

# SAN PEDRO AVENUE

## San Pedro Avenue Corridor Overview

### CONTEXT

San Pedro connects downtown to Loop 410 and San Antonio International Airport. For much of the corridor, there are commercial land uses fronting the road, with established residential neighborhoods behind them.

North of Basse, San Pedro is a seven-lane roadway with 120 feet of right of way. The north end of the corridor provides access to North Star Mall and the North Star Transit Center.

North of Hildebrand Avenue, San Pedro crosses the UPRR rail line, creating a significant barrier, but also a potential opportunity to connect to the future Lone Star Rail.

In the southern section, San Pedro is a five-lane road that provides access to cultural resources such as the Central Library, San Pedro Park, and San Antonio College. North of San Antonio College, the right of way narrows, and San Pedro becomes a four-lane road with narrow lanes and sidewalks.

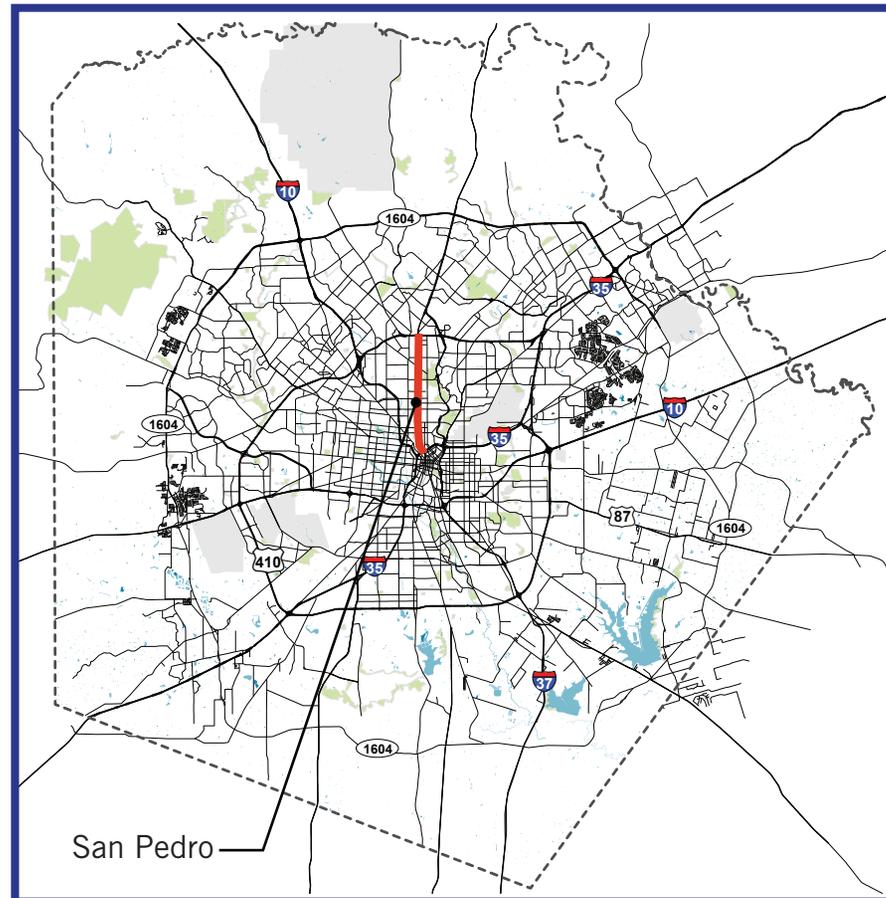
San Pedro has a high driveway density throughout much of the corridor impacting

bike and pedestrian safety and comfort. There are no bike facilities on San Pedro, and the high traffic volumes and high speeds are not conducive to bicycle use. The grid of residential streets surrounding the San Pedro corridor could provide alternate routes for bikes.

Sidewalks are continuous throughout most of the corridor, but are very narrow in many places with obstructions. There are numerous sidewalk gaps on roads intersecting San Pedro, limiting pedestrian connectivity to adjacent neighborhoods.

There are multiple bus routes and frequent stops along the corridor. The current high ridership, combined with a potential connection from downtown to the airport and to North Star Transit Center makes San Pedro a viable candidate for light rail or BRT.

Traffic congestion is an issue for any reconfiguration of the San Pedro corridor. With the current configuration, the major intersections on San Pedro will operate at LOS F by 2040. Dedicated transit lanes require the removal of a travel lane and will increase vehicle congestion.



San Pedro Sheet Set Key

5.5 Miles

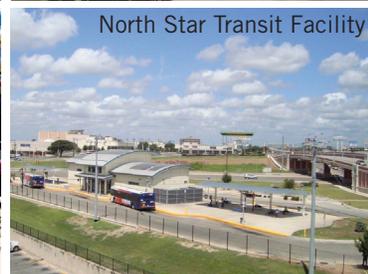
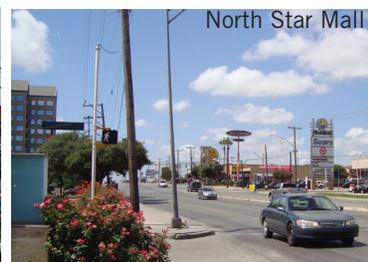


## Observations, Challenges & Vision

### Policy & Guidance Continued

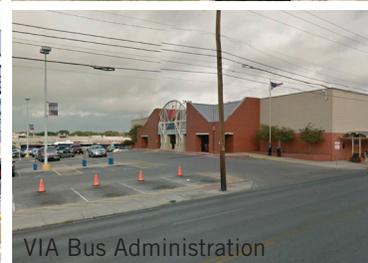
### Vision

The northern section of **San Pedro** offers the greatest opportunity for substantial change to both the transportation system and the land use form and mix. This transformation is made possible by reassigning a portion of the very wide right of way. A higher-density, more walkable corridor featuring transit-supportive development and the addition of a light rail system with connections to the airport, the north side, North Star Transit Center and the future Lone Star Rail Station is possible. The investment in light rail service on San Pedro will spur redevelopment that supports a compact mix of uses creating a walkable environment. Transportation along San Pedro will move more people per lane mile than currently possible with single occupant vehicles and buses. The southern section of San Pedro will feature a Main Street design with neighborhood retail and businesses, featuring a pedestrian-scale environment with streetscaping and on-street parking.



### Future

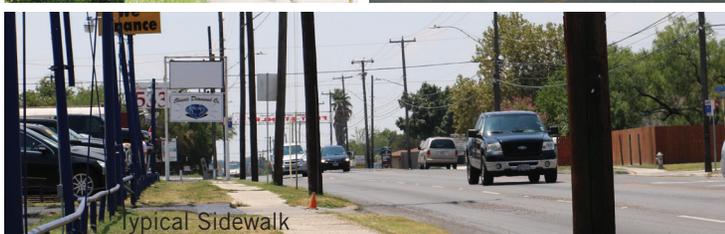
- **Traffic volumes** along San Pedro will increase by 60% by year 2040 with 45,000 vehicles per day near Basse Road and 30,000 vehicles per day near Hildebrand.
- **Growth Rate** – the annual growth rate is projected to be about 2% per year based on the Alamo Area MPO model.
- **Future LOS** – Traffic analysis performed from Loop 410 to Cypress, show only 2 intersections experience LOS E or F today (2015). However, 14 of the 25 intersections will function at LOS E or F during one or both peak hours in year 2040.
- **VIA** is considering San Pedro for rapid transit service as part of Vision 2040.
- An important **multimodal connection** will occur near Hildebrand if the proposed Lone Star Rail service is implemented and the planned station is located there.



### Policy & Guidance

**Access Control** – Strategically close or consolidate driveways to reduce pedestrian and cyclist conflicts and minimize driveways adjacent to intersections

**Zoning** – Create an overlay that guides development compatible with the plans for rapid transit.



**Utilities** – Bury utilities to improve appearance and remove barriers to accessibility

**Vision Zero** – Focus on safety for all modes of travel in this corridor, choosing improvements that incorporate design features that protect people biking and walking from vehicular traffic.

### Issues

**Roadway** – The roadway is very narrow between Ashby and Hildebrand, with ROW as narrow as 50 feet. This results in ten foot travel lanes and a lack of turn lanes creating poor LOS. The geometry at some intersections maybe contributing to the large number of crashes. Two locations will present significant challenges for improving the corridor:

- 1) The Railroad bridge north of Hildebrand requires San Pedro to travel below grade, with narrow lanes. This is a barrier for cyclists and will be a major challenge for any significant improvement along the corridor.
- 2) The Olmos Creek bridge presents significant challenges for improvements with 7 lanes, curbs and narrow sidewalks abutting the guardrail and railings.

**Transit** – Narrow lanes are not ideal for transit, and the narrow sidewalks limit options for bus shelters, benches and wheelchair accommodations.

