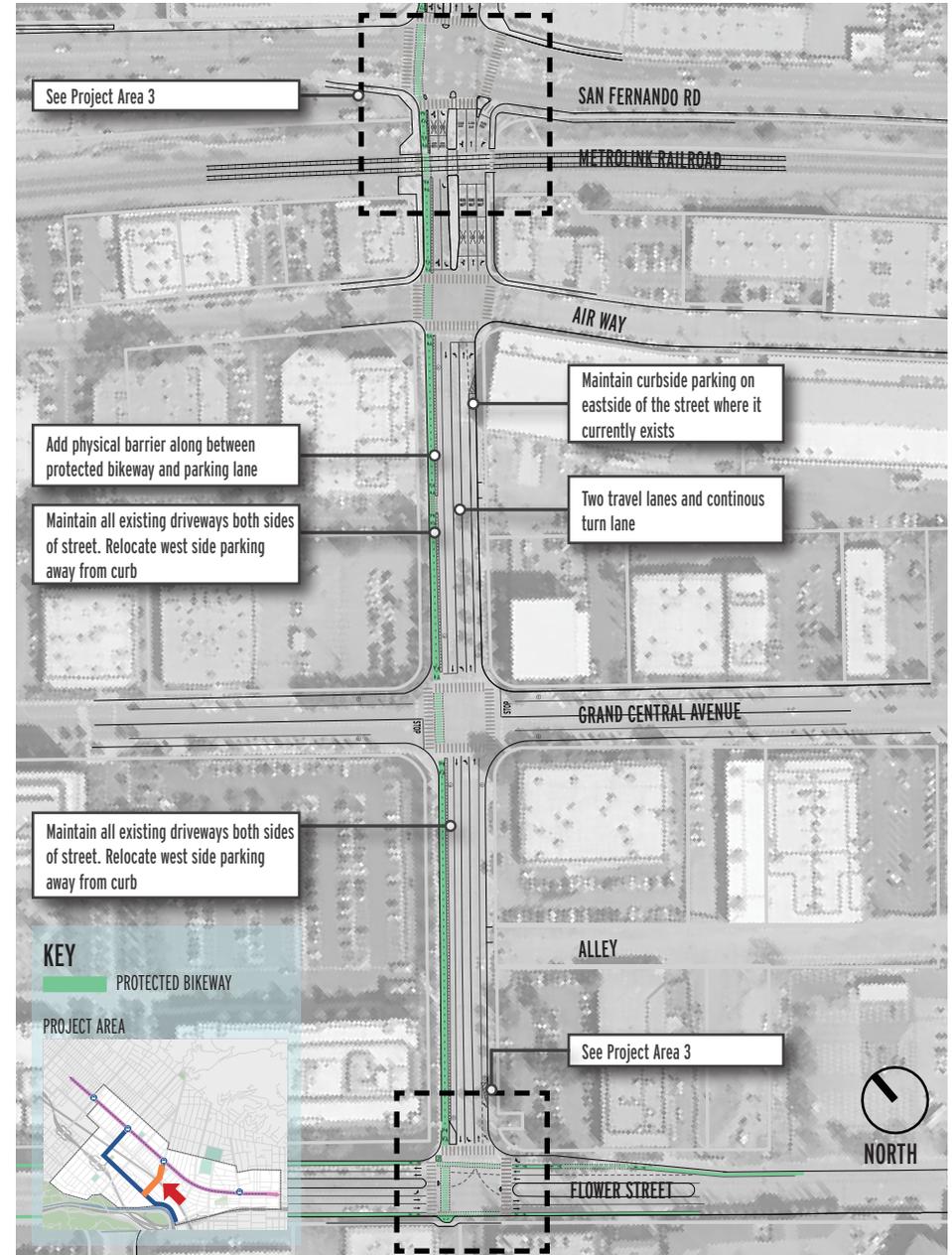


FIG 3.36 EXISTING – PROJECT AREA 2 (SAN FERNANDO ROAD TO FLOWER STREET) LOOKING NORTH



FIG 3.37 EXISTING – PROJECT AREA 2 (SAN FERNANDO ROAD TO FLOWER STREET) LOOKING NORTH

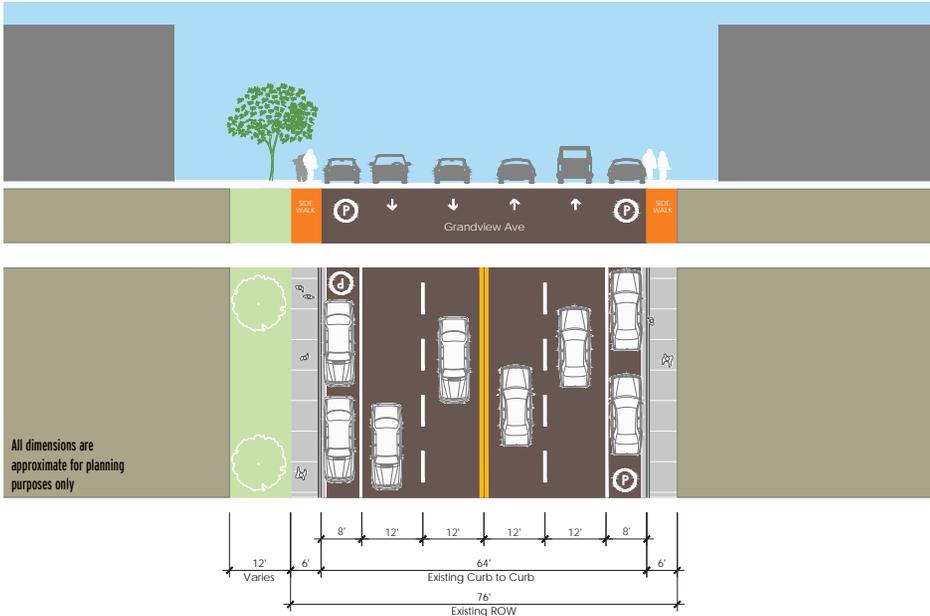
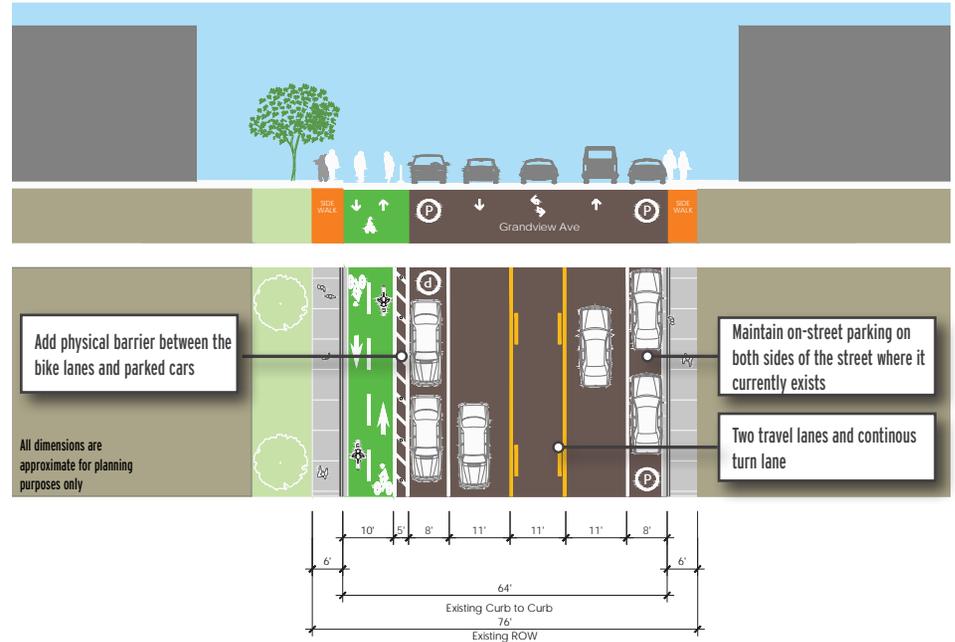


FIG 3.38 BI-DIRECTIONAL BIKEWAY – PROJECT AREA 2 (SAN FERNANDO ROAD TO FLOWER STREET) LOOKING NORTH



FIG 3.39 BI-DIRECTIONAL BIKEWAY – PROJECT AREA 2 (SAN FERNANDO ROAD TO FLOWER STREET) LOOKING NORTH



## PROJECT AREA 3 – GRANDVIEW AVENUE AND SAN FERNANDO ROAD INTERSECTION

### INTENT

Project Area Three presents one of the most challenging crossings for walkers and bikers in the West Glendale Study area because the intersection has an inequitable bias toward auto and truck mobility. While no recent collisions have occurred at the intersection, improving corridor active transportation access may decrease the possible incidence of collisions. The proposed concept represents the results of the analysis of existing conditions, concept development, preliminary traffic analysis, and evaluation of alternatives.

**Biking Improvements** — Currently, bike infrastructure is not present. Providing the thousands of employees at the Disney and Dreamworks campuses a safe, direct, and convenient protected bikeway connection to a new transit station at the intersection of Glenoaks Boulevard and Grandview Avenue is essential to meet project goals and objectives.

Envisioned improvements are intended to reallocate intersection space to fill the gaps of missing walking and biking infrastructure and redesign intersection traffic operations to provide equitable transit, walking, and biking access without negatively impacting auto, truck traffic, and Metrolink railroad movement. Improvements include:

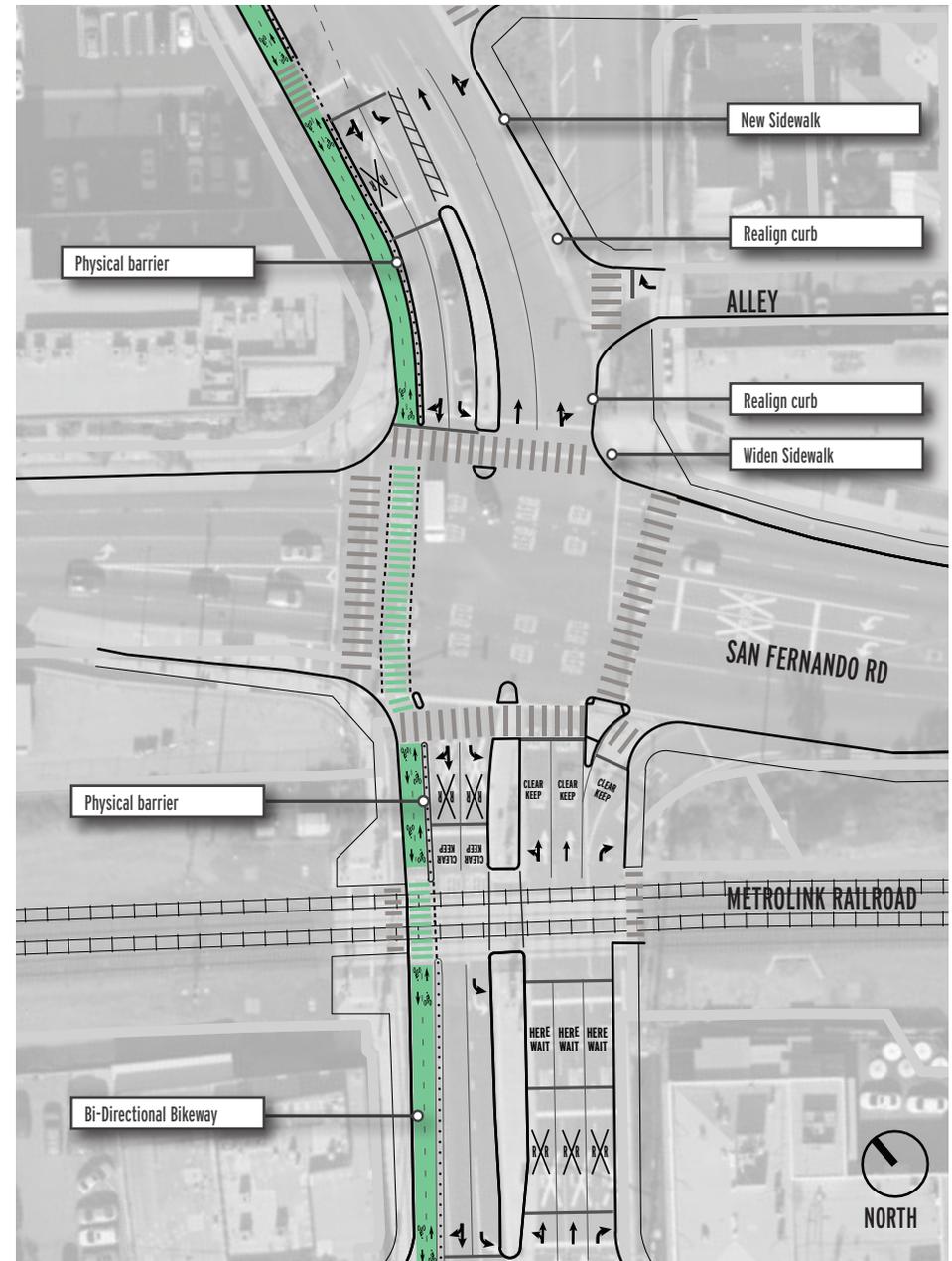
- Two-way protected bikeway on the westside of the intersection.
- Narrowed southbound travel lanes to accommodate a two-way bike lane and protected curb and bollard buffer.
- Bike signals are recommended. If needed, a phased implementation approach could utilize pedestrian signals in the interim.
- Two-stage bike boxes with a protected corner at the north leg of the intersection
- Improvements should include additional sidewalk curb extension bulb-outs along the north side of the intersection, mid-street refuges, and additional intersection lighting.

