



## CHAPTER 11: SUMMARY OF FINDINGS AND CONCLUSIONS

Over a thirteen (13) month period, the Project Team, Project Working Group, and Community worked together to establish the comprehensive University Avenue Mobility Plan for the University Avenue Corridor between 54<sup>th</sup> Street and 69<sup>th</sup> Street. Three (3) options for the University Avenue Mobility Plan were developed, with each option providing different levels of improvements along the corridor. Although all three (3) options for the University Avenue Mobility Plan addressed a majority of the mobility issues/concerns that were raised for the corridor, Option 1 was identified as the preferred/recommended option. By coordinating closely with the community, the Technical Project Team was provided regular feedback on the analysis and recommendations prepared for the corridor. As a result, the majority of the improvements identified in this study were supported by the Project Working Group.

### 11.1 IMPROVEMENT OPTIONS AND SELECTION HISTORY

The purpose of the study was to provide alternative designs that would improve mobility and meet future demands. Each of the options would provide corridor improvements to meet the future 2030 demand for vehicles, pedestrians, bicycles and transit. These improvements include elimination of free right turns at 54<sup>th</sup> Street and 58<sup>th</sup> Street, addition of dual left turn lanes at 54<sup>th</sup> Street and College Avenue, and upgrades of all traffic signals to include countdown pedestrian heads, bicycle detection and ADA upgrades. Each option also includes continuous accessible sidewalks, curb ramps at all intersections, improvements to public transit stations and associated drainage and utility relocations to accommodate these improvements.

Beyond the basic criteria, alternative concepts were considered for each of the four main segments, 54<sup>th</sup> Street to 58<sup>th</sup> Street, 58<sup>th</sup> Street to College Avenue, College Avenue to Aragon Drive and Aragon Drive to 69<sup>th</sup> Street to consider the tradeoffs between the various modes of transportation. A Working Group of seventeen community members was established to help define project goals, develop a rating system for the elements of the project (further described under the “measures of effectiveness”) and distribute information to their respective groups and solicit input from the community at large. Community walk audits were conducted to further understand concerns and needs. Three community workshops were held to introduce options and further identify community needs and solicit input on the potential elements of the plan. Based on engineering analysis and input from the community a number of concepts were eliminated from consideration over the course of the study. Ultimately the 3 Options presented in Chapter 7 were completed. Each option provides improvements to the corridor that meet the initial requirements and provides options to improve pedestrian, bicycle and transit needs with varying trade offs for parking and vehicular access. Based on the measures of effectiveness, input from the community and our engineering analysis, Option 1 provided the best balance for all modes of transportation and was selected as the preferred option with concurrence from the Working Group and the Eastern Planning Area Committee. The following provides a summary

In the first segment between 54<sup>th</sup> Street and 58<sup>th</sup> Street, the placement of dedicated bike lanes and raised medians was compared to the need for maintaining parking. The existing improvement width would not allow for addition of bike lanes without removing parking or obtaining additional right of way. Based on the engineering analysis of parking demand in this segment, input from the community and assessment of the measures of effectiveness (described in Chapter 2 and Chapter 7), it was not considered necessary to maintain parking at the expense of bike lanes or raised medians. Therefore all three final options for this segment include the same



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improvements for bike lanes, limited parking and raised medians to limit cross traffic. Significant improvements are proposed for this segment which are consistent with the minimum level of improvements. These improvements include elimination of the free right turns at 54<sup>th</sup> Street and 58<sup>th</sup> Street which will significantly improve safety for all modes of transportation. The Chollas intersection will be realigned to provide a signalized tee intersection and eliminate the sight distance challenge at the existing skewed intersection. The new intersection also provides a shorter distance between safe cross walks along the portion of the corridor.