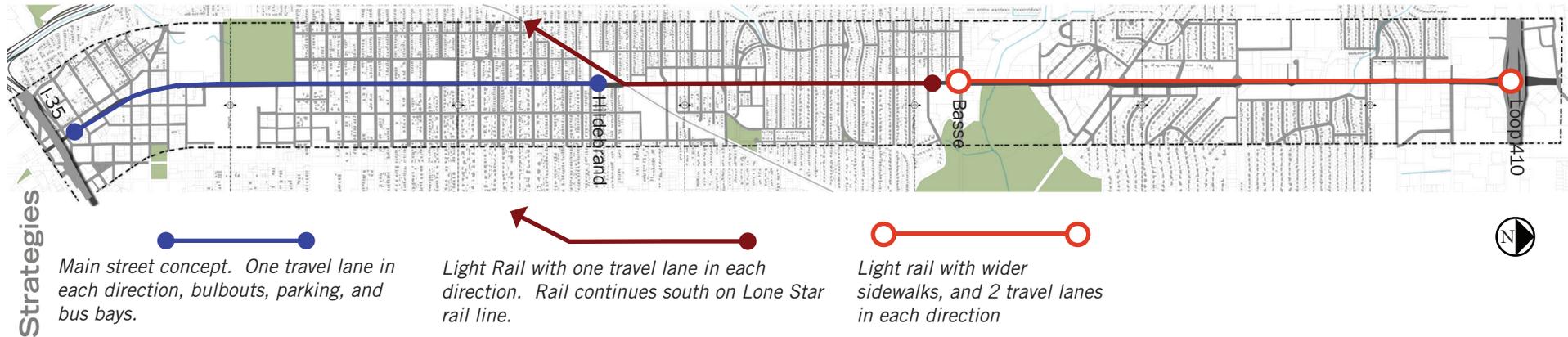
**Bicycles** – There are no bicycle facilities on San Pedro, and the speeds and traffic volumes are not comfortable for cyclist. The grid network of residential roads around San Pedro can be used as bike routes, but there are currently no marked parallel routes.

**Pedestrian** – Narrow sidewalks, gaps along side streets, and the lack of connections to the residential streets in the northern portion of the corridor limit accessibility to the east and west. Interchanges at Loop 410 and I-35 present barriers to pedestrians and cyclists. Wide intersection spacing limits opportunities for safe pedestrian crossing.

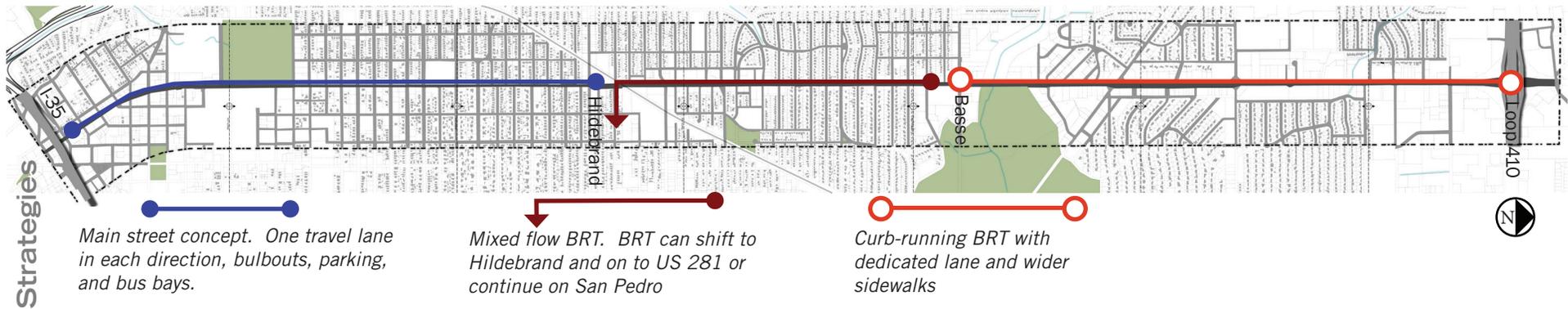
**Land Use** – Current commercial land uses are not as pedestrian or transit friendly as more dense mixed uses. Dense mixed use redevelopment could help reinforce a Main Street design concept in the southern section.

## Long Term Multimodal Options

### Future Option 1: Light Rail + Main Street



### Future Option 2: BRT + Main Street



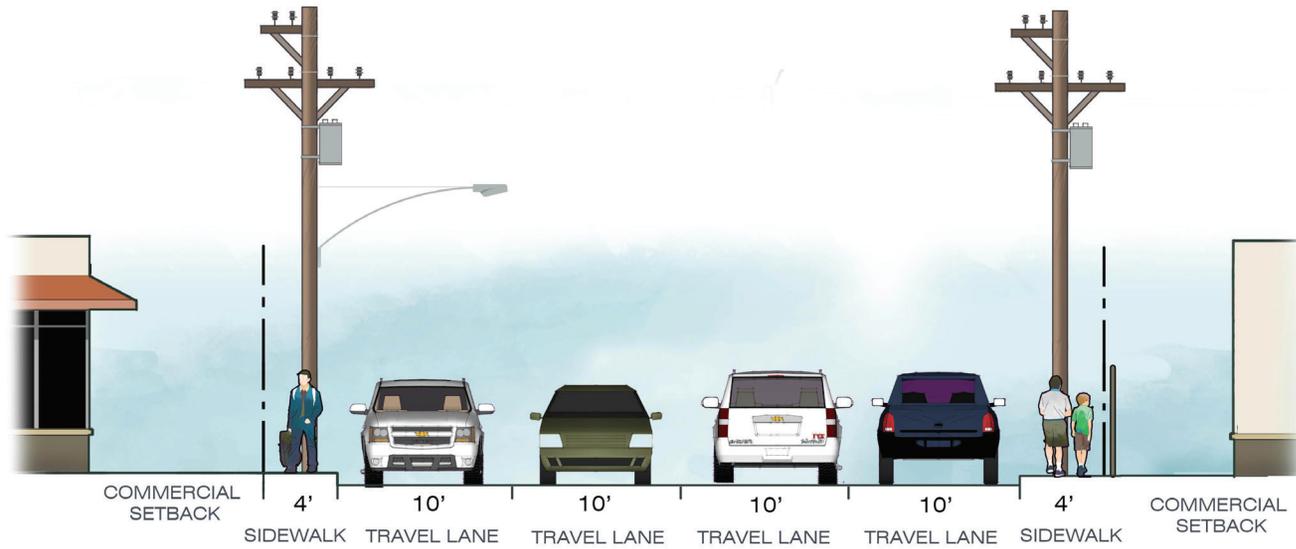
### Future Aspiration: Transit - Only Street

In the long run, a vision of San Pedro as a “transit first” corridor is worthy of serious consideration. Increasing transit ridership and growing automobile congestion in the corridor will precipitate bolder choices that will require modifying current practice. As the community grows more comfortable with an expanding and increasingly effective transit system, a transit first or even “transit only” treatment may become a realistic and necessary option to meet travel needs.



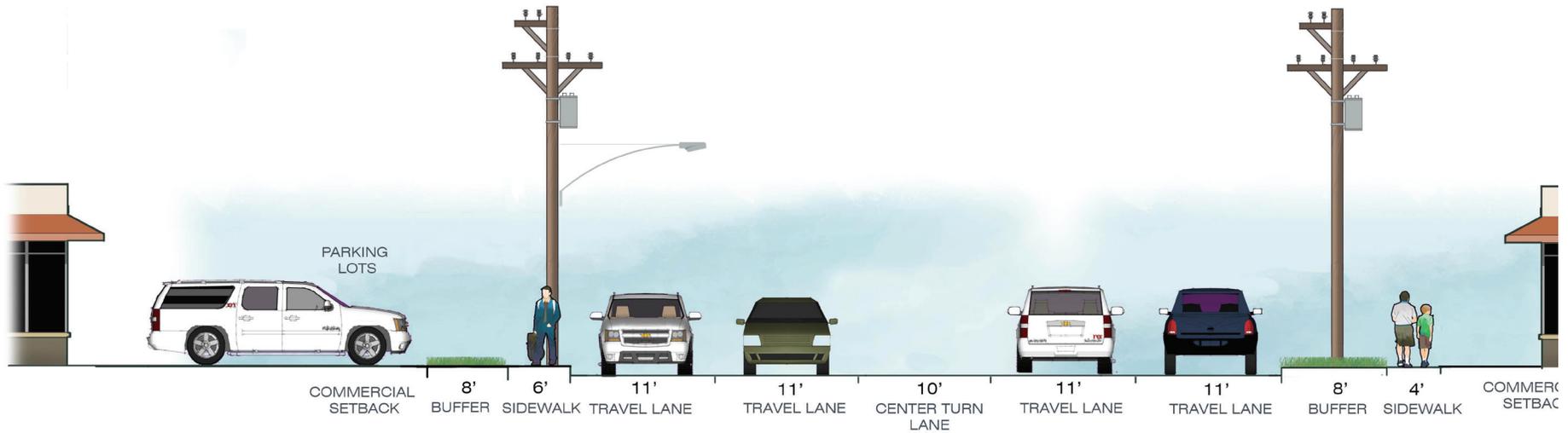
Long Term Multimodal Options: Existing Cross Sections