**Walking Improvements** — Currently, walking access is provided by sidewalks and crosswalks on the westside of the intersection. However, no sidewalks are provided along the east side of the intersection, resulting in out-of-direction travel and increased conflict points with turning motor vehicles. Long-term, eastside sidewalk and crosswalk improvements should be provided to reduce out-of-direction travel and possible collisions.

### ADDITIONAL CONSIDERATIONS

Long-term, a grade-separated crossing of the Metrolink railroad line is planned. Any short-term change should consider the impacts of this long-term change.

FIG 3.40 PROJECT AREA 3 COMPLETE STREETS CONCEPT

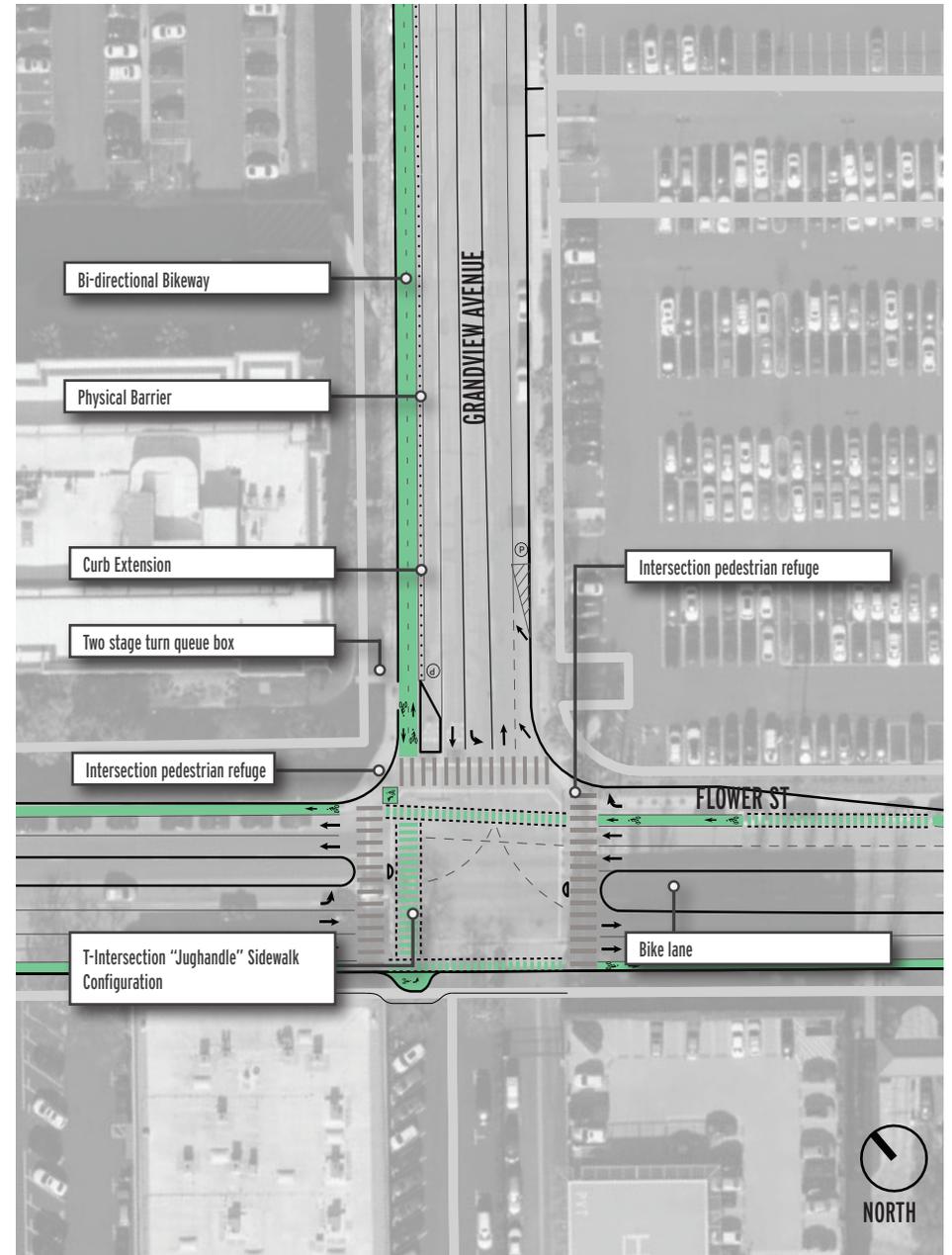


## PROJECT AREA 4 – GRANDVIEW AVENUE AND FLOWER STREET INTERSECTION

### INTENT

Grandview Avenue intersection improvements provide a continuous biking and walking connection. The protected bikeway and pedestrian crossing improvements should be incorporated into the Flower Street widening project.

FIG 3.41 PROJECT AREA 4 COMPLETE STREETS CONCEPT



# FLOWER STREET CORRIDOR EXISTING CONDITIONS ANALYSIS

## PROJECT AREAS

Two districts comprise the mile-long corridor:

- **Project Area 1** - Extends 1,500 feet from Western Avenue to Sonora Avenue
- **Project Area 2** - Extend 3,600 feet from San Fernando Road to Flower Street (future reconstruction as planned)

## GOALS AND OBJECTIVES ANALYSIS

### EQUITY

- Bicycle lanes are not included in Flower Street planned reconstruction project from Western Avenue to Sonora Avenue.
- No existing bus routes are located along Flower Street.

### BIKING

- Very High level of stress for cyclists riding in traffic, especially at Interstate 5 ramp intersection and Western Avenue intersection.

### WALKING

- Wide sidewalk between Western and Griffith Manor Park. 6-8' wide sidewalks on the south side of the street include numerous utility poles and street light obstructions.
- Signalized crosswalks are provided at Western Avenue and Sonora Avenue. Crossings are wide without any median refuge.
- A crosswalk is provided at Justin Avenue but not at Ruberta Avenue.
- Continuous narrow (5' wide) curb adjacent sidewalk are provided along both street edges. The width provides a minimal area for walking. Some sign poles and street light obstructions occur.
- The Sonora intersection crossings is wide and a median crossing 'refuge' that reduces the distance and a place to wait is not provided.

### AUTO & TRUCK

- Curbside parking on both sides of the street between Sonora and Hazel. East of Hazel, parking exists generally along all block frontages on the north side of the street but is more limited, especially east of Grandview on the south side of the street.
- Access to parking and service areas for parcels occurs along all block frontages.
- No alley access to office or industrial uses occurs on either side of the street.
- Well utilized westbound right-turn lane at Western Avenue. Serves as an extension of the interstate off-ramp.
- Roadway narrows between Ruberta and Sonora. Few curbside parking spaces.
- Intersected cross streets Ruberta and Justin Avenues are unsignalized. These streets provide truck access to a number of industrial uses.
- No curbside parking from Interstate 5 ramp to Western Avenue.
- Parking is located on both sides of the street from east of the freeway ramp intersection Sonora.
- No alley access to parking and service areas for parcels fronting the street.
- Few driveways and parking lots are located along the roadway. Parking access and service access is from cross streets.

### SUSTAINABLE URBAN DESIGN

- Poor neighborhood walking and biking connectivity. Over 1500' between Western and Sonora roadway connections. I-5 and Disney campus create barriers. As a result, significant out-of-direction travel is required to connect to adjacent uses and neighborhoods.
- Industrial and office development is built to the sidewalk edge, and most buildings include business entries, but uses are not street-oriented, thereby providing no activation during all hours of the day.
- No driving, biking, or walking connectivity — 1,450 feet between Glenoaks and San Fernando intersections.
- All nearby industrial development is separated by grade, providing no activation during all hours of the day.
- The Glendale Narrows Trail is accessible at Fairmont Avenue.

