

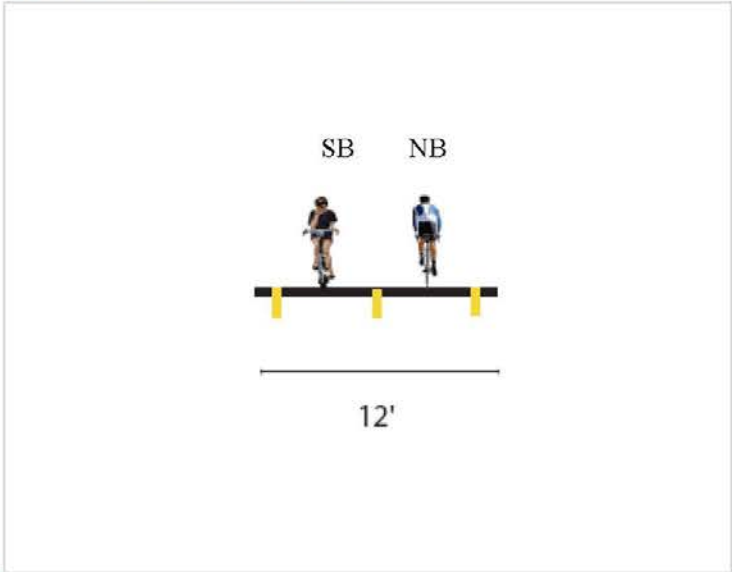
# Appendix L

## Tier III Cross Section Design Assessment

## Introduction

The purpose of this report is to document where the cross-sections developed for the project may not adhere to local design standards.

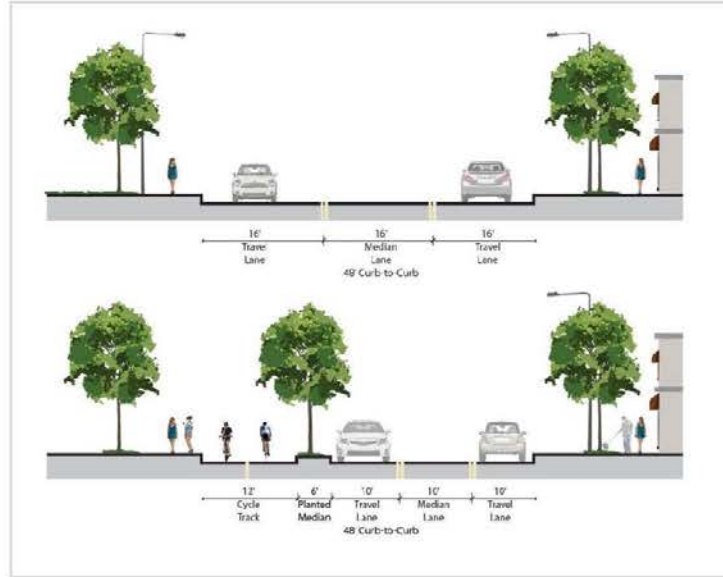
**Ulric Street: Friars Rd – Camino de la Reina**



**Considerations:**

- No foreseen issues with adhering to local design standards.

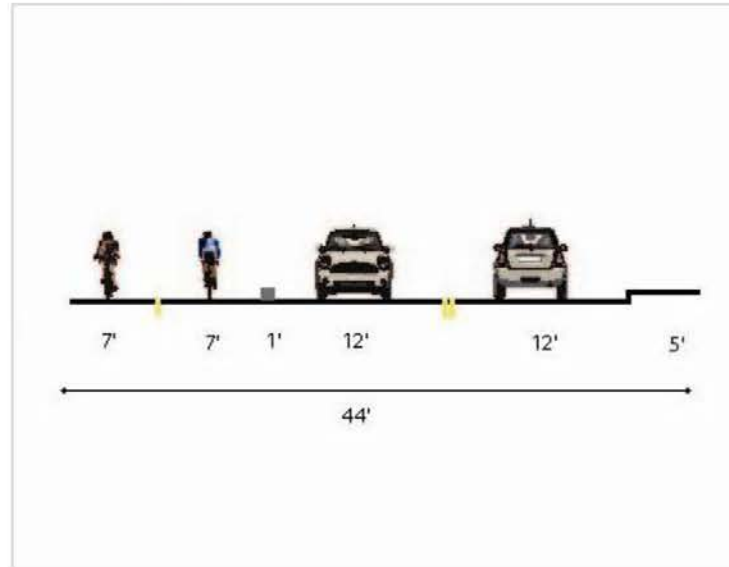
**Camino de la Reina: Avenida Del Rio – Hotel Circle North**



**Considerations:**

- No foreseen issues with adhering to local design standards.

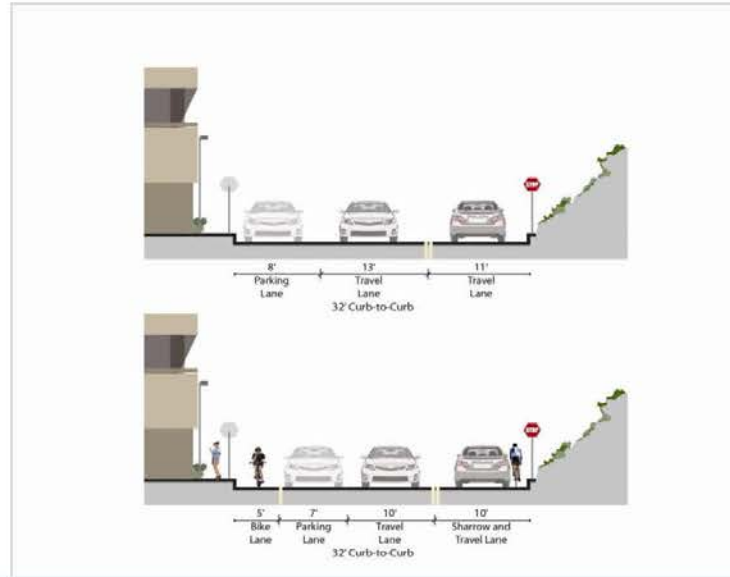
**Hotel Circle: I-8 Underpass**



**Considerations:**

- No shoulder (Highway Design Manual)
- Class I Bikeway separation from travel way (Highway Design Manual)
- Cycle track separation from travel way (NACTO)

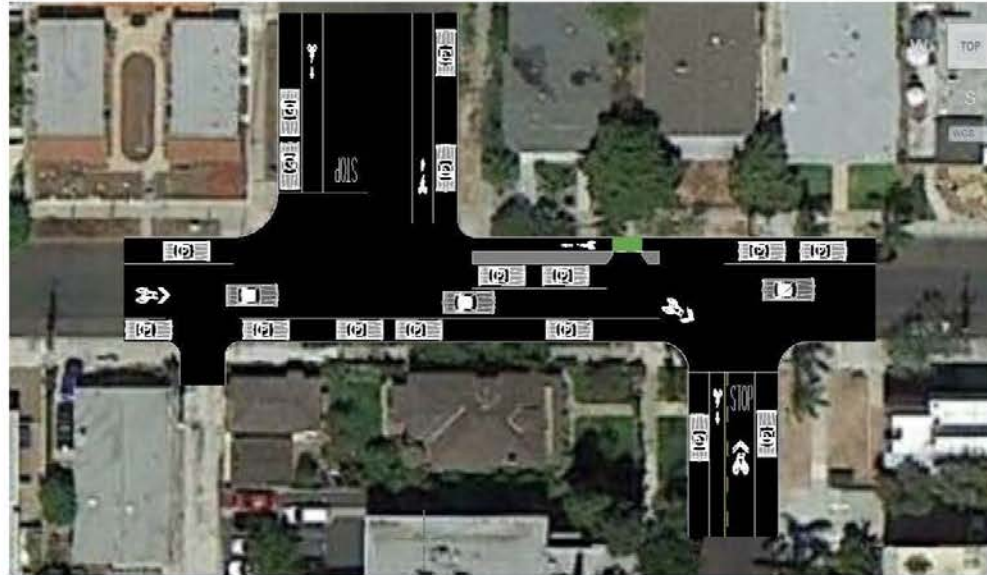
**Bachman Place: Hotel Circle South – Arbor Dr**



**Considerations:**

- Bike lane on passenger side of parking lane (Highway Design Manual)
- Parking more than 30" from the curb (NACTO)

Lewis St: Bachman Pl – 3rd Ave



**Considerations:**

- No foreseen issues with adhering to local design standards.

3<sup>rd</sup> Avenue: Lewis St – Washington St

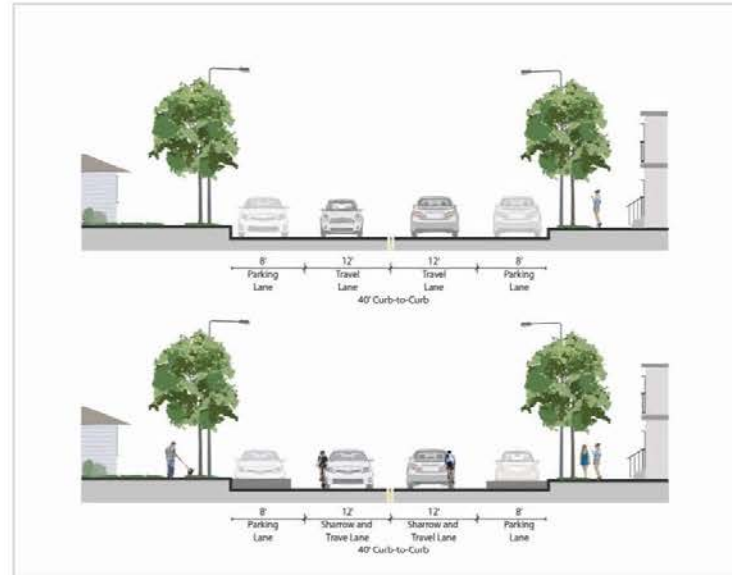


**Considerations:**

- Contraflow bike lane (NACTO)
- Minimum lane widths (Caltrans)



**3<sup>rd</sup> Avenue: Washington St – Upas St**



**Considerations:**

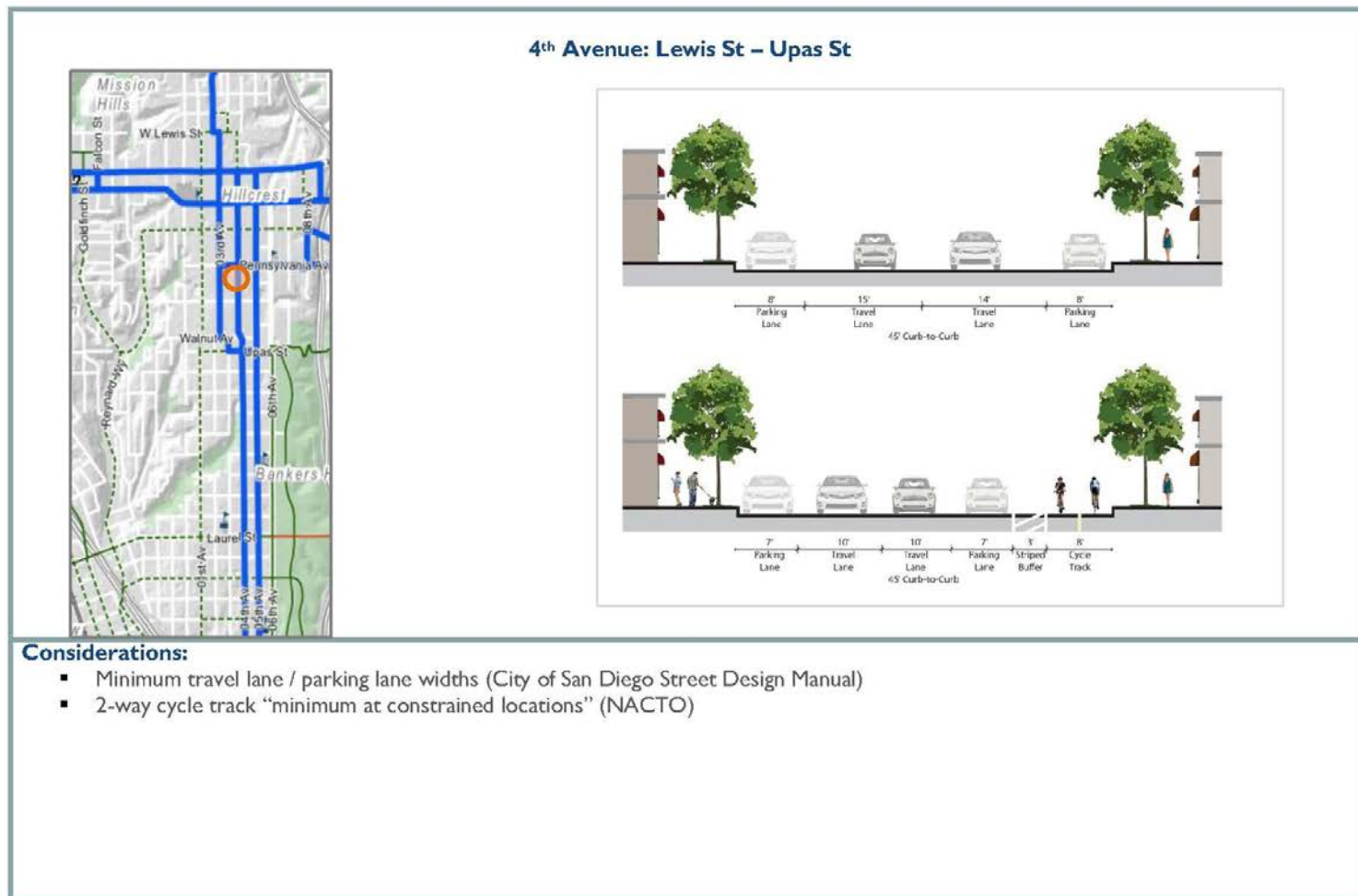
- No foreseen issues with adhering to local design standards.

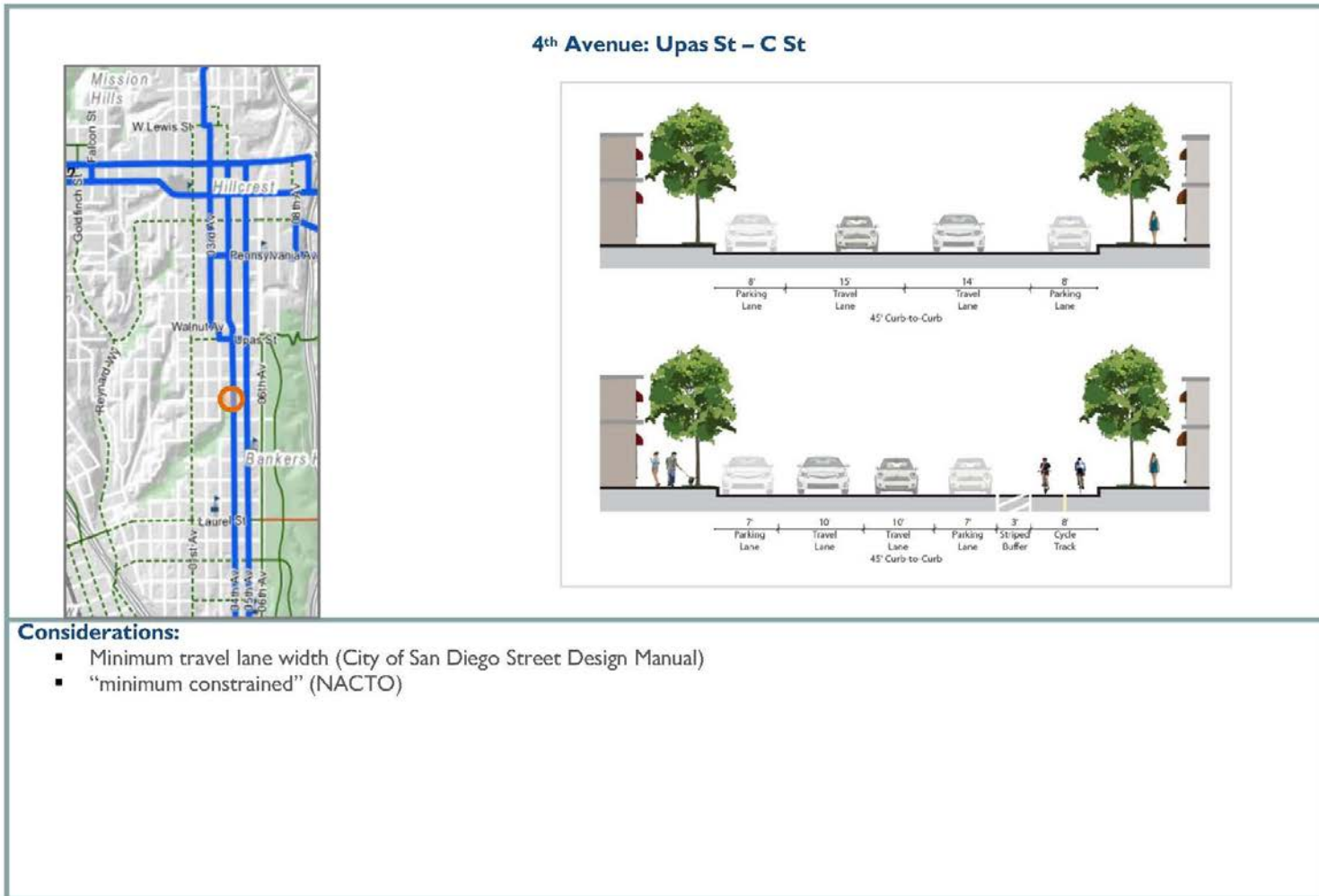
4<sup>th</sup> and 5<sup>th</sup> Avenue: University Ave – Robinson Ave



**Considerations:**

- No foreseen issues with adhering to local design standards.