South of Hildebrand



SECTION : SAN PEDRO : SOUTH OF HILDEBRAND (EXISTING)

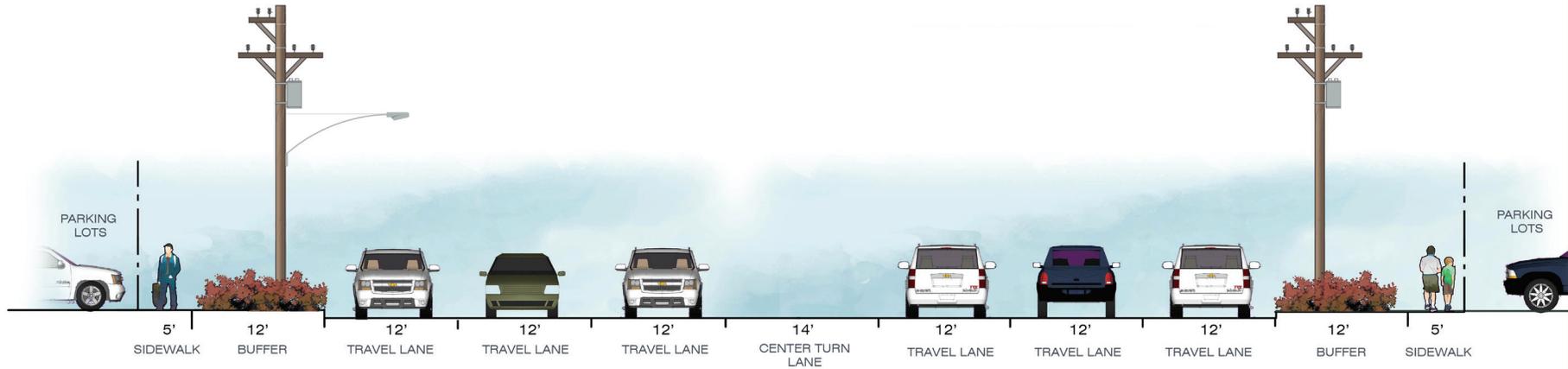
Hildebrand to Basse



80' ROW

SECTION : SAN PEDRO : HILDEBRAND - BASSE (EXISTING)

## Long Term Multimodal Options: Existing Cross Sections



**SECTION : SAN PEDRO : BASSE - LOOP 410 (EXISTING)**

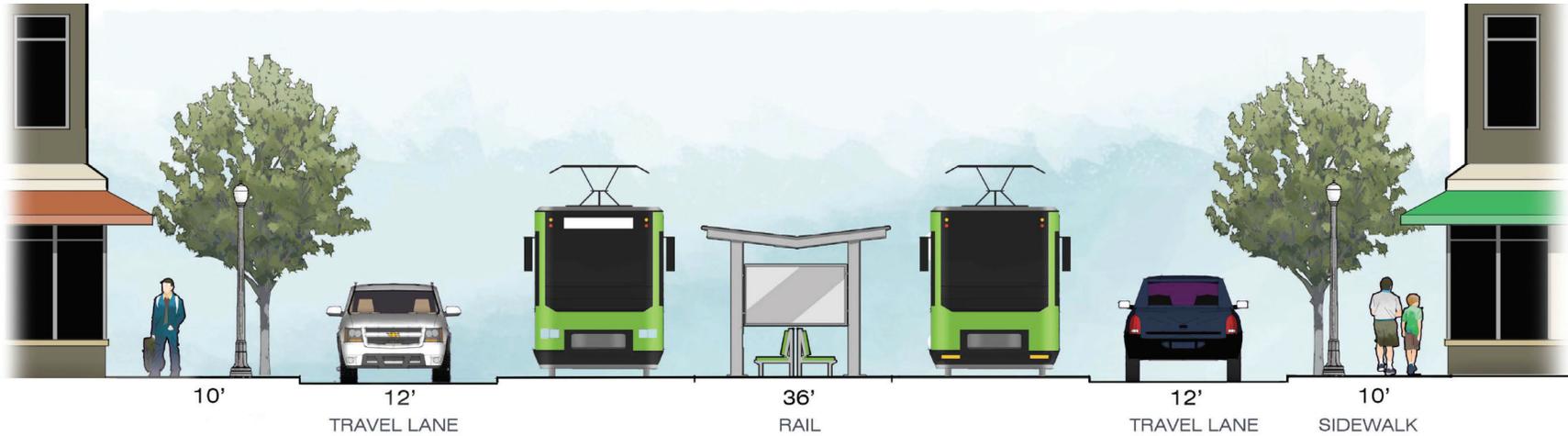
Basse to Loop 410

Long Term Multimodal Options

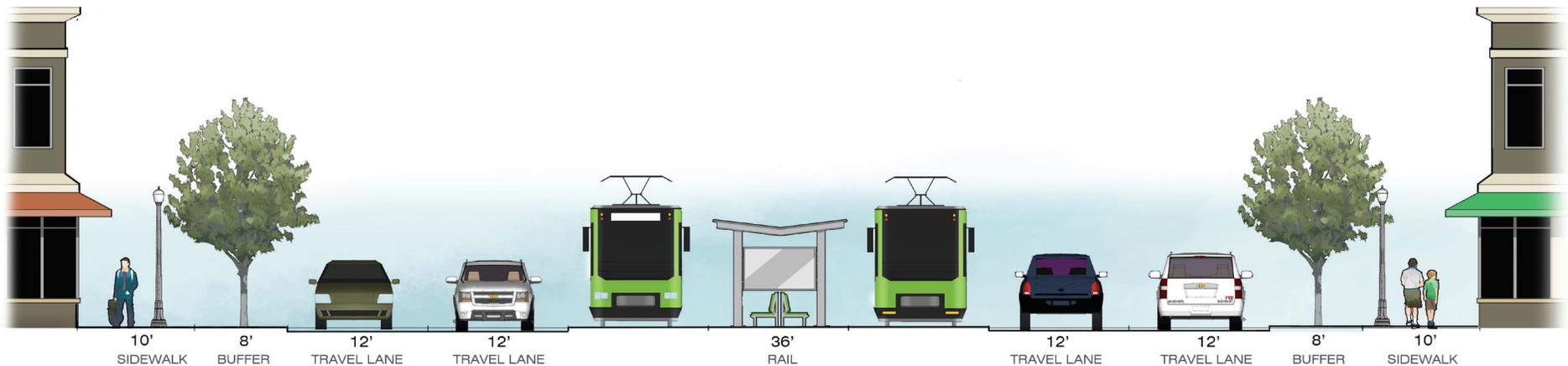
Multimodal Opportunities

The high ridership projections and connections to regional centers make San Pedro a good candidate for high capacity transit. Transit could be in the form of light rail (LRT) or bus rapid transit (BRT) in dedicated lanes. Due to the very narrow right of way south of Hildebrand, creating dedicated rail or bus lanes is not feasible. For LRT, a potential option would be to continue the rail south on the existing rail tracks that intersect San Pedro near Hildebrand. This is also a potential Lonestar Rail corridor. The BRT route could continue on Hildebrand to US 281, where it could become an express service to downtown.

Future Option 1: Light Rail + Main Street



SECTION : SAN PEDRO : HILDEBRAND - BASSE (OPTION 1)



SECTION : SAN PEDRO : BASSE - LOOP 410 (OPTION 1)

## Long Term Multimodal Options

### Future Option 1: Light Rail + Main Street

#### Description:

The high transit ridership projections and available connections to regional centers make San Pedro a good candidate for rapid transit. Transit could be in the form of light rail (LRT) or bus rapid transit (BRT) in dedicated lanes. Option 1 proposes to construct center-running light rail along San Pedro. Stations would be located on the center median. South of Hildebrand to Basse Road the available ROW reduces from 120 feet to 80 feet. The light rail would continue in the center but with a single traffic lane in each direction.

A traffic analysis of the corridor in 2040 was performed. The results show that the existing seven-lane corridor will have a capacity of approximately 2,500 vehicles per hour in the peak direction in 2040. Assuming a standard rate of 1.2 persons per vehicle, the corridor will move approximately 3,000 people per hour or 1,000 people per lane per hour. When a lane is removed in each direction to accommodate transit, the corridor will carry approximately 2,100 people per hour in vehicles in the peak direction of travel. LRT will remove a traffic lane in each direction, however, it can still improve capacity. LRT can carry 4,050 people per hour assuming 10 minute headways, which means the corridor will carry 6,150 people per hour compared with the 3,000 without LRT. This is more than doubling the capacity. The potential to double the capacity of the corridor not only helps the San Pedro corridor, but also greatly improves north-south mobility for the region. The travel demand model shows all parallel arterials will also be over capacity, so a light rail service can add capacity through a part of the City that will greatly need it in 2040.