FIG 3.42 EXISTING PROJECT AREA 1 GLENOAKS BOULEVARD TO SAN FERNANDO ROAD – LOOKING EAST

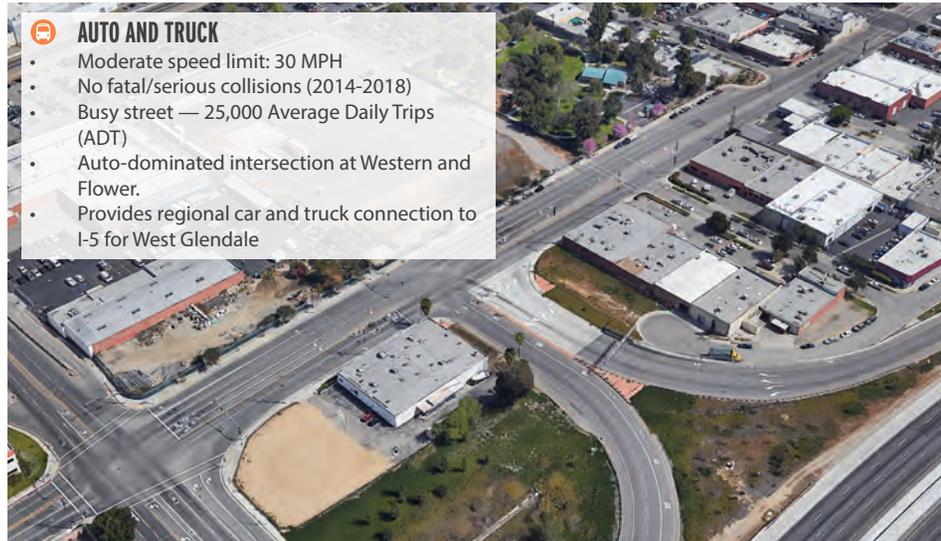


FIG 3.43 EXISTING PROJECT AREA 2 SAN FERNANDO ROAD TO FLOWER STREET – LOOKING EAST

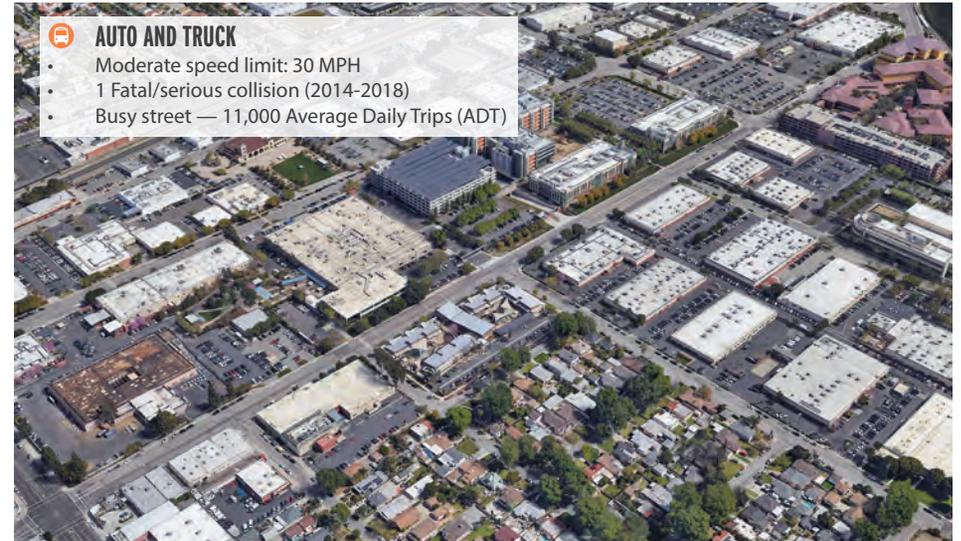
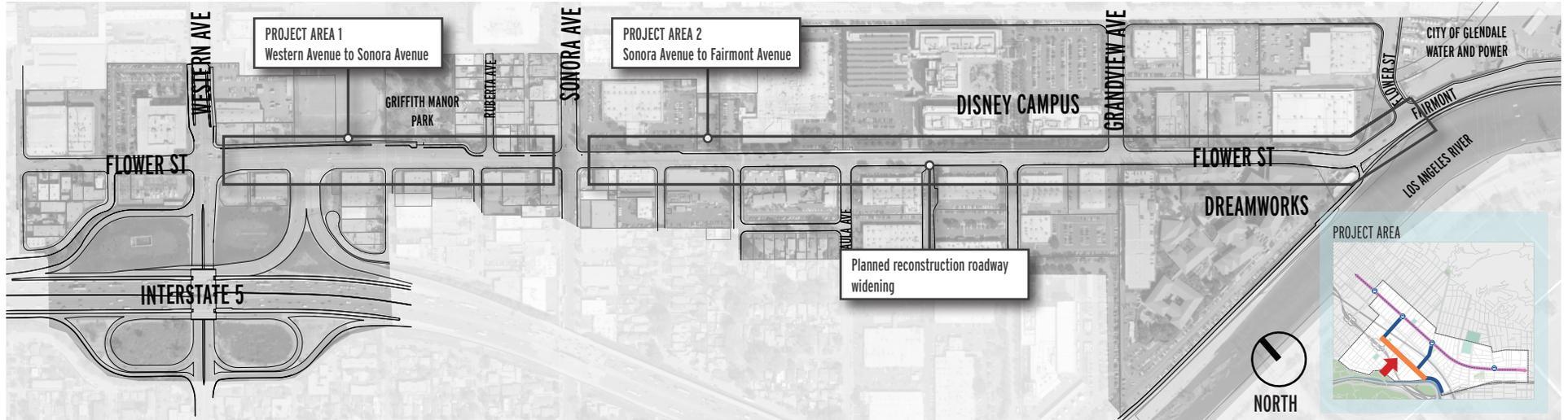


FIG 3.44 PROJECT AREA EXISTING CONDITIONS



# FLOWER STREET CORRIDOR CONCEPT

## FIRST AND LAST MILE COMPLETE STREET CONCEPT SUMMARY

### PROJECT AREA 1

A multi-use path is proposed along the north side of the curb between Western Avenue and Sonora Avenue. This would allow for a separated facility past the I-5 ramps on Flower Street, where auto volumes are highest, and provide continuous multi-modal connections to other important bike facilities, including those on Sonora Avenue. To accommodate this new facility,

- Improvements would occur within the existing right-of-way.
- No changes of travel lanes are required.
- All driveway and alley access along the street would be maintained.
- An enhanced crosswalk with a mid-street refuge is suggested to provide safe access between the proposed Flower Street multi-use path and the proposed Western Avenue

### PROJECT AREA 2

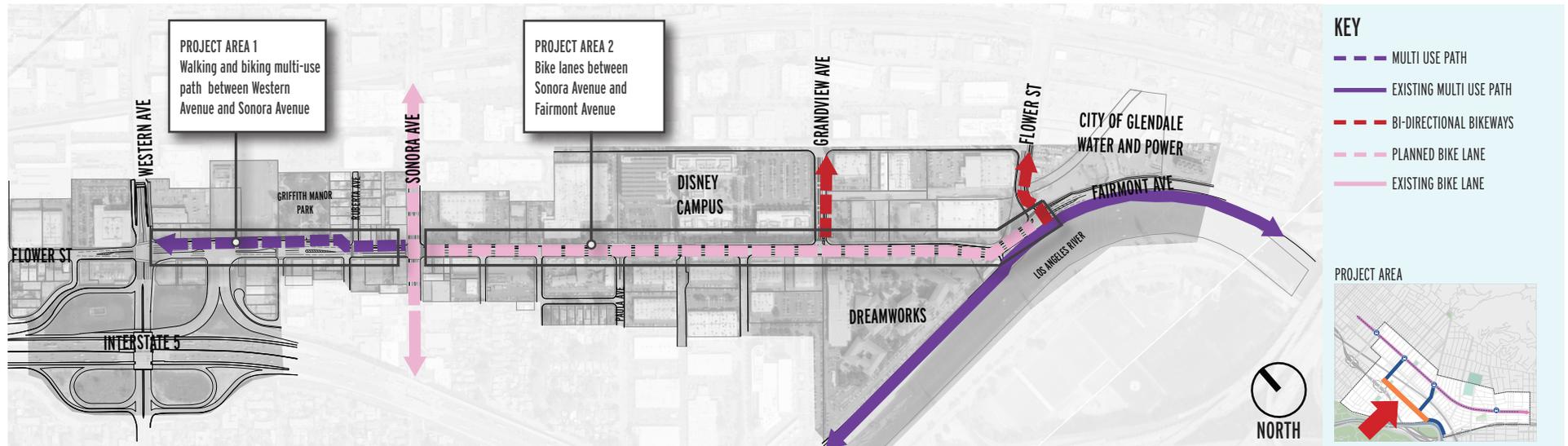
East of Sonora Avenue, the two-way multi-use path transitions to a traditional bike lane facility approximately 1600 feet Flower Street (implemented through a separate ongoing city-led effort and Flower Street reconstruction). Bike lanes on both sides of the street between Sonora Avenue and Fairmont Avenue are planned for construction.

- No changes to this bicycle facility or other roadway lanes or sidewalks are proposed.
- Landscaping is recommended for the median.

### POTENTIAL ADDITIONAL ENHANCEMENTS

- Street and multi-use path lighting. Fixtures could be located between the multi-use path and the travel lane. Light poles could include banners, hanging landscape baskets, and wayfinding signage.
- Landscaping. A parkway could include street trees and planting beds.

FIG 3.45 FLOWER BIKE FACILITIES DIAGRAM



# FLOWER STREET BIKE LANES

FIG 3.46 EXISTING – PROJECT AREA 2 (SONORA AVENUE AND FAIRMONT AVENUE) LOOKING WEST



FIG 3.47 EXISTING – PROJECT AREA 2 (SONORA AVENUE AND FAIRMONT AVENUE) LOOKING WEST

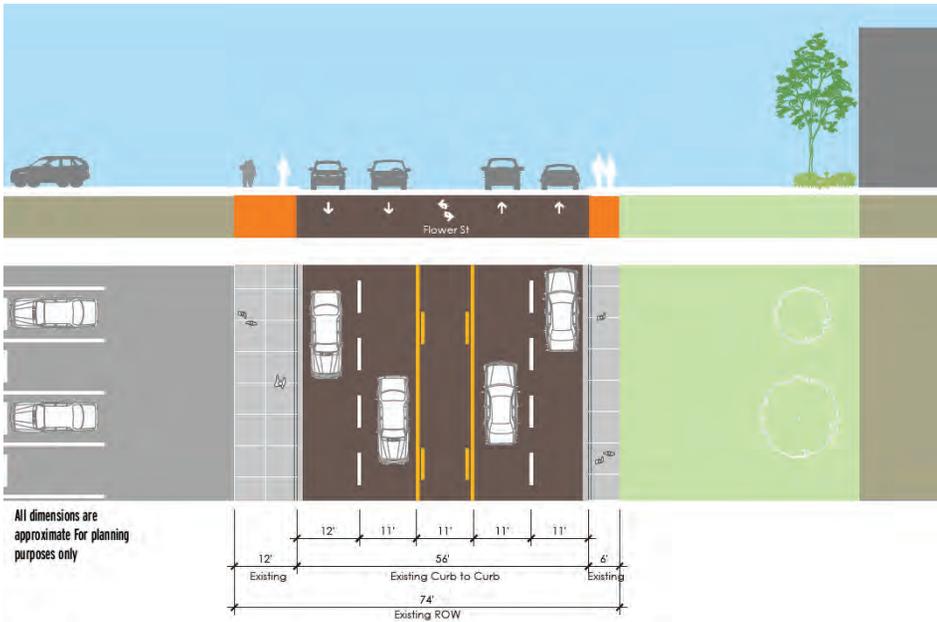


FIG 3.48 BIKE LANES – PROJECT AREA 2 (SONORA AVENUE AND FAIRMONT AVENUE) LOOKING WEST



FIG 3.49 BIKE LANES – PROJECT AREA 2 (SONORA AVENUE AND FAIRMONT AVENUE) LOOKING WEST



## TRANSPORTATION ANALYSIS SUMMARY

The analysis presents the results of a conceptual planning process that sought to incorporate and build off the Metro transit corridor project on Glenoaks Boulevard, explore opportunities to enhance the active transportation environment, and promote sustainable transportation. By analyzing the potential changes to travel patterns and intersection configurations, this effort developed 2040 forecasts using the City's Transportation Demand Forecasting (TDFM) and investigated the feasibility of protected bikeway facility options on Glenoaks Boulevard, Western Avenue, and Grandview Avenue.

**While this analysis should be refined as more information is made available about Metro's proposed design and operation of the corridor, this preliminary analysis suggests that enhancing active transportation facilities would not have a detrimental effect where it may entail modifications to signal treatments or intersection geometry.**

A full transportation analysis is included in the appendix.

### ANALYSIS METHODOLOGY

The analysis included the following steps:

- Researching and obtaining historic counts in the study area
- Conducting an existing level of service analysis using the (TDFM) to:
  - Develop forecasts that assume implementation of the North Hollywood to Pasadena Transit Corridor Project on Glenoaks Boulevard.
  - Develop forecasts that assume active transportation and first/last mile enhancements.
  - Estimate shifts in travel route and travel mode from potential changes that would provide enhanced bicycle facilities to the Glenoaks Boulevard, Grandview Avenue, and Western Avenue corridors.
- Reviewing available data from Metro's Transit Corridor project to develop concept plans for priority intersections that assume implementation of the transit corridor project and protected bike lanes.
- Reviewing geometry, traffic volumes, right-of-way, collision history, signal phasing, and design practices for accommodating protected bicycle facilities and reducing modal conflicts at intersections.
- Conducting a level of service analysis that seeks to evaluate the potential impact of adding protected bicycle facilities on Glenoaks Boulevard, Grandview Avenue, and Western Avenue corridors to enhance safety, travel options, economic vitality, air quality, and access to the proposed transit project.
- Conducting additional sensitivity analysis that tested additional phasing changes that could provide exclusive bicycle or pedestrian phases at the analyzed locations.

