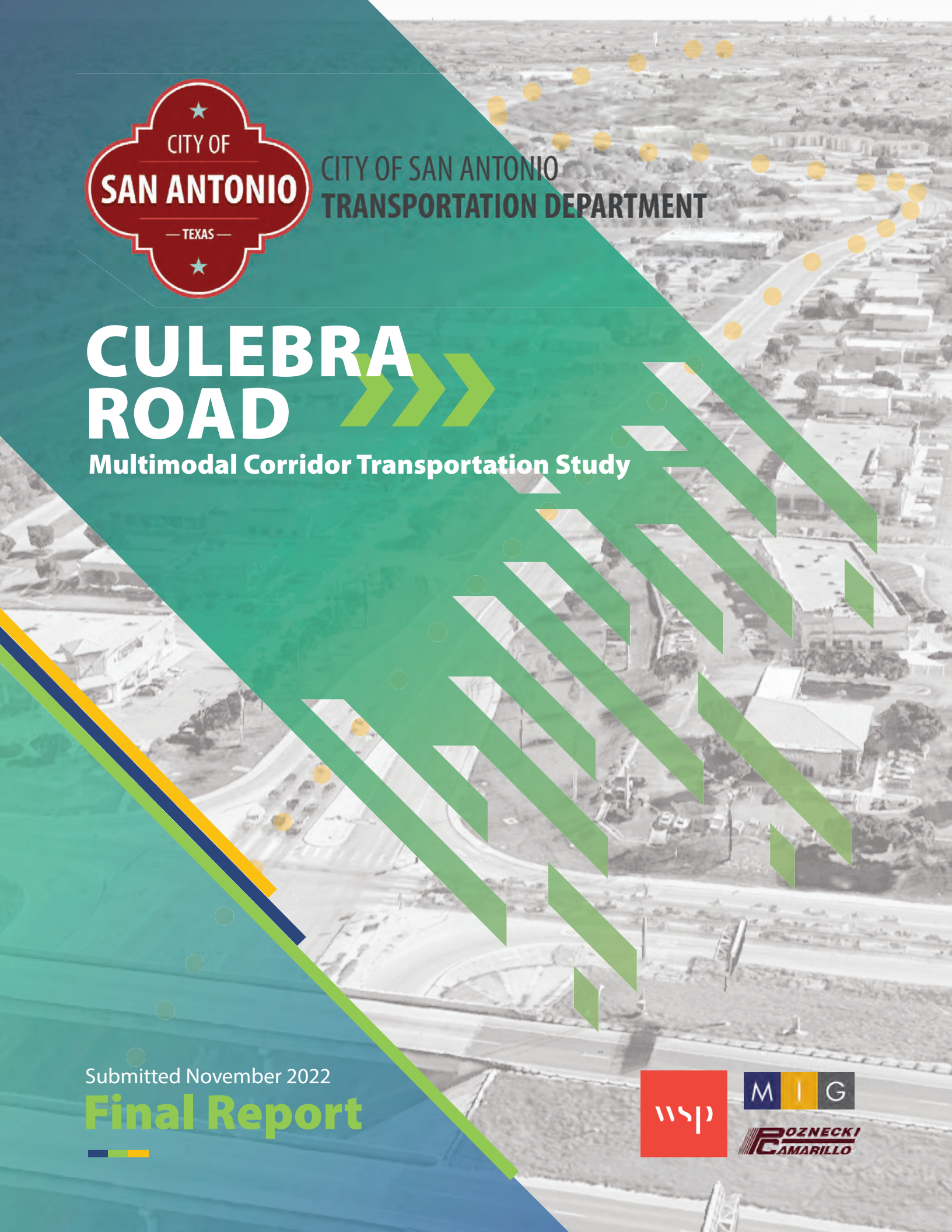
CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT

CULEBRA ROAD

Multimodal Corridor Transportation Study



Submitted November 2022

Final Report

wsp

MIG

POZNECKI CAMARILLO

ACKNOWLEDGMENTS

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City of San Antonio Departments

- Transportation
- Public Works
- Development Services
- Disability Access Office
- Parks and Recreation
- Planning
- Metropolitan Heath District
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- Fire
- Police
- Office of Innovation
- Library
- Sustainability
- Communications and Engagement
- City Attorney's Office

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- Northside Independent School District

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[1] *The asterisks "*" denote those City Council Districts located within the Culebra Road Multimodal Transportation Study*

CONTENTS

EXECUTIVE SUMMARY

Projected to increase its population by approximately one million people between 2010 and 2040, the City of San Antonio (City) looks to plan for this growth in a smart, sustainable manner with policies and practices that consider both the opportunities and available funding for all modes of transportation. There is not one strategy or one funding source that will provide the needed resources for the City to implement a multimodal transportation plan. The City must continuously communicate a transportation strategy for the future, develop proposed improvements that address all modes, and provide a method of prioritizing projects with safety and equity at the forefront.

As part of this overall effort, in March 2018, the Alamo Area Metropolitan Planning Organization (AAMPO) Transportation Policy Board approved funding for Arterial Multimodal Mobility Planning as part of the AAMPO's 2019-2022 Transportation Improvement Program (TIP). Culebra Road was the first of four studies funded by the City and the AAMPO to conduct a detailed transportation planning and engineering analysis, leading to a concept design for implementation. Culebra Road was one of twelve corridors examined at a high-level as part of the San Antonio (SA) Tomorrow Multimodal Transportation Plan completed in 2016. Culebra Road also has one of the highest occurrences of severe pedestrian injuries when compared to other corridors in the City according to the City's 2017 Severe Pedestrian Injury Areas (SPIA) Report.

The purpose of the Culebra Road Multimodal Corridor Transportation Study was to identify corridor deficiencies within the study limits, obtain community feedback on the corridor, prepare traffic counts and modeling, conduct an alternatives analysis of potential improvements, and document cost estimation of the preferred concepts. **This effort aims to transition the corridor from an uncomfortable and unsafe environment for non-vehicular users to an equitable multimodal corridor for people who walk, bike, take transit, and drive.**

Safety was identified as the number one concern to be addressed by this study. In addition, there were several other issues and challenges identified with the corridor, including and not limited to: disconnected sidewalks from adjoining businesses; ADA non-compliant and discontinuous sidewalks; long pedestrian crossing distances (both street width and frequency); narrow and unprotected bicycle facilities; transit facilities with no shelter; poorly marked crosswalks; and skewed intersections. Proposed concepts were developed, evaluated, and resulted in recommended preferred concepts for future implementation. The preferred concepts include providing wider and protected sidewalks; dedicated bicycle facilities; improved crosswalk connections; shade trees; and multi-purpose traffic calming devices.

This report provides a detailed summary of the corridor's existing conditions and challenges, public engagement process, proposed concepts, preferred concept recommendations, as well as an implementation matrix for priority segments by the City of San Antonio Transportation Department and their consultant team led by WSP USA, Inc., Poznecki-Camarillo, LLC, and MIG, Inc.

Initiated in Fall 2020, the study has progressed through the following phases:

- **Data Collection**
- **Facilitated Community Visioning**
- **Concept Refinement for Prioritization and Implementation**

INTRODUCTION

Culebra Road Multimodal Corridor Transportation Study

INTRODUCTION

WHY A STUDY?

Culebra Road was one of twelve corridors examined at a high-level as part of the San Antonio (SA) Tomorrow Multimodal Transportation Plan completed in 2016. The Plan identified a 5-Year Action Plan with over 50 actions, one of which was to perform detailed corridor analysis on at least three corridors. As a result, Culebra Road was identified to be one of the first of four studies funded by City and AAMPO in 2018 to conduct a detailed transportation planning and engineering analysis, leading to a concept design for implementation. One of the reasons Culebra Road was chosen was due to the 2017 Severe Pedestrian Injury Areas (SPIA) Report, produced as part of the City's Vision Zero initiative, which showed higher severe pedestrian injuries than other corridors in the City, with three hotspots identified and a total of 12 fatalities and 14 incapacitating injuries based on 2011-2015 crash data.

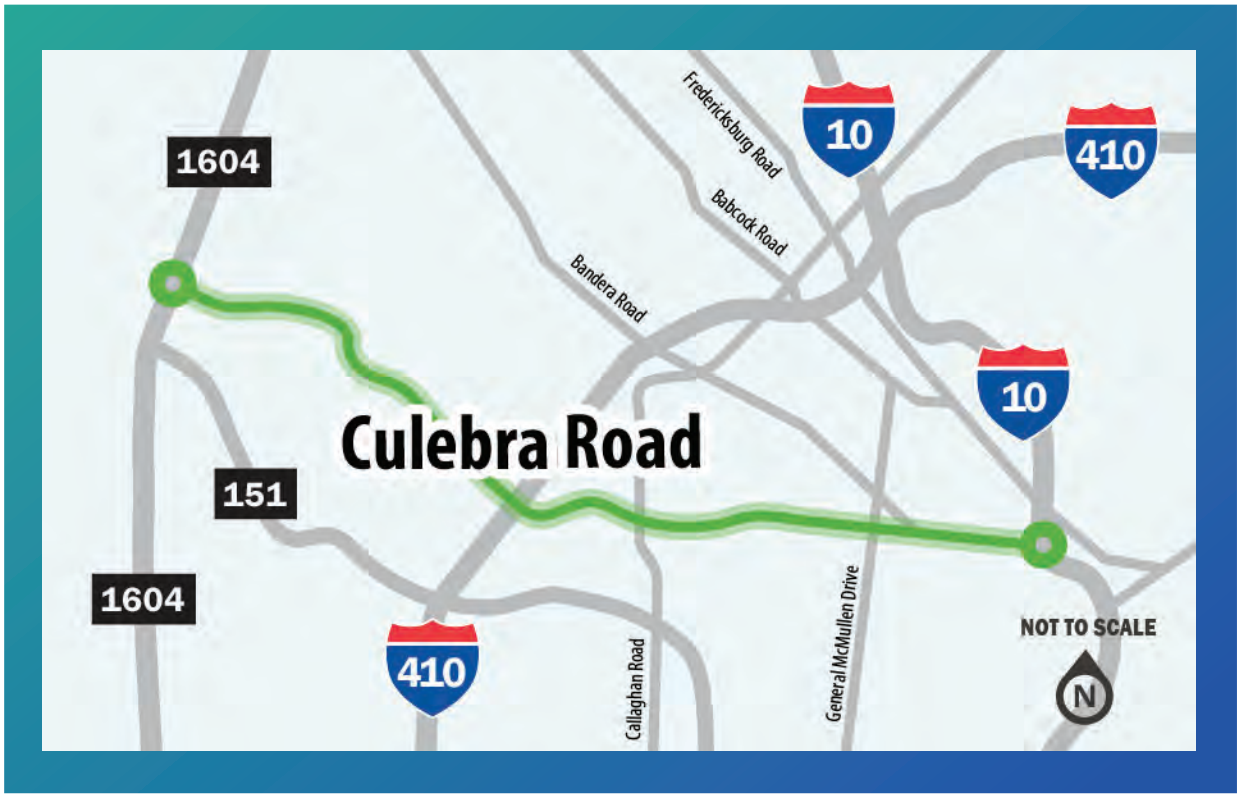
The Culebra Road Corridor extends approximately thirteen (13) miles along Culebra Road from I-10 west to Loop 1604. The corridor is located in the western part of the City of San Antonio as shown in FIGURE 1.

Located in Council Districts 1, 5, 6, and 7 in San Antonio.

Higher severe pedestrian injuries than other corridors in the City.

- **3 Hotspots**
- **14 Incapacitating Injuries**
- **12 Fatalities**

FIGURE 1: Culebra Road Multimodal Corridor Transportation Study Area

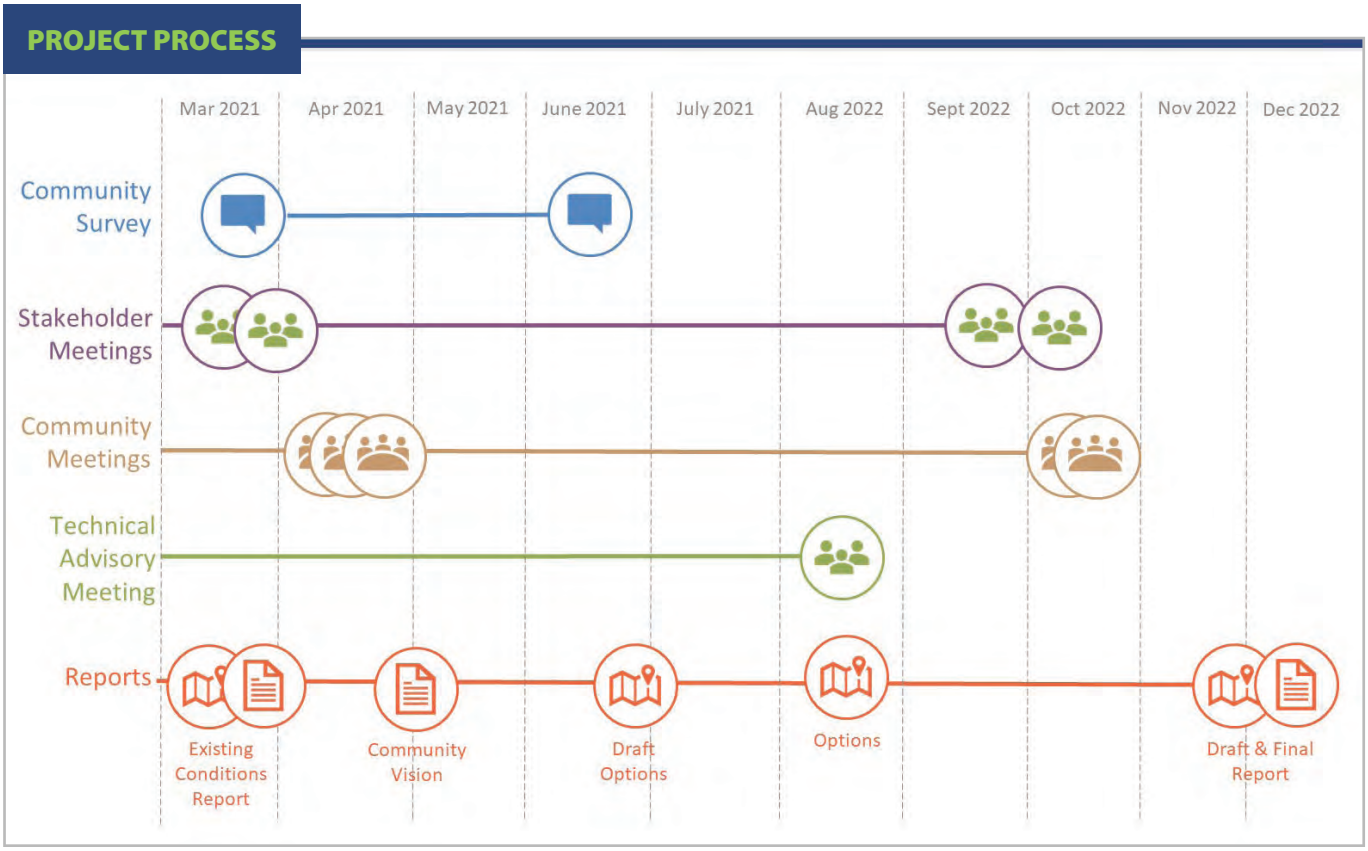


The Culebra Road Multimodal Transportation Study represents the City's effort to proactively plan for safe, attractive, and sustainable transportation improvements consistent with the community's priorities.

PLANNING PROCESS

The City of San Antonio implemented a phased planning process in which the study team gathered data, facilitated visioning with key stakeholders and the community, and refined concepts for implementation as depicted in **FIGURE 2**.

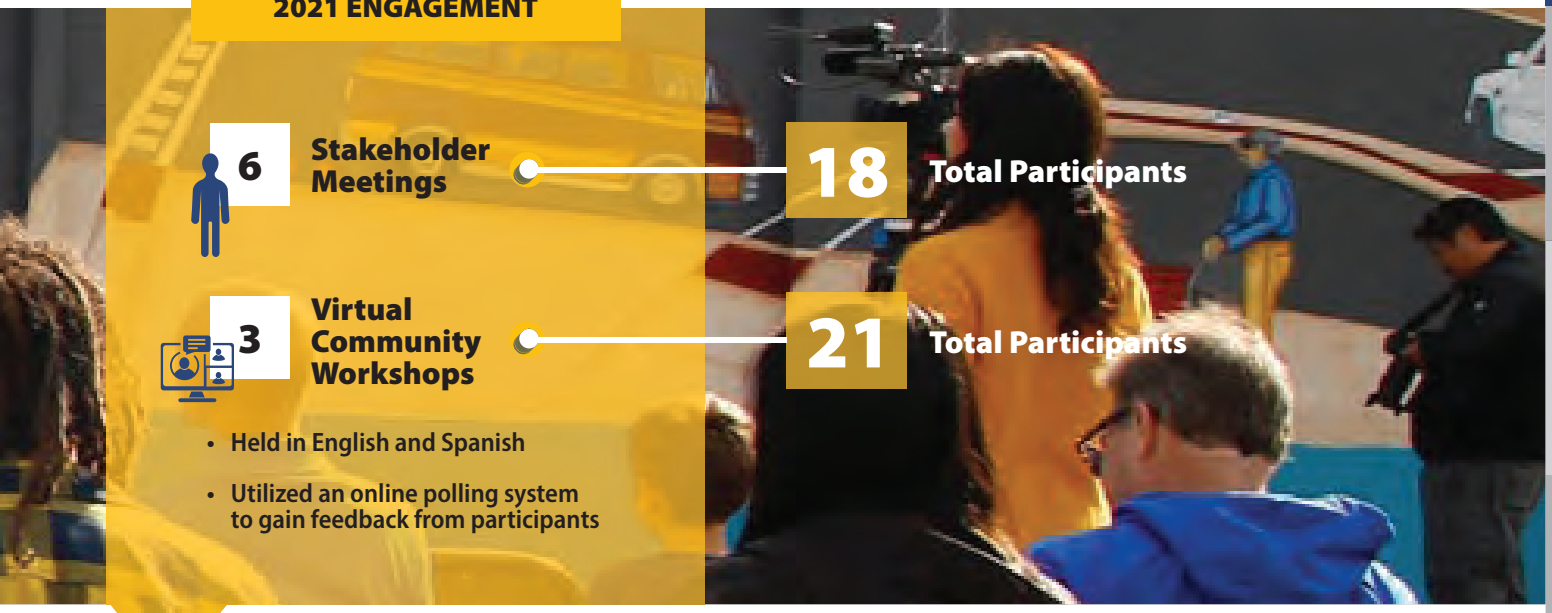
FIGURE 2: Culebra Road Multimodal Corridor Transportation Study Planning Process



THE PUBLIC PROCESS

Meaningful public engagement has been essential to the development of this study's vision and priorities. Beginning in March 2021 and culminating in October 2022, the City of San Antonio provided multiple opportunities for the public to participate in the Culebra Road Transportation Study planning process and express their ideas, hopes, and concerns through numerous avenues.

2021 ENGAGEMENT



6 **Stakeholder Meetings** → **18** **Total Participants**

3 **Virtual Community Workshops** → **21** **Total Participants**

- Held in English and Spanish
- Utilized an online polling system to gain feedback from participants

The study successfully shifted to virtual engagement when the COVID-19 pandemic limited opportunities for in-person events. Public engagement conducted in 2021 for data collection and visioning included six stakeholder meetings and three virtual community workshops. The six stakeholder meetings had a total of 18 participants. The three community workshops, held in English and Spanish, had a total of 21 participants and utilized an online polling system to gain feedback from participants.

Also conducted during this first round of public engagement, a three-month long Community Visioning Survey resulted in over 2,500 map survey responses.

Community Visioning Survey → **2,500+**

Over 600 people participated in our outreach methods in 2021. **600+**

To maximize participation and engagement from community members for the community workshops, a multi-faceted outreach effort was implemented that included both traditional and non-traditional methods. These efforts included:

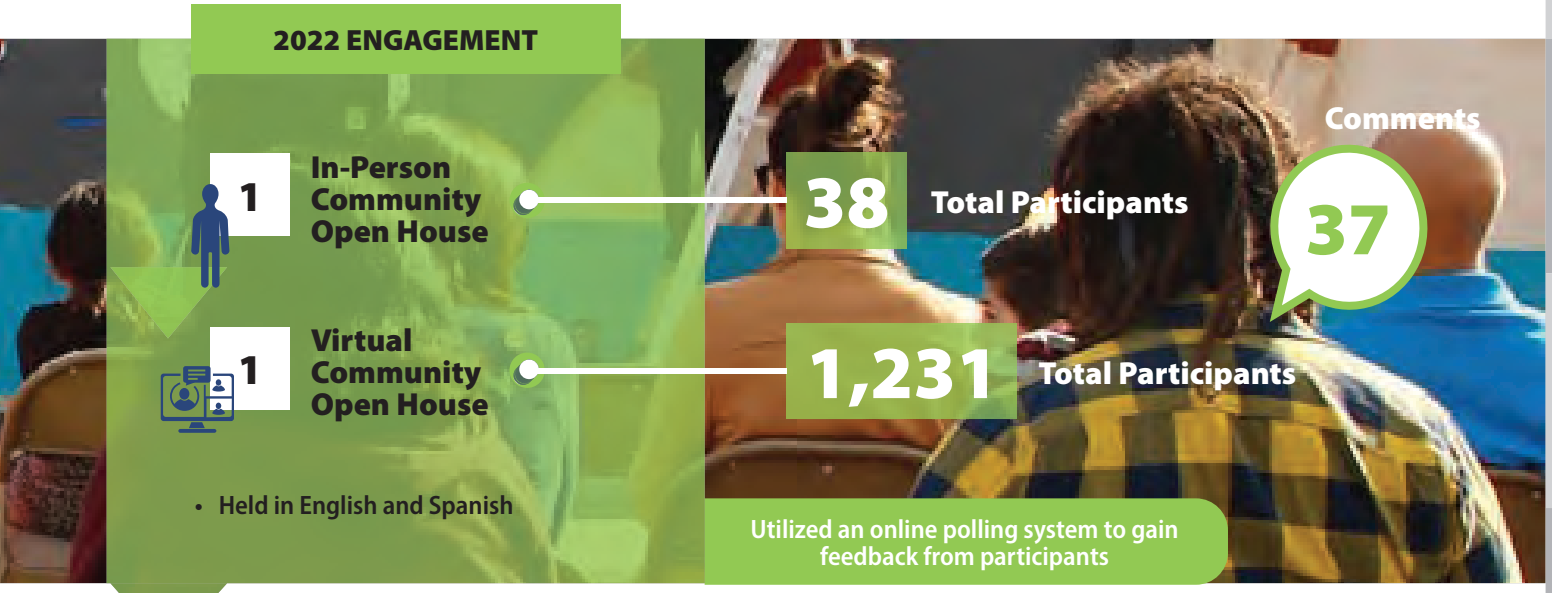
- **Newspaper Ads** – reach of about 215,000 households
- **Postcards** – 788 mailed
- **Email Blasts** – 140 individuals emailed
- **Media Coverage** – 6 news stories
- **Social Media Outreach** – Facebook ads placed with about 73,000 views

Public engagement conducted in 2022 for proposed corridor concepts review included bilingual community open houses with in person and virtual options. The two in-person community open houses had 38 participants in person and 1,231 participants online with 37 comments received.

PHOTO 1: 2022 Community Open House at Holy Cross High School

To maximize participation and engagement from community members for the community workshops, a multi-faceted outreach effort was implemented that included both traditional and non-traditional methods. These efforts included:

- **Newspaper Ads** – reach of about 215,000 households
- **Postcards** – 3,890 mailed
- **Email Blasts** – 388 individuals emailed
- **Media Coverage** – two news stories
- **Social Media Outreach** – geofenced ads placed with about 850,000 views



Throughout the planning process, the City and consultants engaged and interviewed numerous corridor stakeholders from neighborhood associations (e.g., West End Hope in Action, Northwest Crossing, Thunderbird Hills, Great Northwest, University Park) to cycling groups (e.g., SATX Social Ride, Activate SA, Bike San Antonio, South Texas Off Road Mountains, Earn-a-Bike). Careful consideration was given to identify environmental justice (minority/low-income) populations as well as those with limited English proficiency.

In August 2022, the City convened a Technical Advisory Group composed of public agency partners to advise City staff and consultants on the development of the study's strategies and specific implementable short-term and long-term improvements.

See the corridor vision on page 13 for a summary of comments received, the detailed Community Engagement Summary Reports, and the Technical Advisory Group presentation can be found in **APPENDIX A**.

CULEBRA SAFETY CAMPAIGN

Adopted in 2016, Vision Zero SA is San Antonio's plan to eliminate traffic fatalities and to enhance the safety of the transportation system. The program uses a combined approach of six essential elements for a safe transportation system: Education, Encouragement, Engineering, Enforcement, Evaluation, and Equity. Each of these six elements are vital to help reach the program's goal. The engineering component is key to shape the way our roadways are designed and how people use them.

The City's Transportation Department launched the Culebra Road Safety Campaign (**FIGURE 3**) in June 2022 through August 2022 encouraging drivers and pedestrians to modify their behaviors. For drivers, the message was "Slow down and put your distractions away". For pedestrians, the message was to use marked crosswalks whenever possible and be aware of their surroundings. The educational campaign consisted of billboards, bus advertising, posters, and other outreach that informed people of safe habits and encouraged them to provide input through an online survey. On August 11, 2022, the City held a press conference to present insights gained from the scheduled campaign. Approximately 20,000 mailers were sent to residents living along or near Culebra Road. More than a thousand responded to the mailer and participated in the online survey.

Through the online survey, the community expressed that their greatest challenges to safe travel on Culebra Road are **people driving too fast, distracted drivers, and difficulty crossing the street**. Approximately 92% of respondents drive as a primary mode of travel, while those who walk or ride a bicycle represent 4% each. Less than 1% of respondents travel using public transit as their primary mode.

A dynamic report of the survey can be viewed online:

https://publicinput.com/Report/u2dgb3tp4yx

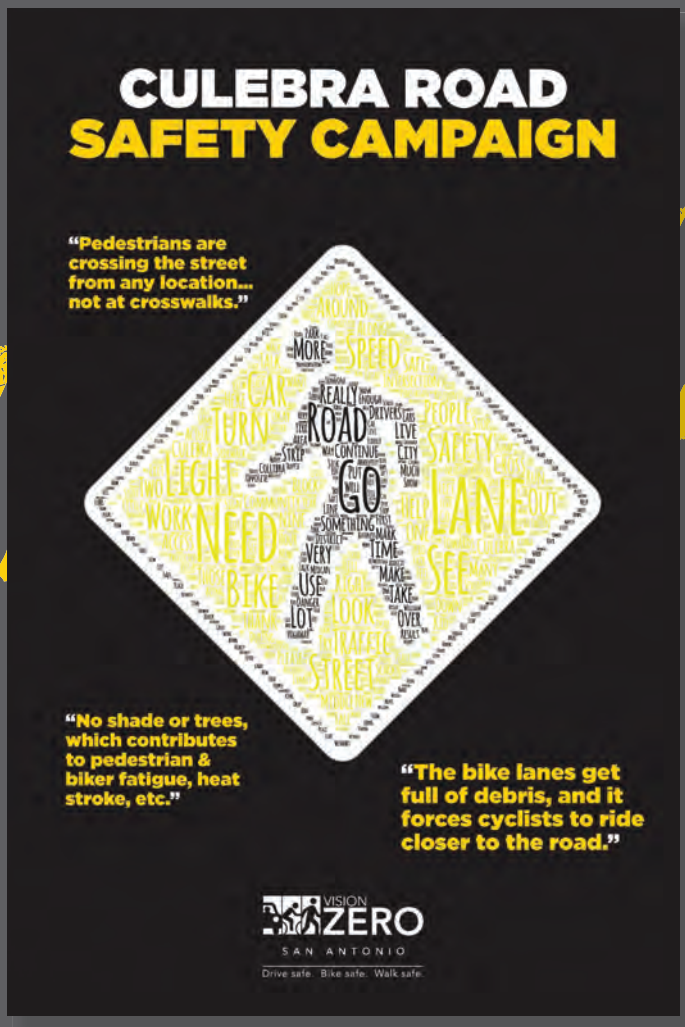


FIGURE 3: Culebra Road Safety Campaign

> **"Vision Zero SA is committed to bringing education and information to help prevent deaths along Culebra Road by focusing attention on drivers and pedestrians along this corridor."**

STUDY GOALS

Culebra Road Multimodal Corridor Transportation Study

STUDY GOALS

Goals implemented for the Culebra Road Multimodal Corridor Transportation Study included:

1. Create a **safe corridor for all users of Culebra Road**
2. Transform Culebra into an **equitable, multimodal corridor for people who walk, bike, take transit, and drive**
3. Coordinate **and build upon previous and concurrent studies and initiatives**
4. Develop **conceptual designs for short-and long-term improvements**
5. Ensure **meaningful community and stakeholder engagement**

CORRIDOR VISION

Culebra Road Multimodal Corridor Transportation Study

CORRIDOR VISION

Through compilation of the ideas, aspirations, and concerns collected, the community vision emerged.

Improve safety for people walking, biking, taking transit and driving.

Participants repeatedly stressed safety as the number one concern for the corridor.

Provide safer walking and biking connections to adjacent neighborhood destinations and trail connections.

Participants noted the need for pedestrian/bicyclist connectivity including for that "last mile" between transit stops and their destination.

Manage traffic speeds to allow more people to walk and bike.

Participants noted the need for a balance between keeping vehicular traffic moving and the safety of pedestrian and bicyclists near high-speed traffic.

Strengthen business and economic development.

Although west San Antonio is thriving, participants would like to see opportunities for businesses to stay and succeed in the corridor. Participants especially desired more grocery shopping, dining options, and family-friendly establishments which could be better served by safe multimodal improvements.

Enhance and incorporate the natural environment.

Participants desired improved area aesthetics with proper landscape maintenance to overall improve the attractiveness of the corridor.

Improve overall shade and comfort.

Participants agreed that shade and comfort should accompany the implementation of pedestrian amenities especially in the San Antonio heat.

Improve neighborhood identity.

The community on the west side of San Antonio are proud of their heritage and unique landmarks including St. Mary's University and the Basilica of the National Shrine of the Little Flower. There is a desire to showcase the Culebra Road corridor as a destination of choice within the City of San Antonio.

CORRIDOR OVERVIEW

Culebra Road Multimodal Corridor Transportation Study

CORRIDOR OVERVIEW

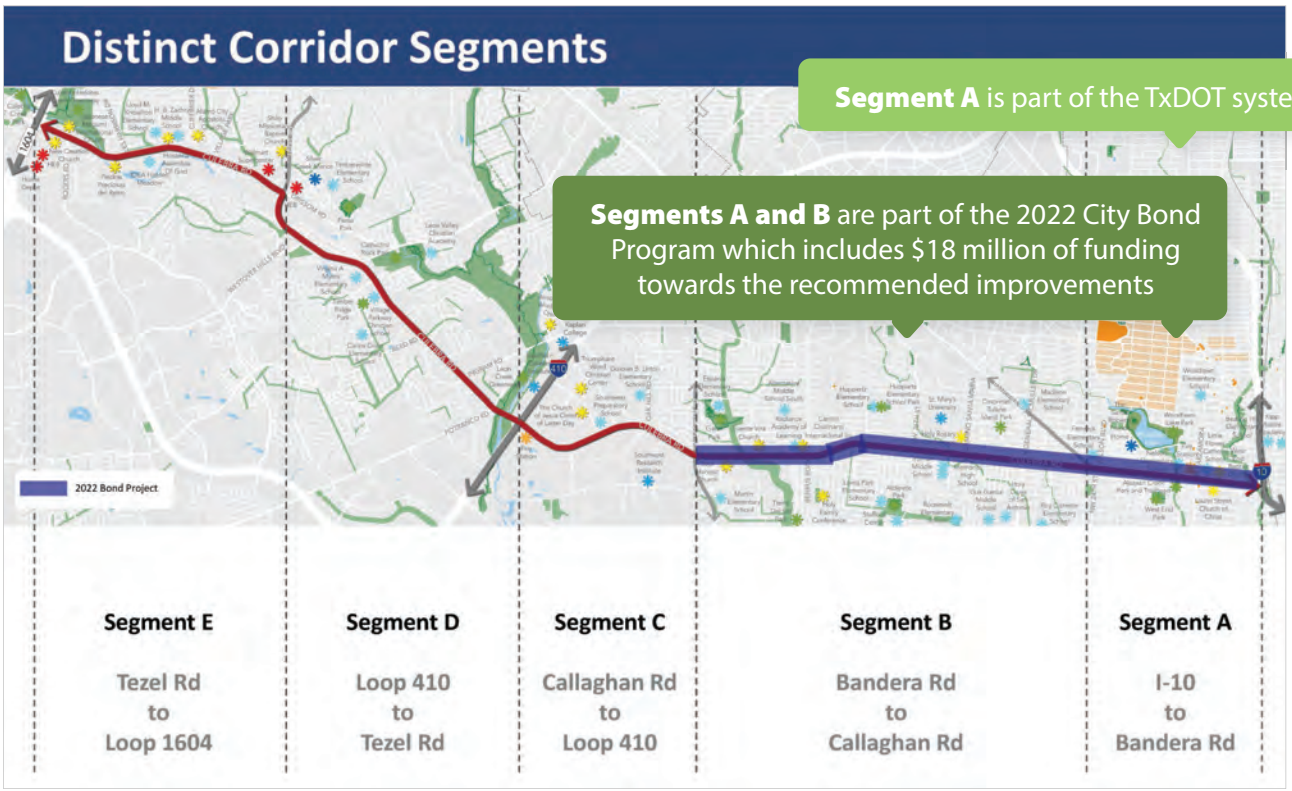
CORRIDOR DESCRIPTION

This corridor is a principal/minor arterial ranging from a four- to seven-lane cross section, and it spans several land use characteristics. The City of San Antonio Major Thoroughfare Plan identifies Culebra Road as a Primary Arterial Type A from I-10 to NW 24th Street / Bandera Road; a Secondary Arterial Type A from NW 24th Street / Bandera Road to Loop 410; and a Primary Arterial Type A from Loop 410 to Loop 1604.

The study considers 13 miles of the Culebra Road corridor from I-10 to Loop 1604.

Due to the length of the corridor and land use characteristics, **THE CORRIDOR WAS DIVIDED INTO FIVE (5) SEGMENTS** representing different context zones as shown in **FIGURE 4**.

FIGURE 4: Culebra Road Corridor Segments



Starting at I-10 and heading westward:

E	D	C	B	A
2.5 miles	3.2 miles	1.8 miles	Total: 3.7 miles	1.5 miles

= Segment B1: 1.7 miles
+ Segment B2: 2 miles

ENVIRONMENTAL CONDITIONS

This section summarizes the existing overall environmental and transportation features within the Culebra Road corridor.

The study area is in an urbanized area in western San Antonio. Located within the Texas Blackland Prairies ecoregion, this area is characterized by a diverse assortment of perennial and annual grasses, as well as rich soil. Due to the urbanized nature of the study area, vegetation consists primarily of maintained, urban grasses and ornamental trees. Portions of the study area are located within Karst Zones 2, 3, and 5. Karst Zone 2 is defined as areas having a high probability of containing a suitable habitat for invertebrate species, Karst Zone 3 is defined as areas that probably do not contain endangered karst invertebrate species, and Karst Zone 5 is defined as areas, both cavernous and non-cavernous, that do not contain endangered karst invertebrate species. There are no critical habitat units for federally listed threatened and endangered species in the study area.

The study area is located within the Headwaters of San Antonio and Leon Creek watersheds, and several creeks cross Culebra Road within the study limits, including Apache Creek, Culebra Creek, Leon Creek, Martinez Creek, Zarzamora Creek, and associated tributaries. Three parks and recreational facilities are located adjacent to the corridor, including Alazan Creek Park, Culebra-Helotes Creek Greenway, and Leon Creek Greenway. The study area is not located within a National Register of Historic Places (NRHP) or City historic district. However, there is an adjacent City Landmark located at 1107 Culebra Road. See the Environmental Constraints Maps in **APPENDIX B**.

SOCIOECONOMIC CONDITIONS

EQUITY INDICATORS

The City of San Antonio maintains an Equity Atlas, which is an interactive tool that highlights the demographics, disparities, and some infrastructure distribution within the city. Below is a summary of the equity indicators for the study corridor.

FIGURE 5: RACE

The census tracts comprising the study limits have a People of Color score of 3 to 5, as defined to the right:

5 – The percent people of color is between 92.50 – 99.71 percent.

4 – The percent people of color is between 83.59 – 92.36 percent.

3 – The percent people of color is between 72.05 – 83.42 percent.

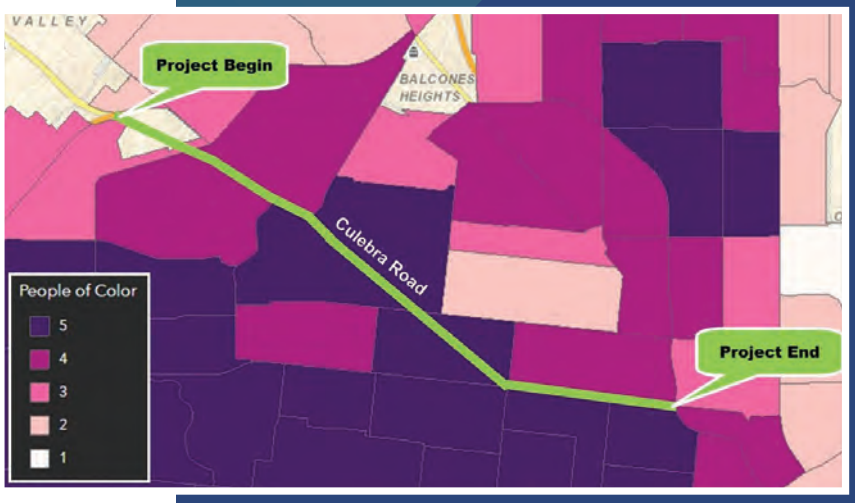


FIGURE 6: INCOME

The census tracts comprising the study limits have a Median Household Income score of 3 to 5, as defined to the right:

5 – The median household income is between $11,360 to $35,900.

4 – The median household income is between $35,981 to $42,377.

3 – The median household income is between $42,594 to $55,351.

FIGURE 7: EDUCATION

The census tracts comprising the study limits have an Education Rank score of 3 to 5, as defined to the right:

5 – The percent Education Less than High School Graduate or Equivalent is between 33.02 – 58.21 percent.

4 – The percent Education Less than High School Graduate or Equivalent is between 19.02 – 32.97 percent.

3 – The percent Education Less than High School Graduate or Equivalent is between 10.42 – 18.99 percent.

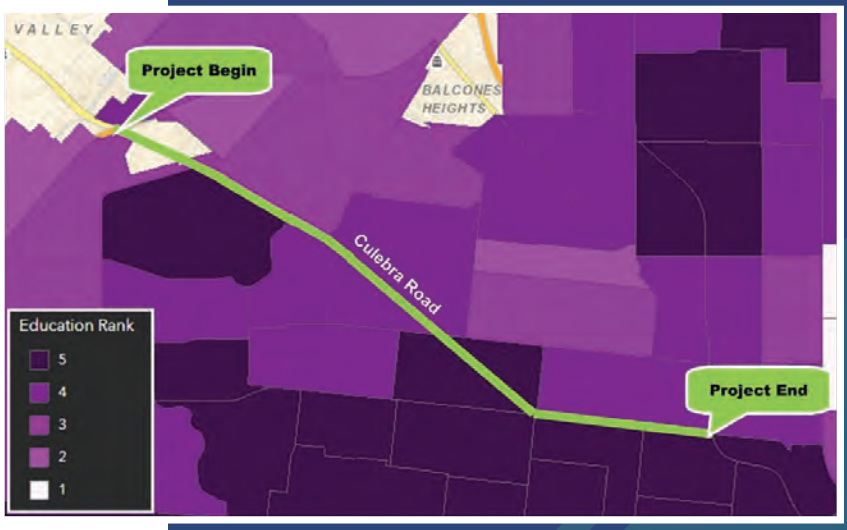


FIGURE 8: LANGUAGE

The census tracts comprising the study limits have a Language Rank score of 3 to 5, as defined to the right:

5 – The percent Speak Other Language at Home – Speak English Less than "Very Well" is between 20.06 – 37.92 percent.

4 – The percent Speak Other Language at Home – Speak English Less than "Very Well" is between 13.90 – 20.02 percent.

3 – The percent Speak Other Language at Home – Speak English Less than "Very Well" is between 9.73 – 13.88 percent.

TRANSPORTATION - RELATED DEMOGRAPHICS

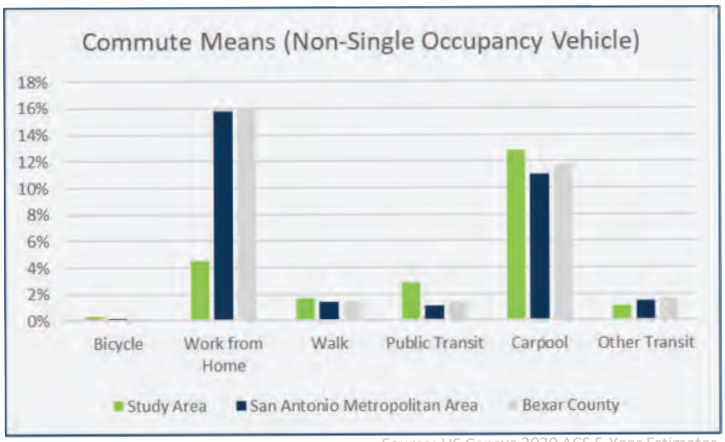
According to the U.S. Census Bureau, approximately 153,303 people live within the study area. The current unemployment rate in the study area is 8.0 percent. This is slightly lower than the 3.5 percent unemployment rate for San Antonio and the 3.8 percent unemployment rate for Bexar County. In addition to the low prevailing unemployment rate, Bexar County is predicted to undergo substantial population and employment growth over the next 30 years.

According to the Texas Water Development Board (TWDB), Bexar County is predicted to grow 0.9 percent between 2020 and 2070.

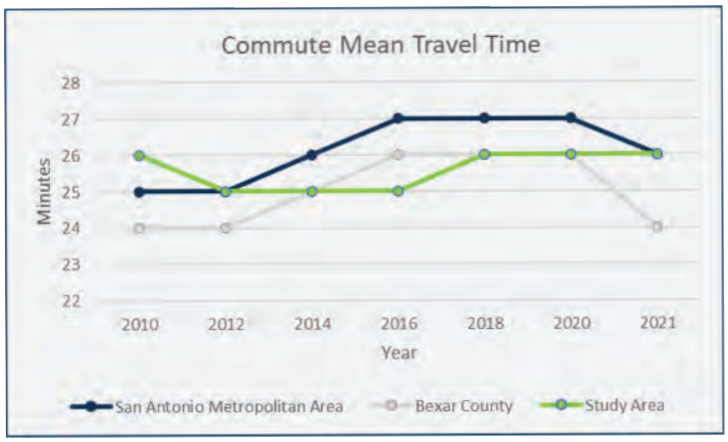
Vehicle ownership is widely prevalent among residents within the study area. According to the U.S. Census Bureau, only approximately 7.2 percent of households in the study area do not have access to a car. Further, approximately 56.9 percent of households in the study area have access to two or more vehicles, and approximately 76.4 percent of residents commute alone. The average household size is 3.3 people and there are approximately 22,000 children between the ages of five and 14 within the study area. Other key study area demographics are provided in the graphics below.

The provided demographic information does not consider people commuting from other areas to work in the study area. To some degree, commuters could be more likely to rely on modes other than single occupancy vehicles (e.g., public transportation, walking, biking, etc.).

FIGURE 9: Transportation-Related Demographics

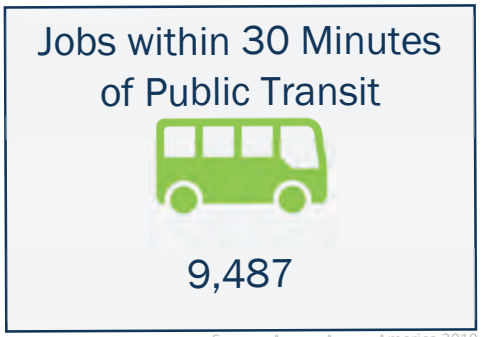


Source: US Census 2020 ACS 5-Year Estimates

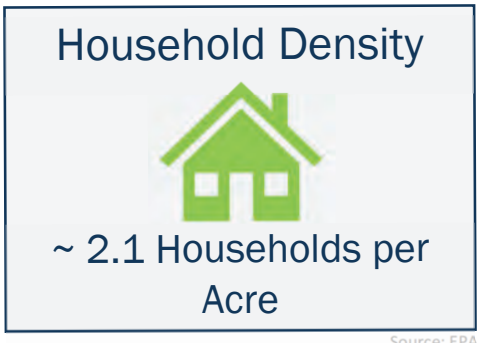


Source: US Census 2010-2021 ACS

Source: EPA Walkability Index



Source: Access Across America 2019



Source: EPA

[2] *For the purpose of this section, the study area consists of U.S. Census Bureau census tracts adjacent to the Culebra Road corridor within the city limits.*

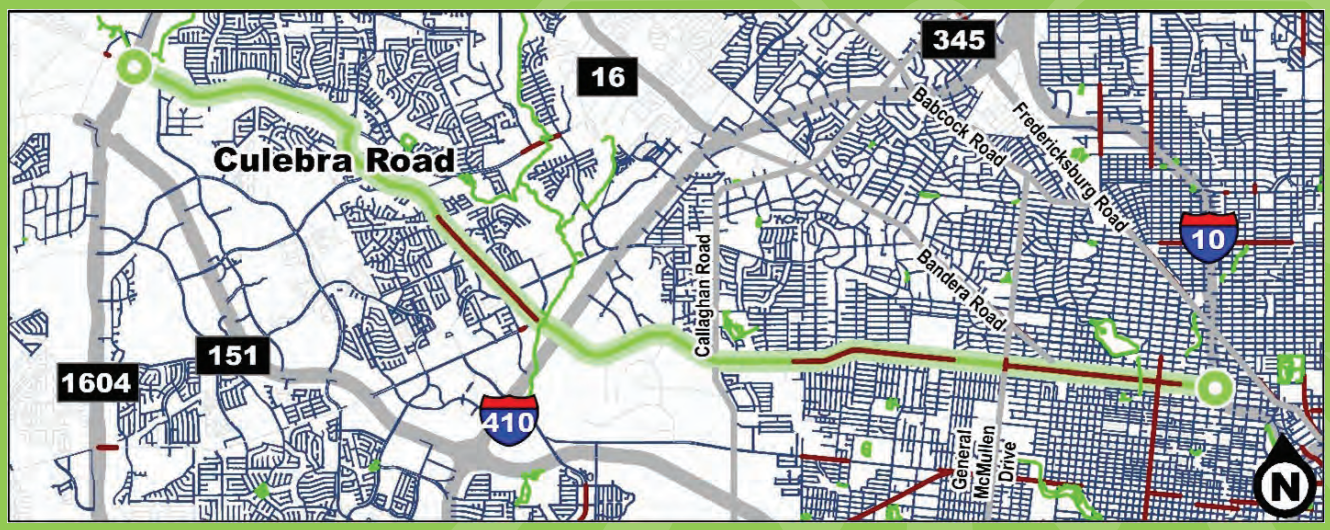
SIDEWALK INFRASTRUCTURE

The City maintains an inventory of existing sidewalks, trails, and areas where severe pedestrian injuries have occurred. There are also several unsignalized mid-block crosswalks and Z-crossings throughout the corridor that have been installed by the City and TxDOT over the last several years in an effort to improve pedestrian safety. The severe pedestrian injury areas are shown below in **FIGURE 10**.

Sidewalks and crosswalks in the study area vary in design and state of repair. A detailed inventory of existing sidewalk conditions including missing sidewalks, existing pedestrian facilities which do not meet the 2010 ADA standards for accessible design, as well as locations missing "detectable warnings" and/or needs improvements are included in the Existing Conditions Technical Report (**APPENDIX C**).

Study Limits | Existing Sidewalks | Existing Trails | Severe Pedestrian Injury Areas

FIGURE 10: Pedestrian Facilities



Source: City of San Antonio, 2022

PHOTO 2: Discontinuous and Non-ADA Compliant Sidewalks

BICYCLE FACILITIES

The City maintains an inventory of existing, lanes, routes, trails and areas where severe bicyclist injuries have occurred. The only segment that contained bicycle facilities along Culebra Road within the study limits was Segment D (refer to **FIGURE 4**). Severe bicyclist injury areas are noted in the following **FIGURE 11**. These connections improve multimodal connectivity and provide additional mode choice but serve limited users due to access restrictions.

Study Limits

Existing Bicycle Facilities

Severe Bicyclist Injury Areas

FIGURE 11: Bicycle Facilities

Source: City of San Antonio, 2022

PHOTO 3: Narrow and Unprotected Bicycle Lanes in Segment D

TRANSIT FACILITIES

VIA Metropolitan Transit serves Culebra Road within the study limits. All segments had transit stops. As shown in **FIGURE 12**, eight routes (82, 88, 282, 288, 606, 610, 618 and 660) currently serve the Culebra corridor with varying service frequency. Routes and service frequency are subject to change in future.

Access to these bus routes is challenging. Gaps in the sidewalk network mean that people have no accommodating way to reach the stops. Access to the bus stops is further impeded by pedestrian crossing restrictions at key signalized intersections where bus stops are located. Additionally, most of the bus stops are little more than a sign on a post with no shelter.

Study Limits

VIA Bus Routes

FIGURE 12: VIA Transit Routes

Source: VIA Metropolitan Transit, 2022

PHOTO 5: Image of bus stop along Culebra Road with no shelter

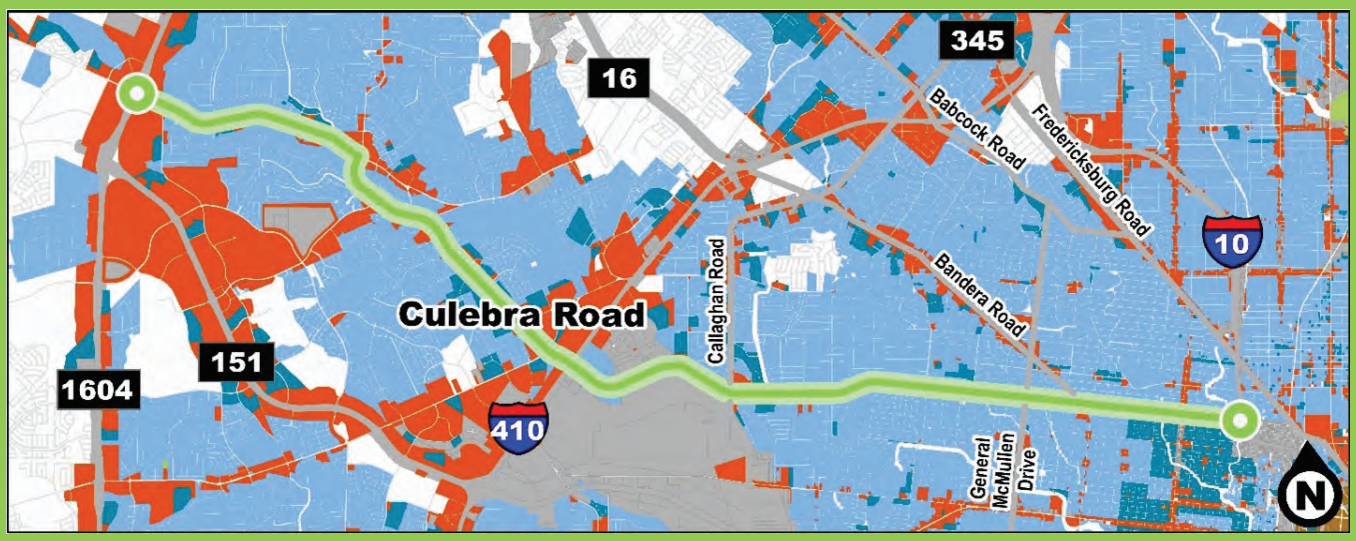
LAND USE

Land use within the project area is predominantly residential and commercial with approximately 839 adjacent properties. Industrial land uses exist between I-410 and Callaghan Road where Southwest Research Institute and Gustafson Stadium are located. Several single-family residential neighborhoods are located adjacent to the corridor, including Culebra Crossing, Culebra Park, Grissom Trails, Loma Park, Memorial Heights, Mountain View Acres, Pipers Meadow, Prospect Hill/West End Hope in Action, Reserve at Culebra Creek, Timber Ridge, University Park, and Uptown Neighborhood Association.

Nearby schools include the following: Beacon Hill Elementary School, Cardenas Center Dolores B. Linton Elementary School, Esparza Elementary School, Fenwick Elementary School, HB Zachry Middle School, Huppartz Elementary School, IDEA Hidden Meadow, Kipp Aspire Academy, Little Leaps Academy, Little Flower Catholic School, Little Treehouse Early Learning Center, Lloyd M Knowlton Elementary School, Loma Park Elementary School, Memorial High School, Myers Elementary School, Nelson Early Childhood Center, Positive Solutions Charter, Roy Cisneros Elementary School, Southwest Preparatory, Southwest Prep Northwest, and St. Mary's University. Community facilities adjacent to the corridor include Memorial Library and Fire Station #26.

Study Limits
Commercial
Reserved Open Space
Industrial
Downtown District
Outside City Limits
Multi-Family Residential
Single-Family Residential

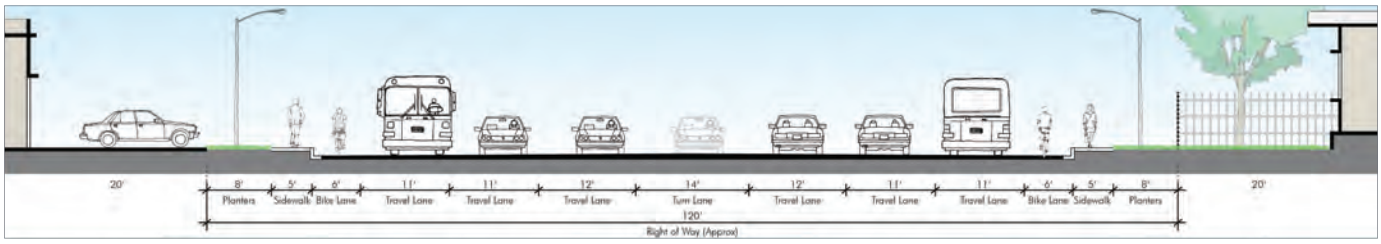
FIGURE 13: Existing Land Use



ROADWAY OVERVIEW

The roadway characteristics of the corridor were summarized visually for each of the five segments. **FIGURE 14** shows an example of the roadway cross section for Segment D. See the **IMPLEMENTATION** Section for the cross sections of each segment.

FIGURE 14: Existing Cross Section for Segment D



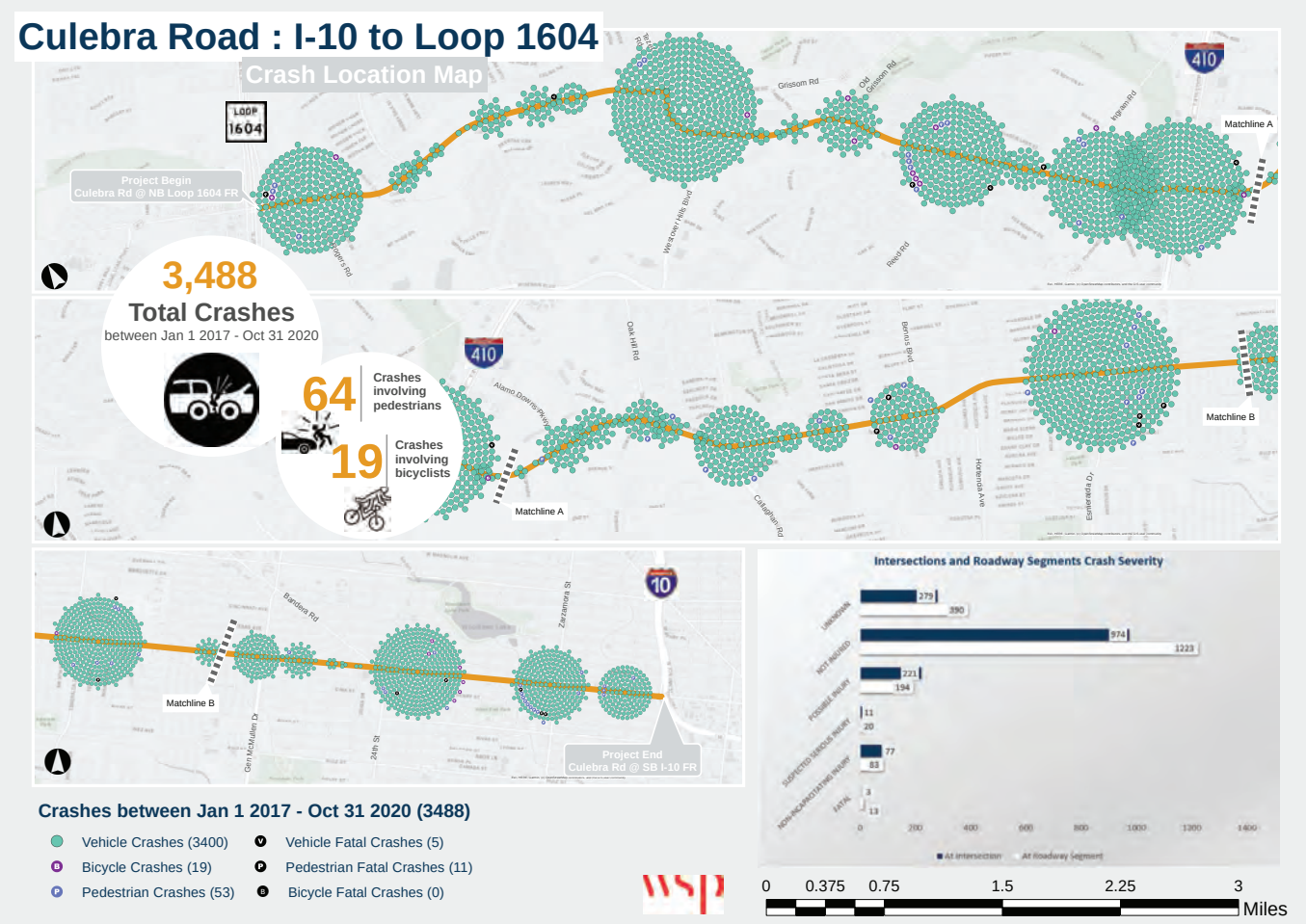
Right-of-way widths vary along the corridor from approximately 80 feet to 120 feet. Traffic volumes ranged from 22,000 to 51,000 Average Daily Traffic (ADT) along the corridor. The percentage of heavy vehicles (trucks) ranged from 1.4 percent to 3.7 percent. Posted speed limits ranged from 40-45 miles per hour (mph).

Because some of the traffic counts were collected during the COVID-19 pandemic when traffic volumes decreased, the Traffic Projections Methodology Memo in **APPENDIX D** includes a COVID-19 adjustment factor.

TRAFFIC SAFETY

Overall, there were approximately 3,500 crashes along the corridor between January 2017 and October 2020. Pedestrians were involved in 64 of those crashes and bicyclists in 19. There were 16 fatal crashes, of which 11 were pedestrian fatalities. The other five fatalities were of persons traveling in a vehicle. **FIGURE 15** shows crash density for vehicle, pedestrian, and bicycle crashes.

FIGURE 15: Culebra Road Crash Density



TRAFFIC OPERATIONS

Synchro modeling provides a data-driven analysis of detailed congestion levels at intersections along the corridor. For vehicles, Level of Service (LOS) F indicates that traffic volumes exceed the roadway capacity and is measured in seconds of vehicle delay (sec/veh). LOS F is triggered when delay exceeds 80 seconds of vehicle delay at a signalized intersection. The LOS is measured in both the AM and PM peak hours when delay is anticipated to be at the highest point during a 24-hour day. In other words, LOS F is what the City deems as unacceptable and poor traffic flow for drivers.

Four of the five segments in the existing conditions model include signalized intersections currently experiencing LOS F. See **APPENDIX D** for more detail on the operational analysis.

FIGURE 16: Culebra Road Existing LOS

Signalized Intersection Existing Traffic Analyses – 2020 PM Peak Hour

No.	Intersection	PM Peak Hour Level of Service	PM Peak Hour Delay (s/veh)
1	LP1604 SBFR	F	108.1
2	LP1604 NBFR	F	187.2
3	Rogers Rd	D	44.5
4	Les Harrison Dr	C	31.1
5	Cliffbrier Dr	B	13.5
6	Nueces Canyon/Village Park	B	14.3
7	Walmart/Commercial Properties	C	33.1
8	Grissom Rd/Tezel Rd	F	138.0
9	Arcadia Creek	A	3.4
10	Westover Hills Blvd/Ensenada	D	43.7
11	Ansley Bend Dr/Timber Path	C	28.7
12	Old Grissom Rd	B	11.0
13	Village Pkwy/Grissom Pass	A	9.0
14	Rim Rock Trail/Commercial Property	B	18.4
15	Timber View Dr	A	6.4
16	Micron Dr/Pipers Ln	B	15.1
17	Reed Rd	C	27.9
18	Ingram Rd	F	128.1
19	Potranco Rd	F	97.7
20	IH410 SBFR	F	141.8
21	IH410 NBFR	F	98.0
22	Commercial Properties/Baseball Field	B	10.1
23	Alamo Downs Pkwy	B	16.2
24	Tom Slick Ave/Oak Hill Rd	D	41.3
25	Callaghan Rd	D	39.3
26	El Centro St	B	15.0
27	Benrus Blvd	C	33.3
28	Alicia Ave	A	3.2
29	NW 38th St	A	8.9
30	Esmeralda Dr/NW 36th St	D	53.0
31	Memorial St/Rattler Dr	A	9.9
32	Camino Santa Maria	C	25.6
33	N San Felipe Ave	C	24.9
34	General McMullen Dr	D	52.7
35	Bandera Rd	F	98.3
36	NW 24th St/Wilson	E	66.3
37	NW 19th St	B	10.4
38	Elmendorf St	B	14.3
39	N Zarzamora	D	37.6
40	IH10 EBFR	E	69.6
41	IH10 WBFR	C	33.2

PM Peak Analyses Summary:

8 of the 41 signalized intersections (including Loop 1604) are operating at LOS F

2 intersections are operating at capacity (LOS E)

Remaining intersections operate at LOS D or better.

KEY FINDINGS

Data collection and input from agency stakeholders and the community have been instrumental in identifying four key findings for the Culebra Road Corridor.