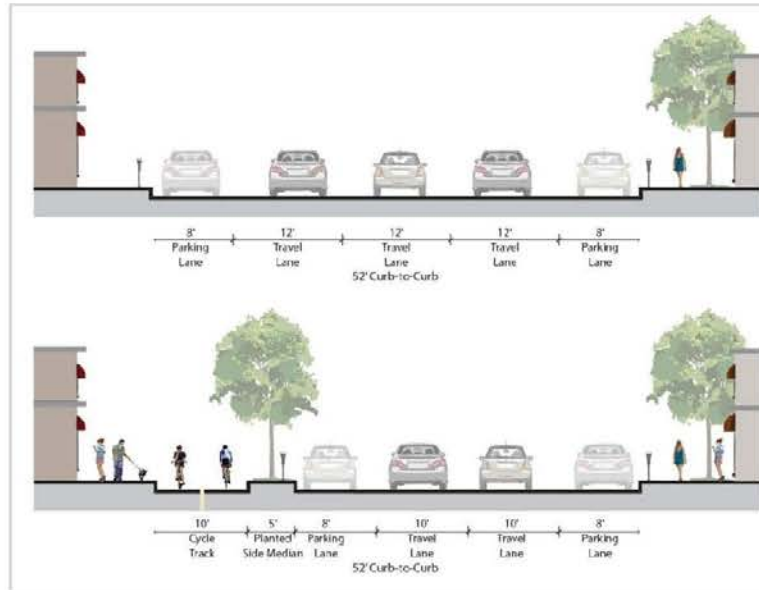
5<sup>th</sup> Avenue: Washington St – Upas St



**Considerations:**

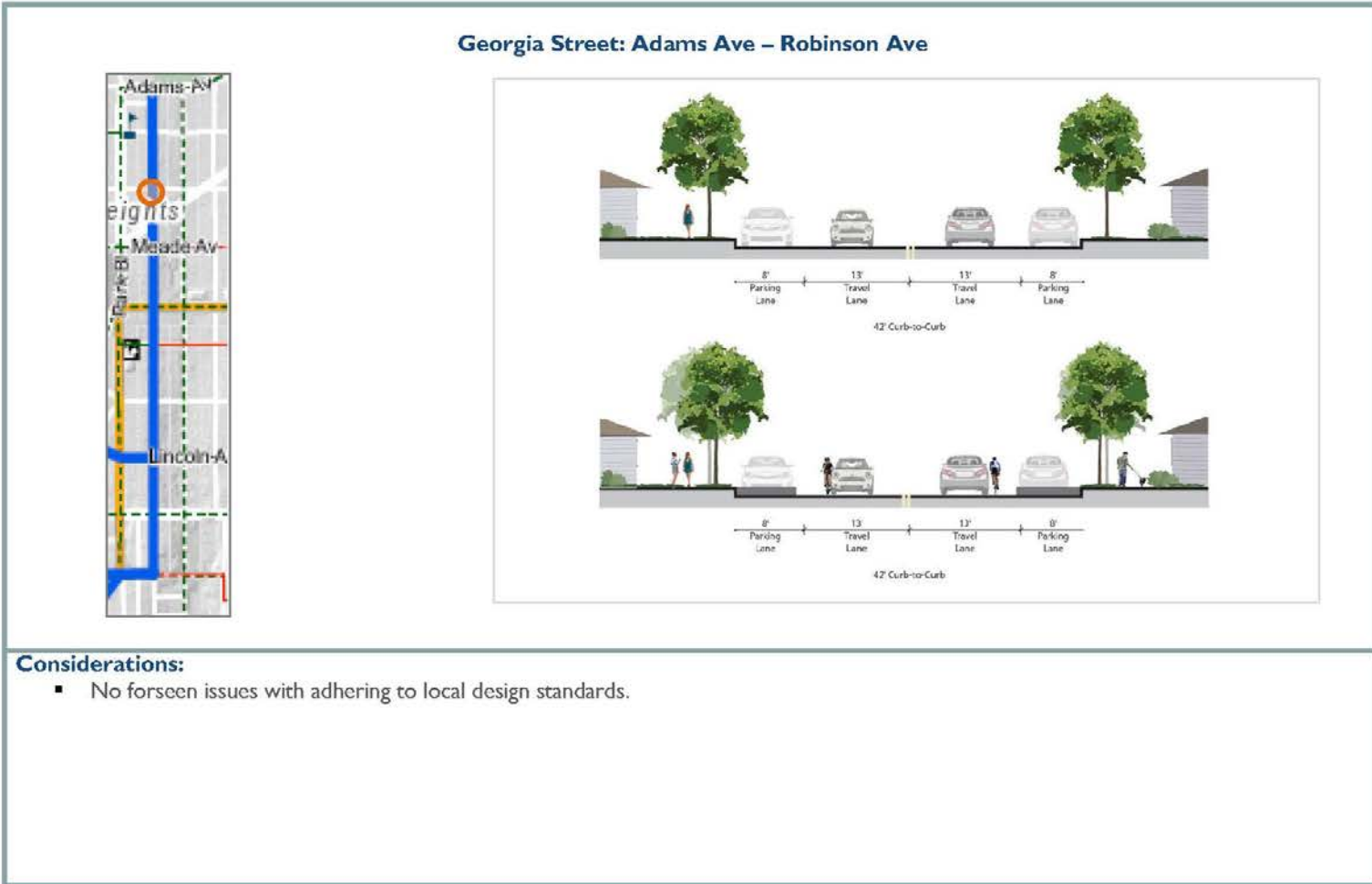
- No foreseen issues with adhering to local design standards.

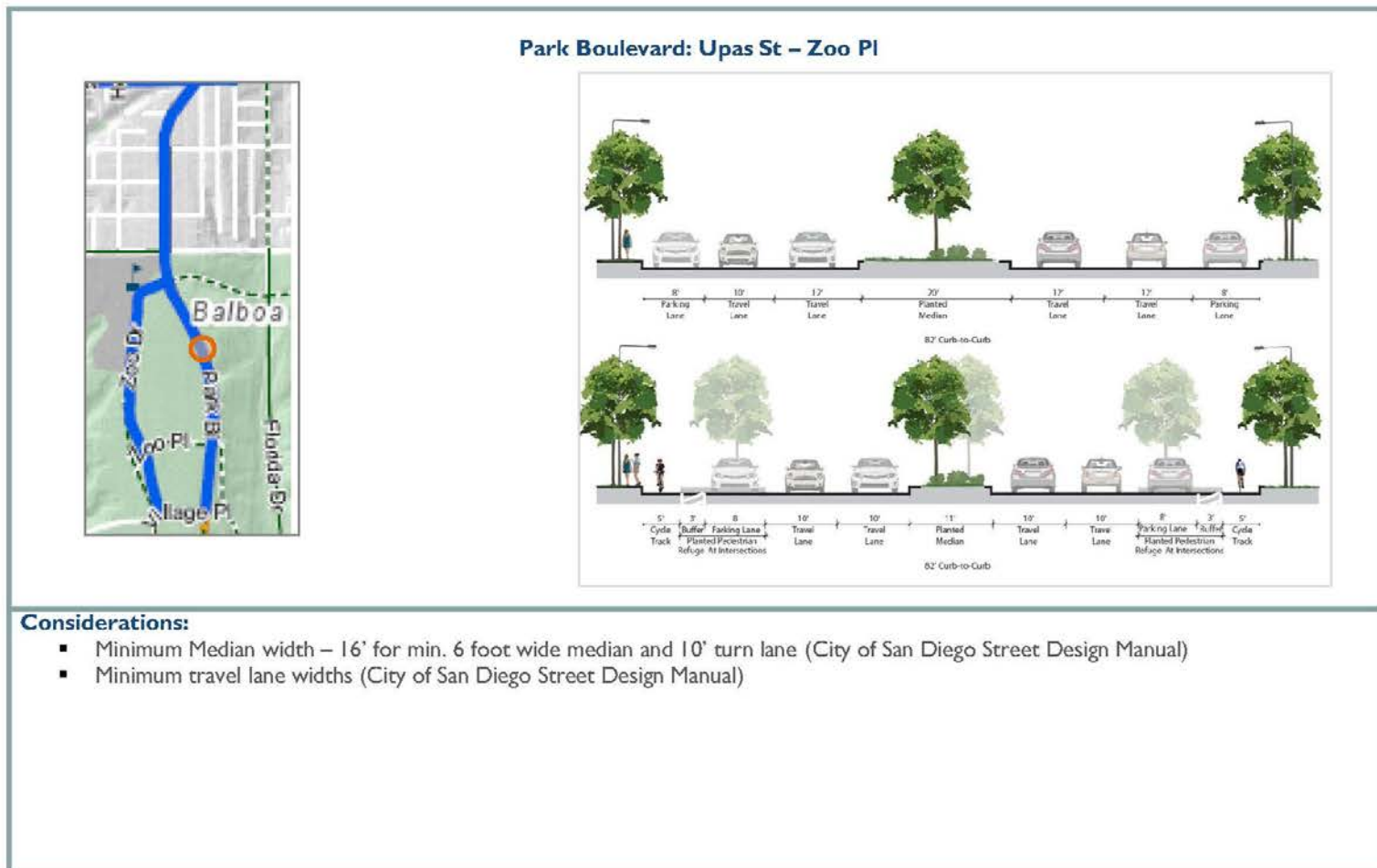
5<sup>th</sup> Avenue: Upas St – C St



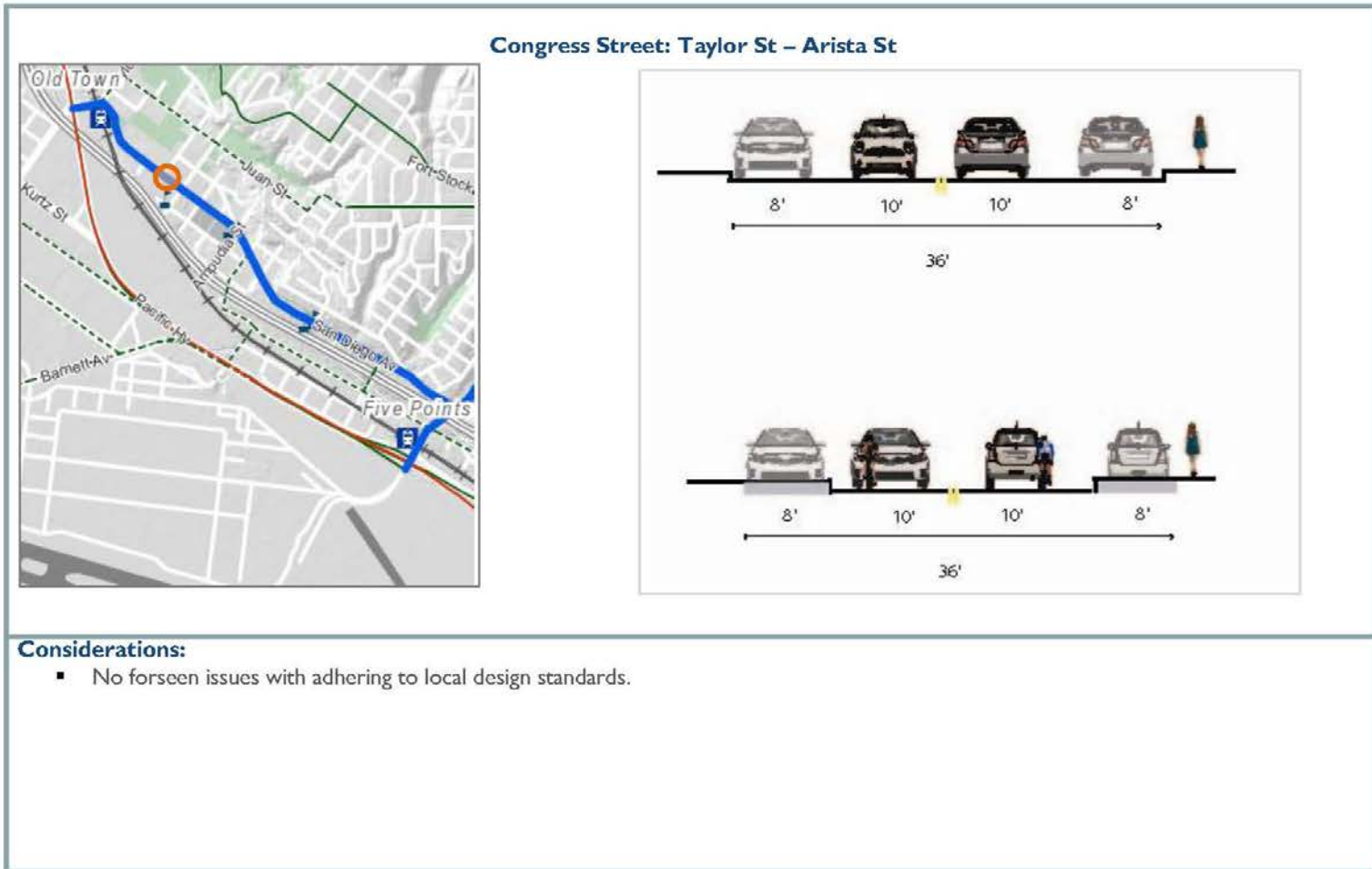
**Considerations:**

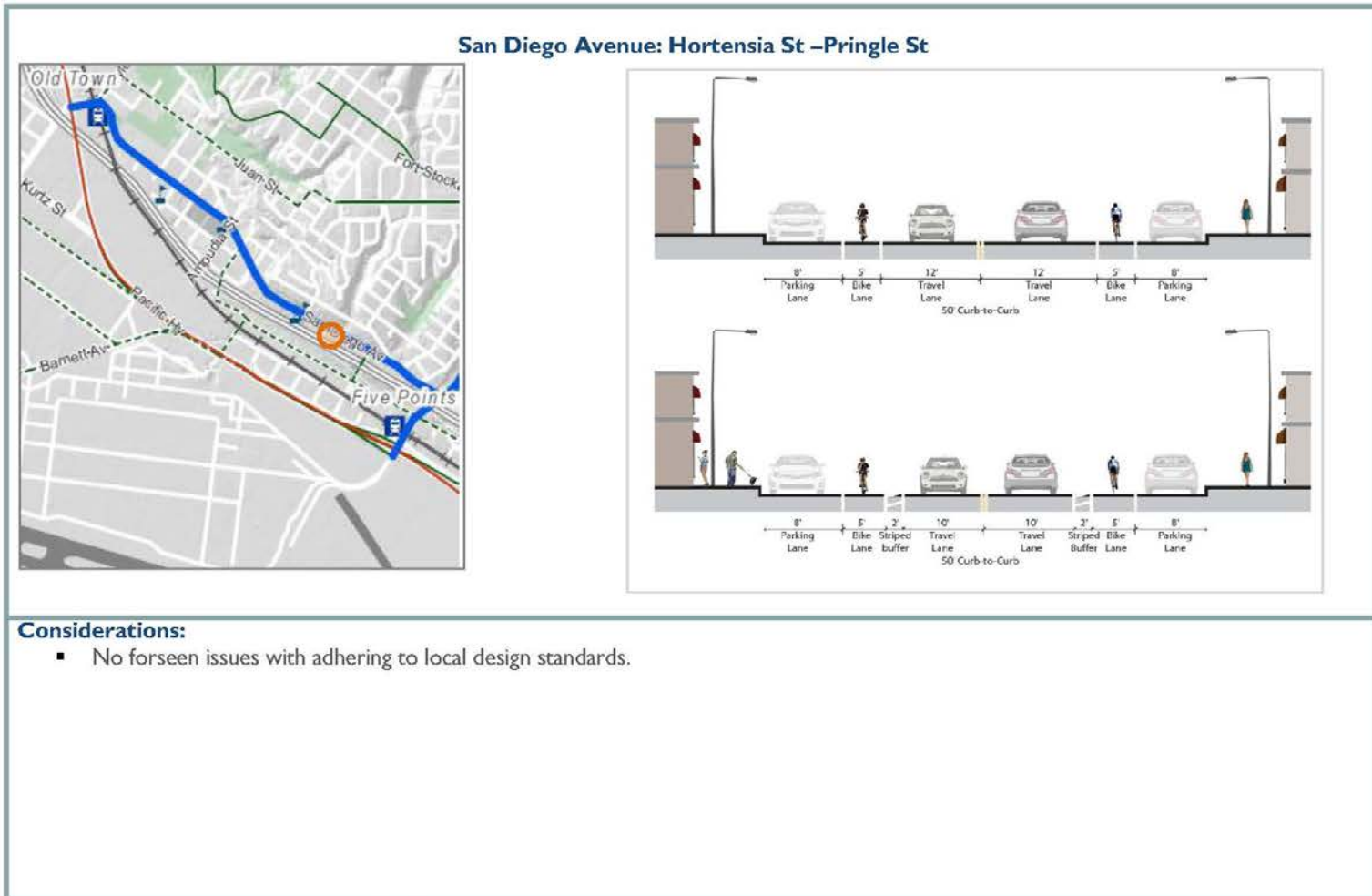
- No foreseen issues with adhering to local design standards.