### INTERSECTION SCENARIOS

The following scenarios were analyzed at the intersection level for the weekday AM peak hour (busiest hour between 7:00AM to 10:00AM) and PM peak hour (busiest hour between 3:00PM to 6:00PM):

- Existing (2019) Conditions – The existing conditions analysis includes an assessment of traffic volumes and operating conditions. Existing year traffic volumes were analyzed using the Highway Capacity Manual (HCM) and Intersection Capacity Utilization (ICU) methodologies to determine the existing operating conditions at the study intersections. Figure 3.50 summarizes the results of the analysis of the existing weekday morning and afternoon peak hour V/C ratio or delay and corresponding LOS at each of the analyzed intersections. As depicted in Figure 3.50, four intersections operate at LOS C or better during both the AM and PM peak hours. Five intersections operate at LOS C or better during either their AM or PM peak hour.
- Future Base (Cumulative) 2040 Conditions – This scenario represents future traffic conditions without the proposed protected bikeway project consistent with land use assumptions in the City of Glendale TDFM for year 2040 and the annual growth projected in the area through 2040. In addition, Metro's transit corridor project is reflected in this scenario as a baseline network change. Since the transit corridor on Glenoaks Boulevard is a Metro effort separate from the proposed bikeway projects in the First and Last Mile Loop, the vehicle shifts due to the transit corridor project were accounted for under the Future Base operating conditions as they would be expected to result from implementation of the corridor transit project. The resulting traffic volumes were analyzed at the intersection level.
- Future Base (Cumulative) 2040 plus Protected Bikeway Project Conditions – This scenario represents future traffic conditions with the proposed bikeways described as the "First and Last Mile Loop" in 2040 including a protected bikeway on Glenoaks Boulevard, Western Avenue, and Grandview Avenue, offering linkages to the existing citywide and regional bike network (e.g. Los Angeles River Bike Path and proposed Verdugo Wash bike facility). The projects aim to enhance multimodal access and comfort and promote sustainability by providing viable options to the personal automobile. Therefore, the analysis scenarios generally entail modifying intersection geometry to reflect updated lane configurations and/or phasing with the added active transportation facilities.

FIG 3.50 EXISTING CONDITIONS (2019) INTERSECTION LEVEL OF SERVICE

NO.	INTERSECTION	PEAK HOUR	EXISTING		METHODOLOGY
			V/C or Delay	LOS	
1	Western Avenue & Glenoaks Boulevard	AM	53.9	D	HCM
		PM	66.5	E	
2	Sonora Avenue & Glenoaks Boulevard	AM	0.749	C	ICU
		PM	0.931	E	
3	Grandview Avenue & Glenoaks Boulevard	AM	0.574	A	ICU
		PM	0.677	B	
4	Highland Avenue & Glenoaks Boulevard	AM	0.685	B	ICU
		PM	0.699	B	
5	Pacific Avenue & Glenoaks Boulevard	AM	34.4	C	HCM
		PM	45.4	D	
6	Western Avenue & Flower Street	AM	17.6	B	HCM
		PM	27.2	C	
7	Sonora Avenue & Flower Street	AM	0.764	C	ICU
		PM	0.803	D	
8	Grandview Avenue & Flower Street (Unsignalized)	AM	11.6	B	HCM
		PM	40.1	E	
9	Western Avenue & San Fernando Road	AM	29.0	C	HCM
		PM	36.3	D	
10	Grandview Avenue & San Fernando Road	AM	0.469	A	ICU
		PM	0.592	A	

**FUTURE INTERSECTION ANALYSIS**

The analysis summarizes the changes in intersection operations between Future Base Conditions and Future Plus Project Conditions as shown in Figure 3.51 . The results generally reflect minor changes to level of service on Glenoaks Boulevard. This is because the geometry and phasing associated with implementation of this option does not substantially change operations and the intersection, therefore, is expected to exhibit a similar amount of average delay as a no project option.

For the Glenoaks corridor, Metro’s BRT project would include a lane reduction on Glenoaks Boulevard that was analyzed as part of the Future Base scenario. For the Future Plus Project scenario, no further lane reduction is needed to accommodate a protected bikeway on Glenoaks Boulevard and the analysis reflects changes related to signal modifications. As a result, intersection operations on the Glenoaks corridor are expected to have the similar or slight changes in terms of auto delay or Volume-to-Capacity (V/C) after proposed signal modifications are made.

For the Western Avenue corridor, specifically the intersections at San Fernando Road and Flower Street, these locations are forecast to experience an increase in auto delay from the Future Base to the Future Plus Project scenario. For the Western Avenue corridor this reflects changes to intersection geometry that reduce vehicular capacity and modify signal phases, explaining the potential for increase in delay.

For the Flower corridor, the Future Base scenario reflects the City’s Flower Street widening and street improvement project, which do not show geometry modifications related the implementation of the proposed bikeway project. Therefore, there is no change of intersection operations from the Future Base to the Future Plus Project scenario for Sonora Avenue & Flower Street and Grandview Avenue & Flower Street.

For the Grandview corridor, specifically the intersection of Grandview Avenue & San Fernando Road, is forecast to have a V/C increase with implementation of the bike-way project. This is due to the reduction of vehicular capacity. Because the volumes are lower on this corridor, a more simplistic ICU analysis was undertaken and the LOS on this corridor remains at LOS D or better (with the exception of the PM peak hour at Flower Street which is also true in the Future Base scenario).

FIG 3.51 FUTURE BASE & BASE PLUS PROTECTED BIKEWAY (2040) INTERSECTION LEVEL OF SERVICE

NO.	INTERSECTION	PEAK HOUR	FUTURE BASE		FUTURE PLUS BIKEWAY		V/C or DELAY INCREASE	METHODOLOGY
			V/C or Delay	LOS	V/C Or Delay	LOS		
1	Western Avenue & Glenoaks Boulevard	AM	80.9	F	80.3	F	-0.6	HCM
		PM	116.6	F	114.7	F	-0.19	
2	Sonora Avenue & Glenoaks Boulevard	AM	0.9292	E	0.929	E	0	ICU
		PM	1.147	F	1.147	F	0	
3	Grandview Avenue & Glenoaks Boulevard	AM	0.731	C	0.731	C	0	ICU
		PM	0.857	D	0.857	D	0	
4	Highland Avenue & Glenoaks Boulevard	AM	0.859	D	0.859	D	0	ICU
		PM	0.894	D	0.894	D	0	
5	Pacific Avenue & Glenoaks Boulevard	AM	43.7	D	42.7	D	-1	HCM
		PM	75.4	E	73.6	E	-1.8	
6	Western Avenue & Flower Street	AM	21.2	C	25	C	<b>3.8</b>	HCM
		PM	42.8	D	49.2	D	<b>6.4</b>	
7	Sonora Avenue & Flower Street	AM	0.92	E	0.92	E	0	ICU
		PM	0.975	E	0.975	E	0	
8	Grandview Avenue & Flower Street (Unsignalized)	AM	11.7	B	11.7	B	0	HCM
		PM	68	F	68	F	0	
9	Western Avenue & San Fernando Road	AM	42.7	D	99.9	F	<b>57.2</b>	HCM
		PM	65.3	E	149.1	F	<b>83.8</b>	
10	Grandview Avenue& San Fernando Road	AM	0.586	A	0.598	A	<b>0.012</b>	ICU
		PM	0.741	C	0.741	C	0	

## SIGNAL TIMING

Figure 3.52 shows the Future Plus signal timing changes for signalized intersections analyzed using the HCM methodology. The conceptual design effort explored feasibility and design options that inform the changes to phasing and geometry. While Figure 3.52 describes changes to phasing, the conceptual design explored options that would entail minimal changes to phasing and would allow bicycles to proceed with the pedestrian signal for the parking protected bikeway option on Glenoaks Boulevard, while maintaining the same lane configurations. On Western Avenue and Grandview Avenue the implementation of a two-way bicycle facility will entail changes to geometry and phasing.

FIG 3.52 SIGNAL TIMING CHANGES FOR SIGNALIZED INTERSECTIONS USING HCM METHODOLOGY

NO	INTERSECTION	SIGNAL TIMING CHANGES
1	Western Avenue & Glenoaks Boulevard	<ul style="list-style-type: none"> <li>Added No Right Turn on Red (NROR) to northbound right, eastbound right, and westbound right movements.</li> </ul>
5	Pacific Avenue & Glenoaks Boulevard	<ul style="list-style-type: none"> <li>Changed northbound left movement to protected phase.</li> <li>Added NROR to eastbound right movement.</li> </ul>
6	Western Avenue & Flower Street	<ul style="list-style-type: none"> <li>Added a protected right turn phase to westbound movement.</li> <li>Added NROR on westbound right and southbound right movements.</li> </ul>
9	Western Avenue & San Fernando Road	<ul style="list-style-type: none"> <li>Added a protected right turn phase to eastbound right movement and right-turn overlap signal phasing with southbound left.</li> </ul>

## SIGNAL PHASING

Signal phasing is an important tool in separating turning movements and reducing conflicts to provide a low-stress, protected facility through the intersection. It also provides clear guidance for bicyclists of when they can proceed through the intersection. There are currently two commonly applied intersection control options for protected bike facilities in the United States – providing a separated bike phase (bike signals) or allowing for concurrent bike phasing (“Bikes Use Ped Signal” signage). The latter can be used in a low volume scenario and should be paired with protected intersection design to improve sight lines and slow turning vehicles. In California, the state’s Manual on Uniform Traffic Control Devices (CAMUTCD) provides guidance on their application.

A preliminary analysis of auto operations and turning movement volumes provided insight to the appropriate signal phasing treatments needed to reduce auto/bike conflicts and provide low-stress, comfortable bike crossings at signalized intersections on Glenoaks Boulevard. Potential tools that can be employed include:

- Protected left-turns (separate phase): best practices recommend all conflicting auto left-turn movements have separate, protected phases.
- Protected right-turns (separate phase) at parallel approaches: where right-turn volumes are high and space allows, best practice intersection design should provide a right turn pocket and separate right turn phasing.
- No right on red on perpendicular approaches: for perpendicular approaches along a two-way facility, no right on red should be considered.
- Horizontal offsets: A strategy to realign streets and intersections to improve sight distance and slow turning vehicles. They also provide room for a protected corner which provides space for bikes to wait when they are turning left.

## GLENOAKS BOULEVARD SENSITIVITY ANALYSIS

The analysis addresses the potential for separate bike phases to minimize conflicts at identified locations. A sensitivity analysis was conducted on the Glenoaks corridor by testing the operations of bike signal options for two intersections using the HCM methodology - for the Western Avenue & Glenoaks Boulevard and Pacific Avenue & Glenoaks Boulevard intersections.

- The first option analyzed included the concurrent bike phase with concurrent permissive vehicle turns, which provides a bicycle phase that runs concurrently with the parallel vehicle phase. This is not applicable at several locations, such as Western Avenue & Glenoaks Boulevard, because there is not enough width for right turn only lanes at the intersection that allows for a right-turn indication to prevent right-turns across the phase the bicyclists and pedestrians would use.
- The second option was to include bicycle only phases, which provide a protected bike phase where all motor vehicle traffic is stopped. In the signal phasing, minimum bicycle green time of 12 seconds and a maximum green time of 25 seconds are provided. Additionally, a two-second all red interval is provided at the end of this phase.
- The third option considered analyzes the provision of a pedestrian scramble phase which would allow pedestrians and bicyclists to cross in all directions at the same time when all motor vehicle traffic is stopped.

All signalization options are expected to increase the auto delay by an estimated two to seven seconds because they are increasing the cycle length and allocating more of the signal cycle to non-vehicular movements, compared to the Future Base scenario. This is estimated as a modest increase in delay and the potential effect on people driving should be balanced with the benefits to people walking, biking, or taking transit and associated environmental, public health, and equity benefits.

FIG 3.54 VEHICLE MILES TRAVELED IN FUTURE SCENARIOS

	Total VMT	Home Based VMT	Home Based Work VMT
2040 Future Base	1,696,095	241,692	516,036
2040 Future Plus Bikeway	1,695,982	241,405	516,383
<b>Total Change</b>	<b>-113</b>	<b>-287</b>	<b>347</b>

FIG 3.53 INTERSECTION LEVEL OF SERVICE FOR BIKE SIGNAL OPTIONS

NO.	INTERSECTION	PEAK HOUR	FUTURE BASE		OPTION 1			OPTION 2			OPTION 3		
					CONCURRENT BIKE PHASE WITH CONCURRENT PERMISSIVE VEHICLE TURNS			BICYCLE ONLY PHASES			PED SCRAMBLE		
			V/C or Delay	LOS	DELAY	LOS	CHANGE	DELAY	LOS	CHANGE	DELAY	LOS	CHANGE
1	Western Avenue & Glenoaks Boulevard	AM	80.9	F	Not Applicable			85.6	F	4.7	85.6	F	4.7
		PM	116.6	F	Not Applicable			123.4	F	6.8	123.4	F	6.8
5	Pacific Avenue & Glenoaks Boulevard	AM	43.7	D	47.6	D	3.9	49.3	D	5.6	49.7	D	6
		PM	75.4	E	78.1	E	2.7	78.8	E	3.4	79	E	3.6

### VEHICLE MILES TRAVELED

This analysis addresses changes in Vehicle Miles Traveled (VMT) in the Future Base and Future Plus Project scenarios. The number of trips and trip lengths were retrieved from the Glendale TDFM for each the Future Base and Future with Protected Bikeway scenarios to estimate the VMT for each scenario and potential changes.