KEY FINDINGS NO. 1 — SAFETY

As noted earlier, safety is a concern in the corridor as seen by the data on crashes and fatalities as well as public input provided to the study team and through Vision Zero SA engagement. The community has specifically expressed concern about people driving too fast, distracted drivers, and difficulty crossing the street. Known as one of the deadliest roads in the City of San Antonio, a recent news article in the San Antonio Express-News notes that "more fatal vehicle crashes have occurred on Culebra than on any other road in San Antonio, excluding freeways." [3]

FIGURE 17: Safety >>> Key Issues and Challenges

[3] *Pettaway, Taylor, Staff writer. "Like it's a speedway: The deadliest road in San Antonio has claimed more than 40 lives in the last decade". San Antonio Express-News, Sept. 12, 2022*

KEY FINDINGS NO. 2 PEDESTRIAN & BICYCLE

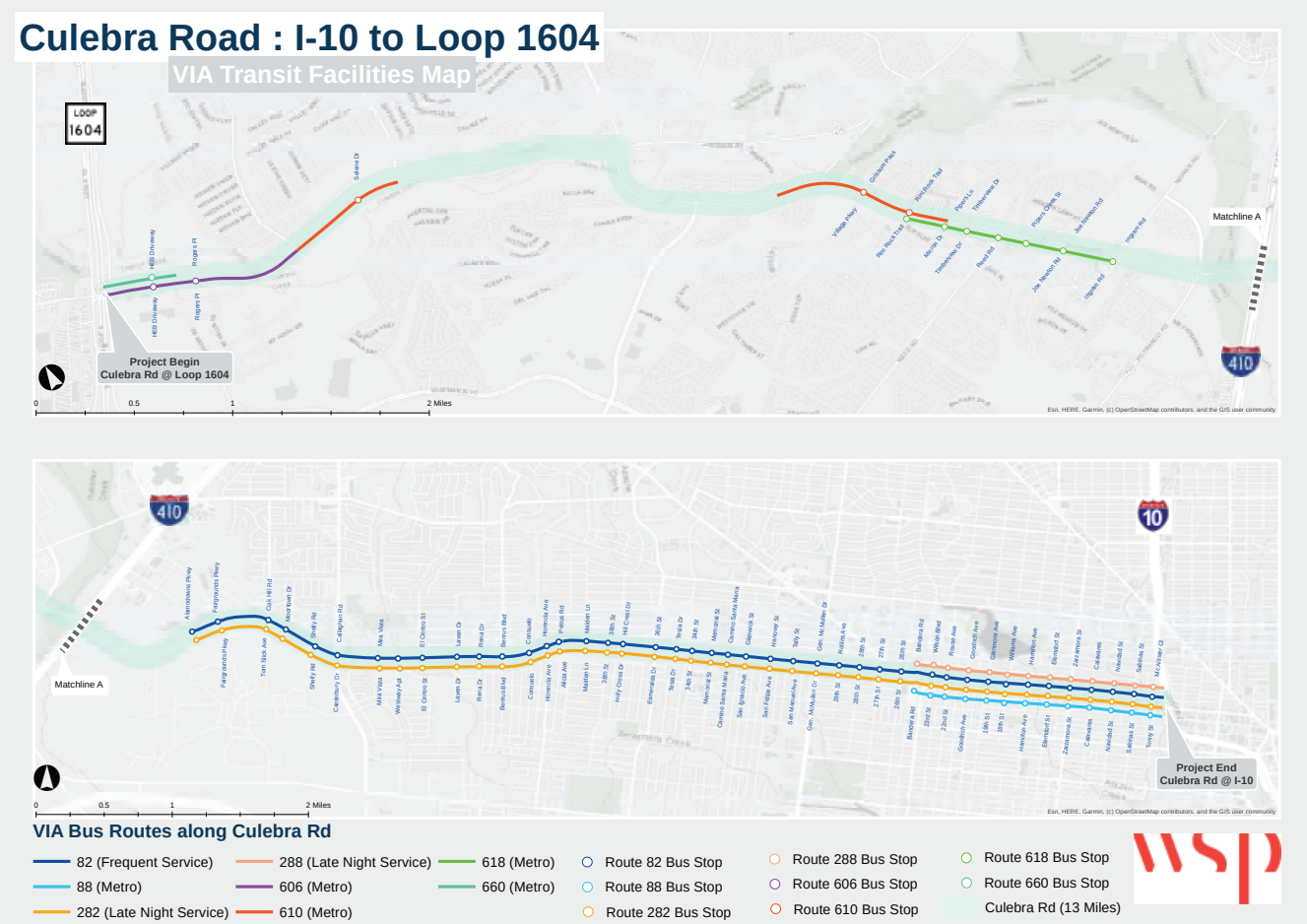
Key findings for cyclists and pedestrians include the lack of sidewalks compliant with the Americans with Disabilities Act (ADA) design guidelines, discontinuous sidewalks, lack of sidewalks to access area businesses, narrow, unprotected bicycle lanes and non-existent bicycle lanes in the majority of the corridor.

FIGURE 18: Pedestrian and Bicycle >>> Key Issues and Challenges

KEY FINDINGS NO. 3 — TRANSIT FACILITIES

While VIA Metropolitan Transit serves the entirety of the corridor, discontinuous and non-ADA compliant sidewalks make access for the traveling public a challenge. Further, lack of shelter at transit stops can make long wait times cumbersome especially in the heat and rain.

FIGURE 19: Transit Facilities >>> Key Issues and Challenges



KEY FINDINGS NO. 4 INTERSECTIONS

A key finding shows that intersections along Culebra Road within the study limits are dangerous and inefficient. Poorly marked sidewalks and skewed intersections make navigating the corridor difficult for users of all modes of transportation.

FIGURE 20: Intersections >>> Key Issues and Challenges

STRATEGIES & TOOLS

Culebra Road Multimodal Corridor Transportation Study

STRATEGIES & TOOLS

Community Voices

"This roadway is one of the most dangerous and deadliest in our city and we should ensure that these improvements make it safer for all. "

"Safety is most important followed by improving the general environment through the corridor."

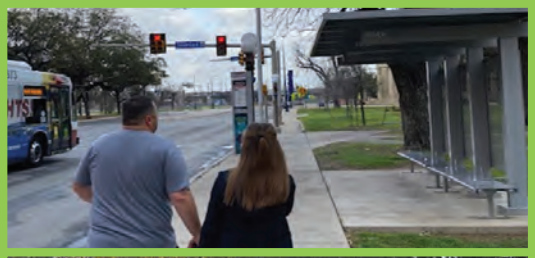
"All improvements are secondary to the safety issue. It is disheartening to see many crashes along Culebra Road. There is one intersection where there are four different roads coming in at different angles. Intersections like that need to be fixed. Please don't worry about beautification until the safety issue is handled."

"Roads are not just for cars! Provide safe paths for non-drivers."

OVERARCHING STRATEGIES

Six overarching strategies arose from our data analysis and public input review, and each can be implemented across the entire corridor.

FIGURE 21: Overarching Strategies

WIDER AND PROTECTED SIDEWALKS	
DEDICATED BICYCLE FACILITIES	
IMPROVED CROSSWALK CONNECTIONS	
IMPROVEMENTS TO TRANSIT FACILITIES AND THEIR LOCATIONS ALONG THE CORRIDOR	
SHADE VIA TREES ALONG THE SIDEWALKS AS WELL AS THE MEDIANS	
MULTI-PURPOSE TRAFFIC CALMING DEVICES	

OVERARCHING STRATEGIES

Six overarching strategies arose from our data analysis and public input review, and each can be implemented across the entire corridor.

1 WIDER AND PROTECTED SIDEWALKS

Pedestrians and businesses thrive where sidewalks have been designed at an appropriate scale. Where a sidewalk is directly adjacent to moving traffic, a minimum 2-foot buffer from the curb is desired and wider buffers provide space for trees.

2 DEDICATED BICYCLE FACILITIES

These facilities would be protected from the moving traffic, and could include protected Class IV bicycle facilities, buffered bicycle lanes, and shared pedestrian / bicycle facilities.

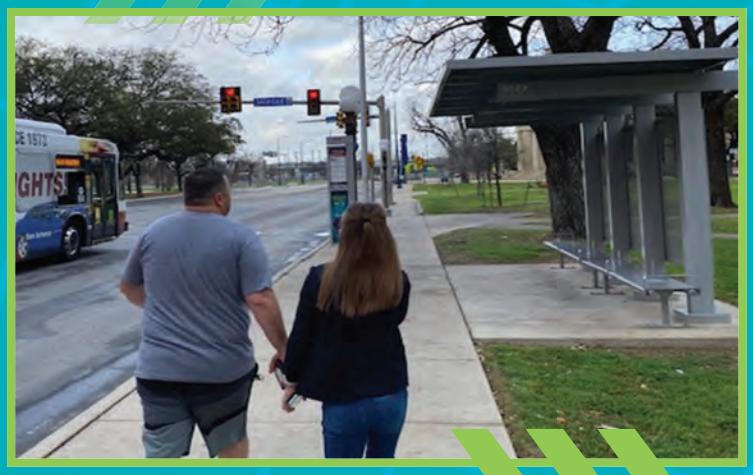
3 IMPROVED CROSSWALK CONNECTIONS

These improvements could include making the crosswalk distance shorter, allowing for longer crosswalk timing, and providing a pedestrian refuge area on shaded mid-block crossings.

Where possible, improvements could include new crosswalks at key locations such as near existing schools, trailheads and other community destinations such as a grocery store.

4 IMPROVEMENTS TO TRANSIT FACILITIES AND THEIR LOCATIONS ALONG THE CORRIDOR

Transit stops placed between the curb and facilities for pedestrians and bikes reduce conflict points, and improve safety and user experience.

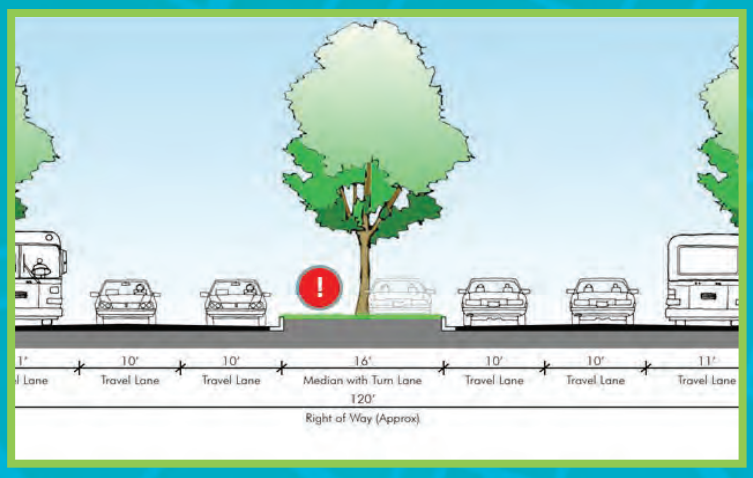


5 SHADE VIA TREES ALONG THE SIDEWALKS AS WELL AS THE MEDIANS

Street trees enhance city streets both functionally and aesthetically. Trees provide shade to homes, businesses, and pedestrians. Street trees frame the street and the sidewalk as discrete public realms, enriching each with a sense of rhythm and human scale. Trees may also provide a traffic calming effect.

6 MULTI-PURPOSE TRAFFIC CALMING DEVICES

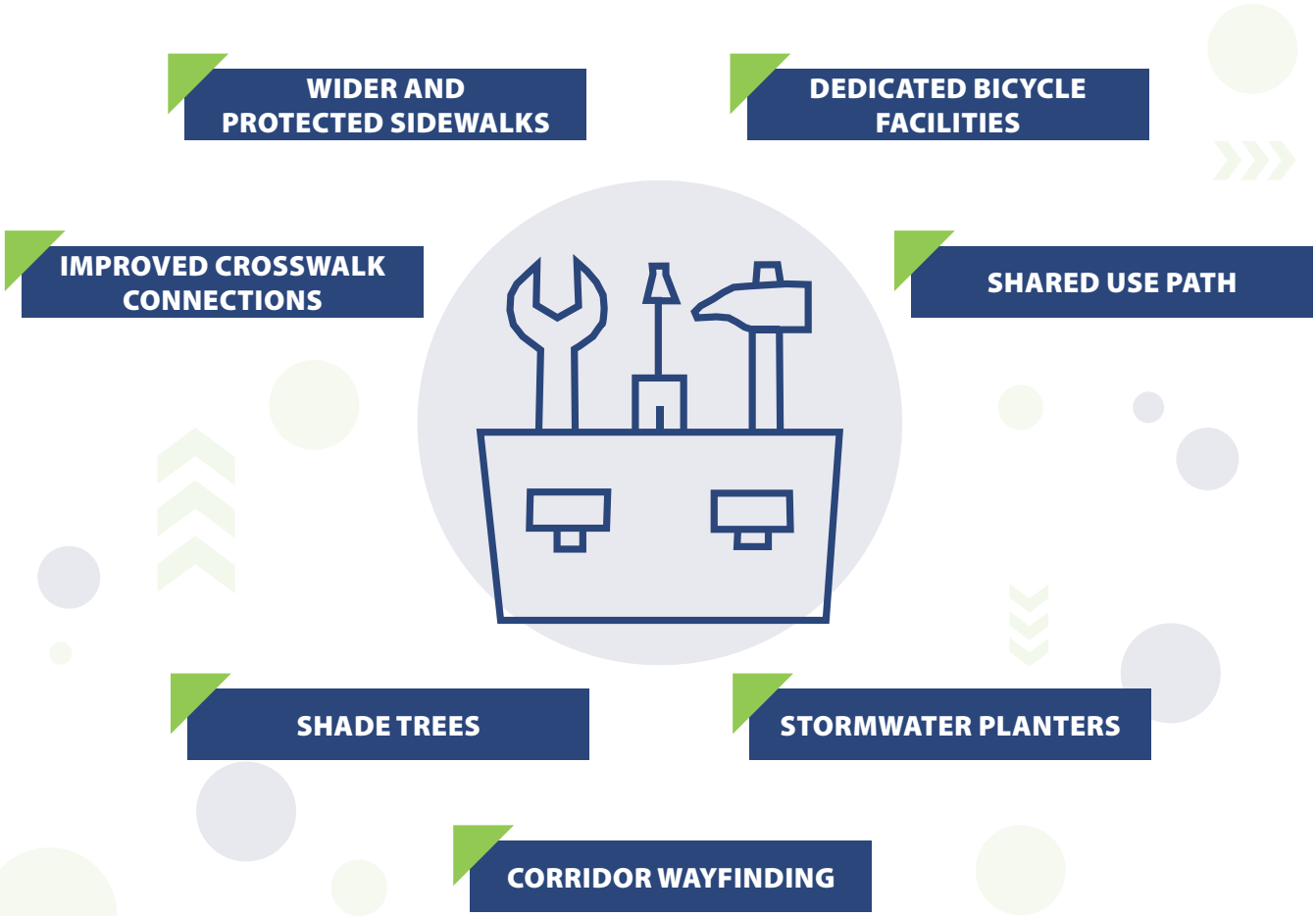
These improvements could include medians, trees, reduced traveling widths, and better access management for vehicular traffic.



MULTIMODAL TOOLBOX

This toolbox demonstrates how we can achieve equity along the corridor by implementing the elements listed in this section. The elements within this toolbox should be appropriately implemented along the corridor based on the proposed concepts for Segments A to E as outlined later in this report.

FIGURE 22: Multimodal Toolbox Elements



WIDER AND PROTECTED SIDEWALKS: Providing comfortable wider and protected sidewalks along the corridor is crucial to create a corridor for all users. In all proposed concepts for the Segments along Culebra Road there are sidewalks that range from a minimum of five (5) feet wide in the most constrained right-of-way scenarios and up to ten (10) feet wide in Segments with wider right-of-way dedication. It is recommended to have a sidewalk at least six (6) feet wide where possible to provide sufficient space for two people to walk side by side comfortably. In addition, it is best practice to provide a planter buffer between the sidewalk and roadway to create a safe and comfortable environment for pedestrians. The planter buffer provides protection and a safe distance from the fast-moving traffic on Culebra Road, while also providing shade and a cooler environment for the pedestrian. Sidewalk spaces shall contain amenities such as lighting as well as trash and recycle bins. Maintenance considerations need to be discussed with the City during project development.

DEDICATED BICYCLE FACILITIES: Dedicated bicycle facilities include protected single-way bicycle lanes or two-way bicycle lanes along the roadway. Bicycle facilities are safest and most comfortable when they are protected or buffered from the roadway, which can be achieved by using planters or bollards for separation. At minimum, a single-way bicycle lane should be a minimum of five (5) feet wide to provide sufficient space for the user. Thus, two-way bicycle lanes shall be a minimum of ten (10) feet wide. It is also essential to provide directional arrows and markings to indicate that the dedicated bicycle facility space is reserved for bicyclists only.

SHARED USE PATH: A shared use path is a space that is intended to be shared by both pedestrians and bicyclists. It is recommended that these spaces be a minimum of twelve (12) feet wide. These spaces can include amenities such as lighting as well as trash and recycle bins.

IMPROVED CROSSWALK CONNECTIONS: Improved crosswalk connections are an essential component to increased safety throughout the corridor. Crosswalks should be placed at all signalized intersections and must include markings. Markings must be clearly visible for all users, including fast-moving vehicles. Where possible, mid-block crosswalks should be provided when distances between existing crosswalks are too long and crossing distances at intersections should be narrowed through the use of curb extensions or bulb-outs.

SHADE TREES: Shade trees shall be provided as often as possible to create shade for bicyclists and pedestrians, provide cooler temperature, and establish a more pleasant aesthetic for the corridor. It is essential that these shade trees be amply spaced to allow the tree roots ample room to reach full maturity. It is recommended to use White Crepe Myrtle, Mexican Sycamore, Cedar Oak, Monterrey Oak, Red Bud, or Chinkapin Oak in planters or stormwater drainage areas along the corridor. To avoid uprooting of adjacent sidewalk space or roadway, the best practice is to use structured soil under pavement and within the planter space. Shade trees also have the added benefit of helping calm traffic.

STORMWATER PLANTERS: Stormwater planters provide beautification for the corridor while also improving stormwater capture and filtration. These are located along adjacent roadways, pedestrian walkways, or parking lots. It is best practice to utilize native vegetation including trees, grasses, or flowers to treat stormwater and remove pollutants. Overall, stormwater planters are cost-effective and can reduce stormwater runoff and decrease flooding.

CORRIDOR WAYFINDING: Corridor wayfinding is crucial to providing identity and character to the corridor. Wayfinding consists of providing signage with corridor specific branding to direct users to key destinations and landmarks along Culebra Road, including the Basilica of the National Shrine of the Little Flower, St. Mary's University, or Culebra Creek.

TOOLBOX ELEMENTS - APPLICABLE BASED ON THE CORRIDOR SEGMENT

		SEGMENTS					
		A	B	C1	C2	D	E
ELEMENTS	Wider and Protected Sidewalks	●	●	●	●	●	●
	Dedicated Bicycle Facilities	●	●	●	●	●	●
	Shared Use Path		●		●		
	Improved Crosswalk Connections	●	●	●	●	●	●
	Shade Trees	●	●	●	●	●	●
	Stormwater Planters			●			●
	Corridor Wayfinding	●	●	●		●	●

IMPLEMENTATION

Culebra Road Multimodal Corridor Transportation Study

IMPLEMENTATION

OVERVIEW

If implemented successfully, the concepts and strategies detailed in this report will contribute significantly to achieving the community's vision for Culebra Road. Each concept includes existing conditions, highlights, strengths, and limitations.

ALTERNATIVES ANALYSIS

As the character of Culebra Road changes throughout the corridor, there cannot be a blanket design solution or one-size fits all approach that will solve the corridor's issues and challenges.

There are **five (5) distinct corridor segments** identified throughout the entire project area and overarching improvements were individually recommended for each segment. The customized solution for each Segment was created in response to surrounding context such as land use, nearby key destinations, drainage, traffic volume, and existing street configuration. As noted earlier, the common improvements for these segments include, providing wider and protected sidewalks; dedicated bike facilities; improved crosswalk connections; shade trees; and multi-purpose traffic calming devices.

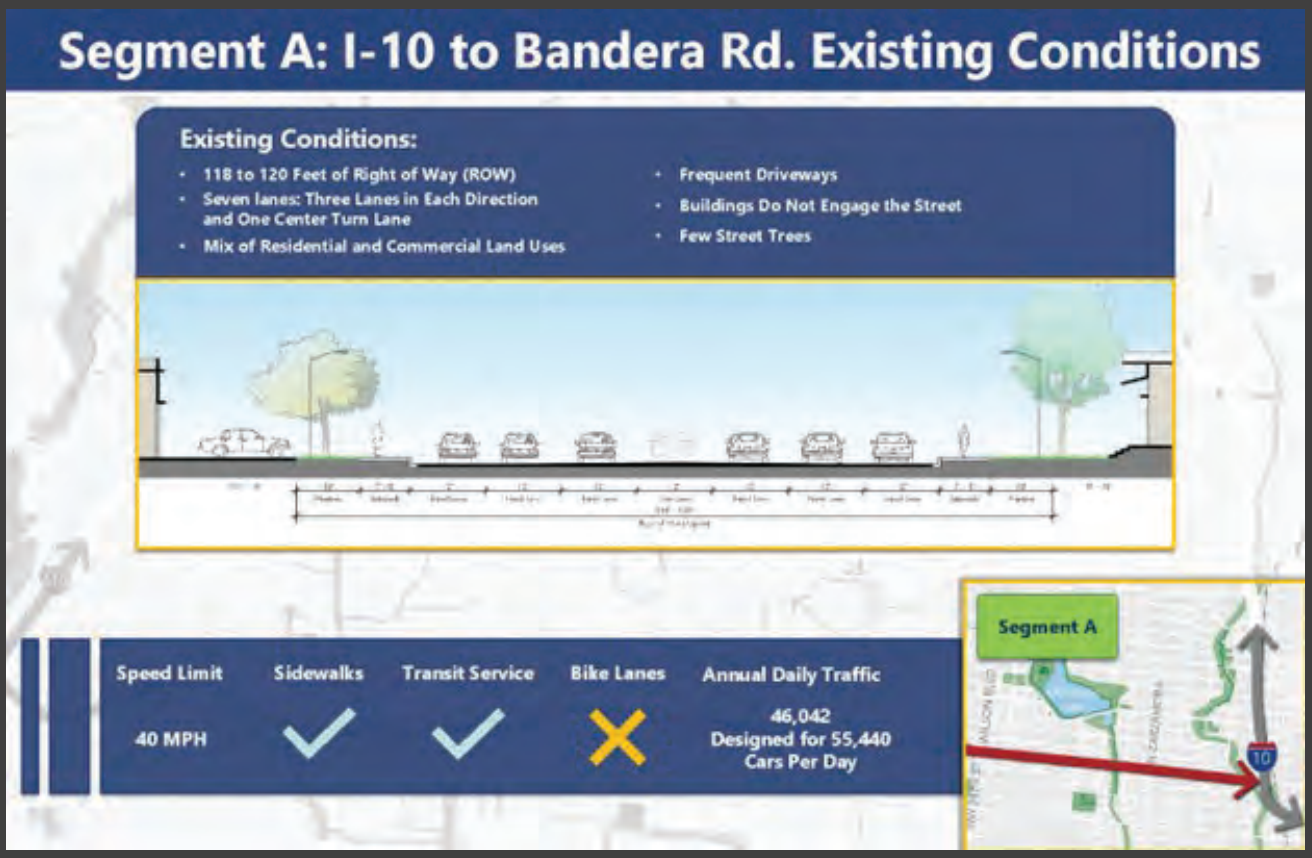
The best practices recommended in the proposed concepts for each segment build on City of San Antonio and NACTO practices and regulations. Collectively, these proposed improvements in the proposed concepts provide safety and connectivity for all modes of travel by re-purposing any excess right-of-way to better serve people who walk, bike, and take transit.

The proposed improvements for the Culebra Road Corridor are summarized and discussed in the following pages. Using the community's vision, overarching strategies, multimodal improvements toolbox, and feedback from the Technical Advisory Group, the study team developed maps, representative cross sections, and conceptual intersection layouts to illustrate two proposed concepts per segment throughout the corridor. Improvements are divided in five segments from north to south as described in the "Corridor Overview."

EXISTING CONDITIONS

A

FIGURE 23: Segment A - Existing Conditions



SEGMENT A

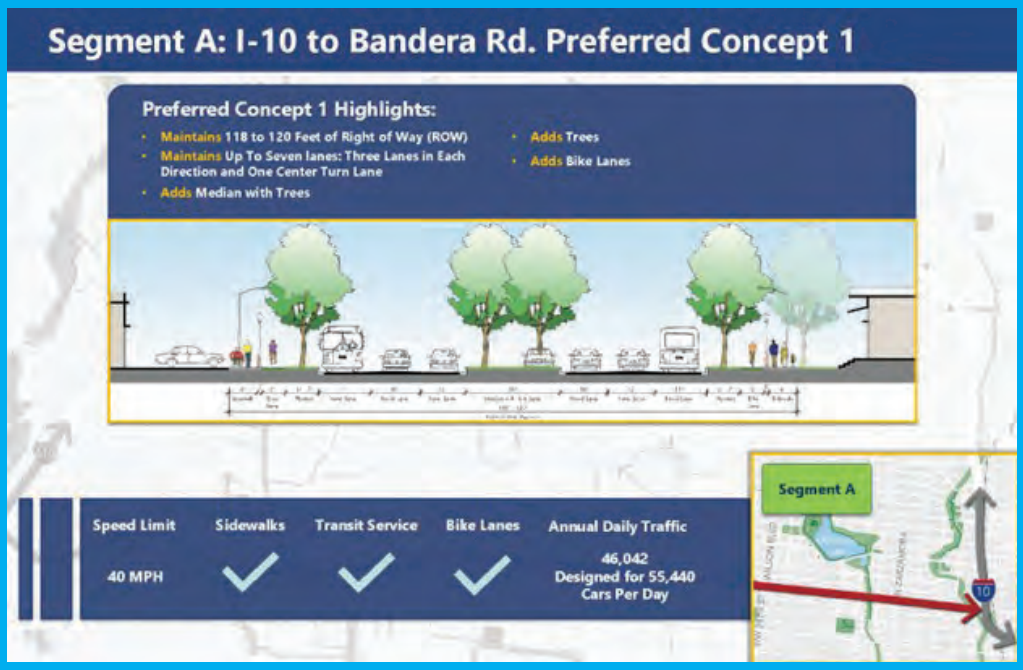
Segment A looks at Culebra Road from I-10 to Bandera Road. It is about 120 feet wide and has three lanes of traffic in each direction with a turn lane in the middle. There is a mix of residential and commercial users with multiple driveways and very few trees. There are no bicycle lanes in this segment. This segment falls within TxDOT's jurisdiction.

A
7,963 feet (1.5 miles)

CONCEPT 1

A

FIGURE 24: Segment A - Proposed Improvements Concept 1



The first concept for Segment A would include protected sidewalks and bicycle lanes on both sides of the street. These paths would be protected from moving traffic with tree lined planters. We also propose a median with trees in the middle of the street. This concept maintains the number of travel lanes within the existing right of way (ROW).

STRENGTHS

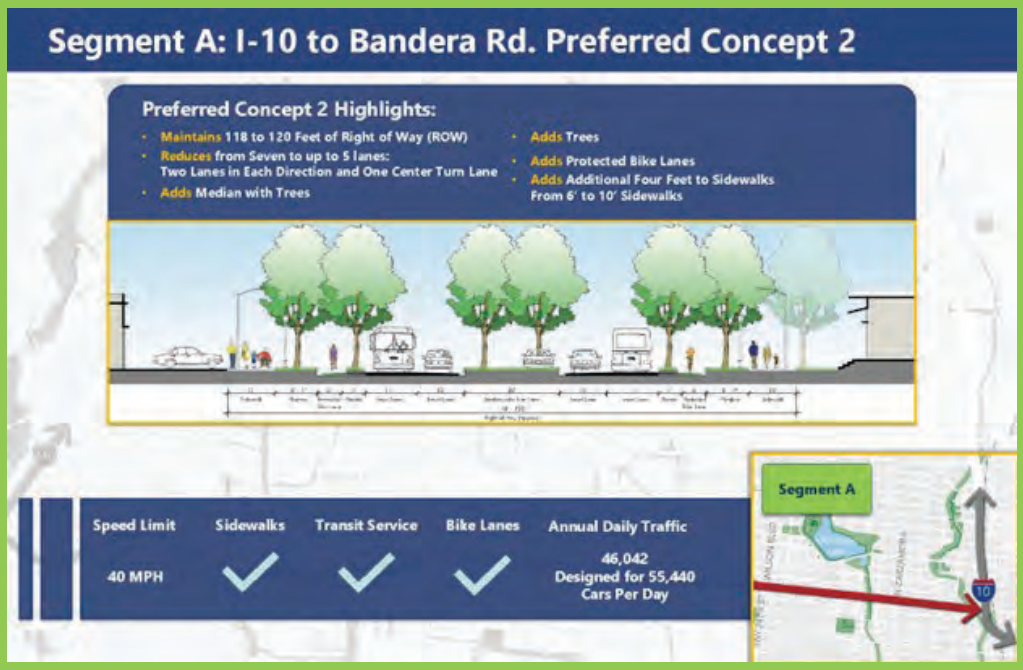
- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds dedicated and protected accommodations for both bicycles and pedestrians on both sides of the road

LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Sidewalks remain at 6 feet when compared to Segment A Concept 2
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

CONCEPT 2

FIGURE 25: Segment A - Proposed Improvements Concept 2



The second concept for Segment A reduces the number of travel lanes from three lanes in each direction to two lanes in each direction. This will allow more space for folks to walk and bicycle along the street and will provide further opportunities for the shade and protection provided by new tree plantings.

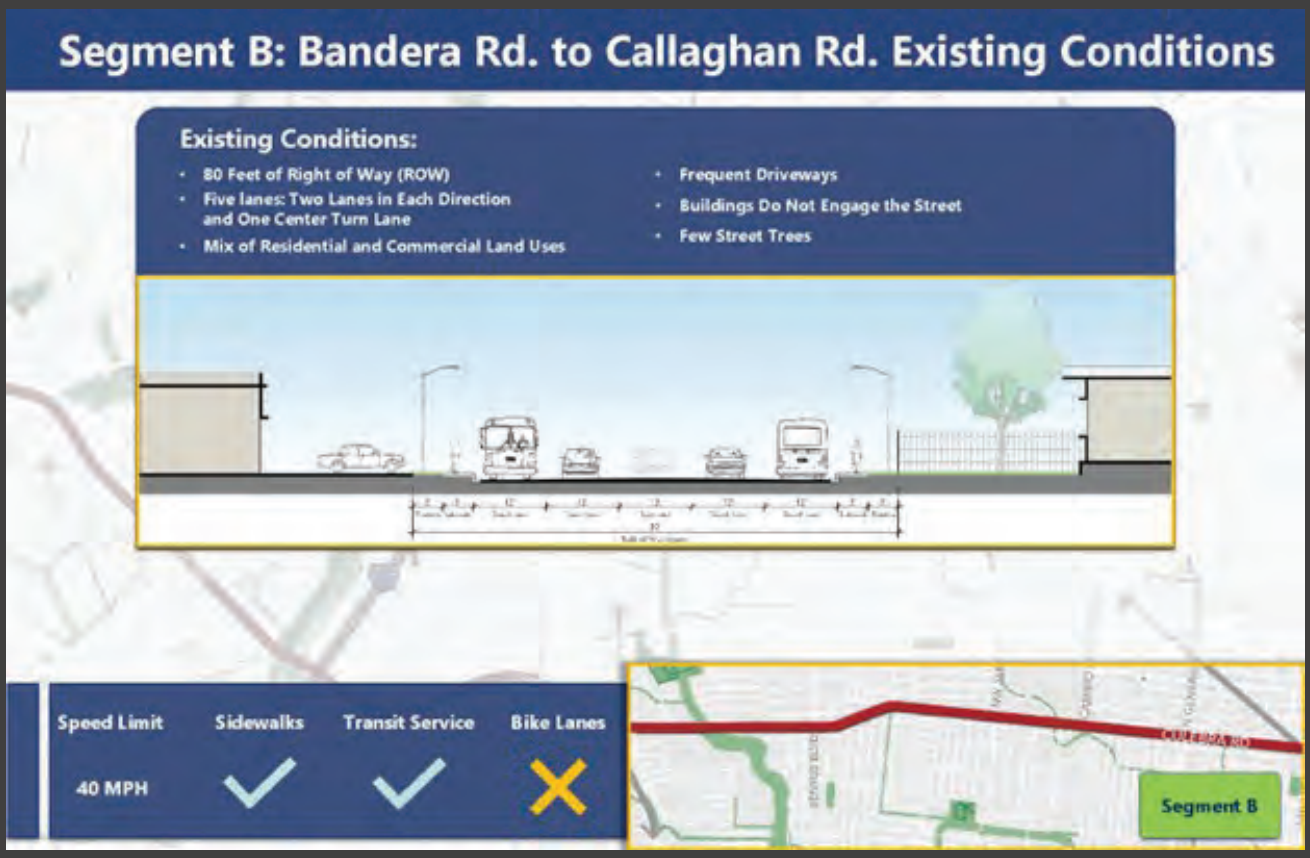
STRENGTHS

- Maintains the existing ROW
- Adds a median with opportunities for trees and landscaping
- Adds dedicated and protected bicycle lanes on both sides of the road
- Widens sidewalks on both sides of the road from six feet to 10 feet

LIMITATIONS

- Would require reducing the number of travel lanes in each direction from three to two
- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

FIGURE 26: Segment B - Existing Conditions



SEGMENT B

Segment B looks at Culebra Road from Bandera Road to Callaghan Road. It's a much narrower road – about 80 feet wide, and it has two lanes of traffic in each direction with one center turn lane. There is a mix of residential and commercial users and very few trees. There are no bicycle lanes in this segment.

B

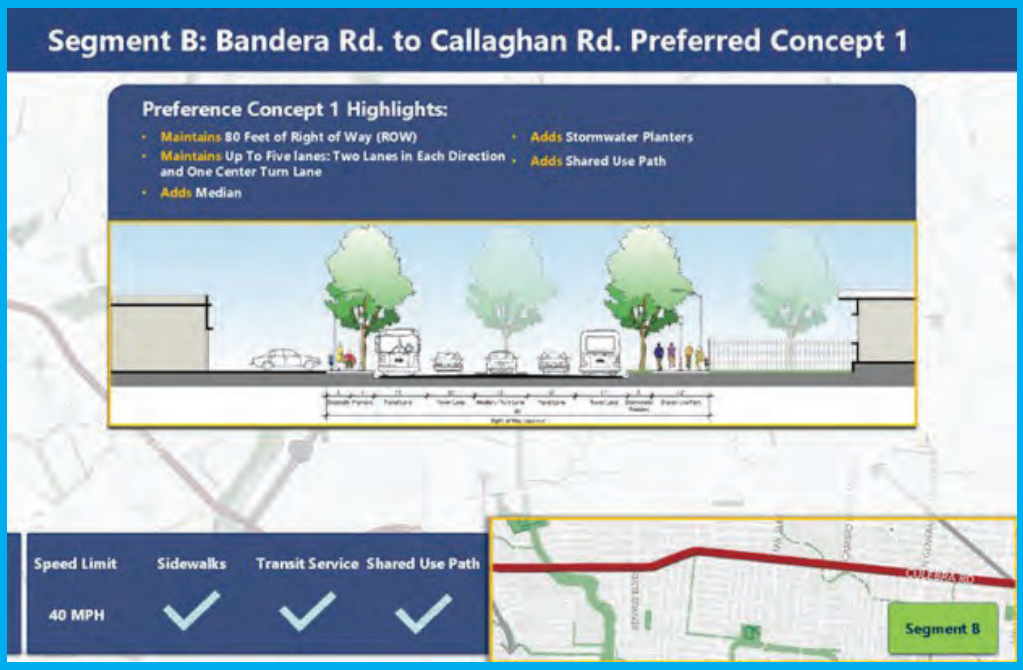
Total: 20,033 feet (3.7 miles)

= Segment B1: 9,195 feet (1.7 miles) + Segment B2:10,838 feet (2 miles)

CONCEPT 1

B

FIGURE 27: Segment B - Proposed Improvements Concept 1



The first concept for Segment B would add a shared use path on one side of the street, which allows pedestrians and cyclists to move comfortably protected with a tree line buffer. On the other side of the street, we propose a sidewalk.

STRENGTHS

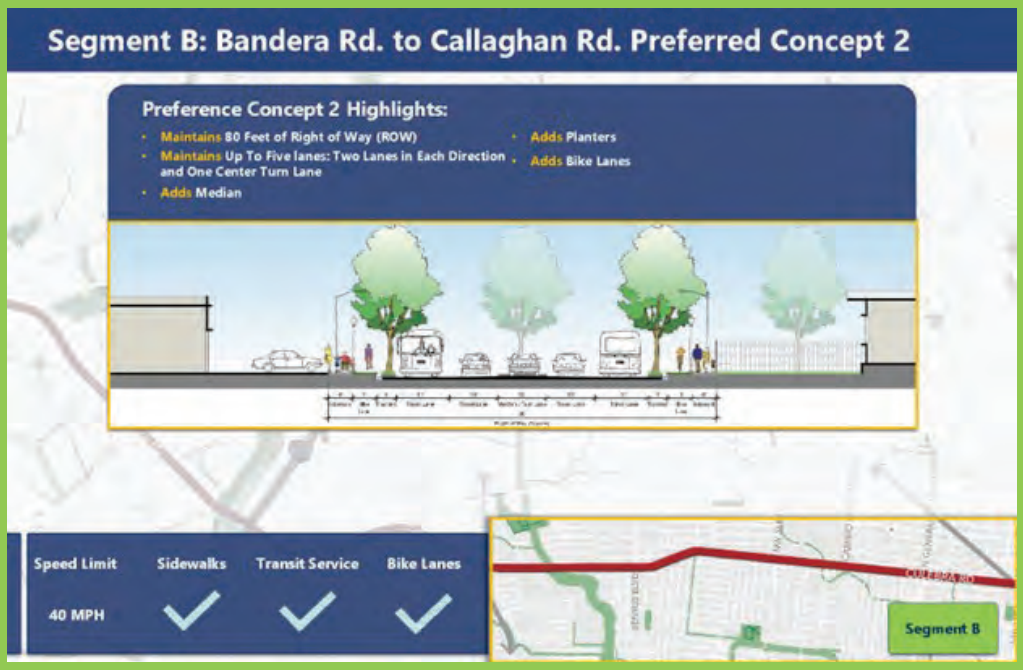
- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds dedicated and protected shared-use path for both bicycles and pedestrians on one side of road
- Add a dedicated and protected sidewalk to the other side of the road

LIMITATIONS

- Does not add a dedicated and protected bicycle lane
- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

CONCEPT 2

FIGURE 28: Segment B - Proposed Improvements Concept 2



The second concept for Segment B would include protected sidewalks and bicycle lanes on both sides of the street. These paths would be protected from moving traffic with tree line planters. It has also been proposed to add a median with trees in the middle of the street. This concept maintains the number of travel lanes within the existing ROW.

STRENGTHS

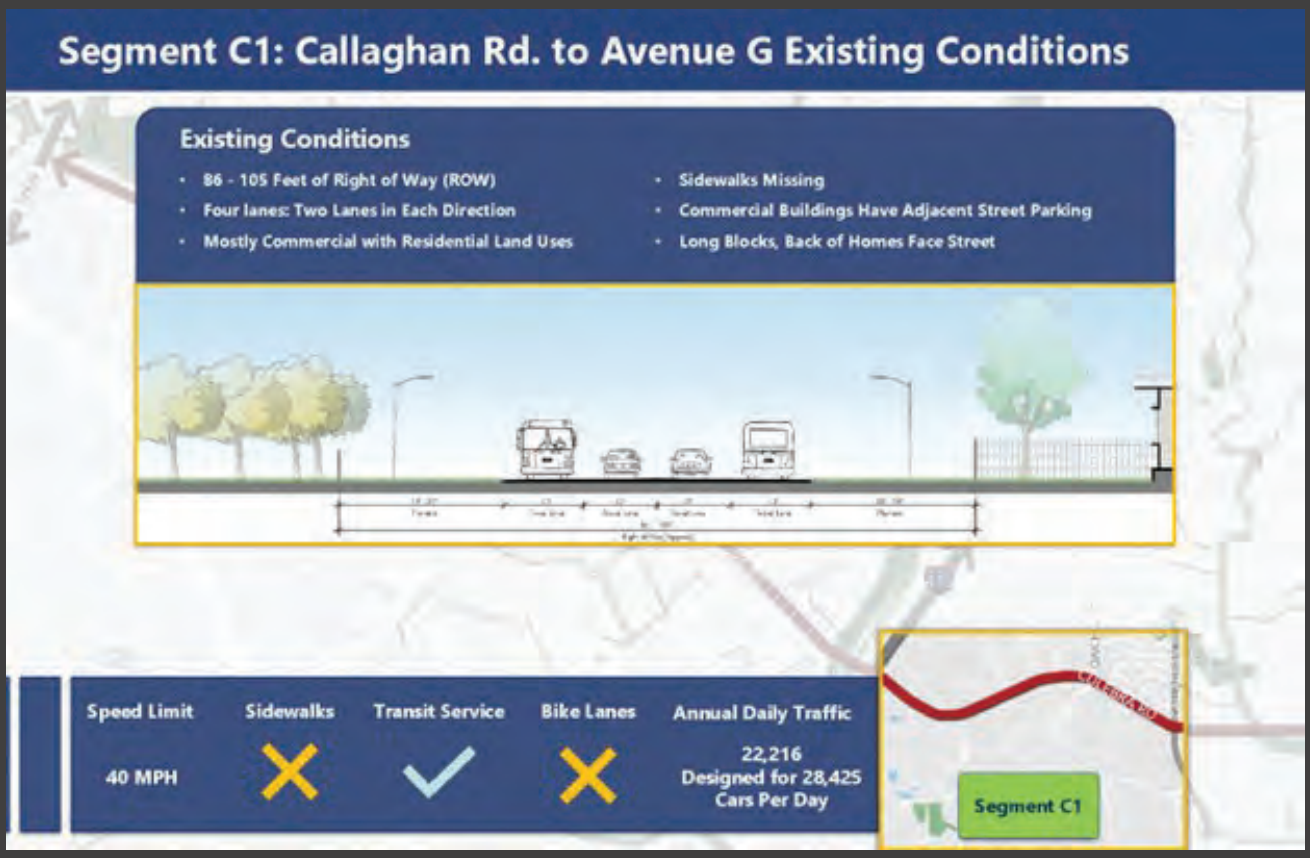
- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds dedicated and protected accommodations for both bicycles and pedestrians on both sides of the road

LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

EXISTING CONDITIONS

FIGURE 29: Segment C1 - Existing Conditions



SEGMENT C1

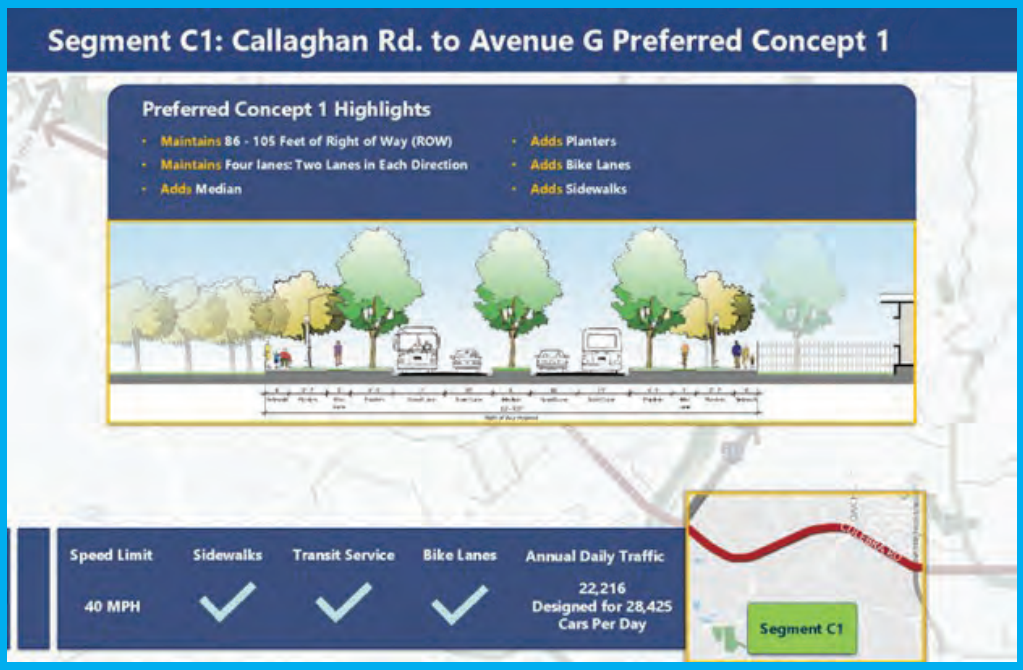
Segment C1 looks at Culebra Road from Callaghan Road to Avenue G. It varies in ROW, going from about 85 feet wide to about 100 feet wide. It has two lanes of traffic in each direction. There are not a lot of sidewalks in this area and several blocks of the road have homes that are located very close to the street.

Note: the study team split Segment C into two different segments, noted as C1 and C2, as they had differences necessitating separate review.

C
9,585 feet (1.8 miles)

CONCEPT 1

FIGURE 30: Segment C1 - Proposed Improvements Concept 1



The first concept for Segment C1 adds a tree line median and provides a tree line buffer space to protect folks walking and cycling on both sides of the street. This concept maintains the number of travel lanes within the existing ROW.

STRENGTHS

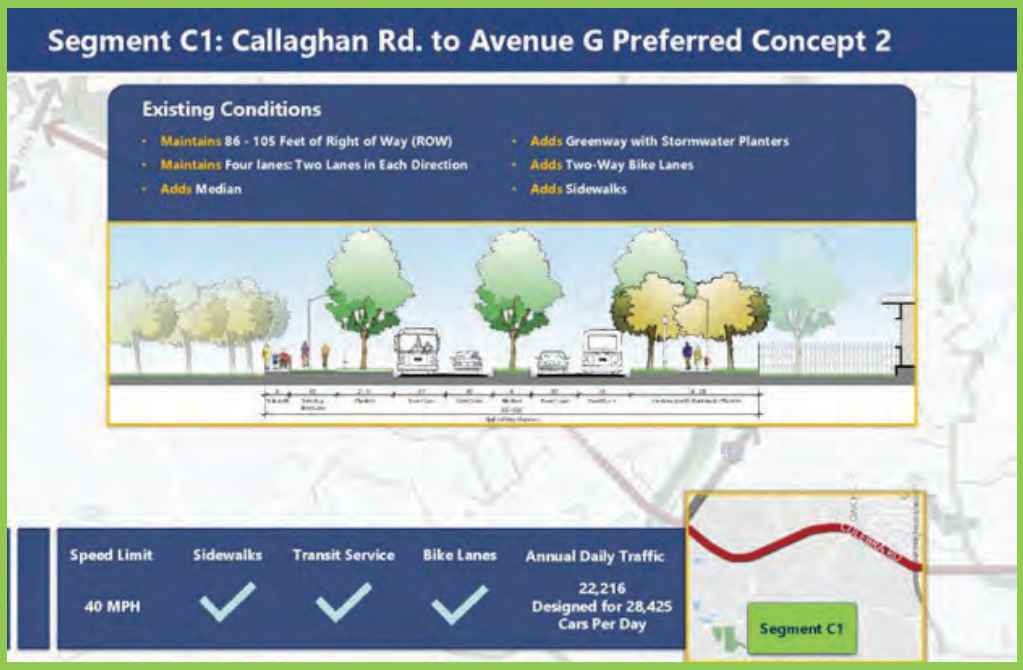
- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds dedicated and protected accommodations for both bicycles and pedestrians on both sides of the road

LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

CONCEPT 2

FIGURE 31: Segment C1 - Proposed Improvements Concept 2



The second concept for Segment C1 provides for a sidewalk and two-way bicycle lanes on one side of the street. On the other side of the street, we propose a greenway with stormwater planters – this is a design element that we clearly heard that the community would like to see in this area.

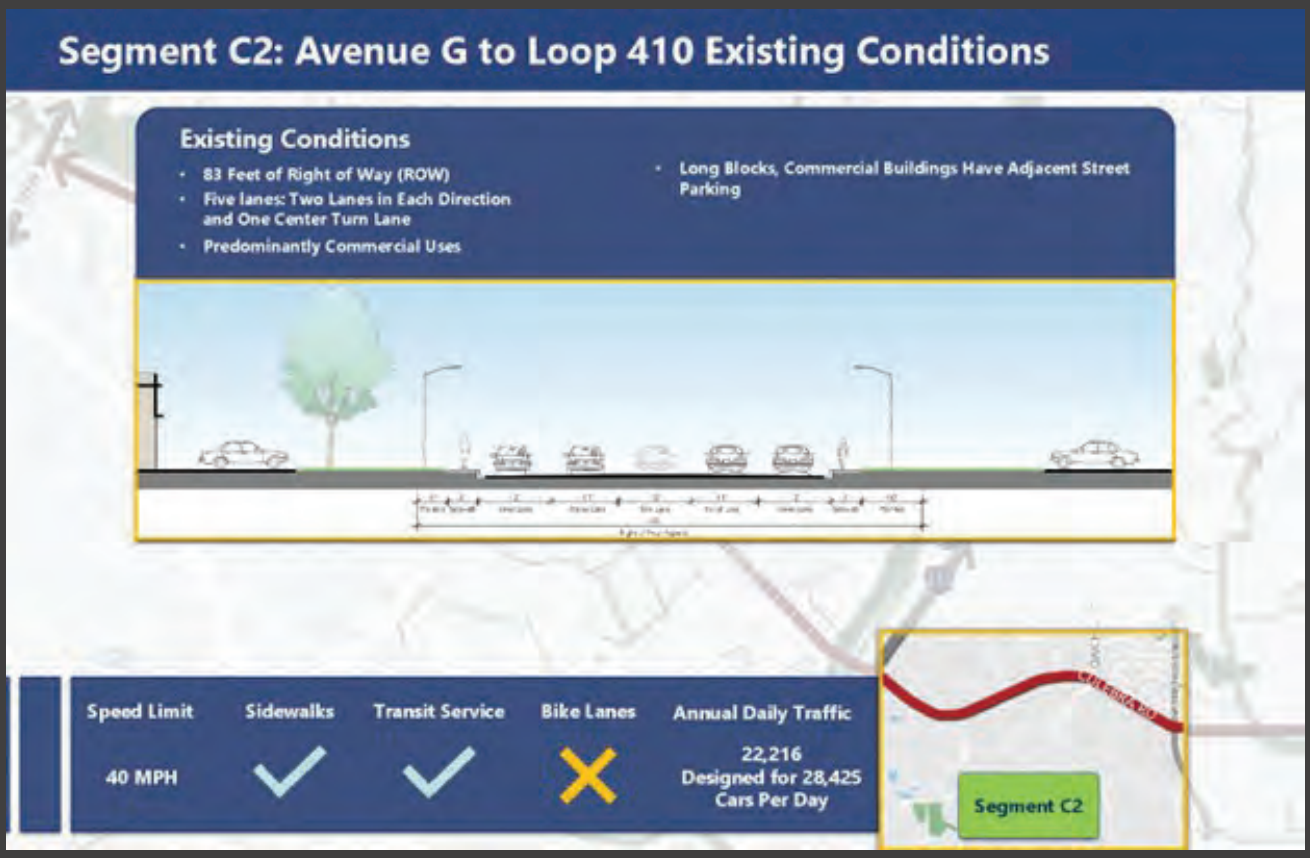
STRENGTHS

- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds dedicated and protected accommodations for two-way bicycle lanes on one side of the road
- Adds dedicated and protected sidewalks on both side of the road
- Add a greenway with stormwater planters on one side of the road

LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

FIGURE 32: Segment C2 - Existing Conditions

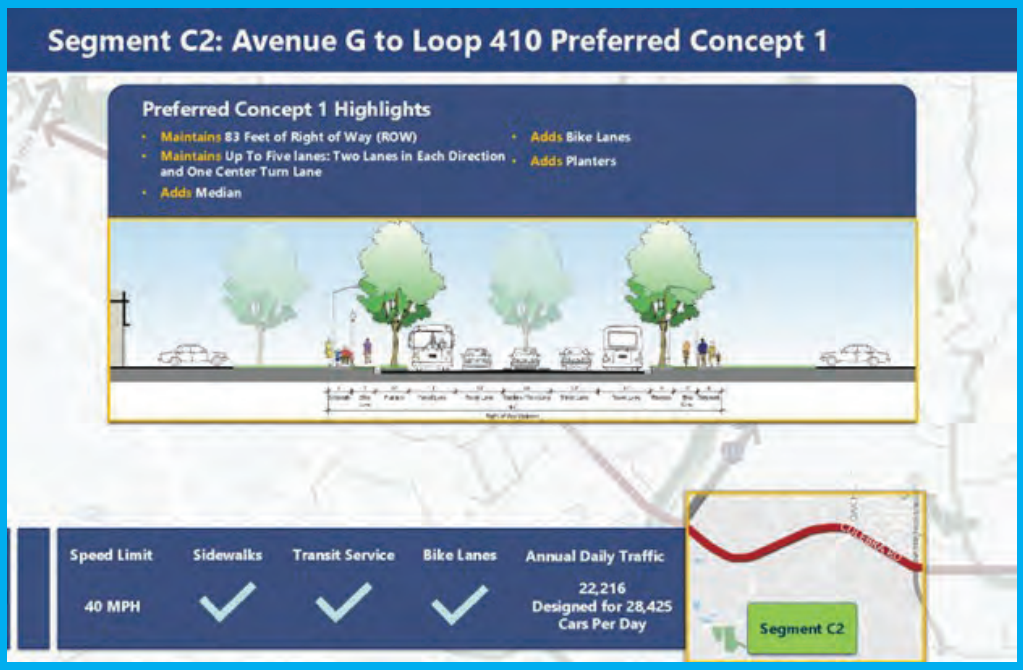


SEGMENT C2

Segment C2 looks at Culebra Road from Avenue G to Loop 410. It has about 80 feet of ROW with two lanes of traffic in each direction. It is predominately commercial and there are narrow sidewalks. There are no bicycle lanes in this segment.

CONCEPT 1

FIGURE 33: Segment C2 - Proposed Improvements Concept 1



The first concept for Segment C2 adds a tree line median to help calm traffic and provides a tree line buffer space to protect folks walking and cycling on both sides of the street. This concept maintains the number of travel lanes within the existing ROW.

STRENGTHS

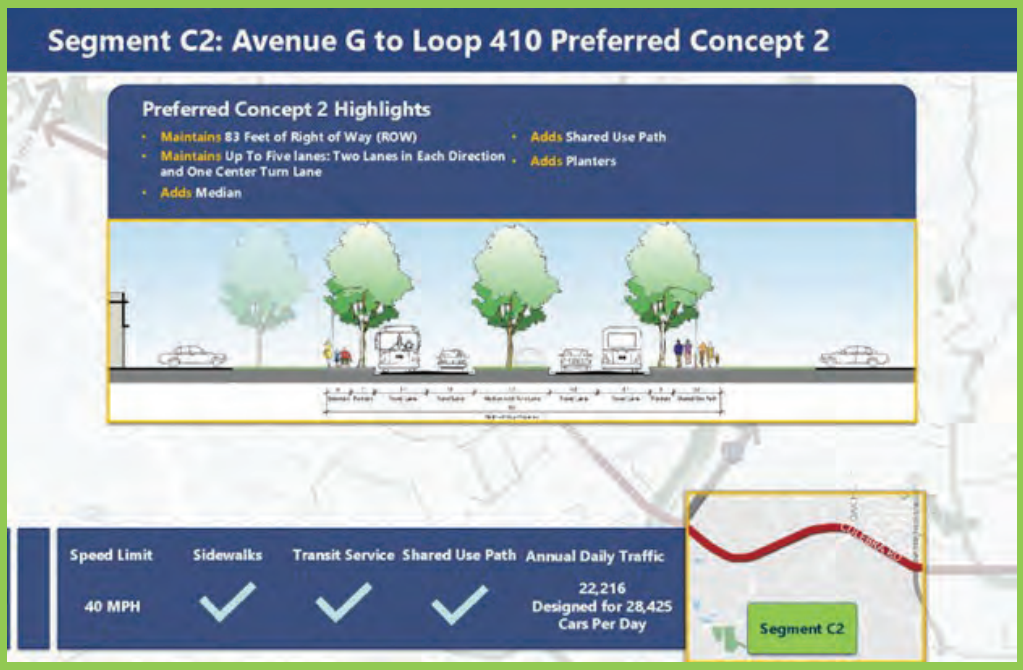
- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds dedicated and protected accommodations for both bicycles and pedestrians on both sides of the road

LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

CONCEPT 2

FIGURE 34: Segment C2 - Proposed Improvements Concept 2



The second concept for Segment C2 provides a shared use path for pedestrians and cyclists on one side of the street and a protected sidewalk on the other side of the street.

STRENGTHS

- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds dedicated and protected shared-use path for both bicycles and pedestrians on one side of the road
- Add a dedicated and protected sidewalk on the other side of the road

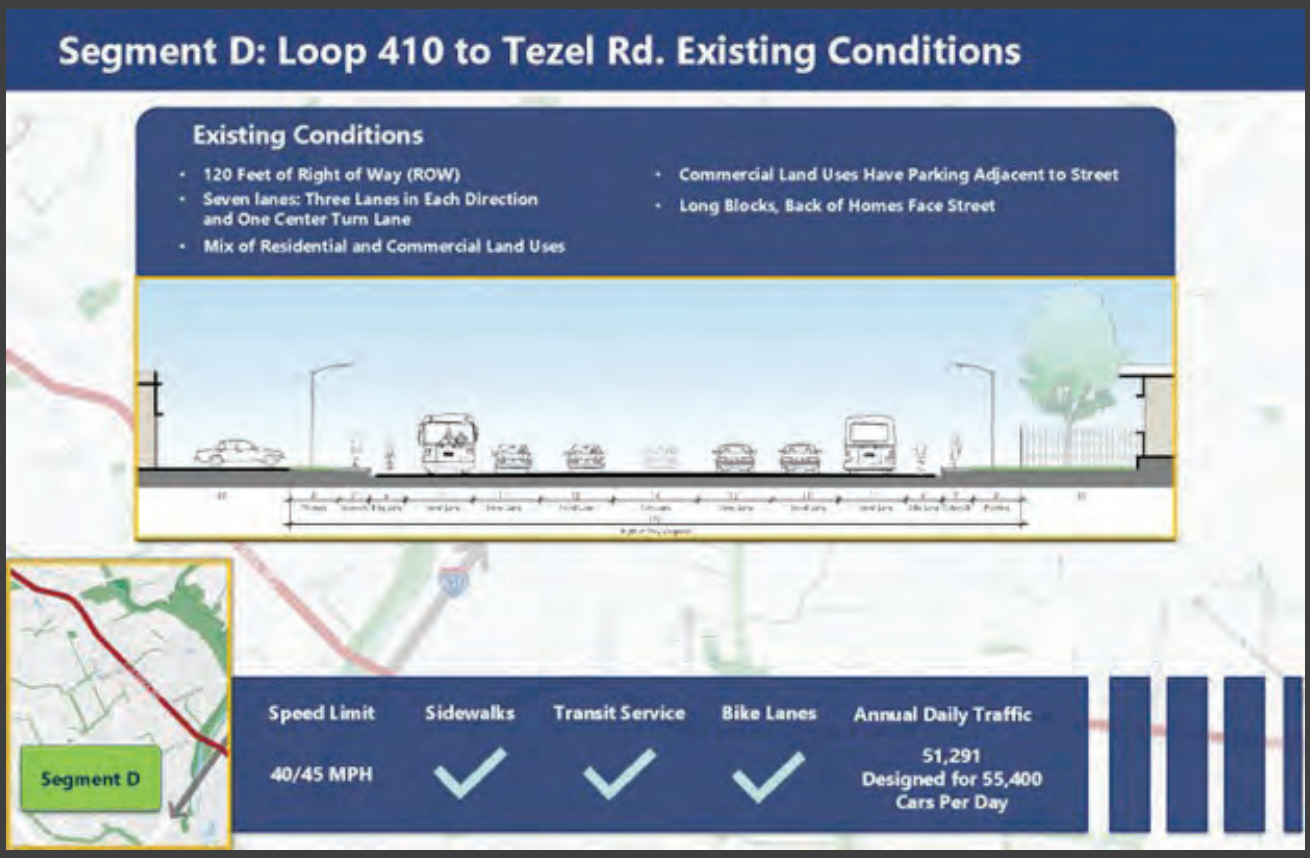
LIMITATIONS

- Does not include a dedicated bicycle lane
- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

EXISTING CONDITIONS

D

FIGURE 35: Segment D - Existing Conditions



SEGMENT D

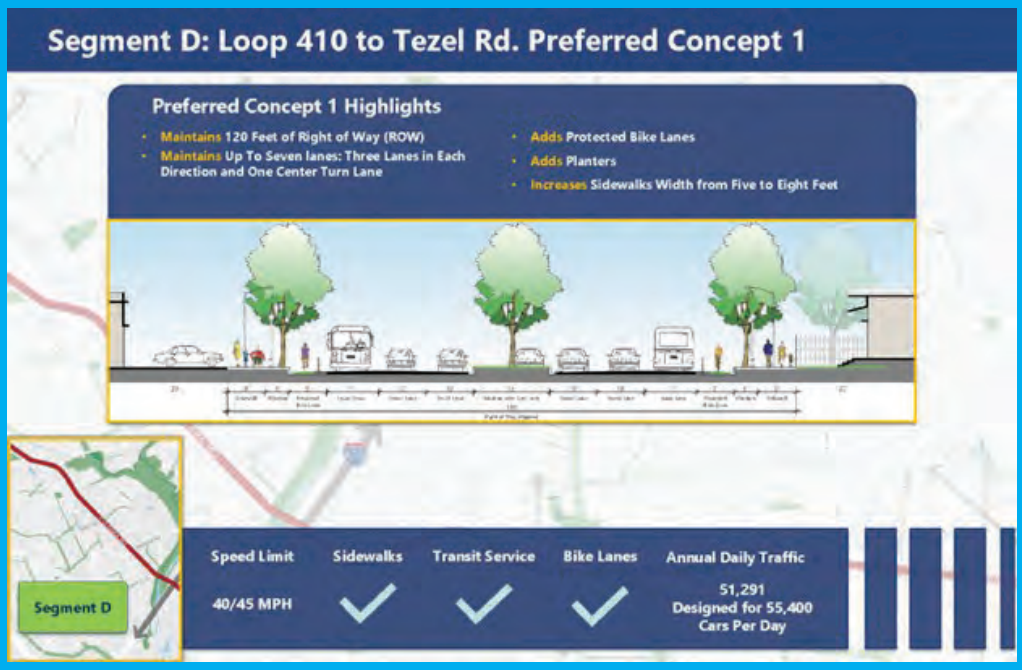
Segment D looks at Culebra Road from Loop 410 to Tezel Road. Currently, it is about 120 feet wide with three lanes of traffic in each direction and a center turn lane. This segment sees a mix of residential and commercial uses. While we do have sidewalks and bicycle lanes on both sides of the street, they are not buffered from the moving traffic. We heard from the community that folks do not feel comfortable walking or using their bicycle in this segment.