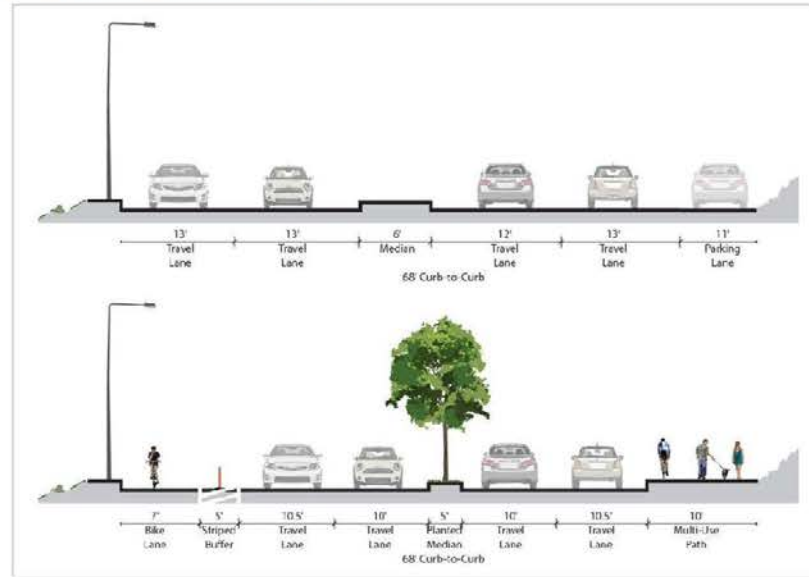
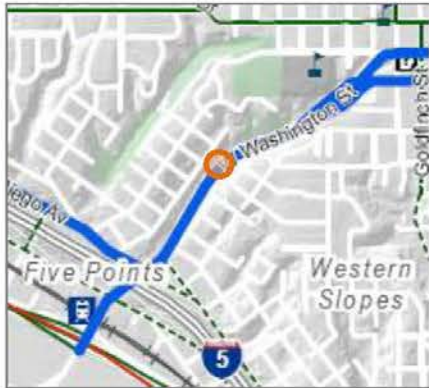






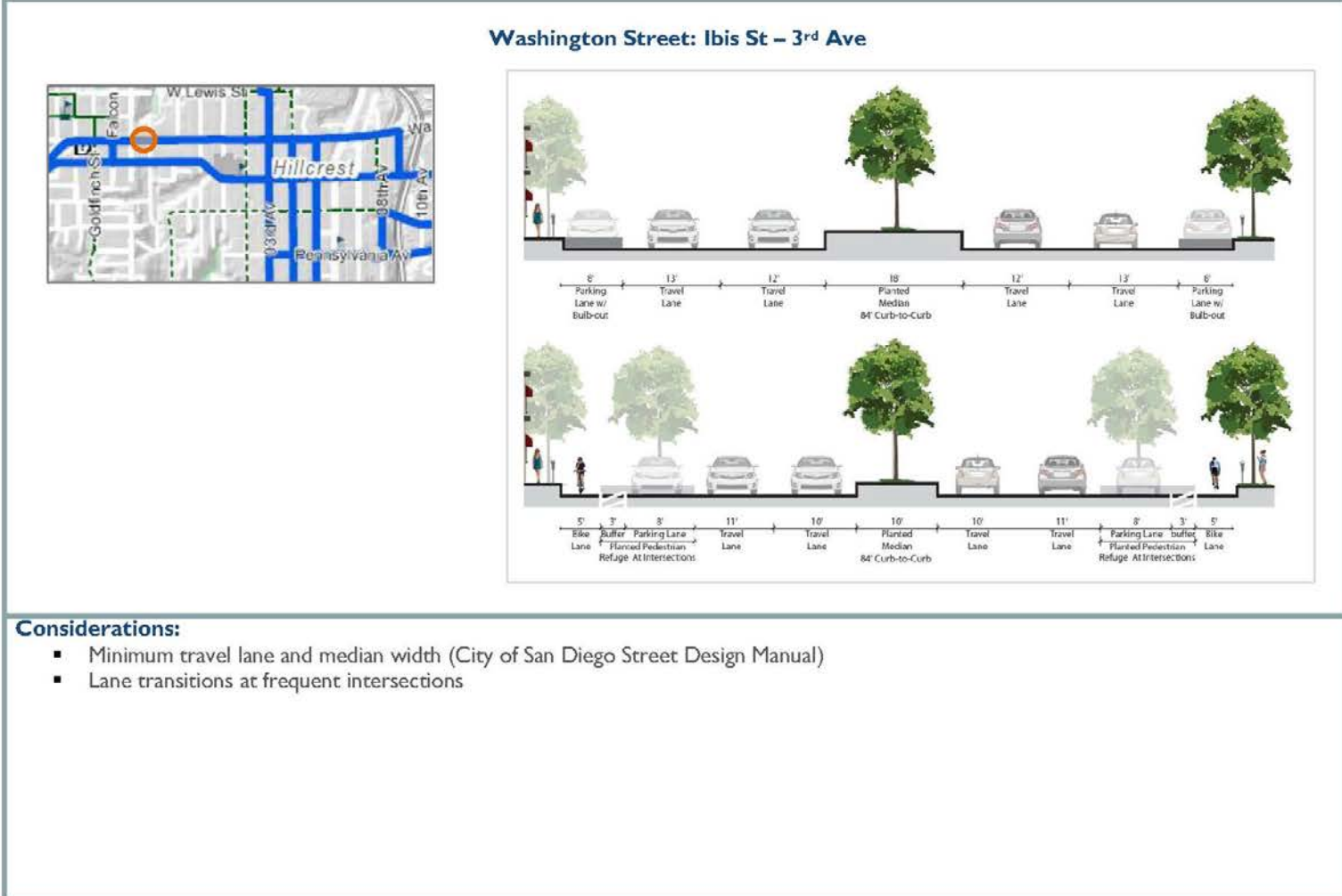


**Washington Street: India St – Ibis St**

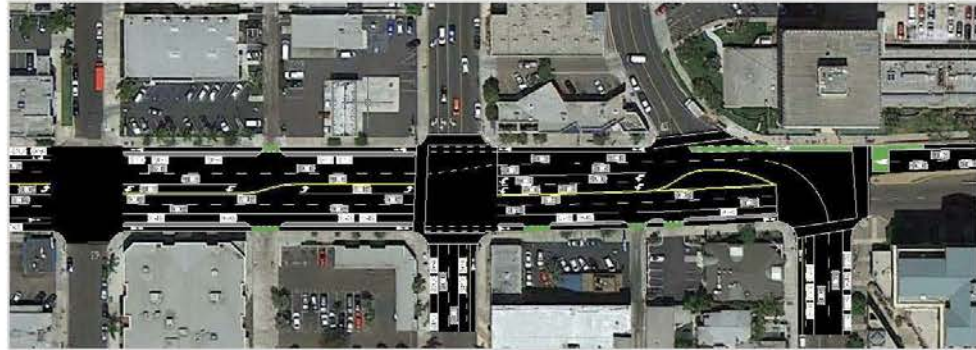


**Considerations:**

- Minimum travel lane width (City of San Diego Street Design Manual)
- Crossing bikes at India (NACTO, City of San Diego Street Design Manual)

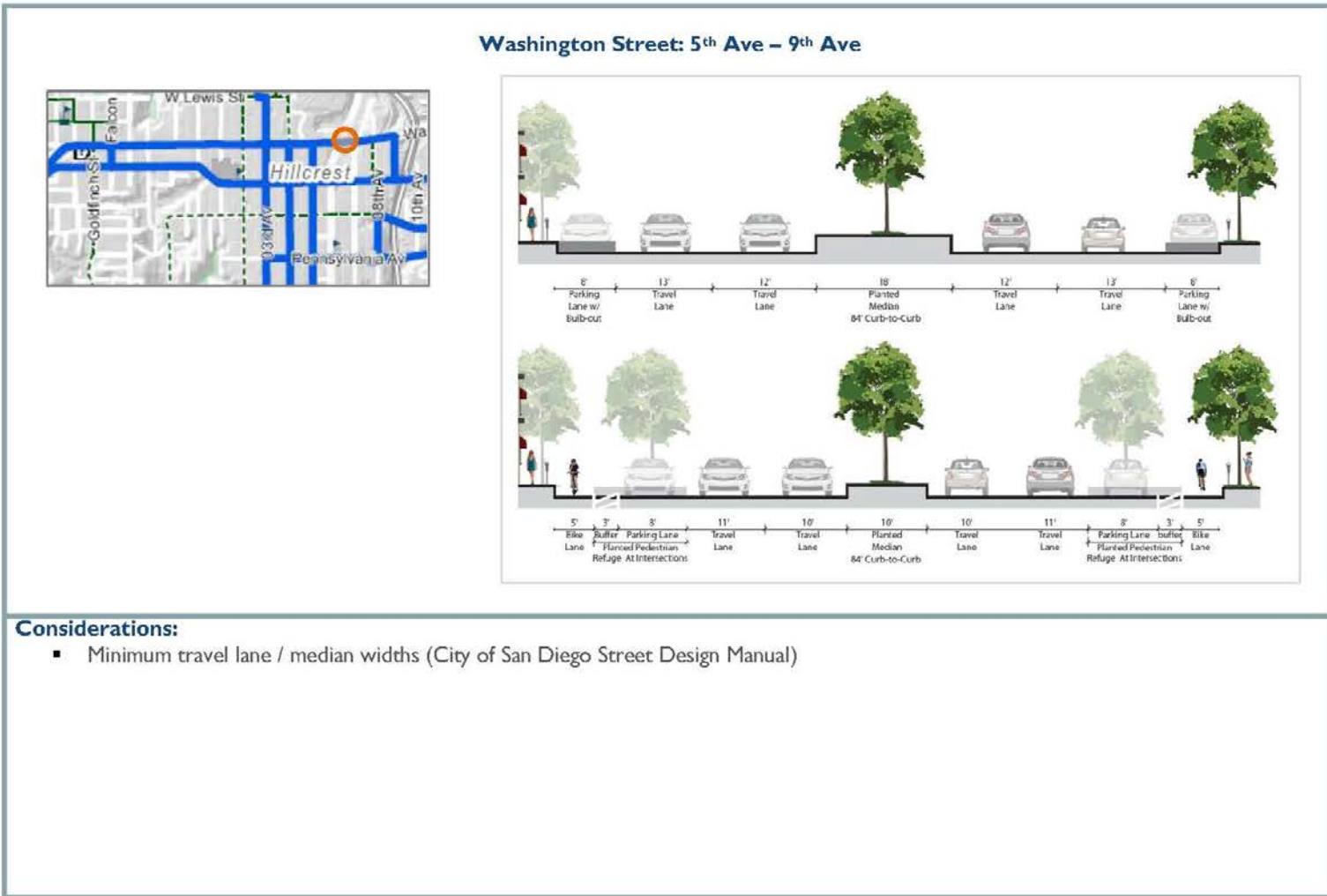


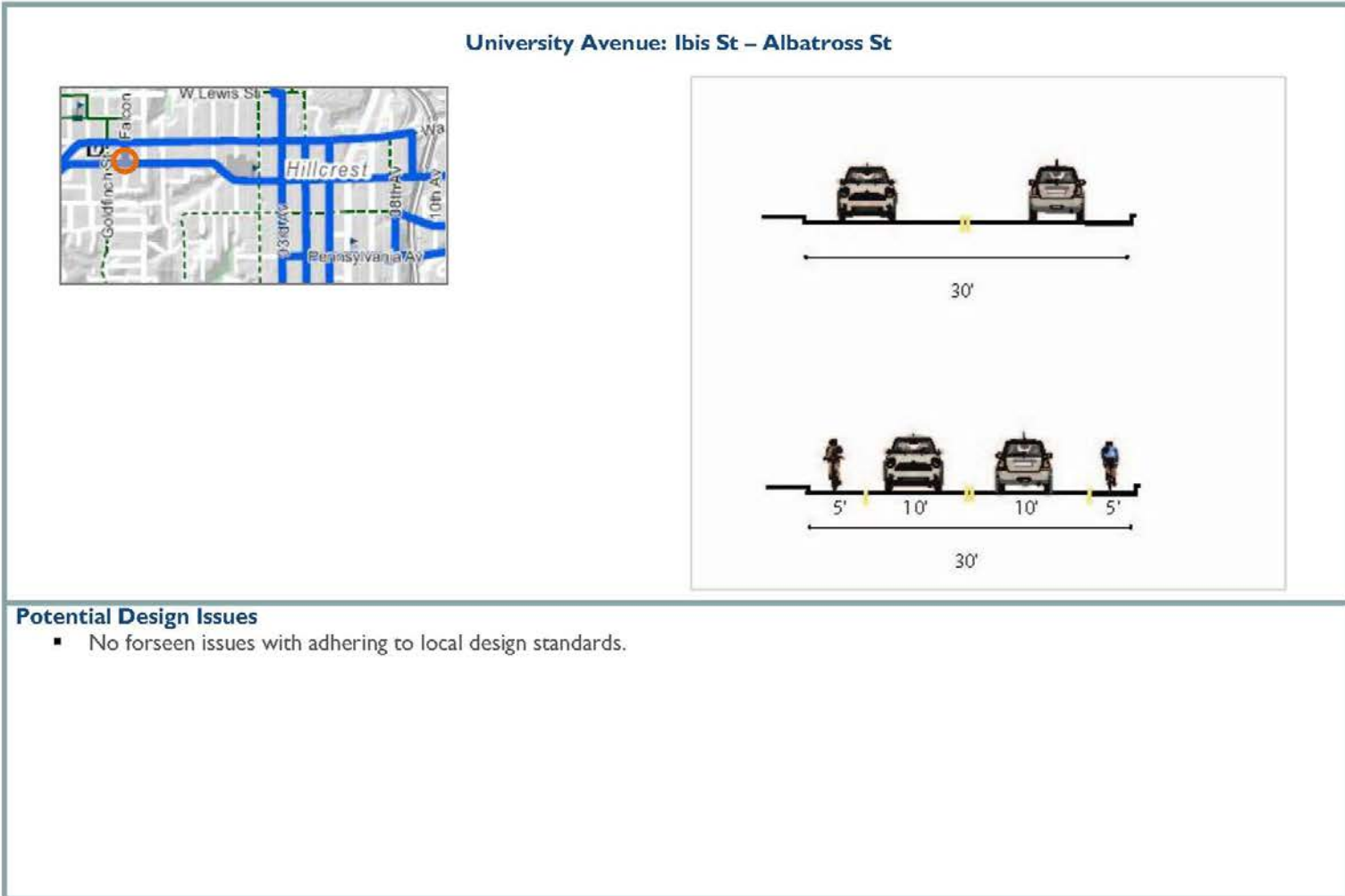
**Washington Street: 3<sup>rd</sup> Ave – 5<sup>th</sup> Ave**



**Considerations:**

- No foreseen issues with adhering to local design standards.





**University Avenue: Albatross St – Front St**

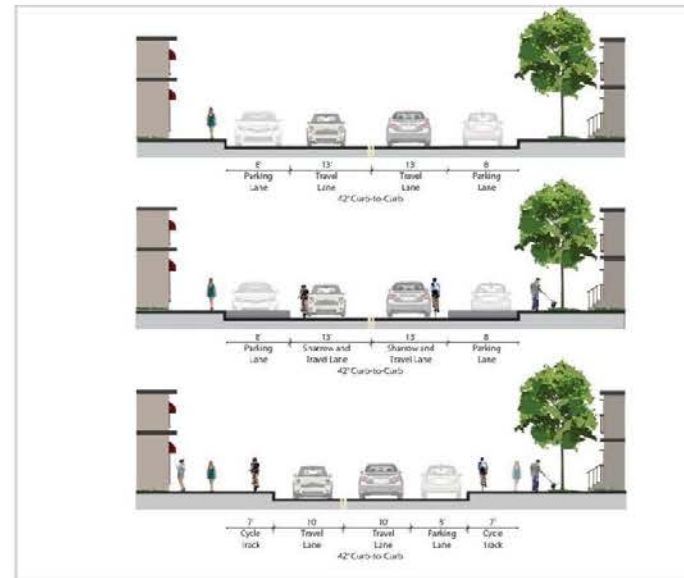


**Considerations:**

- No foreseen issues with adhering to local design standards.