With the implementation of the proposed bikeway projects in the First and Last Mile Loop, the total VMT and home-based VMT in the study area are expected to decrease by between 100 and 300 vehicle miles traveled. Additionally, the modeling displayed that the home-based work VMT could increase by up to 350 vehicle miles traveled, for a net reduction (per Metro’s transit corridor analysis the implementation of the North Hollywood to Pasadena Transit Corridor would result in a reduction to VMT).

As the active transportation and transit networks are enhanced and expanded, VMT would be expected to decrease further as people will have opportunities to take fewer or shorter trips by vehicle.

# WESTERN AVENUE CORRIDOR GOALS AND OBJECTIVES ASSESSMENT

Benefits of the Western Avenue First and Last Mile Complete Street Concept has been assessed. The concept meets project goals and objectives; however, additional considerations need to be addressed.

## EQUITY

The proposed concept enhances the roadway safety of all users and offers enhanced mobility for those who walk and bike.

## BIKING

Western Avenue has a very high level of traffic stress due to high vehicle volumes, speeds, and numbers of auto lanes. The proposed project would significantly enhance the safety and comfort of biking on Western Avenue by providing a separate biking facility.

## WALKING

The proposed project provides an additional buffer between people walking and autos between Glenoaks and San Fernando, and addresses the existing, very poor walking conditions on the Western Avenue viaduct.

## TRANSIT

The proposed project provides safe, direct bike access to the proposed BRT station at Western Avenue. Improved transit access outside walking distance will result in more ridership.

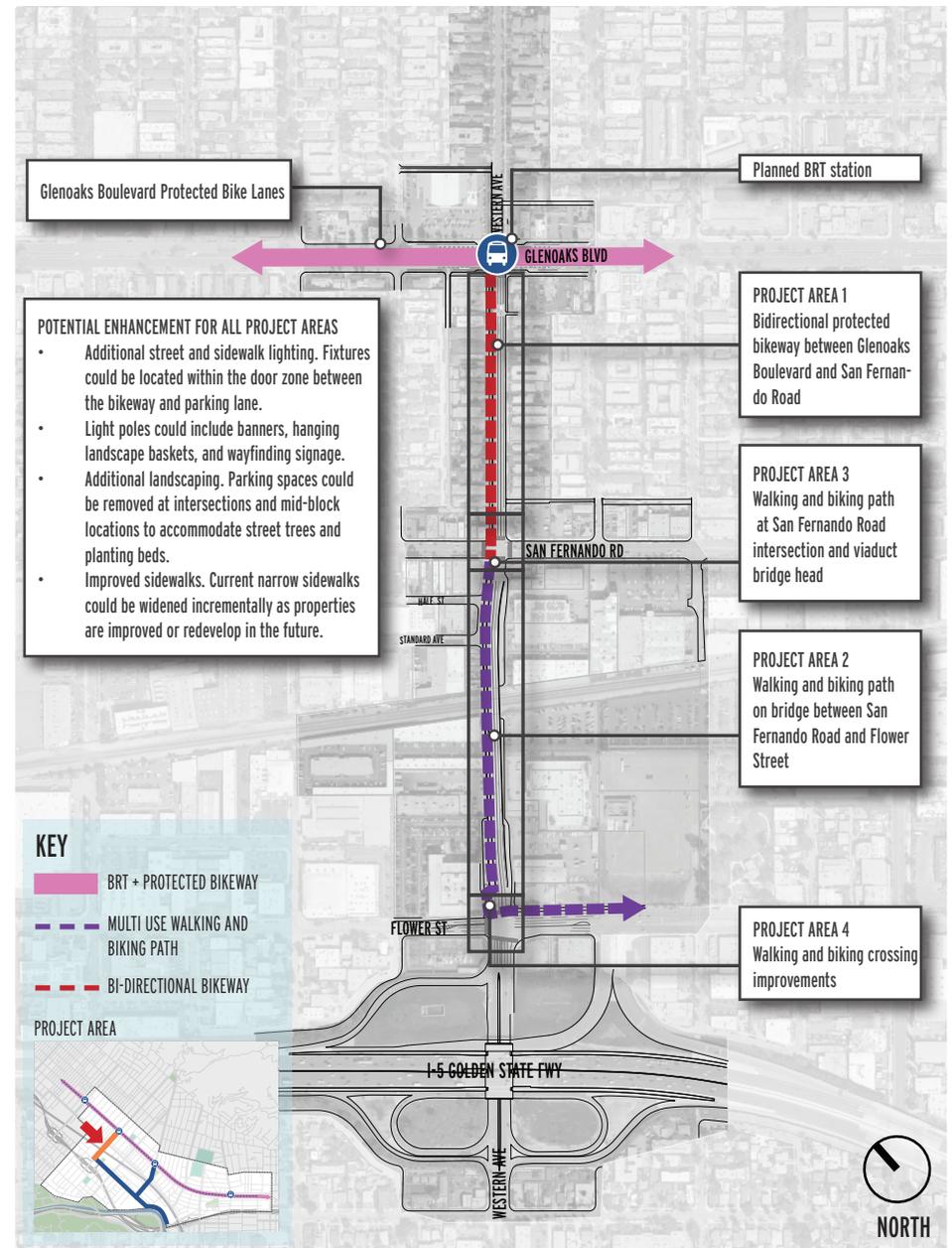
## AUTO & TRUCK

The proposed project also maintains auto capacity on the bridge, where vehicle volumes are highest. Intersection design improvements and signal modifications will create separate phasing for turning movements and will provide safety benefits to people driving, as well as those walking and biking. Further, most on-street parking would be maintained on both sides of the street between Glenoaks Boulevard and San Fernando Road, with some minor losses on the side of the biking facility to improve sightlines at driveways and intersections.

## EASE OF IMPLEMENTATION

This project will likely be exempt from California Environmental Quality Act requirements due to its focus on reducing auto capacity to accommodate active transportation facilities. Further, the proposed project accommodates traffic volume patterns by maintaining auto capacity south of San Fernando Road where volumes are highest. These two considerations will significantly minimize the level of additional analysis needed to implement the project, allowing for the project to move into final design and construction at a much quicker pace.

FIG 3.55 WESTERN FIRST AND LAST MILE COMPLETE STREET CONCEPT



## OTHER CONSIDERATIONS

The following considerations need to be carried through the community engagement and final design processes:



### BIKING

Additional midblock crossing may need to be added. A trade-off of any protected bikeway design is that midblock destinations on the other side of the street may be more difficult to access. People with midblock destinations will need to exit the facility at the intersection and either ride the last leg of their trip in the mixed flow lane or dismount and walk to their destination.



### WALKING

Space constraints on the viaduct create design concerns. A multi-use path does not separate people who walk and bike, creating potential conflicts and weaving movements that may be uncomfortable to users. This especially affects people walking who are typically traveling at a much slower speed than people on bikes.



### AUTO AND TRUCK

The proposed signal modifications and capacity reductions may result in increased auto delay at major intersections on the corridor. However, the operations analysis demonstrates that auto delay is expected to worsen in the future with or without the project. Limited opportunities exist on the corridor to increase capacity to accommodate demand in the future. Existing City goals and policies identify a shift to more efficient modes as an effective approach to providing a safe, sustainable, efficient transportation network. The promotion of mode shift through this project will ideally offset the auto delay impacts caused by the reduction in capacity.



### EASE OF IMPLEMENTATION

There are several engineering considerations at the Western Avenue bridge that will likely affect cost and constructability that require further analysis, including curb re-construction to accommodate the raised multi-use path, side railing improvements, and grade considerations for ADA compliance.

# GRANDVIEW AVENUE CORRIDOR GOALS AND OBJECTIVES ASSESSMENT

Benefits of the 'Western Avenue First and Last Mile Complete Street Concept' has been assessed. The concept meets project goals and objectives; however, additional considerations need to be addressed.

**EQUITY**

The proposed concept enhances the roadway safety of all users and offers missing and enhanced mobility for those who walk and bike.

**BIKING**

Grandview Avenue has a high level of traffic stress, mainly due to the number of auto lanes and lack of existing bike facilities. The proposed project would significantly enhance the safety and comfort of biking on this corridor by reducing the number of auto lanes and providing a separate right of way for people riding bikes.

**WALKING**

The proposed project utilizes the wide right-of-way between Flower and San Fernando to widen sidewalks and improve the pedestrian realm. A midblock cross-walk at Cleveland Road to Pelanconi Park would significantly improve access to the park for people walking on Grandview, providing safety benefits for those who choose to cross midblock today without a facility and reducing pedestrian out of direction travel for those who choose to walk up to the signalized crossings at either San Fernando or Glenoaks to cross.

**TRANSIT**

The proposed project provides safe, direct bike access to the proposed BRT station at Grandview Avenue from the Disney campus and Dreamworks.

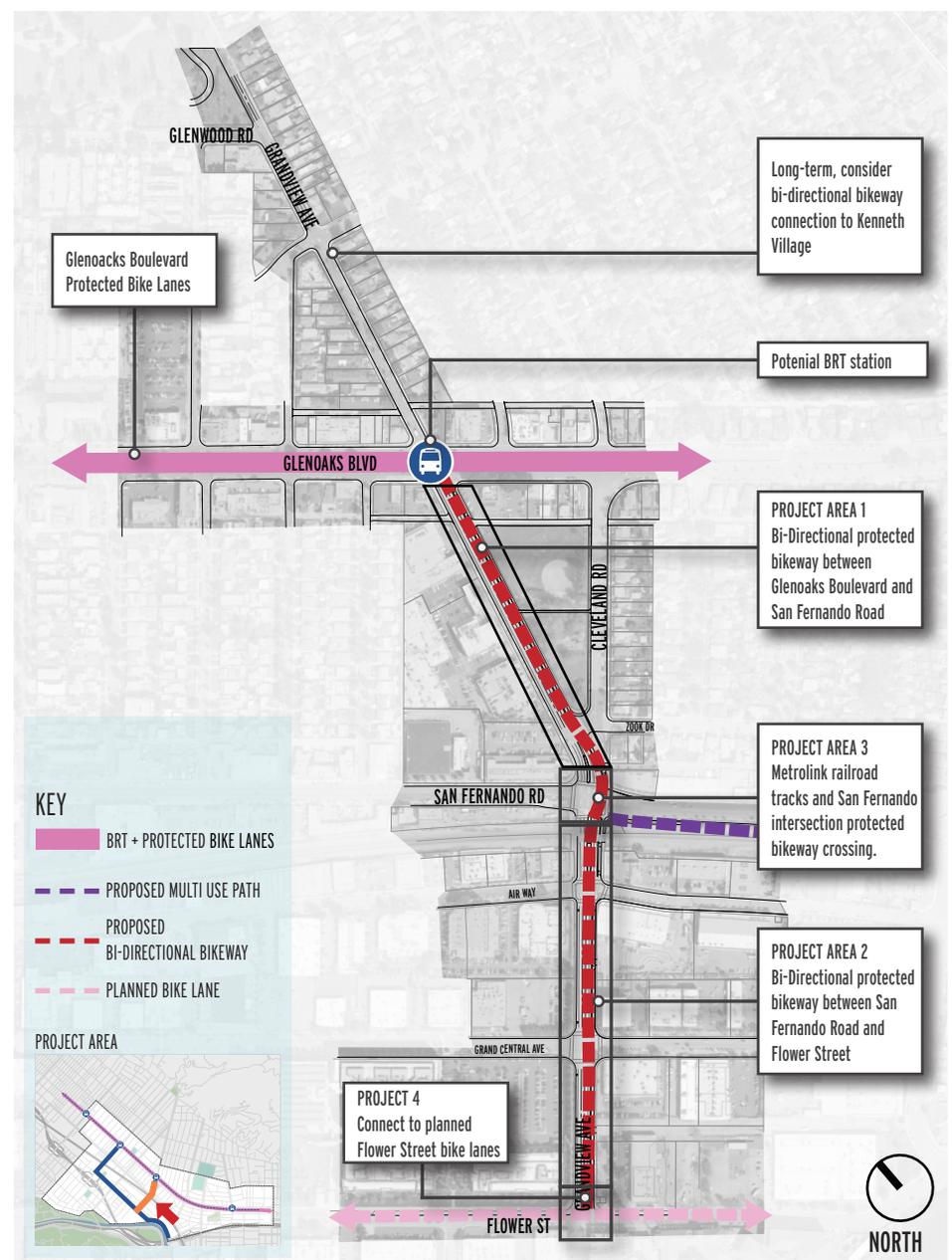
**AUTO & TRUCK**

Intersection design improvements and signal modifications to create separate phasing for turning movements will provide safety benefits to people driving, as well as those walking and biking. Further, parking would be maintained on both sides of the street, with some minor losses on the side of the facility to improve sightlines at driveways and intersections.