D
17,060 feet (3.2 miles)

CONCEPT 1

D

FIGURE 36: Segment D - Proposed Improvements Concept 1



The first concept for Segment D provides for both bicycle and pedestrian paths on both sides of the street as well as a tree line median in the middle that provides for access management and helps calm traffic.

STRENGTHS

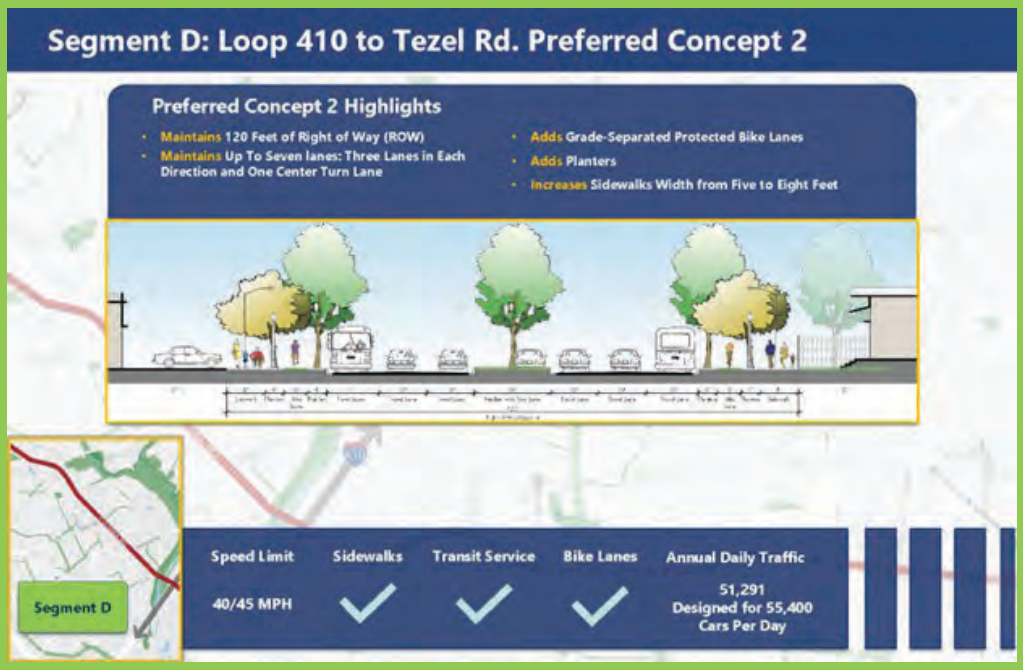
- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Add protection to existing sidewalks and bicycle lanes on both sides of the road
- Increases existing sidewalk widths from five to eight feet

LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

CONCEPT 2

FIGURE 37: Segment D - Proposed Improvements Concept 2



The second concept for Segment D adds the buffer of a planted tree line between the bicycle and pedestrian paths on both sides of the street.

STRENGTHS

- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds grade-separated protection to existing sidewalks and bicycle lanes on both sides of the road
- Increases existing sidewalk widths from five to eight feet

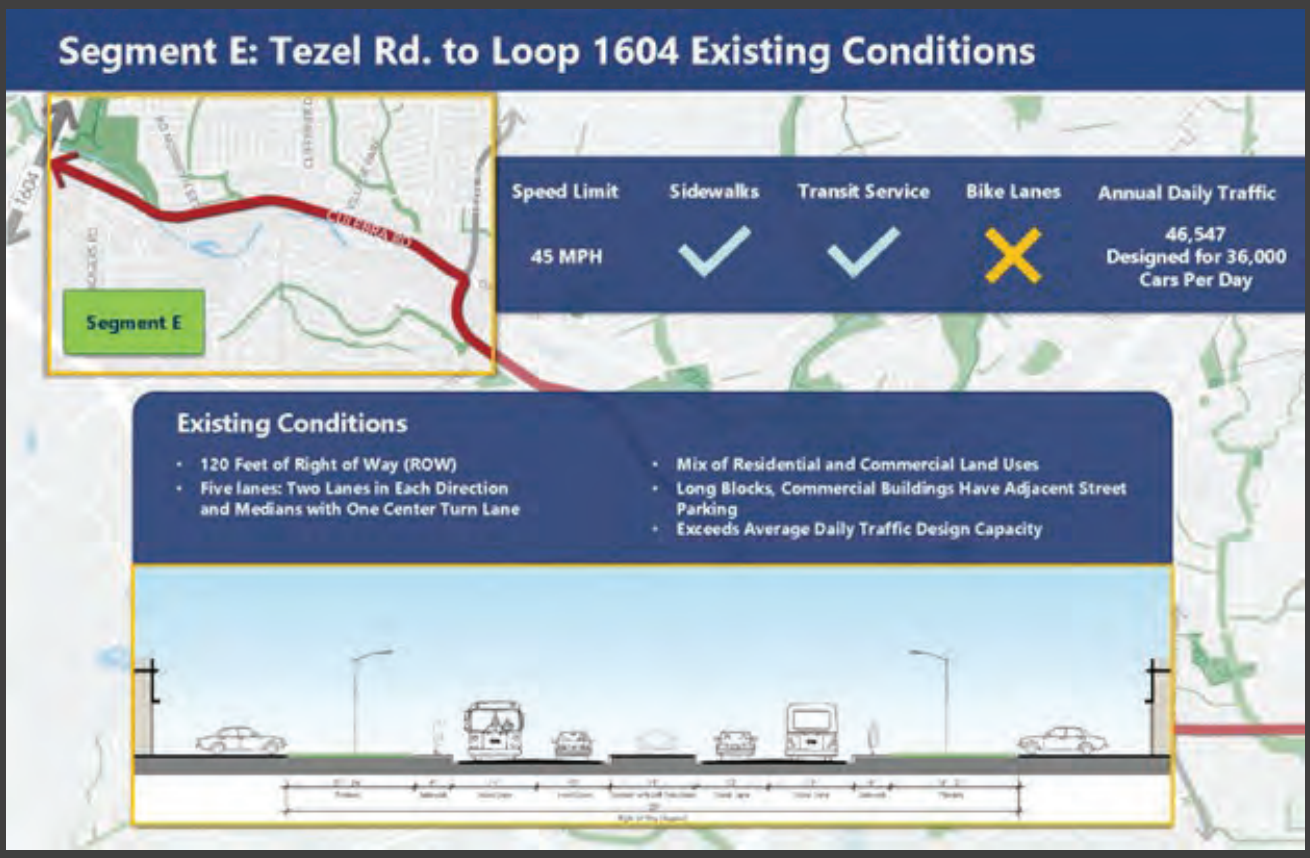
LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

EXISTING CONDITIONS

E

FIGURE 38: Segment E - Existing Conditions



SEGMENT E

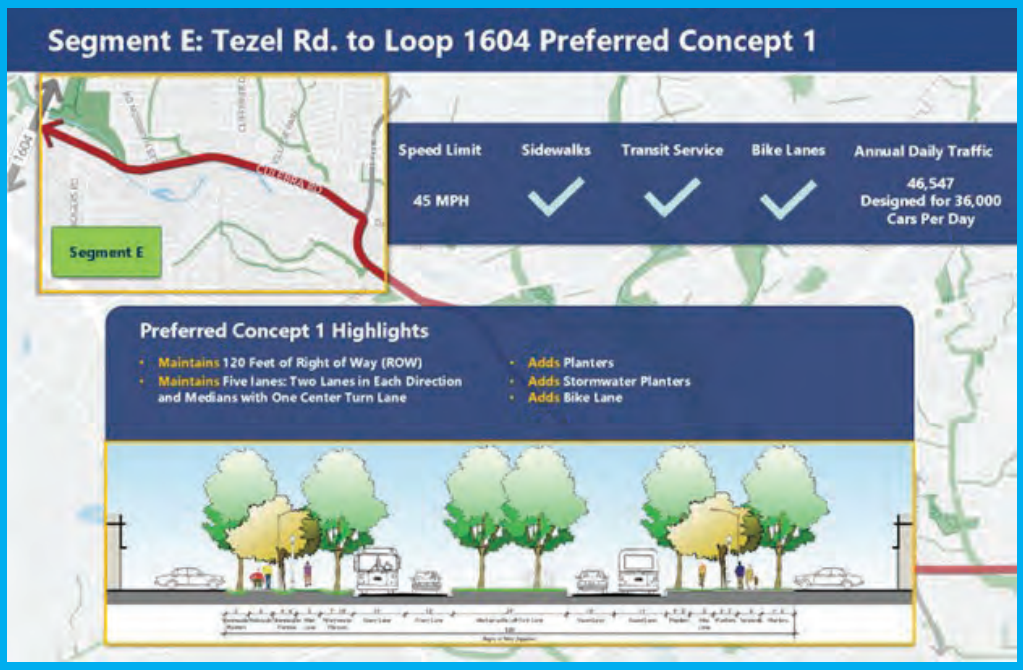
Segment E looks at Culebra Road from Tezel Road to Loop 1604. It is about 120 feet wide with two lanes of traffic in each direction. This segment sees a mix of residential and commercial uses. There are narrow sidewalks and no bicycle paths. We clearly heard from the community that all concepts for this segment allow for protected bicycle and pedestrians paths in a greenway setting.

E
12,927 feet (2.5 miles)

CONCEPT 1

E

FIGURE 39: Segment E - Proposed Improvements Concept 1



Our first concept for Segment E directly reflects community feedback. Folks can walk and bicycle safely and comfortably along tree lined corridors. We also propose a median in the middle that allows for two rows of trees to grow.

STRENGTHS

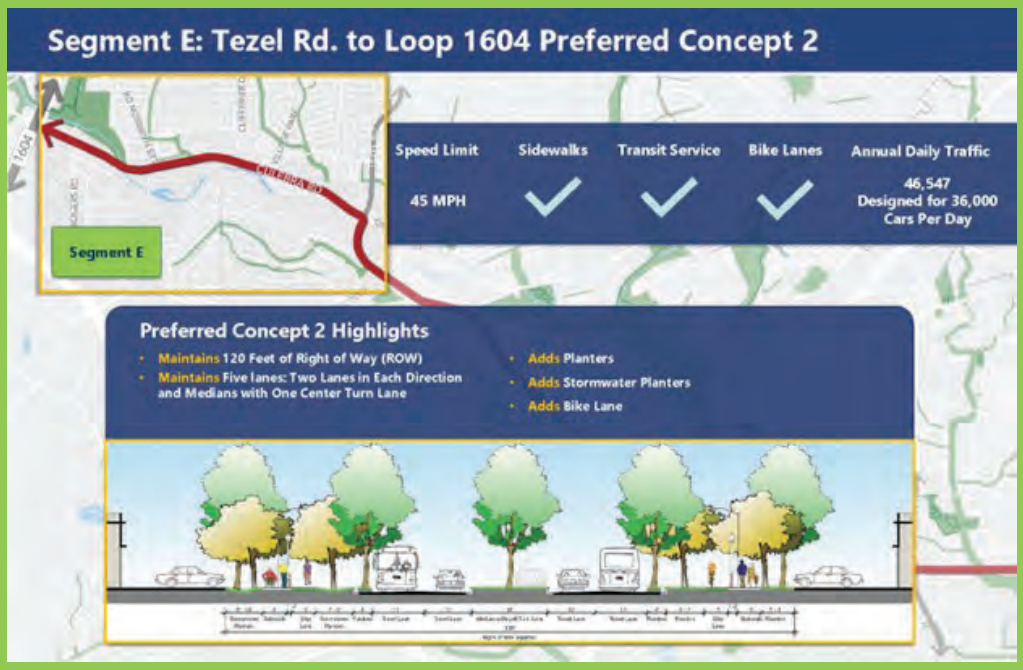
- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for two rows of trees and landscaping
- Adds dedicated and protected bicycle lanes on both sides of the road
- Maintains sidewalks on both sides of the road

LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

CONCEPT 2

FIGURE 40: Segment E - Proposed Improvements Concept 2



Our second concept for Segment E is a little different as we narrowed the proposed median to allow for more space for pedestrians and cyclists on both sides of the street.

STRENGTHS

- Maintains the existing ROW
- Maintains the same number of through lanes
- Adds a median with opportunities for trees and landscaping
- Adds stormwater planters to both sides of the road to increase buffer protection for cyclists and pedestrians
- Adds dedicated and protected bicycle lanes on both sides of the road
- Maintains sidewalks on both sides of the road

LIMITATIONS

- Maintenance requirements for grass and trees in median and along ROW
- Median impacts adjacent property access
- Possible utility conflicts at ROW
- Variable ROW width
- Roadway centerline is not consistently in center of ROW

PREFERRED CONCEPTS

Feedback and comments from the October 2022 engagement effort resulted in overall support for proposed improvements, and no significant comments pulling in one way or another on the two proposed concepts for each segment. The community made it clear throughout the study process that their number one priority for the corridor was to improve safety. All of the concepts achieve that goal through the use of various design elements. These elements focus around reducing the time pedestrians spend crossing the street and creating physical separation between cars and other corridor users.

The top five favored elements

(1) Adding trees to the corridor
(2) Adding separated/protected pedestrian and bicycle paths
(3) Adding frequent and safer pedestrian/bicycle crosswalks
(4) Adding street lighting across all segments
(5) Adding safety measures as safety was noted by many as a major need.

In comparison, there were a very small number of comments in opposition, and they centered on concerns about reducing the number of travel lanes. The following core design principles were used to develop all the concepts:

Travel Lane Width Reduction

Reducing travel lane widths reduces the crosswalk length and which in turn reduces the time it takes for pedestrians to cross the street. Implementing 10-foot travel lanes also serves to calm traffic which helps compound the safety benefit.

Protected Bicycle Lanes

Implementing protected bicycle lanes separates cars from cyclists, and also increases the separation distance between travel lanes and pedestrians.

Adding Trees

Incorporation of trees along the corridor allows for shade protection for pedestrians.

Therefore, as a result of the study process, data analysis, and public input, the team recommends the following as the preferred concept for each segment:

SEGMENT A	SEGMENT B	SEGMENT B
Concept 1	Concept 1	Concept 2
	from Bandera to 36th Street	*from 36th St. to Callaghan Road*

SEGMENT C1	SEGMENT C2	SEGMENT D	SEGMENT E
Concept 2	Concept 1	Concept 2	Concept 2

A preliminary design, also known as a schematic, was prepared for Segments A and B as this stretch of the corridor has potential funding through the 2022 Bond Program. This layout included the preferred concepts as mentioned above. In addition, renderings of an example intersection for the concepts are shown in **FIGURES 41-43** on the following page. In a future final design plan phase, these preferred concepts would be refined further to ensure an equitable, implementable design.

FIGURE 41: Segment A Preferred Concept 1 - Intersection

FIGURE 42: Segment B Preferred Concept 1 - Intersection

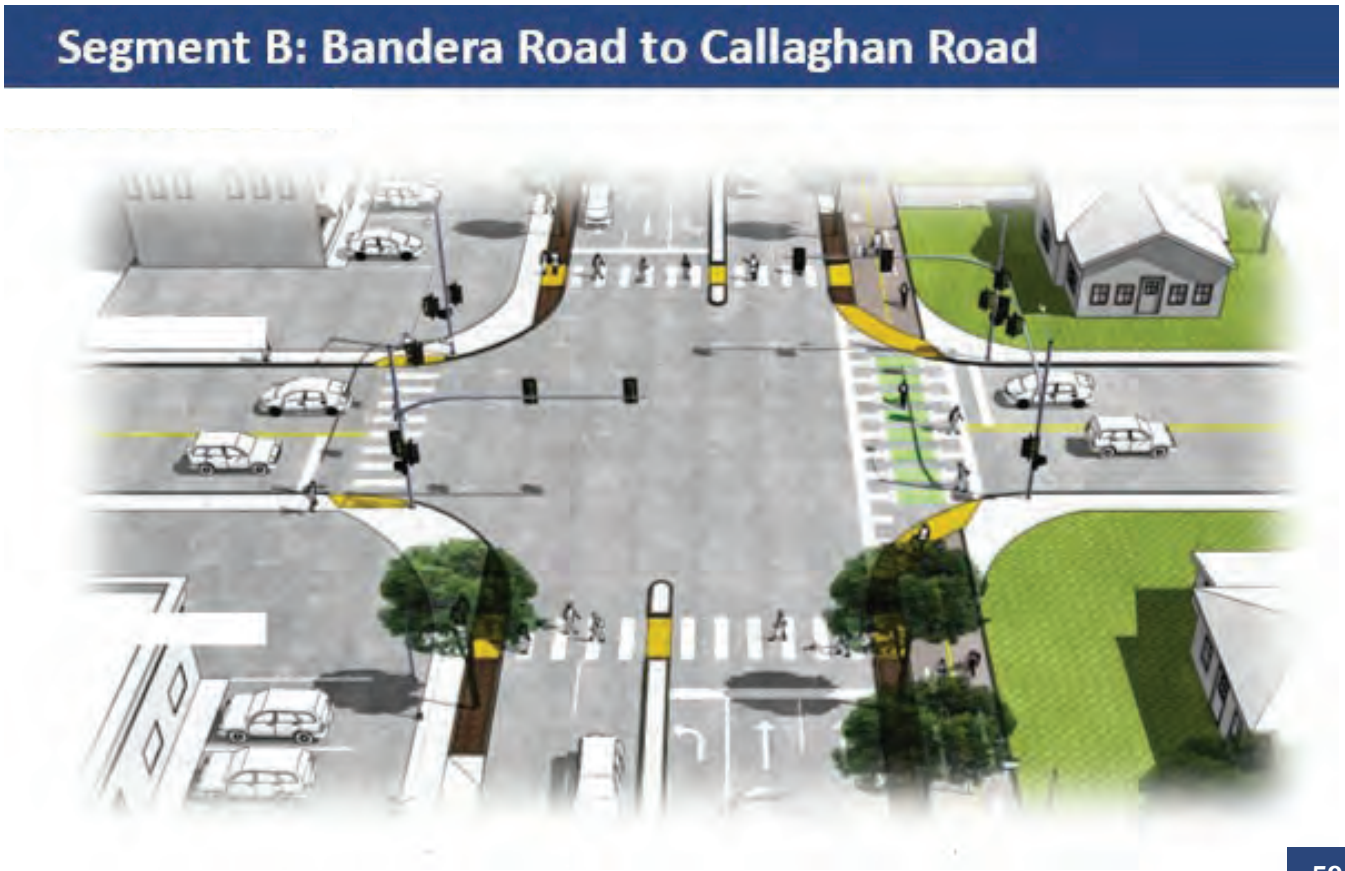


FIGURE 43: Segment B Preferred Concept 2 - Intersection

FUNDING

This study has documented several reasons to prioritize funding for roadway improvements outside of capacity expansion, including community's desire to mitigate existing safety and accessibility concerns.

A combination of local, state, and federal funding sources will be necessary to fully implement the proposed improvements recommended in the Culebra Road Multimodal Corridor Transportation Study. As of the report's writing, funding has not been allocated to support all of the improvements recommended.

PRELIMINARY COST ESTIMATES

Cost estimates for the Culebra Road Multimodal Corridor Transportation Study were developed based on a combination of knowledge of prior improvement design for the urban areas in Central Texas and materials provided by the City of San Antonio. A cost range for the segments is included below to account for variable cost of certain items proposed, such as dedicated bicycle lanes, intersection improvements, sidewalks, and bridge crossings. The estimate took the 12-month average TxDOT bid prices for the San Antonio District up to September 2021 (12-consecutive month averages) and accounted for the main bulk of items that would go into these improvements.

All items considered preliminary engineering costs such as traffic control/impact to traffic, safety fencing, erosion and sedimentation control. Due to the concept-level of the improvements and unknown variables such as design material choices, a contingency was applied for the total estimated cost. Right-of-way costs were not included.

CORRIDOR SEGMENT	ESTIMATED COST
A: I-10 to Bandera Road	$20,000,000
B: Bandera Road to Callaghan Road	$34,000,000
C-1: Callaghan Road to Avenue G	$10,000,000
C-2: Avenue G to Loop 410	$5,000,000
D: Loop 410 to Tezel Road	$36,000,000
E: Tezel Road to Loop 1604	$24,000,000
Total Estimated Cost (includes planning, design, and utility coordination)	***$129,000,000***

Dollar amounts represent general estimates of the level of effort required to design and construct the improvements; costs are likely to change after survey and detailed design.

POTENTIAL AVAILABLE FUNDING AND PRIORITIZATION

The City's Public Works Department has a proposed project in the 2022 Bond Program that considers improvements to Culebra Road from I-10 to Callaghan Road. This stretch of the corridor is noted in this study as Segments A and B. The project budget is $18 million and the recommendations from this study will help inform the proposed project improvements. With the $18 million budget, we recommend completing the detailed design for Segment B and constructing a first phase of Segment B between Bandera Road to 36th Street while pursuing additional funding for the next phase between 36th Street and Callaghan Road. Further discussions with TxDOT are required to determine an implementation approach for Segment A.

The table below summarizes the implementation priority for Segments A and B.

PRIORITY	CORRIDOR SEGMENT	ESTIMATED COST
1	**B:** Bandera Road to 36th Street	$15,500,000
2	**B:** 36th Street to Callaghan Road	$18,500,000
3	**A:** I-10 to Bandera Road	$20,000,000

In addition to the 2022 Bond Program, in Fall 2021, TxDOT awarded the City with $3.2M for safety improvements along Culebra Road from Shelly Street to NW 28th Street via their Highway Safety Improvement Program (HSIP).

This stretch of the corridor includes all of Segment B. The FY2022 budget also included $5.2 million as part of the City's Vision Zero program towards the design and construction of 28 mid-block crossings on 8 corridors including Culebra Road. Discussion between the Public Works Department, Transportation Department, and stakeholders will continue to determine how best to leverage these multiple funding sources to fulfill the community's vision documented in the Culebra Road Multimodal Corridor Transportation Study.

NEXT STEPS

Culebra Road Multi Multimodal Transportation Study

NEXT STEPS

The Culebra Road Multimodal Corridor Transportation Study concluded in preferred concepts, visualizations, and preliminary designs as a result of the exploration of existing conditions, challenges and opportunities, and public input. The City will use these conclusions to create and construct an implementable design.

As Culebra Road from I-10 to Callaghan Road (Segments A and B) is part of the 2022 Bond Program, the City will develop final design plans for that stretch of the corridor, as appropriate, as the needed next step before any potential construction.

The schedule for any future construction is still to be determined. Currently there are no immediate next steps for Segments C through E; however, this study will serve as a foundation for pursuing future local, state, or federal funding opportunities.

This study will serve as a foundation for pursuing future local, state, or federal funding opportunities.

APPENDIX A-1

Multimodal Corridor Transportation Study

Appendix A-1: Culebra Road Transportation Study Community Engagement Summary & Emerging Concepts (August 2021)

APPENDIX A-1

Culebra Road Transportation Study

Community Engagement Summary & Emerging Concepts

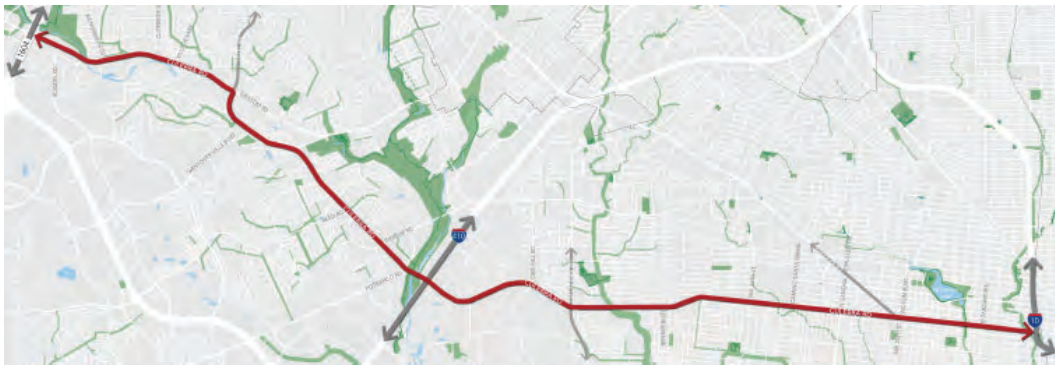
August 2021

TABLE OF CONTENTS

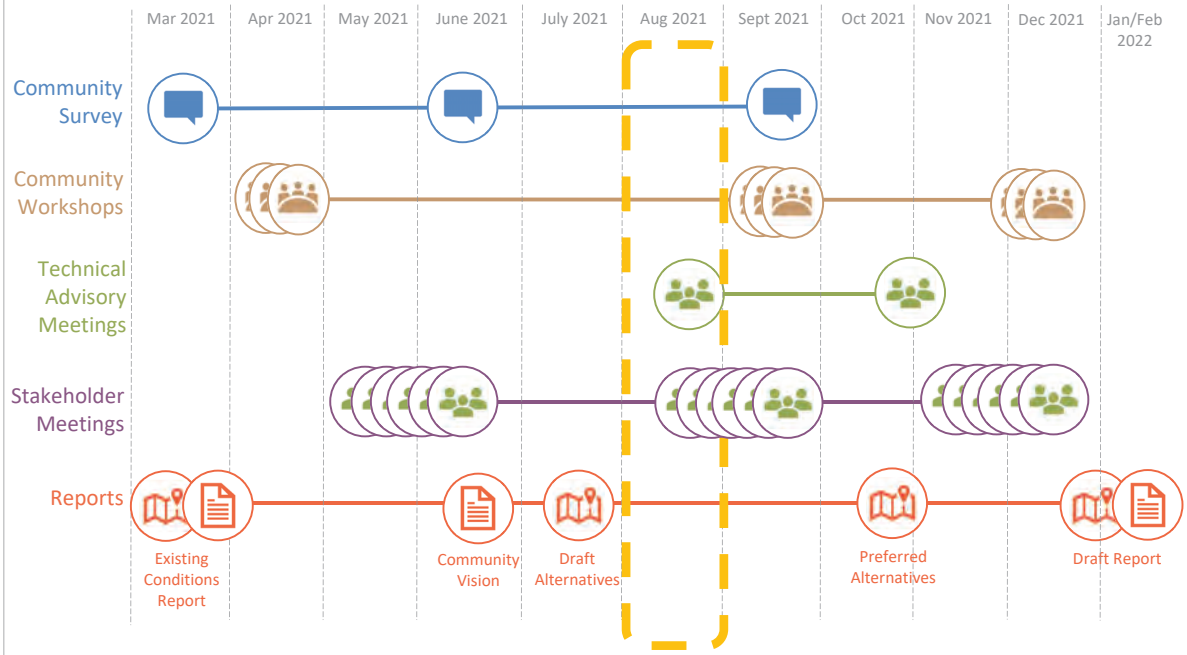
I. PROJECT BACKGROUND

Project Goals

- Create a **safe corridor for ALL users** of the street
- Transform Culebra into an **equitable, multimodal corridor for people who walk, roll, bike, take transit and drive**
- Enhance **overall experience and connectivity for pedestrians, bicyclists & transit users**
- Develop **conceptual designs for short- and long-term improvements**
- Coordinate and **build upon previous and concurrent studies** and initiatives
- Ensure **meaningful community and stakeholder engagement**



Project Schedule



II. COMMUNITY ENGAGEMENT PROCESS & SUMMARY

Overall Community Visioning Engagement Process

- Multi-Pronged Community Engagement Included:
  - 3-month long in-person and virtual **Community Visioning Survey**
  - 5 **Focus Group Stakeholder Meetings** with neighborhood associations, pedestrian and bike advocacy groups and institutions
  - 3 **Community Workshops** in English and Spanish
  - **NEARLY 600 ACTIVE PARTICIPANTS** who attended stakeholder and community meetings and took the community survey
  - **OVER 2000 CLICKS** to multi-media outreach including email blasts, social media posts, newspaper and social media ads, media coverage and project website

Overall Community Visioning Outreach

Multifaceted Community Outreach Efforts advertised the community goals, Included:

- **Postcards:** Nearly 800 bilingual postcards mailed to adjacent property owners and stakeholders
- **Newspaper Ads**: 3 newspaper ads to advertise the project upcoming
  - La Prensa Texas (in Spanish) – April 11th, 2021
  - San Antonio Express- News (in English) – April 11th and April 13th, 2021

Overall Community Visioning Outreach

Outreach Efforts Included:

- **Email Blasts:** 2 bilingual email with over 250 recipients
- **Media Coverage:** KSAT 12 website and Telemundo interview
- **Social Media Posts:** 22 social media posts that were shared or retweeted over 50 times on twitter and facebook
- **Social Media Ads:** 5 ads that were clicked more than 4000 time
- **Culebra Workshop Website:** **https://culebraroadworkshops.org/**

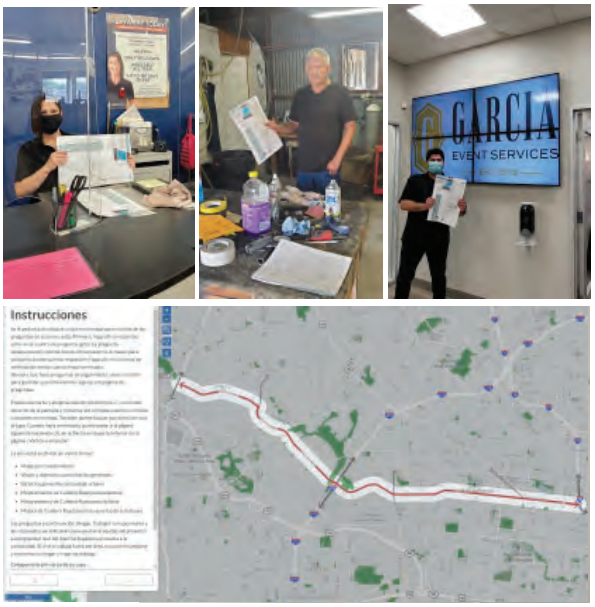
Community Survey

- Bi-Lingual English and Spanish
- March 12 to June 14th, 2021
  - Over 540 surveys
  - Over 2480 map responses
- **Digital survey** – Multi-media and location based
- **Hard copy survey:** In-person and via mail
- Locations for pick up and drop

Memorial Library
3222 Culebra Rd.
San Antonio, TX 78228

Great Northwest Library
9050 Wellwood St. 78250

Council District Offices



https://culebraroadworkshops.org/

Focus Group Stakeholder Meetings & Community Workshops

FOCUS GROUP STAKEHOLDER MEETINGS

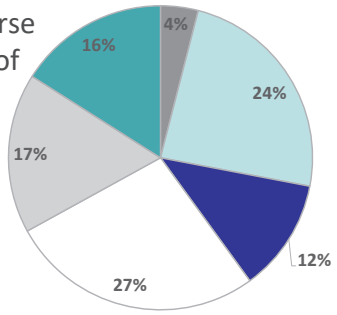
- May 26th to June 8th, 2021
- Neighborhood Associations: West End Hope in Action, NW Crossing, Timber Ridge, Thunderbird Hills, Culebra Park, Great Northwest and University Park
- Bicycle & Pedestrian Advocacy Groups: Activate SA, AAMPO, Bike San Antonio, South Texas Off Road Mountains (STORM), and Earn a Bike

COMMUNITY WORKSHOPS (English and Spanish)

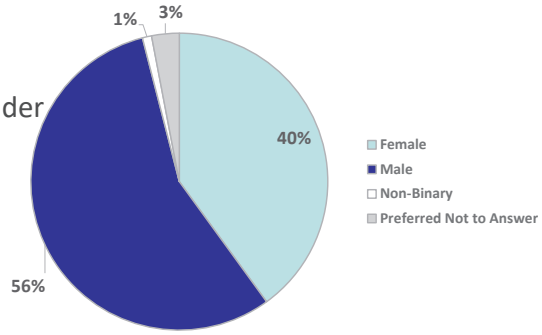
- Afternoon workshop on April 20, 2021
- Evening workshops on April 20 and April 22, 2021

Age/Gender

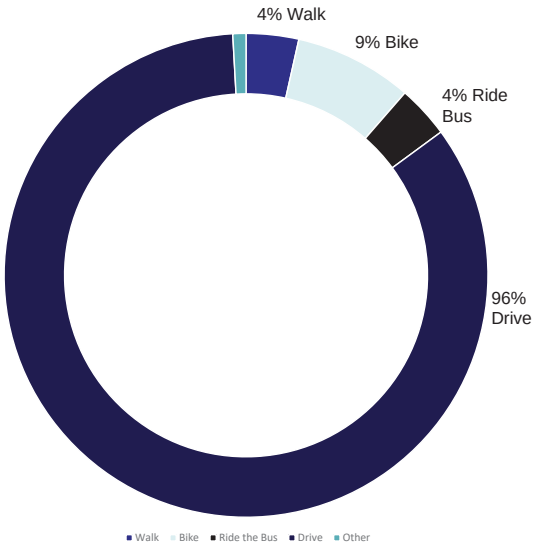
- Diverse mix of ages



- Gender

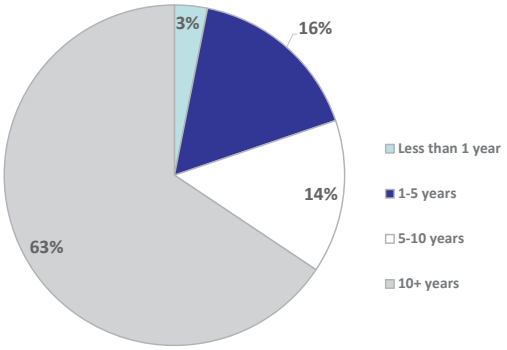


Existing Modes of Travel



Live/Work

- Nearly 2/3rd of the respondents have lived in the area for more than 10 years
- Respondents from all key neighborhoods along the corridor
- Respondent represent small and large places of work including St Mary's University and Southwest Research Institute

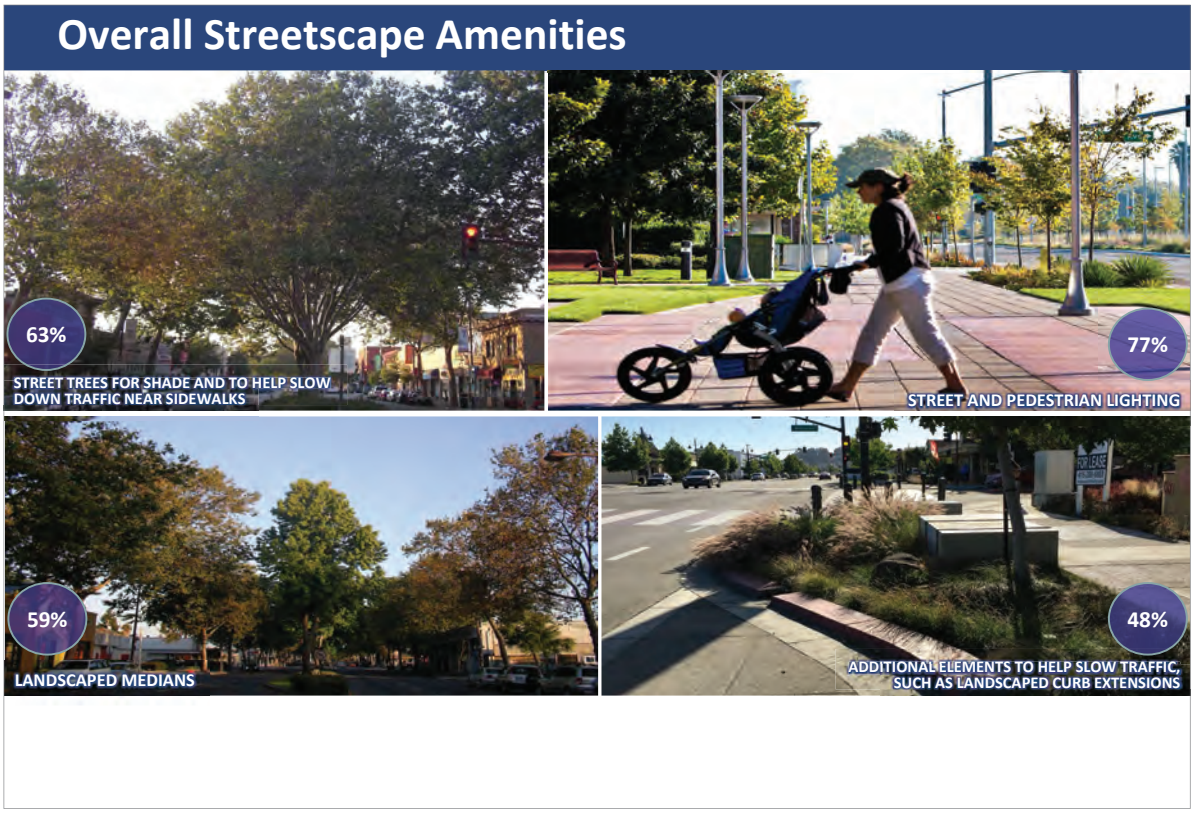


III. COMMUNITY VISION

Community Vision

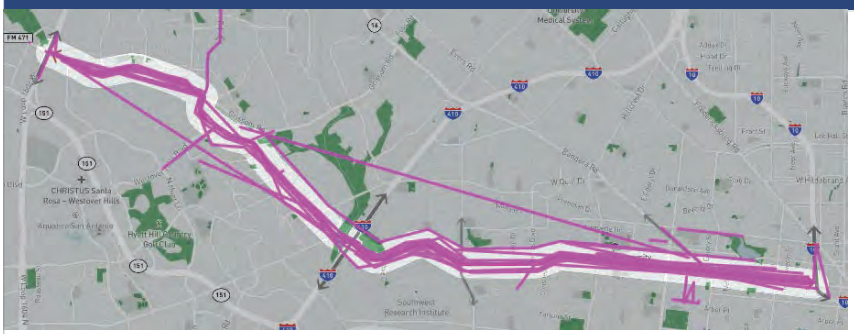
COMMUNITY GOALS

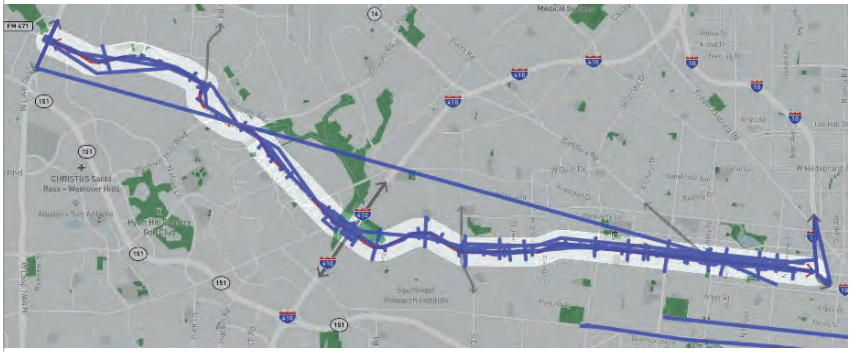
IV. OVERARCHING COMMUNITY STREETSCAPE FRAMEWORK



Walk and Roll Improvements

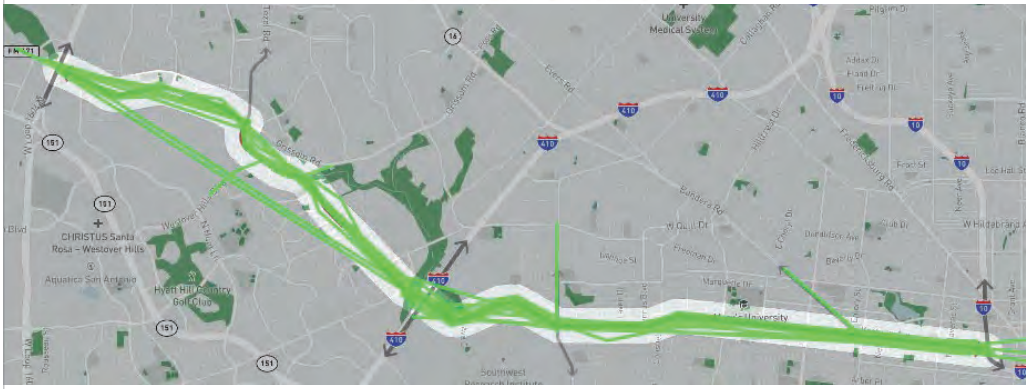
Walk and Roll Improvements





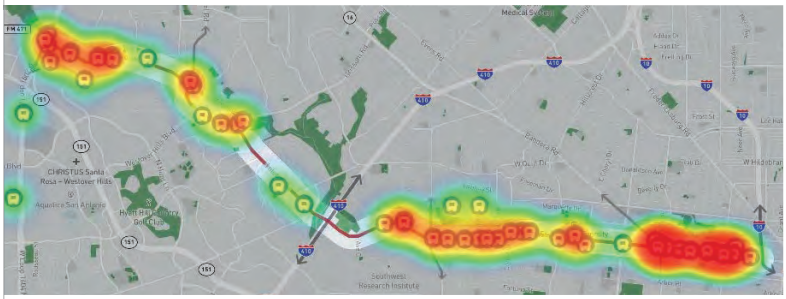
- Improved sidewalks ALL along the Corridor
- New and improved crosswalks include:
  - I-10
  - Zarzamora
  - Bandera
  - General McMullen
  - Oakhill
  - 410
  - Tezel/Grissom
  - Loop 1604

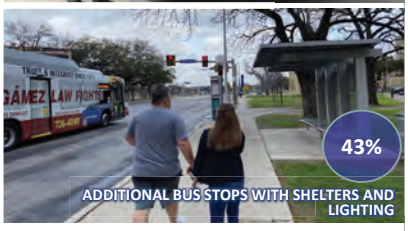
Bike & Micromobility Improvements



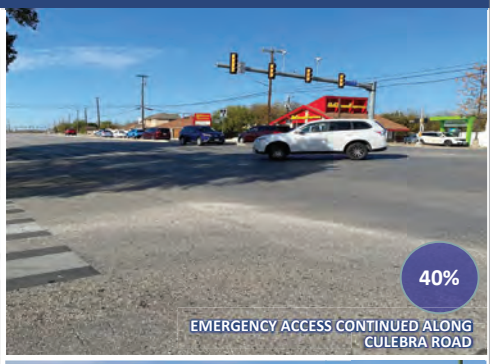
Bike & Micromobility Improvements: Type of Bike Facilities

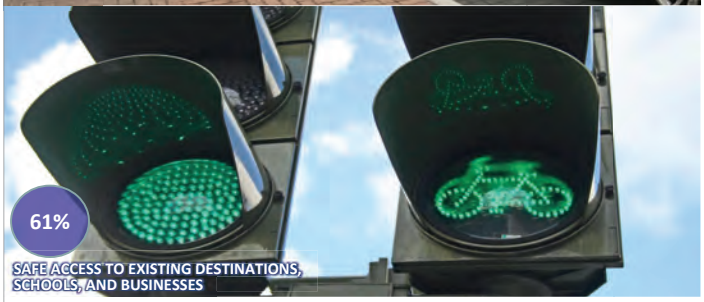
Transit Improvements





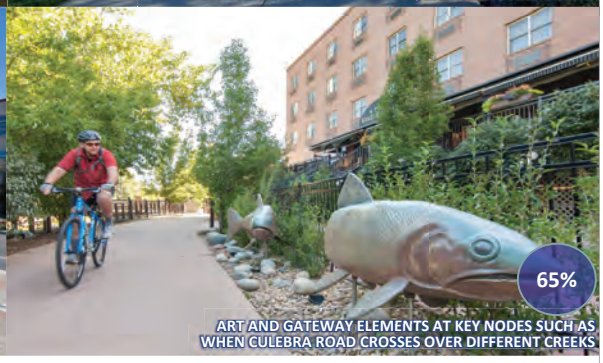
Driving Improvements





Economic Development Improvements

Natural Environment & Community Identity Improvements



Other Community Feedback

BARRIERS

- "Lanes are too wide and incentivize dangerous driving"
- "Cars do not respect pedestrians or yield to bicyclists"
- "The sidewalks are right on the edge of the street…. I always think I am about to die when I walk on them"
- "Too many business signs makes it difficult to focus while driving"
- "Congestion at Culebra and 1604 is a nightmare"

OPPORTUNITIES

- "Reduce the lane widths to slow people down"
- " Prioritize pedestrian safety!"
- "You better build a protected bike lane!"
- " We need better illumination to see people crossing"
- "Add bioswales and LID features"
- "Some urban farming to share with the community"

V. INDIVIDUAL SEGMENT COMMENT SUMMARY & EMERGING CONCEPTS

Distinct Corridor Segments

Segment E	Segment D	Segment C	Segment B	Segment A
Tezel Rd to Loop 1604	Loop 410 to Tezel Rd	Callaghan Rd to Loop 410	Bandera Rd to Callaghan Rd	I-10 to Bandera Rd

Segment A: I-10 to Bandera Road

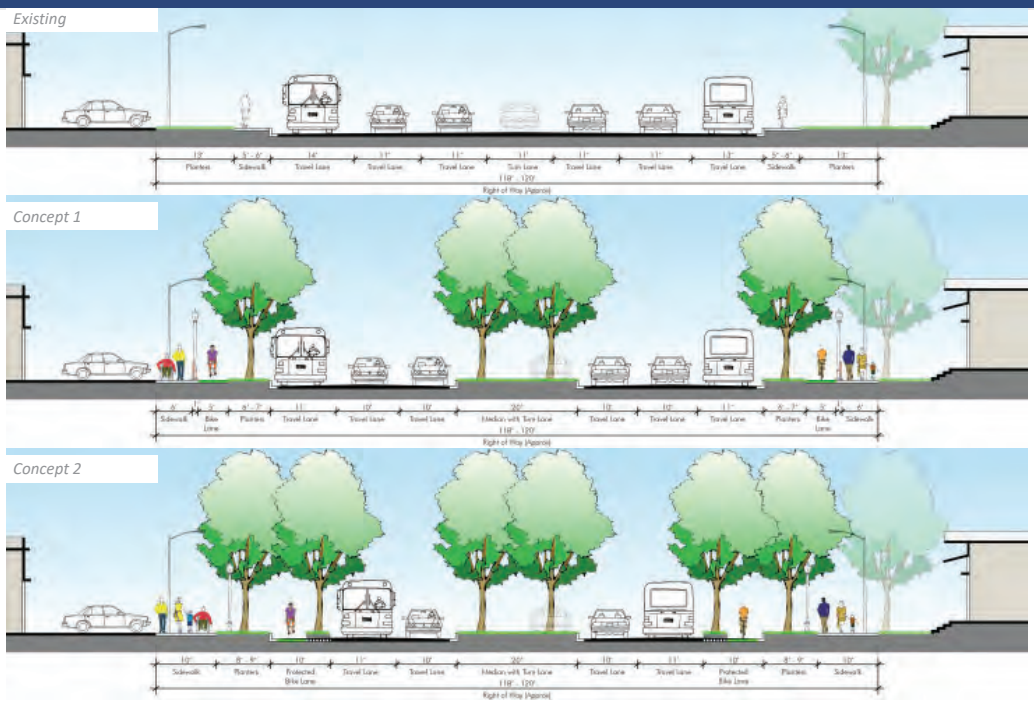
COMMUNITY FEEDBACK:

- **73% support wider and protected sidewalks for people**
- **78% support wider sidewalks for business**
- **72% support safe bike facilities for all ages with over 85% wanting protected, dedicated bike facilities**
- **Strong desire to improving existing crosswalks all along this segment, especially at I-10 interchange, Zarzamora, Hamilton and Wilson/Bandera; new pedestrian and bicycle access to Alazan Creek Trail and mid-block crosswalk between 19th and 24th**
- **Strong support for improved transit facilities all along the corridor segment especially at Zarzamora and Bandera intersections and Alazan Creek Trail**

Segment A

I-10 to Bandera Rd

Segment A: I-10 to Bandera Road



Segment B: Bandera Road to Callaghan Road

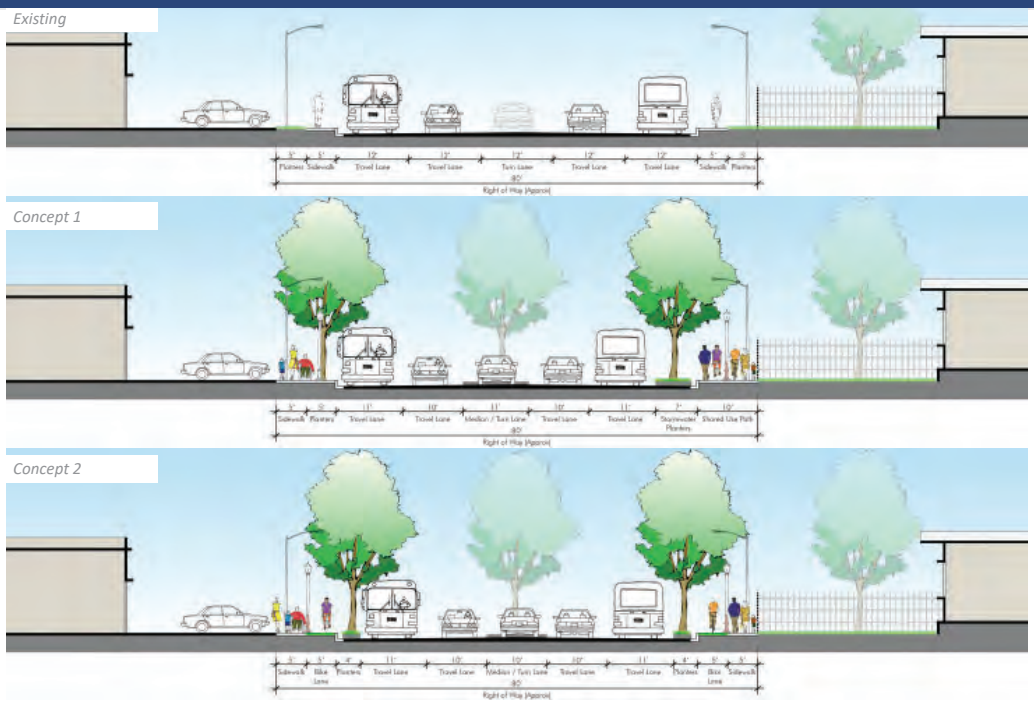
COMMUNITY FEEDBACK

- **76% support wider sidewalks for people walking; 65% support wider sidewalks for business**
- **64% support safe bike facilities for all ages; 76% want protected, dedicated bike facilities**
- **Strong desire for improving crosswalks at existing intersections including Culebra at 36th St/Esmeralda, General McMullen, Benrus and Callaghan; newand more frequent crosswalk opportunities all along the segment including areas between Maiden Lane and Yolanda, and between Callaghan and Mira.**
- **Strong desire for enhanced pedestrian, bicycle and micro-mobility connections between St Mary's University and surrounding neighborhoods including Woodlawn Heights and Woodlawn Lake**
- **Support enhanced transit facilities to St Mary's University**

Segment B

Bandera Rd
to
Callaghan Rd

Segment B: Bandera Road to Callaghan Road



Segment C: Callaghan Road to Loop 410

COMMUNITY FEEDBACK

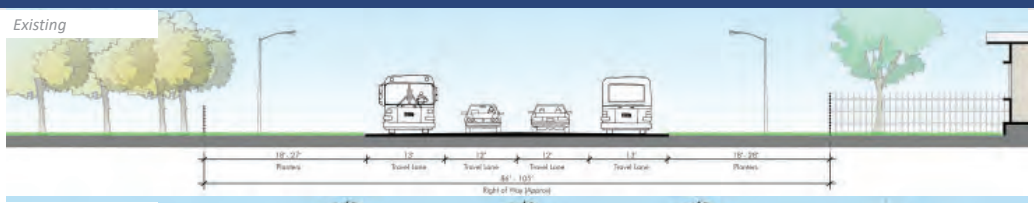
- **60% support wider sidewalks for people walking, 72% support wider sidewalks in front of businesses**
- **56% support safe bike facilities for all ages and an overwhelming 90% want protected, dedicated bike facilities**
- **Strong desire for safer pedestrian and bike crosswalk connections at existing intersections including 410 interchange; new and improved crosswalks between the NISD athletic complex and nearby destinations including Southwest Research Institute and Leon Creek greenway trail system; and, new midblock cross walk between Fairgrounds Pkwy and Oak Hill**
- **Support new and improved transit facilities to Southwest Research Institute, especially at Oak Hill**
- **Over 80% want linear park with pedestrian and bicycle amenities along Culebra**

Segment C

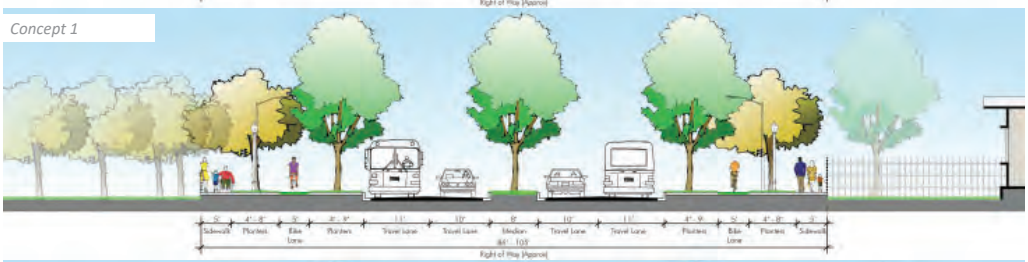
Callaghan Rd
to
Loop 410

Segment C1: Callaghan Road to Ave G

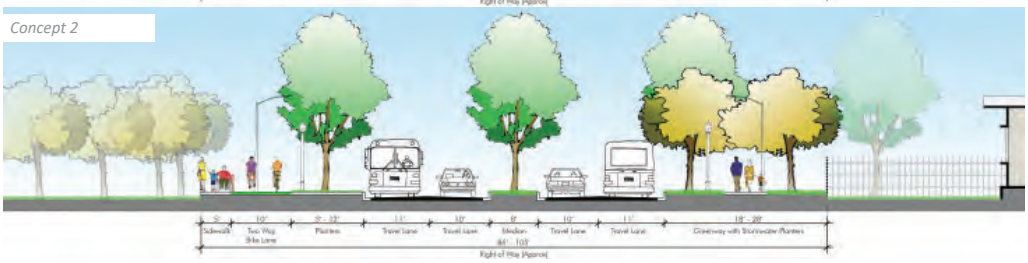
Existing



Concept 1

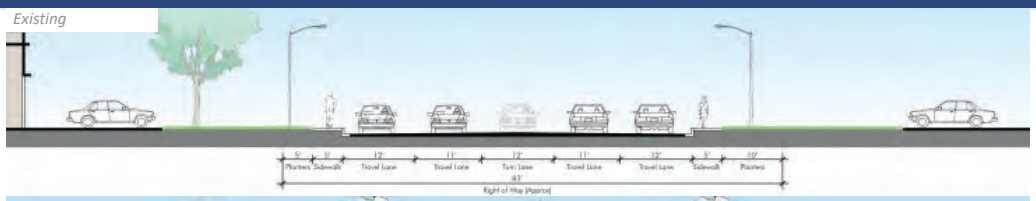


Concept 2

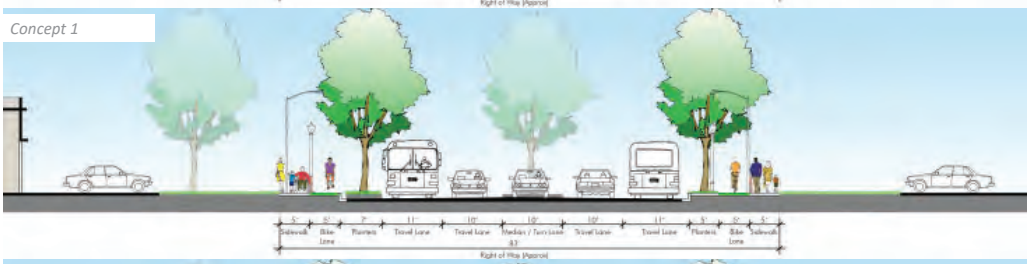


Segment C2: Ave G to Loop 410

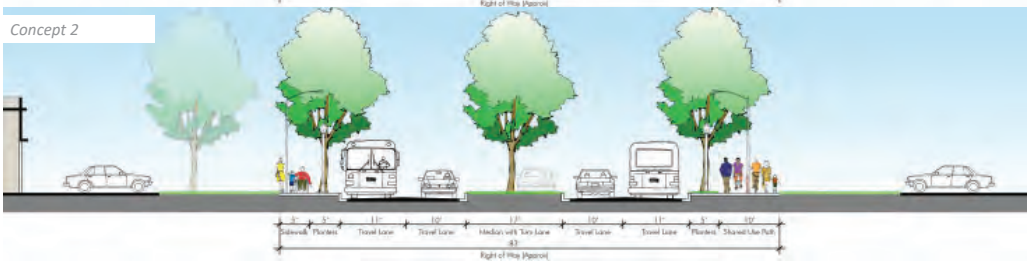
Existing



Concept 1



Concept 2



Segment D: Loop 410 to Tezel Road

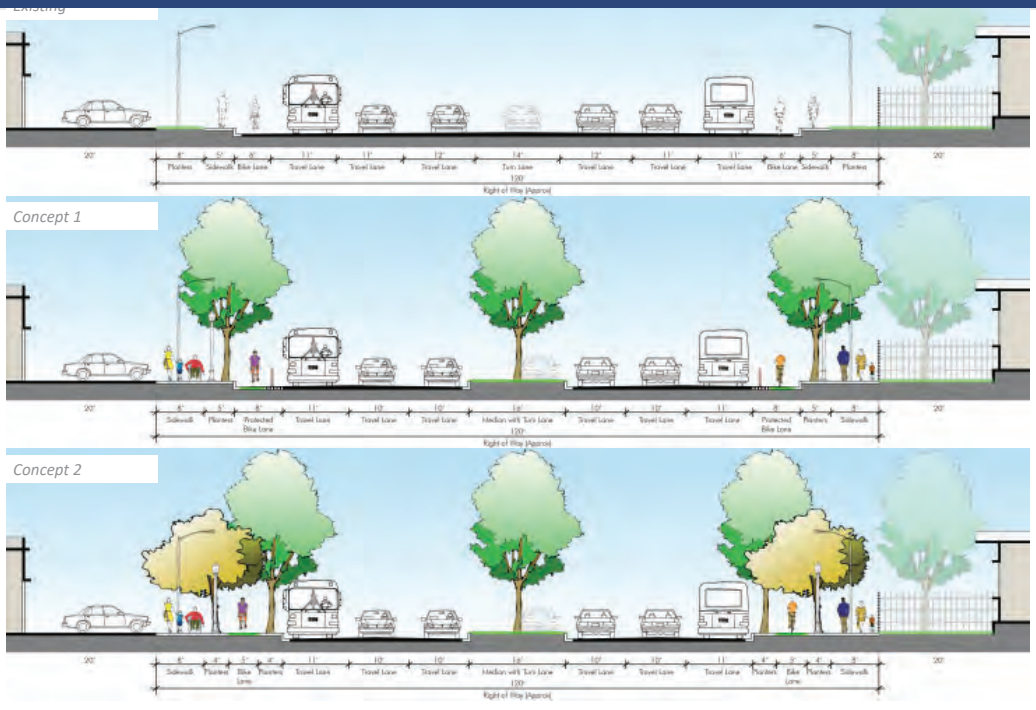
COMMUNITY FEEDBACK

- **57% support wider sidewalks for people; 71% support wider sidewalks for business**
- **54% support safe bike facilities for all ages; 76% want protected, dedicated bike facilities**
- **A lot of comments that the existing bike lane is unsafe and should be separated and protected from fast moving traffic.**
- **Improve bike and pedestrian connectivity at Potranco Rd and nearby Potranco Trailhead, Reed Rd, and Rim Rock Trail; provide new crosswalk amenities around Van Ness intersection, and between Rim Rock Trail and Timber View**
- **Nearly 85% want linear park with pedestrian and bicycle amenities**

Segment D

Loop 410
to
Tezel Rd

Segment D: Loop 410 to Tezel Road



Segment E: Tezel Road to 1604

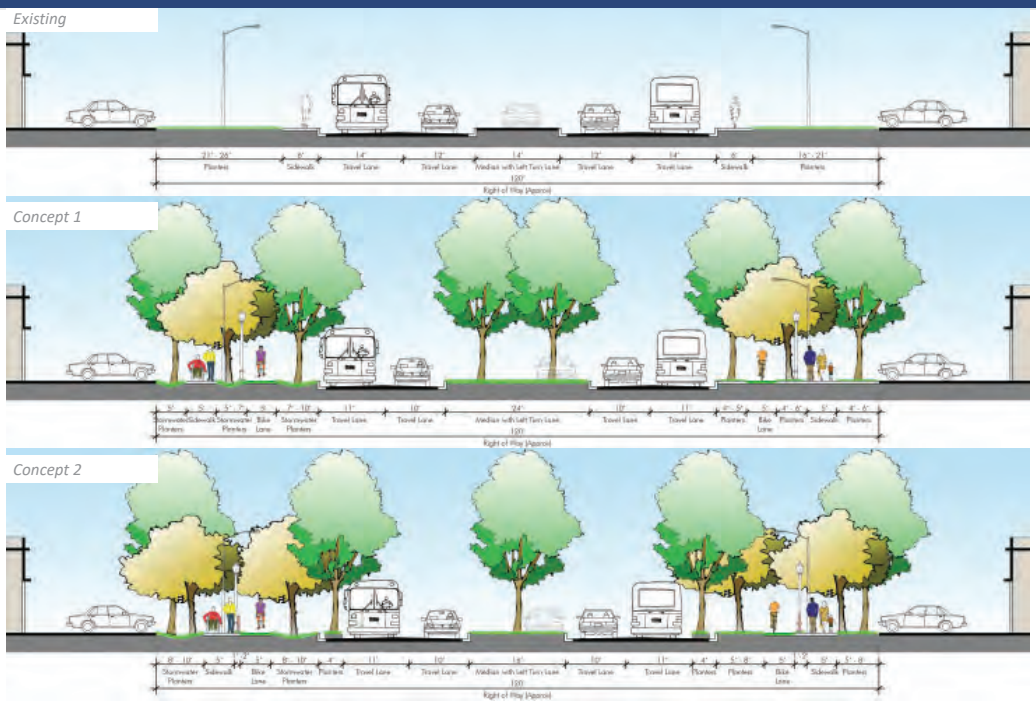
COMMUNITY FEEDBACK

- 68% support wider sidewalks for people; 76% support wider sidewalks for business
- 75% want protected, dedicated bike facilities
- Improve pedestrian crosswalks at Tezel/Grissom, and Rogers Road; new and more frequent crosswalk opportunities all along the corridor segment including at IDEA Hidden Meadow school and Camino Rosa
- Strongly support new transit facilities near IDEA Hidden Meadow School and Tezel/Grissom intersection
- Over 80% want linear park
- Strong feedback about lack of maintenance and the need for more landscaping

Segment E

Tezel Rd
to
Loop 1604

Segment E: Tezel Road to Loop 1604



Culebra Road Transportation Study

Community Engagement Summary & Emerging Concepts

August 2021

APPENDIX

CITY OF SAN ANTONIO TRANSPORTATION DEPARTMENT

Virtual Community Workshops and Outreach Summary- Summary Report

Culebra Road Transportation Study

Table of Contents

1. OVERVIEW

The City of San Antonio is conducting the Culebra Road Transportation Study to identify opportunities to enhance safety, pedestrian mobility, and micromobility access. The study received funding from the Alamo Area Metropolitan Planning Organization that is being administered through the Texas Department of Transportation. Culebra Road is the first of four roads that will be studied using this funding. The study will evaluate Culebra Road from Loop 1604 to I-10 by applying a Vision Zero lens to develop improvements that will make the road friendlier and safer for drivers, pedestrians, and bicyclists.