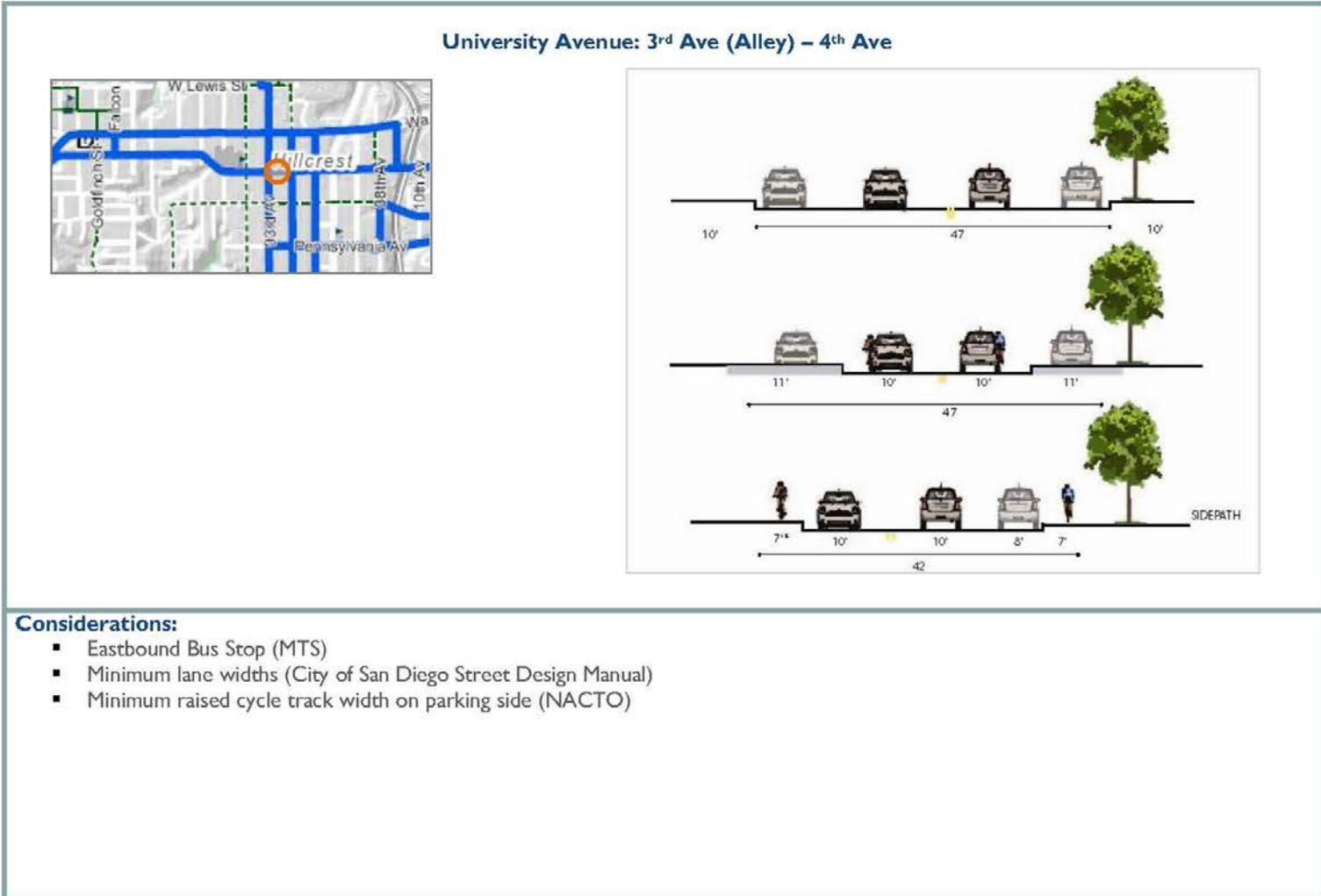


University Avenue: Front St – 3rd Ave

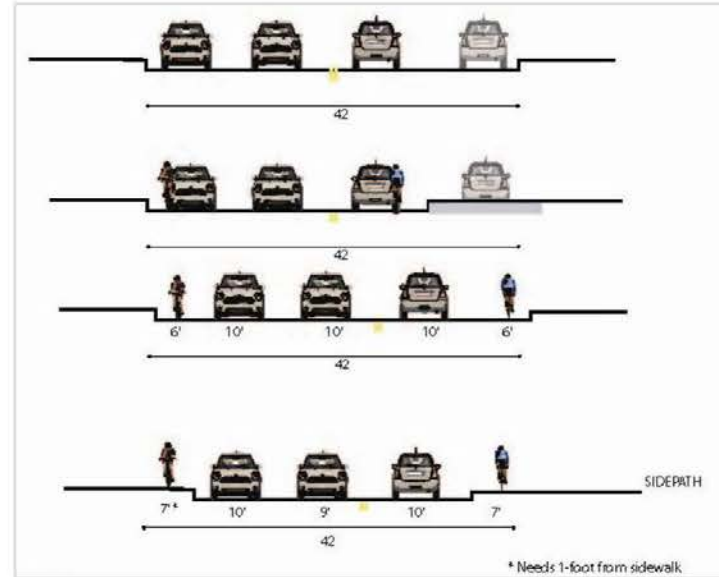
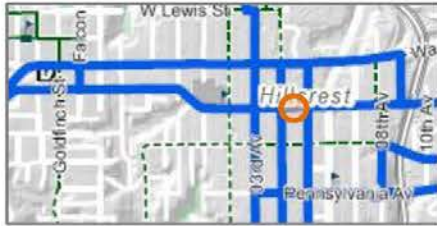


**Considerations:**

- Minimum travel lane widths (City of San Diego Street Design Manual)
- Cycle track width on parking side (NACTO)
- Eastbound Bus stop (MTS)

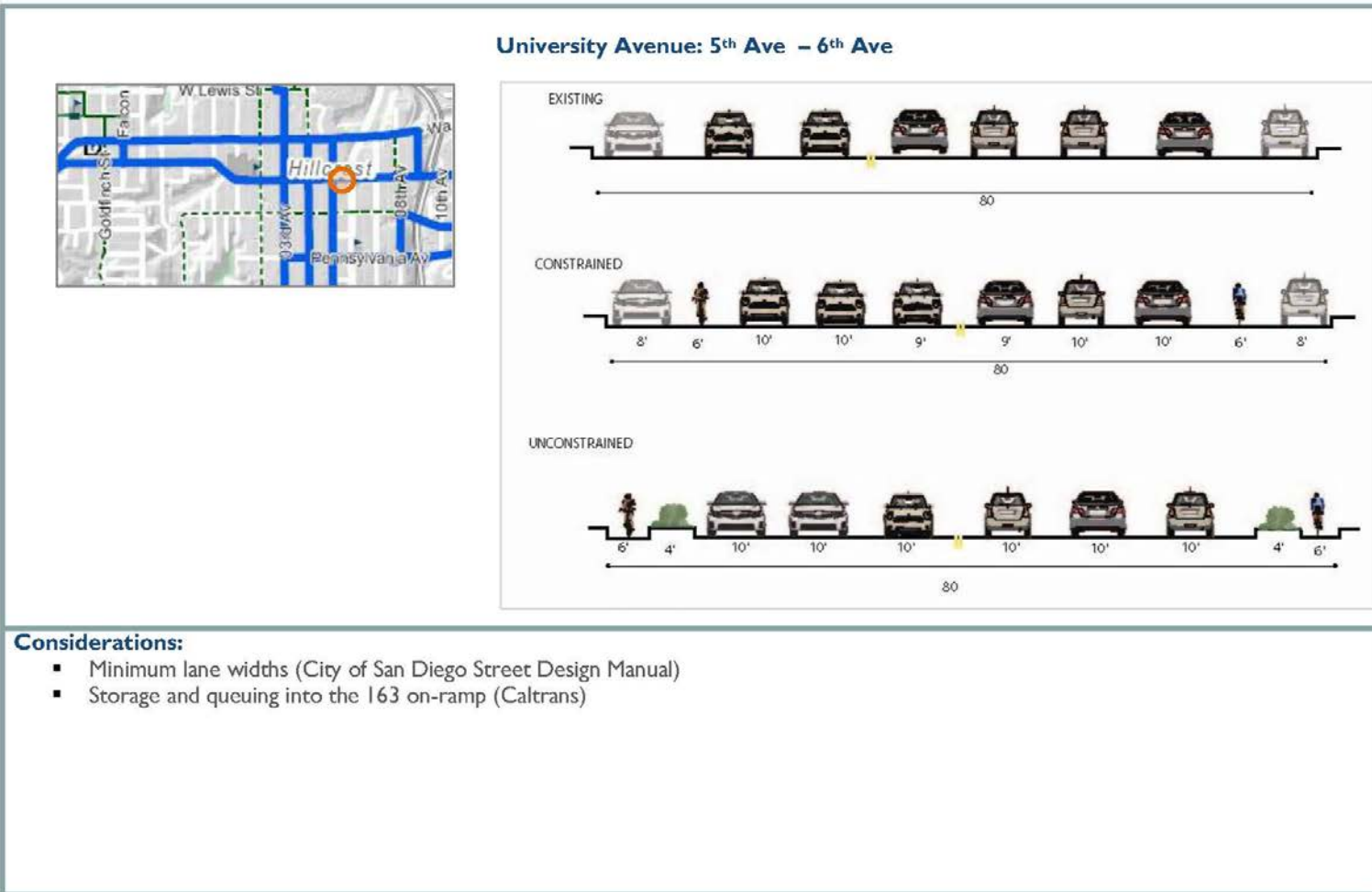


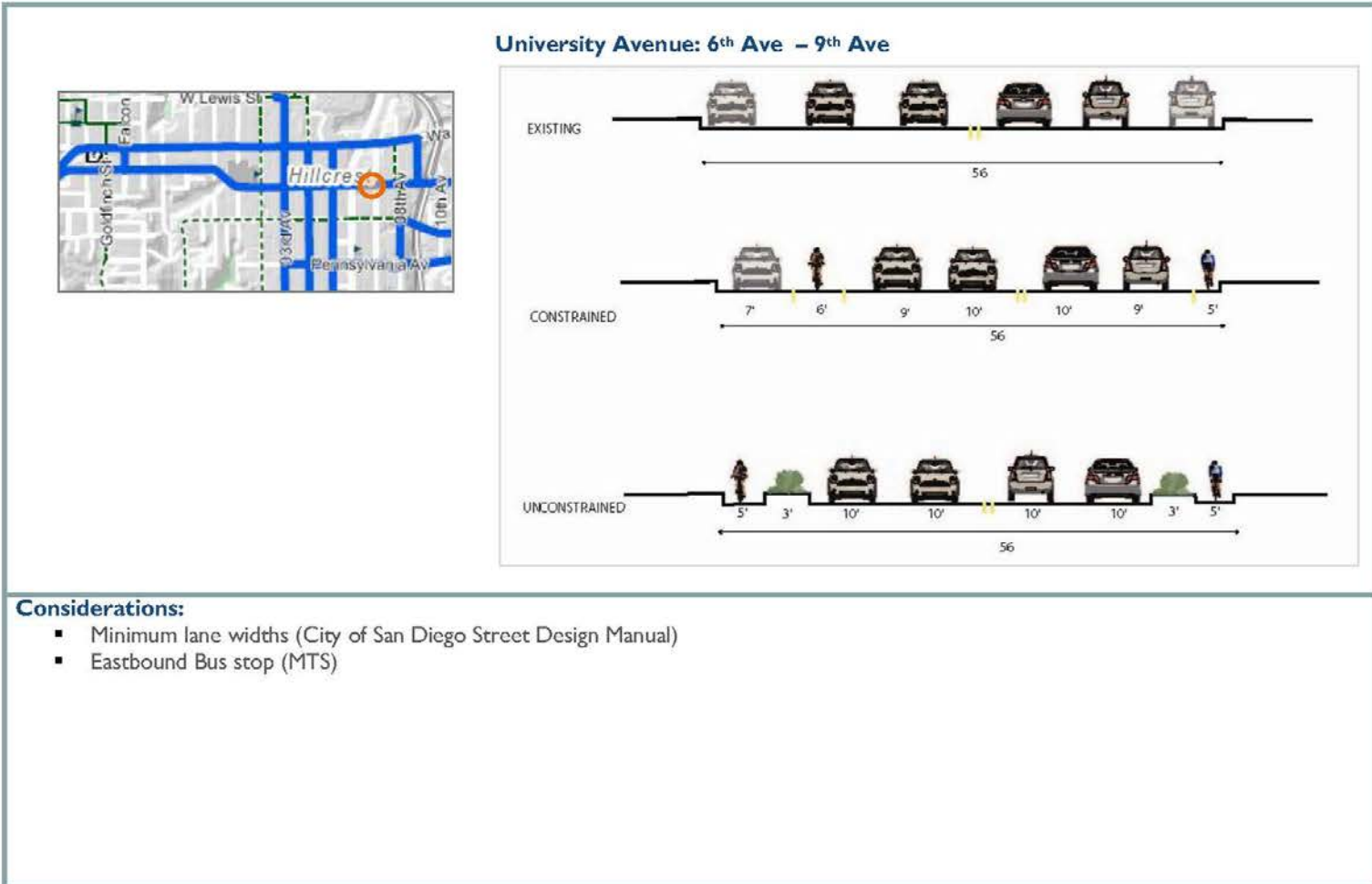
University Avenue: 4<sup>th</sup> Ave – 5<sup>th</sup> Ave

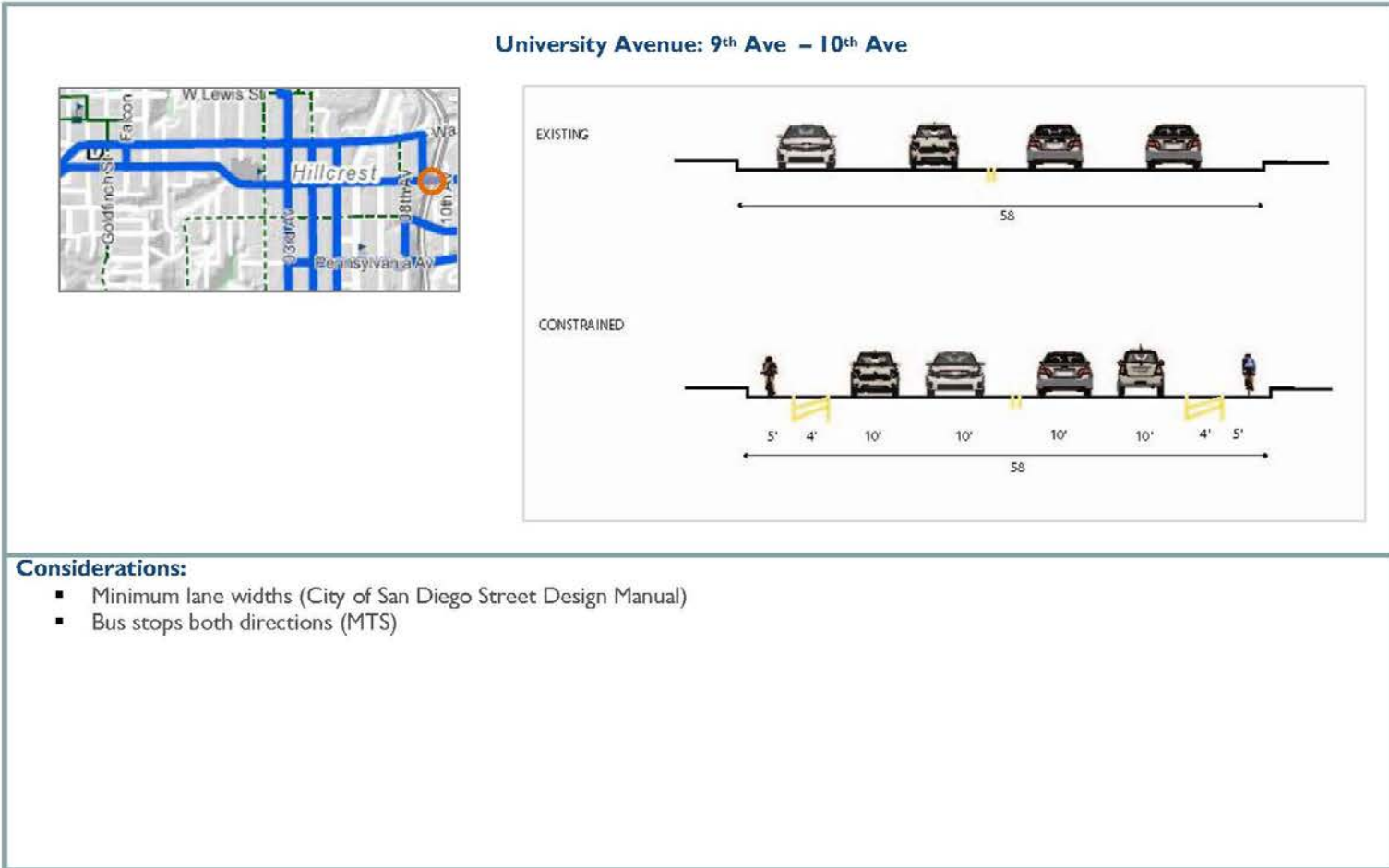


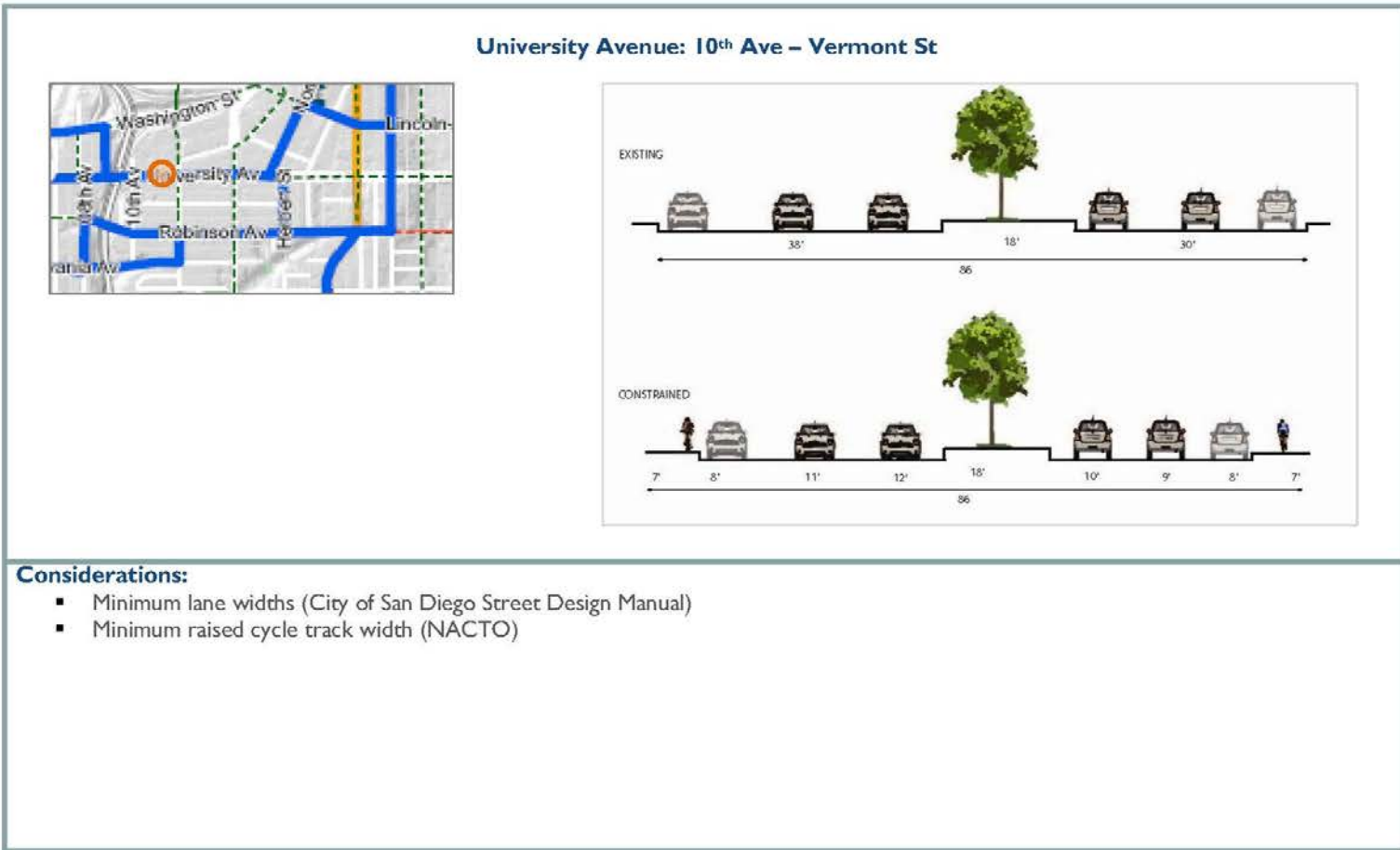
**Considerations:**

- Minimum lane widths (City of San Diego Street Design Manual)
- Eastbound Bus stop (MTS)
- Cycle track width (NACTO)