The segment between 58<sup>th</sup> Street and College Avenue provides a wide pavement section with a raised median. Sight distance is often obstructed by large commercial trucks that park on the south side of the street between 58<sup>th</sup> Street and 60<sup>th</sup> Street. A high demand bus stop is located on the north side of University Avenue at the University Square driveway with inadequate waiting area and poor access to the community to the north. Improvements to the bus stop with an ADA ramp and stairs to the north were considered essential for all options. A number of options were considered to reconfigure the lanes and eliminate truck parking. Based on engineering analysis and input from the community only two configurations were considered viable for this segment. One option eliminates parking on both sides of the street, maintains the existing travel lane configuration (3 east bound lanes and 2 west bound lanes) and adds bike lanes. The second option also eliminates parking and adds bike lanes and reconfigures the travel lanes to provide two standard lanes and a dedicated transit lane in each direction. While the transit lane would tend to improve travel time, the distance was considered too short to be significant. The preferred configuration is depicted in Option 1 with standard travel lanes.

The segment between College Avenue and Aragon Drive provides two travel lanes, parking and a center turn lane. There are a significant number of driveways along the corridor most of which do not meet current City standards. The parking configurations within private properties along the corridor in general do not meet current standards and often encourage uncontrolled access across the public sidewalk and parking encroachments into the public right of way. Construction of standard driveways, standard sidewalks and elimination of encroachments into the right of way is an essential part of all options for this segment. Three options are provided to improve pedestrian and bicycle mobility with varying impacts on parking and access. Option 1 provides a configuration with a 7 foot parking lane, 5 foot bike lane and two 11 foot travel lanes in each direction with a 12 foot raised center median. The lane widths are narrower than the existing lane widths, but still within City Standards. The narrow lane widths tend to reduce travel speeds with a traffic calming effect. The Center median would replace the existing two way left turn lane thereby eliminating the uncontrolled mid-block crossings and providing an opportunity for future landscaping. Option 2 considers elimination of parking on the south side of the road and placement a 6 foot bike lane with a raised median. This option provides for wider bike lane at the expense of parking. Option 3 provides the same lane configuration as option 1, maintains parking and adds curb popouts at the intersection. The curb popouts shorten the distance for pedestrians crossing the street and provide opportunities for enhanced sidewalks at the larger corners. Because of the limited street width, the addition of popouts precludes U-turn movements at the intersections. Under this scenario the center two way striped turn lanes would be maintained to allow access to businesses. Based on our engineering analysis of parking demand and turning movements together with the ratings defined by the measures of effectiveness and input from the community, Option 1 was selected as the preferred option as the better balance for all modes of transportation maintaining parking in this area of high demand but still adding bicycle lanes, limiting mid block cross traffic and providing opportunities for future landscaping.



The segment between Aragon Drive and 69<sup>th</sup> Street provides two travel lanes and parking in each direction with a landscaped raised median. Because the existing raised median is in good condition and the landscape maintenance is provided by the Kroc Center this amenity is maintained in all options. Due to the limited width of the existing street section, addition of dedicated bike lanes requires elimination of parking. Parking on the north side is in high demand because of the adjacent existing multifamily residential. There are a number of major transit stops on the south side of the street that use the parking lane. Major events at the Kroc Center will tend to increase the on street parking demand. Option 1 maintains parking on both sides of the street and adds sharrows for a share the road designation to improve awareness from bicycles. Option 2 eliminates parking and provides bike lanes in each direction. Option 3 eliminates parking and adds a dedicated bike lane on the south side only and uses sharrows on the north side. Based on the parking demand, the measures of effectiveness and input from the community, Option 1 was selected as the best balance to address all modes of transportation.

The preferred/recommended option (Option 1) for the University Avenue Mobility Plan included improvements such as:

- Five-foot (5') dedicated bike lanes between 54<sup>th</sup> Street and Aragon Drive,
- Sharrow stripping (shared bicycle/vehicle/parking lane) between Aragon Drive and 69<sup>th</sup> Street,
- Addition of raised medians between 54<sup>th</sup> Street and Aragon Drive,
- Limited parking between 54<sup>th</sup> Street and College Avenue,
- Dedicated parking lanes between College Avenue and Aragon Drive;
- Elimination of free right turns at 54<sup>th</sup> Street and 58<sup>th</sup> Street; and
- Realignment and signalization of Chollas Parkway intersection.