The City of San Antonio, in cooperation with the project team, held three virtual community workshops and conducted extensive online outreach in April 2021 via Zoom video with teleconferencing platform. Due to the COVID-19 pandemic, the community workshops were held virtually to provide opportunities for engagement, while also adhering to public health officials' guidelines recommended by local health officials and the U.S. Centers for Disease Control and Prevention.

All three virtual community meetings were identical in content, with the one held on April 22, 2021, conducted using Spanish translation. **Table 1** lists the dates and times for each meeting. Meeting attendees, community members, and other stakeholders were invited to provide their feedback on Culebra Road.

Table 1 – Virtual Community Workshops Summary Table

Date	Time	Location
Tuesday, April 20, 2021 (*in English*)	11 a.m. – 1 p.m.	Virtual (Zoom)
Tuesday, April 20, 2021 (*in English*)	5:30 – 7:30 p.m.	Virtual (Zoom)
Thursday, April 22, 2021 (*in Spanish*)	6 – 8 p.m.	Virtual (Zoom)

2. MEETING STRUCTURE

The virtual community workshops were held online via Zoom and consisted of a narrated slide presentation, followed by breakout sessions. During the breakout sessions, participants were asked to provide their feedback through an online polling software, Mentimeter, and provide additional comments in small groups that were captured using another tool, Mural. A list of the attendees are included in **Appendix A**.

3. OUTREACH

To maximize participation and engagement from community members, a multi-faceted outreach effort was implemented that included both traditional and non-traditional methods. Following is a summary of the outreach conducted. Outreach materials for the virtual community meetings are included in **Appendix B**.

Newspaper Ads

Notices of the meetings were advertised in the primary regional newspapers of the area, including San Antonio Express-News, and a Spanish-language newspaper, La Prensa Texas. **Table 2** lists the date each newspaper ad was published and the circulation numbers for each newspaper. Copies of the newspaper ads can be found in **Appendix B**.

Table 2 – Newspaper Ads

Newspaper	Date	# of Subscribers
San Antonio Express-News (*in English*)	4/11/21, 4/13/21	645,000
La Prensa Texas (*in Spanish*)	4/11/21	15,000

Postcards

To ensure geographic coverage of the area, 788 bilingual postcards were mailed to adjacent property owners and stakeholders. A copy of the postcard can be found in **Appendix B**.

Email Blasts

Prior to the virtual community workshops, several bilingual email blasts were sent out to individuals on the Culebra Road Transportation Study stakeholder database. These email blasts notified individuals of the upcoming virtual community meetings.

Table 3 outlines the various email blasts that were sent, including the number of recipients and the open and click numbers for each. "Click numbers" refers to the number of individuals that clicked on a hyperlink included in the email. Copies of the email blasts can be found in **Appendix B**.

Table 3 – Email Blasts Distribution

Date	Email List	Email Content	# of Recipients	# of Opens	# of Clicks
4/6/21	Culebra Road	Online Survey and Virtual Community Workshops	117	33	10
4/19/21	Culebra Road	Reminder – Virtual Community Workshops	140	36	5

Media Coverage

Media coverage of the meetings included an article written ahead of the meetings on the KSAT 12 website and an interview on Telemundo. Below is a table summary and copies of the articles can be found in **Appendix B**.

Table 4 – Media Coverage

Pictured to the right: Hugo Tzintzun from PCI speaking on behalf of the Culebra Transportation Study Team for Telemundo.

Date	Media Outlet	Name of Article/Segment
4/**8/21**	News 4 SA	"The City of San Antonio wants to hear from you about future improvements to Culebra Road" https://www.msn.com/en-us/news/us/the-city-of-san-antonio-wants-to-hear-from-you-about-future-improvements-to-culebra-road/ar-BB1frlh0
4/14/2021	KSAT 12	"San Antonio's Public Works Department asks for input to plan Culebra Road" https://news4sanantonio.com/news/local/the-city-of-san-antonio-wants-to-hear-from-you-about-future-improvements-to-culebra-road
4/14/21	News Chant	"San Antonio's Public Works Department seeks input to plan Culebra Road" https://us.newschant.com/us-news/san-antonio/san-antonios-public-works-department-seeks-input-to-plan-culebra-road/
4/15/21	WOAI	"Transportation Department Seeks Input Regarding Culebra Road" https://woai.iheart.com/content/2021-04-15-public-works-seeks-input-regarding-upgrade-of-culebra-road/
4/15/21	Texas News Today	"San Antonio's utility sector wants input to plan Culebra Road" https://www.newsbreak.com/news/2204923425033/san-antonio-s-utility-sector-wants-input-to-plan-culebra-road
4/15/2021	Telemundo	Filmed but airing not confirmed.

Social Media Outreach
Information about the virtual community workshops and the study in general was shared online via social media. In addition, several social media ads were strategically placed to allow for maximum reach in the community. Below is a table summary of the posts that were published and the ads that were placed. The shared social media posts can be found in **Appendix B**.

Table 5 – Social Media Posts

Date	Platform	Handle	Followers	Engagements	Shares/Retweets
3/15/21	Facebook	Alamo Area Metropolitan Planning Organization	4.059	1	0
3/15/21	Twitter	AlamoAreaMPO	2,720	3	4
3/16/21	Facebook	Pedal SATX	584	0	1
4/16/21	Facebook	Jaque Oznog	76	0	0
4/19/21	Facebook	Mayo Caces	48	0	1
4/19/21	Facebook	Culebra Park Neighborhood Association	540	0	0
4/6/21	Facebook	San Antonio Bikes	3,828	45	22
4/9/21	Facebook	San Antonio City Council District 7	2,930	4	2
4/9/21	Twitter	AnaSandovalSATX	3,039	3	1
4/13/21	Facebook	San Antonio Bikes	3,828	53	18
4/13/21	Facebook	San Antonio City Council District 7	2,930	4	1
4/13/21	Twitter	AnaSandovalSATX	3,039	4	1
4/15/21	Facebook	San Antonio City Council District 7	2,930	1	0
4/15/21	Twitter	AnaSandovalSATX	3,039	4	0
4/16/21	Facebook	San Antonio City Council District 7	2,930	2	0
4/17/21	Facebook	San Antonio City Council District 7	2,930	1	0
4/17/21	Twitter	AnaSandovalSATX	3,039	1	0
4/19/21	Facebook	San Antonio City Council District 7	2,930	1	1
4/19/21	Twitter	AnaSandovalSATX	3,039	5	0
4/20/21	Facebook	Property Finder 210	50	0	0
4/20/21	Facebook	San Antonio City Council District 7	2,930	2	0
4/20/21	Twitter	AnaSandovalSATX	3,039	2	0

Table 6 – Social Media Ads

Date	Platform	Reach	Link Clicks
4/6/21	Facebook	13,760	266
4/6/21	Facebook	14,216	472
4/13/21	Facebook	24,082	969
4/13/21	Facebook	13,687	207

Date	Platform	Reach	Link Clicks
4/19/21	Facebook	6,981	218

4. PARTICIPATION

The combined attendance for all three virtual community workshops was 21 members of the public and elected officials. **Table 7** lists the dates and times for each meeting, the number of people who registered to attend, and the actual number of people who attended. Attrition from those who registered to those who participated is to be expected, but it does indicate that more people were aware of the virtual community meetings even if they were ultimately not able to attend.

Table 7 – Virtual Public Meetings Attendance

Date	Time	Location	Registered	Attendance
Tuesday, April 20, 2021	11 a.m. – 1 p.m.	Virtual	43	9
Tuesday, April 20, 2021	5:30 – 7:30 p.m.	Virtual	39	11
Thursday, April 22, 2021	6 – 8 p.m.	Virtual	8	1

5. WELCOME AND INTRODUCTIONS

Once the workshop began, Krystin Ramirez, MIG Project Team, welcomed all attendees and gave a brief introduction of the Zoom platform, breakout groups, and housekeeping rules. She then introduced Mentimeter, an online polling platform, which was used during the workshop.

At the two English workshops, Ms. Ramirez then went on to thank and introduce Councilman Robert Treviño, District 1, and Councilwoman Melissa Havrda, District 6, for participating in the workshop. She asked Councilman Treviño and Councilwoman Havrda to provide a brief welcome to the group.

Councilman Treviño thanked and welcomed attendees for their time and participation in the virtual community workshop. He stated that this is an important study as Culebra Road is an East/West corridor that extends from District 1 to District 6, from the center city, all the way to the Westside. In addition, he stated that this is an incredible opportunity to make Culebra Road safe for drivers, bicyclists, pedestrians, and transit users. He encouraged everyone to share ideas for Culebra as well as to stay involved with the study.

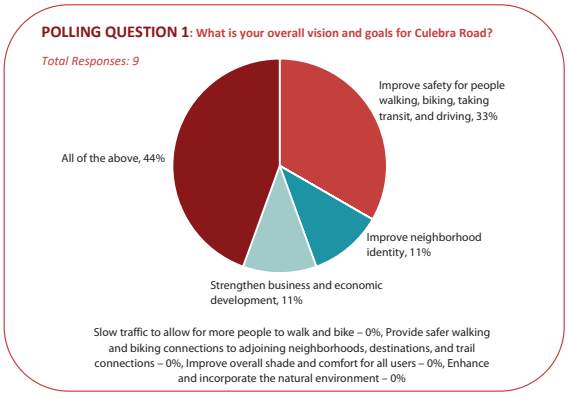
Councilwoman Havrda welcomed attendees and thanked them for their time. She stated this study will help shape reshape multimodal transportation across the San Antonio community. She then encouraged all attendees to share their thoughts and ideas to make Culebra Road a safer and friendlier option for all users.

Ms. Ramirez then introduced Mukul Malhorta, with MIG. Mr. Malhorta stated that this is a multidisciplinary project which inlcudes WSP and Poznecki-Camarillo. He stated that this is the beginning of the project and the team is looking forward to hearing from the attendees on what improvements they want to see and their vision for the corridor.

6. OVERVIEW OF COMMUNITY WORKSHOPS

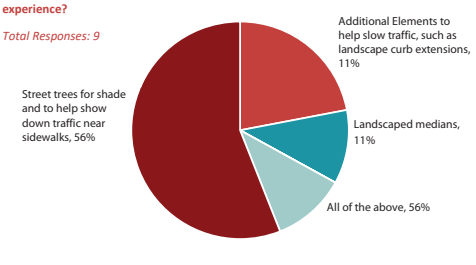
Mr. Malhorta gave an overview of the project and discussed the project purpose, goals, and process. He then went on to reviewing the several different community assets, issues, and opportunities provided by Culebra Road. A copy of the presentation can be found in **Appendix C**. During the presentation, Ms. Ramirez, provided several questions using Mentimeter to allow participants to provide feedback on certain topics pertaining to their overall vision and goals for Culebra Road. Below are the questions and answers provided.

6.1 Community Workshop 1 – Mentimeter Results



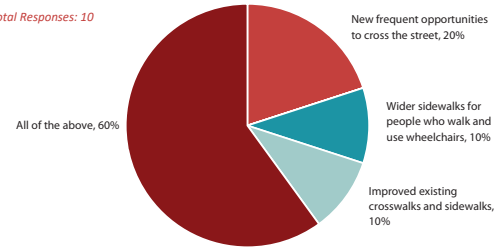
POLLING QUESTION 2: What are the common streetscape amenities you would like to experience?

Total Responses: 9



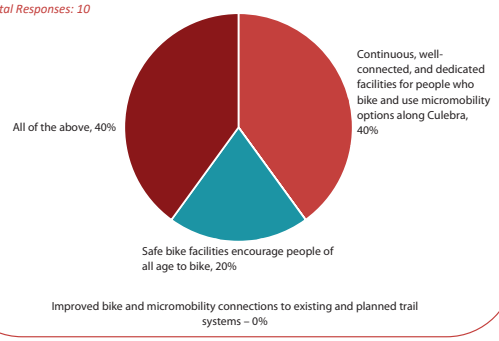
POLLING QUESTION 3: What are walking and rolling improvements you would like to see along Culebra Road?

Total Responses: 10



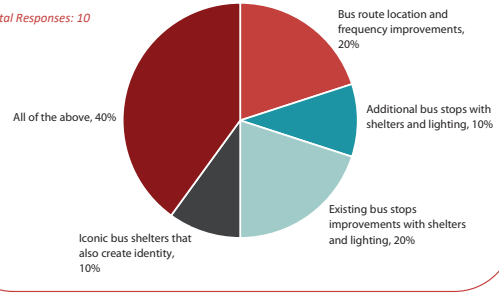
POLLING QUESTION 4: What are the biking and micromobility improvements you would like along Culebra Road?

Total Responses: 10



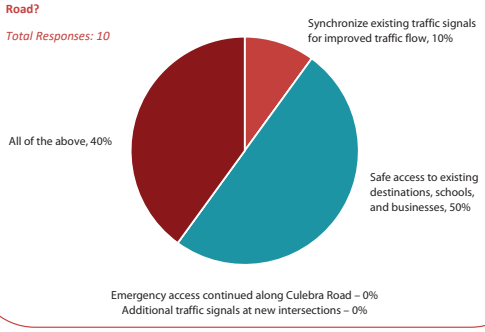
POLLING QUESTION 5: What are the transit improvements you would like along Culebra Road?

Total Responses: 10



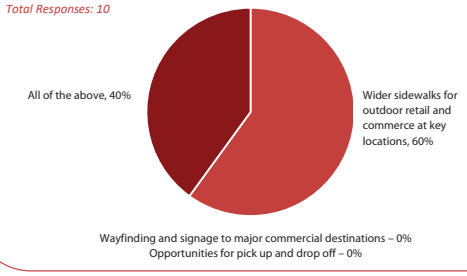
POLLING QUESTION 6: What are driving improvements you would like along Culebra Road?

Total Responses: 10



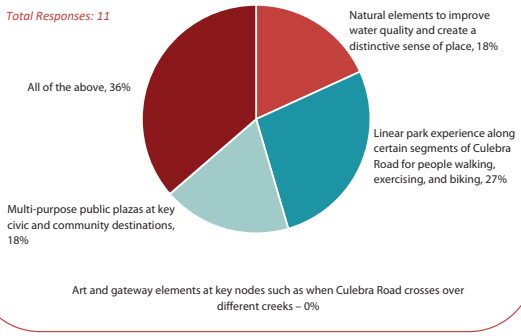
POLLING QUESTION 7: What are the improvements to support local businesses and economic development?

Total Responses: 10



POLLING QUESTION 8: What are the improvements for a better natural environment and community identity?

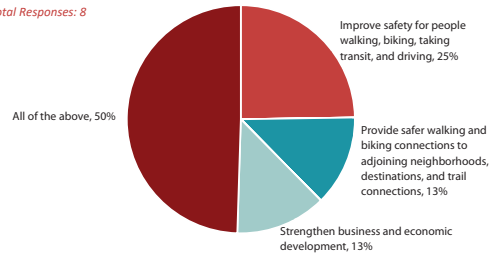
Total Responses: 11



6.2 Community Workshop 2 – Mentimeter Results

POLLING QUESTION 1: What is your overall vision and goals for Culebra Road?

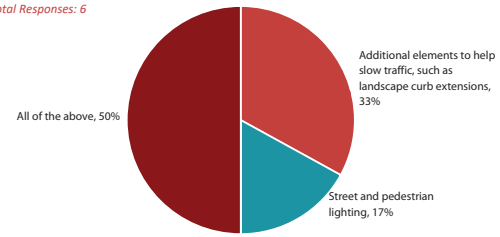
Total Responses: 8



Slow traffic to allow for more people to walk and bike – 0%, Improve overall shade and comfort for all users – 0%, Enhance and incorporate the natural environment – 0%, Improve neighborhood identity – 0%

POLLING QUESTION 2: What is your overall vision and goals for Culebra Road?

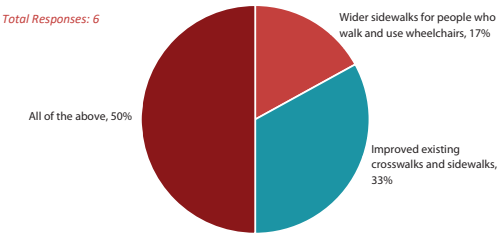
Total Responses: 6



Street trees for shade and help slow down traffic near sidewalks – 0%
Landscaped medians – 0%

POLLING QUESTION 3: What are walking and rolling improvements you would like to see along Culebra Road?

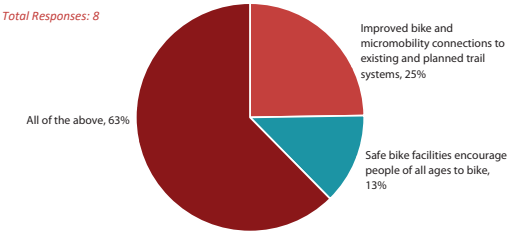
Total Responses: 6



New frequent opportunities to cross the street – 0%
Trees and plantings for shade – 0%

POLLING QUESTION 4: What are the biking and micromobility improvements you would like along Culebra Road?

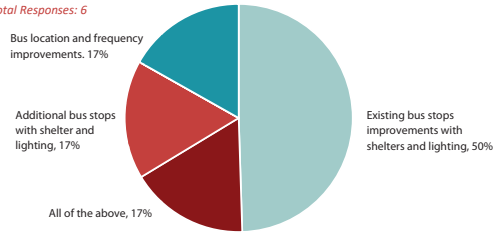
Total Responses: 8



Continuous, well-connected, and dedicated facilities for people who bike and use micromobility options along Culebra – 0%

POLLING QUESTION 5: What are the transit improvements you would like along Culebra Road?

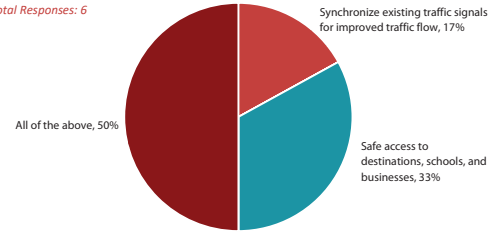
Total Responses: 6



Iconic bus shelters that also create identity – 0%

POLLING QUESTION 6: What are the driving improvements you would like along Culebra Road?

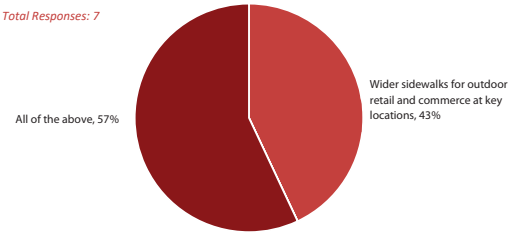
Total Responses: 6



Additional traffic signals at new intersections – 0%
Emergency access continued along Culebra Road – 0%

POLLING QUESTION 7: What are the improvements to support local businesses and economic development?

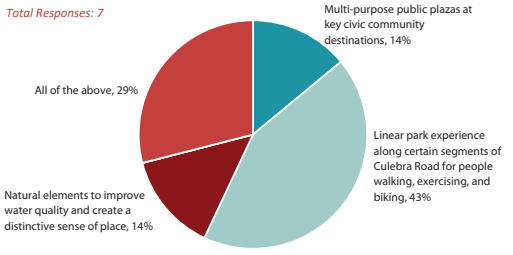
Total Responses: 7



Wayfinding and signage to major commercial destinations – 0%
Opportunities for pick up and drop off – 0%

POLLING QUESTION 8: What are the improvements for a better natural environment and community identity?

Total Responses: 7



Art and gateway elements at key nodes such as when Culebra Road crosses over different creeks – 0%

6.3 Community Workshop 3 – Mentimeter Results

Due to the low number of attendance for this workshop, the attendee had an open discussion about Culebra Road. The discussion from this workshop can be found in the 7.3 Community Workshop 3 – Small Group Discussion.

7. SMALL GROUP DISCUSSION

After the main presentation, small breakout groups were held to facilitate verbal discussion regarding the information presented about Culebra Road. To make the workshop a success, feedback and opinions in the small breakout group discussions were encouraged to see what improvements the community wanted for the corridor. The community input provided by the participants will help develop a plan to improve the corridor.

The breakout session groups were pre-assigned during the registration process. Small group breakouts occurred at the end of main presentation and attendees were automatically placed in their groups. A facilitator led the discussion and a scribe recorded comments and questions. When the small group breakout ended, attendees were placed back into the main presentation and the scribe/facilitator provided a brief summary of the feedback received. Summaries of each breakout session are provided below.

7.1 Community Workshop 1 – Small Group Discussion

Facilitator	Gregory Reininger, City of San Antonio
Scribe	Kailey Butler, Poznecki-Camarillo

QUESTION 1**:** What is your overall vision and goals for Culebra Road?

DISCUSSION:
- Managing traffic speed for I-10 to Culebra Road
- Increasing better walking and biking connections for the whole corridor
- Enhancing neighborhood identity
- Shade and comfort
- More trees

QUESTION 2: What are the common streetscape amenities you would like to experience?

DISCUSSION:
- All of the above – lack of shade
- Landscaping related to transit – at stops and side roads
- Transit is important for making space available for biking and pedestrian
- Frequency of transit as well as amenity

QUESTION 3: What are walking and rolling improvements you would like to see along Culebra Road?

DISCUSSION:
- Shorter crosswalk - distance between safe places to walk
- Street lighting is important for people walking at night
- Improve existing crosswalks
- Good detection when there is someone near the crosswalk – let drivers know
- Improving lighting
- Z-crossings allow drivers to see pedestrians crossing
- Frequent opportunities – more striped or signaled places to cross
- Extra signage – pedestrian signage
- More inclusive design – more aware of disabled users

QUESTION 4: What are the biking and micromobility improvements you would like along Culebra Road?

DISCUSSION:
- Continuous well-connected facilities
- Safe, protected continuous bike lane
- Protected bike lanes – segment next to Loop 410 is narrow
- Important to recognize different type of cyclists (recreation, commuters, etc.)

QUESTION 5: What are the transit improvements you would like along Culebra Road?

DISCUSSION:
- Identifying intersection where there are delays that impact on time performance – whole corridor
- I like the iconic bus shelters, gives identity to the area
- Improve existing bus stops with shelters and lighting
- Update older shelters

QUESTION 6: What are driving improvements you would like along Culebra Road?

DISCUSSION:
- During winter storm – surprisingly, high number of cars out – treated it like a stop sign and worked
- Safe access – lower speed limits and enforcements
- Understand the purpose of the signal
- Lower the speed limits around schools

QUESTION 7: What are the improvements to support local businesses and economic development?

DISCUSSION:
- Wider sidewalks – better for pedestrian and can better businesses
- Signage

- Adding plants, flowers, and curb appeal
- Finding off street areas for parking (competing with bike lanes and sidewalks)
- Consideration for no development zones
- Bringing retail out into the sidewalk enhances the character of the area
- All of the above
- Parking – important to have parking for businesses
- District 1 – regional parking plan for businesses

QUESTION 8: What are the improvements for a better natural environment and community identity?

DISCUSSION:
- Public plaza and gateway elements – locations where there is more on foot movement
- Rain gardens – could prevent runoff going into the street
- St. Mary's would be a great gateway for greenway (Culebra and Zarzamora)

Facilitator	Linda Vela, Poznecki-Camarillo
Scribe	Lauren Simcic, City of San Antonio

QUESTION 1: What is your overall vision and goals for Culebra Road?

DISCUSSION:
- Not conducive to businesses due to LT/RT/center lane – all conflicting
- Creating ease of access to promote economic development
- Tezel improvements north of Culebra is positive – plantings, green
- Aesthetically pleasing & visible, not just concrete
- Long-term projects such as LRT
- Water flowing through, pervious pavement
- Attractive Culebra, warm
- Incorporate community plans

QUESTION 2: What are the common streetscape amenities you would like to experience?

DISCUSSION:
- Amenities to supplement traffic
- Section E (Tezel Road) needs pedestrian amenities
- Larger crosswalks at businesses, protected bike/pedestrian paths
- Texas native plants
- Take a look at plantings on Tezel to see what is best for the region
- Protection for bikes/pedestrians on from I-10 to Bandera Road

QUESTION 3: What are walking and rolling improvements you would like to see along Culebra Road?

DISCUSSION:
- Visibility of stop signs and lights due to overgrowth
- Mitigate sun glare
- Plantings on both sides of the sidewalk, serving as a buffer
- Signage, causing drivers to stop, especially for offloading busses – VIA and school

QUESTION 4: What are the biking and micromobility improvements you would like along Culebra Road?

DISCUSSION:
- Avoid mixing bikes and distracted drivers – safety!
- Connect to existing trail systems
- Make biking more feasible for all, focusing on kids
- Reiterating buffered sidewalks/bikeways
- Safe bike facilities leading into trailheads – would not bike on Culebra as is

QUESTION 5: What are the transit improvements you would like along Culebra Road?

DISCUSSION:
- What about light rail?
- Iconic shelters similar to the I-35 bat bridge
- Work with community health workers to address food/medical needs, and transit can help
- Safer bus stops with buffer from roadway, lighting

QUESTION 6: What are driving improvements you would like along Culebra Road?

DISCUSSION:
- Safe access to businesses, address LT/RT
- Reiterating glare, medians
- Slower speeds along busier sections of Culebra

QUESTION 7: What are the improvements to support local businesses and economic development?

DISCUSSION:
- Sidewalks and planting at business frontage
- Hospitable to all users
- Kids walking on sidewalk that is effectively in the road, but not buffered

- Signage that is more visible, compete with cell phone distraction

QUESTION 8: What are the improvements for a better natural environment and community identity?

DISCUSSION:
- Use natural elements to improve water quality
- Many resident requests for linear parks
- Creekwalk expansion just north on Tezel Road
- Enjoys trailheads on Grissom, possibly something similar on Culebra
- Wayfinding to trailheads

7.2 Community Workshop 2 – Small Group Discussion

Facilitator	Jessica Brunson, City of San Antonio
Scribe	Linda Vela, Poznecki-Camarillo

QUESTION 1: What is your overall vision and goals for Culebra Road?

DISCUSSION:
- My vision is to decrease travel time from there I access it (Bandera/Braun Road/Great NW/to downtown.
- Culebra is an alternate route for me to get to other parts of the city safely.
- One of the main things, I think is the priority to manage traffic speed. Regulate the speed limit.
- Posted speed limit seems to be disregarded quite a bit
- Would like to see better walking and biking connections because it is unsafe with current speeds
- Would second improve walking/biking – I'm at 1604 and Culebra and it has gotten really dangerous
- Sidewalk is right up against the road and sidewalk is missing in huge chunks
- Feels like you have to drive Culebra.
- Find a way to get traffic to flow better to downtown. Culebra is a good arterial to get to downtown.
- Id like to improve bike connections and pedestrian safety, as well as encourage businesses to be more bike/pedestrian friendly. Signs also in Spanish.
- Update bridges/culverts over creeks/tributaries

QUESTION 2: What are the common streetscape amenities you would like to experience?

DISCUSSION:
- I like using landscape to create a buffer between cars and pedestrians, so they feel safe.
- Most sidewalks are thin and up against the road – need a buffer

- Street and pedestrian lighting
- When traveling, it is difficult when buses stop on main lanes -block lanes – can we get bus turn in lanes?
- Can we get lanes or spaces for delivery?

QUESTION 3: What are walking and rolling improvements you would like to see along Culebra Road?

DISCUSSION:
- Wider sidewalks – definitely – especially near shopping areas near Culebra/Texel and Culebra/1604.
- Culebra/Texel is scary to navigate due to free right.
- People do not walk much at Culebra and Alamo Ranch – very car oriented.
- Buses do not give you enough time to board – not ideal – this is at Rogers Road/Culebra intersection.
- New and frequent opportunities to cross the street.
- Well landscaped medians to stop crossing left turns.
- Improved existing sidewalk/crosswalk and more opportunities to cross (on all segments).
- Generally, inside 410 going I-10 – we tried Vision Zero focus on that area.
- Give 410 to I-10 infrastructure to ross safely to bring pedestrian crashes down.
- Pedestrian bridge crossings at major 4 pedestrian ways (Culebra & Ingram, Westover).
- Where people are already crossing that are not designated crosswalks? – still analyzing.
- Some crosswalks are very far apart, and people will not walk that far.

QUESTION 4: What are the biking and micromobility improvements you would like along Culebra Road?

DISCUSSION:
- From Tezel to Loop 1604 they have one side that backs up to Culebra Creek and isn't well developed.
- Instead, put extra west sidewalks on the side by Culebra Creek – give them their own thoroughfare .
- I biked for many years as my sole form of transportation – very antagonistic when you bike – need before between bikes and cars.
- Culebra between 410 & I-10 is very volatile for walk & roll of all forms. Agree with paved & divided sidewalks, or barrier protected bike lanes.
- Downtown Atlanta has protected bike corridors that effectively closed some streets to car traffic. Very unpopular option with voters but safer for micromobility/bike users.
- Improved connection to existing/planned trail systems

QUESTION 5: What are the transit improvements you would like along Culebra Road?

DISCUSSION:
- Bus pull out areas, so they do not block traffic.
- Rogers Road and Culebra stop – hard to get to and buses don't wait long.

- Bus turning from Culebra to Les Harrison – squeezes an extra turning lane and it is literally blocking the protected turn lane.
- Perhaps they need to relocate that bus stop.
- This location has resulted in crashes and it is still pretty bad.
- There really is not transit that goes down Culebra and goes all the way downtown.
- That is very frustrating to people who live here. We want to go along Culebra road to downtown.
- Definitely improve existing bus stops with shelters lighting.
- Co-located bike facilities (pumps, tools, etc.) with bus stops for commuters who use both lighting and emergency serviced button.
- Would like a real time bus info

QUESTION 6: What are driving improvements you would like along Culebra Road?

DISCUSSION:

- It is 7-lane then 5 then 4 in different parts – can we have a dedicated lane that goes faster than other lanes?
- Like an HOV lane? Yes.
- City used to have a traffic signal site on their website – I have not seen anything synchronized – are we doing it?
- What is being done in terms of traffic synchronization?
- Culebra with a high-speed toll lane, interesting idea. Would that be elevated?
- Culebra from Loop 1604 inward to city is best on traffic times and entire weekend – will back up from Loop 1604 past Les Harrison – needs more than widening
- Intersection of Culebra/Grissom/Tezel improvement
- Are there enough carpooling areas? I think people use Culebra because it is quicker to Loop 410 than SH 151.
- Improve crosswalk visibility in the Culebra/Bandera area. Most of those crosswalks are hard to see. Most motorists do not notice the crosswalk even when the crosswalk is flashing. Maybe some overhead lights to increase visibility from a further distance.
- Could a displaced left-turn be a solution at Culebra/Loop 1604?

QUESTION 7: What are the improvements to support local businesses and economic development?

DISCUSSION:

- Incentives for businesses who make themselves bike friendly and accessible.
- Wider sidewalks at key locations, open spaces.
- Food truck park, there are open spaces that can be developed.
- Barrio Barista, family owned, bicycle friendly – no solid route for cyclists to take. Creating a bike route that does not take you on Culebra.
- Use alternate streets to local businesses so they can travel within the neighborhood but not necessarily on Culebra.
- Celebrate historic buildings, e.g., Little Flower Basilica, with open signage or open space for pedestrians .

- The Greenway Trail French Creek is progressing. The old Conoco Station on Tezel is being transformed for CCD6 and park police facility.

QUESTION 8: What are the improvements for a better natural environment and community identity?

DISCUSSION:

- Is there a way to have commercial interest that align with Culebra to put in pedestrian friendly plazas?
- Short answer is yes – especially where there is space. Critical thing is to provide protection.
- Public plazas and pathway designs that incorporate porous surfaces (think Confluence Park park pad) to aid watershed.
- Stormwater runoff management is critical.

GENERAL DISCUSSION:

- As far as economic development - traffic has to be able to cross to get a business.
- My large multi-generational family lives at two different key points - Zarzamora and Westover - and we would love to go back and forth by bike or scooter! thank you for asking for our input!
- Combining driveways.
- Businesses need to be responsible - car wash should have put up some bushes or something
- Design guidelines/overlay districts could be discussed.
- I love the idea of businesses getting together - the idea that they could work together it would be beneficial.
- Too many places along Culebra where buildings are vacant - overall, there is a very lost feeling along many of the areas along Culebra.
- If businesses - start participating, feeling they are getting some help - that the area in front of them will be improved maybe we can get some support.

Facilitator	Gregory Reininger, City of San Antonio
Scribe	Akshaey Sabhanayagam, WSP

QUESTION 1**:** What is your overall vision and goals for Culebra Road?

DISCUSSION:

- Shared use path is unsafe especially between Callaghan and Tezel, improve bike facilities with focus on safety, improve sidewalk and accesses.
- Reduced speed
- Traffic calming to reduce speed.
- Riding a bike between Tezel and Loop 1604 is dangerous. Bicyclists are using trials just to be safe. Bicycle facilities near local businesses would be useful to provide access between shops and residences.
- Improve access

QUESTION 2: What are the common streetscape amenities you would like to experience?

DISCUSSION:
- Landscaping to provide shade
- Enhance crosswalk pavement marking
- Adding a park near Zarzamora Creek
- Street lighting
- Improve mid-block crosswalks by making it more visible to motorists.

QUESTION 3: What are walking and rolling improvements you would like to see along Culebra Road?

DISCUSSION:
- Add pedestrian bays or plaza which include pick-up/drop off center integrated with VIA.

QUESTION 4: What are the biking and micromobility improvements you would like along Culebra Road?

DISCUSSION:
- Separated bike lane is preferred
- Bike boxes at intersection
- Provide connectivity to trails
- Separate bicycle from vehicles

QUESTION 5: What are the transit improvements you would like along Culebra Road?

DISCUSSION:
- Provide transit centers where traffic would consolidate in one place and are given access to WI-FI and convenience stores, etc. Example: At LYNX in Orlando at Central Station, the City of Orlando installed solar WI-FI poles.
- Make is easier for bicyclists to drop-off their bikes on buses.
- Add more bus stop locations.
- Add pedestrian bays or plaza which include pick-up/drop-off center integrated with VIA.

QUESTION 6: What are driving improvements you would like along Culebra Road?

DISCUSSION:
- TWLTL are unsafe and hard to maneuver.
- Culebra at Loop 1604 could be improved like Bandera at Loop 1604 (DLT).

QUESTION 7: What are the improvements to support local businesses and economic development?

DISCUSSION:
- Pick-up and drop-off bays would be a great fit.

QUESTION 8: What are the improvements for a better natural environment and community identity?

DISCUSSION:
- Provide landscape at locations where it would enhance aesthetics. Example: Near creeks or greenway trails transitioning areas .
- Provide green buffer to improve aesthetics for slow speed riders (bicyclists).

7.3 Community Workshop 3 – Small Group Discussion

QUESTION 1: What is your overall vision and goals for Culebra Road?

DISCUSSION:
- Businesses need to take responsibility – they should be asked to put up trees and fences.
- There is no getting away from the Yellow Bee Car Wash.
- Businesses need to not intrude onto areas visually as well as physically.
- There has been an incredible amount of building beyond Loop 1604.
- From 2 p.m. and on, it is impossible to get out of our neighborhood.
- I think we need a 3-lane road from Tezel – three lanes in each direction.
- I would like to see Culebra treated nicely/keep up with maintenance – for example, we have weeds growing in the center concrete pieces.
- There are accidents waiting to happen at Bank of America/Goodwill – people come out there and try to cross to make a left-turn. There is not a traffic light there.
- A possible side road to get to light .
- Three lanes each way, beautiful trees in center, sidewalks, bike lanes, having dedicated right turns.
- Longer turns for more popular areas.
- Culebra near St. Mary's needs bike lanes.

QUESTION 2: What are the common streetscape amenities you would like to experience?

DISCUSSION:
- Street lighting is very important.
- When services are upgraded people tend to respect the area more.
- There are several places with no sidewalks.
- Nice to have coordinated lighting – traffic signals.

QUESTION 3: What are walking and rolling improvements you would like to see along Culebra Road?

DISCUSSION:
- Near Chainey Road, there are people in their electric scooters who are disabled – it is very disheartening knowing they have to face bumpy or broken sidewalks.
- Some of the sidewalks end or have to back into the road.
- Need to get practical things done first then beautification.
- The added trees along Tezel are very pleasant.
- I would like to see trees along Culebra.

QUESTION 4: What are the biking and micromobility improvements you would like along Culebra Road?

DISCUSSION:
- I think adding biking and micromobility improvements to Culebra are a brilliant and wonderful idea.
- If facilities are properly marked, hopefully the crashes will go down.
- When people know what they are supposed to do, they tend to respect it more.

QUESTION 5: What are the transit improvements you would like along Culebra Road?

DISCUSSION:
- More protection from the weather.
- Shelters along Culebra for transit users.
- I know several people who do not feel safe when they ride the bus. They do not take their wallets.
- If I knew I could get around town using transit – I would not know what bus to take or where to get off.
- Do not want to face traffic going into downtown.

QUESTION 6: What are driving improvements you would like along Culebra Road?

DISCUSSION:
- Need a traffic light at Copper Tree exit because we cannot get out of our neighborhood from 2:30 – 7 p.m.
- We have three elementary gates at our back gate, so we are blocked in on both gates
- Addition of left-turn lanes
- If the Loop 1604 exit is too backed up, people go in the left-hand lane, make a U-turn, and come out by Goodwill.
- Perhaps a flying T at Copper Tree could work.

QUESTION 7: What are the improvements to support local businesses and economic development?

DISCUSSION:
- Signage would be nice – especially with improved walking and biking.
- When you turn right from Tezel, on the left there is a giant shopping center where Well-Med is located. The left-hand turn is not very long and could be improved. Coming out of that center, you are coming out of a hill and that is a difficult right-hand turn.

QUESTION 8: What are the improvements for a better natural environment and community identity?

DISCUSSION:
- I love the idea of the outside art.
- The area needs more outdoor/community areas, such as greenspaces.
- Addition of trash cans in locations where they cannot be pushed over and thrown into the road.

8. NEXT STEPS/CONCLUSION

At the end of the virtual workshop, the attendees were thanked for their time and feedback. Mr. Malhorta mentioned the ongoing Culebra Road Community Workshops throughout the week as well as the Community Survey. The Community Survey allows for all members of the San Antonio community to provide their feedback/comments on an interactive map where they can place their comment(s) on a specific roadway. The survey will be available to participate in through Friday, June 4, 2021. All attendees were thanked again for their time and feedback, and the meeting was adjourned.

APPENDIX A
Attendee Reports

Workshop #1 Attendance

First Name	Last Name	Email	Address	City	State	Zip Code
Emily	Fleisher					
Clayton	Ripps					
Steven	Badowski					
Jason	Rodriguez					
William	Loudon					
Mauricio	Hernandez					
Monica	Delgado					
Taniesa	Williams					
Kyle	Sinclair					
Don	Rios					
Roberto	Trevino					

Workshop #2 Attendance

First Name	Last Name	Email	Address	City	State	Zip Code
Hannah	Rogers					
Joseph	Raymond					
Lori	Jones					
Prakash	Shrestha					
Richard	Ibarra					
Cynthia	Coss					
EDWARD	CASTOR					
Lexi	Bachran					
Michael	Brown					
Tomika	Monterville					
Richard	Crabb					

Workshop #3 Attendance

First Name	Last Name	Email	Address	City	State	Zip Code
Valerie	Ford					

APPENDIX B
Outreach

Appendix B – Newspaper Ads

METRO

BRIEFS

NORTH SIDE

Two discovered dead near motel

San Antonio police discovered a grisly scene Tuesday morning at a North Side motel when responding to a call, authorities say.

Officers responded about 5:30 a.m. to reports of multiple shots fired at the Budget Suites at 7880 Fredericksburg Road. When they arrived, they found the two men dead in a vehicle, police said, according to reports. Police believe the men were in their 20s or 30s.

Both men had head trauma, likely from gunshot wounds, SAPD spokesman Chris Ramos said.

"We have a lot of people who heard the shots, but no one who actually saw the shooting," Ramos said.

Police didn't say how many shots were fired, but said the motel was also hit. Some people in the area said they heard as many as five shots, police said.

No other information has been provided.

WEST SIDE

Man's body found in vehicle

A man was found dead inside a vehicle next to a West Side highway Tuesday morning, San Antonio police said.

Police went to the 10000 block of U.S. 90 West, near Joint Base San Antonio-Lackland, in response to reports of a single-vehicle crash.

When they arrived, they found the car in a field several yards off the access road and the man dead inside, according to reports.

Police said the man was 27 years old but have not identified him.

Police said the engine was cold to the touch and did not know how the man died or what caused the accident. There was, however, extensive damage to a nearby wire fence and trees, police said.

Police are still investigating.

From staff reports

Legislator overstates voter fraud

By Taylor Goldenstein
AUSTIN BUREAU

Jay Janner / Associated Press

State Sen. Bryan Hughes, R-Mineola, claimed the attorney general's office has 400 open voter fraud cases.

In defending his controversial voting bill on CNN this week, Texas state Sen. Bryan Hughes claimed half a dozen times that the attorney general's office had 400 open voter fraud cases.

"That's the fact," Hughes, R-Mineola, said in an interview with CNN host Pamela Brown. "It's documented. There's no question about that."

The number is almost 10 times larger than the number of people with pending voter fraud charges in Texas, which is 43, according to data from the attorney general's office. Only one of those pending cases stems from the 2020 election, in which more than 8 million Texans cast ballots.

Hughes, who is the author of the Senate Bill 7, which would ban drive-thru and overnight voting among other provisions, said in an interview that he was referring to the office's 396 ongoing investigations of voter fraud as of April 5.

Investigations, or unproven allegations that have not yet been taken to court, are different than filed criminal cases to which there has been some evidence of wrongdoing found.

There have been no arrests in any of those cases, and because of the way Attorney General Ken Paxton's office defines them, it's unclear how many people are under investigation or how many offenses each of them may have committed.

It's also unclear how long those investigations have been ongoing. A spokeswoman for Paxton did not respond to a request for clarification.

Texas Republicans, including Paxton, were among former President Donald Trump's staunch best supporters after he falsely claimed the 2020 election was stolen from him.

But even as Lt. Gov. Dan Patrick offered up a $1 million reward for evidence of voter fraud and Paxton doubled the resources for his election integrity unit in 2020, none have come up with evidence of widespread voter fraud in Texas or anywhere else.

That hasn't stopped them from pushing legislation like SB 7 that will reduce early voting opportunities in the name of preventing fraud, as Democrats and voting rights groups rail against it as voter suppression.

As was reported in December, the attorney general's office last year spent 22,000 hours – nearly double what it did in 2018 – working on voter fraud cases but only closed half as many: 16 cases in which Harris County residents who used a false address on their voter registration applications. Most of those cases date back to the 2016 election.

CNN anchor Pamela Brown on Sunday pushed Hughes to explain why those closed cases were not mentioned.

"To what end does a state that already has some of the strictest voting laws on the books put restrictions in place on voting in the name of voter fraud?" Brown asked.

"There are over 400 open cases of investigations of voter fraud by the Attorney General right now. Because of COVID-19 protocols, courts were not open last year," Hughes said.

Brown asked again how 16 minor cases "justify taking away access to voting," and five more times throughout their conversation, Hughes repeated that there were "400 open cases" without clarifying that he meant investigations.

It was not the first time a Texas official has cited those 400 investigations to argue the prevalence of fraud as the Legislature moves to adopt more voting restrictions.

In March, the American Civil Liberties Union pointed out a discrepancy in testimony provided by Josh Rivas, deputy attorney general for criminal justice, who repeatedly and falsely told members of the House elections committee that the office had 500 voter fraud cases pending. The cases pending against 43 defendants involve about 500 counts, to which Reno has pleaded not guilty.

The attorney general's office did not respond to a request for comment by Hearst Newspapers on why Reno used that number, even after he took time to explain to members the difference between counts and cases. Counts refer to each instance in which an individual is accused of breaking a law. A case against a single defendant can include many counts.

"Counts isn't really a great metric for what is actually happening," ACLU senior staff attorney Tommy Buser-Clancy said at the time. "It's possible for prosecutors to charge a number of counts, saying that some action violated four different laws, five different laws, and thereby inflate the number of total offenses charged."

taylor.goldenstein@chron.com

About the Cover Art: Music Mural

Provided by Paul Garson

Artist Statement:

"This was my piece for @riskital-ljam here in San Antonio, TX. over the past weekend. This is my depic-tion of the Johann Strauss monument located in Vienna, Austria. Sharing culture, and hopefully inspiring a new generation of music/art lovers to reach further than what they currently know. □ Located at The Paintyard (500 E. Carolina)."

Johann Strauss II (born Johann Baptist Strauss; 25 October 1825 – 3 June 1899) was an Austrian composer of light music, particu-larly dance music and operettas. He composed over 500 waltzes, polkas, quadrilles, and other types of dance music, as well as several operettas and a ballet. In his lifetime, he was known as "The Waltz King", and was largely responsible for the popular-ity of the waltz in Vienna during the 19th century.

Culebra Road Transportation Study
TALLERES COMUNITARIOS VIRTUALES

La Ciudad de San Antonio está llevando a cabo el Estudio de Transporte de la Calle Culebra para identificar oportunidades para hacer de Culebra una calle más segura y amigable para los conductores, peatones y ciclistas.

Únase a nosotros en uno de los tres talleres de la comunidad virtual para compartir su visión del corredor y cualquier otra cosa que desee que el equipo de estudio considere. Hay tres talleres: dos en inglés y uno en español. Los tres presentarán la misma información. También puede realizar nuestra breve encuesta en línea para compartir su visión de calle de Culebra.

INGLÉS
martes 20 de abril de 2021
11 a.m. - 1 p.m.

INGLÉS
martes 20 de abril de 2021
5:30 - 7:30 p.m.

ESPAÑOL
jueves 22 de abril de 2021
6 - 8 p.m.

PARA REGISTRARSE, VISITE:
www.CulebraRoadWorkshops.org
Una vez registrado, recibirá el enlace apropiado para unirse su taller. Si tiene alguna pregunta, por favor llame a Linda Vela al (210) 349-3273.

Enfrentamiento de Intereses y el Papel del Dinero En Elecciones de SAISD
Por Julián Villarreal, PhD

Por Julián Villarreal, PhD
P16

Chingona Fire:
Keli Rosa Cabunoc Romero
Video by Natasha Gonzales

Transcribed by
Celinda De La Fuente
P13

Mini Miracles #doitfordavid

By Roy Aguillon
P7

Juego De Estrellas Categoría Abierta 2021

Por Sendero Deportivo
P9

My Mestizo Family Crossed the Rio Grande: 1752

By Ricardo Romo, Ph.D
p10

Appendix B – Postcards

CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT
c/o Poznecki-Camarillo LLC
5835 Callaghan Road, Suite 200
San Antonio, Texas 78228

Don't have internet access? Call Linda Vela at (210) 349-3273 to ask questions or get materials presented at the community workshops. She's available between 8 a.m. and 5 p.m., Monday through Friday.

¿No tienes acceso al Internet? Llame a Linda Vela al (210) 349-3273 para hacer preguntas u obtener materiales presentados en los talleres comunitarios. Está disponible de 8 a.m. a 5 p.m., de lunes a viernes.

Culebra Road Transportation Study
VIRTUAL COMMUNITY WORKSHOPS

The City of San Antonio is studying Culebra Road, from Loop 1604 to I-10, to see how the City can make it a safer and friendlier road for drivers, pedestrians, and bicyclists. Join us for one of three virtual community workshops to share your vision for the corridor and anything else you would like considered by the study team. There are three workshops: two in English and one in Spanish. All three will present the same information. You can also take our short online survey to share your vision for Culebra Road.

TO REGISTER OR TAKE OUR PROJECT SURVEY, VISIT:
www.CulebraRoadWorkshops.org

Once registered, you will receive the link to join the workshop. If you have any questions, please call Linda Vela at (210) 349-3273.

ENGLISH
Tuesday,
April 20, 2021
11 a.m. - 1 p.m.

ENGLISH
Tuesday,
April 20 , 2021
5:30 p.m. - 7:30 p.m.

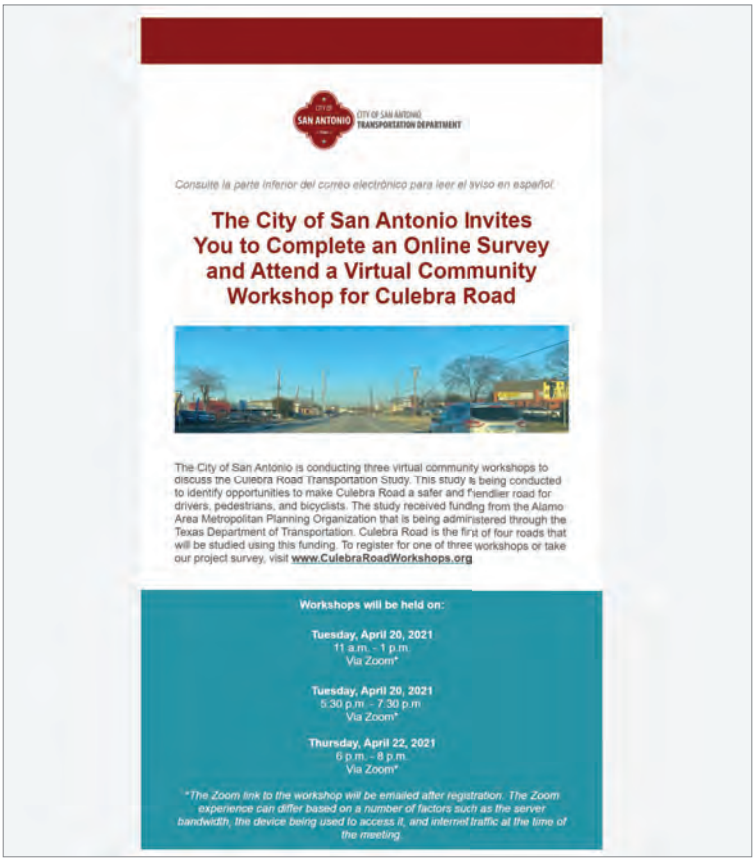
ESPAÑOL
jueves,
22 de abril de 2021
6 - 8 p.m.

Estudio de transporte de la calle Culebra
TALLERES COMUNITARIOS VIRTUALES

La Ciudad de San Antonio está estudiando a la calle Culebra, desde Loop 1604 hasta I-10, para ver cómo la Ciudad puede convertirla en una calle más segura y amigable para conductores, peatones y ciclistas. Únase a nosotros en uno de los tres talleres comunitarios virtuales para compartir su visión del corredor y cualquier otra cosa que desee que el equipo de estudio considere. Hay tres talleres: dos en inglés y uno en español. Los tres presentarán la misma información. También puede realizar nuestra breve encuesta en línea para compartir su visión de la calle Culebra.

PARA REGISTRARSE O TOMAR NUESTRA ENCUESTA, VISITE:
www.CulebraRoadWorkshops.org

Una vez registrado, recibirá el enlace para unirse al taller . Si tiene alguna pregunta, por favor llame a Linda Vela al (210) 349-3273.



CITY OF SAN ANTONIO TRANSPORTATION DEPARTMENT

Consulte la parte inferior del correo electrónico para leer el aviso en español.

The City of San Antonio Invites You to Complete an Online Survey and Attend a Virtual Community Workshop for Culebra Road

The City of San Antonio is conducting three virtual community workshops to discuss the Culebra Road Transportation Study. This study is being conducted to identify opportunities to make Culebra Road a safer and friendlier road for drivers, pedestrians, and bicyclists. The study received funding from the Alamo Area Metropolitan Planning Organization that is being administered through the Texas Department of Transportation. Culebra Road is the first of four roads that will be studied using this funding. To register for one of three workshops or take our project survey, visit **www.CulebraRoadWorkshops.org**

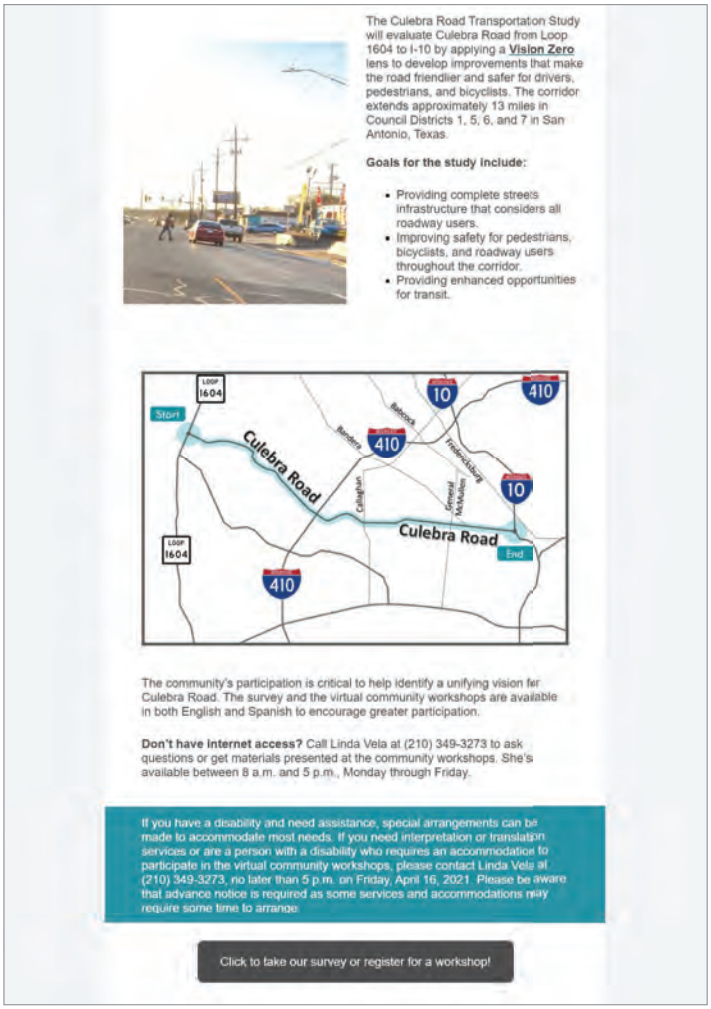
Workshops will be held on:

Tuesday, April 20, 2021
11 a.m. - 1 p.m.
Via Zoom*

Tuesday, April 20, 2021
5:30 p.m. - 7:30 p.m.
Via Zoom*

Thursday, April 22, 2021
6 p.m. - 8 p.m.
Via Zoom*

**The Zoom link to the workshop will be emailed after registration. The Zoom experience can differ based on a number of factors such as the server bandwidth, the device being used to access it, and internet traffic at the time of the meeting.*



The Culebra Road Transportation Study will evaluate Culebra Road from Loop 1604 to I-10 by applying a **Vision Zero** lens to develop improvements that make the road friendlier and safer for drivers, pedestrians, and bicyclists. The corridor extends approximately 13 miles in Council Districts 1, 5, 6, and 7 in San Antonio, Texas.

Goals for the study include:

- Providing complete streets infrastructure that considers all roadway users.
- Improving safety for pedestrians, bicyclists, and roadway users throughout the corridor.
- Providing enhanced opportunities for transit.

The community's participation is critical to help identify a unifying vision for Culebra Road. The survey and the virtual community workshops are available in both English and Spanish to encourage greater participation.

Don't have internet access? Call Linda Vela at (210) 349-3273 to ask questions or get materials presented at the community workshops. She's available between 8 a.m. and 5 p.m., Monday through Friday.

If you have a disability and need assistance, special arrangements can be made to accommodate most needs. If you need interpretation or translation services or are a person with a disability who requires an accommodation to participate in the virtual community workshops, please contact Linda Vela at (210) 349-3273, no later than 5 p.m. on Friday, April 16, 2021. Please be aware that advance notice is required as some services and accommodations may require some time to arrange.

Click to take our survey or register for a workshop!

La ciudad de San Antonio lo invita a tomar una encuesta y asistir a uno de tres talleres comunitarios virtuales para la calle Culebra

La ciudad de San Antonio está llevando a cabo tres talleres comunitarios virtuales para discutir el Estudio de Transporte de la Calle Culebra. Este estudio se está llevando a cabo para identificar oportunidades para hacer de Culebra una calle más segura y amigable para conductores, peatones y ciclistas. El estudio recibió fondos de la Organización de Planificación Metropolitana del Área de Alamo que se administraran a través del Departamento de Transporte de Texas. La calle Culebra es la primera de las cuatro carreteras que se estudiarán con este financiamiento. Para registrarse en uno de los tres talleres o realizar la encuesta de nuestro proyecto, visite www.CulebraRoadWorkshops.org.

Los talleres se llevarán a cabo en:

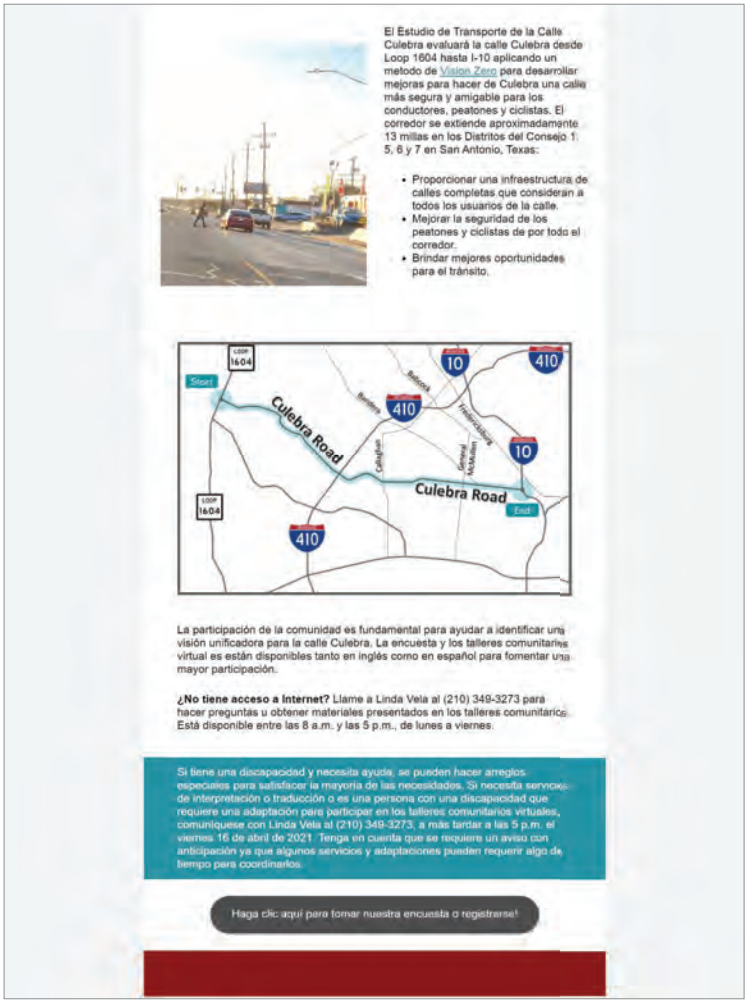
Taller de Inglés

martes 20 de abril de 2021
11 a.m. - 1 p.m.
Vía Zoom*

Taller de Inglés
martes 20 de abril de 2021
5:30 p.m. - 7:30 p.m.
Vía Zoom*

Taller de español
jueves 22 de abril de 2021
6 - 8 p.m.
Vía Zoom*

** El enlace de Zoom al taller se enviará por correo electrónico después del registro. La experiencia de Zoom puede diferir en función dependiente en una serie de factores, como el ancho de banda del servidor, el dispositivo que se utiliza para acceder a él y el tráfico del Internet en el momento de la reunión.*



El Estudio de Transporte de la Calle Culebra evaluará la calle Culebra desde Loop 1604 hasta I-10 aplicando un metodo de Vision Zero para desarrollar mejoras para hacer de Culebra una calle más segura y amigable para los conductores, peatones y ciclistas. El corredor se extiende aproximadamente 13 millas en los Distritos del Consejo 1, 5, 6 y 7 en San Antonio, Texas:

- Proporcionar una infraestructura de calles completas que consideran a todos los usuarios de la calle.
- Mejorar la seguridad de los peatones y ciclistas de por todo el corredor.
- Brindar mejores oportunidades para el tránsito.

La participación de la comunidad es fundamental para ayudar a identificar una visión unificadora para la calle Culebra. La encuesta y los talleres comunitarios virtual es están disponibles tanto en inglés como en español para fomentar una mayor participación.

¿No tiene acceso a Internet? Llame a Linda Vela al (210) 349-3273 para hacer preguntas u obtener materiales presentados en los talleres comunitarios. Está disponible entre las 8 a.m. y las 5 p.m., de lunes a viernes.