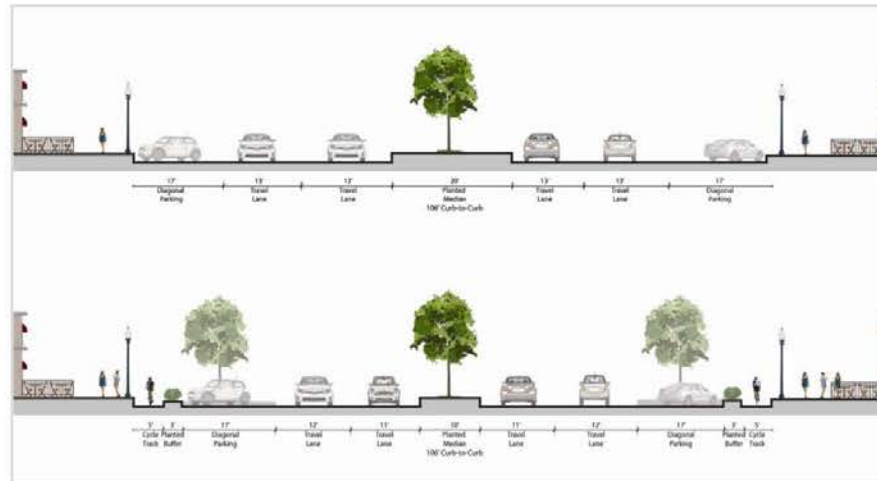








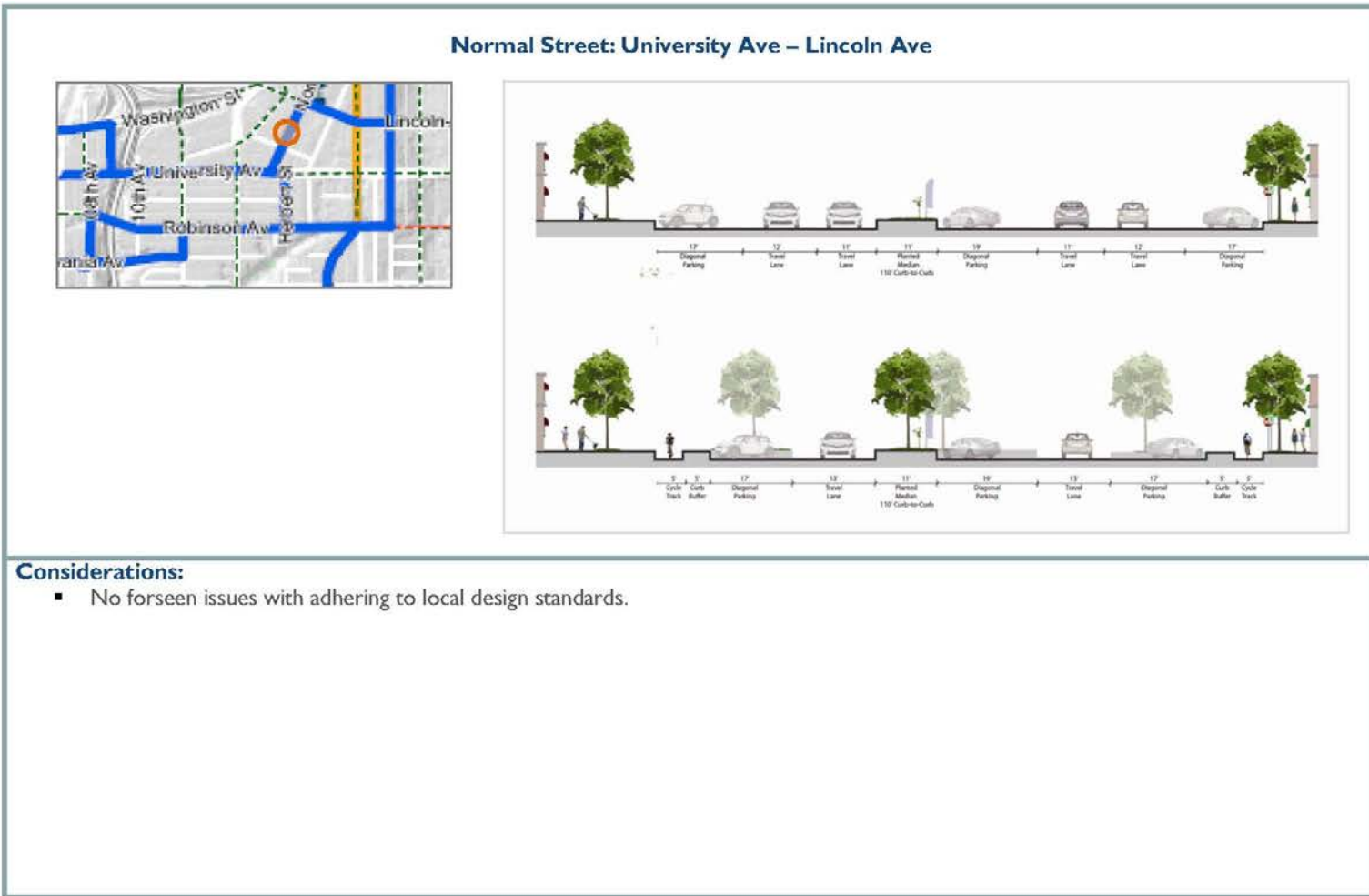
University Avenue: Vermont St – Normal St



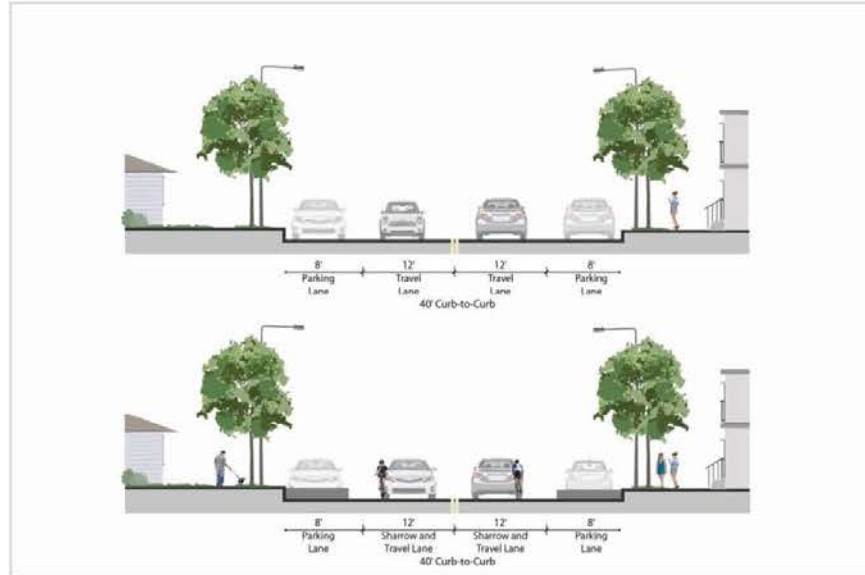
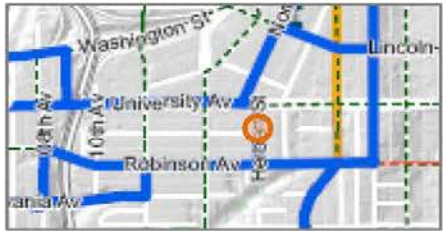
Considerations:

- Minimum lane width- outside the travel lane next to diagonal parking (City of San Diego Street Design Manual)
- Diagonal parking of 4-lane street (City of San Diego Street Design Manual)



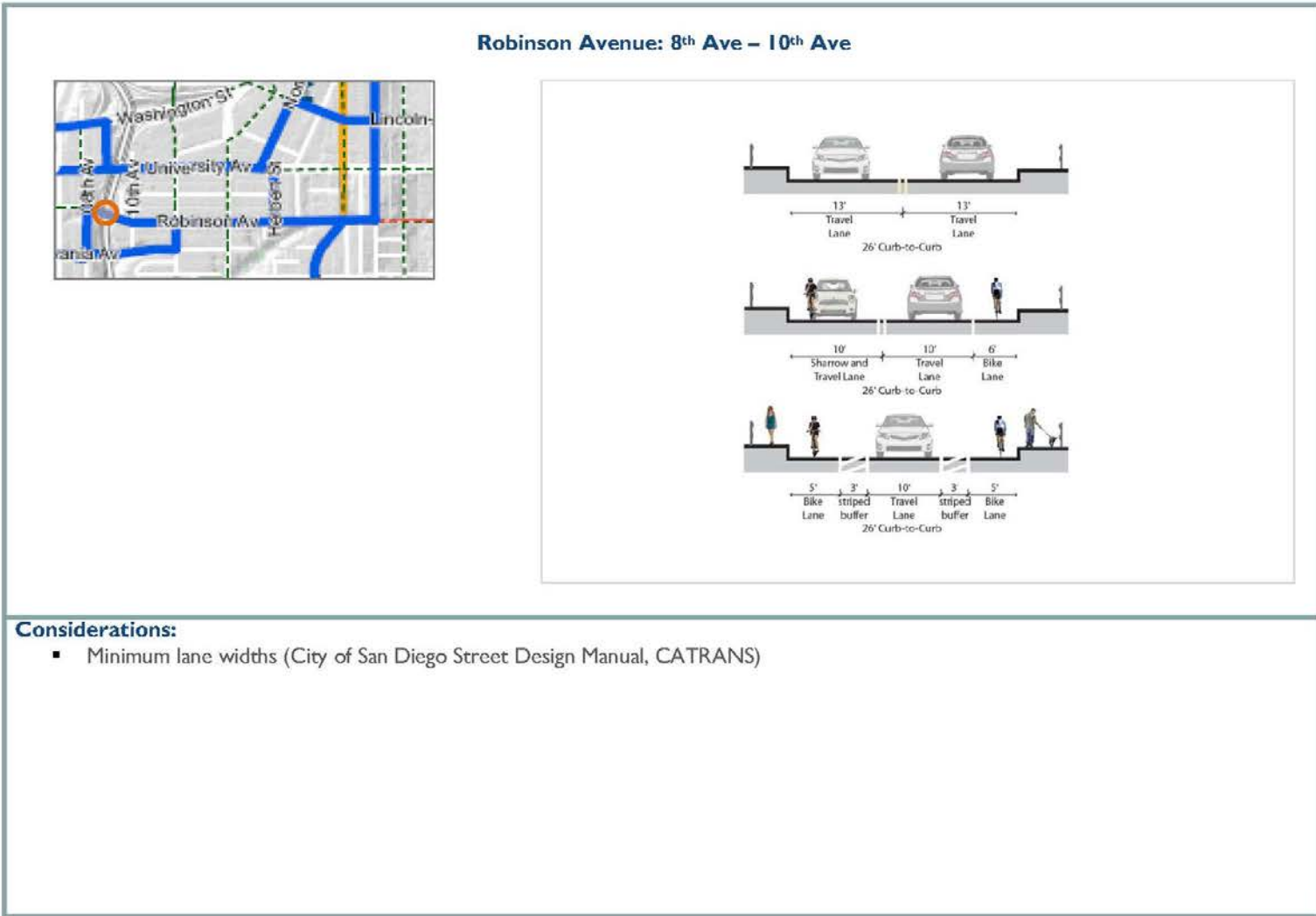


**Herbert Street: University Ave – Robinson Ave**

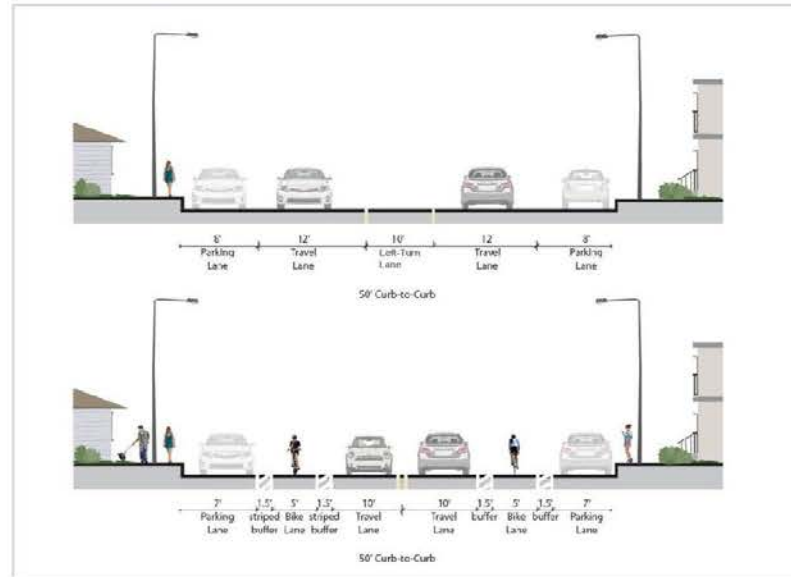
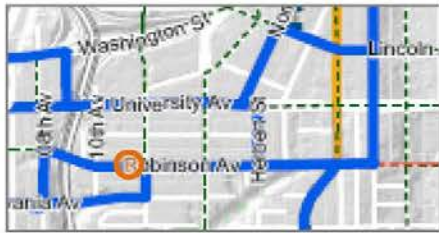


**Considerations:**

- No foreseen issues with adhering to local design standards.