In identifying improvements for the University Avenue Study Corridor, the Technical Project Team focused on changes within the existing right-of-way. This study focused on identifying short to medium term improvements that would address existing or near term mobility issues. There are several large parcels on the north side of University Avenue west of 58<sup>th</sup> Street that provide the potential for future development and redevelopment opportunities. The impacts associated with the potential redevelopment opportunities were not part of the scope of this study.

### 11.2 TRAFFIC FLOW IMPROVEMENTS

Overall, the improvements identified in the University Avenue Mobility Plan do not directly improve nor degrade the roadway segment operations based on the volume-to-capacity ratio methodology adopted by the City of San Diego. All segments of University Avenue along the study corridor will operate at an acceptable LOS C or better under 2030 conditions with either option of the proposed University Avenue Mobility Plan. The benefits of the improvements identified in the University Avenue Mobility Plan; however are demonstrated in the improvements to the intersection levels of service and travel time.

Implementation of any of the three (3) options of the University Avenue Mobility Plan results in improved operations at the following intersections when the 2030 No Build conditions are compared to the 2030 with recommended improvements conditions:

- University Avenue/Chollas Parkway: PM Peak hour LOS F to LOS B;
- University Avenue/College Avenue: PM Peak hour LOS F to LOS D.

With implementation of any of the three (3) options of the University Avenue Mobility Plan all intersections along the University Avenue Mobility study corridor will operate at an acceptable LOS D or



better under 2030 conditions with either option of the proposed University Avenue Mobility Plan.

Implementation of any of the three (3) options of the University Avenue Mobility Plan results in improved operations based on travel times on the following roadway segments when the 2030 No Build conditions are compared to the 2030 with recommended improvements conditions:

- Westbound University Avenue-between College Avenue and Salvation Driveway:
  - AM Peak Hour - LOS E to LOS D
  - PM Peak Hour – LOS F to LOS D
- Westbound University Avenue-between 54<sup>th</sup> Street and Salvation Driveway:
  - PM Peak Hour - LOS E to LOS D

With the implementation of either option of the University Avenue Mobility Plan, the Year 2030 average travel speeds along the study corridor are projected to operate at an acceptable LOS D or better.

### 11.3 PARKING IMPROVEMENTS

Based on the information received from a review of the existing conditions in the field, Community Workshops, Project Working Group Meetings, and Walk Audits some of the key parking related issues that were noted for the study corridor included:

- A concern about the large trucks parking on University Avenue west of College Avenue;
- Illegal parking east of College Avenue; and
- Parking in the public right-of-way.

The majority of the community expressed that they could accept some loss of parking along the corridor as long as any improvements made strived to maintain the on-street parking on the north side of University Avenue between Cartagena Drive and Rolando Boulevard and between Aragon Drive and 69<sup>th</sup> Street.

Each option of the University Avenue Mobility Plan included improvements to improve the parking issues. A summary of the parking improvements included in the preferred/recommend option (Option 1) include:

- With Option 1, parking would be eliminated along the segment of University Avenue between 54<sup>th</sup> Street and College Avenue with the exception of the 300 foot long segment on the north side of the road west of 58<sup>th</sup> Street where the existing pavement is wide enough to allow parking.
- Option 1 proposes to provide seven-foot (7') parking lanes on both sides of the road along the segment of University Avenue between College Avenue and Aragon Drive.
- Between Aragon Drive and 69th Street, Option 1 proposes to provide a one (1) twenty-one-foot (21') wide sharrow (shared bicycle/vehicle/parking lane) on each side of the road.

### 11.4 PEDESTRIAN IMPROVEMENTS

Based on 2011 pedestrian data, there were only four (4) intersections along the University Avenue Corridor where pedestrian crossings exceeded 100 during the AM or PM peak hour. By the year 2030, there were projected to be seven (7) intersections along the corridor with 100 or more pedestrian crossings during the AM or PM peak hour. The increase in pedestrian activity warranted evaluation of existing pedestrian facilities to ensure that pedestrian capacity on sidewalks is being met.