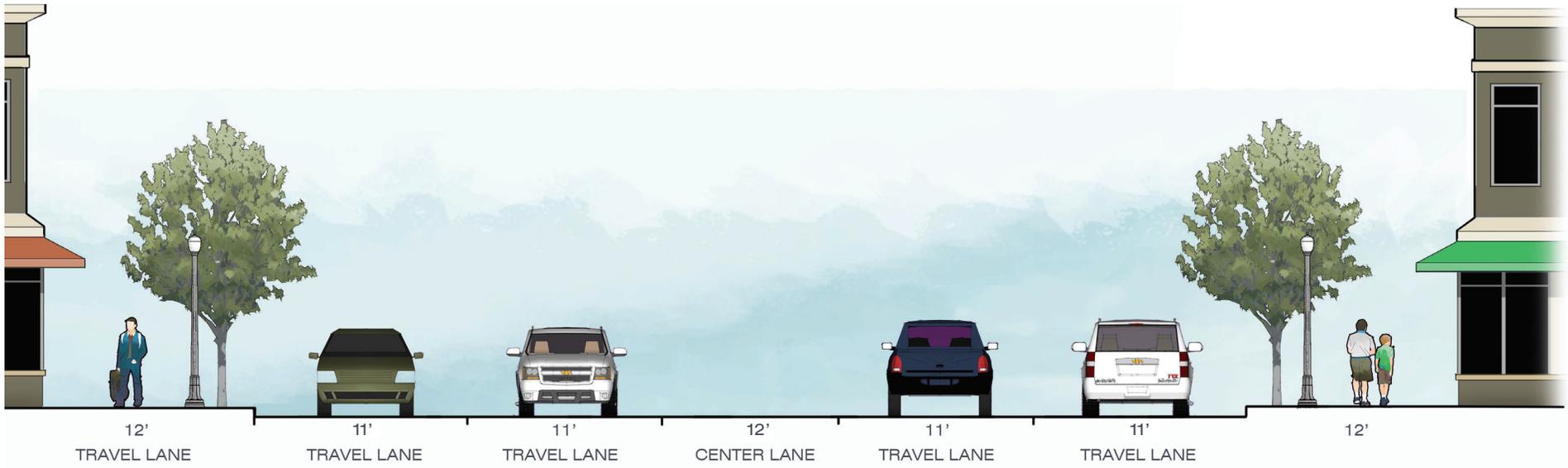
#### Opportunities:

- Existing and projected high transit ridership will provide a foundation for implementing light rail.
- The seven lane cross section along the northern segment of San Pedro and connections to the North Star Transit Center, the airport, Park North Shopping Center and North Star Mall make San Pedro a good candidate for north-south light rail service into downtown.
- The proposed Lone Star Rail service and station near San Pedro and Hildebrand will create a multimodal node. The City and VIA should focus investments on improvements that promote connections with bike, transit and pedestrian facilities, create placemaking, and encourage Transit Oriented Development (TOD) at and around the station.
- LRT is a permanent investment that can spur development. Adding population and employment centers along the LRT line will shift trips from cars reducing VMT.

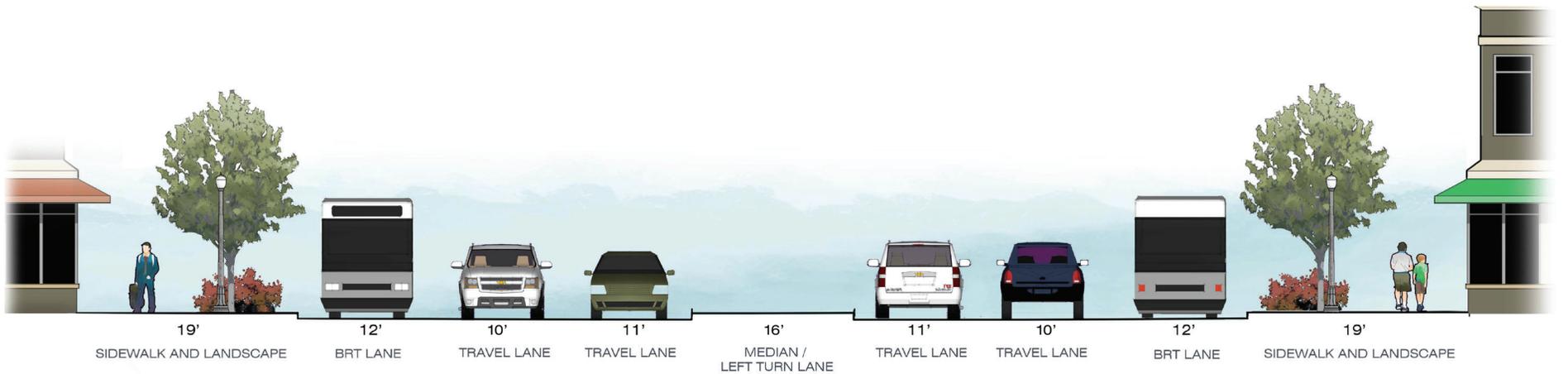
#### Challenges:

- Traffic congestion is an issue for any reconfiguration of the San Pedro corridor and adding capacity through widening would require significant ROW acquisition. In its current form, the major intersections on San Pedro will operate at LOS F by 2040. Dedicating traffic lanes for LRT will further increase vehicle congestion, but will still increase capacity by moving more people and improving travel time for transit users.
- The character and ROW on San Pedro changes several times as you move from Loop 410 south into downtown. Proposed improvements and changes to land use must be context sensitive.
- Successful rapid transit options rely on transit supportive development. Land use policies that encourage higher-density development are needed to support LRT.
- The railroad bridge near Hildebrand and the Olmos Creek bridge present design challenges for incorporating LRT.

**Future Option 2: BRT + Main Street**



**SECTION: SAN PEDRO: HILDEBRAND - BASSE (OPTION 2)**



**SECTION : SAN PEDRO : BASSE - LOOP 410 (OPTION 2)**

## Long Term Multimodal Options

### Future Option 2: BRT + Main Street

#### Description:

The high transit ridership projections and available connections to regional centers make San Pedro a good candidate for rapid transit. Transit could be in the form of light rail (LRT) or bus rapid transit (BRT) in dedicated lanes, known as Primo Plus in VIA's Vision 2040 plan. Option 2 proposes to implement BRT along the outside lanes on San Pedro. BRT has dedicated lanes, unique branding, longer articulated buses, level-boarding, and stations with amenities. BRT can carry approximately 600 people per hour when operating at 10 minute headways or 1,000 people per hour at 5 minute headways. The BRT option will carry slightly fewer or the same number of people per hour per lane than a single travel lane. However, it will not be subject to the anticipated high levels of congestion, since it will operate in a dedicated lane and will provide reliable and rapid service on an otherwise heavily congested corridor.

Where the ROW narrows south of Basse Road, the BRT would operate in mixed flow to Hildebrand. At Hildebrand, the BRT route could continue on San Pedro in mixed traffic flow, subject to congestion or it could shift to US 281, via Hildebrand, where it could become an express service operating in a dedicated HOV lane to downtown.

San Pedro will be over capacity in 2040, as will many of the arterials in San Antonio. Removing a lane for transit will further decrease the available capacity for vehicles traveling on San Pedro. However, this does not necessarily decrease the capacity of the corridor in terms of moving people.