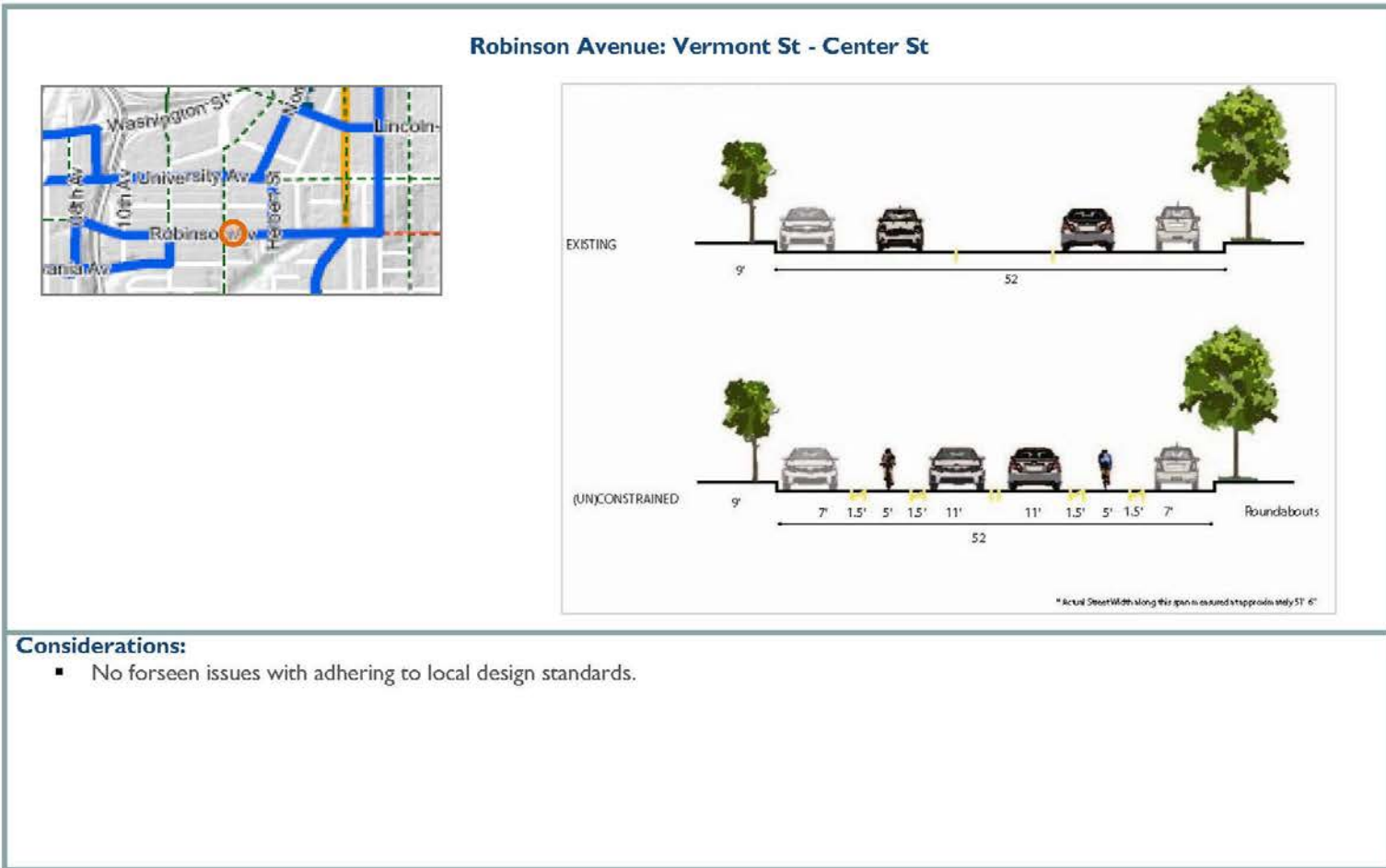


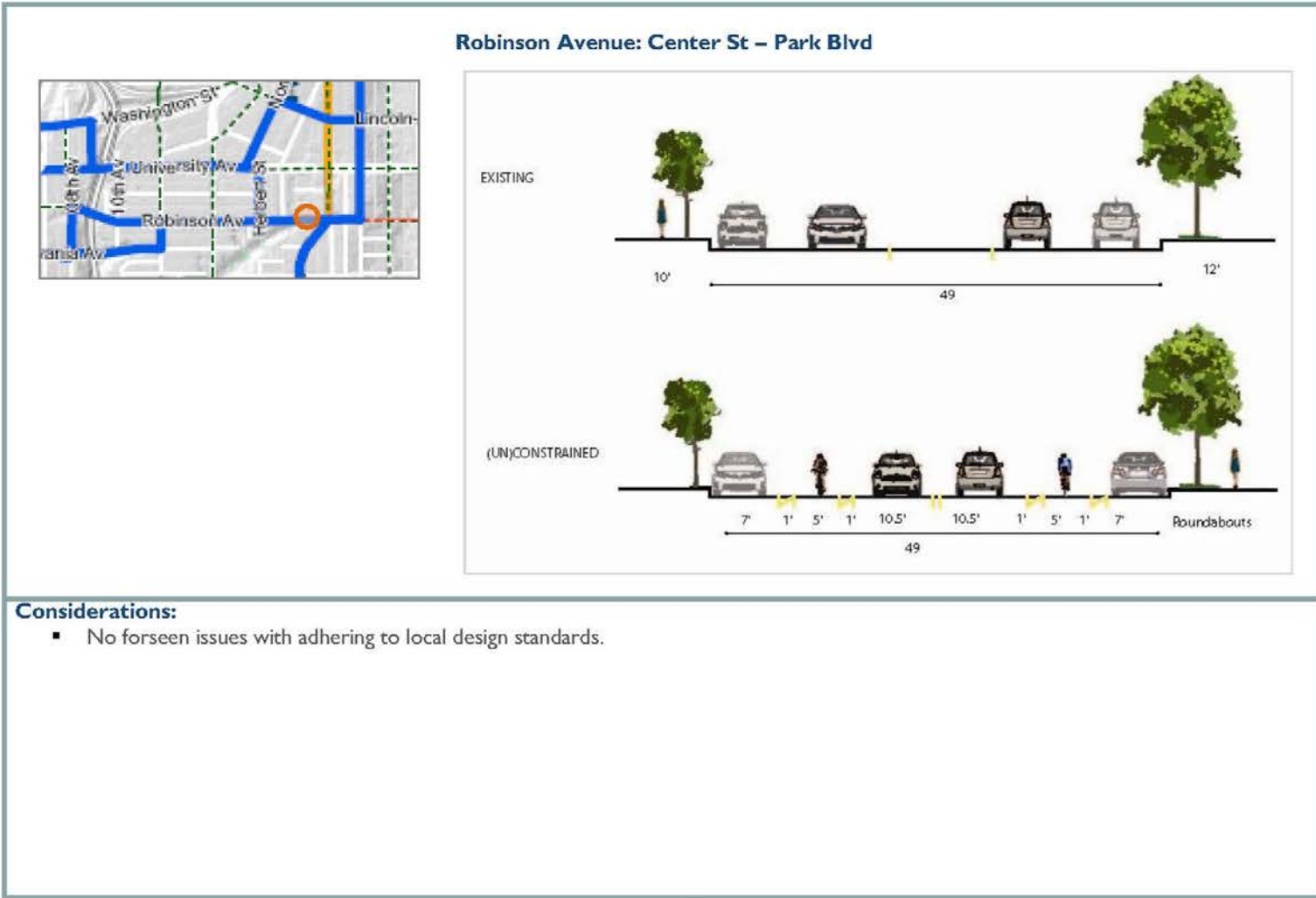
**Robinson Avenue: 10<sup>th</sup> Ave – Vermont St**

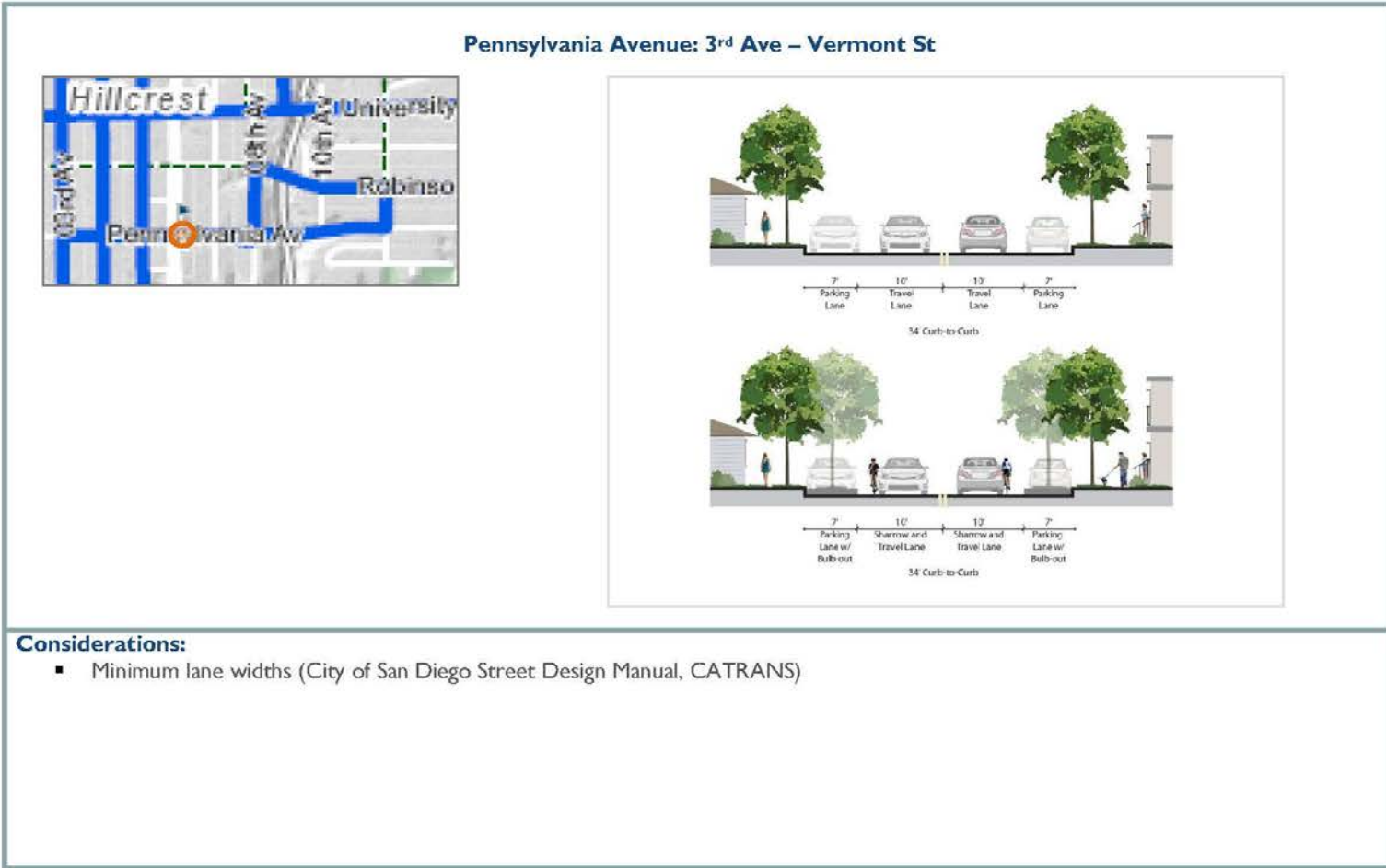


**Considerations:**

- Minimum lane widths (City of San Diego Street Design Manual, CATTRANS)
- Left turn lane (City of San Diego Street Design Manual)











# Appendix M

## Corridor Descriptions and Alignment Design Concept Maps

## **Appendix L - Corridor Descriptions and Alignment Design Concept Maps**

This appendix includes a detailed description of each corridor (per the Early Action Program project number and images from the concept plans which identify cross-section features and widths along each corridor.

### **Description of Corridors per Bike Early Action Program**

#### ***Project 1 – Fashion Valley to Downtown San Diego***

The 6.27-mile Class I, Class III, Protected Bikeway, and Bike Boulevard project begins in Fashion Valley at Ulric Street and Friars Road near Fashion Valley Center. It runs south adjacent to State Route 163 and the Fashion Valley Mall and turns west along the San Diego River to continue onto Avenida del Rio as a Class I facility. At Avenida del Rio and Camino de la Reina, it turns west onto Camino de la Reina, passes the Union Tribune Building and continues south onto Hotel Circle South. At Bachman Place, the route turns south and continues up the hill as a Hybrid Bike Facility into Hillcrest where it connects with UC San Diego Medical Center Hillcrest. The route continues south on 3rd Avenue as a Contraflow Bike Lane heading south, and a Class III facility heading North, from Lewis Street and Washington Street. On Washington Street the route becomes a one-way Protected Bikeway on each side of the roadway, where it connects with both 4th and 5th Avenue. The route becomes a one-way Protected Bikeway couplet along 4th and 5th Avenue between Washington Street and C Street, crossing University Avenue where it intersects with Project #6. The route terminates at C Street at the trolley tracks.

#### ***Project #3 – Old Town to Hillcrest***

This 3.05-mile project begins in Old Town at the Coastal Rail Trail and the Old Town Transit Station. The project begins as a Protected Bikeway along Taylor Street and then runs south along Congress Street adjacent to the Old Town State Historic Park as a Bicycle Boulevard. For 230 feet just south of the Old Town Transit Station, the route becomes a Class II facility. Continuing on Congress Street, the route converts back to a Bicycle Boulevard north of Mason Street and continues past Fremont Elementary School. The route continues along San Diego Avenue between Ampudia Street and Pringle Street, just north of Washington Street, as an enhanced Class II facility. At Pringle Street, the route becomes a two-way Protected Bikeway along San Diego Avenue to navigate the one-way northbound segment of San Diego Avenue between Pringle Street and Washington Street. At Washington Street the Protected Bikeway spurs west to make a connection to the Coastal Rail Trail and the Washington Street Trolley Station. The Protected Bikeway also continues east as two separate one-way Protected Bikeways where they connect to the International Restaurant Row in the Five Points neighborhood and continues up a 5 percent incline for two-thirds of a mile up Washington Street into Mission Hills. The route continues along University Avenue as a Bicycle Boulevard and passes near to the Mission Hills Library and Florence Elementary School. From Albatross Street to Front Street, the route becomes two one-way Protected Bikeways before converting to a Class III facility from Front Street to First Avenue. The facility type then changes to an enhanced Class II Buffered Bike Lane facility from 1st Avenue until the route terminates at 3rd Avenue where it connects to Project #7.

#### ***Project #6 – Hillcrest to City Heights***

This 1.54-mile project provides continuous east-west connectivity between Hillcrest and City Heights-North Park through a combination of various facility types. This route begins in Hillcrest at University Avenue and 3rd Avenue as a Protected Bikeway. The route converts into two one-way Protected Bikeways at 5th Avenue, running east and west down University Avenue. At Normal Street, the project splits with one portion continuing north as two one-way Protected Bikeways on

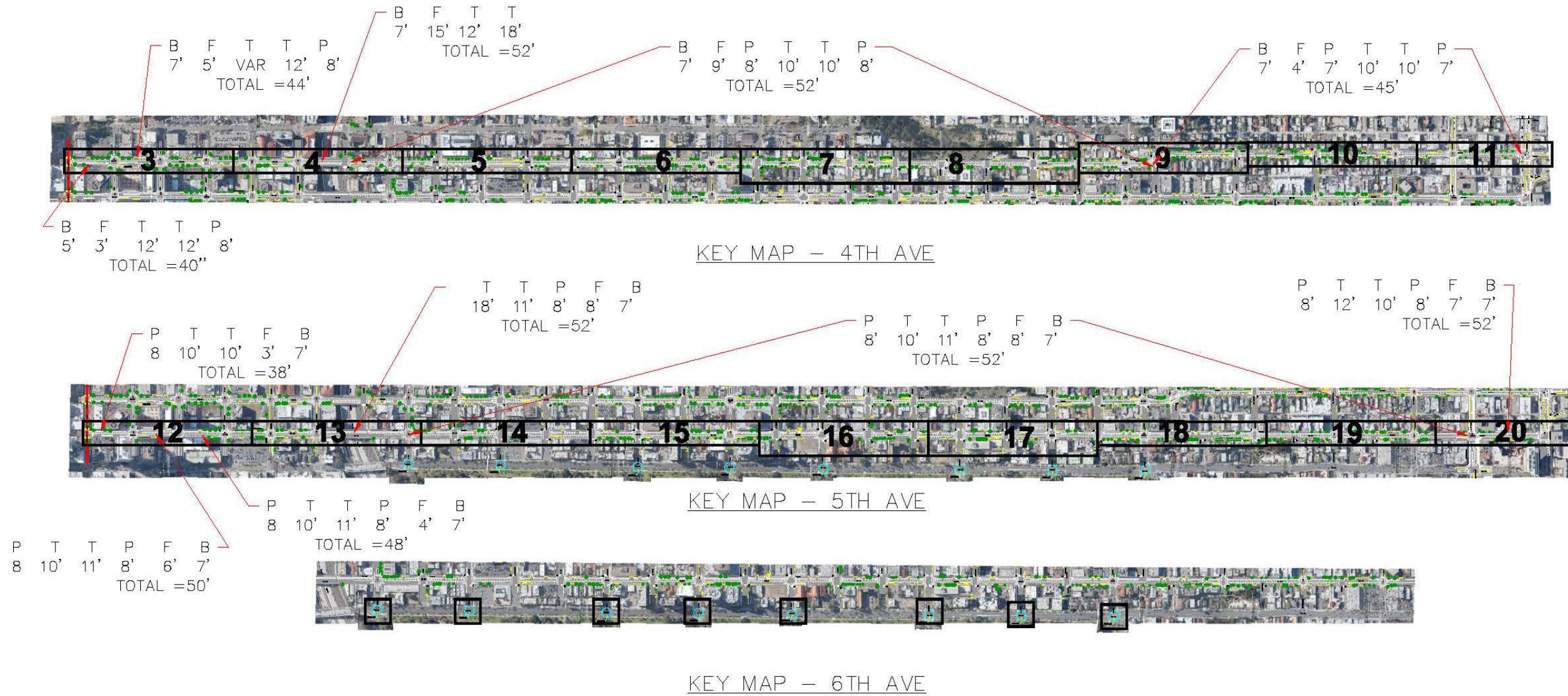
Normal Street. This portion then turns east on Lincoln as a Class III facility until it terminates at Georgia Street where it intersects with Project #7. The other portion of the project continues on University and turns south at Herbert Street where the route becomes a Class III facility. At Robinson Avenue the route turns east and continues as a Class II facility until it terminates at Park Boulevard, where it intersects with Project #7.

### ***Project #7 – Hillcrest to City Heights***

The 1.79-mile project begins in University Heights at Georgia Street and Meade Avenue and connects with Project #6 as a Bicycle Boulevard facility. It runs south along Georgia Street close to Birney Elementary School and retail attractors on Park Boulevard and passes the University Heights Public Library. At Robinson Avenue, the route turns west as a Class III facility where it intersects with Project #6 at Park Boulevard. At Park Boulevard, the route turns south and becomes a Protected Bikeway along Park Boulevard, passes Roosevelt Middle School and continues south until it reaches Village Place, in Balboa Park, where it terminates.