A review of the pedestrian activity found that the majority of the pedestrian traffic along the University Avenue Corridor occurs west of Rolando Boulevard with the highest peaks occurring at the intersections of University Avenue/54<sup>th</sup> Street and University Avenue/College Avenue. The peak in pedestrian activity at these two (2) intersections is primarily due to the location of the bus transfer stations that exist at 54<sup>th</sup> Street and College Avenue.

A review of the existing conditions found that there are either missing or poor sidewalk conditions along most of the University Avenue Mobility study area with the majority of the problems occurring between College Avenue and Aragon Drive. Additionally, there was found to be a total of 555 feet of sidewalk along the University Avenue Corridor that provided less than 48 inches (4 feet) of clearance and was thus concluded to be obstructed. In addition to missing and obstructed sidewalk, existing field reviews found that there are a total of ten (10) missing curb ramps at four (4) intersections (University Avenue/Chollas Parkway; University Avenue/60<sup>th</sup> Street; University Avenue/Cartagena Drive; and University Avenue 68<sup>th</sup> Street) along the study corridor.

These pedestrian mobility issues were pointed out by the community during the Community Workshops, Project Working Group Meetings, and Walk Audits as the Pedestrian Walkability along the majority of the University Avenue Corridor, with the exception of the segment between College Avenue and Bonillo Drive was ranked poorly by the majority of the walk auditor participants.

The University Avenue Mobility Study looked at existing conditions along the corridor and identified projects that would improve the overall pedestrian environment. The following summarizes some of the key components that were included in the University Avenue Mobility Plan that will improve the pedestrian connectivity and walking environment:

- New or improved curb ramps to meet current ADA Standards. (This improvement is part of all three options.)
- New sidewalks. (This improvement is part of all three options, although some options have more sidewalks added than others.)
- Upgraded traffic signals with bicycle loop detection, ADA push buttons, and pedestrian countdown heads. (The improvement is part of all three options.)
- Reduce pedestrian crossing distances and improve pedestrian/bicycle and vehicle safety by eliminating free right turns at 54th Street and 58th Street. (This improvement is part of all three options.)
- New signal at re-aligned University Avenue/Chollas Parkway intersection provides additional protected pedestrian crossing. (This improvement is part of all three options.)
- The northeast corner of 58th Street and northwest corner of 60th Street would be widened to provide a wider plaza area for pedestrians (This improvement is part of all three options.)
- Curb pop outs would be provided at intersections to provide traffic calming and shorten the pedestrian crossing lengths. (Curb pop-outs are generally only provided as part of Option 3.)
- Tree wells/trees could be added to intersections to provide additional shade for the pedestrians.





### 11.5 BICYCLE IMPROVEMENTS

Based on 2011 data, approximately 255 bicycles were observed during the AM peak period and 354 bicycles were observed during the PM peak period at the key intersections along the University Avenue Corridor. By the year 2030, bicycle activity along the University Avenue Corridor is projected to increase to 590 during the AM peak period and 790 during the PM peak period. The highest bicycle activity along the University Avenue Corridor occurs at the University Avenue/54<sup>th</sup> Street intersection.

The absence of bike lanes or bikeways along the University Avenue Corridor is a major concern. The University Avenue Corridor is identified in the Mid-Cities Community Plan and City’s Bicycle Master Plan as having a Class II Bike Lane; however, there are no posted signs to identify this segment of University Avenue as a bike route. Therefore, a key component of the University Avenue Mobility Study was to identify ways to provide Class II Bike Lanes or at a minimum a Class III bike route along the University Avenue Corridor where feasible.