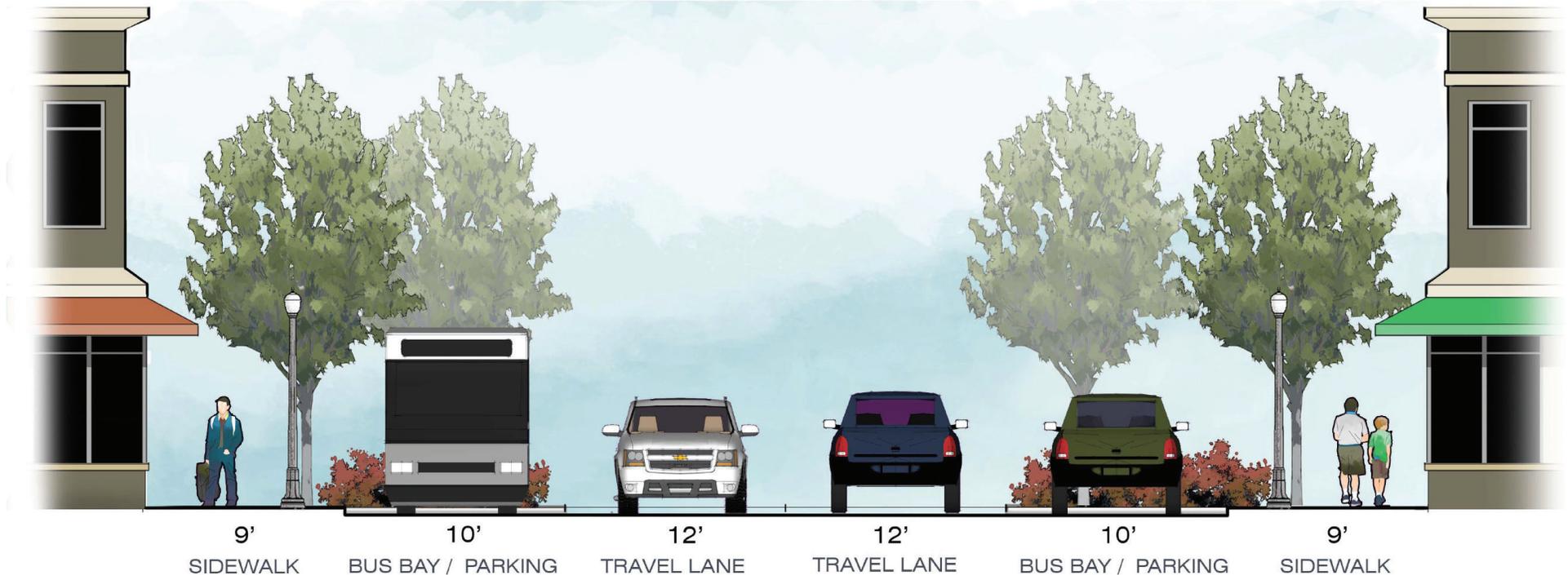
#### Challenges:

- Traffic congestion is an issue for any reconfiguration of the San Pedro corridor and adding capacity through widening would require significant ROW acquisition. In its current form, the major intersections on San Pedro will operate at LOS F by 2040. Dedicating traffic lanes for BRT will further increase vehicle congestion, but will greatly improve travel time and reliability for transit users and can improve capacity by moving more people depending on the frequency of the BRT service.
- The character and ROW on San Pedro changes several times as you move from Loop 410 south into downtown. Proposed improvements and changes to land use must be context sensitive to the surrounding area.
- Successful rapid transit options rely on transit supportive development. Land use policies that encourage higher-density development are needed to support BRT.
- BRT includes investment in infrastructure but not at the same level as LRT and developers may not be as easily encouraged to invest.

#### Opportunities:

- Traffic congestion is an issue for any reconfiguration of the San Pedro corridor and adding capacity through widening would require significant ROW acquisition. In its current form, the major intersections on San Pedro will operate at LOS F by 2040. Dedicating traffic lanes for BRT will further increase vehicle congestion, but can increase capacity by moving more people and improving travel time for transit users.
- The character and ROW on San Pedro changes several times as you move from Loop 410 south into downtown. Propose improvements and changes to land use must be context sensitive to the surrounding area.
- Successful rapid transit options rely on transit supportive development. Land use policies that encourage higher-density development are needed to support BRT.

### Future Options 1 & 2: South of Hildebrand



#### Section: San Pedro, South of Hildebrand (Option 1 and 2)

### Future Option 1 & 2: South of Hildebrand

#### Description:

South of Hildebrand, dedicating a traffic lane to light rail is not likely to be feasible due to very narrow ROW. A potential option is to continue the light rail south on the existing rail line that intersects San Pedro near Hildebrand. This is also the rail line being considered for Lone Star Rail with a proposed station near Hildebrand. South of Hildebrand the proposed cross section considers the much narrower ROW. The corridor will take on the appearance and feel of a Main Street design with landscaping, wider sidewalks and on-street parking that converts to bus pull-outs at stop locations. The bus pull-outs are proposed so that traffic operating in the single travel lane in each direction is not obstructed when buses are at stops. The proposed cross section along this segment of San Pedro has the potential to attract neighborhood retail and businesses. Taking the LRT underground is one solution to the ROW limitations and railroad overpass and Olmos Creek Bridge. However, it is recognized that this solution would come with a very hefty price tag.

## Long Term Multimodal Options

## San Pedro Option 1: Light Rail Transit Visualization

**Description:**

Option 1 proposes to construct center-running light rail along San Pedro. Stations would be located on the center median. LRT is a permanent investment that can spur development. Adding population and employment centers along the LRT line will shift trips from cars reducing Vehicle Miles Traveled (VMT) and improving air quality. Although LRT removes a lane for traffic in each direction it can double the capacity of the corridor since it carries so many more people. The potential to double the capacity of the corridor not only helps the San Pedro corridor, but also greatly improves north-south mobility for the region. The travel demand model shows all parallel arterials will also be over capacity, so a light rail service can add capacity through a part of the City that will greatly need it in 2040.

## Corridor Recommendations

					<b>Recommendations</b>	<b>Benefits</b>
					Bury overhead utilities	Relocating utilities below grade will improve the pedestrian environment helping the corridor achieve ADA compliant facilities, and encourage redevelopment.
					Reduce driveway density	Consolidating driveways will concentrate turning movements to appropriate areas. This will reduce the number of conflict points between cyclists, pedestrians, and vehicles.
					Identify and designate parallel bike routes	If a dedicated bike route is not appropriate for San Pedro, consider an adjacent route that can serve as a viable alternative for bike movements. San Pedro's context is primarily gridded in character, offering numerous alternative routes for connectivity.
					Complete sidewalk gaps on intersecting streets	Continuous sidewalks provide multimodal connections to land uses and promote transit access for pedestrians and persons with disabilities. Sidewalks and associated amenities can spur the redevelopment of vacant land.
					Create pedestrian paths from neighborhoods to San Pedro through commercial parcels where residential streets do not intersect	Providing an improved, inter-connected pedestrian network makes pedestrian movements convenient and accessible. Better pedestrian access to current and future transit amenities will boost transit ridership and promote mobility options.
					Develop a corridor section for center-running LRT or center-running BRT from Basse to IH 410	In this section San Pedro's ROW allows for the inclusion of rapid transit services. Rapid transit service will manage future traffic generated by projected development and growth.
					Develop main street design from I-35 to Hildebrand incorporating on-street parking, streetscaping and bus bays	A main street section reflects and enhances the unique context of the San Pedro corridor. Main Street design features augment the activity generated by San Pedro Park and San Antonio College, and support neighborhood retail and commercial businesses.