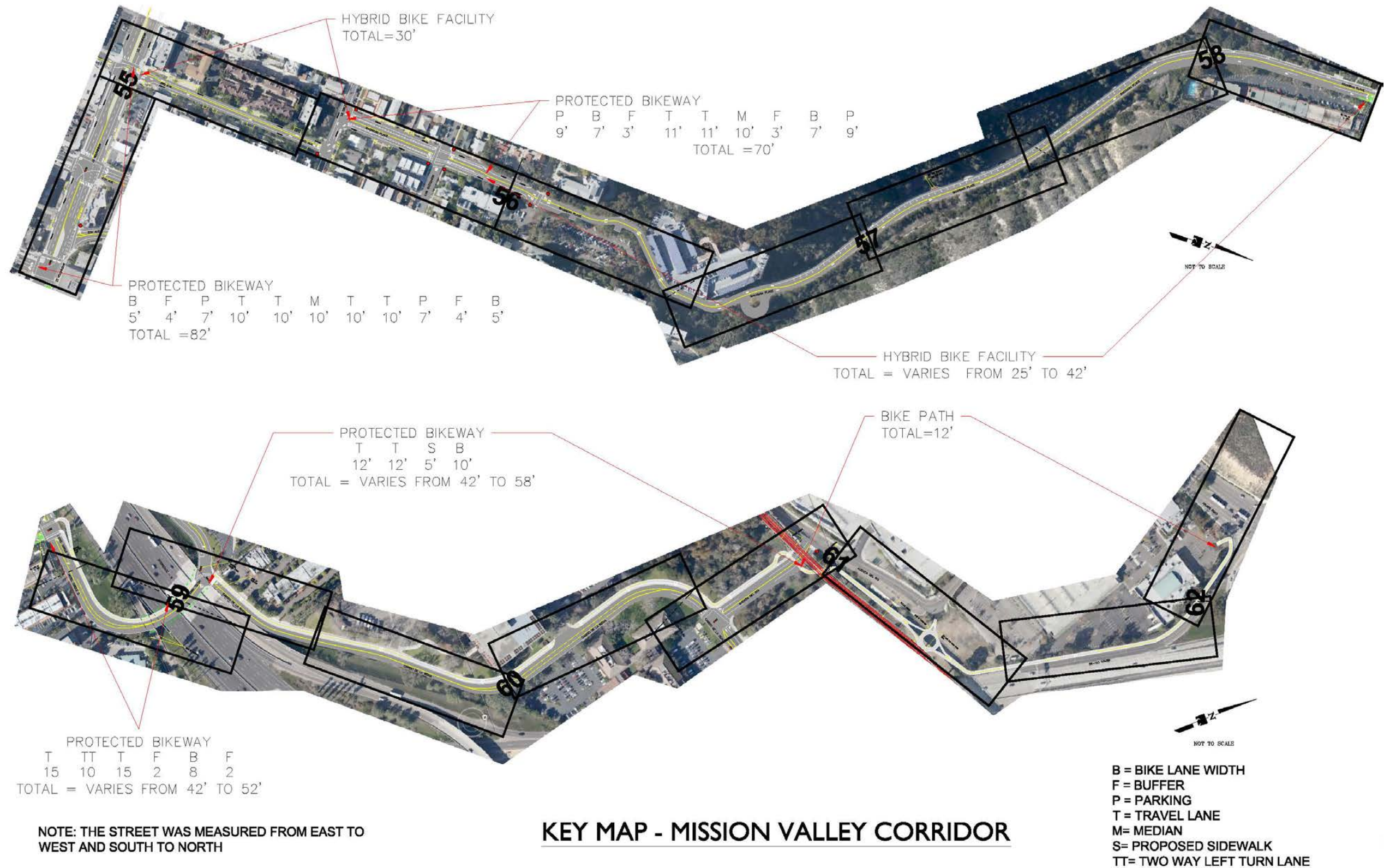
Alignment Design Concepts – Key Maps

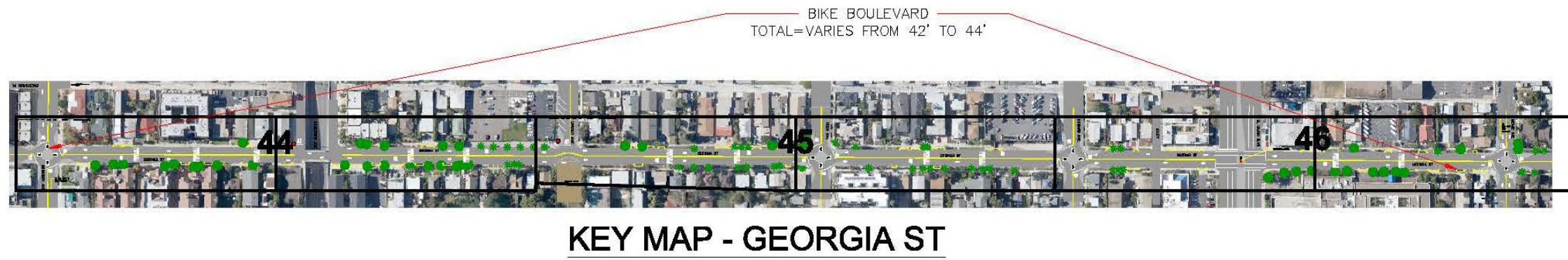
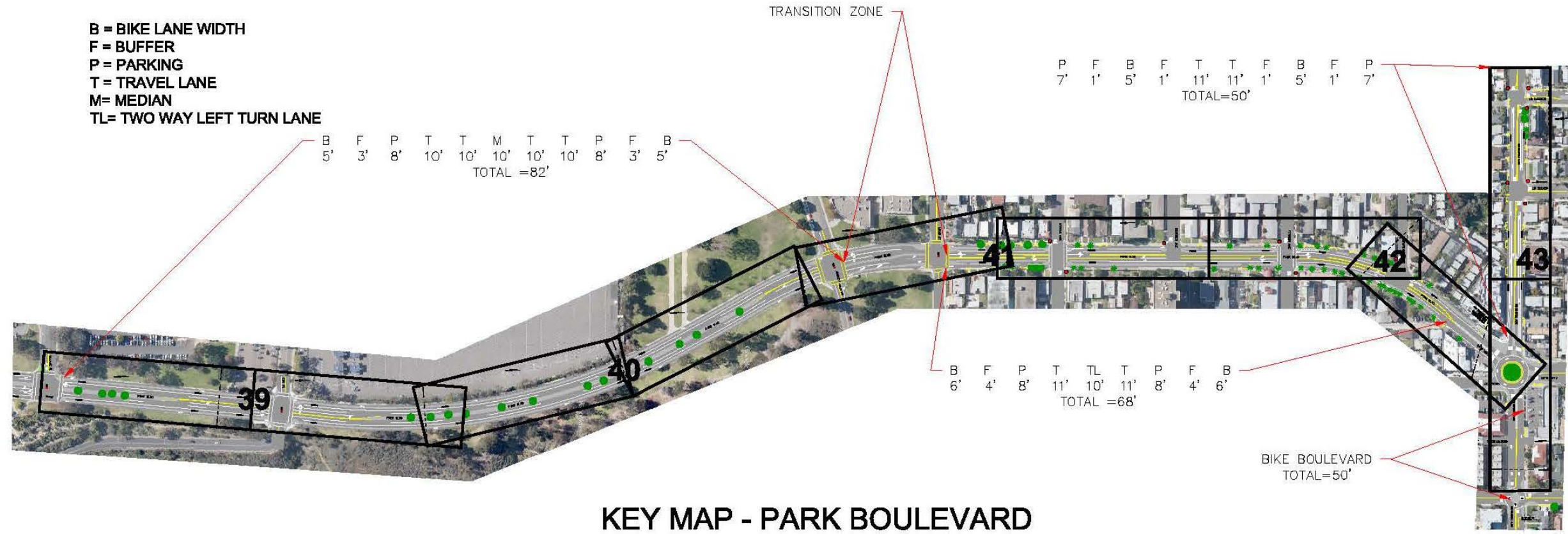
B = BIKE LANE WIDTH  
 F = BUFFER  
 P = PARKING  
 T = TRAVEL LANE



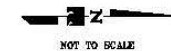
NOTE: THE STREET WAS MEASURED FROM EAST TO WEST.



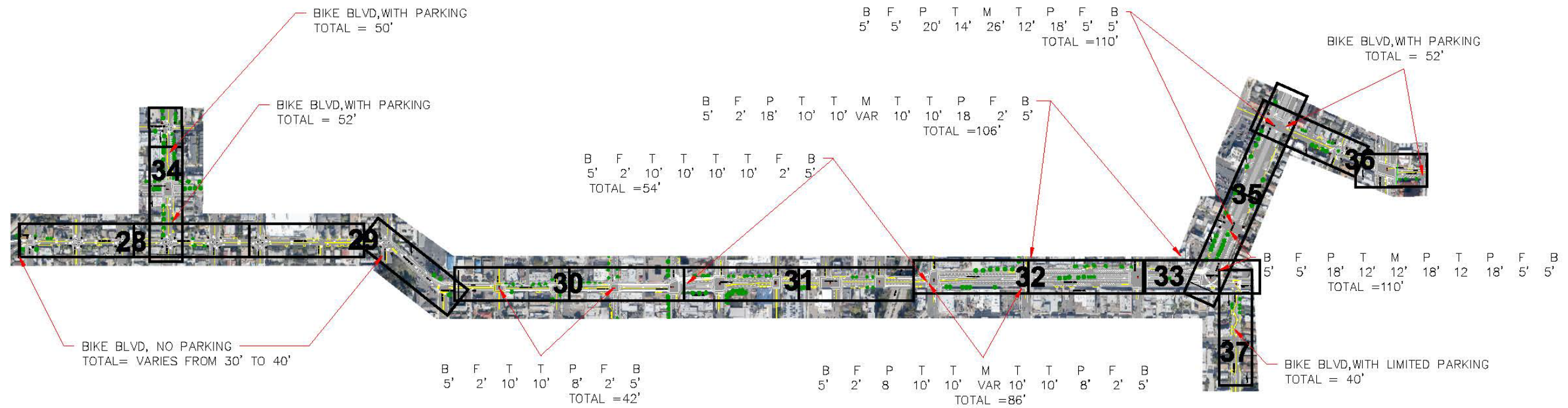




NOTE: THE STREET WAS MEASURED FROM EAST TO WEST

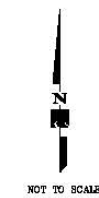


**B = BIKE LANE WIDTH**  
**F = BUFFER**  
**P = PARKING**  
**T = TRAVEL LANE**  
**M = MEDIAN**  
**S = PROPOSED SIDEWALK**



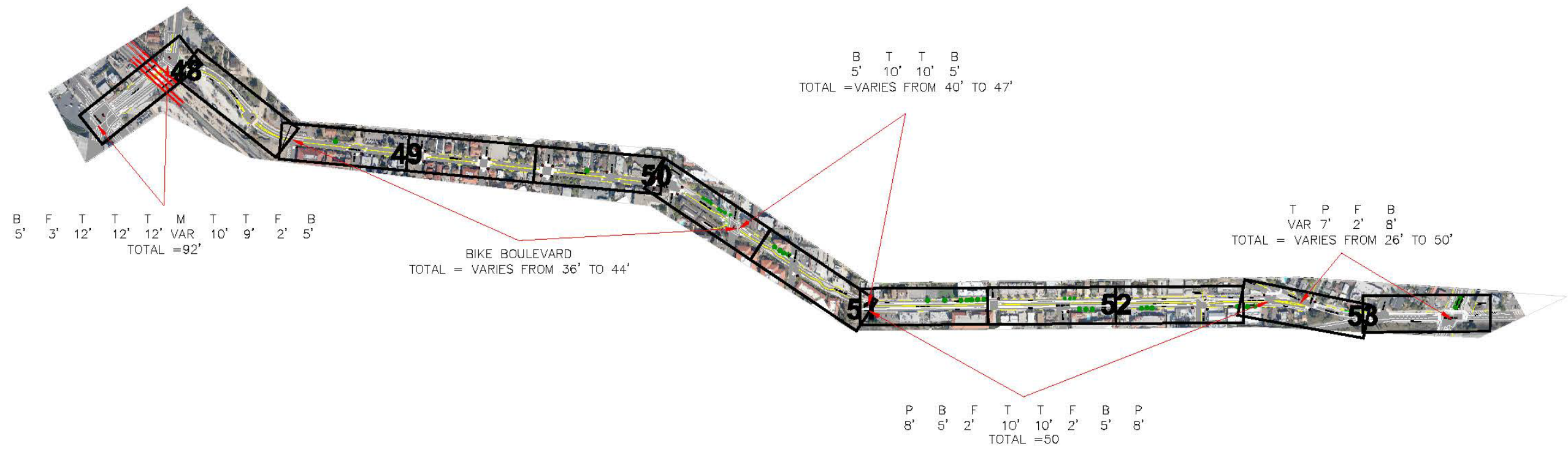
**KEY MAP - UNIVERSITY AVENUE**

NOTE: THE STREET WAS MEASURED FROM SOUTH TO NORTH









**B = BIKE LANE WIDTH**  
**F = BUFFER**  
**P = PARKING**  
**T = TRAVEL LANE**  
**M = MEDIAN**  
**S = PROPOSED SIDEWALK**

### KEY MAP - OLD TOWN CORRIDOR

NOTE: THE STREET WAS MEASURED FROM SOUTH TO NORTH





# Appendix N

## Design Strategies

## General Strategies

### ■ Existing Bulb-Outs

- In general, where there are existing bulb-outs, these bulb-outs are designed to be demoed and then reconstructed to accommodate a straight, protected bikeway.

### ■ Existing Driveways and Bus Stops

- To accommodate existing driveways and bus stops, gaps are designed along protected bikeway buffers to allow vehicles access.

### ■ Striped Protected Bikeway Buffer on Bridges

- It is recommended that the protected bikeway buffer be striped instead of raised at all bridge crossings. Striping will eliminate the need for structural analysis of bridge crossings that would otherwise be warranted with the installation of the heavier raised buffers.

### ■ Traffic Calming Features and Driveways

- The design of traffic calming features was influenced by the number of driveways along residential streets. Traffic calming elements should not be placed in such a manner that they interfere with residents turning into and turning out of driveways.

### ■ Speed Cushions

- Speed cushions are shown in several locations within the concept plans. They are designed as several small speed humps that force vehicles to slow down as they ride over the humps. They are preferred over traditional speed humps because wider axled emergency vehicles can straddle the speed humps without slowing down markedly. Additionally, they are more favorable for cyclist travel and are easier to install and remove than traditional speed humps, while still maintaining a traffic calming effect.

### ■ Summary of Bus Access Strategies

- Bus access may be limited by the turning radii associated with certain traffic circles or mini-roundabouts.
- At some locations, width constraints at the bus stops may result in a conflict with the proposed bike lane.
- Certain bus stop locations require busses to stop in the travel lane.

### ■ Delineators

- Delineators may be used on the project wherever a painted buffer is indicated in the plans.

### ■ High Visibility Crosswalks

- High visibility crosswalks are the default design for crosswalks throughout the project.

### ■ Trash Dumpster Pick-up

- The concept design does not currently indicate dumpster locations. For future phases of design, garbage truck access to these collection points will need to be accommodated.

## 4<sup>th</sup> and 5<sup>th</sup> Avenue

### ■ Right Turn Lanes

- All existing right turn lanes have been removed as part of the concept plans for both 4<sup>th</sup> and 5<sup>th</sup> Avenue corridors.

### Washington Street (Five Points to Hillcrest)

- Parking on Washington Street
  - Currently the concept design shows a street layout on Washington Street East of India Street, with no parking.
- Bikeway terminus at trolley tracks
  - A bulb-out and fence is proposed at the terminus of the protected bikeway on Washington Street adjacent to the trolley tracks. The fence would facilitate sufficient stopping time for fast moving bicyclists if a trolley is on the tracks.
- Lane reconfiguration summary at Washington Street and San Diego Avenue intersection
  - On the southwest side of the intersection, the current three northwest bound through lanes have been converted to two through lanes and one right turn only lane. The conversion was warranted in order to balance the number of through lanes on both sides of the intersection. There are only two through lanes on the northwest side of the intersection (in order to create sufficient room for a protected bikeway).
  - There are currently two left turn lanes on the southeast side of the intersection (northeast bound Washington Street turning onto northwest bound San Diego Avenue). One of these left turn lanes has been eliminated to accommodate a two-way protected bikeway on Washington Street between San Diego Avenue and Hancock Street.

### University Avenue

- 1<sup>st</sup> through 4<sup>th</sup> deviations from Visual Simulations
  - Crosswalk locations deviate slightly from those shown by MIG in previous visual simulations. This deviation was required in order to avoid the pedestrian ramps overlapping with the protected bikeway surface.
- Variation in Protected Bikeway
  - It may be noted that the protected bikeway is painted at the following segments: between 1<sup>st</sup> and 5<sup>th</sup> and between 9<sup>th</sup> and 10<sup>th</sup>.
- Design Vehicle
  - The design vehicle for this corridor was selected to be a single unit truck, which is sufficiently large to ensure access for emergency vehicles. In order to accommodate the single unit truck at proposed mini-roundabouts, the circles will need 5-foot wide mountable aprons. There also may be specific locations where larger trucks will need to be accommodated, and thus influence the type of traffic calming used in the design. One example location is the segment of University adjacent to Vons (on the northeast corner of University and Dove Street). This segment currently accommodates larger delivery trucks, as do the intersections of Albatross and University and Dove and University. It is proposed to provide raised crosswalks for this segment, because they can more easily be negotiated by large trucks than other types of traffic calming devices.
- Bus Access
  - The bus stop at the northwest corner of 4<sup>th</sup> and University will need additional analysis during future design phases to ensure the design vehicle has enough space to make a right hand turn. As well, the bus bulb-out pad width may not be sufficient for Americans with Disabilities Act (ADA) access.

**■ Curbless Bulb-Outs**

- At the intersection of Normal Avenue at University Avenue and Washington Street at India Street, curbless bulb-outs are proposed. These bulb-outs would be delineated by stamped and colored asphalt or concrete. This kind of bulb-out would result in a visual narrowing of the street to provide traffic calming, and at the same time would be mountable for emergency vehicles making turning movements onto northbound Normal Avenue from westbound University Avenue, or onto westbound University Avenue from southbound Normal Avenue. On both corners, this design also provides access for existing driveways.

**■ Traffic Signal Modifications**

- The traffic signal has been removed at the intersections of Goldfinch Street and University Avenue. It is proposed to replace this signal with a traffic circle, also sometimes called a mini-roundabout.
- The traffic signal has been removed at the intersections of Dove Street and University Avenue. It is proposed to replace this signal with a mini-roundabout. It is noted that the traffic signal was installed at this location within the last few years.

**■ Lane Removal**

- Existing right turn lanes have been removed on University Avenue at the following locations:
  - Westbound University Avenue at 5<sup>th</sup> Avenue
  - Westbound University Avenue at 6<sup>th</sup> Avenue
  - Westbound University Avenue at 10<sup>th</sup> Avenue
  - Westbound University Avenue at Vermont Street
  - Westbound University Avenue at Richmond Street
- Existing left turn lanes have been removed on University Avenue at the following locations:
  - Eastbound and Westbound University Avenue at Goldfinch Street
  - Eastbound and Westbound University Avenue at Dove Street
- Existing through lanes have been removed on University Avenue at the following location:
  - Eastbound University Avenue between 5<sup>th</sup> and 6<sup>th</sup> Avenue

**Georgia Street****■ Approach slopes at intersections with mini-roundabouts**

- City of San Diego Street Design Manual 2002 states on Page 80-81, "A mini-circle is a raised circular island placed in the center of an intersection. Mini-circles should not be used where the grade exceeds 5 percent on any approach." Several of the intersections along the Georgia Street segment have approaches which exceed 5 percent. Upon initial review by KOA staff, it is believed that these particular intersections offer sufficient stopping sight distance with the additional enforcement of yield signs placed per CAMUTCD standards. All intersections with proposed mini-roundabouts are recommended to be constructed with accompanying yield signs.

## Park Boulevard

- Left Turn Pockets
  - In order to preserve the left turn pockets and at the same time accommodate a protected bikeways plus parking, the concept design had to eliminate the median at intersections. A double yellow line has been indicated on the plans at these locations, and the line transitions to a median further back off the intersections.
- Signal at Village Place
  - A bike priority phase for the signal at Park Boulevard and Village Place is recommended. This will facilitate people riding bikes making left turn movements from Village Place onto northbound Park Boulevard.
- Lane Transition at Village Place and Park Boulevard
  - The lane transition on the northbound leg of Park Boulevard at Village Place needs further analysis. To the south of Village Place, there is no protected bikeway, so the vehicle travel lanes take up more of the cross section width of the street. Vehicles in the lane furthest to the right will have to transition left, in order to avoid conflicts with the buffer that begins on north side of the intersection.