**EASE OF IMPLEMENTATION**

This project will likely be exempt from California Environmental Quality Act requirements due to its focus on reducing auto capacity to accommodate active transportation facilities. Further, Grandview Avenue's relatively low average daily vehicle volumes can be easily accommodated with the reduced lane capacity. These two considerations will significantly minimize the level of additional analysis needed to implement the project, allowing for the project to move into final design and construction at a much quicker pace.

FIG 3.56 GRANDVIEW FIRST AND LAST MILE COMPLETE STREET CONCEPT



## OTHER CONSIDERATIONS

The following were identified through the benefits assessment as critical areas that need to be carried through the community engagement and final design processes:

-  **BIKING:** A trade-off of any protected bikeway design is that midblock destinations on the other side of the street may be more difficult to access. This is especially true on Grandview Avenue, where both sides of the street have active land uses that will be likely destinations for people using the facility. People with midblock destinations will need to exit the facility at the intersection and either ride the last leg of their trip in the mixed flow lane or dismount and walk to their destination.
-  **AUTO & TRUCK:** Truck volumes at the Grandview and Air Way intersection should be further analyzed in the next design phase to ensure minimal conflicts between bicyclists and trucks accessing the industrial uses off Air Way. A west-side placement of the bicycle facility may help mitigate this issue. A two-way facility is proposed on Grandview Avenue to minimize driveway conflicts, limit parking loss, and provide continuity with the two-way facility proposed on Western Avenue. Whether the facility should be recommended on the west or east side was not immediately evident and required an assessment of land use, intersection design, and operations. The outcomes of this assessment pointed to the west side being the preferred alternative at this point in the design process. The rationale behind this decision can be used to facilitate discussion during future design phases and community engagement.
  - **Business Access:** Most businesses on this corridor have primary access points on the west side of the street. A west-side facility would allow for easy access between the facility and those businesses.
  - **Park Access:** Pelanconi Park is located on the east side of the street. This is a major destination on the corridor and the proposed midblock crosswalk on this block would help with access if the facility is placed on the west side.
  - **Driveway Conflicts:** There are a similar number of driveway conflicts on both sides of the street.
  - **Air Way Intersection Design:** Traffic volumes were not collected for this intersection, however the current intersection configuration suggests heavy southbound left turns. A west-side facility would minimize conflicts with turning vehicles and reduce impact to auto delay. A review of traffic counts at this location in future design phases could confirm this.
  - **San Fernando Intersection Design:** The curbside southbound travel lane is wide enough to accommodate the two-way cycle track. A west-side placement would allow for this lane to be re-purposed with limited median reconstruction. A west-side placement also mitigates the need to close or reconfigure the northbound right slip lane.
  - **Zook Drive/Cleveland Road Intersection Design:** A west-side placement would minimize auto/bike conflicts at the skewed intersection of Cleveland Road and Zook Drive.
-  **EASE OF IMPLEMENTATION:** The concrete median and adjacent railroad crossing at the San Fernando/Grandview intersection may pose a challenge for re-striping to accommodate the two-way separated facility. The preliminary feasibility review indicates that the facility can likely be accommodated with limited curb reconstruction if placed on the west side of the median. However, if it is determined that the east side is the better placement, significant curb reconstruction and closure of the northbound right slip lane will likely be needed.

## GLENOAKS BOULEVARD CORRIDOR GOALS AND OBJECTIVES ASSESSMENT

Creating a more sustainable West Glendale means providing low-stress, comfortable walking, biking, and transit options for the community. The proposed project achieves this by providing a protected bikeway along Glenoaks Boulevard that connects residents to employment, retail, and regional transportation facilities in the area.

-  **EQUITY:** The proposed concept enhances the roadway safety of all users and offers enhanced mobility for those who walk and bike.
-  **BIKING:** Glenoaks Boulevard has a very high level of traffic stress due to high vehicle volumes and number of auto lanes. The proposed project would significantly enhance the safety and comfort of biking on Glenoaks Boulevard by providing a separated facility.
-  **WALKING:** Protected intersection design proposed as part of this project reduces the crossing distance and slows turning vehicles at major signalized intersections on Glenoaks Boulevard, both increasing the visibility of people crossing the street and reducing their crossing distance.

-  **TRANSIT:** The proposed project provides low-stress, direct bike access to the proposed BRT stations along Glenoaks Boulevard.
-  **AUTO & TRUCK:** Intersection design improvements and signal modifications to create separate phasing for turning movements will provide safety benefits to people driving, as well as those walking and biking. The separated facility also maintains the auto capacity proposed as part of the BRT project. Further, parking would be maintained on both sides of the street. In the parking-protected facility, there may be some minor parking losses to improve sight lines at driveways.
-  **EASE OF IMPLEMENTATION:** This project will likely be exempt from California Environmental Quality Act requirements due to its focus on active transportation facilities. Further, this proposed project could be implemented through the BRT project, providing cost and construction benefits to the project.

FIG 3.57 GLENOAKS CORRIDOR PARKING PROTECTED BIKE LANE CONCEPT – THOMPSON AVENUE TO SONORA AVENUE (WESTERN STATION)

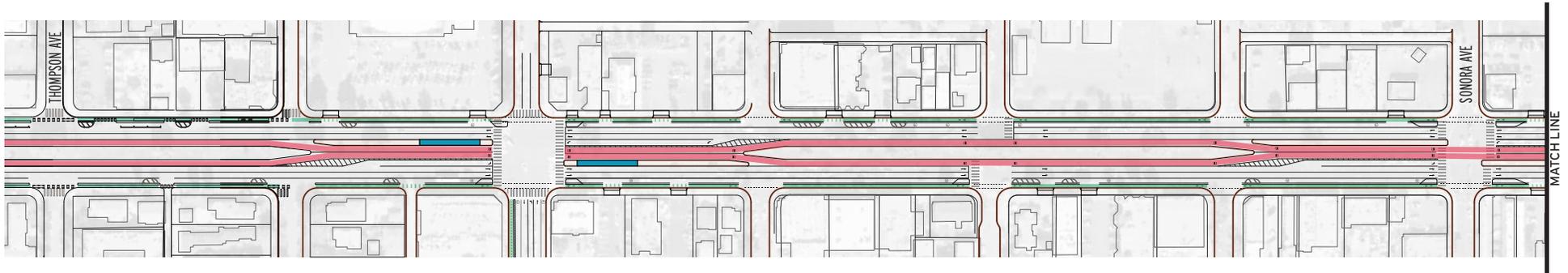
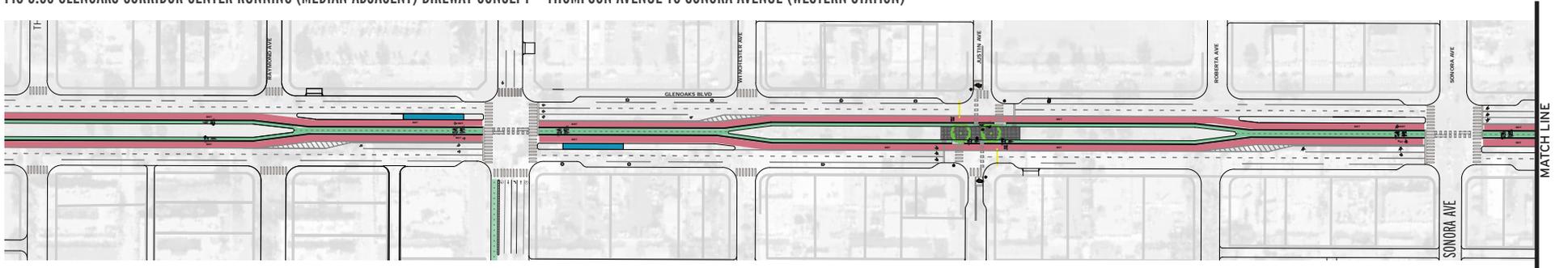


FIG 3.58 GLENOAKS CORRIDOR CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY CONCEPT – THOMPSON AVENUE TO SONORA AVENUE (WESTERN STATION)



## OTHER CONSIDERATIONS

The following were daylighted through the benefits assessment as critical areas that need to be carried through the community engagement and final design processes:

- BIKING:** In the center-running alternative, intersection design is complex and may be difficult to navigate to someone riding bikes who has not been on a facility of this type before.
- AUTO & TRUCK:** The proposed project can be implemented with limited modifications to signal phasing or capacity proposed as part of the BRT project. However, future design and community engagement phases may determine the need for separated bike phases at major intersections, which would likely impact auto delay. The promotion of mode shift through this project would ideally offset the auto delay impacts caused by the added signal phases.
- LAND USE:** The two proposed separated bikeway alternatives— parking protected and center-running— highlight a trade-off between local business access (parking-protected) and regional connectivity (center-running). Community input should be sought to determine what the right priorities are for the facility on Glenoaks Boulevard.

- EASE OF IMPLEMENTATION:** Constrained right of way and multimodal considerations at intersections make protected intersection design for the proposed project particularly complex. Future design and community engagement phases should discuss auto, bike, pedestrian, and transit trade-offs that are inherent in multimodal intersection design to determine the right priorities and approach for signalized intersections on Glenoaks Boulevard. Further, while center-running separated facilities are gaining popularity through recent installations in Portland, Oregon and Washington D.C., they are still a relatively new facility type with variations in guidance. For example, the Caltrans Highway Design Manual included an update in July 2020 stating that “bike paths should not be placed in the median of a State highway or local road,” primarily due to them requiring movements contrary to normal rules of the road.