Elements included in the preferred/recommend option (Option 1) of the University Avenue Mobility Plan that will improve the bicycle riding environment include:

- Provision for a five-foot (5’) dedicated bike lane with a two-foot (2’) striped buffer between the adjacent travel lane along both the north and south sides of University Avenue between 54th Street and College Avenue.
- Between College Avenue and Aragon Drive, Option 1 provides for a five-foot (5’) bike lane adjacent to a seven-foot (7’) parking lane along both the north and south sides of University Avenue.
- Between Aragon Drive and 69th Street, Option 1 provides for one (1) twenty-one-foot (21’) wide sharrow lane (shared bike/vehicle/parking lane) along both the north and south sides of University Avenue.

### 11.6 TRANSIT IMPROVEMENTS

Based on the average daily ridership provided by MTS (January 2011), the corridor has 3,195 daily trip ends. The majority of ridership leaving the corridor is in the westerly direction. The Bus Route 7 carries the majority of riders.

By the Year 2030, the University Avenue Corridor is anticipated to have a total of 3,830 trip ends, with Route 7 having 3,100 trip ends (1,510 eastbound, 1,590 westbound) and Route 10 having 730 trip ends (520 eastbound, 210 westbound). Per discussions with MTS, the existing bus supply should be able to adequately accommodate the additional transit ridership.

If no improvements are made to the corridor, the segment of University Avenue between College Avenue and Salvation Driveway is projected to operate at LOS E in the westbound direction during the AM peak hour and LOS F during the PM peak hour under 2030 conditions by the year 2030, and the University Avenue/College Avenue intersection is also forecasted to operate at LOS F during the PM peak hour. These changes to traffic operations will have a direct impact on the operations of transit operations along the corridor. Slower run times and longer wait times for buses will result in impacts to bus on-time performance.



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In addition to reviewing ways to improve traffic flows along the corridor to maintain/improve the transit on-time performance, per field reviews of the existing transit stops, and discussions with the community members the University Avenue Mobility Study also looked at ways to improve pedestrian access to the transit stops, providing better transit stop locations, and improving the transit stops themselves where feasible.

Elements of the University Avenue Mobility Plan that will improve the accessibility and/or appeal of the transit stops along the corridor include:

- Bus Pads would be added at all transit stops.
- Several bus stops along the corridor would be relocated to provide a more accessible/appealing location. Please refer to the University Avenue Mobility Plan illustrations located at the end of this chapter for the specific bus stops that are being relocated.
- The station area at the University Square Bus Stop on the north side of University Avenue (Bus Stop 4W) would be enlarged and a pedestrian ramp would be added to provide direct access for the housing located to the north on the frontage road between 58<sup>th</sup> Street and 60<sup>th</sup> Street.
- The bus stop areas at 54<sup>th</sup> Street, 58<sup>th</sup> Street, 60<sup>th</sup> Street westbound, Cartagena Drive westbound, and Aragon Drive westbound would be enlarged to improve the waiting area.
- Access to all bus stops along the corridor would be improved.
- Consideration was given to providing a combined transit and bike lane along both the north and south sides of University Avenue between 54th Street and College Avenue. There is adequate room within the existing right-of-way to accommodate this type of scenario. Joint uses of bicycle and transit have been tried in several other jurisdictions; however, this use is not currently allowed per the California Vehicle Code and was therefore not included in any of the proposed options at this time.
- Option 2 would provide a dedicated transit lane along the south side of University Avenue lane between 58th Street and College Avenue. The dedicated transit lane should help decrease the delay experienced by the transit vehicles which could help improve the efficiency of the transit vehicles operating schedule and thus make transit more appealing.

### 11.7 COST AND IMPLEMENTATION

In total, the construction costs for the proposed project improvements are estimated to exceed \$22 million (in 2011 dollars). Additional costs that should be anticipated, but not included in this estimate include additional potential right-of-way acquisition, potential legal costs associated with closing/relocating a property owner's driveway, future landscaping of the medians, drainage studies, and preliminary design of storm drainage systems.

With over \$22 million in improvements and only limited funding in the order of \$600,000 being available in the coming fiscal year for the project, the elements of the project will need to be implemented in a series of phases. To assist the City in identifying the priorities of the improvements along the University Avenue Corridor, each of the major intersection and segment improvements were ranked based on safety and mobility considerations.