## Robinson Boulevard

- Summary of Design Strategies for the proposed Roundabout
  - Installation of a roundabout at this location will facilitate the movement of motorized and non-motorized vehicles through this 5-way intersection without a traffic signal and all its associated costs.
  - People with more experience or who are more comfortable riding with traffic will likely move through the roundabout in the shared travel lane, and experience much less delay than with the current existing signalized intersection.
  - For WB-40 trucks (the next size up from a single unit truck) to negotiate the roundabout, the mountable apron must be 5 feet wide at a minimum.
  - Parking spaces will be lost in order to accommodate popouts around the roundabout.
  - The roundabout at Robinson Avenue is conceptually designed as a one-lane roundabout, and it should slow traffic down in all directions while mitigating the sight distance problems created by Park Avenue's curvature through the intersection. Additionally, difficult left turn movements for motorists such as the northbound and southbound left turns from Park Boulevard will become easier and safer.
  - The roundabout will create additional pedestrian islands and reduce pedestrian exposure with conflicting motor vehicle traffic.
  - The roundabout is likely to improve Mid-City Bus Rapid Transit performance, resulting in less delay than with the existing signal.

## Washington Street (3<sup>rd</sup> to 5<sup>th</sup> Avenue)

- Painted Buffer
  - The buffer is painted between 4<sup>th</sup> and 5<sup>th</sup> on the north side of the street to better facilitate buses leaving the adjacent bus stop.
- Reconfiguration of Washington and 3<sup>rd</sup> Avenue.

- It is proposed to reconfigure this intersection as a modified Tucson toucan. This type of facility provides a safe crossing for pedestrians and bicyclists. Left turns for motorized vehicles are eliminated and the signal is phased, so that it can be activated with push buttons by bicyclists or by pedestrians. Bicyclists use a special lane when crossing, and pedestrians get a standard WALK indication and have a separate, adjacent crosswalk. The system uses a standard signal for motorists.

### **3<sup>rd</sup> Avenue**

#### ■ Contraflow Bike Lane

- Between Washington and Lewis, a contraflow bike lane is proposed. Third is a northbound one-way street, and the bike lane on the west side of the street is southbound. Striping is currently being proposed to include a double yellow line and a white parking lane line. In future project striping plans, it is proposed that the white parking stripe will be dashed at driveways.

### **Bachman Place**

#### ■ Curved Bike Lane

- A curved bike lane (within Caltrans right-of-way) is proposed at the intersection of Bachman Place and Hotel Circle South so that cyclists only need to cross the intersection once. Before southbound bikes reach the intersection, it is proposed that they will pass over a bike detector loop to activate the traffic signal. When they get to the intersection, bicyclists would then be able to continue through without pausing.

### **Avenida del Rio**

#### ■ General Design Strategies

- The bike path crosses perpendicularly to Avenida del Rio approximately 75 feet south of the T-intersection (just to the north of the trolley tracks). The 75 feet allows for at least three cars to queue at the stop sign. It also accommodates the bike path fully crossing under the elevated trolley tracks before crossing Avenida del Rio.
- On the west side of Avenida del Rio, adjacent to where the bike path crosses Avenida del Rio, a curve in the bike lane is proposed. A curve is also proposed for the bike lane at Hotel Circle and Bachman Place intersection. The radius of this curve has been calculated to incorporate a 20 degree lean angle for bicycles. Twenty degrees is the recommended design lean angle for bicycles per AASHTO's Guide for the Development of Bicycle Facilities (2012, 4<sup>th</sup> edition, pg. 5-14).
- It is currently proposed that a small segment of bike path will lead into the parking lot of Fashion Valley Mall. The connection will be located at the northeast corner of the parking lot, where Friars Road and the southbound on-ramp for Highway 163 intersect. At the place where the bike path enters the parking lot, one parking space will need to be eliminated in order to accommodate bikes entering the parking lot.

### **Congress Street**

#### ■ Traffic Circles

- For Traffic circles were considered at the intersections of Twiggs and Harney. Placing traffic circles would make turning movements for single unit trucks (like fire trucks) at these intersections infeasible. Thus, as shown on the concept plans, other traffic calming measures were implemented where there was the opportunity. A view of some of the turning templates overlaying the intersections is attached.



## San Diego Avenue

### ■ Noell Street Intersection

- As part of the public process, in particular CAM 4, three alternative treatments were presented for the intersection of Noell and San Diego Avenue. Based on our review of the options, KOA staff feels an all-way stop with additional bulb-outs provides traffic calming and the most placemaking opportunities (potentially in the form of outdoor seating for the adjacent restaurant). To the south of the Noell intersection, an enhanced pedestrian refuge, as well as a stop sign at Pringle and San Diego Avenue, will additionally calm traffic. One of the alternatives for the intersection of Noell and San Diego Avenue was to install a traffic circle, but upon further review, it was deemed infeasible due to constraints put on the turning movements of a single unit truck (like fire trucks). A view of the turning template overlaying this intersection is attached for reference.

### ■ Congress/Ampudia/San Diego Avenue intersections

- In order to calm traffic, an all-way stop in conjunction with pedestrian refuges and high visibility crosswalks is being proposed. This also provides a gateway opportunity to the historic Old Town State Park. Upon initial consideration of this intersection, it seemed that it might be a candidate for a mini-roundabout. However, turning movements from the various angles of the adjacent streets make a roundabout infeasible. It can also be noted that the intersection does not accommodate all emergency vehicle turns and would need to be reviewed for approval by the Fire Department. A view of the turning template overlaying this intersection is attached for reference.

### ■ Signal Phasing

- A bike priority phase could be implemented at the signalized intersections of: Congress Street/Taylor Street, San Diego Avenue/Old Town Avenue, San Diego Avenue/Washington Street.

### ■ Buffered Bikeway

- NACTO's Urban Bikeway Design Guide April 2011 Edition (pg. 21) states, "Buffers should be at least 2 feet wide because it is impractical to mark a zone narrower than that." In order to address this guideline, the painted buffer on San Diego Avenue does not currently show cross-stripping where the buffer is less than 2 feet wide.



# Appendix O

## Future Design Considerations

## General Future Design Considerations

- Pedestrian Crossings
  - In the interest of improving pedestrian crossings, intersections without bulb-out treatments need additional design to improve pedestrian facilities. This is most critical across wider portions of the project alignments.
- Green Pavement
  - Green pavement markings are currently not included at each curb cut and across all intersections. These markings should be analyzed and potentially included in future design.
- Bulb-Out Size and Design
  - Generally, further analysis of bulb-out radii (and size) is warranted.
  - Fire truck turning movements should be accommodated at all intersections, which limits bulb-out radii.
  - Other designs should be looked at, such as mountable curbs, so they meet emergency vehicle requirements without compromising bicycle, pedestrian, and traffic calming objectives.
- Fire Hydrants, Emergency Access, and Protected Bikeways
  - KOA has received input from the San Diego Fire/Rescue Department, Deputy Fire Marshal/Fire Plans Officer about clear space preferences for fire hydrants. The Deputy Fire Marshal recommends 40 feet of clear space adjacent to the hydrant (31' truck length, 6' for locating hydrant, 3' departure length). This would mean eliminating raised buffers at any locations where there are fire hydrants. The concept design does not currently indicate fire hydrants or design accommodations adjacent to them.
- Driveways and Parking Pertaining to Sight Distance along Protected Bikeways
  - Per NACTO guidelines regarding driveways, "If the cycle track is parking protected, parking should be prohibited near the intersection to improve visibility. The desirable no-parking area is 30 feet from each side of the crossing." To accommodate these no-parking guidelines in future phases of the design, additional parking spaces may need to be removed.
- Summary of Future Bus Access Considerations
  - It is recommended that during subsequent design phases Americans with Disabilities Act (ADA) access considerations be thoroughly reviewed for all bus stops.
  - Locations where the busses stop may result in blocking crosswalks at some locations, and so this issue needs further analysis.
- Traffic Signal Modifications
  - Traffic signal modifications may be necessary at various locations to accommodate bicycle movements.
- Street Surfacing
  - Coordination with the City department responsible for street resurfacing projects needs to be conducted to both gain information on current pavement conditions and provide for avenues of collaboration for the Uptown Bike Project as a whole.
- Design Concepts and Parking Reduction
  - Future design will focus on providing optimal bikeways and access for both pedestrians and cyclists. On-street parking reduction should be minimized where possible, but design concepts

should not be abandoned solely on on-street parking reduction. To meet these ultimate design objectives, accurate parking analysis needs to be conducted throughout the design process.

#### ■ Fire Department Approvals

- All intersections with unusual turning movements will need to be reviewed and approved by the Fire Department to ensure emergency vehicle access is not compromised.

#### **4<sup>th</sup> and 5<sup>th</sup> Avenue**

#### ■ Pedestrian Improvements

- Based on community input including the Banker's Hill Residents Group, bulb-outs and pedestrian refuges will be analyzed and potentially designed along 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> Avenues along the cross streets of Elm, Grape, Juniper, Laurel, Nutmeg, Quince, Spruce, and Upas to help facilitate pedestrian access to the park.

#### **Washington Street**

#### ■ Parking on Washington Street

- While the current concept plans do not show any parking for Washington Street, East of India Street, parking will be analyzed in future design. Conceptually, KOA will look at three to four different scenarios concerning the inclusion or exclusion of parking along Washington Street East of India Street.

#### ■ Downhill Speed

- For the downhill portion of Washington, it was noted at CAM 4 that a means of slowing bicyclists down on this steep grade is desired by the public. The concept plans do not currently indicate this concern. This will need to be analyzed further.

#### **University Avenue**

#### ■ Bus Rapid Transit (BRT) Project

- The BRT Project is under construction at the intersection of Lincoln Avenue and Normal Street. The design includes a new traffic signal. Bike facility options may be further analyzed at subsequent phases of the design.

#### ■ Bus Access

- Access for the Route 10 bus along University needs to be further analyzed. There also may be additional parking losses due to accommodating bus stops for this route.

#### ■ Delineators

- A specific location that is a good candidate for delineators is at Normal Avenue and University Avenue on the south side of the intersection. The delineators would separate the bikeway from eastbound traffic.

#### **Georgia Street**

#### ■ Street Surfacing

- Preliminary indications suggest the City of San Diego has undertaken a crack sealing program for the Georgia Street segment. This may suggest a deteriorating pavement condition that should be addressed prior to investing in the enhancement of bike facilities.

#### ■ Americans with Disabilities Act Corner Ramps

- The Georgia Street segment has a number of new ADA ramps, which have been installed by the City. In reviewing revisions to intersection corners, it may be of value to assess with the City the need to preserve any of this recently installed infrastructure, but not at the expense of traffic calming determined necessary at intersections where ADA ramps have been recently installed.

### **Park Boulevard**

#### ■ Lane Transition at Village Place and Park Boulevard

- The lane transition on the northbound leg of Park Boulevard at Village Place needs further analysis. To the south of Village Place, there is no protected bikeway, so the vehicle travel lanes take up more of the cross section width of the street. Vehicles in the lane furthest to the right will have to transition left, in order to avoid conflicts with the buffer that begins on north side of the intersection.

#### ■ Potential Streetlight Relocation

- The existing median between Village Place and Upas Street has street lighting. Modifications to the median may result in the need to relocate street lights.

#### ■ Street Trees

- The existing median from Village Place to Morely Field Drive has street trees. Modifications to the median may result in the loss of street trees. City of San Diego Municipal Code Chpt. 14, Art. 2, Div. 4, pg. 7, trees need a minimum of 40 square feet for the root zone, with a minimum dimension is 5 feet unless structural soil is used; root barriers are needed if a tree is within 5 feet of public improvement.

#### ■ Intersection of Park Boulevard and Pennsylvania Avenue

- For people riding bikes intending to turn north from eastbound Pennsylvania Avenue, they currently need to share the vehicle travel lane until the roundabout at Robinson and Park. An opening in the raised buffer at Pennsylvania could also be created; however, it ends shortly after the Pennsylvania intersection as northbound Park Boulevard transitions to the roundabout at Robinson Avenue. Either the buffer could be painted or a sharrow could be placed in the travel lane immediately after Pennsylvania.

### **Robinson Boulevard**

#### ■ Summary of Future Design Considerations for the Roundabout

- People who are less comfortable riding with traffic can navigate the proposed roundabout through a series of shorter cross walks with multiple refuge islands. However, this type of cyclist travel needs to be carefully analyzed throughout the design phase to make it accommodating and intuitive.
- In order to prevent trucks that are eastbound on Robinson Avenue turning right onto southbound Park Boulevard, a large popout is proposed. Further consideration should be taken to see if the space created could be promoted as public plaza space. An example of such a public plaza would be San Francisco's Castro District. To provide more continuous plaza space, further design can look at swinging the bikeway out.
- Further analysis may need to be conducted on adjacent driveways as they may be a design constraint that will affect popout dimensions, as well as crosswalk locations. For parcels with

two driveways, permanently closing one driveway could be considered. Creating a database of specific properties that will be affected by changes to curb cuts of on-street parking immediately adjacent to specific properties may be necessary to use for outreach. As design progresses, affected properties could be entered.

- Acquisition of right-of-way also may be necessary.
- Sharrows cannot be placed in a 2-lane roundabout, but initial research does not appear to find definitive literature prohibiting placement of sharrows for a 1-lane roundabout. The roundabout at Robinson Avenue is conceptually designed as a 1-lane roundabout, and KOA staff recommends installing sharrows. Further analysis of sharrow installation at roundabouts will be part of subsequent design phases.
- Landscaping opportunities along the center of the roundabout, as well as placemaking opportunities should be researched and expanded on through the design phase.
- Coordination will need to be conducted with Metropolitan Transit System to make sure that the roundabout meets all of their bus route needs as well.
- Further analysis is needed to determine whether a roundabout at Robinson Avenue has the capacity to handle peak traffic movements.
- Queuing analysis needs to be conducted between Park at University and Park at Robinson using VISSIM. As part of this queuing analysis, southbound vehicle queues need to be closely looked at as they may block the intersection of Park Boulevard and Robinson Avenue at certain peak times.
- Sidewalks will need to be adequately sized to prevent conflicts between people walking and people biking who choose not to ride within the roundabout.
- Traffic flow will need to be carefully considered and addressed in the design phase due to the possibility that a roundabout here may create a continuous stream of traffic heading away from the roundabout, so that pedestrians and motorists may find it difficult to cross Park Boulevard downstream.

### **Washington Street (3<sup>rd</sup> to 5<sup>th</sup> Avenue)**

#### **■ Bus Stop Location**

- A bus stop is currently shown at the northwest corner of Washington and 5<sup>th</sup> Avenue. To better accommodate the buffered bike lane at this location, a bus bulb-out could be an appropriate design for the bus stop. However, a bus bulb-out does not fit at this location unless one of the travel lanes is eliminated. It may be preferable to move the bus stop to the northwest corner of Washington and 4<sup>th</sup> since there is space for parking at that location. The parking could be eliminated and a bus bulb-out could be installed without blocking a travel lane. This will need to be further analyzed at later design phases.

#### **■ Traffic Signal**

- CTCDC approval may be required for potential experimental phasing at the intersection of 5<sup>th</sup> Avenue and Washington. It is proposed that the traffic signal phase at this intersection will include a bicycle only or early bike phase.

### 3<sup>rd</sup> Avenue

#### ■ Contraflow Bike Lane

- 3<sup>rd</sup> Avenue between Washington and Lewis also could be converted to angled parking on the east side, providing approximately the same number of spaces as the standard parking on both sides of the street. An advantage of this alternative configuration is that cars would not have to cross over the southbound bike lane when they maneuvered into and out of parking spaces. The disadvantage is that parking would only be offered on one side of the street, and residents may not view this favorably. If there are the same number of spaces with angled on one side of the street, that would be preferable for the bikeway design, provided it is back-in parking. Benefits to back-in angled parking are as follows:
  - **Bicyclist Safety:** Drivers are able to see cyclists easily when they exit the stall. Throughout the country, the reporting of bike/car accidents per month drops when back-in angle parking is adopted.
  - **Increased visibility:** When backing in, the driver is in control of his lane, vs. traditional parking.
  - **Safety:** One of the most common causes of accidents is people backing out of standard angled spaces without being able to see on-coming traffic.
  - **Convenience:** Vehicular loading, particularly in the trunk area, can be loaded from the sidewalk.

### Bachman Place

#### ■ Downhill Speed

- For the downhill portion of Bachman, it was noted at CAM 4 that a means of slowing bicyclists down on this steep grade is desired by the public. The concept plans do not currently indicate this concern. This will need to be analyzed further.

#### ■ Bike Rest Areas

- It is proposed to construct a small bike rest stop on the uphill portion of Bachman Place, south of Hotel Circle. This rest stop could include bike rest bollards or a bike rest bar. See photos:



Bike rest bollard ([www.dezeen.com/2013/02/12/bikers-rest-by-marcus-abrahamsson-for-nola](http://www.dezeen.com/2013/02/12/bikers-rest-by-marcus-abrahamsson-for-nola)):



Bike rest bar ([www.copenhagenize.com/2010/01/holding-on-to-cyclists-in-copenhagen.html](http://www.copenhagenize.com/2010/01/holding-on-to-cyclists-in-copenhagen.html)):



## Avenida del Rio

### ■ Project Limits

- It was discussed between SANDAG and KOA staff if the project limits should be moved to incorporate bike access along Fashion Valley Road. The concept plans are detailed from Avenida del Rio to Ulric Street. This segment, along Avenida del Rio to Ulric Street, will not be designed further in the engineering design phase. SANDAG will discuss with KOA whether the segment of Fashion Valley Road (between San Deigo River Trail and Friars Road) should be added to the engineering design phase.