Transit Improvements



Pedestrian Improvements



Bicycle Improvements

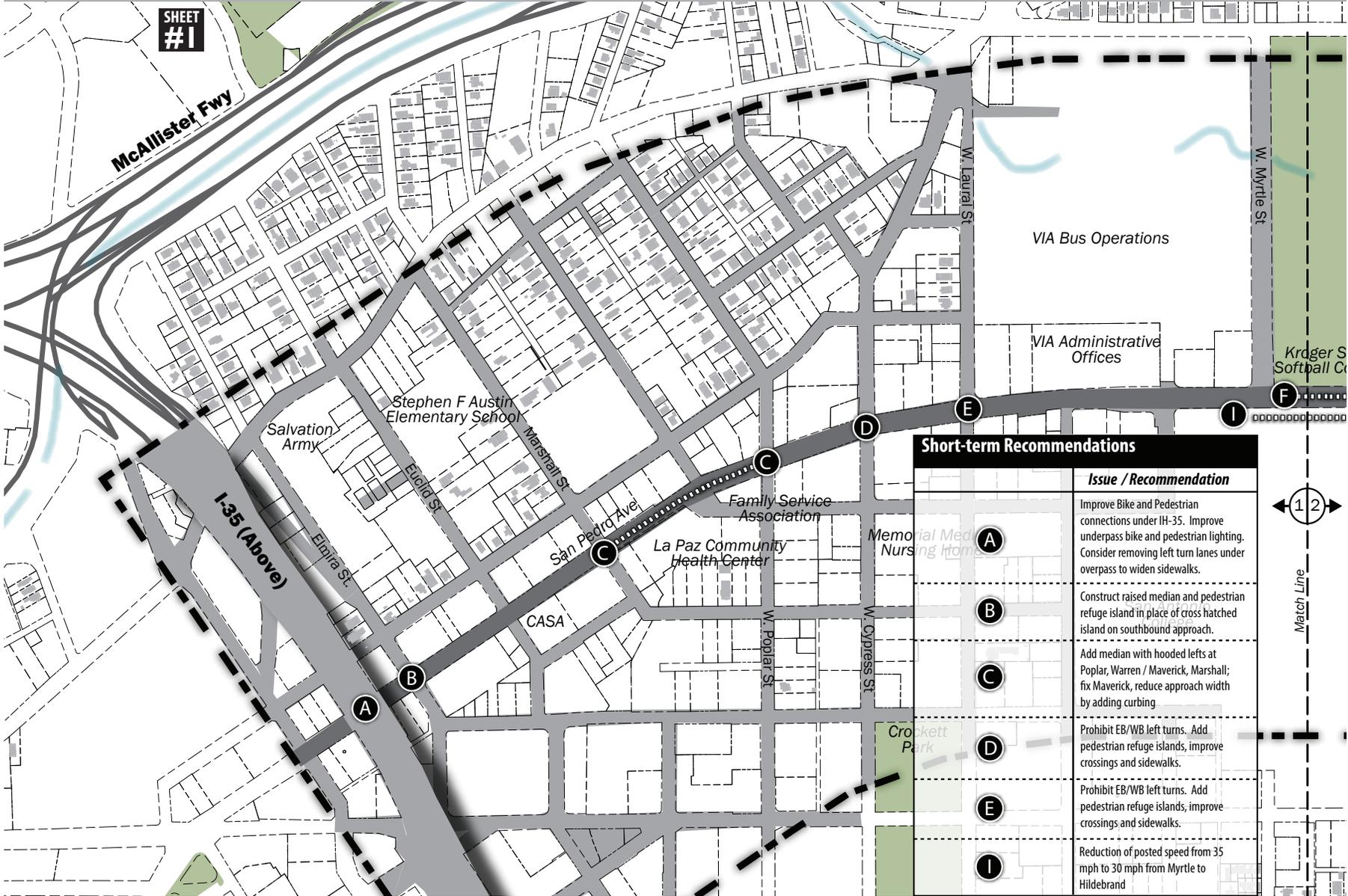


Vehicular Improvements



Land Use Improvements

TRADITIONAL / URBAN

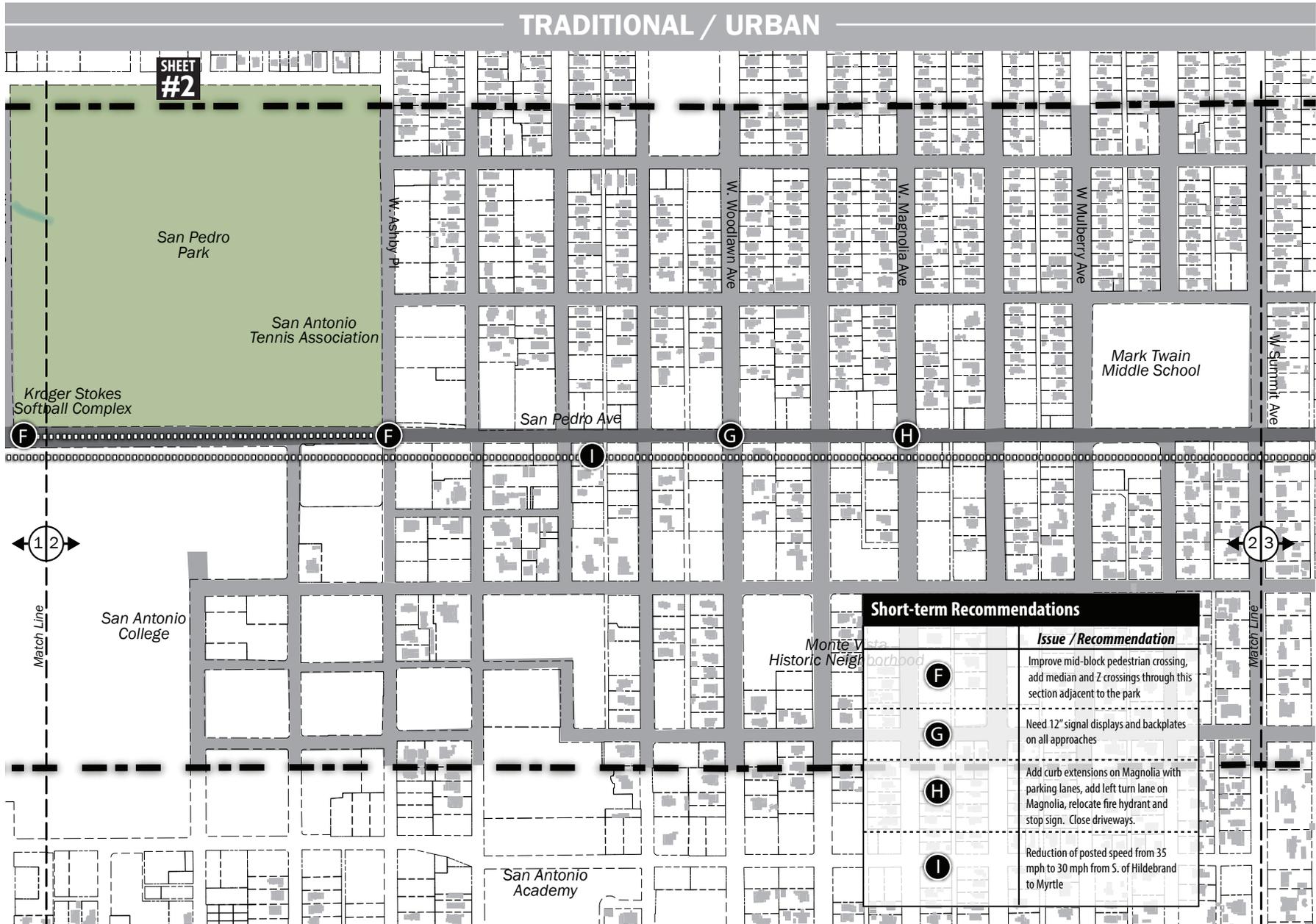


San Pedro Ave Corridor: Sheet 1 Short Term Recommendations

Open Space  
Study Area



TRADITIONAL / URBAN

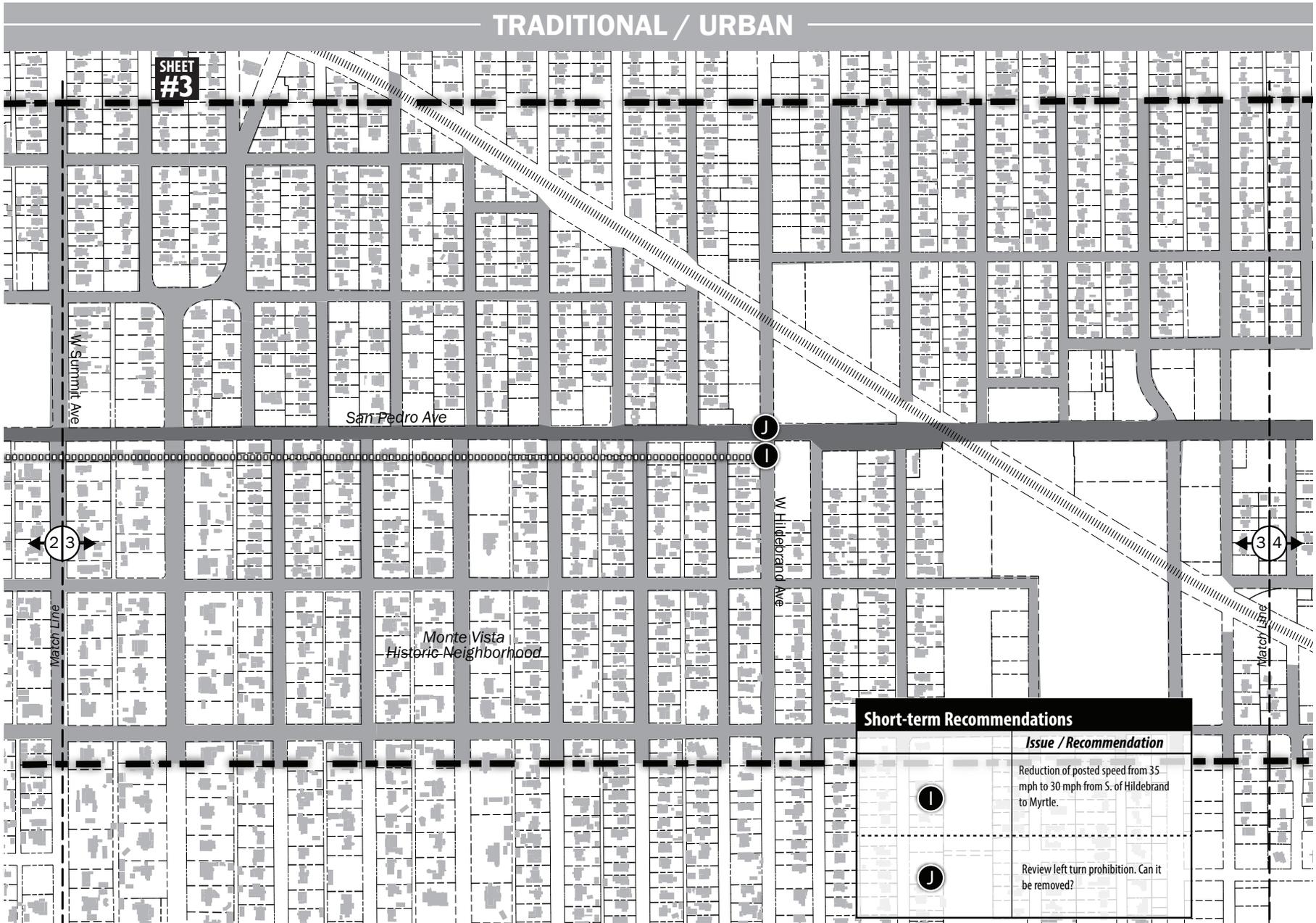


San Pedro Ave Corridor: Sheet 2 Short Term Recommendations

Open Space  
Study Area

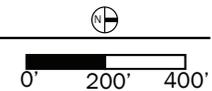


TRADITIONAL / URBAN

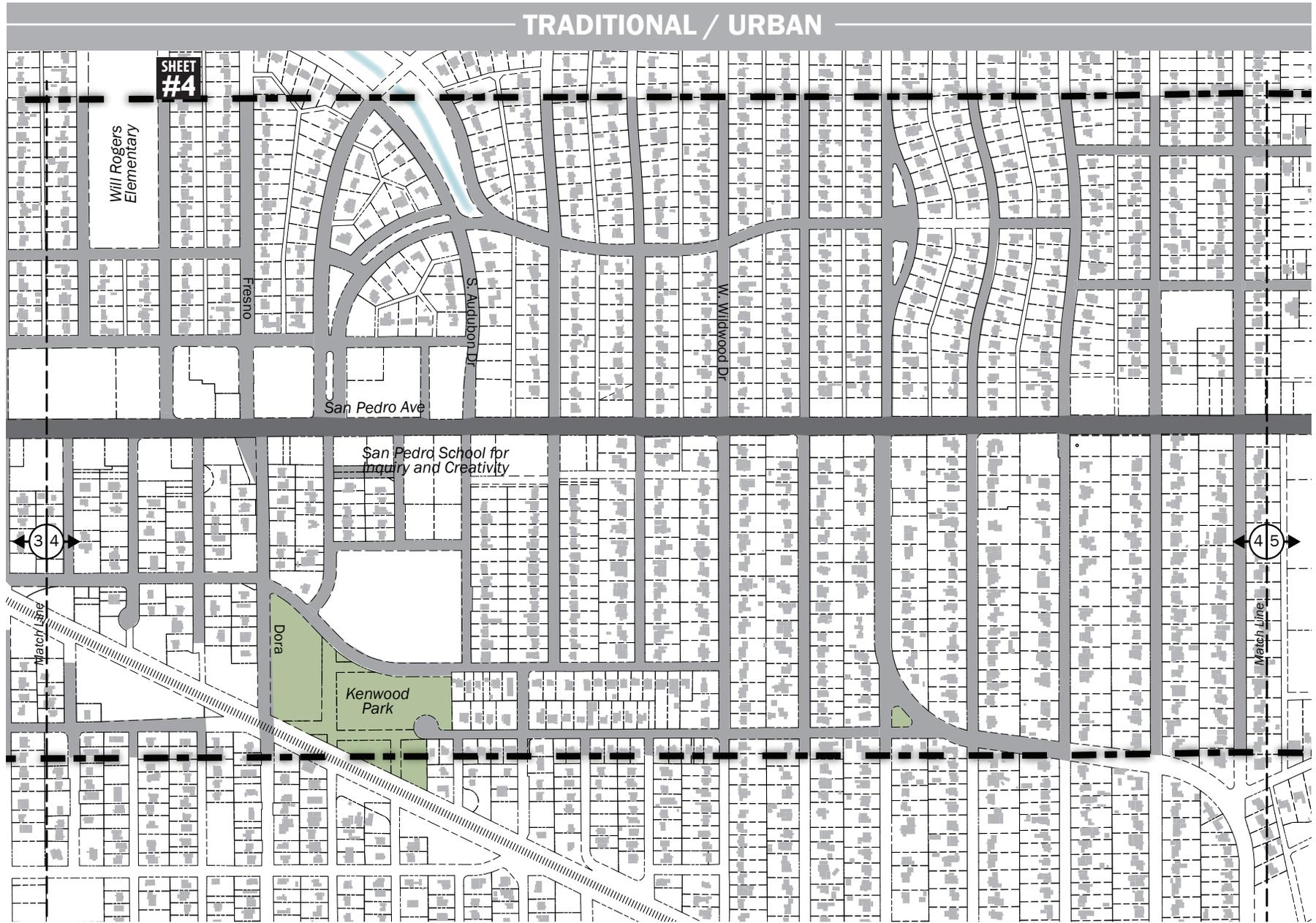


San Pedro Ave Corridor: Sheet 3 Short Term Recommendations

 Open Space  
 Study Area