The highest priority was assigned to the 54<sup>th</sup> Street intersection improvements which would significantly improve traffic safety by eliminating the free right turns. Additionally, the improvements to the intersection would provide an opportunity to improve the entrance into the community. The costs associated with the 54<sup>th</sup> Street intersection improvements exceed the anticipated funding levels available. Additional funding on the order of \$1.4 million would be needed to proceed with this project in the initial phase.

As an alternative, smaller projects that could be completed within the funding available were considered. Striping is relatively inexpensive and could be completed in some areas ahead of the physical improvements. The new dedicated bike lanes could be stripped from 58<sup>th</sup> Street to Aragon Drive. The physical improvements would be limited to addition of bike loops at the signalized intersections. The sharrow striping could be added from Aragon Drive to 69<sup>th</sup> Street. Striping of the dedicated bike lanes from 54<sup>th</sup> Street to 58<sup>th</sup> Street could not be completed without the major improvements west of 58<sup>th</sup> Street, but the total length from 58<sup>th</sup> Street to 69<sup>th</sup> Street would provide a benefit to mobility. Striping of the bike lanes between 58<sup>th</sup> Street and 60<sup>th</sup> Street has the added benefit of eliminating parking on the south side of the street. The cost of these improvements is approximately \$570,000 and is within the \$600,000 budget. The condition of the westbound bus stop across from the University Square Driveway creates a safety issue. This bus stop could be expanded and the walkway to the north could be added independently from the sidewalk improvements. An additional \$400,000 would be needed in order to include this option with the striping improvements. As an alternative to dedicating the current funding to a construction project, the funding could be used for final design of a major project. Based on current estimates, final construction documents could be completed for the 54<sup>th</sup> Street and 58<sup>th</sup> Street intersections and the improvements between 58<sup>th</sup> Street and 60<sup>th</sup> Street. These improvements have been identified as number 1 and number 3 priorities as it relates to safety and mobility. Completed construction documents would give more complete data to the City to use for obtaining construction funding and could improve the overall schedule for advancing these projects.

### 11.8 NEXT STEPS

There are many steps that will occur before any of the improvements identified in this study can be constructed. This study should be used as the guiding document for improvements within the study area and will be helpful in completing future environmental assessment, grant funding applications, and gathering community support for improvements.

Integration into the Community Plan Update and Capital Improvement Program: As local Community Plans undergo the process of updating the Mobility Elements, the elements of this plan should be considered by the community and integrated, as appropriate, into the Mid-Cities Community Plan. Based on the prioritization of projects and the funding sources available, short term projects should be considered for the City's Capital Improvement Program (CIP).

Environmental Documentation: Traffic operation analysis conducted for this report is consistent with the traffic study requirements established for the City of San Diego. Therefore operation analysis of the key intersections could be used in the development of environmental documents to support elements of the project. Traffic signal warrants could be used to justify the implementation of the new traffic signal at the University Avenue/Chollas Parkway intersection.

Grant Application Materials: Conceptual design plans and cost estimates are effective tools that the City could use to pursue grant funding opportunities that could lead environmental documents, final design, and construction. Digital files of the conceptual engineering and cost estimates as well as the traffic operational analysis files were provided with this document to the City for use in future phases of the project.

There are many ways the City and the community could utilize the analysis prepared as part of this project.





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Community Planning Groups have the technical information necessary to identify high-priority projects and work with the local government in seeking funding to complete those elements that could resolve current mobility issues along the University Avenue Corridor.



## 11.9 CONCLUSION

The Technical Project Team would like to thank all the volunteers and community members who participated in the development of this plan. The countless hours of meetings attended by the Project Working Group, the active participation by the community at the workshops, and the hard work by the technical team resulted in a plan that identifies feasible solutions for the University Avenue Corridor. The concepts identified in this study are a starting point and could be used to attract both potential funding sources as well as community support for much needed mobility improvements along the University Avenue Corridor.