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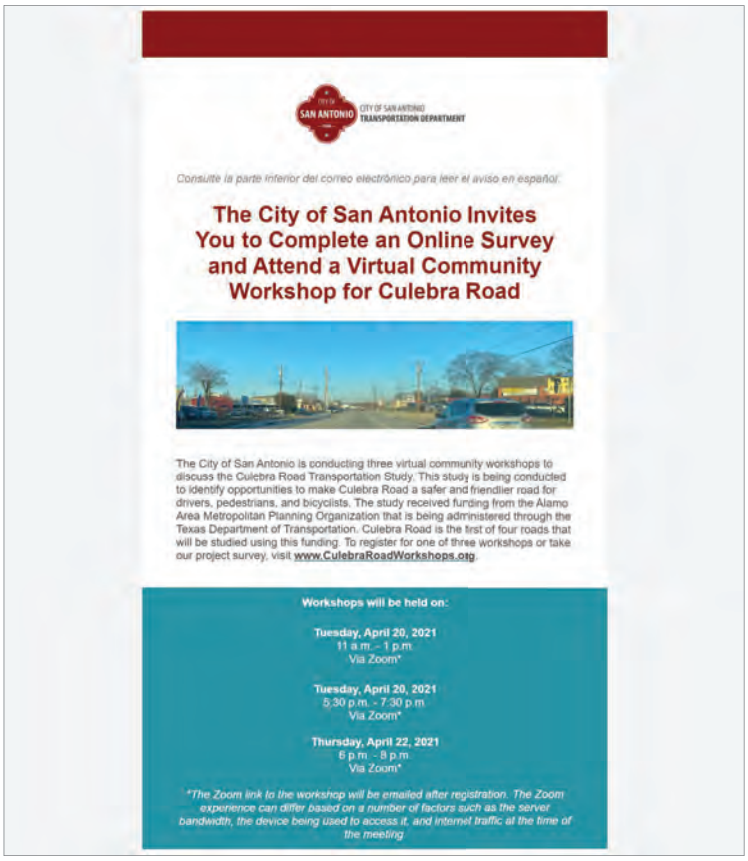
Haga clic aquí para tomar nuestra encuesta o registrarse!



CITY OF SAN ANTONIO TRANSPORTATION DEPARTMENT

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Tuesday, April 20, 2021
11 a.m. - 1 p.m.
Via Zoom*

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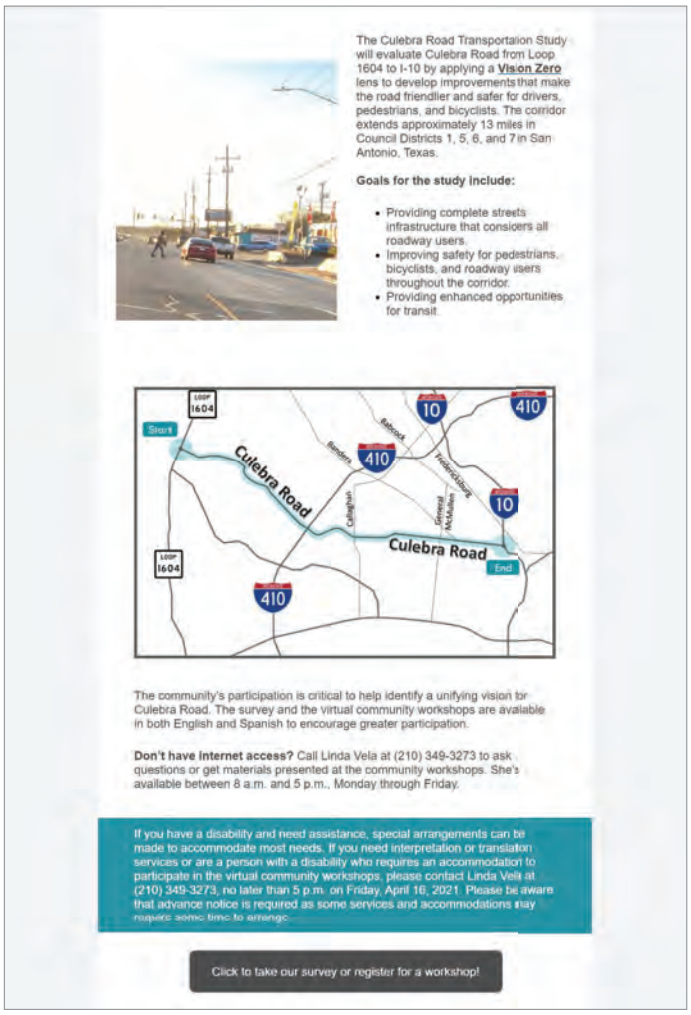
5:30 p.m. - 7:30 p.m.
Via Zoom*

Thursday, April 22, 2021
6 p.m. - 8 p.m.
Via Zoom*

**The Zoom link to the workshop will be emailed after registration. The Zoom experience can differ based on a number of factors such as the server bandwidth, the device being used to access it, and internet traffic at the time of the meeting*



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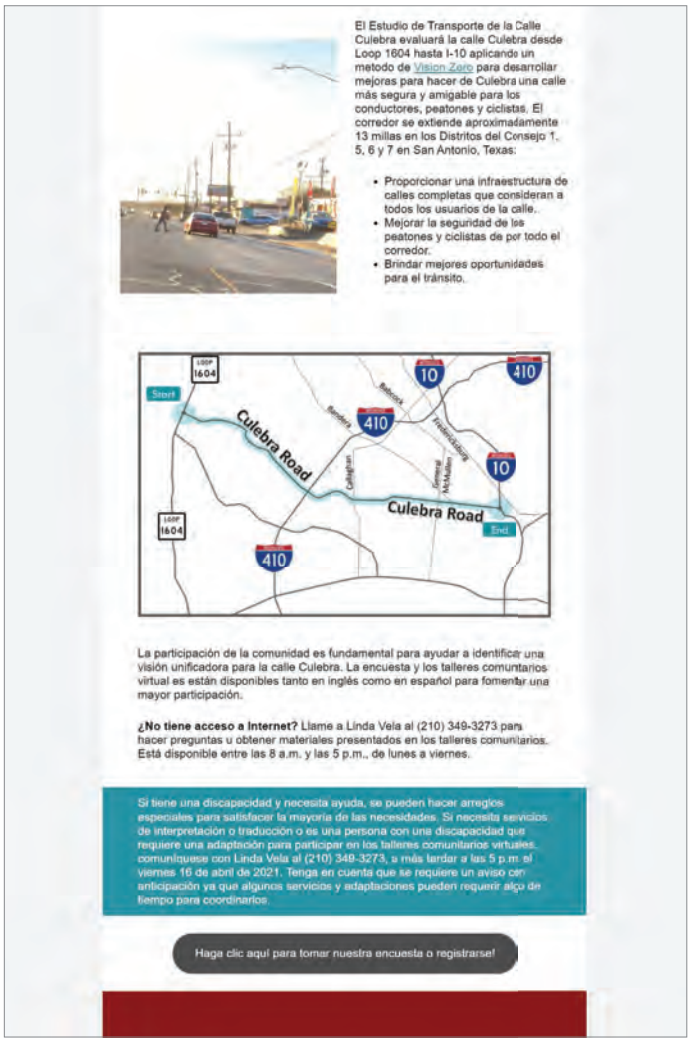

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Haga clic aquí para tomar nuestra encuesta o registrarse!

Appendix B – Media Coverage

The City of San Antonio wants to hear from you about future improvements to Culebra Road

Bryan Logan 4/15/2021

© Provided by WOAI San Antonio

The City of San Antonio wants to hear from you regarding future improvements for Culebra Road between Loop 1604 and I-10. It's all part of the city's Culebra Road Transportation Study.

It will hold three virtual workshops, two in in English and one in Spanish later this month. You can see the times and register HERE.

Culebra Road is the first of four roads that will be studied with Texas Department of Transportation funding.

LOCAL NEWS

San Antonio's Transportation Department asks for input to plan Culebra Road

Residents are invited to one of three virtual community workshops

Julie Moreno, Executive Producer/Digital Content

Published: **April 14, 2021 5:32 pm**
Updated: **April 15, 2021 10:35 am**

Tags: **Traffic, Public Works, San Antonio, Culebra Road, Northwest Side, West Side, Vision Zero**

SAN ANTONIO – San Antonio's Transportation Department is asking residents to help them make plans for improving Culebra Road.

There will be three virtual community workshops next week. Residents can register for one of the workshops online at **www.CulebraRoadWorkshops.org**. The workshops will be held via Zoom. The Zoom link will be emailed after registration.

The city aims at making Culebra a safer route for drivers, pedestrians and bicyclists. The workshops will support the Culebra Road Transportation Study, which will evaluate 13 miles of Culebra Road, from Loop 1604 to I-10, by applying a **Vision Zero** lens, officials said in a press release.

Vision Zero is an initiative that focuses on reducing serious and fatal injuries in our area.

The study received funding from the Alamo Area Metropolitan Planning Organization that is being administered through the Texas Department of Transportation. Culebra Road is the first of four roads that will be studied using this funding, officials said.

The workshops will be held on the following days/times:

WORKSHOP #1 (ENGLISH) via Zoom

- Tuesday, April 20, 2021 from 11 a.m.-1 p.m.

WORKSHOP #2 (ENGLISH) via Zoom

- Tuesday, April 20, 2021 from 5:30 p.m.-7:30 p.m.

WORKSHOP #3 (SPANISH) via Zoom

- Thursday, April 22, 2021 from 6 p.m.- 8 p.m.

Residents who don't have internet access can call Linda Vela at (210)349-3273 between 8 a.m. and 5 p.m. on weekdays to ask questions or get materials presented at the community workshops.

Also on KSAT:

- *D5 Councilwoman Shirley Gonzales pushes for further improvements on Culebra Road*
- *Is your vehicle registration expired? Texas DMV officials say you have until April 14 to renew*
- *New AAA campaign highlights dangers of distracted driving*
- *Amtrak promises more service between San Antonio and other Texas cities if infrastructure plan passes*

ABOUT THE AUTHOR:

Julie Moreno
Julie Moreno has worked in local television news for more than 20 years. She came to KSAT as a news producer in 2000. After producing thousands of newscasts, she transitioned to the digital team in 2015. She writes on a wide variety of topics from breaking news to trending stories and manages KSAT's daily

San Antonio

San Antonio's Public Works Department seeks input to plan Culebra Road

• April 14, 2021

San Antonio – San Antonio's Public Works Department is asking residents to help plan for improvements to Culebra Road.

There will be three virtual community workshops next week. Residents can register for one of the online workshops www.CulebraRoadWorkademy.org. The workshops will be conducted through Zoom. The zoom link will be emailed after registration.

The city aims to make Culebra a safe passage for drivers, pedestrians and cyclists. The workshops will support the Cuelabra Road Transportation Study, which will evaluate 13 miles of Culebra Road, from Loop 1604 to I-10, Sight zero Lens, officials said in a press release.

Vision Zero is an initiative focused on reducing serious and fatal injuries in our region.

The study received funding from t
Organization which is being admir

Cop who fatally shot Maya Bryant is a military-trained shooter: report

Read Next Story ›

Transportation. Officials said that (
will be studied through this funding.

The workshops will be held on the following days / times:

Work # 1 (English) via Zoom

- •Tuesday, April 20, 2021 from 11 am to 1 pm

Work # 2 (English) via Zoom

- •Tue, Apr 20, 2021 5:30-7:30 pm

Work # 3 (SPANISH) via Zoom

- •Thursday, April 22, 2021 from 6 pm-8pm

Residents who do not have Internet access can call Linda Valla between 8am and 5pm on weekdays to ask questions or receive materials presented at community workshops.

1200 News Radio WOAI

Local News

Transportation Department Seeks Input Regarding Upgrade Of Culebra Road

Apr 15, 2021

The city's Transportation Department is asking San Antonio residents for their input about how to improve Culebra Road. The Culebra Road Transportation Study is evaluating 13-miles of the road between Loop 1604 and I-10. The goal is to make Culebra safer for drivers, pedestrians and bicyclists. Three virtual community workshops are planned for next week via Zoom. The Zoom link will be emailed to people who register on their **website**.

Texas

San Antonio's utility sector wants input to plan Culebra Road

daviddalpe • 3 weeks ago

San Antonio – San Antonio's public works sector is asking residents to help develop plans for improving Culebra Road.

Next week there will be three virtual community workshops. Residents can enroll in one of the online workshops at www.CulebraRoadWorkshops.org. The

workshop will be held via Zoom. The zoom link will be emailed to you after registration.

The city aims to make Klebra a safer route for drivers, pedestrians and cyclists. Officials said the workshop will support the Culebra Road Transportation Study, which evaluates the 13-mile Culebra Road from Loop 1604 to I-10 by applying the Vision Zero lens, officials said in a press release.

Vision Zero is an initiative focused on reducing serious and fatal injuries in our area.

The study was funded by the Alamo Regional Metropolitan Planning Organization, which is managed through the Texas Department of Transportation. Officials said Klebra Road was the first of four roads to be investigated using this money.

Advertising

The workshop will be held on the following day / time.

Zoom Workshop # 1 (English)

- •Tuesday, April 20, 2021 from 11:00 am to 1:00 pm

Zoom Workshop # 2 (English)

- •Tuesday, April 20, 2021 from 5:30 pm to 7:30 pm

Zoom Workshop # 3 (Spanish)

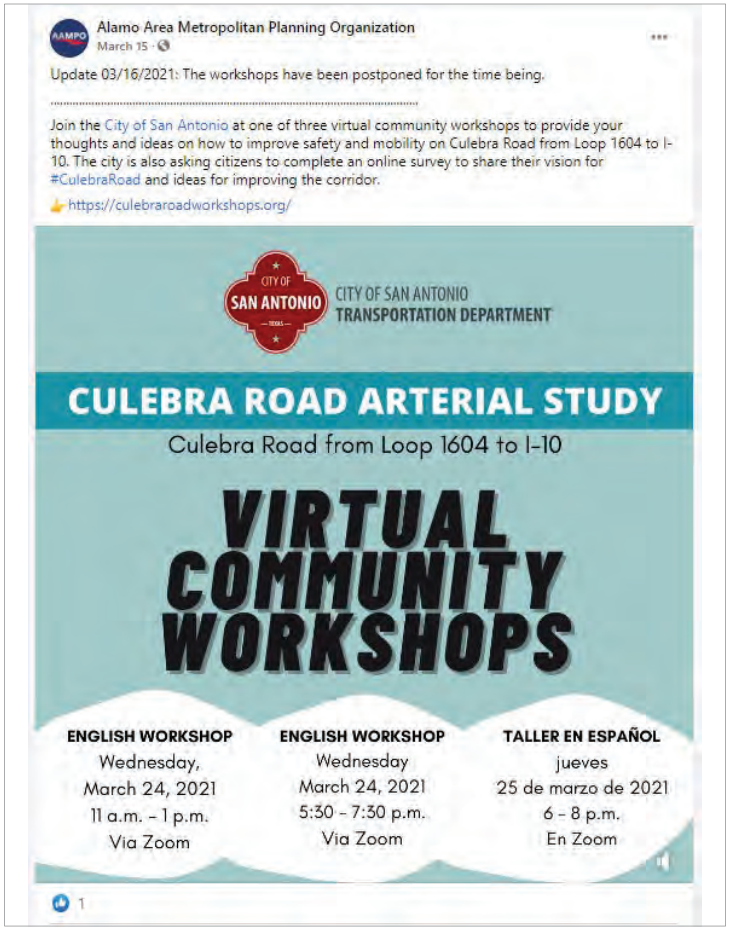
- •Thursday, April 22, 2021 6:00 pm to 8:00 pm

Residents without internet access can call Linda Vəla (210) 349-3273 between 8 am and 5 pm on weekdays to ask questions and present materials at community workshops.

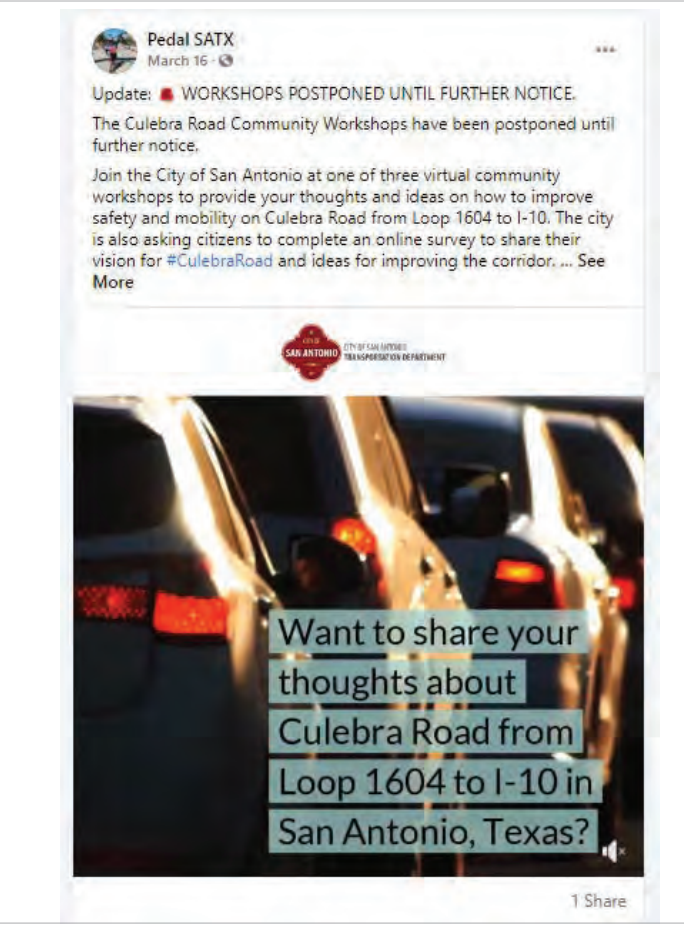
San Antonio's utility sector wants input to plan Culebra Road

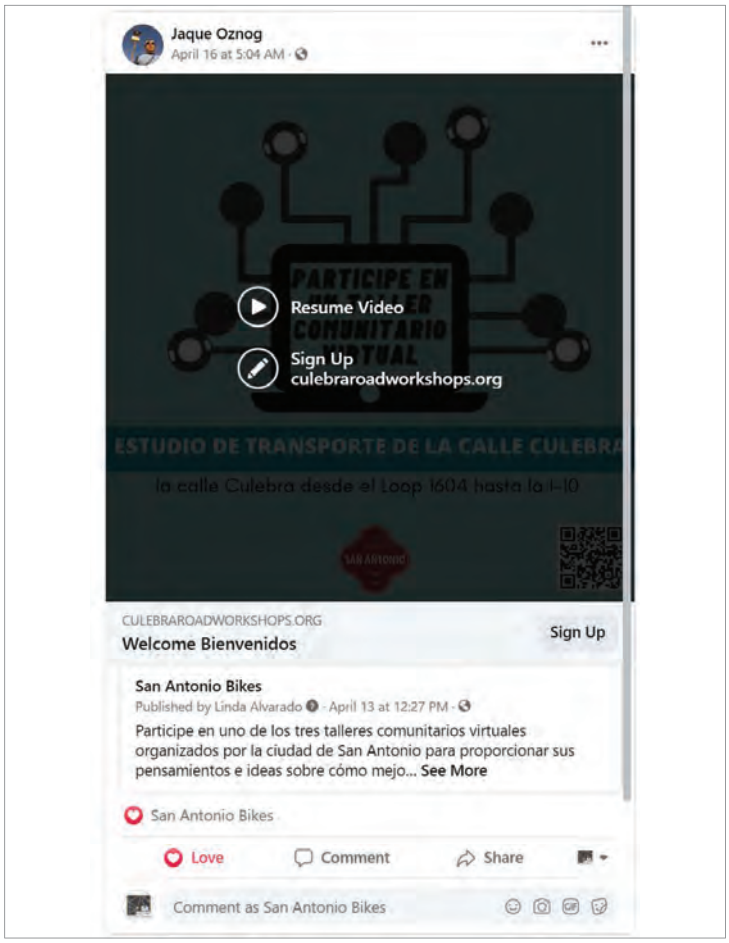
Source link San Antonio's utility sector wants input to plan Culebra Road

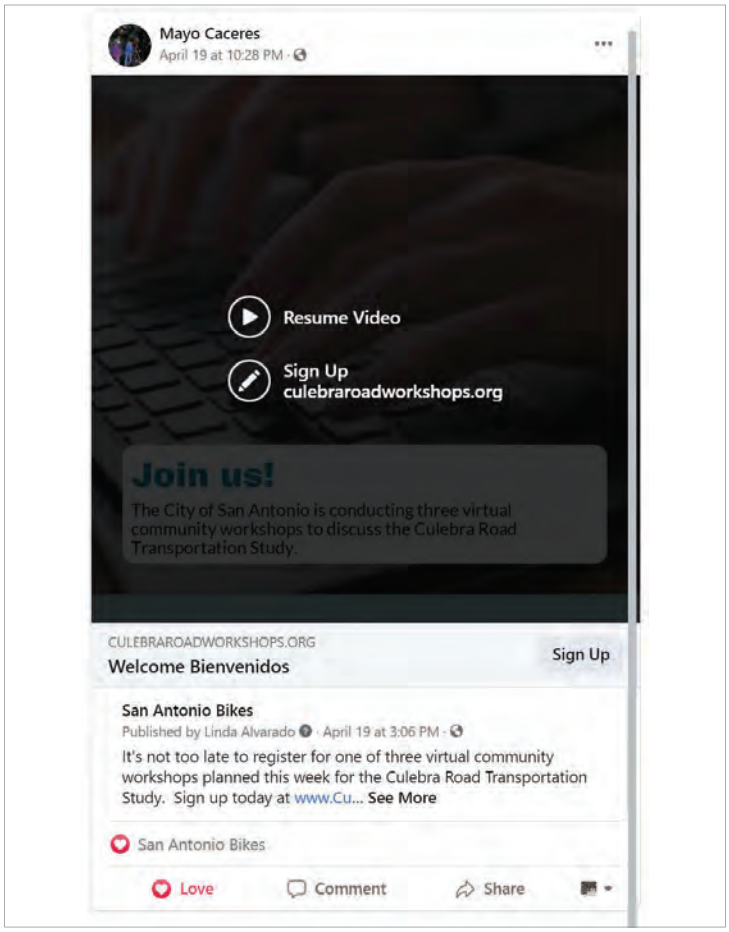
Appendix B – Social Media Outreach



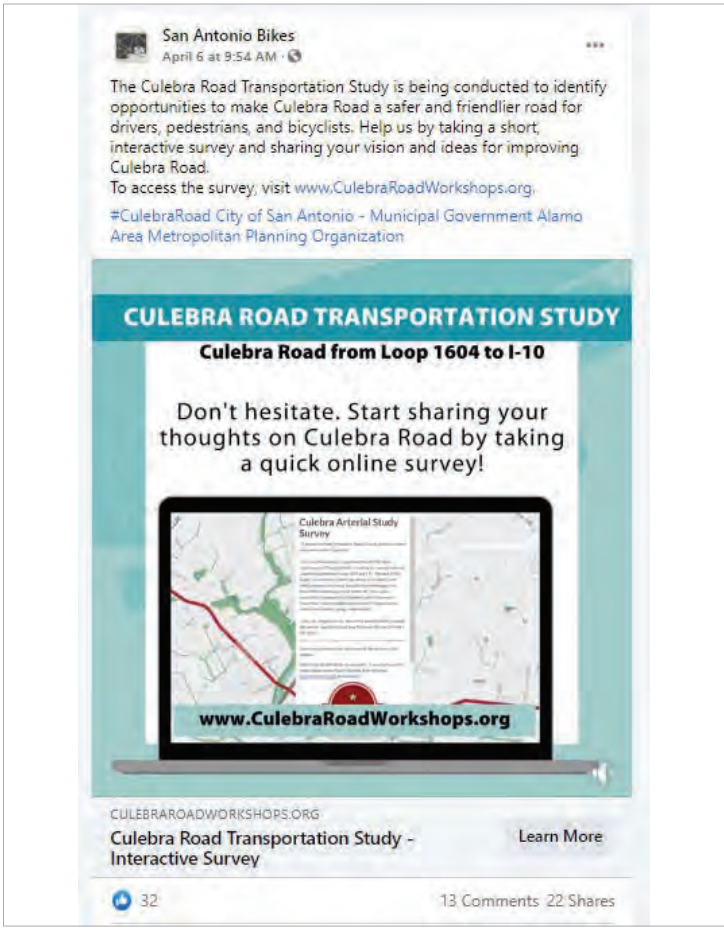

Alamo Area MPO @AlamoAreaMPO · Mar 15
Your input matters! The @COSAGOV wants to hear your thoughts and ideas on possible improvements to #CulebraRoad from Loop 1604 to I-10.
Take the online survey bit.ly/3IofzAP
CITY OF SAN ANTONIO TRANSPORTATION DEPARTMENT
CULEBRA ROAD ARTERIAL STUDY
Culebra Road from Loop 1604 to I-10
VIRTUAL COMMUNITY WORKSHOPS
ENGLISH WORKSHOP
Wednesday,
March 24, 2021
11 a.m. - 1 p.m.
Via Zoom
ENGLISH WORKSHOP
Wednesday
March 24, 2021
5:30 - 7:30 p.m.
Via Zoom
TALLER EN ESPAÑOL
jueves
25 de marzo de 2021
6 - 8 p.m.
En Zoom
149 views
0:02 / 0:07
4
3


Pedal SATX
March 16
Update: WORKSHOPS POSTPONED UNTIL FURTHER NOTICE.
The Culebra Road Community Workshops have been postponed until further notice.
Join the City of San Antonio at one of three virtual community workshops to provide your thoughts and ideas on how to improve safety and mobility on Culebra Road from Loop 1604 to I-10. The city is also asking citizens to complete an online survey to share their vision for #CulebraRoad and ideas for improving the corridor. ... See More
Want to share your thoughts about Culebra Road from Loop 1604 to I-10 in San Antonio, Texas?
1 Share


Jaque Oznog
April 16 at 5:04 AM
Resume Video
Sign Up
culebraroadworkshops.org
ESTUDIO DE TRANSPORTE DE LA CALLE CULEBRA
la calle Culebra desde el Loop 1604 hasta la I-10
CULEBRAROADWORKSHOPS.ORG
Welcome Bienvenidos
Sign Up
San Antonio Bikes
Published by Linda Alvarado · April 13 at 12:27 PM
Participe en uno de los tres talleres comunitarios virtuales organizados por la ciudad de San Antonio para proporcionar sus pensamientos e ideas sobre cómo mejo... See More
San Antonio Bikes
Love
Comment
Share
Comment as San Antonio Bikes

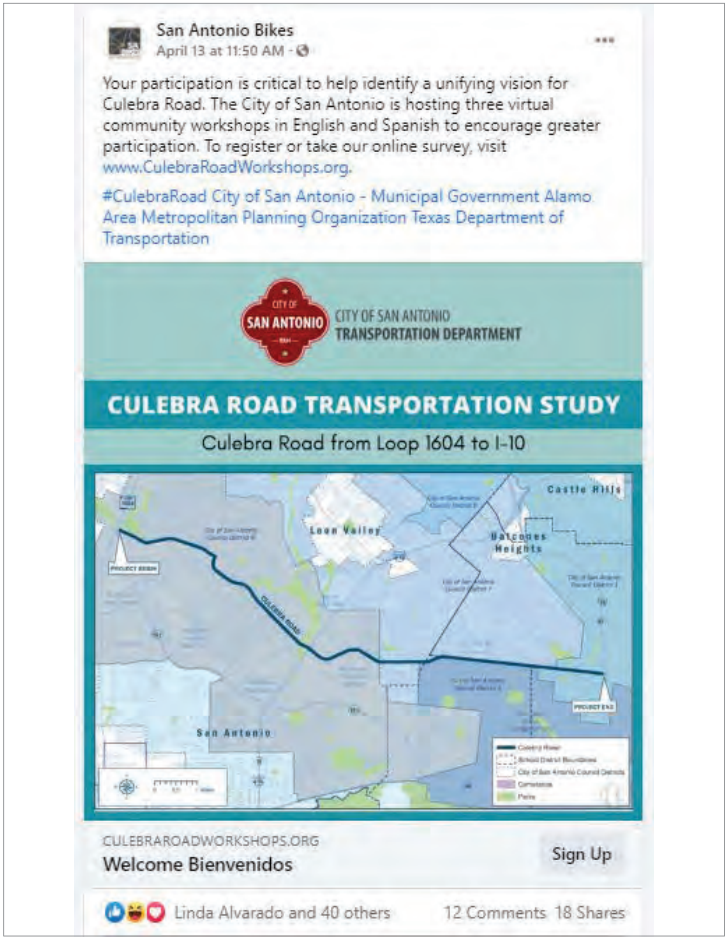

Mayo Caceres
April 19 at 10:28 PM
Resume Video
Sign Up
culebraroadworkshops.org
Join us!
The City of San Antonio is conducting three virtual community workshops to discuss the Culebra Road Transportation Study.
CULEBRAROADWORKSHOPS.ORG
Welcome Bienvenidos
Sign Up
San Antonio Bikes
Published by Linda Alvarado · April 19 at 3:06 PM
It's not too late to register for one of three virtual community workshops planned this week for the Culebra Road Transportation Study. Sign up today at www.Cu... See More
San Antonio Bikes
Love
Comment
Share

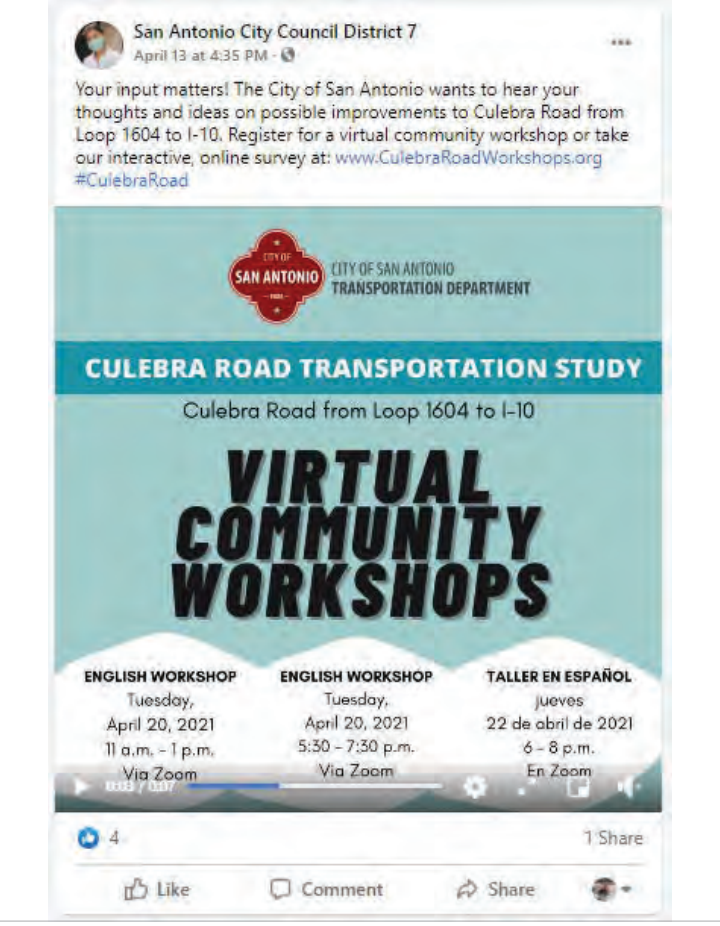

Culebra Park Neighborhood Association
April 19 at 5:25 PM
Neighbors, this is a wonderful opportunity to voice concerns.
CITY OF SAN ANTONIO
CITY OF SAN ANTONIO TRANSPORTATION DEPARTMENT
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
TAKE OUR INTERACTIVE, ONLINE SURVEY
0:06 / 0:07
San Antonio City Council District 7
April 19 at 2:57 PM
This Week: The City of San Antonio is looking to make Culebra Road a safer and friendlier road for drivers, pedestrians, and bicyclists and wants your input! Jo... See More
Like
Comment
Share


San Antonio Bikes
April 6 at 9:54 AM
The Culebra Road Transportation Study is being conducted to identify opportunities to make Culebra Road a safer and friendlier road for drivers, pedestrians, and bicyclists. Help us by taking a short, interactive survey and sharing your vision and ideas for improving Culebra Road.
To access the survey, visit www.CulebraRoadWorkshops.org.
#CulebraRoad City of San Antonio - Municipal Government Alamo Area Metropolitan Planning Organization
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
Don't hesitate. Start sharing your thoughts on Culebra Road by taking a quick online survey!
Culebra Arterial Study Survey
www.CulebraRoadWorkshops.org
CULEBRAROADWORKSHOPS.ORG
Culebra Road Transportation Study - Interactive Survey
Learn More
32
13 Comments 22 Shares


San Antonio City Council District 7
April 9 at 4:15 PM
Your participation is critical to help identify a unifying vision for Culebra Road. The City of San Antonio is hosting three virtual community workshops in English and Spanish to encourage greater participation. To register or take our online survey, visit www.CulebraRoadWorkshops.org. #CulebraRoad
Want to share your thoughts about Culebra Road from Loop 1604 to I-10 in San Antonio, Texas?
0:25 / 0:25
Linda Alvarado and 3 others
2 Shares


Ana Sandoval @AnaSandovalSATX · Apr 9
Your participation is critical to help identify a unifying vision for Culebra Road. @COSAGOV is hosting three virtual community workshops in English and Spanish to encourage greater participation. To register or take our online survey, visit CulebraRoadWorkshops.org. #CulebraRoad
Want to share your thoughts about Culebra Road from Loop 1604 to I-10 in San Antonio, Texas?
59 views
0:03 / 0:25
1
3


San Antonio Bikes
April 13 at 11:50 AM
Your participation is critical to help identify a unifying vision for Culebra Road. The City of San Antonio is hosting three virtual community workshops in English and Spanish to encourage greater participation. To register or take our online survey, visit www.CulebraRoadWorkshops.org.
#CulebraRoad City of San Antonio - Municipal Government Alamo Area Metropolitan Planning Organization Texas Department of Transportation
CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
Castle Hills
Leon Valley
Balcones Heights
San Antonio
CULEBRAROADWORKSHOPS.ORG
Welcome Bienvenidos
Sign Up
Linda Alvarado and 40 others
12 Comments 18 Shares


San Antonio City Council District 7
April 13 at 4:35 PM
Your input matters! The City of San Antonio wants to hear your thoughts and ideas on possible improvements to Culebra Road from Loop 1604 to I-10. Register for a virtual community workshop or take our interactive, online survey at: www.CulebraRoadWorkshops.org
#CulebraRoad
CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
VIRTUAL COMMUNITY WORKSHOPS
ENGLISH WORKSHOP
Tuesday,
April 20, 2021
11 a.m. - 1 p.m.
Via Zoom
ENGLISH WORKSHOP
Tuesday,
April 20, 2021
5:30 - 7:30 p.m.
Via Zoom
TALLER EN ESPAÑOL
jueves
22 de abril de 2021
6 - 8 p.m.
En Zoom
4
1 Share
Like
Comment
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Ana Sandoval @AnaSandovalSATX · Apr 13
Your input matters! The City of San Antonio wants to hear your thoughts and ideas on possible improvements to Culebra Road from Loop 1604 to I-10. Register for a virtual community workshop or take our interactive, online survey at: CulebraRoadWorkshops.org #CulebraRoad
CITY OF SAN ANTONIO
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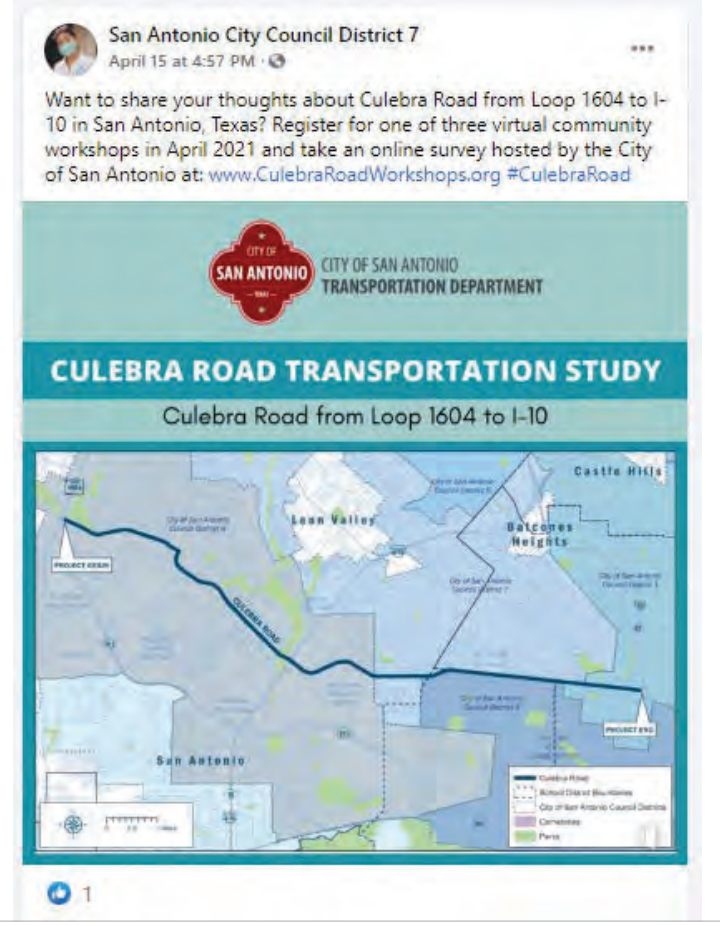
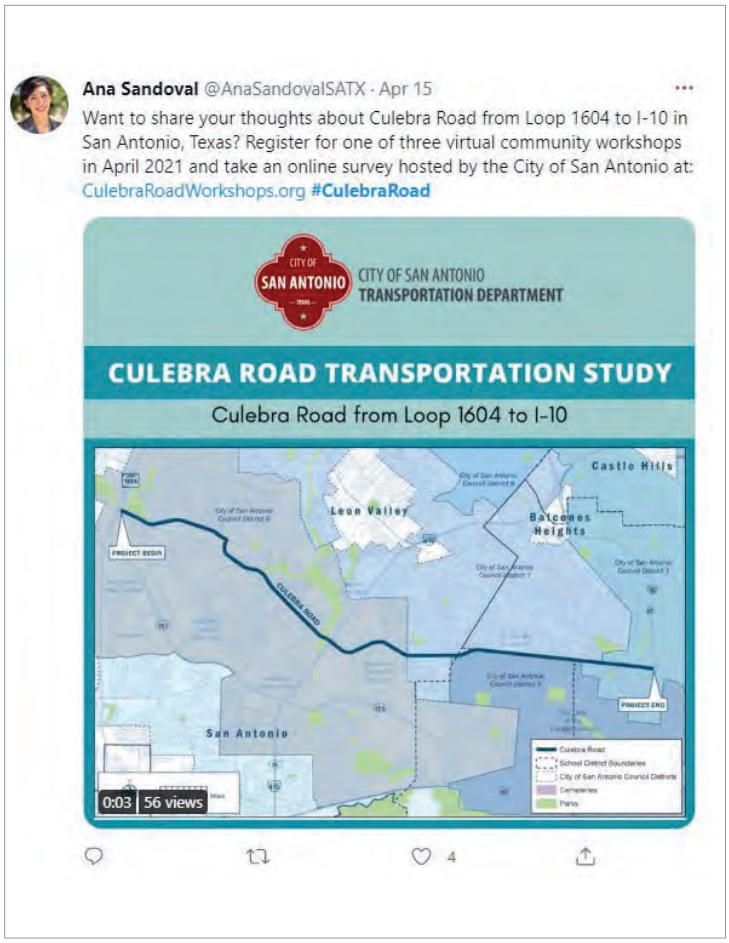
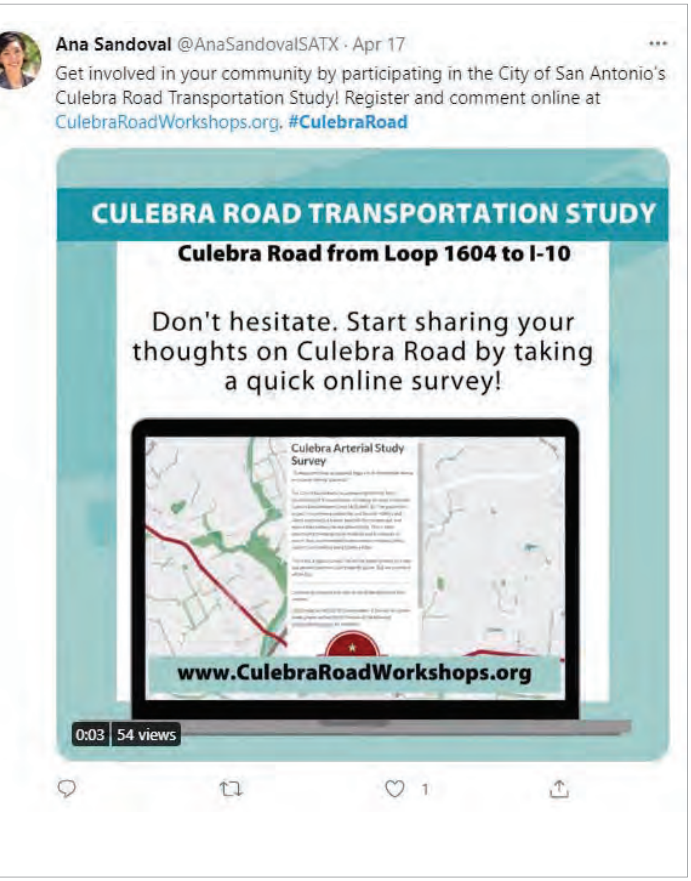
Via Zoom
TALLER EN ESPAÑOL
jueves
22 de abril de 2021
6 - 8 p.m.
En Zoom
0:01
63 views
1
4

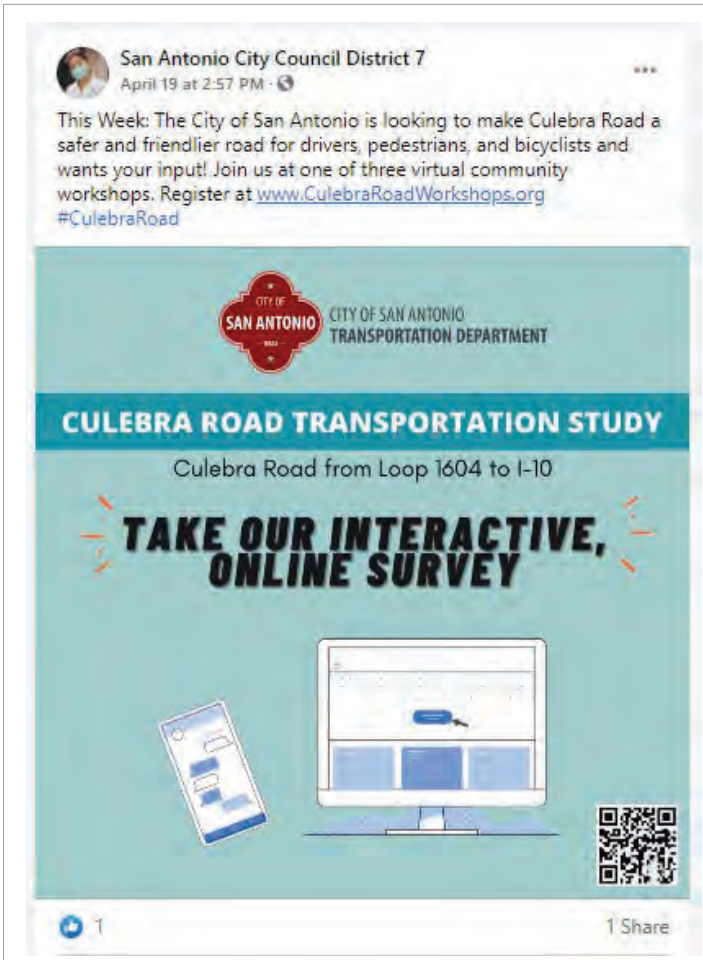

San Antonio City Council District 7
April 15 at 4:57 PM
Want to share your thoughts about Culebra Road from Loop 1604 to I-10 in San Antonio, Texas? Register for one of three virtual community workshops in April 2021 and take an online survey hosted by the City of San Antonio at: www.CulebraRoadWorkshops.org #CulebraRoad
CITY OF SAN ANTONIO
CITY OF SAN ANTONIO TRANSPORTATION DEPARTMENT
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
Castle Hills
Leon Valley
Balcones Heights
San Antonio
1


Ana Sandoval @AnaSandovalSATX · Apr 15
Want to share your thoughts about Culebra Road from Loop 1604 to I-10 in San Antonio, Texas? Register for one of three virtual community workshops in April 2021 and take an online survey hosted by the City of San Antonio at: CulebraRoadWorkshops.org #CulebraRoad
CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
Castle Hills
Leon Valley
Balcones Heights
San Antonio
PROJECT BEGIN
PROJECT END
0:03 | 56 views
4


San Antonio City Council District 7
April 16 at 11:13 AM
Su participación es fundamental para ayudar a identificar una visión para la calle Culebra. La ciudad de San Antonio está organizando tres talleres comunitarios virtuales en inglés y español. Para registrarse o realizar nuestra encuesta en línea, visite:
www.CulebraRoadWorkshops.org. #CulebraRoad
Your involvement is critical to help identify a vision for Culebra Street. The city of San Antonio is hosting three virtual community workshops in English and Spanish. To register or take our online survey, visit:
www.CulebraRoadWorkshops.org. #CulebraRoad
· Hide original · Rate this translation
PARTICIPE EN UN TALLER COMUNITARIO VIRTUAL
ESTUDIO DE TRANSPORTE DE LA CALLE CULEBRA
la calle Culebra desde el Loop 1604 hasta la I-10
2
Like
Comment
Share


San Antonio City Council District 7
April 17 at 10:15 AM
Get involved in your community by participating in the City of San Antonio's Culebra Road Transportation Study! Register and comment online at www.CulebraRoadWorkshops.org. #CulebraRoad
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
Don't hesitate. Start sharing your thoughts on Culebra Road by taking a quick online survey!
Culebra Arterial Study Survey
www.CulebraRoadWorkshops.org
0:05 / 0:05
1
Like
Comment
Share


Ana Sandoval @AnaSandovalSATX · Apr 17
Get involved in your community by participating in the City of San Antonio's Culebra Road Transportation Study! Register and comment online at CulebraRoadWorkshops.org. #CulebraRoad
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
Don't hesitate. Start sharing your thoughts on Culebra Road by taking a quick online survey!
Culebra Arterial Study Survey
www.CulebraRoadWorkshops.org
0:03
54 views
1

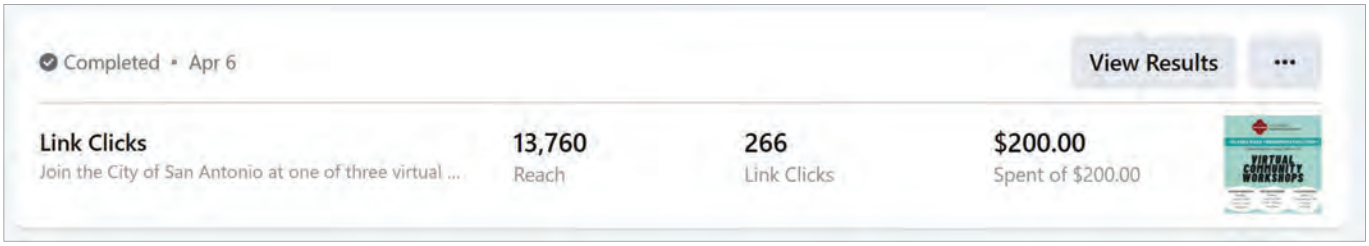

San Antonio City Council District 7
April 19 at 2:57 PM
This Week: The City of San Antonio is looking to make Culebra Road a safer and friendlier road for drivers, pedestrians, and bicyclists and wants your input! Join us at one of three virtual community workshops. Register at www.CulebraRoadWorkshops.org
#CulebraRoad
CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
TAKE OUR INTERACTIVE, ONLINE SURVEY
1
1 Share

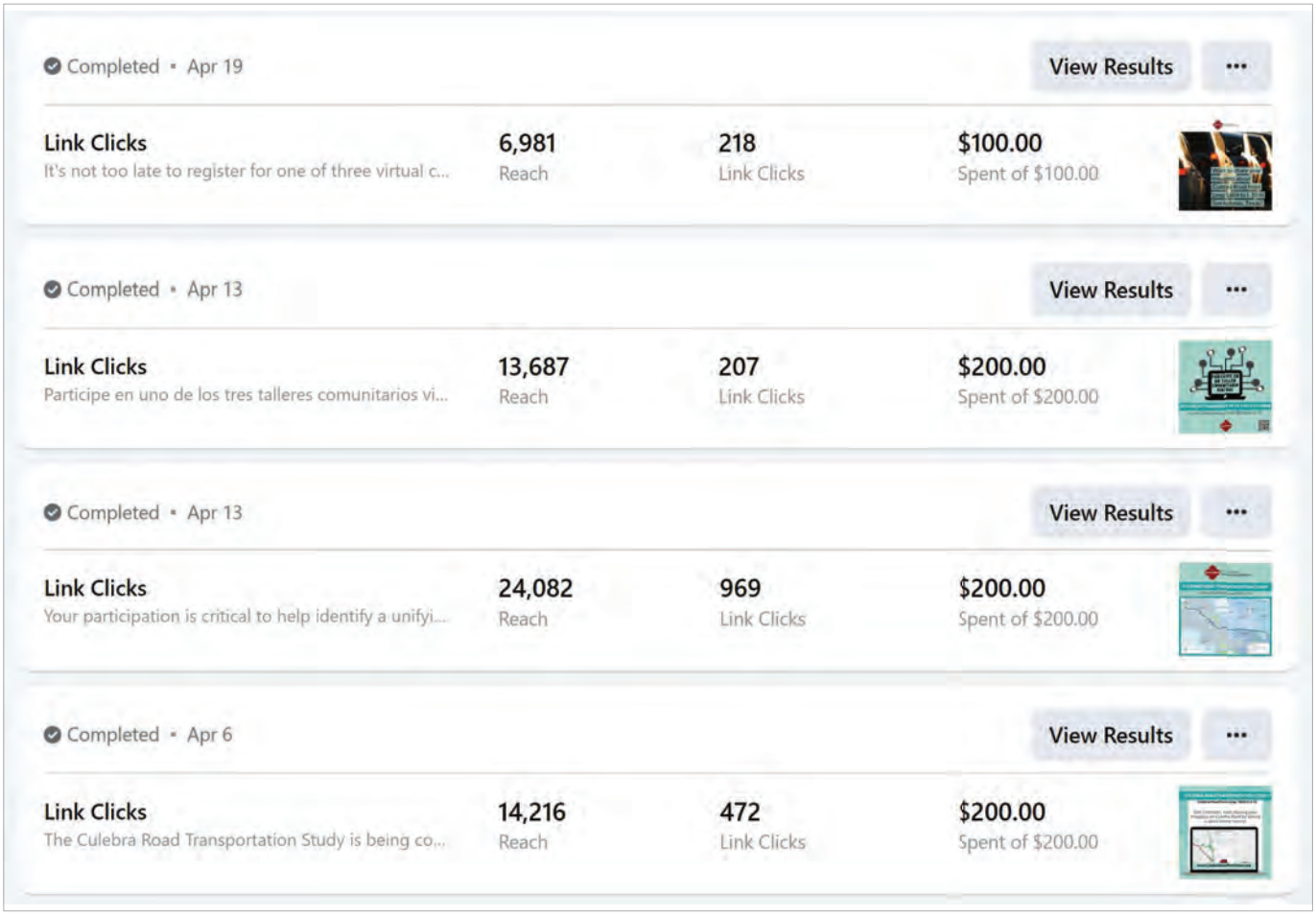

Ana Sandoval @AnaSandovalSATX - Apr 19
This Week: The City of San Antonio is looking to make Culebra Road a safer and friendlier road for drivers, pedestrians, and bicyclists and wants your input! Join us at one of three virtual community workshops. Register at CulebraRoadWorkshops.org #CulebraRoad
CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
TAKE OUR INTERACTIVE, ONLINE SURVEY
0:03
63 views
5


Property Finder 210
April 20 at 5:51 AM
Thoughts on how to improve Culebra rd (from I-10 to 1604)? Take the survey or participate in tonights workshop!
#sanantoniofuture #culebraroad #sanantoniotexas
https://culebraroadworkshops.org
CITY OF SAN ANTONIO
CULEBRA ROAD ARTERIAL STUDY
CULEBRAROADWORKSHOPS.ORG
Welcome Bienvenidos
The City of San Antonio is conducting the Culebra Road Arterial Stu...
Like
Comment
Share


San Antonio City Council District 7
April 20 at 10:15 AM
Do you travel along Culebra Road from Loop 1604 to I-10 on a regular basis? Then the City of San Antonio wants to hear from you! Register and comment online at www.CulebraRoadWorkshops.org.
#CulebraRoad
TAKE OUR INTERACTIVE ONLINE SURVEY
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT
0:06 / 0:06
2
Like
Comment
Share


Ana Sandoval @AnaSandovalSATX · Apr 20
Do you travel along Culebra Road from Loop 1604 to I-10 on a regular basis? Then the City of San Antonio wants to hear from you! Register and comment online at CulebraRoadWorkshops.org. #CulebraRoad
TAKE OUR INTERACTIVE ONLINE SURVEY
CULEBRA ROAD TRANSPORTATION STUDY
Culebra Road from Loop 1604 to I-10
CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT
0:00 37 views
2


Completed • Apr 6
View Results
Link Clicks
Join the City of San Antonio at one of three virtual ...
13,760
Reach
266
Link Clicks
$200.00
Spent of $200.00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It's not too late to register for one of three virtual c...
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Reach
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Link Clicks
$100.00
Spent of $100.00
Completed • Apr 13
View Results
Link Clicks
Participe en uno de los tres talleres comunitarios vi...
13,687
Reach
207
Link Clicks
$200.00
Spent of $200.00
Completed • Apr 13
View Results
Link Clicks
Your participation is critical to help identify a unifyi...
24,082
Reach
969
Link Clicks
$200.00
Spent of $200.00
Completed • Apr 6
View Results
Link Clicks
The Culebra Road Transportation Study is being co...
14,216
Reach
472
Link Clicks
$200.00
Spent of $200.00


Views
171,598
Clicks
1,314
Overview
Views
Clicks
Spend
CTR
CPC
CPM
Views
Clicks
Apr 08 2021
Apr 10 2021
Apr 12 2021
Apr 14 2021
Apr 16 2021
Apr 18 2021
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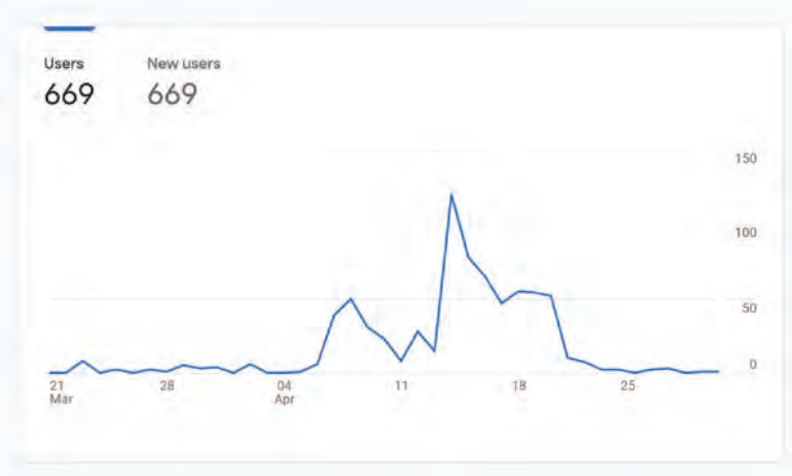
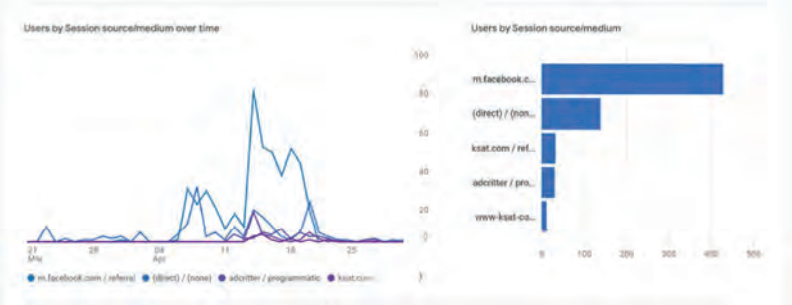
Apr 22 2021
Apr 24 2021
Apr 26 2021
Apr 28 2021
Apr 30 2021
May 02 2021
May 04 2021

Google Analytics for www.culebraroadworkshops.org





APPENDIX C
Presentation

Appendix C – English Presentation

Culebra Road Transportation Study

COMMUNITY VISIONING WORKSHOP

April 2021

Meeting Instructions

ZOOM:

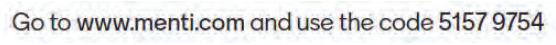
- **Name:** Click the … by your name to update your name – use **First and Last Name**
- **Unmute:** Have a question? Use the raise hand feature to ask a question

- **Chat:** Use the Chat feature to submit questions or comments during the meeting

- **Can't access the Chat feature?** Please text your questions to (210) ***-****.