FIG 3.59 GLENOAKS CORRIDOR PARKING PROTECTED BIKE LANE CONCEPT – SONORA AVENUE TO CLEVELAND AVENUE (GRANDVIEW STATION)

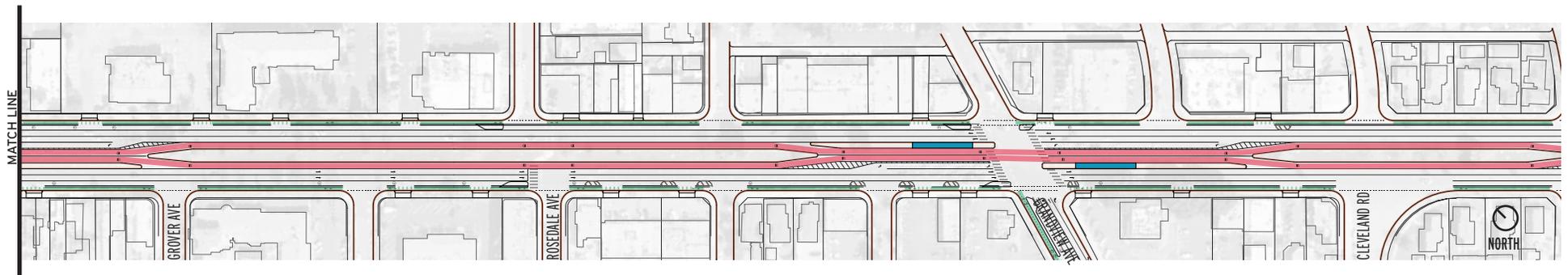
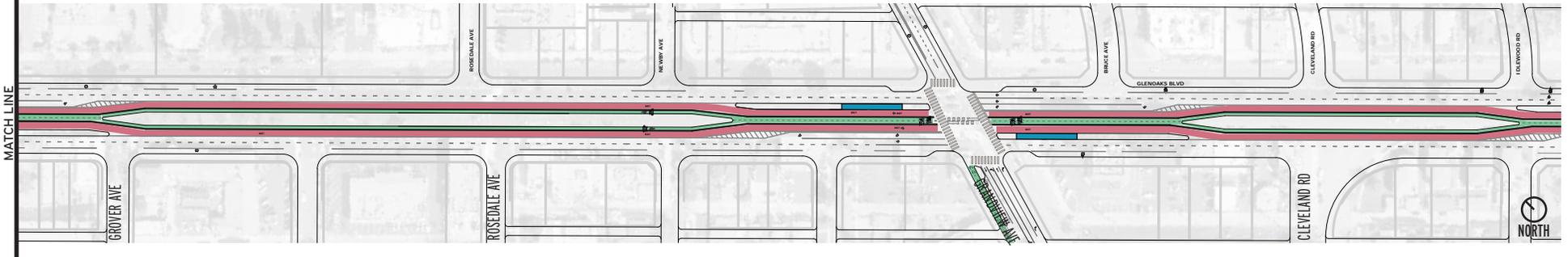


FIG 3.60 GLENOAKS CORRIDOR CENTER RUNNING (MEDIAN ADJACENT) BIKEWAY CONCEPT – SONORA AVENUE TO CLEVELAND AVENUE (GRANDVIEW STATION)



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# 4.0 IMPLEMENTATION



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# INTRODUCTION

## INTENT

The intent of the implementation strategy is to identify the public actions necessary to generate sustained and substantial reductions in vehicle miles traveled and while addressing the goals and objectives of the West Glendale Study. The action plan focuses on achievable short-term and long-term projects that can be part of the North Hollywood to Pasadena BRT project, or be integrated into the West Glendale Community Plan and other relevant City plans.

## ACTION PLAN

The implementation strategy includes:

- **Priority Projects:** A short list of Priority Projects that are achievable and can be completed or initiated using either existing or potential identified additional public financial resources.
- **Actions:** Required tasks to advance the concepts of the West Glendale Study
- **Responsibilities:** Identification of individuals or groups responsible for leading implementation activities.
- **Funding Sources:** Current or potential funding sources, where available.
- **Schedule:** A preliminary timeline for project completion within a 5-year timeframe.

To oversee the implementation of these projects, it is recommended that an Implementation Committee be formed and given the responsibility of ensuring that all projects are implemented as envisioned in a timely manner. The Committee would:

- Include an appointed group of approximately 5 key stakeholders and West Glendale advocates that would be appointed on an annual basis by the City Council.
- The Committee would meet on a 3-4 month schedule to review project proposals, project progress, and identify issues.
- The Committee would provide a 'Status of the Plan' report to Council annually or sooner as deemed necessary.
- Be dissolved upon completion of all implementation projects.

## PRIORITY PROJECTS

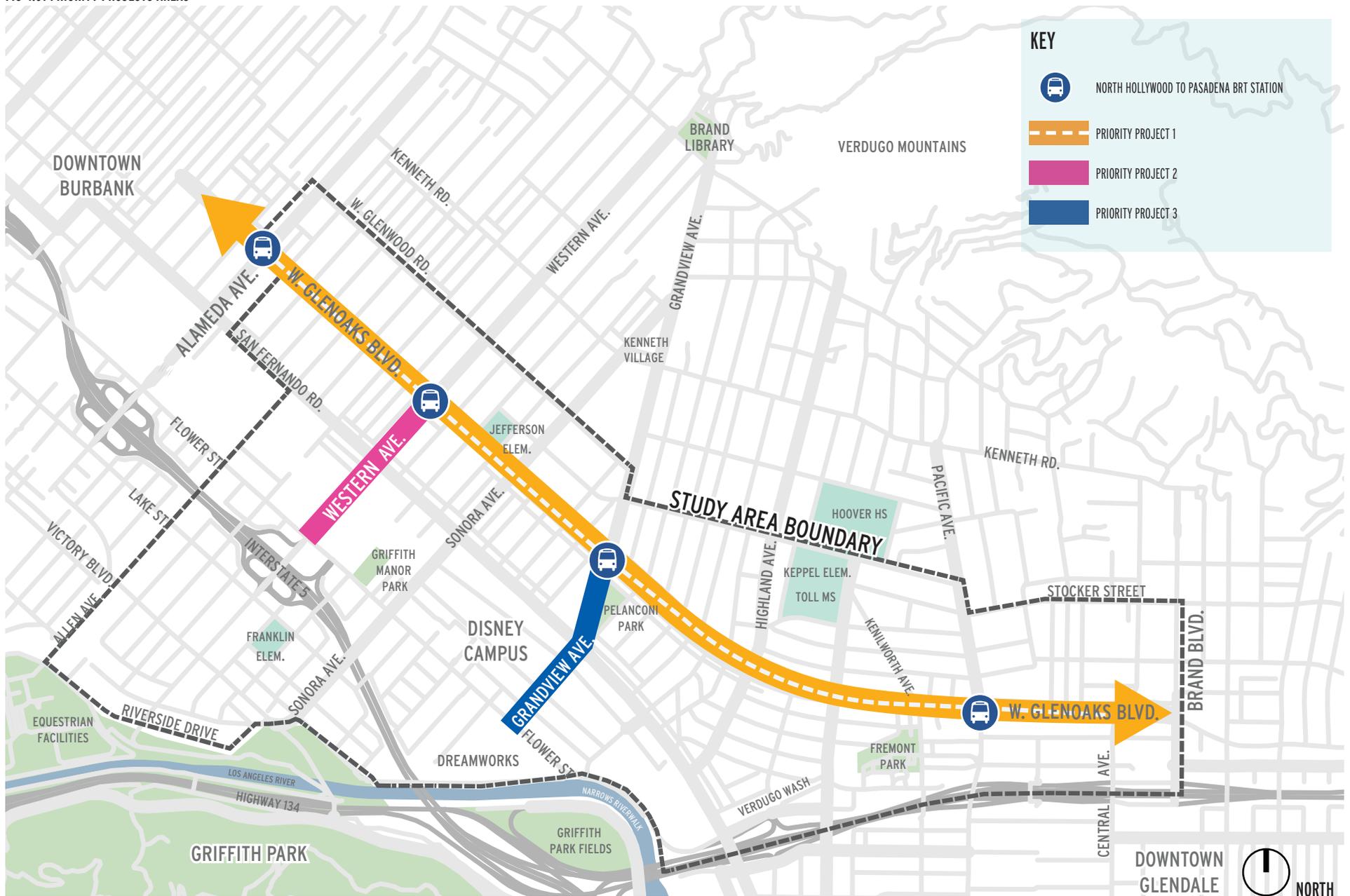
The selected projects are those that can demonstrate that they can meet the following criteria:

- **Catalysts:** Strategically located to induce substantial biking and walking within and through West Glendale.
- **Optics:** Positively change the public perception of West Glendale as a bikable and walkable district.
- **Game Changers:** Create immediate momentum that will, in turn, spur other transit, walking and biking improvements.
- **Induce Economic Development:** Stimulate private development that can address unmet demand and fill gaps in housing, commercial and retail uses while improving the livability of West Glendale.
- **Business Case:** Generate a return on public investment.

Four Priority Projects are identified. They include:

- **Priority Project 1:** Protected Bikeway improvements along Glenoaks Boulevard
- **Project 2:** Western Avenue 'First and Last Mile Loop' Complete Street Improvements
- **Project 3:** Grandview Avenue 'First and Last Mile Loop' Complete Street Improvements

FIG 4.01 PRIORITY PROJECTS AREAS



# PRIORITY PROJECT 1 GLENOAKS PROTECTED BIKEWAY

## PROJECT DESCRIPTION

The preliminary conceptual design and operational review conducted during this Study found that both the parking lane protected and center running median adjacent bike lane options are feasible, with each having advantages and disadvantages. However, additional design refinement, technical review, and public input is needed to ensure that the protected bike lanes contribute positively to the creation of a Glenoaks multi-modal corridor that results in safe, direct, and convenient biking and walking routes.

**Preliminary Cost Estimate** — \$20,600,000

## ACTION

**This Study's two concepts should be assessed. A selected preferred concept would be refined and incorporated into the bus rapid transit project's planning and design process.** Adding first and last mile bicycle improvements will strengthen the BRT project by increasing transit ridership, reducing auto dependency, lessening traffic congestion, lowering greenhouse gas emissions, and providing new transit-supportive development opportunities.

**Additional actions are required to confirm concepts and technical analysis, and provide opportunities for additional stakeholder input for the following project areas:**

- **Protected Bikeway engineering** — Finalize concept design.
- **Additional traffic analysis** — Feasibility review, and operations analysis to understand design options and tradeoffs relating to intersection/ mid-block crossing operations and multi-modal comfort and mobility options.
- **Cost Estimating** — Develop more refined cost estimates for the final concept.
- **Identify phasing/concepts** — Identify potential pilot projects.

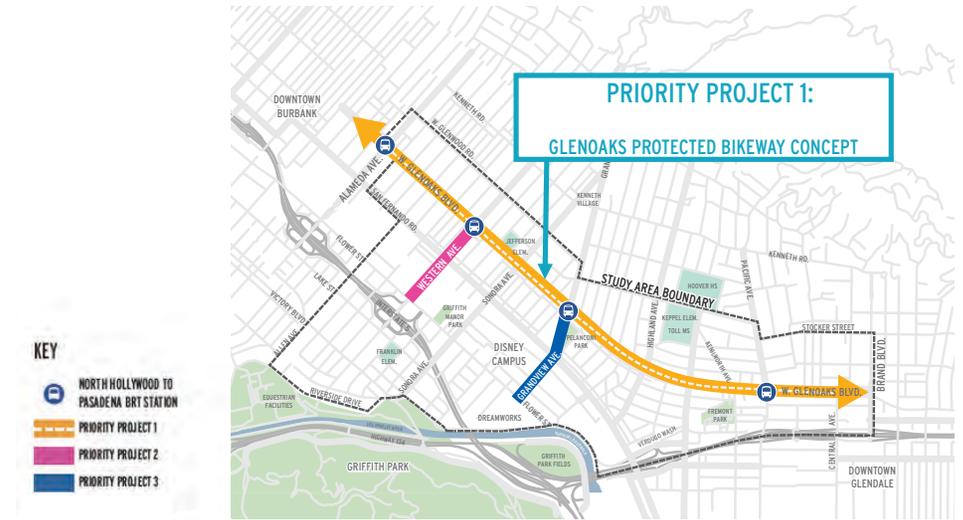
## RESPONSIBILITY:

City of Glendale & Metro

## TIMELINE:

- **2021-2022:** Evaluate design options with local stakeholders and Metro, discuss funding strategies to cover costs of protected bike lane as part of the BRT project, and prepare for funding through grant applications.

FIG 4.02 PRIORITY PROJECT 1



- **2022-2023:** Apply for ATP Cycle 6, Metro Active Transportation Program, and/or Highway Safety Improvement Projects (HSIP) for grant funding if Metro cannot fund with BRT project. Local match to grant funds may be available from the General Fund or local return for Metro Measure M and Measure R sales tax dollars.
- **2024-2026:** Receive funding, construct and implement.

## COMMUNITY OUTREACH:

Conduct community outreach events, obtaining local stakeholder input as part of the North Hollywood to Pasadena BRT Project or through City-facilitated processes.

- **Engagement:** Conduct community meetings, technical meetings, surveys, and pop-up events to discuss vision, options, assessment, and preferences for the corridor.
- **Website:** Update [WestGlendaleStudy.com](http://WestGlendaleStudy.com) website materials.

## ISSUES TO BE RESOLVED

**Select typical block option** — Based on the West Glendale Study concepts, develop corridor long plans and sections for both options. Evaluate and select preferred option to ensure that West Glendale Study goals and objectives are met. Key criteria include ease-of-implementation, safety, equitable access, placemaking potential, and economic development potential.