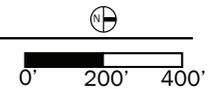


TRADITIONAL / URBAN

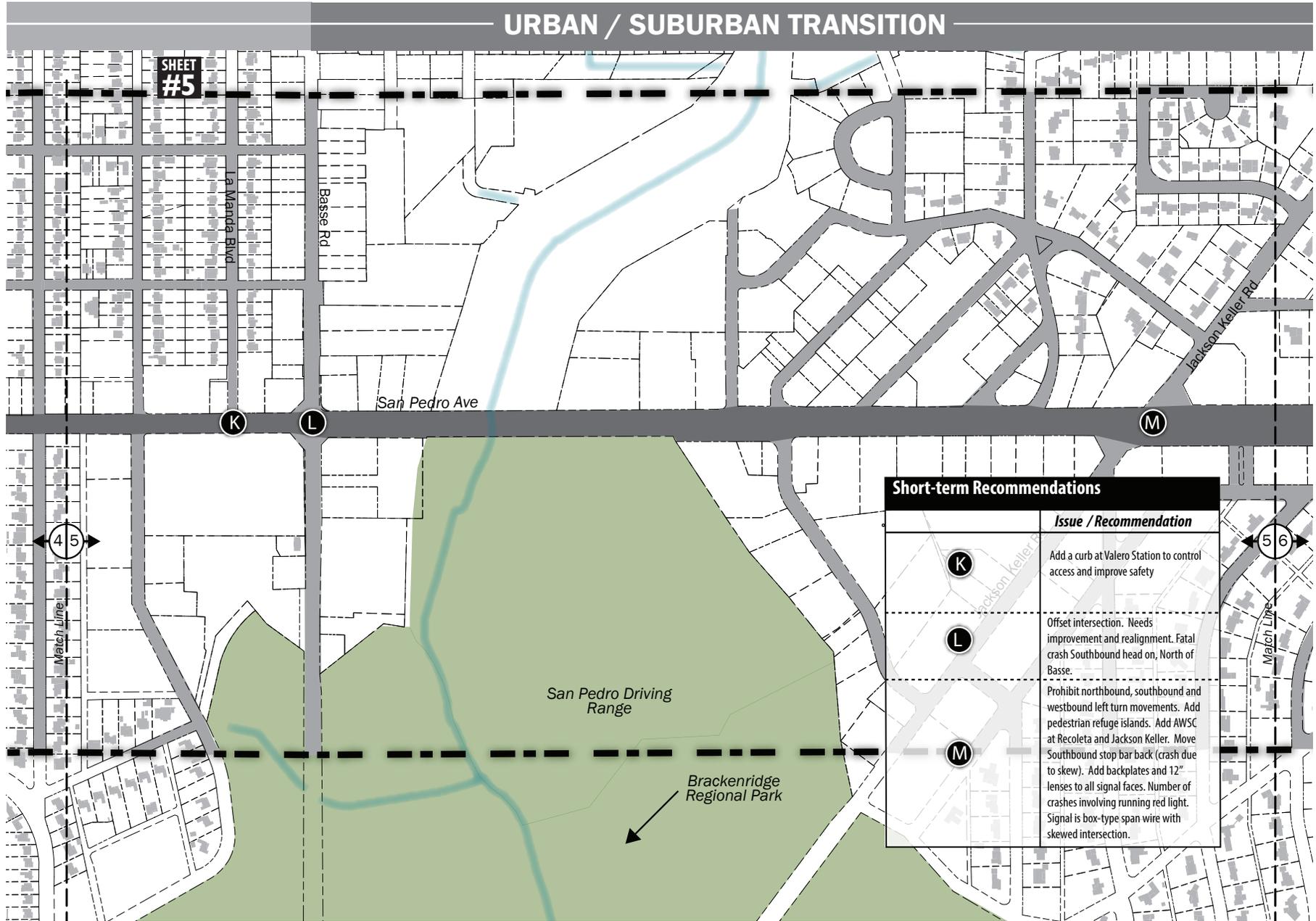


San Pedro Ave Corridor: Sheet 4 Short Term Recommendations

- Open Space
- Study Area



URBAN / SUBURBAN TRANSITION

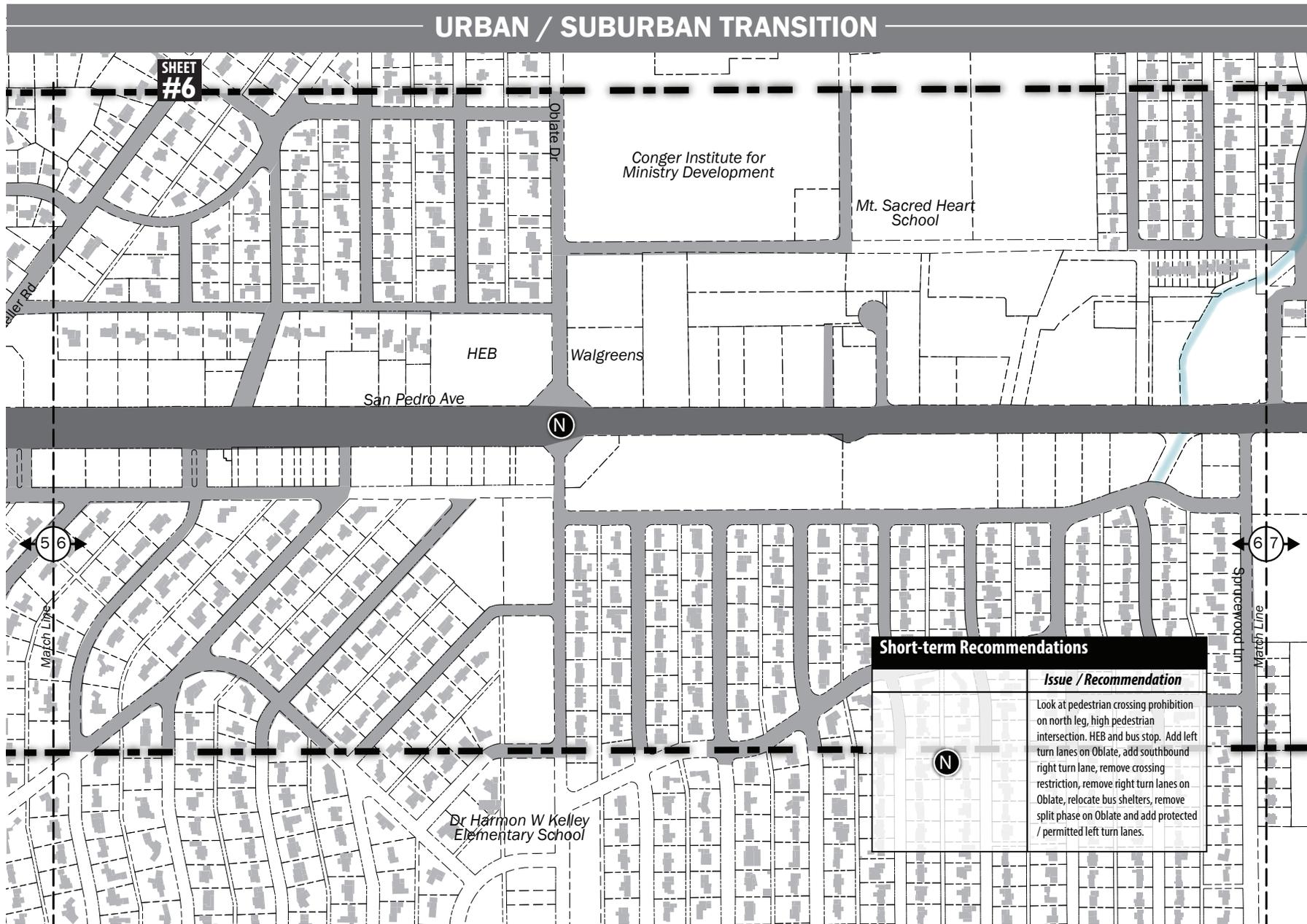


San Pedro Ave Corridor: Sheet 5 Short Term Recommendations

- Open Space
- Study Area



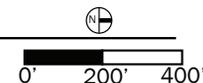
URBAN / SUBURBAN TRANSITION



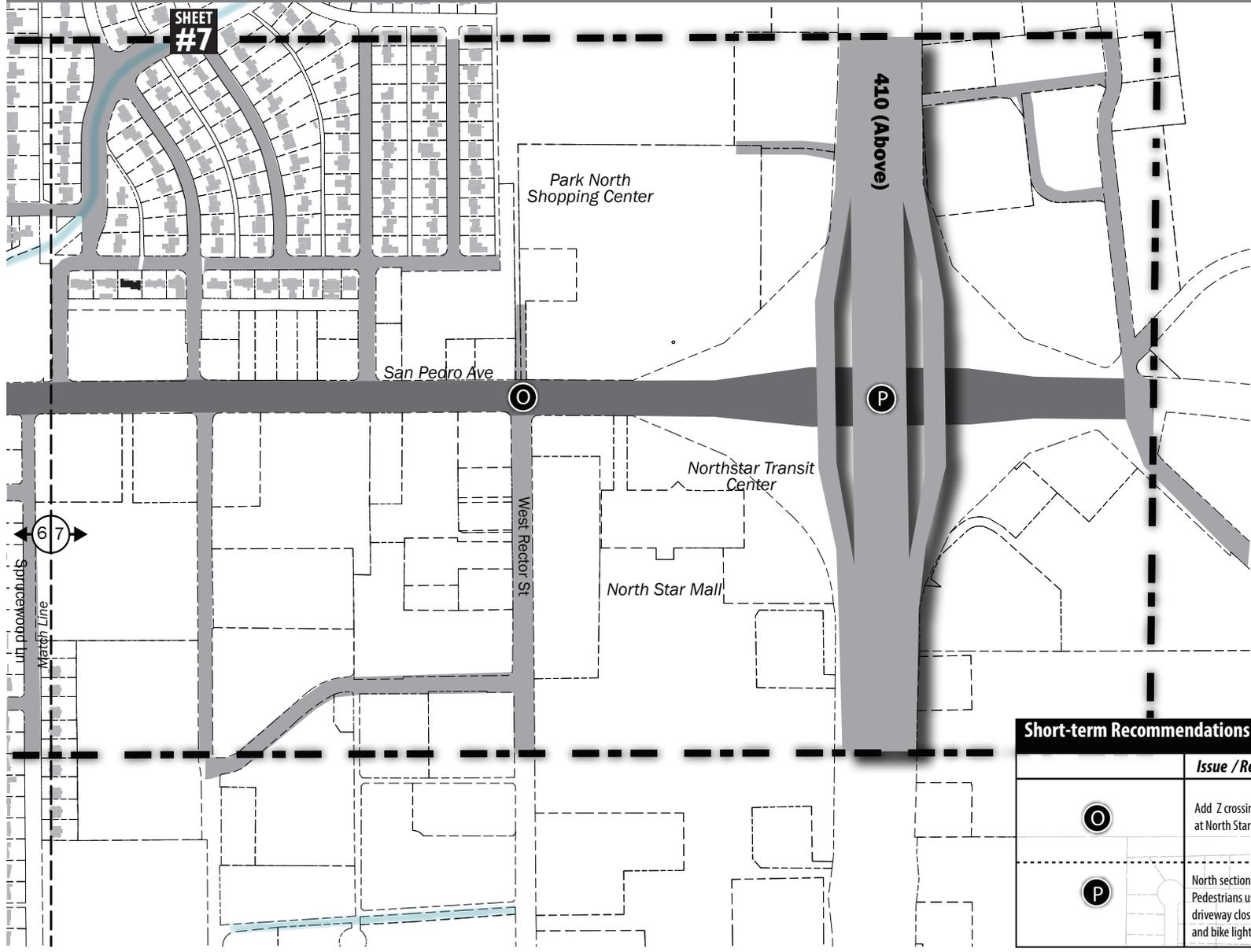
Short-term Recommendations	
Issue / Recommendation	
Look at pedestrian crossing prohibition on north leg, high pedestrian intersection. HEB and bus stop. Add left turn lanes on Oblate, add southbound right turn lane, remove crossing restriction, remove right turn lanes on Oblate, relocate bus shelters, remove split phase on Oblate and add protected / permitted left turn lanes.	

San Pedro Ave Corridor: Sheet 6 Short Term Recommendations

- Open Space
- Study Area



URBAN / SUBURBAN TRANSITION



Short-term Recommendations	
	Issue / Recommendation
O	Add Z crossing and signal modification at North Star Mall / Park North
P	North section of San Pedro is very wide. Pedestrians use TWTL as refuge. Need driveway closures. Improve pedestrian and bike lighting under overpass.

San Pedro Ave Corridor: Sheet 7 Short Term Recommendations

- Open Space
- Study Area