Mentimeter:

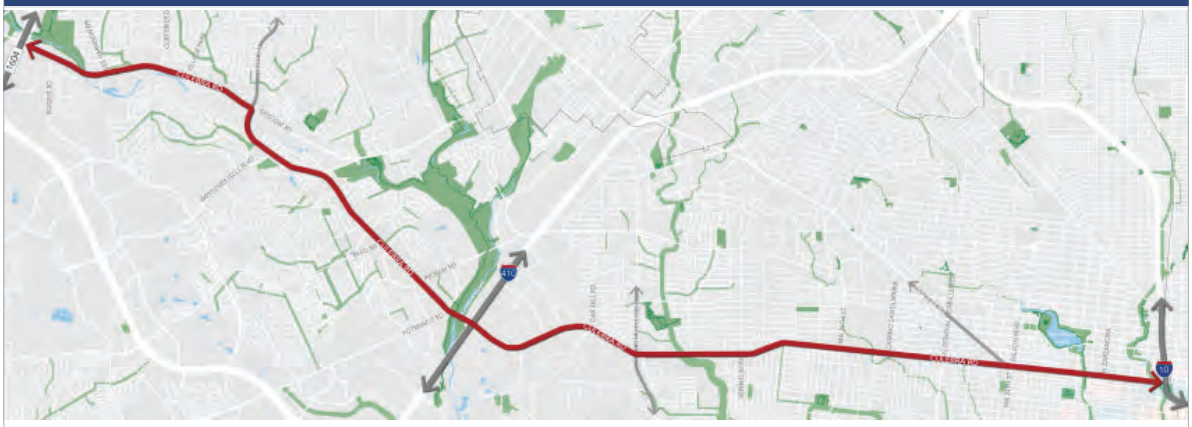
- **Description:** Mentimeter is an online polling tool
- **Access:** Use another browser tab or device to access Mentimeter
  - Visit: www.menti.com
  - Use Code: 5157 9754
- **Can't access Mentimeter?** Please text your responses to (210) ***-**** or enter your response in the chat



Agenda

- WELCOME & INTRODUCTIONS
- PROJECT PURPOSE, GOALS & PROCESS
- COMMUNITY ASSETS, ISSUES & OPPORTUNITIES
- EMERGING COMMUNITY VISION & GOALS
- GROUP DISCUSSIONS
- GROUP DISCUSSION REPORT BACK
- NEXT STEPS

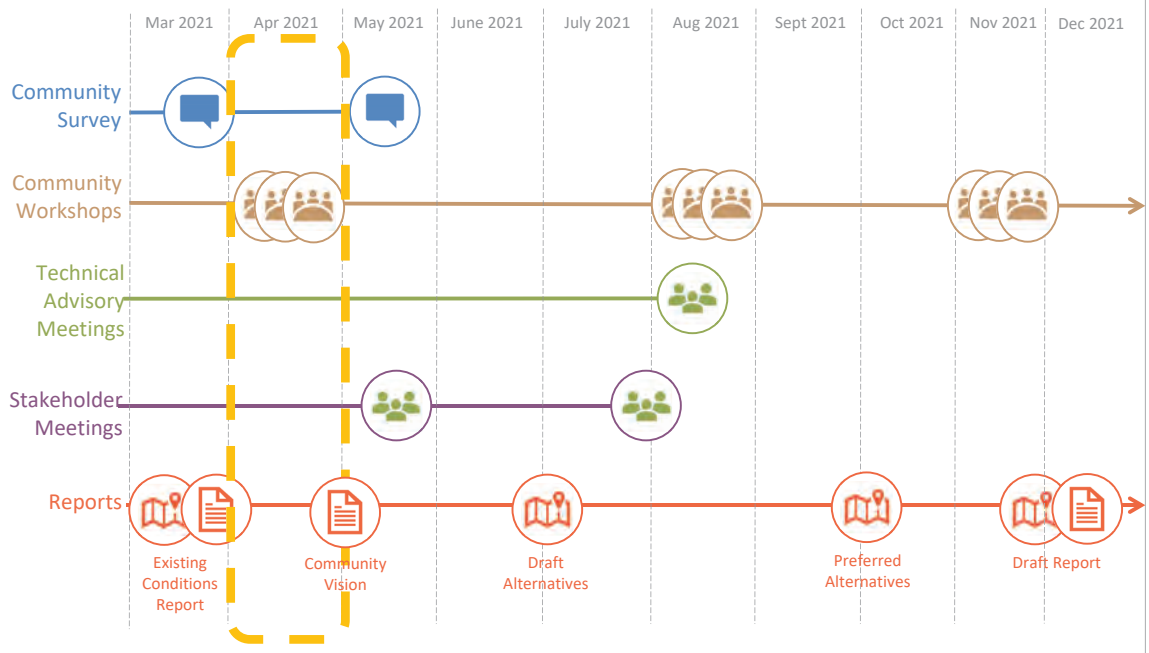
Project Area



Project Goals

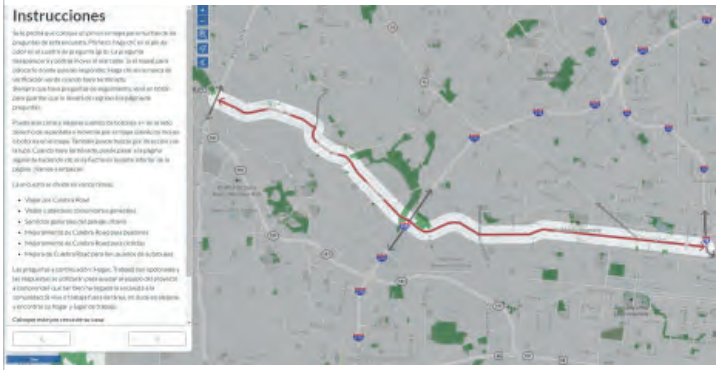
1. Create a **safe corridor for ALL users** of the street
2. Transform Culebra into an **equitable, multimodal corridor for people who walk, roll, bike, take transit and drive**
3. Enhance the **overall experience and connectivity for pedestrians, bicyclists and transit users**
4. Develop **conceptual designs for short- and long-term improvements**
5. Coordinate and **build upon previous and concurrent studies** and initiatives
6. Ensure **meaningful community and stakeholder engagement**

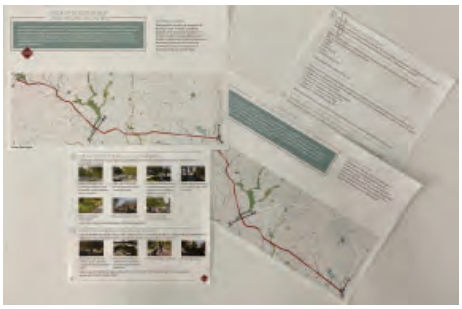
Project Process



Project Process: Community Survey

- Bi-Lingual English and Spanish
- Engaging, online, interactive survey
- Launched: March 12, 2021
  - Over 150 surveys
  - Over 2480 map responses
- Complimentary in-person survey





https://culebraroadworkshops.org/

Project Process: Community Survey

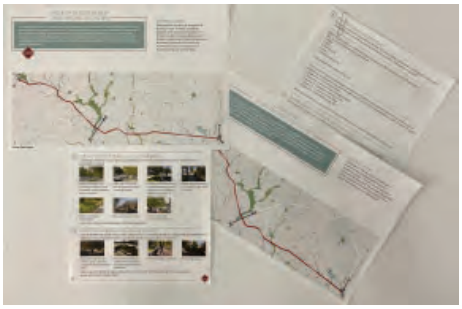
- Bi-Lingual English and Spanish
- Engaging, online, interactive survey
- Launched: March 12, 2021
  - Over 150 surveys
  - Over 2480 map responses
- Complimentary in-person survey
- Locations to pick up or drop the survey

Memorial Library
3222 Culebra Rd.
San Antonio, TX 78228

Great Northwest Library
9050 Wellwood St. 78250

Council District Offices

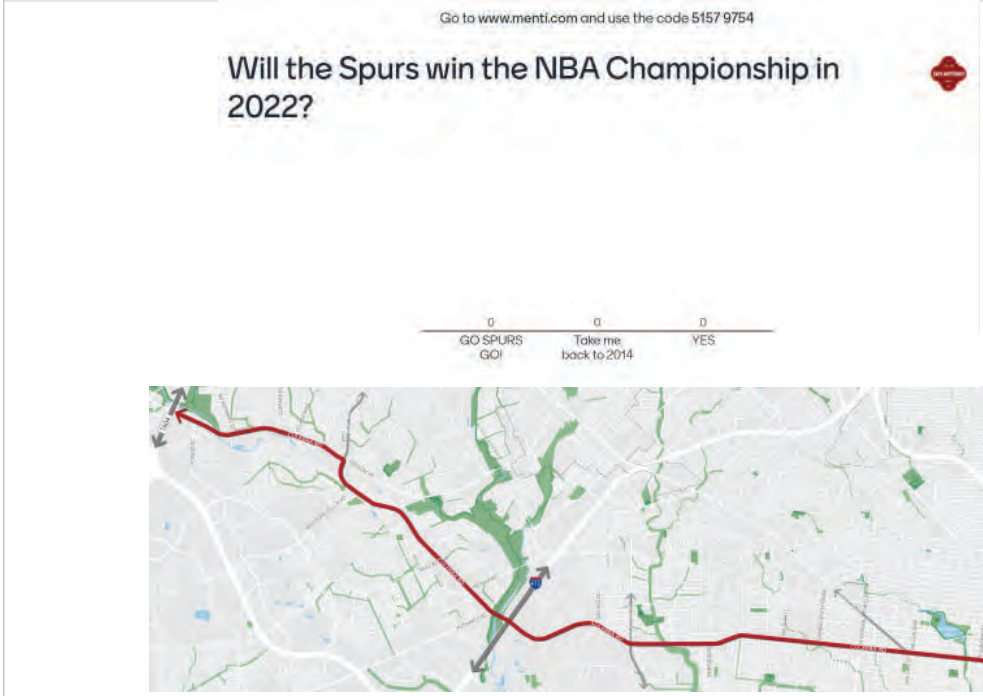
- Or ask for a copy to be mailed to you!



https://culebraroadworkshops.org/

Project Process

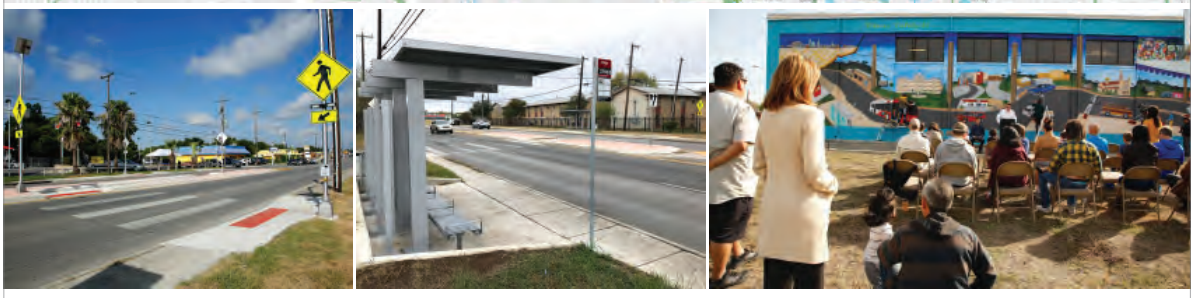
Project Process



COMMUNITY ASSETS

Community Destinations and Neighborhoods

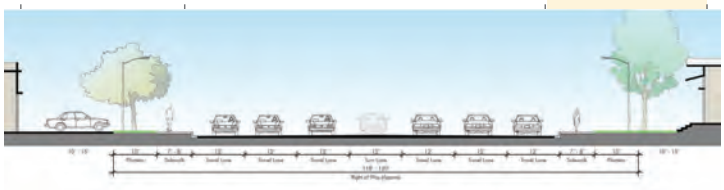
Community & Political Investment



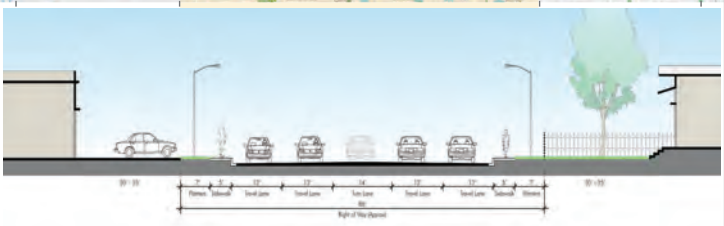
Distinct Corridor Segments

Segment E	Segment D	Segment C	Segment B	Segment A
Tezel Rd to Loop 1604	Loop 410 to Tezel Rd	Callaghan Rd to Loop 410	Bandera Rd to Callaghan Rd	I-10 to Bandera Rd

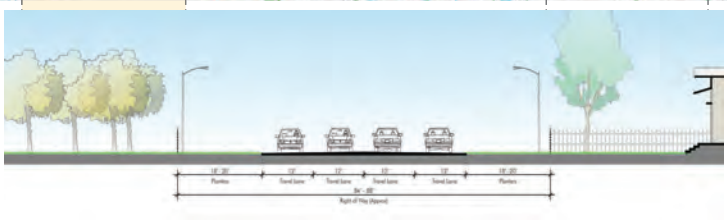
Segment A: I-10 to Bandera Road



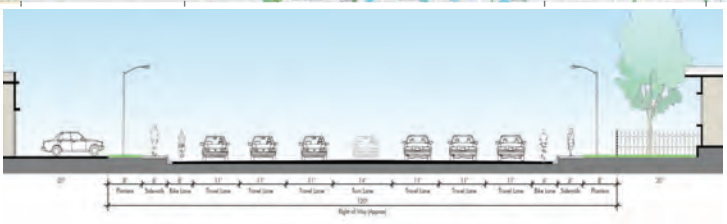
Segment B: Bandera Road to Callaghan Road



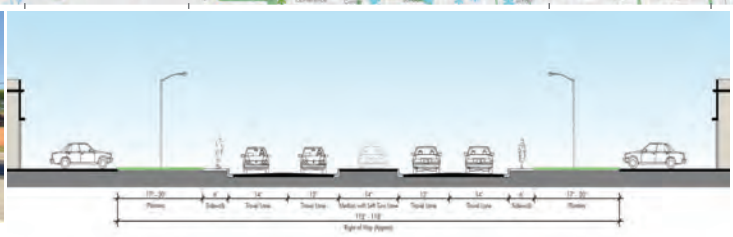
Segment C: Callaghan Road to Loop 410



Segment D: Loop 410 to Tezel Road

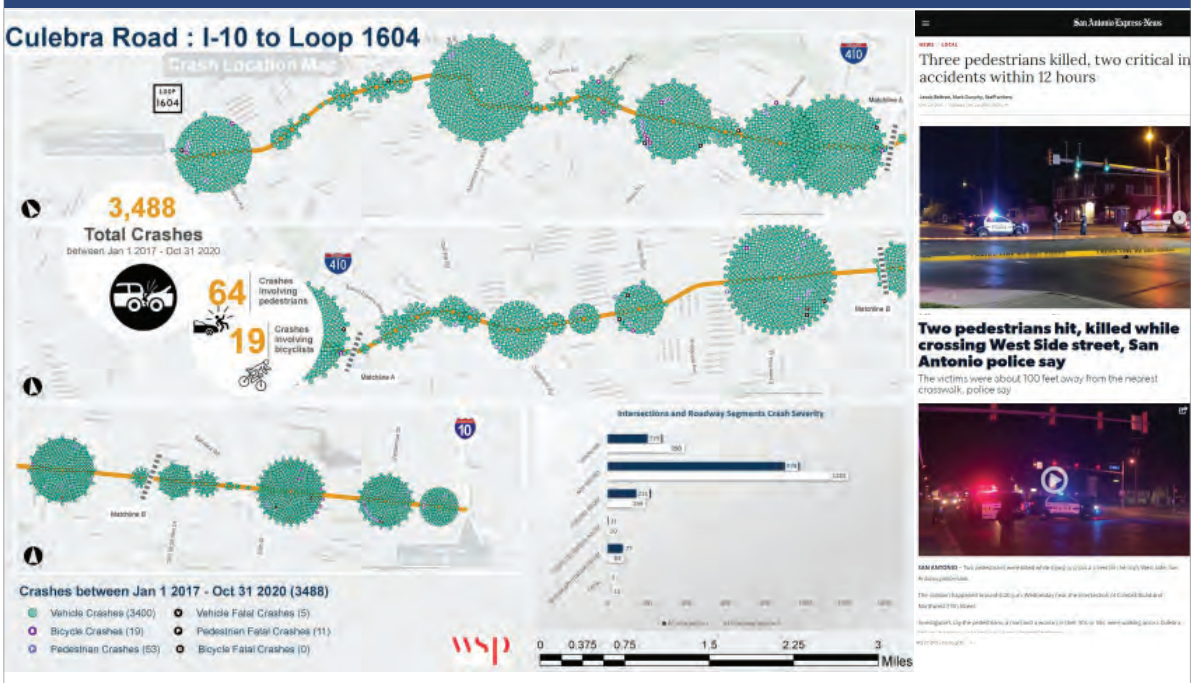


Segment E: Tezel Road to Loop 1604

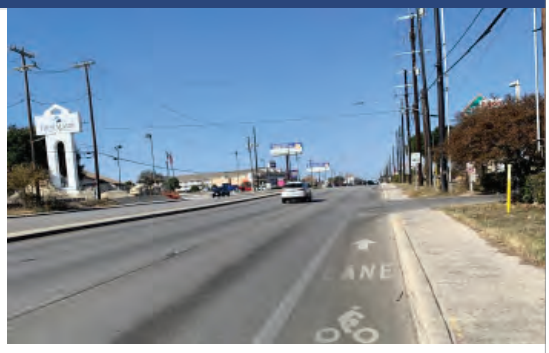


KEY CHALLENGES & OPPORTUNITIES

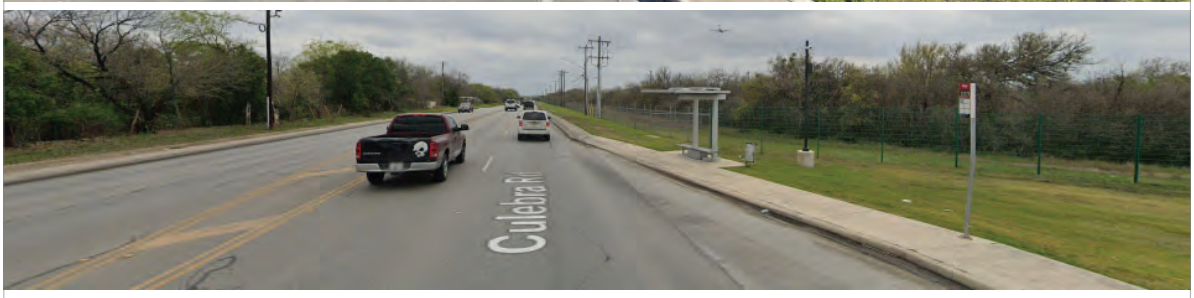
Key Issues & Challenges



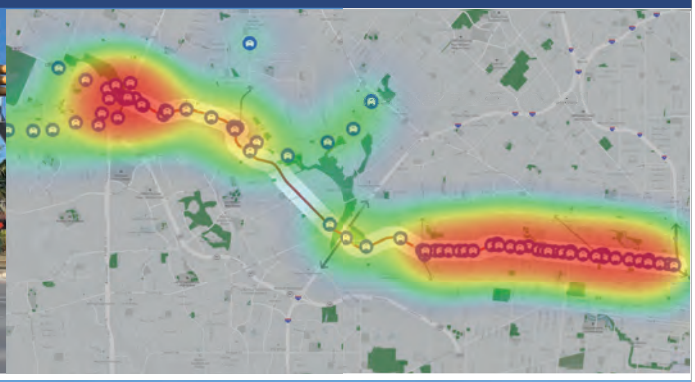
Pedestrian and Bicycle Facilities

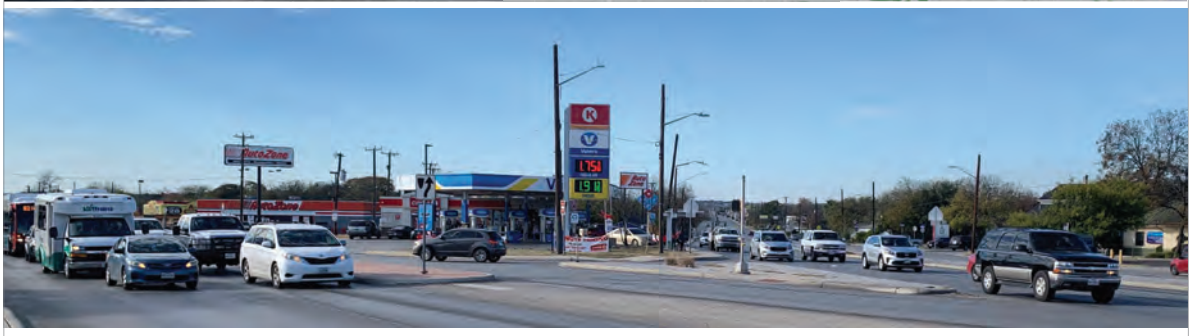



Transit Facilities

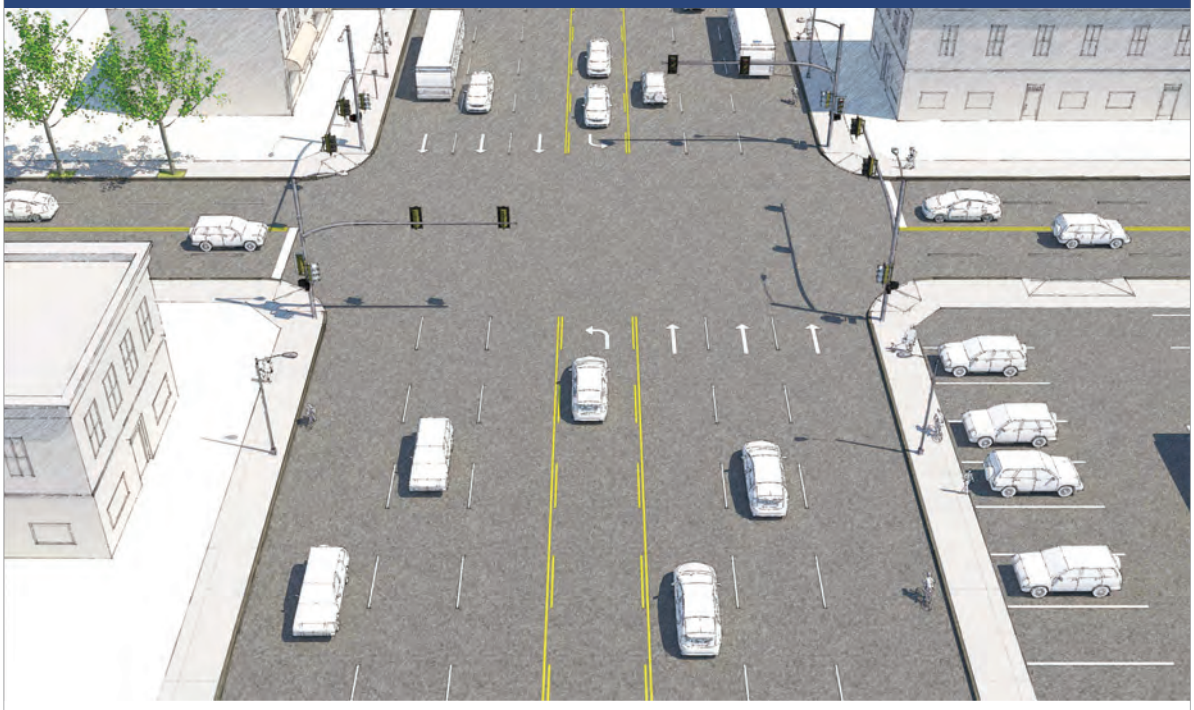


Intersections

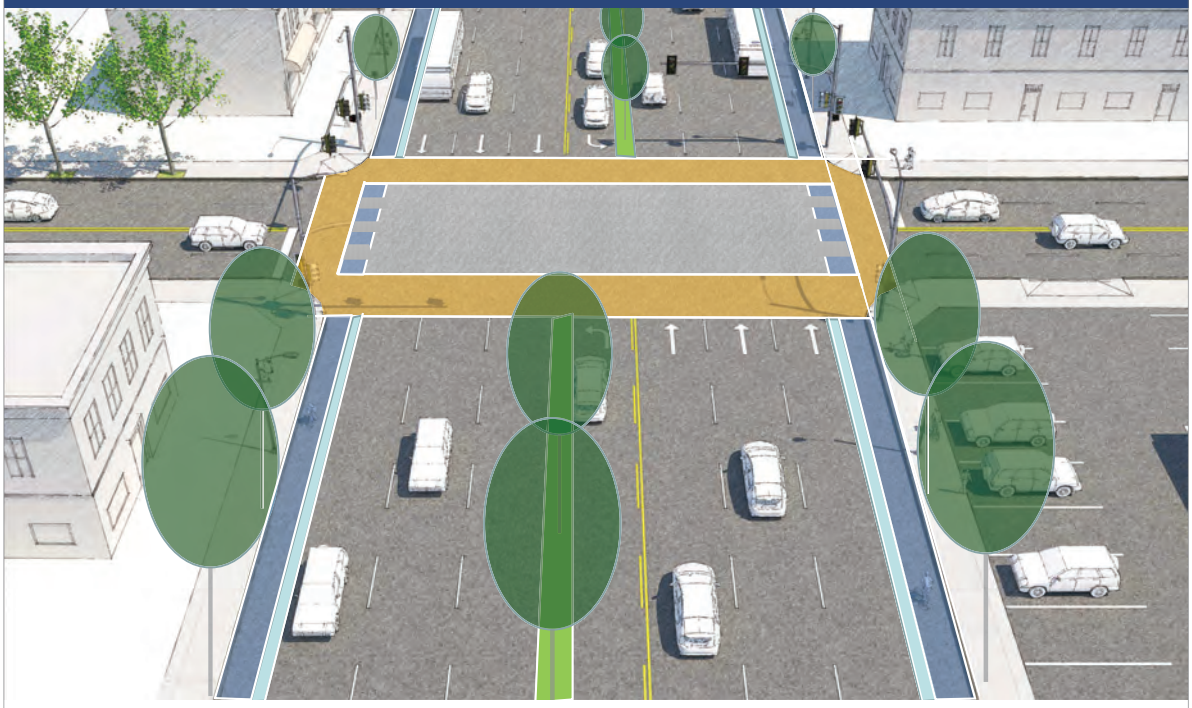




Emerging Opportunities: Potential Improvements



Emerging Opportunities: Potential Improvements



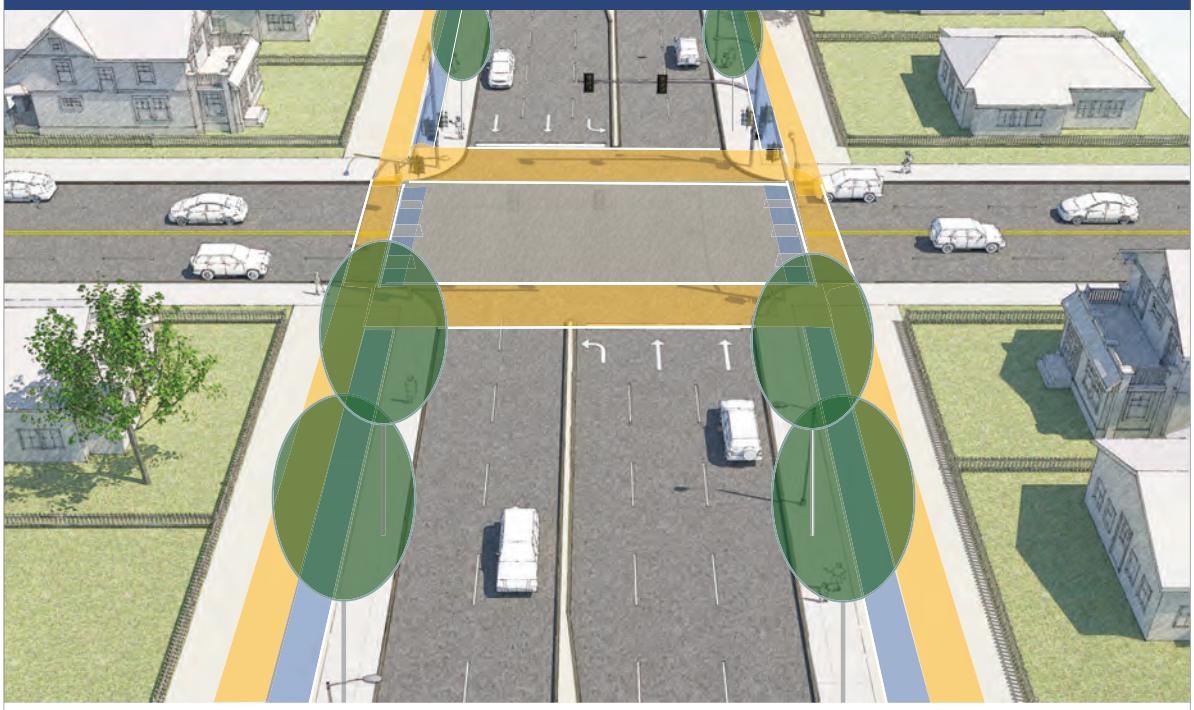
Emerging Opportunities: Potential Improvements

Emerging Opportunities: Potential Improvements

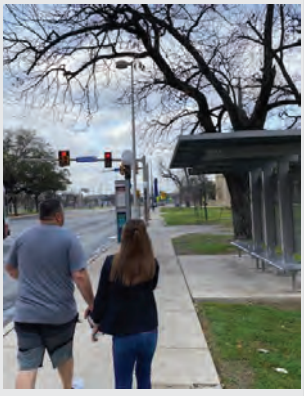
Emerging Opportunities: Potential Improvements

Potential Improvements

Potential Improvements

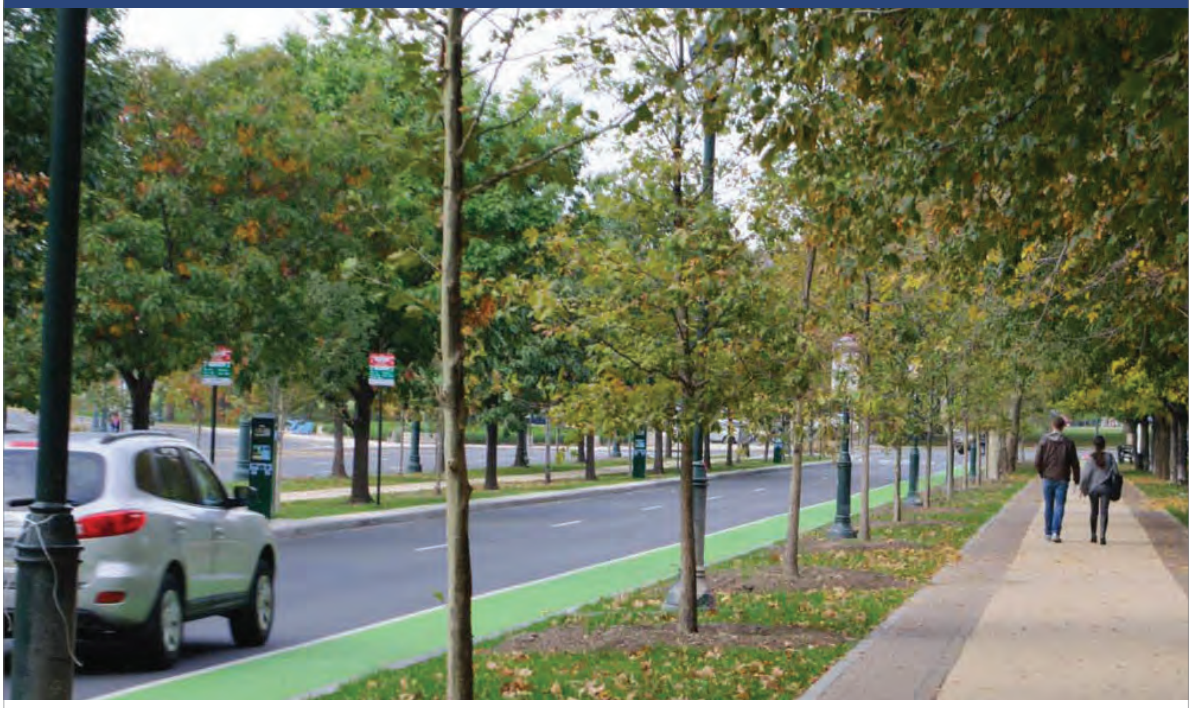


Emerging Opportunities: Potential Improvements



EMERGING VISION FOR CULEBRA ROAD

Increase Safety

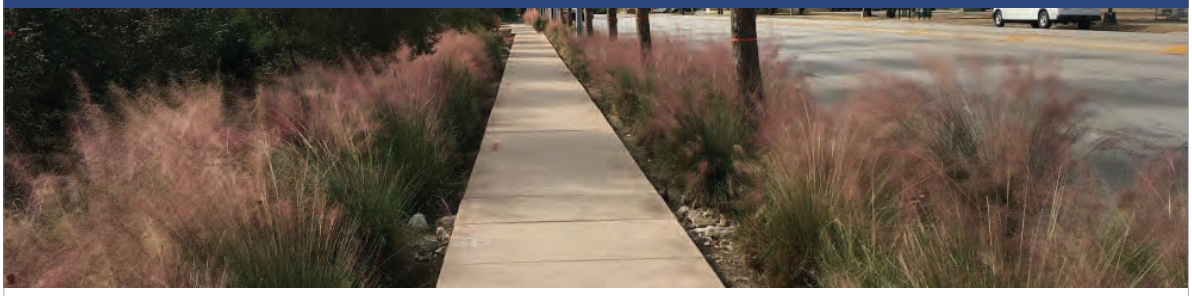


Manage Traffic Speed

Provide Better Walking/Biking Connections

Improve Shade and Comfort

Enhance the Natural Environment



Improve Neighborhood Identity

Strengthen Business & Economic Development

Emerging Community Vision

GROUP DISCUSSION

GROUP DISCUSSION: Breakout Groups

Segment E	Segment D	Segment C	Segment B	Segment A
Tezel Rd to Loop 1604	Loop 410 to Tezel Rd	Callaghan Rd to Loop 410	Bandera Rd to Callaghan Rd	I-10 to Bandera Rd

GROUP DISCUSSION

- **What is your overall vision?**
- **What are the common streetscape amenities you would like to experience?**
- **What improvements you would like to see as you walk and bike?**
- **Other Discussion Items**
  - What improvements you would like to see as you drive and take transit
  - What improvements would support local business and economic development?
  - What are the improvements for a better natural environment and community identity?

GROUP DISCUSSION #1: Community Vision

Questions #1: What is your overall vision and goals for Culebra Road?

GROUP DISCUSSION #2: Overall Streetscape Amenities

◯ Street trees for shade & comfort

◯ Street and pedestrian lighting

◯ All of the above

◯ Additional elements to help calm traffic

◯ Landscaped Medians

Questions #2: What are the common streetscape amenities you would like to experience?

GROUP DISCUSSION #3: Walking and Rolling

◯ New frequent opportunities to cross the street

◯ Trees and plantings for shade

◯ All of the above

◯ Wider sidewalks for people who walk and use wheelchairs

◯ Improved existing crosswalks and sidewalks

Questions #3: What are walking and rolling improvements you would like to see along Culebra Road?

GROUP DISCUSSION #4: Biking and Micromobility

○ Continuous, well-connected, and dedicated facilities

○ Improved bike and micromobility connections to existing and planned trail systems

○ Safe bike facilities encourage people of all ages to bike

○ All of the above

Questions #4: What are the biking and micromobility improvements you would like along Culebra Road?

GROUP DISCUSSION: Taking Transit

○ Existing bus stops improvements with shelters and lighting

○ Bus route location and frequency improvements

○ All of the above

○ Additional bus stops with shelters and lighting

○ Iconic bus shelters that also create identity

Questions #5: What are the transit improvements you would like along Culebra Road?

GROUP DISCUSSION: Driving

○ Synchronize existing traffic signals for improved traffic flow

○ Additional traffic signals at new intersections

○ All of the above

○ Safe access to existing destinations, schools, and businesses

○ Emergency access continued along Culebra Road

Questions #6: What are driving improvements you would like along Culebra Road?

GROUP DISCUSSION: Local Business & Economic Development

○ Wayfinding and signage to major commercial destinations

○ Wider sidewalks for outdoor retail and commerce at key locations

○ Opportunities for pick up and drop off

○ All of the above

Questions #7: What are improvements to support local businesses and economic development?

GROUP DISCUSSION: Natural Environment & Identity

○ Natural elements to improve water quality and create a distinctive sense of place.

○ Linear park experience along certain segments of Culebra Road for people walking, exercising and biking

○ All of the above

○ Multi-purpose public plazas at key civic and community destinations

○ Art and gateway elements at key nodes such as when Culebra Road crosses over different creeks

Questions #8: What are the improvements for a better natural environment and community identity?

GROUP DISCUSSION FEEDBACK

Next Steps

- Community Vision Engagement
  - Upcoming Community Meetings
  - Community Survey – Ends (May 15th)
- Summarize Overarching Community Vision
- Develop Emerging Streetscape Concepts

Culebra Road Arterial Study
COMMUNITY VISIONING WORKSHOP
April 2021

Appendix C – Spanish Presentation

Culebra Road Transportation Study

Taller de Visión Comunitaria

April 2021

Instrucciones de Taller

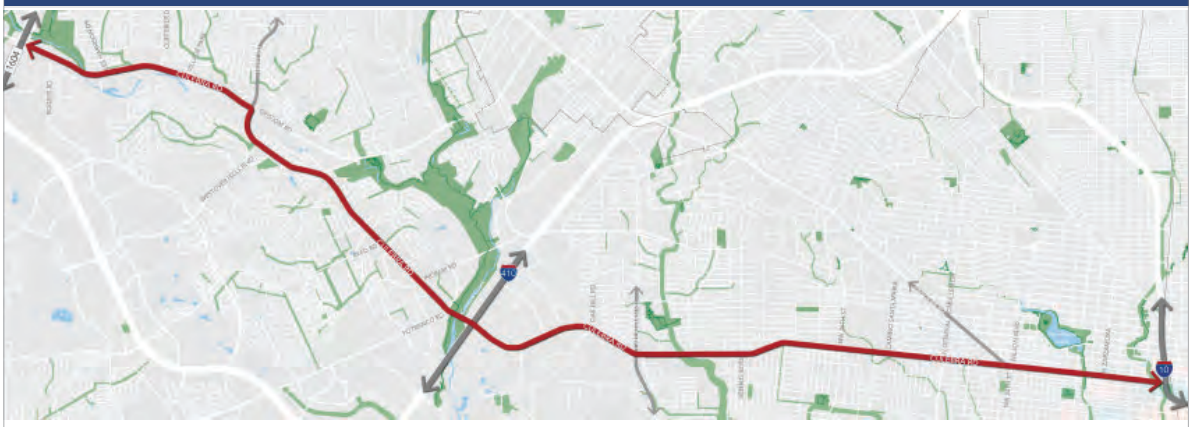
ZOOM:

- **Nombre:** Haga clic en ... junto a su nombre para actualizar su nombre – use **Primer Nombre y Apellido**
- **Chat:** Utilice la función de Chat para enviar preguntas o comentarios durante la reunión
- **¿No puede acceder a la función de Chat?** Envíe sus preguntas por mensaje de texto a (210) 827-7183.

Agenda

- BIENVENIDA e INTRODUCCIONES
- PROPÓSITO, OBJETIVOS Y PROCESO DEL PROYECTO
- ACTIVOS, PROBLEMAS Y OPORTUNIDADES COMUNITARIAS
- VISIÓN Y OBJETIVOS COMUNITARIOS EMERGENTES
- DISCUSIONES
- PASOS SIGUIENTES

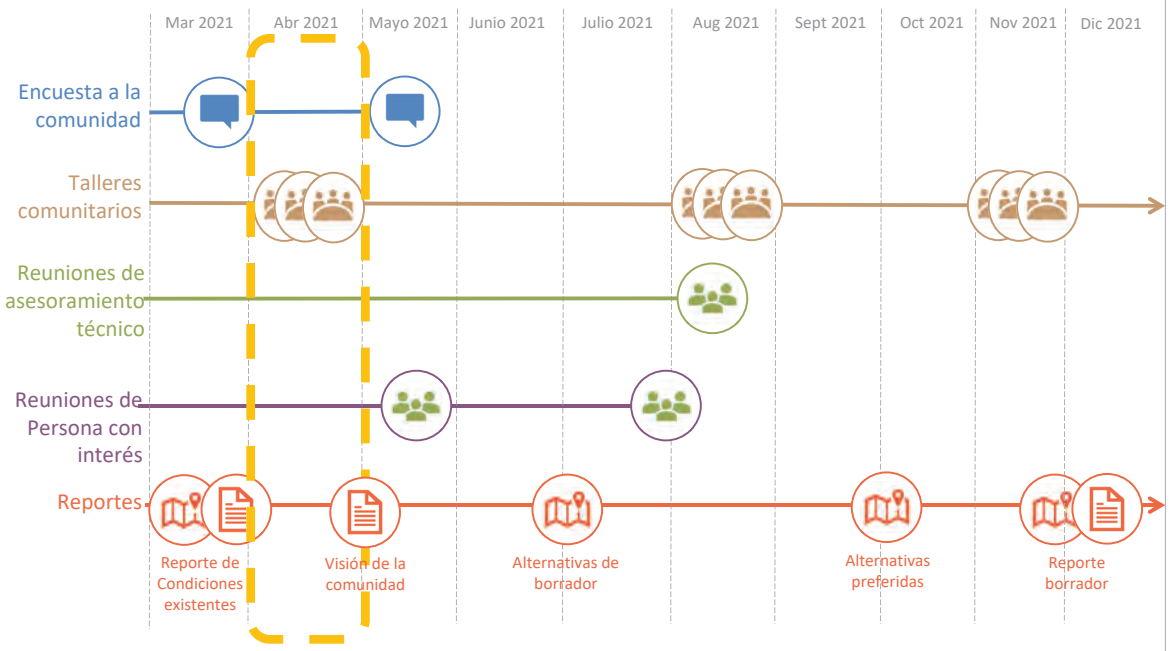
Área del proyecto



Objetivos del proyecto

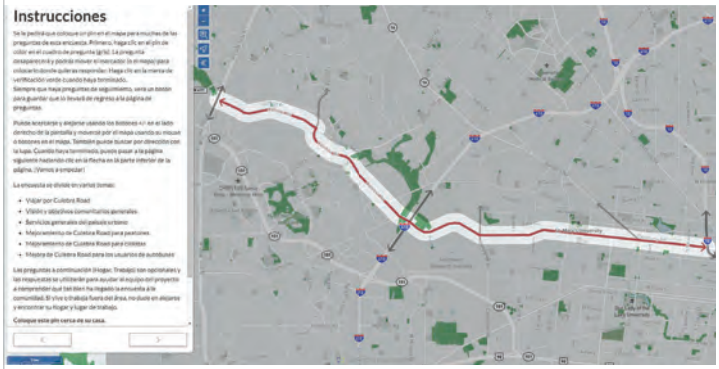
1. Crear un corredor **seguro para TODOS** los usuarios de la calle
2. Transformar Culebra en un **corredor equitativo y multimodal para personas que caminan, ruedan, andan en bicicleta, toman el transporte público y conducen**
3. Mejore la **experiencia general y la conectividad para peatones, ciclistas y usuarios del transporte público**
4. Desarrollar diseños conceptuales para mejoras **a corto y largo plazo**
5. Coordinar y aprovechar **estudios e iniciativas anteriores y simultáneos**
6. Asegurar una **participación significativa de la comunidad y las partes interesadas**

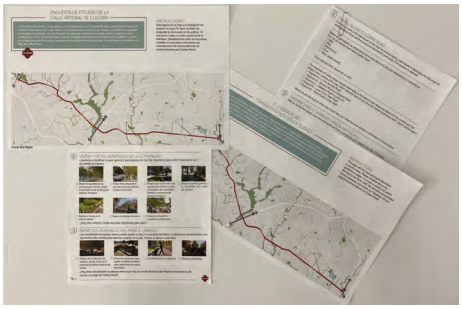
Proceso de proyecto



Proceso del proyecto: Encuesta a la comunidad

- Bilingüe Ingles y Español
- Encuesta interesante, en línea e interactiva
- Lanzado: 12 de Marzo, 2021
  - Más de 150 encuestas
  - Más de 2480 respuestas de mapas
- Encuesta en persona de cortesía





https://culebraroadworkshops.org/

Proceso del proyecto: Encuesta a la comunidad

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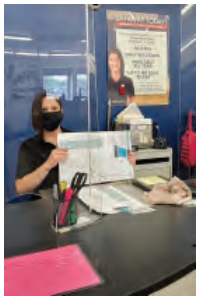
- Encuesta interesante, en línea e interactiva
- Lanzado: 12 de Marzo, 2021
  - Más de 150 encuestas
  - Más de 2480 respuestas de mapas
- Encuesta en persona de cortesía
- Ubicaciones para recoger o dejar la encuesta

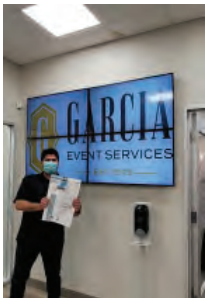
Memorial Library
3222 Culebra Rd.
San Antonio, TX 78228

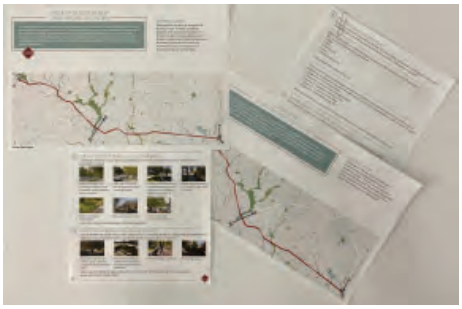
Great Northwest Library
9050 Wellwood St. 78250

Oficinas de Distrito del Consejo

- ¡O solicite que le envíen una copia por correo!







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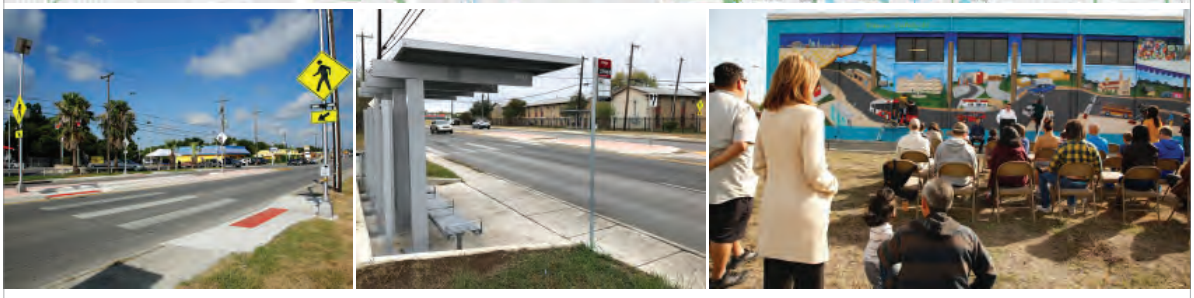
ACTIVOS COMUNITARIOS

Destinos y vecindarios comunitarios

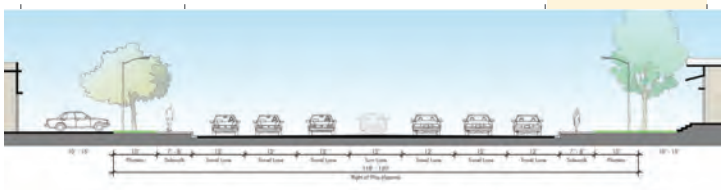
Inversión comunitaria y política



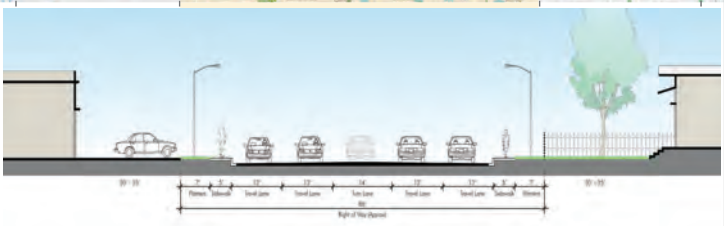
Segmentos de corredor distintos

Segmento E	Segmento D	Segmento C	Segmento B	Segmento A
Tezel Rd a Loop 1604	Loop 410 a Tezel Rd	Callaghan Rd a Loop 410	Bandera Rd a Callaghan Rd	I-10 a Bandera Rd

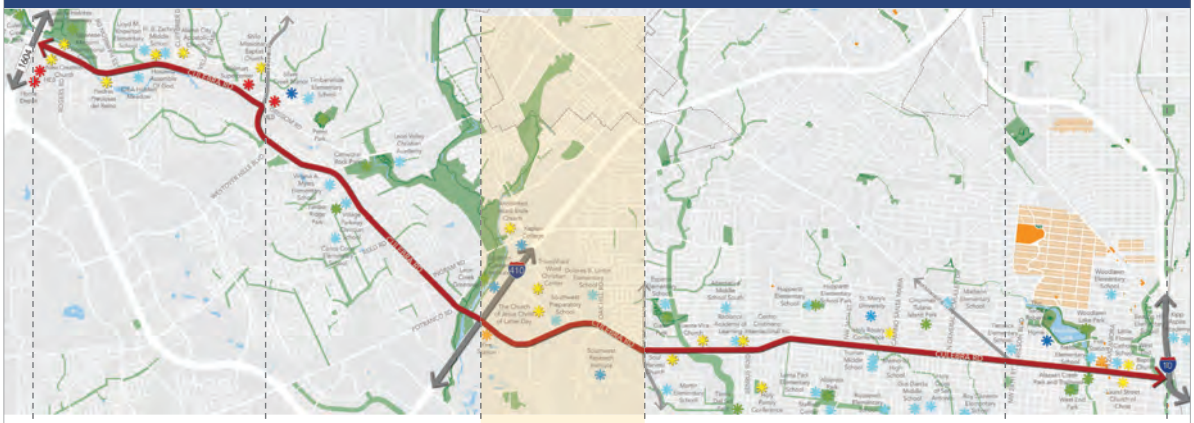
Segmento A: I-10 a Bandera Road

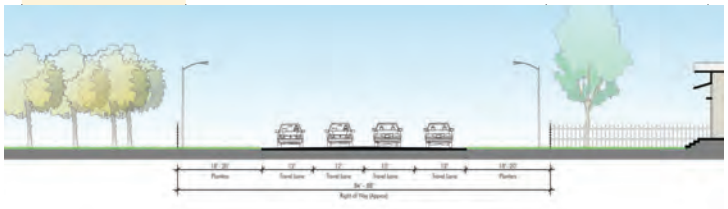


Segmento B: Bandera Road a Callaghan Road

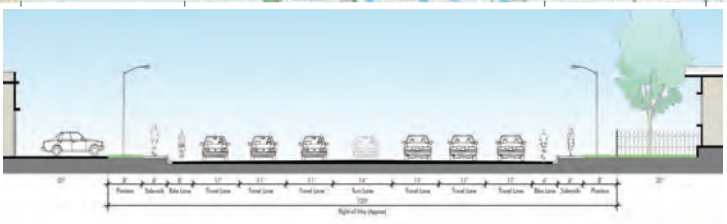


Segmento C: Callaghan Road a Loop 410

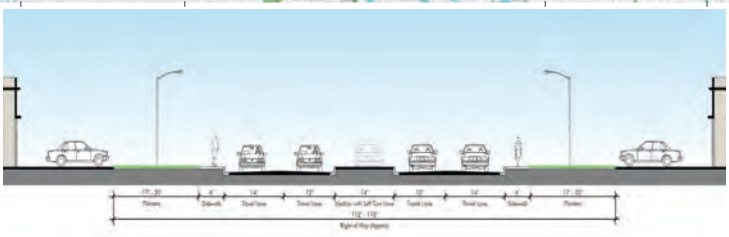




Segmento D: Loop 410 a Tezel Road

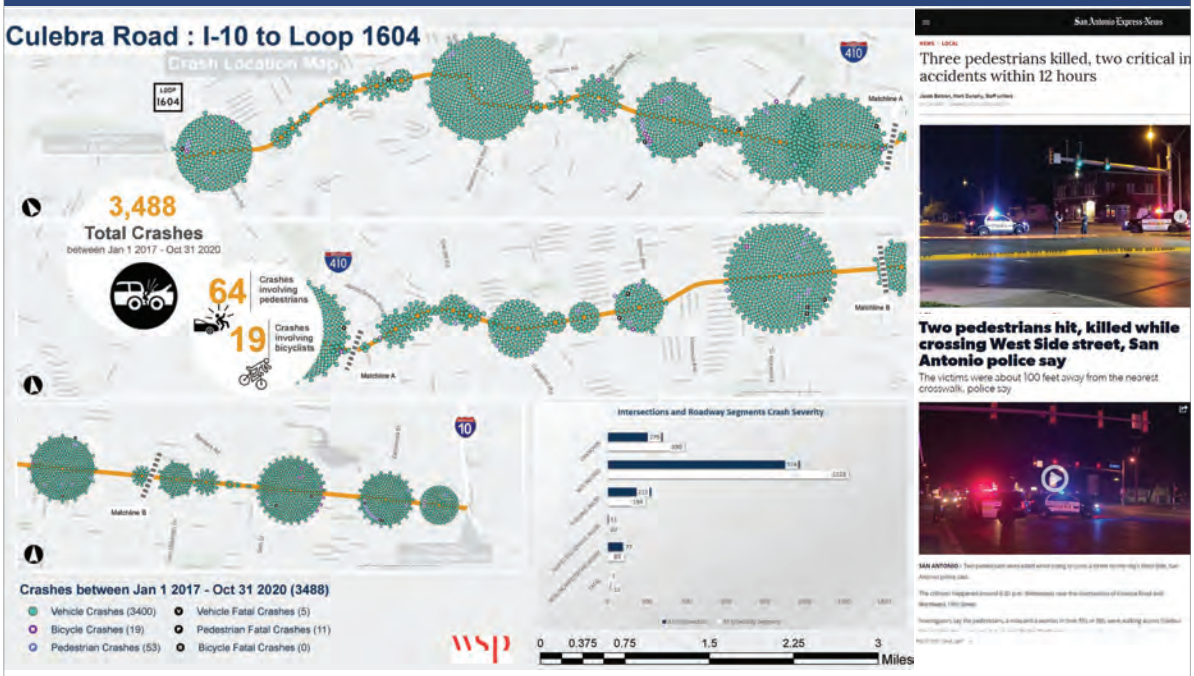


Segmento E: Tezel Road a Loop 1604

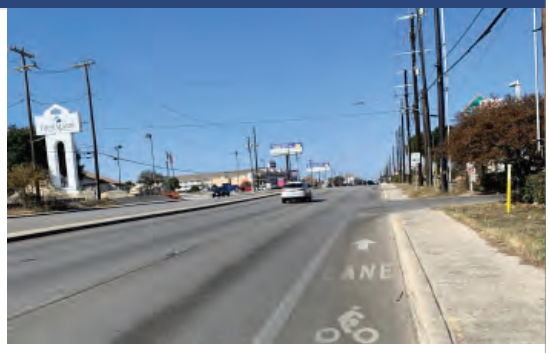


DESAFÍOS Y OPORTUNIDADES CLAVES

Problemas y desafíos clave

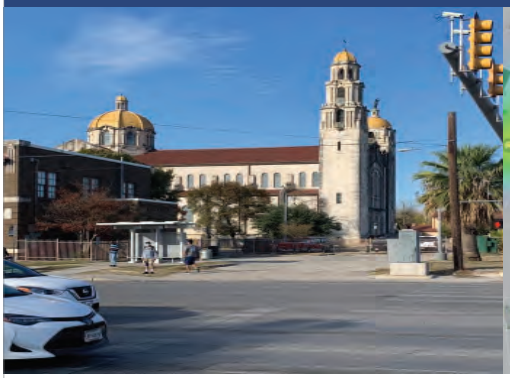


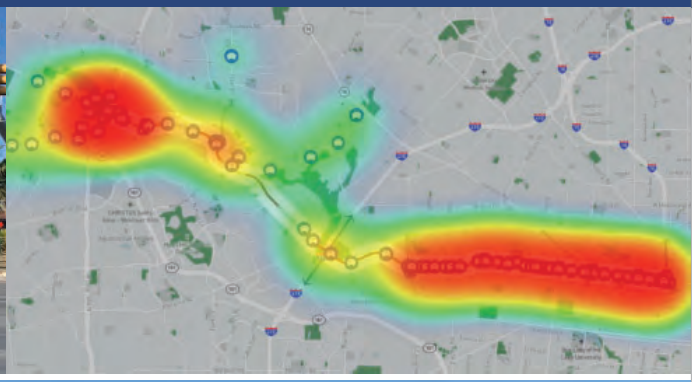
Instalaciones para peatones y bicicletas

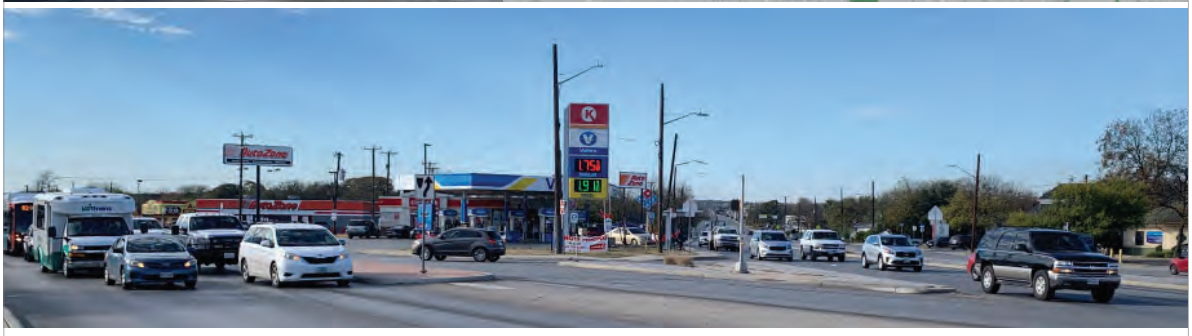



Instalaciones de tránsito

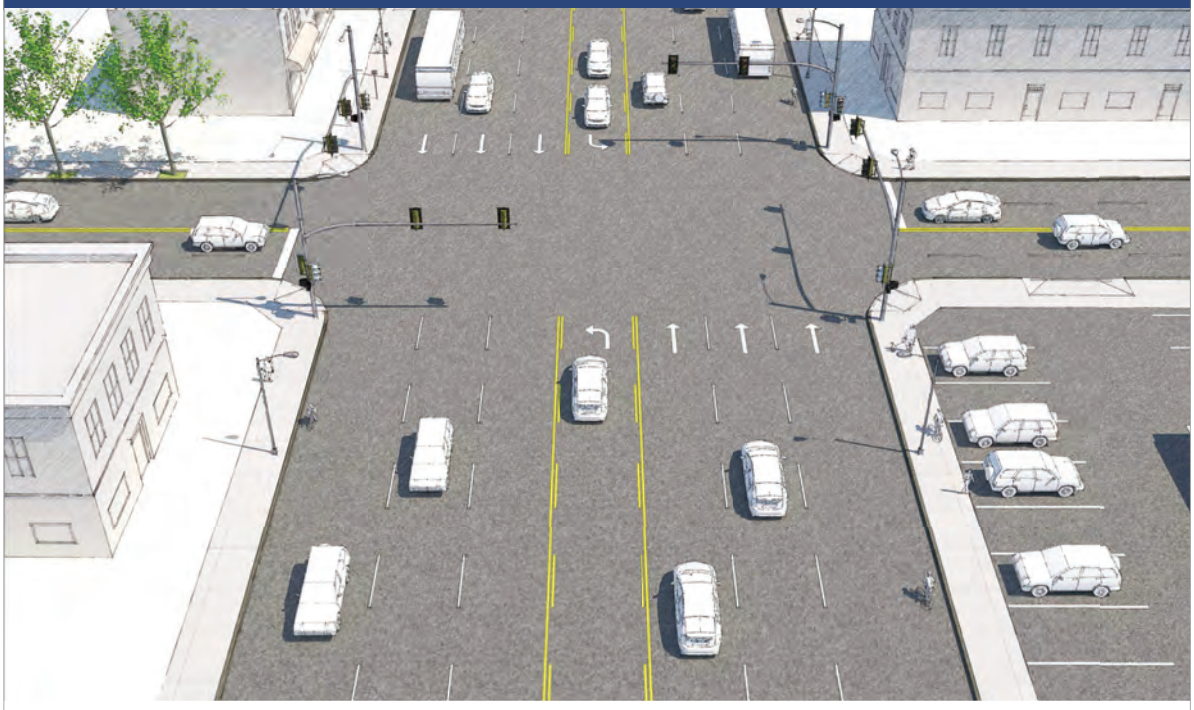
Intersecciones



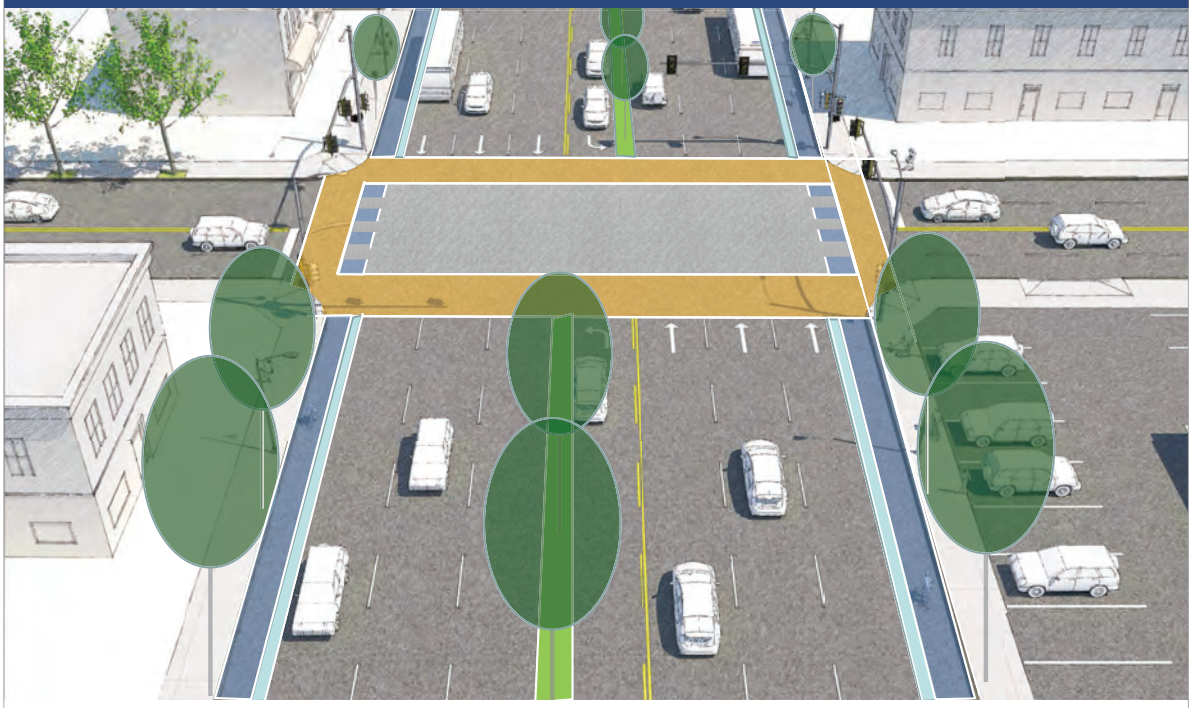




Oportunidades emergentes: posibles mejoras



Oportunidades emergentes: posibles mejoras



Oportunidades emergentes: posibles mejoras

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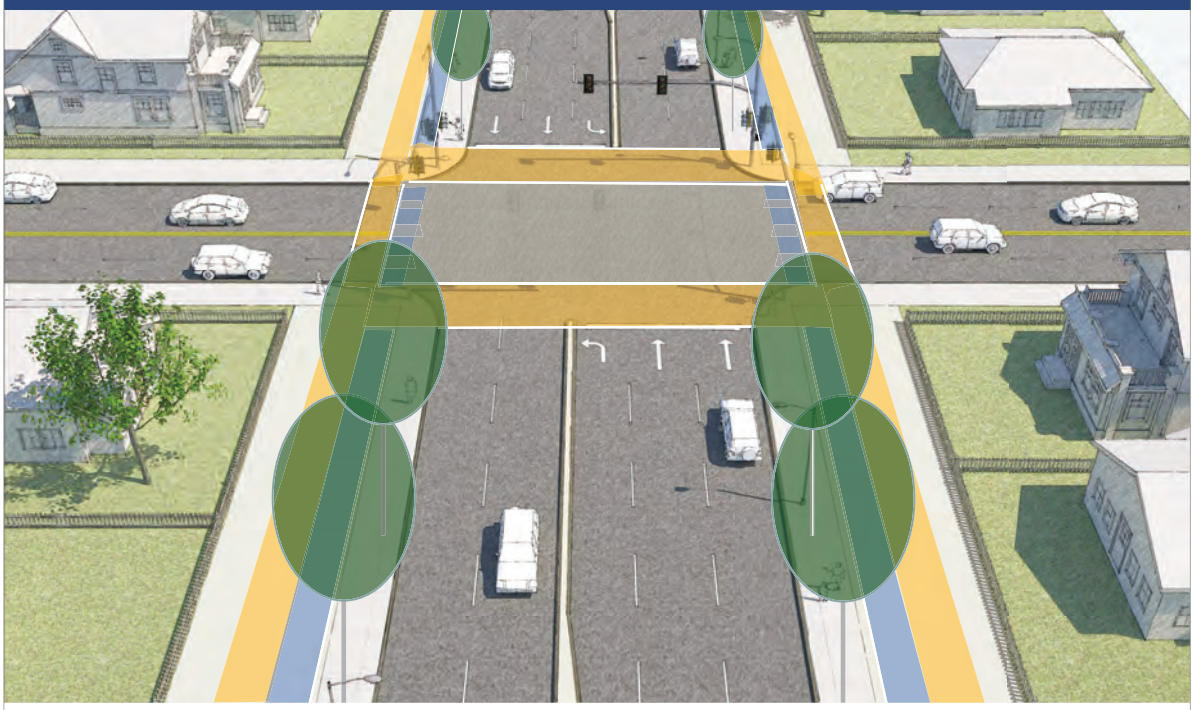
Oportunidades emergentes: posibles mejoras

Posibles mejoras

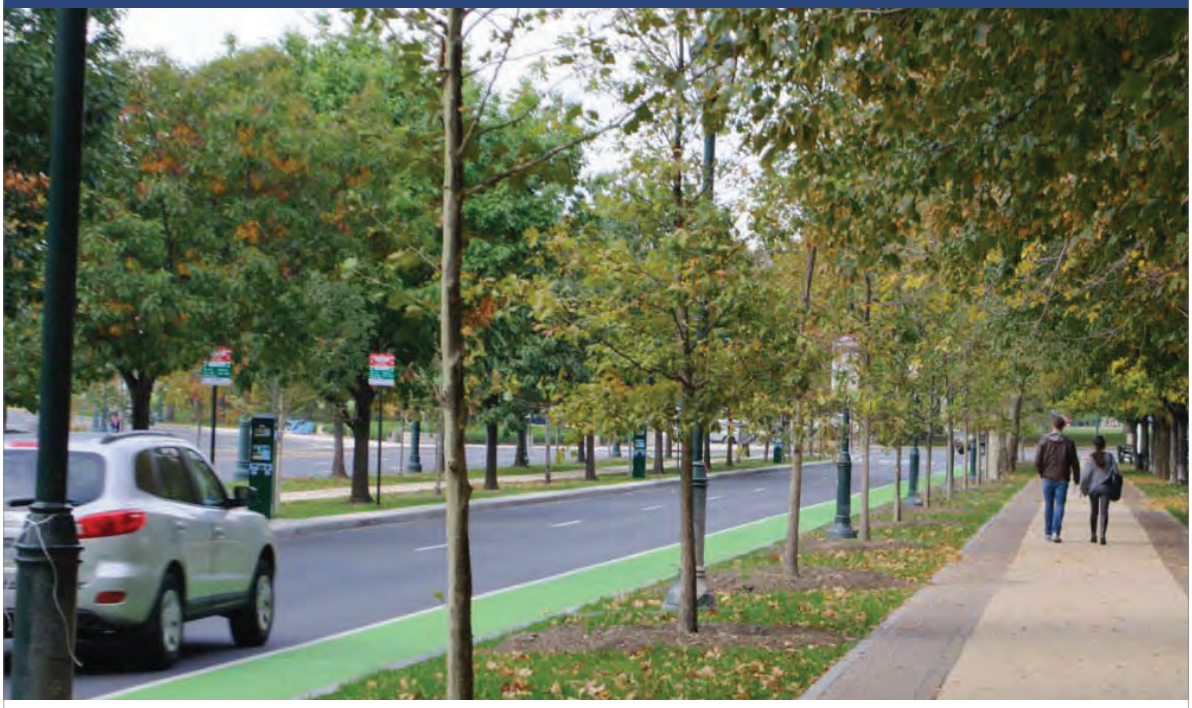
Posibles mejoras



Oportunidades emergentes: posibles mejoras

VISIÓN EMERGENTE DE CULEBRA ROAD

Aumentar la seguridad

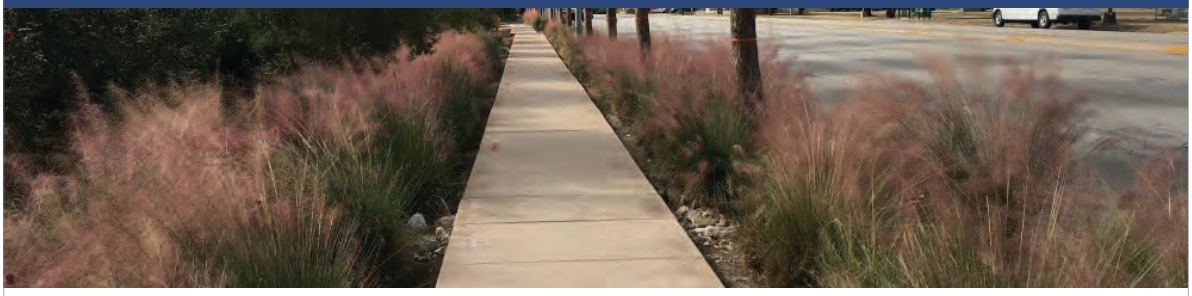


Gestionar la velocidad del tráfico

Proporcione mejores conexiones para caminar / andar en bicicleta

Mejora la sombra y la comodidad

Mejorar el entorno natural



Mejorar la identidad del vecindario

Fortalecer el desarrollo económico y empresarial

Visión de la comunidad emergente

REUNIÓN DE DISCUSIÓN

REUNIÓN DE DISCUSIÓN

Segmento E	Segmento D	Segmento C	Segmento B	Segmento A
Tezel Rd a Loop 1604	Loop 410 a Tezel Rd	Callaghan Rd a Loop 410	Bandera Rd a Callaghan Rd	I-10 a Bandera Rd

DISCUSIÓN

- ¿Cual es su visión y objetivos generales por Culebra Road?
- ¿Cuáles son las comodidades del paisaje urbano quieres experimentar?
- ¿Cuáles son las mejoras para personas que caminan y van en ruedas que le gustaría ver?
- ¿Cuáles son las mejoras para personas que andan en bicicleta que le gustaría ver?
- Otros temas de discusión:
  - ¿Cuáles son las mejoras de transporte público que le gustaría ver?
  - ¿Cuáles son las mejoras para personas que conducen que le gustaría ver?
  - ¿Cuáles son las mejoras para apoyar a las empresas locales y el desarrollo económico?
  - ¿Cuáles son las mejoras del entorno natural y identidad de comunidad?