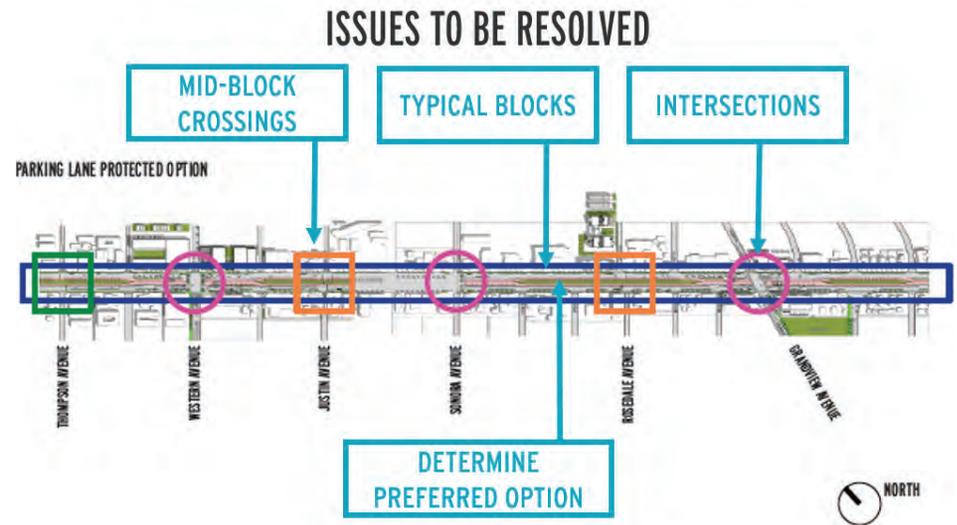
**Select preferred design option for intersections** — Finalize major signalized intersection treatments that provide a “protected intersection,” incorporate crossing improvements, and resolve potential changes to left-turn phasing and pedestrian signal timing. The preliminary conceptual design shows the protected bike lane can fit and designed in a way that preserves signal timing to minimize impacts to BRT. To ensure that equitable access is provided for all modes, additional operational analysis will be needed:

- At large BRT station intersections and other intersections with multimodal conflicts, bicycle signal phasing should be provided.
- Work with Metro to understand if/how intersections can be timed to allow pedestrians to queue in the median and cross in two stages as they do today.

**Refine design options for midblock crossings** — Signalized crossings are provided roughly every 750 to 1000 feet, which result in long out-of-direction walking and biking trips. Add additional crossings to provide equitable walking and biking access. Evaluate midblock crossing locations and spacing. To ensure that equitable access is provided for all modes, additional operational analysis will be needed:

- At mid-block crossings, BRT operations may conflict with biking and walking signal phasing. Analysis should identify design concepts that ensure crossings are maintained and added wherever there are gaps.

FIG 4.03 PRIORITY PROJECT 1 – ISSUES TO BE RESOLVED





## ISSUES TO BE RESOLVED

**Protected Bikeway** — Based on the West Glendale Study concepts, develop plans and sections. Evaluate and select a refined design to ensure that the West Glendale Study goals and objectives. Key criteria include ease-of-implementation, safety, equitable access and economic development potential are met.

- **Roadway Changes:** Finalize/confirm modification of parking lanes, driveway, and alley access points.
- **Signalization:** Determine the type of two-way bike facility signalization that will be used on this segment of the Western Avenue corridor.
- **Identify/ design other roadway changes:** Potential midblock crossing between Glenoaks Boulevard and San Fernando Road.
- **Amenities** — Identify/design other elements: Bollards, barriers, landscaping, lighting, signage, etc.

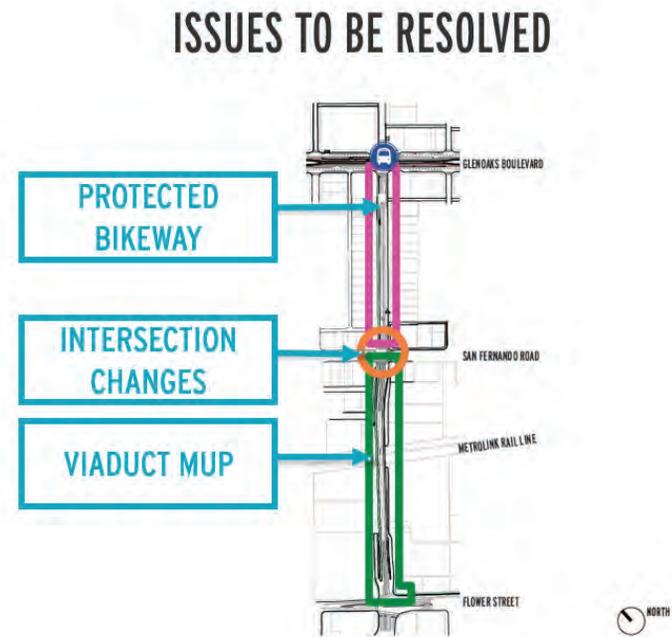
**Select preferred design option for intersections** — Finalize major signalized intersection treatments that provide a “protected intersection,” incorporate crossing improvements, and resolve potential changes to turn phases and pedestrian and bike signal timing.

- **San Fernando and Western Frontage Road:** Finalize design option for closure of Western Avenue frontage between Hale Street and San Fernando Road. Future access to businesses via Thompson Avenue is recommended.
- **San Fernando and Western Traffic Analysis:** Refine design and operations analysis based on potential design changes and document tradeoffs and benefits related to enhanced safety, increased biking/walking, reducing vehicle travel on the local/state highway system, and meet local sustainability goals.
- **Flower and Western Traffic Analysis:** This location experiences a high number of left-turns to/from the freeway. Based on northbound left-turn volumes and a two-way facility on the west side of the street, a protected left-turn phase is suggested.

**Select preferred option for Western Avenue Viaduct** — Based on the West Glendale Study concepts, develop plans and sections.

- **Multi-use Path:** Finalize/confirm the design of multi-use pathway and barrier.
- **Viability:** Assess structural, accessibility for Americans with Disabilities Act compliance (ADA), grade challenges with the proposed project.
- **Identify/ design other elements:** lighting, signage, potential vertical circulation, etc.

FIG 4.05 PRIORITY PROJECT 2 – ISSUES TO BE RESOLVED



## PRIORITY PROJECT 3 – GRANDVIEW AVENUE PROTECTED BIKEWAY

### PROJECT DESCRIPTION

The proposed project for this corridor would reallocate space within the current street right-of-way to provide a two-way protected bike lane and fill in the gaps where sidewalks are missing or substandard, thereby providing better connections between existing residential, employment, retail uses, and potential Disney campus redevelopment area destinations and a potential BRT station at Glenoaks Boulevard intersection. The preliminary conceptual design and operational review conducted during this Study found that the project is feasible based on available right-of-way and evaluation of intersection operations. To implement this concept, additional actions are required to confirm this Study's concepts and technical analysis. Design refinement, additional analysis, and stakeholder input is needed.

**Preliminary Cost Estimate** — \$6,995,000

### ACTION

**Additional actions are required to confirm Study concepts and to provide opportunities for additional property owner and stakeholder input:**

- **Protected Bikeway engineering** — Finalize concept to identify extent and type of facility that is proposed for implementation and document anticipated benefits such as how the project would enhance safety, contribute to increased biking/walking.
- **Additional traffic analysis** — Feasibility review, and operations analysis to understand design options and tradeoffs relating to intersection operations and multimodal safety, comfort, and equitable mobility.
- **Cost Estimating** — Developed more refined cost estimates for the final concept.
- **Identify phasing concepts**— Identify potential pilot project.

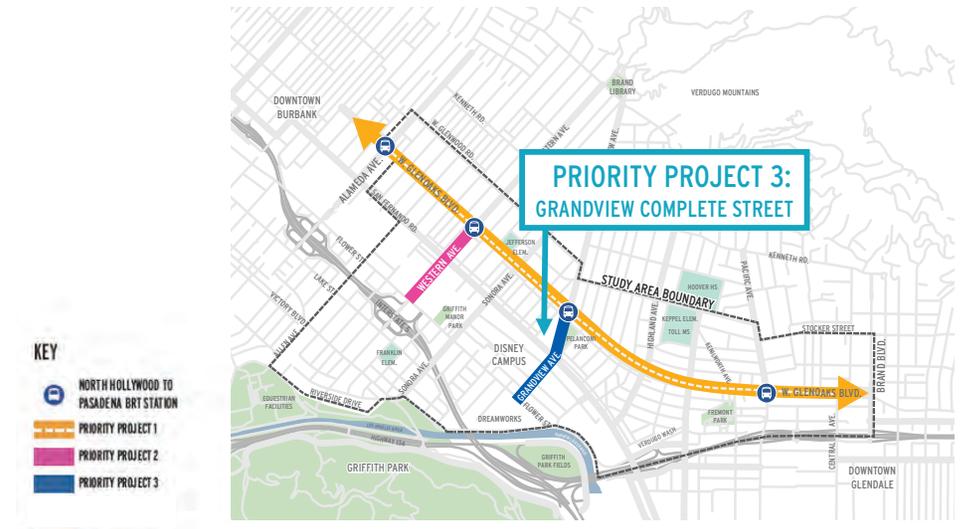
### RESPONSIBILITY:

- City of Glendale

### TIMELINE:

- **2020-2021:** Prepare conceptual design, feasibility review, and operations analysis
- **2021-2022:** Conduct stakeholder outreach
- **2022:** Finalize concept to identify extent and type of facility
- **2022:** ATP Cycle 6 is anticipated to open in 2022. Steps above will allow City staff to have the information required for a complete and competitive application. Consider combining portions of the Glenoaks Boulevard and Western Avenue projects into a single grant application to enhance safety, connectivity, and coordinated implementation of these complementary facilities.

FIG 4.06 PRIORITY PROJECTS 3



- **2024-2025:** Pursue local match and/or funds from Measure R or Measure M
- **2025 – 2026:** Construction and implementation

### COMMUNITY OUTREACH:

Conduct community outreach events, obtaining local stakeholder input.

- **Engagement:** Conduct community meetings, technical meetings, surveys, and pop-up events to discuss vision, options, assessment, and preferences for the corridor.
- **Website:** Update [WestGlendaleStudy.com](http://WestGlendaleStudy.com) website materials.
- **Pilot Project:** Pursue a temporary installation, potentially in partnership with SCAG's Go Human program in 2021 to demonstrate project design and benefits.

## ISSUES TO BE RESOLVED

**Bi-Directional Protected Bike Lane (Glenoaks to San Fernando)** — Based on the West Glendale Study concepts, develop corridor long plans and sections:

- **Roadway Changes:** Finalize/confirm the location of the bikeway (east or west side), modification parking lanes, driveway, and alley access points.
- **Signalization:** Determine signal design on this segment of the Glenview Avenue corridor.
- **Mid-Block Crossings:** Identify/design other roadway changes: potential midblock crossing at Pelanconi Park; redesign of the Zook Drive intersection; redesign of Cleveland Road to include an additional bike route east of Pelanconi Park.
- **Amenities:** Identify/design other elements- bollards, barriers, landscaping, lighting, signage.
- **Cost:** Develop more refined cost estimates for the final concept.

**Bi-Directional Protected Bike Lane (San Fernando to Flower)** — Based on the West Glendale Study concepts; develop corridor long plans and sections:

- **Roadway Changes:** Finalize/confirm modification to Grandview Avenue at the Metrolink railway crossing Street and San Fernando.
- **Roadway Changes:** Finalize/confirm modification of parking lanes, driveway, and alley access points.
- **Amenities:** Identify/ design other elements- bollards, barriers, landscaping, lighting, signage.

### Select preferred design option for intersections —

- **Signalization:** Finalize/confirm phasing at San Fernando Road and Glenoaks Boulevard.
- **Roadway Changes:** Finalize/confirm modification to Grandview Avenue at the Metrolink railway crossing to provide bike lane while maintaining adequate travel lane capacity.

FIG 4.07 PRIORITY PROJECTS 3 – ISSUES TO BE RESOLVED