DISCUSIÓN #1: Visión

Pregunta #1: ¿Cual es su visión y objetivos generales por Culebra Road?

DISCUSIÓN #2: Paisaje Urbano

◯ Árboles de la calle para dar sombra y comodidad

◯ Alumbrado público y peatonal

◯ Todo lo Anterior

◯ Elementos adicionales para ayudar a ralentizar el tráfico

◯ Medianas ajardinadas

Pregunta #2: ¿Cuáles son las comodidades del paisaje urbano quieres experimentar?

DISCUSIÓN #3: Caminan y van en Ruedas

◯ Nuevas y más frecuentes oportunidades para cruzar la calle de forma segura.

◯ Árboles y plantaciones para sombra y como amortiguador del tráfico.

◯ Aceras más amplias para personas que caminan y personas que usan sillas de ruedas

◯ Mejorar los cruces peatonales existentes

◯ Todo lo Anterior

Pregunta #3: ¿Cuáles son las mejoras para personas que caminan y van en ruedas que le gustaría ver?

DISCUSIÓN #4: Andar en Bicicleta y Micro-movilidad

○ Instalaciones continuas, bien conectadas y dedicadas para personas que andan en bicicleta y usan opciones de micromovilidad a lo largo de Culebra.

○ Conexiones mejoradas para bicicletas y micromovilidad con los sistemas de senderos existentes y planificados

○ Las instalaciones para bicicletas seguras animan a las personas de todas las edades a andar en bicicleta.

○ Todo lo Anterior

Pregunta #4: ¿Cuáles son las mejoras para personas que andan en bicicleta que le gustaría ver?

DISCUSIÓN: Transporte Público

○ Mejoras en paradas de autobús existentes con marquesinas e iluminación

○ Mejoras en la ubicación y frecuencia de las rutas de los autobuses

○ Todo lo Anterior

○ Paradas de autobús adicionales con marquesinas e iluminación

○ Marquesinas de autobús icónicas que también crean identidad

Pregunta #5: ¿Cuáles son las mejoras de transporte público que le gustaría ver?

DISCUSIÓN: Conducir

○ Sincronizar las señales de tráfico existentes para mejorar el flujo de tráfico

○ Semáforos adicionales en nuevas intersecciones

○ Todo lo Anterior

○ Acceso seguro a destinos, escuelas y negocios existentes

○ Acceso de emergencia contínuo por Culebra Road

Pregunta #6: ¿Cuáles son las mejoras para personas que conducen que le gustaría ver?

DISCUSIÓN: Empresas Locales

○ Señalización y guías a los principales destinos comerciales

○ Aceras más amplias para venta minorista y comercio al aire libre en ubicaciones clave

○ Oportunidades para recoger y dejar pasajeros

○ Todo lo Anterior

Pregunta #7: ¿Cuáles son las mejoras para apoyar a las empresas locales y el desarrollo económico?

DISCUSIÓN: Entorno Natural y Identidad

○ Elementos naturales para mejorar la calidad del agua y crear un sentido distintivo de lugar

○ Experiencia de parque lineal a lo largo de ciertos segmentos de Culebra Road para personas que caminan, hacen ejercicio y andan en bicicleta

○ Todo lo Anterior

○ Plazas públicas de usos múltiples en destinos cívicos y comunitarios clave

○ Arte y elementos de entrada en nodos clave, como cuando Culebra Road cruza diferentes arroyos

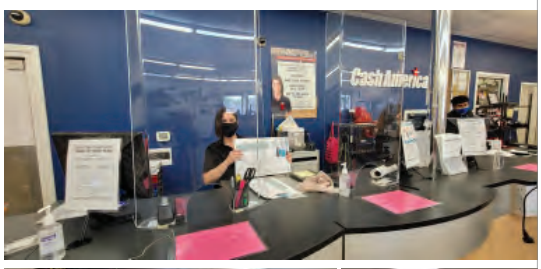
Pregunta #8: ¿Cuáles son las mejoras del entorno natural y identidad de comunidad?

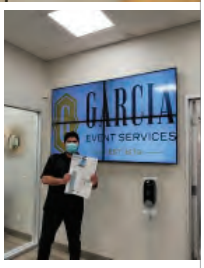
DISCUSIÓN

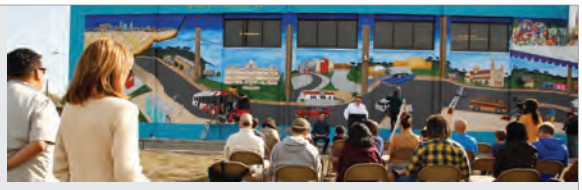
Próximos pasos

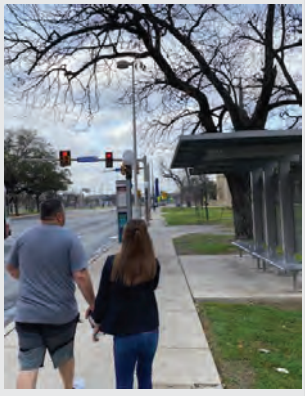
- **Participación en Visión de la Comunidad:** Encuesta a la comunidad – Termina May 15, 2021:
- **Resumir la visión comunitaria global**
- **Desarrollar conceptos emergentes de paisaje urbano**

https://culebraroadworkshops.org/









Culebra Road Transportation Study
Taller de Visión Comunitaria
April 2021

Culebra Road Transportation Study

Stakeholder Meeting
May 26, 2021 from 5:30 – 6:30 p.m.

PARTICIPANTS

- Carlos Gonzalez, Co-President, West End Hope In Action
- Greg Reininger, City of San Antonio
- Julio Ramos, WSP
- Mukul Malhotra, MIG
- Krystin Ramirez, MIG
- Linda Vela, PCI

MEETING SUMMARY

The meeting began with an overview of West End Hope in Action. Mr. Gonzalez, Co-President of West End Hope in Action, stated that the organization was formed 10 years ago with an AARP grant and has been doing grassroots community organizing since then. He said the group was challenged to become a neighborhood association and since has provided comments on Culebra numerous times because people keep getting killed, especially as the roadway has gotten wider and faster. He said the organization focuses on the area from 24th Street to Zarzamora but also extends from Zarzamora to I-10, and they primarily work out of the Frank Garrett Multi Service Center at 1226 NW 18th Street, 78207.

Next, Krystin Ramirez, with MIG, provided an overview of the Culebra Road Transportation Study. She got to a stopping point and asked Mr. Gonzalez to identify assets and opportunities along Section A of the corridor. Mr. Gonzalez said the character of the roadway changes at Bandera. He expressed appreciation that the traffic light on 19th Street was reinstalled. He said it had always been there and was then taken out and finally reinstalled once West End Hope in Action collaborated with the city to get it back.

Mr. Gonzalez recommended placing surveys in front of Torreon Restaurant and in front of Delicious Tamales and mentioned they were both great locations and places to collect surveys. Mr. Gonzalez said they really wanted to slow the speed of traffic. He said his experience is that electronic signs that show drivers how fast they are going compared to the posted speed limit work when combined with increased police enforcement. He said he used this when working for a school.

Mr. Gonzalez also recommended creative signage that encourages drivers to "keep our children safe" and "protect our neighborhood." He said that drivers do not seem to realize that after 24th Street they are in a residential area. Mr. Gonzalez said the traffic signal at 19th was very helpful and the additional z-crossings helped as well. He said that traffic signals help seniors and the disabled to have enough time to cross. He said the Alazan Creek trail also helps walkers get from one side of Culebra to the other safely. He said that Zakina Price who works for Councilman Roberto Treviño would have copies of their input and comments regarding Culebra Road.

In terms of assets, Mr. Gonzalez also cited the Little Flower Basilica, which is on the corner of Culebra and Zarzamora. He told the study team that there are pavers at Culebra and Zarzamora and thought they were put there when St. Theresa's remains were toured through the city. He said Little Flower just got a relatively new

pastor and that he would try to get a good contact for them to the study team. He also cited the former Lerma's Night Club, the longest running conjunto live music venue, which is on the National Register of Historic Places.

Mr. Malhotra then asked for the best restaurants in the community. Mr. Gonzalez recommended Torreon, Valentinas, and Los Angeles.

Mr. Gonzalez said that his organization helped District 1 get input on a previous survey asking questions about Culebra Road. He said Ms. Price with District 1 would have this information. Mr. Gonzalez said that the city installed an island at Hamilton which he felt might have been a mistake because emergency vehicles often have to jump the median when they respond.

He said his organization meets every two weeks at the Frank Garrett Multi Service Center with the next meeting being on Friday, June 4, 2021 at 9:15 a.m. He offered to have his folks take the survey at that meeting. Linda Vela, with PCI, offered to take surveys and offer a short overview of the study.

Mr. Gonzalez said that when they were working with District 1 to collect surveys, they talked to the woman operating Delicious Tamales and she indicated was involved in a crash. He said she agreed that people needed to go slower. He also said that day was also the night of the last fatality on Culebra that included a man and a woman.

Mr. Malhotra asked if a lot of students walk or bike. Mr. Gonzalez said that most of the kids from the Lincoln Court Public Housing have to cross at Elmendorf and Culebra because they go to Nelson Elementary about two blocks north of Culebra. He said that for a while, one of the crossing guards was a retired cop and that helped. He said West End Hope in Action works with the SAPD SAFE unit and every now and then they can help increase enforcement and help slow things down. He again mentioned the speed limit alert machine would only work if it is followed up with increased enforcement.

Mr. Ramos asked if connections from the Alazan Creek trail to Culebra Road would help. Mr. Gonzalez said they would. He said it would make things a lot easier. He said there is a natural foot path from the sidewalk to get to the trails but that a formal connection would be great.

Mr. Gonzalez also said Culebra Road used to be the dividing line between the northside and the rest of the community. He said it feels very symbolic to try to make things safer. He said, "the way things evolved, a lot of the lawn keepers and house keepers lived over here and worked over there."

Mr. Malhotra asked if Mr. Gonzales saw a lot of people walking or biking on Culebra Road. Mr. Gonzalez said he did not see anyone riding a bike on Culebra but that there are a ton of pedestrians.

Mr. Malhotra asked how long Mr. Gonzalez lived in the area. He said 64 years. Mr. Malhotra also asked what Culebra was like before widening. Mr. Gonzalez said one good thing was that it got rid of Mike's Lounge. He said there was a rumor about widening it for years before it actually got widened. He said speeds were always fast on Culebra Road but that when it got widened, they got even faster. He also mentioned that someone told them there were more fatalities on that segment of Culebra than any other in the country. Greg Reininger said it is definitely one of the highest fatality corridors in the city.

Mr. Gonzalez finished by saying he was excited to see new businesses coming in. He talked about a combo washateria and pizza place coming in next to the Circle K, the Anais Record Service expanding, and other signs that people are ready and willing to invest in Culebra.

He wrapped up by talking about the assets near the Frank Garrett Multi Service Center in the West End Park, which is a historic park. He said it is also next to the senior nutrition center, and Parks and Recreation. He also said that West End Hope in Action coordinates a walk/talk with Chief McManus. He said the organization teaches people in the community they can report crime anonymously, come to the center, or contact one of the organization representatives. He said there are 10 people on the executive committee.

Culebra Road Transportation Study
NW Crossing NA and Timber Ridge NA
Stakeholder Meeting
June 1, 2021, from 1 p.m. to 2 p.m.

PARTICIPANTS

- Kenneth Pfeiffer, Northwest Crossing NA
- Dawn Tomaschefsky, Northwest Crossing NA
- Donald Page, Timber Ridge NA
- Julio Ramos, WSP
- Mukul Malhotra, MIG
- Krystin Ramirez, MIG
- Linda Vela, PCI

MEETING SUMMARY

This meeting was set to gather input from the Great Northwest on the Culebra Road Transportation Study. Mukul Malhotra, MIG, provided an overview of the study then asked participants for their thoughts on needed improvements along Culebra Road. Following is the information collected from the stakeholders listed above.

Kenneth Pfeiffer with the Northwest Crossing Neighborhood Association made the following comments:

- The safety issue is critical and in addition to that is making sure that the traffic flows.
- He indicated that his neighborhood association as in communications with City of San Antonio Council District 6 regarding the linear parks and the linear trails. He said they are asking the city to extend a trail that runs from 1604 and Culebra Road through some undeveloped area. He said this also ends up right across of Schaenfield where a new hospital is being built . He indicated this trail could also take care of issues the neighborhood has experienced with a homeless camp and the crime and drugs that come with the homeless camp. He said that by bringing in the trails, it will bring more eyes to the area.
- Mr. Pfeiffer said that making sure that public right of way is used appropriately is something else that came up.

Donald Page with the Timber Ridge Neighborhood Association provided the following comments:

- He said most of his observations had to deal with safety concerns in Segment E.
- He said that speeding is a concern and that the speed limit signs on Potranco from Culebra to Military are 33% larger than the signs on Culebra. He said the city code does allow for larger signs to be used. He said Culebra is extremely busy and those speed limit signs easily get lost. He recommended that instead of using the minimum size of signs, the city should use larger signs on Culebra Road.

- Secondly, he said that crossing Culebra is like trying to run the gauntlet. He said that as one is trying to cross or merge into Culebra you also have to try to avoid pedestrians who may be trying to cross.
- He said solid medians like on Hunt Lane would be nice on Culebra Road to limit left turns especially where you have six lanes. He said he would recommend raised medians from Rimrock Trail to Timberview, Micron to Reed Road, and Micron to Ingram.
- Mr. Page also mentioned that there was a median installed last month that he feels was improperly placed at Potranco. He said the City needs to make sure medians are installed correctly.
- He expressed a concern that from Micron to Ingram there are no signalized intersections or pedestrian crossings. He said there is an extended stay hotel in this area and that there are always people trying to cross the street. He said a median in this area would provide a refuge for pedestrians. He said this would benefit both the people who walk in this area and the people who drive.

Julio Ramos, WSP, said the team had been discussing the use of green T intersections. He said the team is also considering adding pedestrian signals and z-crossings because there are areas with pretty big gaps between pedestrian crossings.

One of the stakeholders asked if it was possible to do a fly over from Culebra Road to Loop 410 and specifically how the Bandera Road to Loop 410 fly over came to be. Mr. Ramos said this suggestion would be noted for consideration.

Mr. Pfeiffer said he thought all these ideas were good and that he hoped they would take root and move forward. Dawn Tomaschefsky, Northwest Crossing NA, said she had no additional ideas.

The consultant team asked if stakeholders ever saw kids cross Culebra to get to school. The stakeholders said that there may be some that cross at Timberview but that this has never been an issue or concern.

The consultant team said that one hope is to add more vegetation along the corridor. One of the stakeholders said that when they added more trees and shrubbery in the Tezel median, the foliage can sometimes make left turns a real challenge because you cannot see cars coming. They asked that the team be aware of the site distances associated with any sort of vegetation.

The study team also asked if there were any hilly areas on Culebra. Stakeholders said Culebra is generally pretty flat.

The consultant team asked for any other ideas and the stakeholders suggested connecting to adjacent creeks.

Stakeholders concluded their comments by pointing out that folks traveling to the new hospital on Loop 1604 would probably take Les Harrison.

Culebra Road Transportation Study
Thunderbird Hills NA and Culebra Park NA
Stakeholder Meeting
June 1, 2021, from 5:30 p.m. to 6:30 p.m.

PARTICIPANTS

- Daniel Rossiter, Thunderbird Hills NA
- Don Rios, Culebra Park NA
- Greg Reininger, City of San Antonio
- Mukul Malhotra, MIG
- Linda Vela, PCI

MEETING SUMMARY

This meeting was set to gather input from the Thunderbird Hills Neighborhood Association and the Culebra Park Neighborhood Association on the Culebra Road Transportation Study. Mukul Malhotra, MIG, provided an overview of the study then asked participants for their thoughts on needed improvements along Culebra Road. Following is the information collected from the stakeholders listed above.

Daniel Rossiter said he is a consultant with WSP working at the Southwest Research Institute but also the president of the Thunderbird Hills Neighborhood Association for the past three years. He said he was involved in meetings back in the spring to develop a vision for Culebra Road.

Mukul Malhotra asked if either of them had taken the Culebra Road Transportation Study survey and Don Rios said he had.

Mr. Rossiter said the Thunderbird Hills NA extends from Callaghan to I-10. Mr. Rios said the Culebra Park NA extends from Benrus to Callaghan.

Mr. Rossiter said that to him everything is secondary to the safety issue. He said it is pretty disheartening to see all the crashes. He said there is one intersection where there are four different roads coming in at different angles and that intersections like that needed to be fixed. He asked the study team not to worry about beautification until the safety issue is handled.

Mr. Rios said that he concurred with Mr. Rossiter on safety as the paramount factor. He said that near his area, the study team needed to think about mass transit. He also said that he would like beautification and shade cover especially where Zarzamora Creek runs under the Culebra Road Bridge. He said there is an apartment complex by there and that stretch of road has lots of people that take the bus. He said another opportunity is near Brindle and Culebra. He said that opens into his neighborhood and would provide an opportunity. He also identified the area near Barrio Barrista as an area with retail going in and neighborhood visitors. He thought this would be an area with more pedestrian traffic. As a side bar, he recommended that the study team have the Westside Special if they go to Barrio Barrista.

Mr. Rios also said the intersection at Bandera Road and Culebra Road is really challenging. He said he did not know how to fix it without causing significant impacts. Mr. Mulhotra said that one issue is the geometry, but the other issue is the amount of speeding.

The consultant team then asked for other issues or opportunities. The stakeholders said the sidewalks along that area are in disarray. They said there is no green buffer between the sidewalks and the road. They also said HEB draws huge amounts of pedestrian traffic. Stakeholders said they need wider sidewalks and sidewalks with a buffer away from the roads.

The Culebra Park NA said they were looking forward to the types of improvements being proposed. They said that how the proposed improvements sound very different from what is there now. Some of the concerns that were raised included the 300-unit apartment complex that is being constructed at Mira Vista and Culebra Road.

Stakeholders said that most of those residents would be drivers but that it could also increase the number of people using the sidewalks. They also said that south of Mira Vista there is another 200-unit apartment complex coming into the area.

Mr. Mulhotra said all improvements will have to consider the future needs of the road. He said there are several locations where people have told the study team that they would like to see new crosswalks.

Mr. Mulhotra asked if there were any other developments that the study team should keep in mind. Stakeholders said there is another development that sits next to Thunderbird Hill NA. They said they were called the Majestic Ranch Apartments and that they were located at Bandera Road and Callaghan Road.

Stakeholders asked if the study team would be coordinating with the Southwest Research Institute (SWRI) and St. Mary's University. The study team said they were reaching out to try to schedule a meeting with both.

Mr. Rossiter said he works for WSP but is located at SWRI. He said the majority of SWRI employees do drive and enter via the main entrance, which is off Culebra, but that SWRI has five separate entrances – three of which are not on Culebra. He said most of the traffic is skewed towards Culebra Road since their main gate is there and has a signalized intersection.

Mr. Rossiter said It is dangerous trying to turn into and out of Bill Miller at Culebra and I-410 because you cannot see past the vehicles directly in front of you. He said this is a daily occurrence and turning into and out of Bill Miller is difficult. He said he would strongly recommend make getting back from those food areas safer.

He said the Northside Stadium is also a consideration. He said in the evenings the parking lot gets very crowded and you have lots of high schoolers trying to go to those food establishments. He also pointed out that there is a fire station and a police substation in this area.

Stakeholders also mentioned a proposal to the county commissioners to develop Zarzamora Creek into a trailway that would end at the Tierra Sol Park. They said it seems reasonable to extend that trailway northward. They indicated that they were confident that something positive would happen at Zarzamora Creek and asked that consultants consider access to a future trail.

Stakeholders encouraged consultants to include protected bike lanes wherever possible instead of just a striped bike lane.

Mr. Malhotra asked Mr. Rossiter how long his drive to work was. Mr. Rossiter said that on a good day it's between 2-5 minutes. He said he picked his home based on where he works so his commute is not bad.

Mr. Rossiter said he uses his bike recreationally and uses the sidewalks on Culebra Road but does not always feel safe. He said he liked the idea of shared use paths.

Mr. Malhotra concluded the meeting by indicating that Ms. Vela would send out the links to the survey and asked that they help disseminate to others who might be interested in the study.

Culebra Road Transportation Study
Great Northwest Stakeholder Meeting
June 4, 2021, from 10:30 – 11:30 a.m.

PARTICIPANTS

- Brian Stives, Great Northwest Chairman of the Board
- Bill McDunn, Great Northwest Resident
- Andy Greene, Great Northwest Resident
- Julio Ramos, WSP
- Linda Vela, PCI

MEETING SUMMARY

This meeting was set to gather input from the Great Northwest on the Culebra Road Transportation Study. Julio Ramos, WSP, and Linda Vela, PCI, provided an overview of the study then asked participants for their thoughts on needed improvements along Culebra Road. Following is the information collected from the stakeholders listed above.

- The I-10 section may be more dangerous for pedestrians since there are more pedestrians in that area.
- My concern is the Tezel intersection and having to make that left turn on Culebra Road. Is there a conceptual plan in place for that area? Not yet but the study team will be developing cross-sections.
- Stakeholders mentioned that Culebra Road from Tezel to Loop 1604 used to be a state-maintained section and that as part of TxDOT's turn back program, the medians were added. They indicated that the public had a hard time with this because there was not enough notice given. They indicated that the medians make it difficult to get out of the way of emergency vehicles, which can affect response times.
- Stakeholders said the traffic on the west end of Culebra is significant and that instead of two lanes in each direction there should probably be three lanes in each direction.
- Stakeholders were concerned that adding protected bicycle lanes from Tezel to Loop 1604 would make it even more difficult to get emergency responders through.
- They indicated that there is already a bike lane on Timber Path from Culebra Road to Les Harrison. They further said they would prefer for the city to complete the bike trail from Cathedral Rock to Loop 1604 and to go under Culebra Road near the HEB.
- They indicated that cyclists do not ride on Culebra Road and instead ride on the sidewalks.
- Stakeholders said the right of way is already narrow from Tezel to Loop 1604 and that adding a bicycle lane would make it difficult to add a third lane in each direction when needed.
- They said the owner of a limo company owns most of the land near Easterling and Village Parkway.
- Mr. Ramos informed stakeholders that there are issues with a cement plant that are holding up the completion of the trail.
- Stakeholders mentioned that this issue is currently being handled by the courts as the cement plant owner is being cited for several violations related to an adjacent drainage channel. They

reiterated that the neighborhood is most interested in seeing the trail connected. They said their observations are that most cyclists use the trails and not the road due to safety concerns.

- One of the stakeholders indicated that the intersection at Bandera Road and Loop 1604 seems to be working better since it was improved. He said he would prefer to travel through that area than through the Culebra Road/Loop 1604 intersection.
- Stakeholders also indicated the pedestrian crossings at Culebra/Tezel/Grissom have bad timing and they are very hard to cross if you are older or in a wheelchair. They said the intersection works well for cars but not for bicycles and pedestrians.
- Stakeholders also expressed concerns that the improvements that were just put in by TxDOT would get torn up as part of this project. They said they had just gone through construction and did not want to see the loss of those improvements.
- Stakeholders also said that people often come down Tezel and over to Timber Path to avoid the Culebra/Tezel/Grissom intersection.
- Stakeholders expressed concerns that since ATD funds were taken away from trail projects, the trail connection they were seeking would not get built.
- Stakeholders asked what the timeframe was for completion of the study. Mr. Ramos said the goal was to finish the study by the end of the year so that any proposed projects could be recommended for inclusion in the bond package.
- Andy Greene recommended reaching out to the District 6 office for an updated list of neighborhood associations.
- Mr. Ramos asked stakeholders if speeding was an issue. They said that congestion is too great during the day for any kind of speeding but that you can hear people speeding at night, particularly on Grissom.
- Ms. Vela asked about student travel patterns. Mr. Greene said that neither high school is within walking distance. He recommended checking school boundaries via the school district. He also recommended talking to Lindsey Place about this issue.
- Stakeholders did identify that younger children (8th graders/pre-teens) will cross Culebra to get to the gas station for snacks.
- Stakeholders also mentioned that there are about 100 homeless people living under the Culebra bridge in the vicinity of the proposed trail.

This concluded the stakeholder meeting. Mr. Ramos thanked stakeholders for their time and told them the plan was to conduct a public meeting later in the year.

Culebra Road Transportation Study

Bicycle/Pedestrian Groups Stakeholder Meeting
June 4, 2021, from 1:30 – 2:30 p.m.

PARTICIPANTS

- William Long, Activate SA Board Member
- Joe Pawlik – Active Transportation Planner with AAMPO
- Jeff More – SATX Social Ride
- David Bemporad – Activate SA
- Bryan Martin – Bike San Antonio
- Brenda Gonzalez – South Texas Off Road Mountains (STORM)
- Cristian Sandoval – Earn-a-Bike
- Greg Reininger, City of San Antonio
- Julio Ramos, WSP
- Mukul Malhotra, MIG
- Krystin Ramirez, MIG
- Linda Vela, PCI

MEETING SUMMARY

The meeting began with introductions of the Study Team, participants, and an overview of the Culebra Road Transportation Study given by Julio Ramos, with WSP. Julio Ramos, WSP, went over the goals of the project and then asked the participants what their goals were for Culebra Road. During the presentation, William Long suggested that the Study Team attend the SATX Social Ride on Tuesday night to give riders the opportunity to take the survey. Jeff More, SATX Social Ride, said they would ensure to share the survey information with all riders. William Long also mentioned that a community member's water company came out to SATX Social Ride and was able to engage the group. At the conclusion of the presentation, the meeting was opened up to any questions or feedback regarding the study.

William Long started the questionnaire portion of the meeting and mentioned that he has lived off of Les Harrison near Loop 1604 and Easterling Dr., and on Easterling Dr. there is a dead end. He said a concrete company owns the entire horseshoe, and you can see the tracks and trails from their driving, and it can be a big impact zone. David Bemporad, Activate SA, then asked what the traffic flows were and what the potential reduction is when you get closer to Downtown where segments A, B, and C exist. Julio responded that the Study Team has been running existing and projected models and came to the result that the 7-lane segment between I-10 and Bandera is a very congested segment. Having received the majority of feedback from the community, the Study Team is trying to make a five-lane section work and have specific improvements at signalized intersections. He mentioned the analysis is still in progress. He said on segment B, a lower volume section, the Study Team is looking at doing improvements at specific intersections and creating proposed cross-sections then go back to the public for feedback. From there, that will shape a preferred alternative and go back to the public once more to verify that we have the community's vision in place. Julio also said that they are looking at what to do with the right of way by Southwest Research Institute.

Linda Vela, PCI, then pulled up Google Maps and explained how when the Study Team met with West End Hope in Action, their biggest concern was slowing down traffic in the area. Brenda Gonzalez, STORM, wanted to identify how many elementary and middle schools are nearby and how many kids

would have to cross Culebra to get there since most kids walk and ride their bikes. She mentioned she used to live in Sections E and D towards Loop 1604 and would bike to work taking Culebra Road with no bike lanes and then head out towards Talley Road (no sidewalks). She said she would have to take her mountain bike because it was dangerous. She said she also accesses Culebra Creek Park to reach Terra Oaks Trailhead to get to the Greenaway's to use commuting, similar to others. Another concern she has is traffic during school hours not slowing down for kids, especially younger kids, who are trying to get to school.

Cristian Sandoval, Earn-a-Bike, mentioned Culebra Road is not at its best right now and the people who are riding along Culebra Road are not recreational riders, they all ride to get to work, school, etc. He said recreational cyclists would even find it intimidating to ride with cars going 50-55 mph. He said he agrees that there should be a dedicated bike lane for riders.

David Bemporad, Activate SA, then briefed the team on Activate SA efforts and said they are working with neighborhood associations in the Woodlawn Lake area to get a complete street along Cincinnati which is a corridor north of Culebra. He also pointed out that the SA River authority has put out plans to receive funding from Bexar to extend Zarzamora from Roosevelt Park to Monterey Park and Commerce Street. The future goal is to further extend Zarzamora to reach Culebra Road to serve that potential need. He also said that Activate SA is working with communities in the South Westside at potential east/west bike routes to reach from Loop 1604 on one side to Loop 410 from East to West. He also worked with the City of San Antonio on a Vision Zero project and to potentially add more crosswalks to Culebra Road.

Mr. Bemporad continued with his topics and said a two-way cycle track at the northern edge of Culebra from I-10 out to Callaghan (Segments A and B) would be ideal – which would allow for greater connectivity to Woodlawn Lake and direct connection to St. Mary's University. He suggested that since there are no driveway approaches on Culebra Road along Section C, a cycle track should have a painted crossing at Culebra and Callaghan. He pointed out that it would help to have painted and separated signalized intersections along each of these segments. He concluded with mentioning that his main interaction with Culebra Road is as a transit user so he would love to see a great interaction with transit and cycling users with adding a cycle track bending around a bus stop.

Bryan Martin, Bike San Antonio, mentioned that the Study Team may not get an accurate representation of the community from the surveys due to numerous factors and to possibly find other ways to get feedback. He said he is very concerned with bus stops and bike lanes because the bike lanes go through the bus stops, and it becomes a safety issue.

Joe Pawlik, Active Transportation Planner with AAMPO, said to possibly show before and after images of what the study team is envisioning for certain corridors. He is hoping for efficient intersection improvements for bicycle infrastructure and said the Study Team needs to ensure the public knows how to use it.

David Bemporad, Activate SA, mentioned he would send an email with more ideas for components on the Culebra Road corridor.

Culebra Road Transportation Study
Bicycle/Pedestrian Groups Stakeholder Meeting
June 8, 2021, from 6:30 – 7:30 p.m.

PARTICIPANTS

- Celina Escamilla, University Park NA
- Art, University Park NA
- Julio Ramos, WSP
- Mukul Malhotra, MIG
- Krystin Ramirez, MIG
- Lianna Ybarra, PCI

MEETING SUMMARY

The meeting began with introductions of the Study Team, participants, and an overview of the Culebra Road Transportation Study given by Julio Ramos, with WSP. Mr. Ramos went over the goals of the project and then passed it off to Krystin Ramirez, WSP. Ms. Ramirez provided a presentation of the Culebra Road Transportation Study. At the conclusion of the presentation, the meeting was opened up to any questions or feedback regarding the study.

Due to low attendance of the neighborhood association meeting, there were not any pressing questions. Celina Escamilla, University Park NA, asked Ms. Ramirez if she could provide a link to the presentation and survey so she could include it in the meeting minutes and send to everyone in the neighborhood association.

One of the attendees, Art, did mention that Culebra Road needed better safety for bicyclists. He said it is a very dangerous corridor for people who ride their bikes, and most people in cars do not slow down for them – it is the most dangerous in the afternoon during peak traffic time.

Ms. Escamilla then concluded the meeting and said she was going to ask her surrounding neighbors for their thoughts and feedback and said she would send the Study Team a summary.

APPENDIX A-2

Multimodal Corridor Transportation Study

Appendix A-2: Culebra Road Transportation Study
Technical Advisory Group (TAG) Meeting
(August 2, 2022)

APPENDIX A-2

Culebra Road Transportation Study
Technical Advisory Group (TAG) Meeting
August 2, 2022

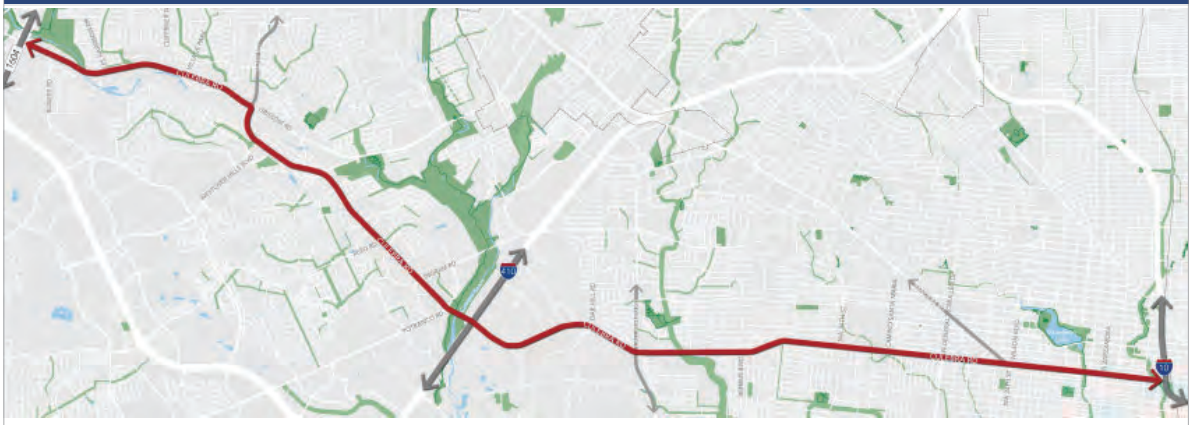
1

Meeting Purpose

- Provide project overview including engagement process with community members, stakeholders and City staff
- Review, discuss, and identify any changes to the proposed streetscape improvement options

2

Project Area



- Project Limits: Loop 1604 to IH-10
- Project Area Length: Approximately 13 miles long
- Project Location:
  - Within northwest Bexar County, City of San Antonio, Texas
  - Western and eastern ends are part of TxDOT system. On the west, FM 471/Culebra Road extends from LP 1604 to Tezel Road. On the east, Spur 421/Culebra Road extends from NW 24th Street to I-10.

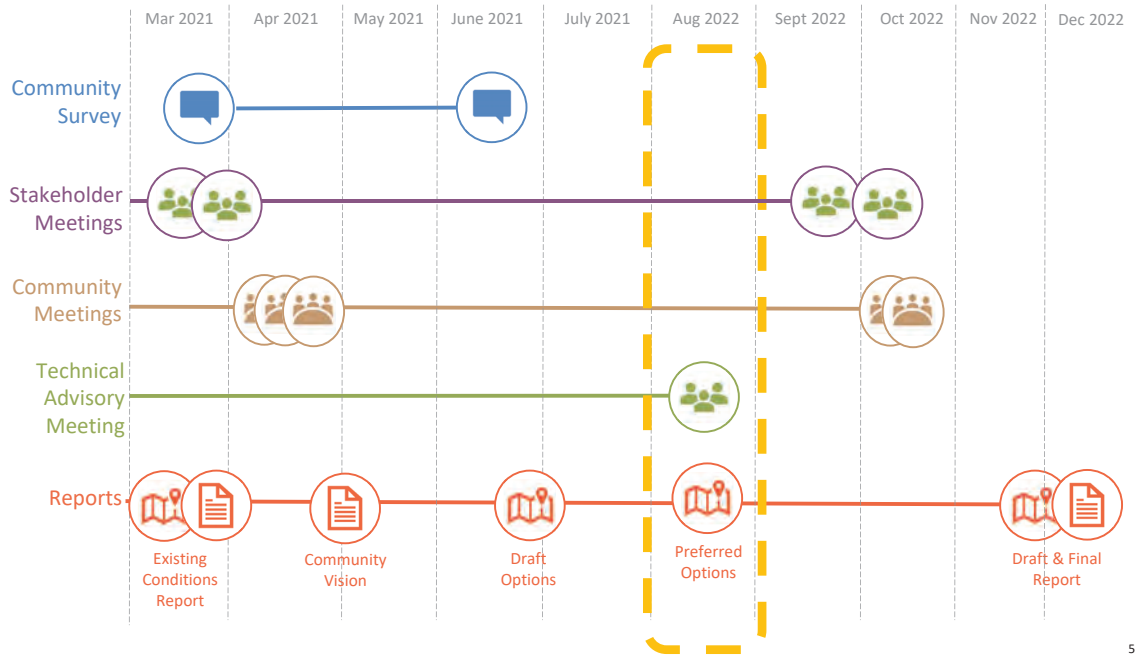
3

Project Goals

1. Create a **safe corridor for ALL users** of the street
2. Transform Culebra into an **equitable, multimodal corridor for people who walk, roll, bike, take transit and drive**
3. Enhance the **overall experience and connectivity for pedestrians, bicyclists, transit users and drivers**
4. Develop **conceptual designs for short- and long-term improvements**
6. Ensure **meaningful community and stakeholder engagement**
7. Coordinate and **build upon previous and concurrent studies** and initiatives

4

Project Process



5

Community Outreach

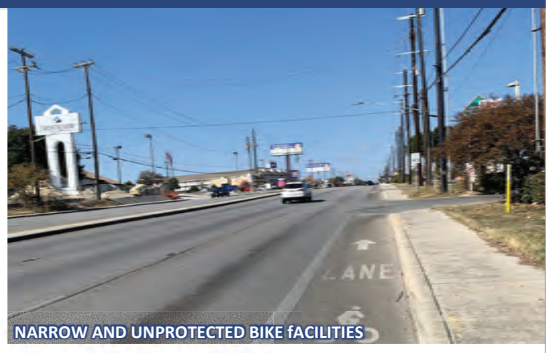
Multi-Pronged Community Engagement Included:

- 3-month long in-person and virtual **Community Visioning Survey**
- 5 **Focus Group Stakeholder Meetings** with neighborhood associations, pedestrian and bike advocacy groups and institutions
- 3 **Community Workshops** in English and Spanish
- **NEARLY 600 ACTIVE PARTICIPANTS** who attended stakeholder and community meetings and took the community survey
- **OVER 2000 CLICKS** to multi-media outreach including email blasts, social media posts, newspaper and social media ads, media coverage and project website

6

Key Issues and Challenges: Pedestrian & Bicycle


ADA NON-COMPLIANT SIDEWALKS


NARROW AND UNPROTECTED BIKE fACILITIES

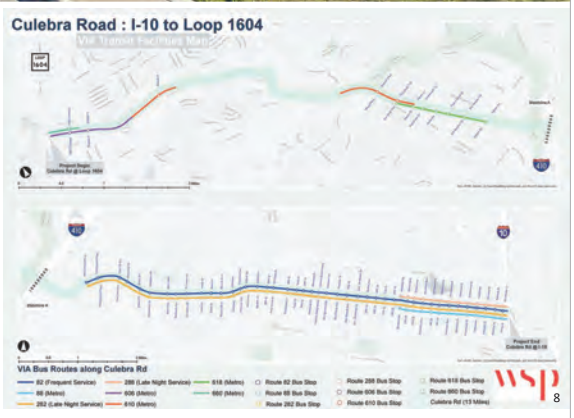

SIDEWALKS DISCONNECTED FROM ADJOINING BUSINESS


ADA NON-COMPLIANT AND DISCONTINOUS SIDEWALKS

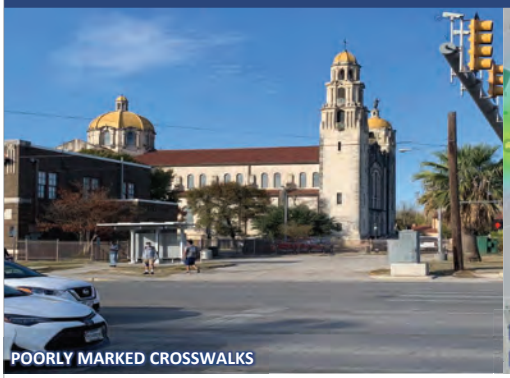
Key Issues and Challenges: Transit Facilities

TRANSIT FACILITIES WITH NO SHELTER

- **Transit Routes:** Project area served by four routes: 82, 88, 610, and 618
- **Ridership:** Average combined daily weekday ridership for all routes in April 2022 was 3,519. Ridership on individual routes:
  - **82** -1,315 riders
  - **88** -1,674 riders
  - **610** – 280 riders
  - **618** – 250 riders



Key Issues and Challenges: Intersections



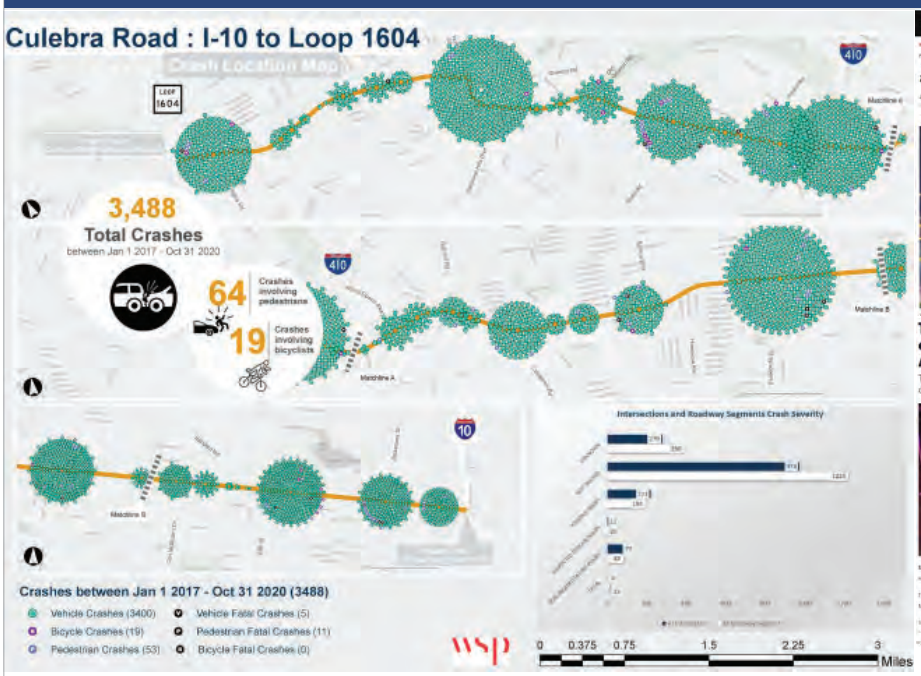
POORLY MARKED CROSSWALKS

LOCATIONS OF INTERSECTION IMPROVEMENTS IDENTIFIED BY COMMUNITY

SKEWED INTERSECTIONS

9

Key Issues & Challenges: Safety



San Antonio Express-News

Three pedestrians killed, two critical in accidents within 12 hours

Two pedestrians hit, killed while crossing West Side street, San Antonio police say

The victims were about 100 feet away from the nearest crosswalk, police say

10

Culebra Safety Campaign

- **Vision Zero SA** is committed to bringing education and information to help prevent deaths along Culebra by focusing attention on drivers and pedestrians along this corridor.
- **Data Collection Ends September:** Link to draft report: https://publicinput.com/Report/u2dgb3tp4yx
- **Publish Results in October:** Results will be incorporated into the final Culebra Corridor Study Report

PROPOSED OPTIONS & DISCUSSIONS

Overarching Improvements

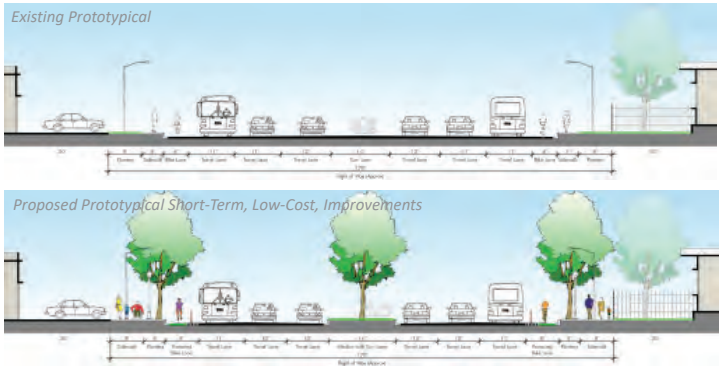
Individual Segment Prototypical Cross Sections

12

Overarching Improvements

Overarching Design Principles:

- **Improve Overall Safety & Connectivity for all Modes of Travel**
- **Repurpose Any Excess Right-of-Way to better serve people who walk, bike and take transit**
- **Customize solutions to respond to surrounding context like land use, drainage, etc**
- **Explore long-term high-cost concepts to build on short-term, low-cost, improvements**
- **Build on best practices including, City of San Antonio, NACTO, etc**



Short-Term, Low-Cost, Improvements May Include:

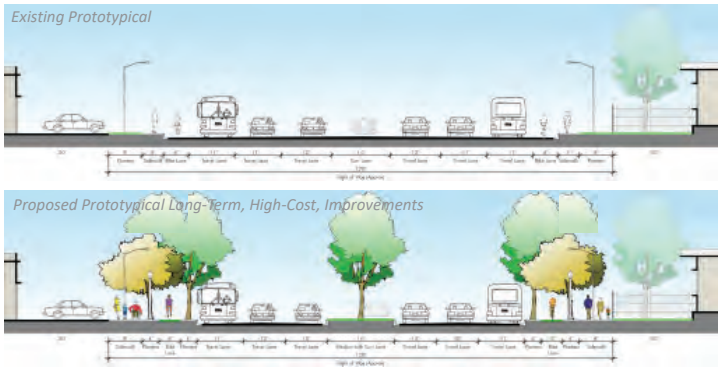
- Separated bike facilities
- Wider sidewalks
- Raised median
- Landscaping

13

Overarching Improvements

Overarching Design Principles:

- **Improve Overall Safety & Connectivity for all Modes of Travel**
- **Repurpose Any Excess Right-of-Way to better serve people who walk, bike and take transit**
- **Customize solutions to respond to surrounding context like land use, drainage, etc**
- **Explore long-term high-cost concepts to build on short-term, low-cost, improvements**
- **Build on best practices including, City of San Antonio, NACTO, etc**



Long-Term, High-Cost, Improvements May Include Short-Term Improvements and:

- Moving the existing curb to shorten crosswalks
- Elevated and protected bike facilities
- Lighting and additional landscaping

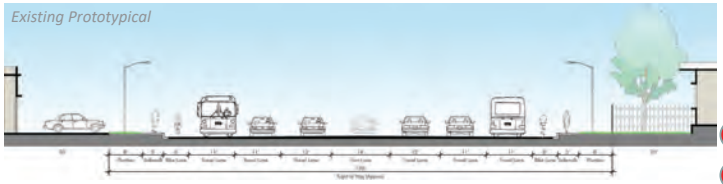
14

Overarching Improvements

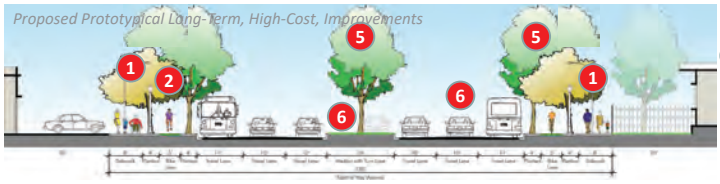





Existing Prototypical



Proposed Prototypical Long-Term, High-Cost, Improvements



Common Improvements:

1. **Wider & Protected Sidewalks:**
2. **Dedicated Bike Facilities**
   - Protected Class IV bike facilities pref.
   - Buffered bike lanes & shared ped/bike facilities for other situations
3. **Improved Crosswalk Connections**
   - Improve existing crosswalks all along segment with shorter distances, longer crosswalk timings, and pedestrian refuge where possible
   - Explore new crosswalks specially to existing schools, trail heads, community destinations, etc.
4. **Improved Transit Facilities**
5. **Shade Providing Trees**
   - Along sidewalks and medians
6. **Multi-purpose Traffic Calming Devices**
   - Explore mix of solutions to include access management, medians, trees, travel lane widths, etc.

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PROPOSED CONCEPTS & DISCUSSIONS

Overarching Improvements

Individual Segment Prototypical Cross Sections

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Distinct Corridor Segments

Segment E	Segment D	Segment C	Segment B	Segment A
Tezel Rd to Loop 1604	Loop 410 to Tezel Rd	Callaghan Rd to Loop 410	Bandera Rd to Callaghan Rd	I-10 to Bandera Rd

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Segment A: I-10 to Bandera Road

EXISTING CONDITIONS

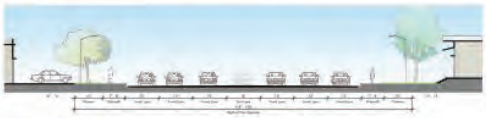
Overall Character:
Mix of residential and commercial uses

Street Character:
Buildings do not engage the street, frequent driveways on the North side and few street trees

Street Configuration and Traffic Speed:
118-120 foot ROW with seven lanes, 40 mph

Multi-Modal Access and Facilities:
Sidewalks: 5 to 6 feet wide
Bike Lanes: None
Transit: Yes

Traffic Volumes:
Currently 46,042 ADT
(55,400 cars per day design capacity)



Existing Section

Existing Photos

PROPOSED OPTIONS

Option 1

Option 2

COMMUNITY FEEDBACK:

Wider & Protected Sidewalks:
- 73% support overall; 78% support for wider sidewalks for business

Dedicated Bike Facilities:
- 85% support for protected facilities

Improved Crosswalk Connection:
- Improve existing crosswalks all along segment, especially at I-10 interchange, Zarzamora, Hamilton, & Wilson/ Bandera
- New pedestrian and bicycle access to Alazan Creek Trail and mid-block crosswalks between 19th and 24th

Improved Transit Facilities:
- Improve all along the corridor, especially at Zarzamora and Bandera & Alazan Creek Trail

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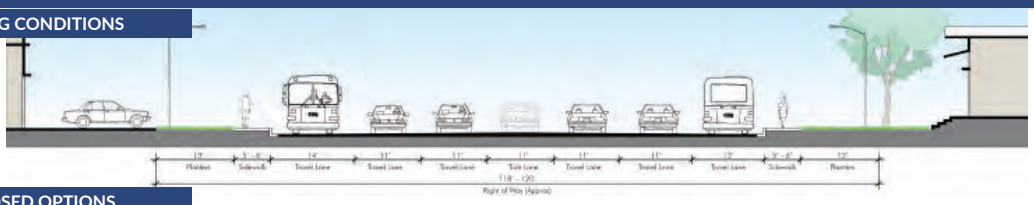
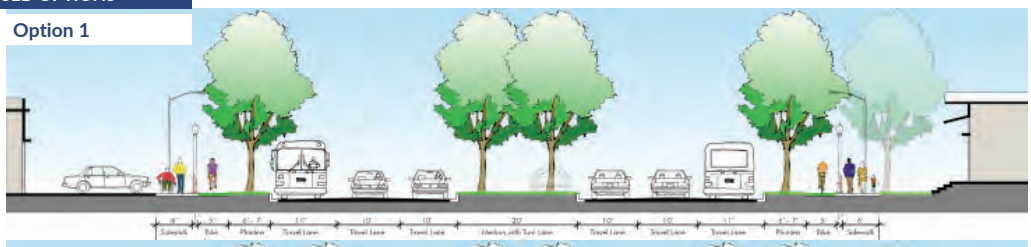
Segment A: I-10 to Bandera Road

EXISTING CONDITIONS

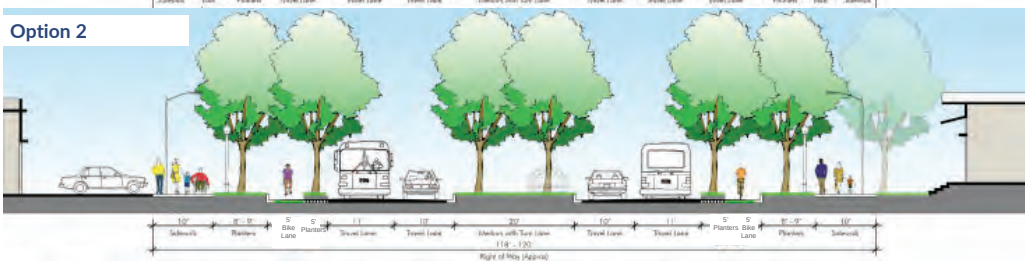


PROPOSED OPTIONS

Option 1



Option 2



19

Segment A: I-10 to Bandera Road

EXISTING CONDITIONS

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Segment A: I-10 to Bandera Road

PROPOSED OPTIONS: OPTION 1

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Segment A: I-10 to Bandera Road

PROPOSED OPTIONS: OPTION 2

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Segment B: Bandera Road to Callaghan Road

EXISTING CONDITIONS

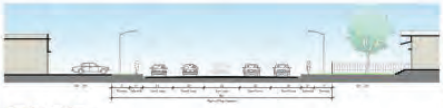
Overall Character:
Mix of residential and commercial uses

Street Character:
Buildings do not engage the street, infrequent few street trees in private parcels

Street Configuration and Traffic Speed:
80 foot ROW with five lanes, 40 mph

Multi-Modal Access and Facilities:
Sidewalks: 5 feet wide
Bike Lanes: None
Transit: Yes

Traffic Volumes: Currently 27,039 ADT (36,000 cars per day design capacity)



Existing Section

Existing Photos

PROPOSED CONCEPTS

Concept 1

Concept 2

COMMUNITY FEEDBACK:

Wider & Protected Sidewalks:
- 76% support overall;
- 65% support for wider sidewalks for business

Dedicated Bike Facilities:
- 76% support for protected faciliites

Improved Crosswalk Connection:
- Improve existing crosswalks all along segment, especially at 36th/Esmeralda, McMullen and Callaghan
- New crosswalks between Maiden Lane and Yolanda, Callaghan and Mira

Improved Transit Facilities:
- Improve all along the corridor,
- Enhance connectivity to St Marys' University from surrounding neighborhoods

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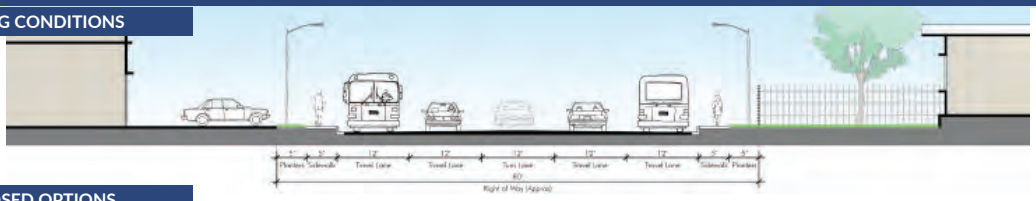
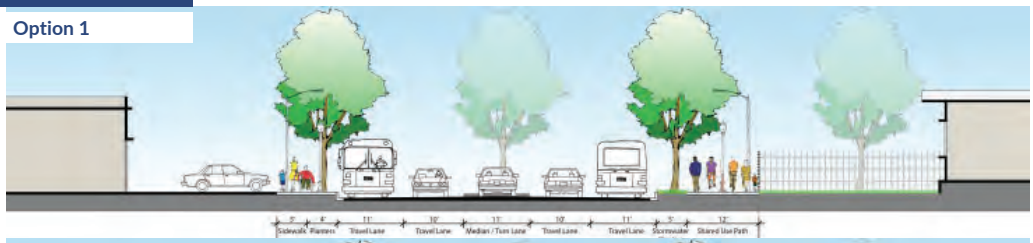
Segment B: Bandera Road to Callaghan Road

EXISTING CONDITIONS

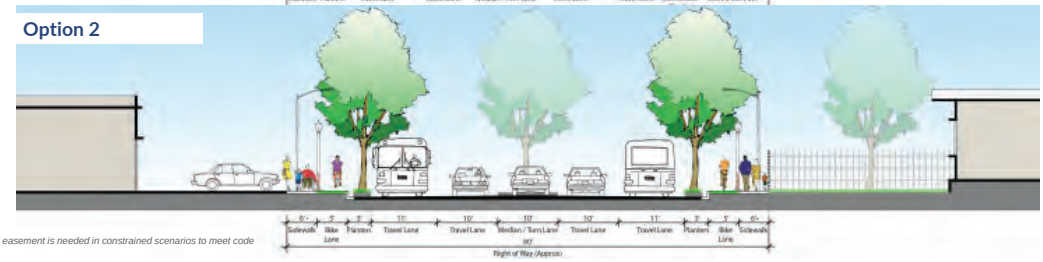


PROPOSED OPTIONS

Option 1



Option 2



* = Potential easement is needed in constrained scenarios to meet code standards

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Segment B: Bandera Road to Callaghan Road

EXISTING CONDITIONS

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Segment B: Bandera Road to Callaghan Road

PROPOSED OPTIONS: OPTION 1

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Segment B: Bandera Road to Callaghan Road

PROPOSED OPTIONS: OPTION 2

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NEXT STEPS

- **October:** Final Public Meeting
  - –Report out TAG recommended concept
  - –Receive feedback and input from residents
- **October – November:** Compile results and develop final report
- **December:** Publish results to Council and residents
  - –Provide final report to appropriate departments and agencies for incorporation into future infrastructure projects.

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Culebra Road Transportation Study

Technical Advisory Group (TAG) Meeting

August 2, 2022

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APPENDIX A-3

Multimodal Corridor Transportation Study

Appendix A-3: Culebra Road Transportation Study Documentation of October 2022 Community Open Houses (November 15, 2022)

APPENDIX A-3

CULEBRA ROAD TRANSPORTATION STUDY

Documentation of October 2022 Community Open Houses

Draft date 11/15/2022

OVERVIEW	In October 2022, the City of San Antonio Transportation Department held the second series of meetings for the proposed Culebra Road Transportation Study. This study is looking at improvements to Culebra Road from Loop 1604 to I-10, a length of approximately 13 miles in Council Districts 1, 5, 6, and 7 in San Antonio, Texas. The following documents the October 2022 outreach. In total, the City had 38 participants in person and 1,231 participants online with a total of 33 commenters. Further details below.		
MEETING	In Person Meeting	In Person Meeting	Virtual Option
MEETING DATE AND TIME	Oct. 1, 2022 9 am to 11 am	Oct. 4, 2022 6 pm to 8 pm	Oct. 1-Oct. 19, 2022 Beginning at 9 am
MEETING LOCATIONS	Holy Cross High School – Convocation Center 426 N. San Felipe Street San Antonio, TX 78228 *Inside Loop 410, District 5*	Alamo City Apostolic Church 9302 Timber Path San Antonio, TX 78250 *Outside Loop 410, District 6*	culebraroadstudy.org
TRANSLATION SERVICES	Spanish interpreters were available and materials were provided in Spanish	Spanish interpreters were available and materials were provided in Spanish	A Spanish version of the virtual public meeting webpage with Spanish materials was available.
PRESENTERS	A pre-recorded presentation with audio and visual components	A pre-recorded presentation with audio and visual components	A pre-recorded presentation with audio and visual components
ELECTED OFFICIALS IN ATTENDANCE	5	0	0
TOTAL NUMBER OF ATTENDEES (APPROX.)	12	21	959 Virtual Meeting Page Unique Visitors and 212 Online Participants on SA Speak Up between Oct. 1-Oct. 19, 2022
TOTAL NUMBER OF COMMENTERS	6	4	14

DOCUMENTATION CONTENTS

A. Summary of comments received
B. Notices provided
C. Comments received by Oct. 19, 2022
D. Figures
E. Additional comments received between Oct. 20-Oct. 31, 2022

A. Summary of Comments Received

Comments pertaining to the Community Open Houses must have been postmarked by Oct. 19, 2022. 33 comments were received. Comments received after this deadline are still being received and evaluated but are not reflected in the summary analysis.

The following is (1) a summary based on comments received as well as the written feedback provided during the in house open houses that were written on post it notes and placed on the exhibits and roll plots (see section C for details), and (2) a matrix of all comments received. The original comments can be found in section C.

MAJOR THEMES:

- Overall support for proposed improvements overall and the proposed concepts presented at the meeting.
- Five top favored elements that were proposed:
  - (1) Adding trees to the corridor,
  - (2) Adding separated/protected pedestrian and bicycle paths,
  - (3) Adding frequent and safer pedestrian/bicycle crosswalks,
  - (4) Adding street lighting across all segments, and
  - (5) Adding safety measures as safety was noted by many as a major need.
- Other elements that were supported:
  - Beautifying the corridor,
  - Reducing lane widths,
  - Reducing the number of travel lanes,
  - Improving the road pavement (e.g., dips and potholes, consider PFC asphalt),
  - Removing center turn lane where appropriate,
  - Adding stormwater planters in comparison to general planters, and
  - Considering tree maintenance needs (e.g., watering, removal of dead trees)
- In comparison, there were a very small number of comments in opposition, and they centered on concerns about reducing the number of travel lanes. Other concerns included: new trees at intersection blocking views of the traveling public and causing maintenance hassles; concrete islands potentially being a hazard for cars; support for increasing speed rather than reducing it; and traffic noise concerns for adjacent neighborhoods.

SPECIFIC DESIGN CONSIDERATIONS:

- General:
  - Add bus pull outs (across all segments but noted especially in Segment D).
  - Add privacy wooden fences between homes and new bicycle/pedestrian facilities.
  - Keep sidewalk and bike lanes at grade with each other as it helps with those getting off bus to access these facilities.
- Intersection break needs:
  - Mira Vista and Culebra Road need intersection break to accommodate traffic access.
  - Laven and Culebra Road need intersection break to support access and U-turns.

- U-Turn access needs:
  - Consider U-turn access at El Centro and Culebra Road to support business.
- Crosswalk needed
  - Traffic light on Laven for pedestrian crossings needed.
- Segment E Specific:
  - Consider adding turn lane or traffic light from EB Culebra Road to turn into Bank of America and Wells Fargo.
  - Consider widening Segment E to three lanes in each direction and route bicycle/pedestrian traffic to Timber Path instead.
- Trail considerations
  - Consider adding trailhead at the lot by El Centro and Culebra Road near Zarzamora Creek.
  - Support for Zarzamora Creek south of Culebra Road to be parkland.
- Mobility improvements:
  - Improve mobility at Culebra Road and I-10 with longer left turn signal timings or improved on ramps.

CONSIDERATIONS ABOUT THE PROPOSED CONCEPTS PER SEGMENT:
There were not a lot of comments with preferences about one concept or another. Two considerations for designers were:

- (a) the wish for continuity and equity across segments and
- (b) symmetry where possible.

The following are specifics to each segment.

- Segment A:
  - Two comments in support of concept 1.
- Segment B:
  - One comment in support of concept 1, three comments in support of concept 2.
- Segment C1:
  - Two comments in support of concept 1, one comment in support of concept 2.
- Segment C2:
  - One comment in support of concept 1, two comments in support of concept 2.
- Segment D:
  - One comment in support of concept 1, two comments in support of concept 2.
- Segment E:
  - One comment in support of concept 1; three comments in support of concept 2.

OTHER COMMENTS

- Concerns regarding construction impacts (e.g., traffic flow, business access, safety).
- Concerns regarding financing for proposed improvements.
- Coordination needed with adjacent projects/support for adjacent projects.
  - Coordinate Culebra Road bike/ped improvements with Bandera Road bike/ped improvements so that it's continuous/consistent.
  - Be complementary with the Westside creeks investments.

- Zarzamora Creek Trail access at bridge needed.
- Improve existing trail between Grissom Road and Timberwilde by adding additional access to neighborhoods, call boxes and security cameras for safety concerns.
- Improve bicycle/pedestrian facilities along Timber Path.
- Improve safety at the intersections of Culebra Road and Bandera Road, and Culebra Road and Loop 1604.
- Connect Culebra Road with Woodlawn Lake or the Greenway of Alazan Creek via new bicycle lanes

- Unrelated to scope of study:
  - Concerns regarding city code compliance and enforcement including for those who abuse the center lane as an additional lane during congested times.
  - Desire to move utility poles in the corridor underground.
  - Drainage concerns.
  - Consider removing traffic intersections for traffic circles/roundabouts.
  - Need for traffic signals to be synchronized and have enhanced camera technology.
  - Comments regarding VIA Metropolitan Transit
    - Consider adding dedicated bus lanes.
    - Need better bus stops.
    - Need lighting at bus shelters.
    - Need maintenance for lighting outages at bus shelters/stops.
- Appreciation for community open houses.

Culebra Road Transportation Study | Community Open Houses Documentation

Comment #	Date Received	Name	Type of Comment	What do you like about the proposed concepts?	What improvements are most important to you?	Other comments?
1	Sept. 20	Matthew T. Rodriguez	Email Comment			I began commuting to work last week. Leading up to my decision, I biked various routes on the weekends in order to identify an optimal way to get from my home (New Guilbeau/Tezel) to work (Culebra/Potranco). I regularly find myself torn between two routes, which I call "The Direct Route" and "The Scenic Route". My direct route places me onto the Tezel/Culebra bike lane the entire way. Tezel does not concern me much, because there is just not that much traffic on my route (except for one school zone, but not an issue if I leave at the correct time). However, Culebra always has me worried. The bike lane disappears completely on the overpass once I cross over from Tezel to Culebra, which leaves me somewhat vulnerable, in the main lane for about 50 yards as I approach Westover Hills. Even when the bike lane reappears, it is hardly visible to motorists for the entire duration of my ride down Culebra. And to make matters worse, there is lots of debris in the lane, which is mainly gravel/rocks, but also has quite a bit of broken bike parts, screws, bits of plastic, etc, which makes me very nervous because it gives the appearance that bikers have attempted this road before me, only to be wiped out during their ride. The lane also needs a lot of sweeping, because in some areas the gravel is so bad that I am riding on the line that separates the driving lane and the bike lane. Due to the rough condition of the Culebra bike lane, I sometimes opt to take the scenic route when time is not a concern. This route utilizes the Greenways, which start at Tezel/Timber Lodge, goes through Cathedral Rock Park, and down towards the VIA transportation center where I can pop out at Potranco. This, however, adds almost 3 miles to my commute, not to mention many hills, twists, and turns that slow me down. I plan to attend the community open house, but just in case I cannot, I'd like to recommend that we begin by revitalizing Culebra road as a whole. All lanes are in dire need of repainting from Tezel to 410 (possibly all the way to I-10, but I never go that far down Culebra). In addition, the Bike lane should stand out more. I propose we color it green, clearly label it a bike lane, and even add some sort of separator (bumpers, pylons, or rumble strips) to notify drivers when they are veering into the lane, to give us commuters a little more peace of mind that drivers will be alerted when crossing over into our lane. Also, regular cleaning/sweeping is necessary. It's possible that all that the sweepers are doing is moving around debris; perhaps it has reached the point that it's so bad we need something to actually remove the debris? I also used to drive down Culebra every day. I personally don't have much of an issue while driving, other than the fact that the lines are incredibly faint and hard to see. I think that traffic is bearable (much more than Bandera) even during busy hours.

Comment #	Date Received	Name	Type of Comment	What do you like about the proposed concepts?	What improvements are most important to you?	Other comments?
2	Sept. 23	Matt	Email Comment			We need to do better to protect bicyclists. https://www.ksat.com/news/local/2022/09/22/bicyclist-hit-killed-in-hit-and-run-crash-on-far-west-side-police-say/
3	Sept. 24	Hilda Ochoa	Email Comment			I live at Coppertree Condos. Some of the homes, including mine, are close to Culebra Road. Traffic speed is ridiculous and it seems that its a disaster waiting to happen. I would like to see the City install a high concrete fence or some type of noise/safety barrier on the Culebra side to help lessen traffic noise and potential danger.
4	Sept. 27	Josiah	Email Comment			We want less car lanes , it brings a lot of noise and car shows to the neighborhoods creating dangerous environments. We want safer bike lanes , safer sidewalks and high density living not just offices
5	Oct. 1	Juan Varela	Email Comment			I would like more information.
6	Oct. 1	Ofelia Sanchez	Written Comment	The proposal looks like a great idea to improve the community but unless code compliance comes to uphold property owners who are hoarders and create unsanitary conditions like rat infestations that infestation affects nieghbors [sic] (Ace Ice House) wrecked vehicles and trash, useless dump.	Code compliance needs to inforce [sic] the no dumping in this area N. Gen McMullen and Culebra. The camera are not working, too many accidents. Placing trash deposits every corner. Sidewalks on W. Laurel needed. Speed bumps are also needed.	Project seems good for improvements.
7	Oct. 1	Jan Wells	Written Comment	Good people at the meeting & plenty of people who were knowledgeable	1604 & Culebra intersection area – driver/ pedestrian safety and rage problem	Section E should be combined with an F
8	Oct. 1	Edward F. Granado	Written Comment	Improving the streets, sidewalks, beautifying. Bike lanes on or close to sidewalk.	Street repair and sidewalks. Improving business, more lighting. Do not have bike lanes on street. We need to do something about homeless, hookers, drugies [sic], and crime in the area.	
9	Oct. 1	Jerid Morris	Written Comment	Protected ped/ bike lanes & proposed green canopy improvements	Decrease auto capacity & incentivize pedestrian/ bike traffic	Defund public safety budgets & use funds for meaningful, generational quality of life improvements
10	Oct. 1	Michael Stumpff	Written Comment	Focus on flora (?) & dedicated bike lanes & walk lanes and narrowed 10' lanes to slow down traffic.	Slowing traffic & reducing cut thru neighorhood [sic]	
11	Oct.1	Stacey Sinclair	Written Comment	Separate ped/ bike facilities - Reduced lanes/ lane widths - Trees in median - Enhanced safety	Safe multimodal facilities (w/ separation) Trees/ vegetation (to combat heat issues??) Providing options for safe travel (reduce SOV dependency)	Any considerations for dedicated bus lanes?
12	Oct. 1	Matthew Baiza	Online Comment	Overall, I think the proposed concepts will improve safety and mobility along the corridor for all modes of transportation. Regarding Segment A, I prefer Concept 1 which will create a wider buffer between vehicular traffic and cyclists. In addition, Concept 1 looks to keep the sidewalk and bike lane at grade with each other, which will be easier for those getting off the bus, especially for those with disabilities and/or mobility challenges. Regarding Segment B, I prefer Concept 1 because it similarly provides a wider buffer between vehicular traffic and cyclists. Regarding Segment C1, I prefer Concept 2 with the Greenway and storm planters.	Safety improvements, particularly ensuring there are wide barriers between vehicular traffic and cyclists as well as adequate crosswalks and shading for pedestrians. In addition, improvements should not just look like a concrete jungle - I hope to see color and art integrated into bus shelters and other features.	This roadway is one of the most dangerous and deadliest in our city and we should ensure that these improvements make it safer for all.

Comment #	Date Received	Name	Type of Comment	What do you like about the proposed concepts?	What improvements are most important to you?	Other comments?
				Regarding Segment C2, I prefer Concept 2 to be in line with Concept 2 in Segment C1 where the bike lane stays on one side of the street. Regarding Segment D, I strongly prefer Concept 2 as it keeps the bike lane at grade with the sidewalk. Traffic in this section is fast and there should be as much of a barrier as possible between vehicular traffic and cyclists. In addition, with the sidewalk and bike lane being at grade with each other, it should be easier for those getting off the bus, especially those with disabilities and/or mobility challenges. Regarding Segment E, I prefer Concept 2 which keeps the bike lane and sidewalk adjacent to each other.		
13	Oct. 2	Robert Perez	Online Comment	I guess the trees. But they do not address what will fix the common issues with this road with road delays.	Reduction in commute times by car and fixing the quality of the road, too many dips, and potholes.	No. Just no. None of the proposed concepts address key issues. Pedestrian traffic to cross needs to be segregated either by a bridge or tunnel for bikes and wheelchairs. They will help troubleshoot jaywalkers. If they must pass I would look into fencing to prevent jaywalkers. Secondly, no speed REDUCTION and/or lane reduction is acceptable. if anything the speed limit needs to be increased to 45-50mph. That is a comfortable cruising speed for this road. Third, Buses need a dedicated pull-out so as to not cause congestion. That is all they do currently, get in the way and cause frustration and accidents. Forth Renforce [sic] the road for the heavy weight of said via buses and school buses. They have caused dips and massive potholes that damage personal property. Fifth is section A when going towards I10 you have jerks that cause traffic by taking the center lane to cut off other drivers to either go left or right causing massive traffic and road rage. This section needs a solid barrier to prevent that to make traffic commit to that lane be it to go straight or turn left or right. That is my biggest issue. Enforcement should be present to send a message that this will not be tolerated, however, they should not shoot radar/laser to make a quick buck. In section C there is also a massive collection of traffic going towards 410 by the firehouse and police substation. This section should be widened to 3 lanes to promote laminar flow.
14	Oct. 3	Sean Tompkins	Online Comment	I am greatly in favor of protected bike and pedestrian lanes. I appreciate that designs have been created to not reduce the number of lanes of traffic while still incorporating these changes.	Bike lanes protected from traffic	
15	Oct. 3	Jesus Lopez	Online Comment	I like the inclusion of protected bicycle lane concepts across all segments. I also like the reduction of lanes as a traffic calming measure. And the addition of trees is favorable for the aesthetics and reduction of the heat island effect.	The most important improvements to me are the separate bicycle lanes, wider sidewalks, frequent pedestrian street crossings, and pedestrian islands at intersections.	I support the concepts with separate bicycle lanes on both sides of the street to establish a continuous bicycle corridor along Bandera. Mixing different implementations of bike infrastructure could interfere with the ease of use along all of Bandera.
16	Oct. 4	Vicki Larkins	Written Comment	I do like safe sidewalks and bicyle [sic] lanes where they aren't in the road.	To widen Culebra please safe turn lanes and more road to travel, I am on the road at least an hour to go home from Church and errands	Thank you for everything

Comment #	Date Received	Name	Type of Comment	What do you like about the proposed concepts?	What improvements are most important to you?	Other comments?
17	Oct. 4	Gerilynn Lee	Written Comment	I like the concepts of space from sidewalks & road	Cost efficient and safety	Who pays for this after all is said & done? (actually) - How will you help manage traffic during this? - What about the Businesses? Safety for everyone during the work?
18	Oct. 4	Nathan Alvarado	Written Comment	Trees good, safer crosswalks good	More pedestrian crossings between intersections	Bike lanes not a priority, better walking path yes
19	Oct. 4	Cathy Stein	Written Comment	Protected bike lanes		Require the construction company to actually work on the project until finished to limit the total time for the project, not tear up the road and leave it for 6 months as they did with the Timber Path extension & bridge years ago.
20	Oct. 4	Greg Singleton	Online Comment	I agree with the increased patrolling of Culebra. Speeding and reckless driving are a severe problem that must be controlled. But the pedestrians and cyclists that we are committing to protect must be patrolled also. They drift and wander across Culebra with no regard of the laws they must uphold.	Lighting in the area inside Loop 410 is a huge problem. Also there are random concrete islands in the middle of the road that are not marked or aren't even necessary. That, combined with the wandering pedestrians and cyclists and the insufficient lightning presents ongoing hazards every evening	I have lived in San Antonio for 70 years, always on the northwest quadrant of the city. My first home was just off Culebra in the University Park neighborhood, when I was just born. I attended St. Mary's University and St Mary's Law School from 1971 to 1976. In 1979, my wife and I moved in the Timber Ridge area, off Culebra, between 410 and 1604. We lived there 18 years, when we moved to our current home, near Sea World. My son and his family recently renovated a home and live there, two blocks from St. Mary's, and one block off Culebra. Recently while visiting them there one night, a speeding vehicle on Culebra cut me off, and I swerved to prevent getting hit. I didn't see the unmarked curb/island in the middle of the street, and hit it, severely damaging my car. My son had hit the same curb/island also, and blew a tire. When the repair facility on Culebra picked up my car, he told me the [sic] he, himself, had hit that island before, and many people came to his shop there on Culebra after the same type of incident.
21	Oct. 4	Laura Parker	Online Comment	I love the protected bike lanes and treed sidewalks!	Providing safe paths for non-drivers. So many people in the city do not have cars. For too long the city has been designed around cars, pedestrians are just as, if not more important than drivers when it comes to planning safe roads. Roads are not just for cars!	
22	Oct. 4	Brian Mast	Online Comment	Would prefer to see stormwater planters as opposed to general planters throughout the project as much as possible. Also, where trees are being planted, it would be good if they were implemented through tree wells so they could infiltrate stormwater as well.	Safety is most important followed by improving the general environment through the corridor. Between federal and local investments the westside creeks are poised to see an approximately $224 million investment to improve the creek ecosystems. These road improvements can be done with that investment in mind so both the projects complement one another.	
23	Oct. 4	Natalie Dabbs	Online Comment	I like all the separated bike lanes and the added greenery. It's too scary to bike any place other than greenways and cars don't care about bike lanes.	I think caring about adding greenery is important since all the concrete is ugly.	

Comment #	Date Received	Name	Type of Comment	What do you like about the proposed concepts?	What improvements are most important to you?	Other comments?
24	Oct. 5	Melissa Reyna	Online Comment	I like wider sidewalks and that the streets will be lined with greenery.	Safety of crosswalks. Maintenance of traffic lights and re paved streets removing potholes	Would like to see more trash bins, better bus stops, water fountains for pedestrians. Also, some of the strip centers need work to upgrade exterior buildings, graffiti control, city planning of what new business are added to street. Ex. Too many car washes in a small area
25	Oct. 6	Jacob Reyes	Online Comment	I like the addition of BUFFERED bike lanes (shared use paths are also appreciated when a buffered bike path can't be made)	BIKE LANES	This 13-mile corridor is ESSENTIAL for me, as I ride my bicycle to downtown frequently from the Great Northwest neighborhood. Please let this aspect come to fruition!! I beg you!!!
26	Oct. 6	Austin Kelm	Online Comment	Downsizing lanes from 3 lanes to 2. Adding PROTECTED bike lanes throughout the project. Adding landscaping and a median.	All bike lanes need to be PROTECTED bike lanes. A bike lane without protection isn't actually a bike lane at all. Shrinking the lane size down is also probably the most influential portion of this project.	Please make sure that the median is landscaped w/ NATIVE plants that are drought resistant and do not take much water. Also, landscaping does little to slow traffic. Big, tall, mature trees do more than anything else to slow down traffic. Please make sure you put as many as possible on every side of the roadway and median. When building the bike lane, EVERY inch of it needs to be protected. A non-protected bike lane is a dead cyclist. It also needs to be a solid curb, bollard, or something similar. A car should not be able to drive through it, even if it damages the car. Drivers are inside a giant steel box with protection all around them and bikers/pedestrians are not. They are the ones that need protection. Lastly, there are not nearly enough cross walks and protected intersections here. There need to be far more options for SAFELY crossing the street, and each crossing needs to have protection and prioritize the timing of the pedestrian/cyclist. No buttons that do nothing or waiting until the light cycles. They need to go IMMEDIATELY for bikers/pedestrians as they are the more efficient form of transportation. Please make sure that any crossing is also protected. This means a raised crossing and speed table at EVERY crossing and intersection, not just some. Lastly, please consider doing away with the traffic lights. They are one of the most inefficient forms of traffic routing. Traffic circles and its many variations would be much better for this area, allowing for more consistent and sustainable traffic to pass through the area.
27	Oct. 10	Mark Anthony Rivera	Online Comment	The inclusion of shade throughout the corridor. It is a feature that mitigates the urban heat island effect and provides comfort for people walking.	The addition of consistent, protected bike facilities throughout the entire corridor.	I think it is contradictory to the vision zero goals of San Antonio to add slip lanes along the corridor. They create confusion about who has the right of way and encourage drivers to speed through intersections, making the area more dangerous for all users.

Comment #	Date Received	Name	Type of Comment	What do you like about the proposed concepts?	What improvements are most important to you?	Other comments?
28	Oct. 10	Maria Vinton	YouTube Comment			Hello i live off culebra. my backyard backs up to culebra st. i live in the westover elms subd. my concerned is speeding. cars have been crashing into the fences of not only my subd but others in the area. i dont know how that can be resolved but i would like a resolution. i would like a metal ramp installed to protect our homes from getting run into by speeding vehicles ..as for the stretch bwtn tezel &1604 i would like to see a third lane & extended turn lanes would help the traffic flow easier ..trees & extended mediam are not the solution...waste of taxpayer money .sure it would look beautiful but its not the solution..i have been living in the area for at least 20years i believe i have better input then someone who hasnt . traffic is very heavy in the area during busy times ..due to schools &business in the area ..4lanes in that area is not enough..btwn rogers &1604 is also a busy area & dangerous..we need more easy turn in lanes for businesses it is very dangerous there..always someone that gets inpatient and causes accidents ..therefore traffic builts up ..someone needs to evaluate that area like yesterday please..
29	Oct. 10	Marie	Email Comment			1) go up, taxpayers can't afford government to buy all the property and companies it would have to buy to expand road, so go up with entry /exit lanes at intervals which would give drivers less traffic lights. 2) you want shade and bike lanes, go up double decker. This will give shade and protection to bikers. Leave side walks alone and don't be causing More traffic problems by planting trees. Trees need maintenance, are you going to close Culebra down when the trees need maintenance? Not to mention storm/ice damage to limbs that can cause accidents. 3) law requires bikes, For Their Safety, follow same laws as vehicles. So having them travel the wrong way in traffic is a problem you can't handle. We already have hundreds of bikers who Don't follow the rules of the road, and their accidents are blamed on car drivers not the bad bicyclists! 4) also do you really believe going from three lanes to two, on such a busy street is a good idea. 5) do Not allow for any more commercial or residential buildings, that increase traffic, to be built on Culebra. The idea you can continue to push more traffic onto the roads without tragic consequences is strange for a city that wants to decrease accidents. There is nothing that says every scrap of land Must have a building, for any use, built on it. Also for future road expansion push any buildings further back from street entry. A double decker might, and it might not, cost more but it beats the process you have now. Every road, crossing major highways, will be better served with double deckers , better commercial and residential planning to limit excess traffic on existing roads, and controlled traffic movement that may not be in a straight line. So if you are looking for a better direction then double deckers otherwise once completed your system will be obsolete and you will have to find another way to make traffic work for sa! I can only hope that you will rethink

B. Notices Provided

ELECTED OFFICIAL LETTER

On Aug. 31, 2022, elected officials were mailed a letter inviting them to participate in the Community Open Houses. The letter also included a copy of the bilingual flyer. The mailing list and an example copy of the letter packet are included below.

An emailed version of the letter was sent on Sept. 22, 2022, and an example copy of the email is also included.

Elected Officials Sent Meeting Notice

Representing	First Name	Last Name	Title
San Antonio	Ron	Nirenberg	Mayor
San Antonio	Zack	Lyke	Chief of Staff, Mayor
San Antonio	Mario	Bravo	Councilmember, District 1
San Antonio	Mario	Llano	Chief of Staff, Councilmember, District 1
San Antonio	Teri	Castillo	Councilmember, District 5
San Antonio	Katy	Bravenec	Chief of Staff, Councilmember, District 5
San Antonio	Melissa	Cabello Havrda	Councilmember, District 6
San Antonio	Samantha	Hernandez	Chief of Staff, Councilmember, District 6
San Antonio	Ana	Sandoval	Councilmember, District 7
San Antonio	Andrew	Solano	Chief of Staff, Councilmember, District 7
Bexar County	Nelson	Wolff	Judge
Bexar County	Nicole	Erfurth	Chief of Staff, Judge
Bexar County	Justin	Rodriguez	Commissioner, Precinct 2
Bexar County	Francesca	Caballero	Chief of Staff, Commissioner, Precinct 2
Bexar County	Rebeca	Clay-Flores	Commissioner, Precinct 1
Bexar County	Frankie	Gonzales-Wolfe	Chief of Staff, Commissioner, Precinct 1
Bexar County	Tommy	Calvert	Commissioner, Precinct 4
Bexar County	Amy	Putney	Chief of Staff, Commissioner, Precinct 4
State of Texas	Trey	Martinez Fischer	Texas House of Representatives, District 116
State of Texas	Diego	Bernal	Texas House of Representatives, District 123
State of Texas	Ina	Minjarez	Texas House of Representatives, District 124
State of Texas	Ray	Lopez	Texas House of Representatives, District 125
State of Texas	José	Menéndez	Texas Senate, District 26

CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT

August 31, 2022

Culebra Road Transportation Study Community Open House

As part of the project development process for the above-referenced study, the City of San Antonio will be conducting the second Community Open House series this October to present the proposed concepts and to receive public feedback. The City is studying transportation improvements to Culebra Road from Loop 1604 to I-10.

We invite you or a representative from your office to attend the community open houses by either viewing a pre-recorded presentation online or joining us in person at one of the open houses. For your convenience, a copy of the bilingual flyer is enclosed.

The in person community open houses will be held on:

Saturday, October 1, 2022
9:00 a.m. to 11:00 a.m.
Holy Cross High School – Convocation Center
426 N. San Felipe Street, San Antonio, TX 78228

Tuesday, October 4, 2022
6:00 p.m. to 8:00 p.m.
Alamo City Apostolic Church
9302 Timber Path, San Antonio, TX 78250

A virtual option is being provided for individuals who would like to participate online instead of in person. The virtual option will be held via a pre-recorded presentation that will be available starting on Saturday, October 1, 2022, at 9 a.m. through Wednesday, October 19, 2022. To participate in the virtual community open house, please visit www.culebraroadstudy.org at the date and time indicated above.

Comments may be submitted at the in person meetings, at www.culebraroadstudy.org, or mailed to City of San Antonio Transportation Department c/o Poznecki-Camarillo, 5835 Callaghan Road, Suite 200, San Antonio, Texas 78228. All written comments must be postmarked or received on or before Wednesday, October 19, 2022 to be included in the official record of the community open houses series.

The previous community open houses series held on this project occurred virtually on April 20 and April 22, 2021. The City has heard from nearly 600 active participants. As a result of the valuable feedback received, our designers are studying the possibility of wider and protected sidewalks, dedicated bicycle facilities, improved crosswalk connections, improved transit facilities, shade-

providing trees, and multi-purpose traffic-calming devices. At the October 2022 community open houses, participants can see the proposed concepts and provide feedback.

We value your input and look forward to your participation in this critical study. If you have any questions, please feel free to contact Jacob Floyd, Transportation Planning Manager, at [redacted] or via email at [redacted]

Elizabeth Story

Subject: FW: Open House: Culebra Road Transportation Study (Multi-Modal Corridor Study)
Location: Holy Cross High School - Convovation Center 426 N San Felipe

Start: Sat 10/1/2022 9:00 AM
End: Sat 10/1/2022 11:00 AM
Show Time As: Tentative

Recurrence: (none)

Organizer: Catherine J Hernandez (Transportation)

Elizabeth,

This is the email invite that was sent to elected officials. For record tracking.

-Deb

-----Original Appointment-----
From: Catherine J Hernandez (Transportation) [redacted]
Sent: Thursday, September 22, 2022 2:28 PM
To: Catherine J Hernandez (Transportation); Catherine J Hernandez (Transportation); Tomika Monterville (Transportation); Ana Sandoval (City Council); Mario Llano (City Council); Teri Castillo (City Council); Andrew Solano (City Council); Katy Bravenec (City Council); Samantha Hernandez (City Council); Victor Landa (City Council); Jacob T. Floyd (Transportation); Margarita Hernandez (Transportation); Joe Conger (Transportation); Sherrita Jones (Transportation); Teena Bailey (Transportation); Debora Gonzalez (Transportation); Melissa Cabello Havrda (City Council)
Cc: Melissa Ramirez (DSD); Adrian De Anda (City Council); Isaac Fellows (City Council)
Subject: Open House: Culebra Road Transportation Study (Multi-Modal Corridor Study)
When: Saturday, October 1, 2022 9:00 AM-11:00 AM (UTC-06:00) Central Time (US & Canada).
Where: Holy Cross High School - Convovation Center 426 N San Felipe

Good afternoon! Sending you this so it is on your calendars if you can drop by!

We invite you to attend the second round of Community Open House series for the Culebra Road Transportation Study from Loop 1604 to I-10. Whether you drive, walk, bike, or ride transit on Culebra Road, the City of San Antonio wants to hear from you!

Virtual Option
Participate online by visiting www.culebrasroadstudy.org from Saturday, October 1, 2022, through Wednesday, October 19, 2022. Identical information will be available at both in person options and the online option.

The community open houses will be conducted in English and Spanish. Please contact us if you need special communication or accommodation arrangements. For more information, please view the attached flyer, visit www.culebraroadstudy.org or call Jacob Floyd at [redacted].

Thank you,

The Culebra Road Corridor Study Team

Debora Gonzalez
Senior Transportation Planner
Transportation Department
114 W. Commerce St. 9th Floor | San Antonio, TX 78205
O: 210.207.8085
www.sanantonio.gov/transportation
www.visionzerosa.com

CITY OF SAN ANTONIO TRANSPORTATION DEPARTMENT

2

Elizabeth Story

Subject: FW: Open House: Culebra Road Transportation Study (Multi-Modal Corridor Study)
Location: Alamo City Apostolic Church 9302 Timber Path

Start: Tue 10/4/2022 6:00 PM
End: Tue 10/4/2022 8:00 PM
Show Time As: Tentative

Recurrence: (none)

Organizer: Catherine J Hernandez (Transportation)

Elizabeth,

This is the email invite that was sent to elected officials. For record tracking.

-Deb

-----Original Appointment-----
From: Catherine J Hernandez (Transportation) [redacted]
Sent: Thursday, September 22, 2022 2:31 PM
To: Catherine J Hernandez (Transportation); Catherine J Hernandez (Transportation); Tomika Monterville (Transportation); Ana Sandoval (City Council); Mario Llano (City Council); Teri Castillo (City Council); Andrew Solano (City Council); Katy Bravenec (City Council); Samantha Hernandez (City Council); Victor Landa (City Council); Jacob T. Floyd (Transportation); Margarita Hernandez (Transportation); Joe Conger (Transportation); Sherrita Jones (Transportation); Teena Bailey (Transportation); Debora Gonzalez (Transportation); Melissa Cabello Havrda (City Council)
Subject: Open House: Culebra Road Transportation Study (Multi-Modal Corridor Study)
When: Tuesday, October 4, 2022 6:00 PM-8:00 PM (UTC-06:00) Central Time (US & Canada).
Where: Alamo City Apostolic Church 9302 Timber Path

Good afternoon! Sending you this so it is on your calendars if you can drop by!

We invite you to attend the second round of Community Open House series for the Culebra Road Transportation Study from Loop 1604 to I-10. Whether you drive, walk, bike, or ride transit on Culebra Road, the City of San Antonio wants to hear from you!

Virtual Option
Participate online by visiting www.culebrasroadstudy.org from Saturday, October 1, 2022, through Wednesday, October 19, 2022. Identical information will be available at both in person options and the online option.

The community open houses will be conducted in English and Spanish. Please contact us if you need special communication or accommodation arrangements. For more information, please view the attached flyer, visit www.culebraroadstudy.org or call Jacob Floyd at [redacted].

Thank you,

The Culebra Road Corridor Study Team

1

Debora Gonzalez
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CITY OF SAN ANTONIO
TRANSPORTATION
DEPARTMENT

2

POSTCARD

The week of Sept. 12, 2022, property owners and other interested parties were mailed a bilingual community open houses postcard which included public meeting details. Property owner information was obtained from Bexar County. There was a total of 3890 individuals who were mailed the notice. The mailing list and an example copy of the notice packet are included below.

Representing
0781 Culebra Land Investors Ltd
10673 Culebra Road LLC
1100 Callaghan Road LLC
0781 Culebra Land Investors Ltd
10673 Culebra Road LLC
1100 Callaghan Road LLC
131 Admiral Dr Land Trust
1506 Laurel LLC
1507 Navidad Land Trust
1515 N Trinity Land Trust
1803 Culebra Inc
2003 Epperson Revocable Living Trust
2040 W Laurel Land Trust II
2610 Los Coyotes Diagonal Lp
2647 Culebra LLC
3200 Timber View Drive Co LLC
329 Henry Street Trust
3M1B Investments
443 Alicia Avenue Land Trust
4802 Bluff Street LLC
5530 Tezel LLC
738 N General Mcmullen Land Tr
7770 Pipers LLC
7895 Culebra Re LLC
7940 Pipers Creek LLC
7-Eleven Inc
8839 Culebra LLC
9263 Culebra Road LLC
A Estrada Homes LLC
A R C Stx Holdings LLC
A&C Esquivias Properties LLC
A&R Tejas Capital LLC
A-1 Auto Broker Inc
AAA Realty of Texas Inc
ABCLA Properties LLC
Abel M Rivera L/E
Abkot Properties LLC
Abran Peres L/E
ACHAL Properties LLC
Adil Real Estate Investments LLC
Adolfo and Bertha Gutierrez Revocable Trust
Adventures Investments Ltd
Ahani Enterprises LLC
Akaashaman LLC
Al Jazira Property Lp
Alamo Managed Services LLC
Alco Rent All
Alejandro Flores Jr Etal
Alessio Leasing Inc
Alfaro Family Trust
Alfredo Garza Business LLC
Alice S Trinidad L/E
Almendarez/Gomez Properties LLC
Alvera Capital Investments LLC
A-Max Insurance Services
Ambrosia Properties LLC
American Homes 4 Rent Properties Eight LLC
Ameritex Homes LLC
AMH 2014-2 Borrower LLC
AMH 2015-2 Borrower Lp American Homes 4 Rent
Angelicas Solutions LLC
Angelina C Mares L/E
Anna Maria Cendejas Etal
Antonio A Garza Etal
Apache Self Storage LLC
Applepine Flp
ARC DBPCFBR001 LLC
ARC FESANTX001
Archbishop of San Antonio

Archdiocese of San Antonio Inc Fbo Catholic Charities
Archland Property II Lp
Archon Growth & Income-Residential Lp
Arizpe Properties Ltd
Armando & Patsy Gonzalez Rev Tr
Artemio Ortega Etal
Artistic Remodeling LLC
Arturo E Macias Etal
Asa Fann LLC
Ashita LLC
Ashwa Enterprises LLC
Astha Pc LLC
Atc Sequoia LLC
Atw Investments Inc
Austin Chase Homes Lp
Autozone Inc
Avg Fitness Txok LLC
AZ Alamo Ranch Development Lp
Baf Assets LLC
Bank of America
Bar K Design LLC
Bardoi Twins Ventures LLC
Basel Investments Ltd
Bazan Family Holdings Inc
Bc Flip LLC
Belac Inc
Belinda O Hernandez Etal
Ben Reyna Contracting Inc
Benitez Raul Enterprise Inc
Bernardo Valdez Etal
Betos Collision Inc
Betty Jeffery Trust
Bexar County Mental Health & Mental Retardation Center
Bexar Rental Properties Lp
BGPT Investments Corporation
Big Daddy Realty LLC
Big Diamond Inc
BLRE Tx Number One LLC
Blue Barn Properties LLC - Laguna Rio Series
Bluefish Properties LLC
Brambila Management LLC
Brazos De Santos Partners Ltd

BRE RC Alamo Ranch Tx Lp
BRE/LQ Tx Properties LP
Breakie Holdings LLC
Broadway National Bank
Brody Allan J Trust Agreement Etal
Brundage Mini Storages Ltd
Bubble Bath Properties Culebra LLC
Buffalo-Culebra Business Tr
Can Holdings LLC
Capital Plus Financial LLC
Carmelite Fathers of San Antonio Inc
Carmen E Hart Revocable L/Tr
Casa Del Rey Assembly of God Inc
Castellanos Construction LLC
Castellanos Constructions LLC
Cemex Construction Materials South LLC
Centro Cristiano
Cerrillos Inc
CF.SATX LLC
CG & DG Properties LLC
Chapa Family Trust
Chase J P Morgan Corp
CHC Doral/Sutton LLC
Choe Chung S LLC
Citi Casa
City of San Antonio
City of San Antonio
City of San Antonio &
Citywide Metal Recycling
CNL Funding 2000 A Lp
Cole Fd Portfolio I LLC
Congregacion Vida Nueva
Copemex Partners Ltd
Coppertree Condominiums Owner Association
Costa Brava Otm Harmony Lp
Cpi/Amherst Sfr Program Owner LLC
Creh Series LLC- Series 3/9
Cristo Centro Del Mundo
CRJM Investments LLC-Laguna Rio Series
Crown Haven Homeowners Association Inc
Crown Meadows SA Partnership Ltd
Cuallix Homes Inc

Culebra Affordable Housing Lp
Culebra Center LLC
Culebra Land L P
Culebra North LLC
Culebra Oaks Owners Association, Inc
Culebra Phillips Mart Inc
Culebra Plaza LLC
Culebra Property LLC
Culebra Road Properties Ltd
Culebra Square Owners Association Inc
Culebra Vico LLC
Cuspid Realty LLC
Custody of Our Lady of
CY Properties Texas LLC
D & O Developers LLC
Dakota South Properties Series LLC
Darya Enterprises LLC
Debra Asgari L/E
Deer Creek Apartments J V
Delacerda Investments Inc
Delia E Lopez L/E
Delicious Inc
Dewo LLC
Diana R Salinas Trust
Dis Investments LLC
Discalced Carmelite Fathers
Discalced Carmelite Fathers
Discalced Carmelite Fathers-
Discalced Carmelite Nuns
DN & K Properties Series LLC
Dome Properties LLC
Donald M Greer 1989 Rev Trust
Do-Re-Mi Holdings LLC
Doris K Garrett Rev L/Tr
Dsam Partners Limited Retirement Plan Roth 401K Plan
Duncan Family Trust
Durissio LLC
E M Richards Partnership Lp
EA Partners Ltd
Easterling Culebra Apartments Ltd
Eastgroup Properties Lp
Eat 2006-022 LLC

Edgewood ISD
Elbaci LLC
Elca 8227 LLC
Emmanuel Baptist Church of San Antonio Inc
Esc LLC
Esperanza Peace & Justice Center
Esquivias Properties LLC
Essin LLC
Estate of Adam Reyes
Estate of Agapito C Zambrano
Estate of Alfred Paniagua
Estate of Alfred Pete Santos
Estate of Alfred S Pierson
Estate of Alicia G Garcia
Estate of Aucencio De Leon
Estate of Benjamin Green Sr
Estate of Clark Herman
Estate of Dan Clark
Estate of Domingo Cortez
Estate of Dora Ramirez
Estate of Dora Rodriguez
Estate of Elena Yanez
Estate of Elia Barrera
Estate of Elida Cantu
Estate of Elizabeth M Robalin
Estate of Ernest T & Isabel Garay
Estate of Fernando Inoyue
Estate of Francisco Sonora Jr
Estate of Frank Kypuros
Estate of Frank Thomas Jr
Estate of Hermi Salas
Estate of Hilario Gutierrez
Estate of Ivy Sue Grissett
Estate of John A Granado
Estate of Josie Fernandez
Estate of Josie R Calvillo
Estate of Juan Reynaldo Garza
Estate of Lillian Spears
Estate of Lily Herrera
Estate of Lucia Rios
Estate of Manuel & Mary C Guajardo
Estate of Margaret M Villarreal

Estate of Margarita Garza Murillo
Estate of Maria Pena
Estate of Maria R Munoz
Estate of Mary Rita Trevino
Estate of Mittie Owens
Estate of Neomi R Insuriaga
Estate of Raul Aguilar
Estate of Rodolfo N Jalomo
Estate of Roger Lee Stack Etal
Estate of Ronald Veilleux
Estate of Severa M Zuniga
Estate of Wilson Freeman I
Estrada Salazar Santos L/E
Eugene C Fuentes Sr L/E
Eva Helen Fetters L/E
E-Z Wash Inc
Fabian Amador & Maria Hernandez C/S
Fade 2 Black Management LLC
Federal Home Loan Mortgage Corporation
FGIII Enterprise Inc
Fibrcom Inc
Firstmark Credit Union
FJP Realty Lp
Flamingo-Jones Ltd
FLCR LLC
Fountain of Life Mennonite
Freds Fish Fry Inc
Free Grace Baptist Church
Gabriel Alfonso Valadez L/E
Gallegini Properties LLC
Garcia Properties Inc
Garcia's Home Investments LLC
Gardenia Home Investments LLC
Gayatri Maa Properties LLC
Gen2 Texas Properties LLC
Getty Leasing Inc
GFR-Hercules Properties LLC
Global Evangelism Inc
Global New Millennium Prtnrs Ltd
Global Signal Acquisition LLC
Gloria E Padilla Etal
Gloria Ehrlich Etal

Golden Arch Ltd Ptshp
Goodwill Industries
Grant Holdings LLC & Granjoma Inc
Great Northwest Community
Grissom Trails Owners Assoc Inc
GSN LLC
Guadalupe Sanchez Gomez L/E
Guamnitz Inc
Guerra Living Trust
Guerrero Eloisa F Rl/Tr
Gulf Latin Amer Assembly God
H E B Butt Grocery Co
Halle Properties LLC
Hank Sully LLC
Hard Investors LLC
Harold & Heather Green Living Trust
Hartman Gordon Family Foundation
Heb Grocery Company Lp
Hendershot Levy LLC
Herrero Properties LLC
Hey Now Properties LLC
Hilario Martinez Et Al C/S
Hispanic Christian Communications Inc
Hollywood Adventures Ltd
Holy Rosary Church
Hosanna Assembly of God San Antonio
Hotchkiss Interests Inc
Housing Auth City of S A
Housing Authority of Bexar County
HPA Texas Sub 2016-2 LLC
HPA Texas Sub 2017-1 MI LLC
Huebner Boneem Lp
Hutton San Antonio (Zarzamora) St LLC
Hutton San Antonio Culebra St LLC
Hvh Homes LLC
Idea Public Schools
Iglesia Centro Cristiano
Iglesia Ni Cristo Church of Christ
Ikonkar Enterprises Lp
Imelda & Mario A Torres Guzman Living Trust
Intown Suites Culebra Road
Inverterra Holdings LLC

Ipac Properties LLC
Ivest Properties LLC
J & B Bar
J&C Quillian LLC
James A Dick Co
Jayden SRB LLC
Jayne Raymond Properties LLC
JBJ Car Wash Inc
JCLG LLC
JD Belmarez Properties LLC
Jessie & Sylvia Osoria C/S
Jesus G Chavez Etal
Jesusita Rodriguez L/E
Jimmie M Leal Etal
Jimmie Olivarez Et Al
Jma Eagles Nest LLC
Jo Ann Shaw Lewis L/E
Joe Cardenas Etal
Johnny A & Sandra P Castillo Trust
Jose Sierra & Josefa Perez C/S
Joy Star Holdings LLC
Jpmorgan Chase Bank NA
Juarez Living Trust
Kap Capital Investment LLC
Kara West Enterprises Inc
KD Homes 1 LLC
Kimia Realty Inc
Kirat Enterprises LLC
KJ Electric Co Inc
KK&LK Property LLC
Klaymeier Doug Revocable Trust
Klepetko Ronald Francis & Rayla-Jeanne Living Trust
Kosturakis Holdings LLC
Kuiraba Investments LLC
L John & Judith Milam Liv Trust
La Terraza LLC
Labor On Demand Inc
Lambeth Building Company
Lannalex Ventures LLC
Lar Del Ltd
Laredo Gonzalez Auto Parts Ltd
Laundromath H & S LLC

Laurel Street Church of Christ
Legacy Creekside Ltd
Legacy Home Investments LLC
Lehigh Gas Wholesale Services Inc
Len Realty Group LLC
LIDL US Operations LLC
Life Storage Lp
Lionel A Saldana Etal
Little Culebra LLC
LJCRE Ventures LLC
LJ & M Investments LLC
Lobo Estates LLC
Lomah Offices LLC
Lone Star Monarch LLC
Lone Star Petroleum Inc
Lopez Family Living Rev/Tr
Lopez Ventures Family Ltd
Lucille Lee L/E
Luz Apostolica Assembly of
MAAHA9 LLC
Mag Real Estate Services LLC
Mansour Mansour
Margaret S Wong Trust
Maria Dela0Ruz I L/E
Maria H Ortiz L/E
Maria S Jimenez L/E
Maribel V Valero Et Al
Markham Rayvin Jeannette Revocable Trust 2000
Mary C Lorea L/E
Mary J Abdo #1
Mauricio Rivera L/E
Mayo & Sons Construction Co
Mccombs Family Ltd
Mcdonalds Real Estate Co
Mcdonalds Real Estate Company
Mcdonalds Real Estate Company
MCREH Series LLC-Series 5
Mendiola Garza Family Trust
Mericia Flores C/S
Meyer Epstein Estate
Meyer Miller Developers LLC
Micaela Galindo L/E

Michael Litofsky Etal
Mireles Inc
Miriama LLC
Mirta E Valle Etal
MMM Texas Land Company LLC
Monticello Manor Ltd / Ms 235
Montoya Auto Supply
Moonlight Land Trust
Moreno Family 2011 Lllp
Morsa Homes LLC
Multi Electric Co
Nameless Enterprises LLC
Nams C Inc
Nance & Associates
National Retail Properties Lp
Naysin LLC
Neal-Geoghegan Living Trust
Net Lease Funding 2005 Lp
New Millenia Group
Newell Properties I LLC
Nieves G Canizalez L/E
NIRAAJ LLC
Noorani Investments Inc
North America Car Co
North Park Condominiums LLC
Northside ISD
NSA Property Holdings LLC
Nunez Family Living Trust
NW Texas Realty Lp
O Tara
Obsvc San An 2 LLC
Odilon & Maria Delarosa C/S
OIS Investments Inc
Olson Dale H LLC
O'Reilly Auto Enterprises LLC
Oreilly-Wooten 2000 LLC
Orn Ltd
Ortiz Mortuary Inc
Ortiz Mortuary Inc
Packard Enterprise Inc
Pal Foundation
Panjwani Energy Properties LLC

Paredez Investments Ltd
PC5 Properties LLC
PDRE II III IV LLC
Pilgrim Center of Hope
Pipers SA Income Partners Lp
PLSP Ltd
PNG-ELP LLC
Pompa Capital LLC
Potranco Hospitality LLC
Progeny VII Partners Ltd
Properties Pluss LLC - Series Z
Propiedades Management LLC
Qirem & Milbis LLC
Qt South LLC
Queen of Texas LLC
Quiktrip Corporation
R & D Brothers LLC
R & R Universal Llp
R & S Dairy Queens Inc
R C P Holdings
R Koby Construction LLC
Raid 9355 Culebra Road Lp
Randolph Brooks Federal Credit Union
Ranger SA-Tx Lp
Raul S Cantu Trust
Reaglyn Investments LLC
Realty Income Tx Prop L P
Redfinnow Borrower LLC
Redwood Estates 2 LLC
Rendon Construction Co Inc
Rentia Corporation
Republic Culebra Market LLC
Republic Culebra Market LLC
Republic Culebra Mkt II LLC
Reserve At Culebra Creek Community Assocaition Inc
Reynaldo Perez Etal
Reynolds Dean Trust
Reysol Properties LLC
Richblo2D LLC 3 Kentucky Glen Series
Riparian Research Coporation
RJF - Joe Newton LLC
Rkbe Properties LLC

Robert Serna C/S
Roble Hill LLC
Rodcel Group Limited Partnership
Rogelio Castillo Puente Jr C/S
Rogers Tanforan Ventures LLC
Rolando Hernandez Etal
Romaniacs Land Trust
Ronald F Reina Etal
Ronstin Properties LLC
Rosenstein Family Ltd Prtnrshp
Rossmore Enterprises
RSM Holdings Inc
RT Industries
Rudolfo Gonzales Et Al
Ruelas Property LLC
Ruth M Reed Etal
S J B C Corporation Inc
S N B Ltd Ptshp
SA Creekside Assn Inc
SA Investments LLC
SA Properties & More LLC
Safaiz International Inc
Saikirpa LLC
Salazar Family Prop Mgmnt Tr
Salome Garcia Sanchez L/E
San Antonio Alternative Housing Corp
San Antonio Culebra LLC
San Antonio Hotels LLC
San Antonio Housing Authority
San Antonio Housing Facility Corporation
San Antonio ISD
San Antonio River Authority
San Antonio Truss Company Inc
Sandoval Real Estate LLC
Sandra P Castillo Etal
Santikos Culebra Warehouse LLC
SATX Business Trust
SATX Holdings LLC Series I
SBA 2012 TC Assets LLC
Scrubadoo Culebra LLC
Sdharod Enterprises Inc
Security Service FCU

Sendero I Public Facility
Seven J Properties LLC
Shantilal SSK LLC
Sharique Properties LLC
Sharon Peters Real Estate Inc
Shivam Real Estate LLC
Shree Mataji Corporation
Silver Moon Properties LLC
Singh Radhika Management Trust
Skipper Beverage Company Inc
Smartchoice Builders LLC
SMT Land Trust
Socorro Gomez L/E
Sorrento Plaza LLC
Southwest Research
Southwest Research Institute
Southwest Winners Foundation
Sovran Acquisition Ltd Prtnrshp
Speedy Stop Food Stores LLC
Spencer Anthony Cash Trust
Spirit Master Funding X LLC
St Marys University of S A
Stanwich Mortgage Loan Trust A
State of Texas
State of Texas Dept of Transportation
State of Texas Transportation Commissions
Store Capital Acquisitions LLC
Sunrise America Homes LLC
Super Oz Holdings LLC
T C L Construction Enterprises Inc
TAH-MS-2 Borrower LLC
Taylor Street Venture Lp
Teardrop Partners Lp
Telecom Lease Advisors LLC
Templo Bautista Mexicano
Teresa C Rios L/E
Term Legacy Real Estate LLC
Terry Vincent Torres Etal
Texas Auto Inspection Inc
Texas Project 28 LLC
Tezel Rd Holding LLC
TMA Realty Services Inc

Tomasa Flores G L/E
Toscano Gene Inc
TRF Irrevocable Trust
Trinidad M Parades L/E
True Flavors LLC
Uamd LLC
Ufund Realty LLC
Uno Capital Commercial Investments LLC
Urban Bradley LLC
USA Ram Ltd
Varela Management Inc
Velsua Real Estate LLC
Verai Krupa LLC
Victory Fellowship of Texas
Victory Outreach of Texas
Village Parkway Baptist Chur
Vill's Rel Estate Investments LLC
Virginia P Lopez Etal
Waf Texas Management Group LLC
Waf Texas Managment Group LLC
Walberg-Cruz Living Trust
Wal-Mart Real Estate Bus Tr
Wash Corral Incorporated
WC Culebra Crossing Sa Lp
Wells Fargo Bank N A
Wendy's of San Antonio Inc
West End Baptist Church
Westdale Hollows Tx L P
Westmount At Three Fountains Lp & LRE DC Property Owner LLC
Westover Elms HOA Inc
Westover Hills Assembly of God Holdings
Westover Hills Medical And Professional Building LLC
Westover Medical Plaza I LLC
Westover Valley HOA Inc
Wet Cay LLC
Weynand Enterprises Ltd
Woodlawn Lake RE LLC
WRO Corp
YB Construction LLC
Yolanda D Garza
Yolanda Saldana Aldana L/E
YS-CW Corporation

YS-K Corporation
Zen Lautus Inc
Alamo Area Metropolitan Planning Organization
Alamo Area Metropolitan Planning Organization
Alamo RMA/Bexar County
Alamo RMA/Bexar County
San Antonio Mobility Coalition
San Antonio Mobility Coalition
Texas Department of Transportation
VIA Metropolitan Transit
7-Eleven
AutoZone Auto Parts
Bank of America
Barrio Barista
Bee Clean Car Wash #4
Bill Miller Bar-B-Q
Birrieria y Taqueria Ay Arandas
Cali Motors Official Vehicle Inspection
Caliente Harley Davidson
Cash America Pawn
Chase Bank
Chevron
Church's Chicken
CPS Energy
Culebra Meat Market 17
Culebra Park
CVS
CVS
Dairy Queen
Delicious Tamales
Discount Tire
Dollar General
Dollar General
Doral Club Apartments
Dunkin'
El Canelo #6 Mexican Grill
El Rodeo Seafood and Taqueria
EZ Pawn
Family Dollar
Gardendale
Gold's Gym San Antonio Culebra
Great Northwest Library

HB Zachry Middle School
H-E-B
H-E-B
Hernandez Tire & Muffler Shop
IHOP
IPAC Preowned Outlet
Islas Automotive Tires
Jack in the Box
Jack in the Box
Javies Wheel - Repair
Jefferson Dental & Orthodontics
KFC
La Michoacana Meat Market
La Popular Bakery
La Popular Bakery
Labor on Demand, Inc.
Little Caesars Pizza
Mariscos de Puerto
McDonald's
Memorial Library
Mi Guadalajara Mexican Restaurant
Monticello Manor Apartment Homes
Natwel Supply
Pizza Hut
Popeyes Louisiana Kitchen
QuikTrip
RBFCU
Restaurante el D.F.
Roadrunner Food Mart
Sahara Motel
Shipley Do-Nuts
Silver Oaks Apartments
Southwest Research Institute
Supernova Smoke Shop
Taco Cabana
Taqueria El Rodeo de Jalisco
Taqueria Guadalajara
The Corner Craft Beer
Top Notch Wheels & More
Tropic Express
U-Haul Neighborhood Dealer
Umberto's Italian Grill

Valero
Valero
Villas at Costa Brava
Walgreens
Walmart Supercenter
Wendy's
Wok Inn Asian Café
Zip's Car Wash
San Antonio Fire Department
San Antonio Police Department
SAPD West Police Substation
Alamo City Apostolic Church
Basilica of the National Shrine of the Little Flower
Holy Rosary Catholic Church
Kingdom Hall of Jehovah's Witnesses
The Church of Jesus Christ of Latter Day Saints Bishop's Storehouse
West End Hope in Action
Northwest Crossing
Canterbury Farms Community Association
Crown Meadows
Great Northwest
Hidden Meadow
Loma Park
Loma Vista
Memorial Heights
Mountain View
Pipers Meadow
Pospect Hill
San Antonio Creekside
Thunderbird Hills
Timber Ridge
University Park
Woodglen
Woodlawn Lake
Culebra Park
Edgewood ISD
Edgewood ISD Transportation Director
Happy Guy Chinese Cuisine
Huppertz Elementary School
IDEA Hidden Meadow
Lloyd M. Knowlton Elementary School
Martin Elementary

Memorial High School
Mexican American Catholic College
Nelson Early Childhood Education Center
NISD Facilites and Operations
NISD Police Chief
NISD Property Analyst

NISD Transportation Director
Northside Activity Center
St. Mary's University
St. Mary's University School of Law
SAISD

Residents	
First Name	**Last Name**
Solomon Abdo &	A L Hernden
Damian R & Shelly R	Abbott
Quader Imad	Abdel
Solomon	Abdo
Carlos Javier	Abelar
Jessica	Abrego
Rina	Acevedo
Catherine	Achin
Belinda G	Acosta
Elia	Acosta
Hector M & Linda	Acosta
Jesus	Acosta
Martha L	Acosta
Victor	Acosta
Sandra P	Adame
Luis Moreno &	Adriana Vasquez
Rafael E & Linda R	Agredano
Alice	Aguallo
Elisa Saldivar	Aguayo
Lucia	Aguero
Alfonso & Blanca	Aguilar
Alfonso B & Marie	Aguilar
Bertha	Aguilar
Felix & Francisca	Aguilar
Francine M	Aguilar
Isabel Sendejo	Aguilar
Jose A & Lorena D	Aguilar
Juan L	Aguilar
Kay M & Tony	Aguilar
Paula	Aguilar
Pedro	Aguilar
Ricardo	Aguilar
Sofia L	Aguilar
Jose R & Juanita H	Aguilera
Juan	Aguillon
Arturo	Aguinaga
Leticia	Aguirre

Rodolfo & Vicenta	Aguirre
Socorro	Aguirre
Rabeya	Akhtar
Sadoon Basim	Al
Maria Isabel & Luis E	Alamillo
Alejandro	Alanis
Alejandro & Leticia	Alanis
Hector Hugo	Alanis
Jason Anthony	Alanis
David	Alaniz
Juan J & Mariana	Alaniz
Roland	Alaniz
Ramiro G	Alarcon
Yesenia Flores	Alarcon
Delia Rosa	Alcocer
Antonio S	Alcocer, Jr
Carlos	Aldaco, Jr
David G Jr & Maribel	Aldana
Alfredo S	Alderete
Nancy & Daniel	Alderete
Jose Delagarza	Alejandro
Vicky	Alejos
Benjamin & Diana H	Aleman
Irvin	Aleman
Irving G	Aleman
Jose	Aleman
Rebecca H	Aleman
Leroy Martinez &	Alexandra G Soto
Victor R & Maria R	Alfaro
Marissa Perez Hernandez &	Alfredo Villeda Arteaga
Josefina	Alfrido
Maricel	Aligno
Adam D. Saucedo &	Alison N. Lujan
John J & Carolyn M	Allen
Stacy W	Allen
Thomas G	Allison
Larry Scott Hermes &	Allison Sheppard
Hector Jesus	Almaguer
Jose R	Almanzar

Yolanda P & Jose Angel	Almaraz
Michael	Almendarez
Javier & Gloria	Alonso
Albino A	Alonzo
Esteban & Silberia	Alonzo
Leonard & Antonia	Alonzo
Edward	Alonzo, Jr
Rosa	Altamirano
Diana L	Alvarado
Fidel G	Alvarado
Francisco & Alma	Alvarado
Ida	Alvarado
Irene	Alvarado
Joseph	Alvarado
Juan F	Alvarado
Luis E & Arcilia	Alvarado
Marisol	Alvarado
Michelle	Alvarado
Ralph A	Alvarado, Jr
Virgilio	Alvarado, Jr
Benito	Alvarez
Benjamin & Maria	Alvarez
Daniel & Guadalupe	Alvarez
David & Felipa	Alvarez
Eleazar P & Yolanda A	Alvarez
Francisco & Wf	Alvarez
Gladys E	Alvarez
Jaime R	Alvarez
Lisa A	Alvarez
Maria	Alvarez
Maria J	Alvarez
Maria P	Alvarez
rancisco & Oralia	Alvarez
Robert G	Alvarez
Victor	Alvarez
Yolanda A	Alvarez
Bentio	Alvarez, Jr
Juan P & Valeria	Alvarez-Canchola
Paul	Alvear
Sergio E Venegas &	Alvina M Rogers
Rogelio S & Orvilia	Amador
Aaron M Coronado &	Amanda A Madison
Vincent A Canales &	Amanda Salazar-Canales
Jose A & Leticia C	Amaya
Erik	Amezquita
Tom & Pejman	Amrollah
Jacqueline & Stanley	Anderson
Martin V	Andrade

Nestor J Ramos Calderon &	Andrea H Herrera Valdez
Peirre R Elliott &	Andreen Elliott Peta-Gaye
Jerry Kagan &	Angela Maria Garcia
Leonal Lamas, Jr &	Angela Milagros Lamas
Carmen	Anguiano
Juan A & Janie	Anguiano
Noemi R.	Anguiano
Alicia Puente &	Antonio Maldonado
Beatrice R	Antu
Richard	Anyang
Daniel G	Aparicio
Ana E	Aponte
Shonda M	Applewhite
Carlos F Flores &	Araceli De Bustos
Agustin	Aranda
Gabino E	Araujo
Gilbert H & Dolores	Arevalo
Jose A & Guadalupe	Arevalo
Jesse Angel	Arevalos
Thomas S.	Arevalos, Jr.
Vanessa	Arguelles
Vannesa & Miguel Angel	Arguelles
Marco A & Mary Ann	Arias
Sandra D	Arias
Griselda	Arizmendi
Robert A	Arizola
Maria Magdalena	Arizpe
Ramiro Garza, Delores P Rangel &	Arnold L Garza
David C & Mary A	Arredondo
Fidel Garcia	Arredondo
Ignacio	Arredondo
Jesse	Arredondo, Jr
Melissa	Arreola
Salvador R	Arreola
Kim	Arroyo
Paula	Arroyo
Ruben & Carmen	Arroyos
Jessica M	Asebedo
Danial P	Asgari
Debra	Asgari
John Paul Queener, Jr &	Ashley Nicole Benavidez
Andres	Astorga
Karena	Auzenne
Juanita R	Avalos
Miguel	Avalos
Edward R & Linda	Avila
Maria Canderlaria	Avila

Victor M & Leticia C	Avila
Alfonso A	Avina
Jose Antonio	Avitia
Antonio & Martha	Ayala
Daniel & Maria R	Ayala
Mary De Los Angeles	Ayala
Oruc	Ayhan
Mary Margaret & Mike S	Baez
Debra D	Bailey
Kodi Duray & Sabrina	Bailey
Stacey Hall	Bain
Refugio S & German Dejesus	Balcarcel
Lydia A & Jose M & Aida	Balcazar
John R & Petra	Balderas
Jose D & Bertha P	Balderas
Mercedez D	Balderas
Clenton	Ballard, III
German & Gloria	Ballesteros
Gloria	Ballesteros
Maria H.	Baltazar
Rafaela	Banda
Robert	Banda
Ruben & Gloria D	Banda
John Jesse	Barajas
Roseann	Barajas
Gilbert	Barba
Encarnacion	Barbosa
Henry G & Gloria	Barbosa
Martin & Ma Elena	Barbosa
Esteban	Barboza
Macario R	Barcena
Randy & Margarita	Barela
Mark A	Barker
Charissa	Barnes
Antonio F & Isabel	Barrera
Balde C & Lupe G	Barrera
Gloria	Barrera
Willie C & Concepcion B	Barrera
Gustavo G	Barreto
Heriberto V	Barrientes
Graciela	Barrientos
Guadalupe	Barrientos
Edwin R & Anamaria	Barrios
Hector O & Rosario A	Barrios
Jorge H	Barrios
Angel F & Maria C	Barron
Felipe M	Barron
Mario Jose & Tina A	Barron

Jose Luia	Basulto
Robert E & Michele K	Bates
Kevin D Lima	Batres
Michelle	Bautista
Ronald A & Susie S	Bayer
Joseph J	Bayona
Vikhyat	Bebarta
Matthew T & Jennifer L	Becker
Kim B, Ginger A & Christopher B	Beckstead
Michael	Bedient
Virginia	Beierly
Robert Arredondo &	Belkis Cuca-Arredondo
Rachel G	Benavides
Rosa P	Benitez
Geraldine L	Benke
Corey S	Benshoof
Duane L & Rebekah R	Benson
Michael & Andrea R	Beraducci
Timothy E & Rhea A	Bergauer
Jerome & Patricia	Berlanga
Joel	Berlanga
Cristobal J & Connie A	Bermea
Joe U & Sandra	Bermea
Andrew & Raven T	Bernal
Carlos & Anita S	Bernal
Claudia	Bernal
Edgardo I	Bernal
Francisco B	Bernal
Julie Ann	Bernal
Zoe X Luo &	Bernard J McDonald
Guadalupe R	Berrones
Jesus R & Norma C	Berrones
Johnroy R	Berrones
Jose Jesus & Sylvia Ann	Berrones
Duane	Berry
Kristine A	Besas
Arnoldo & Mayra	Betancourt
Betcourt Servando & Terry	Betancourt
Emmanuel B Castellanos &	Bethany D Burbank
Brandy Y & Marcus D	Beverly
Ansuya Gopal	Bhagat
Albert F & Josie	Bishop
Anthony E & Brenda J	Bishop
Luther Lorain	Bishop
Vernie M	Blackwell
Eric	Blaine
Jose Luis O. Santillan &	Blanca A. S. Pineda

Pascual Zavala Davila &	Blanca Margarita
Hector R & Graciela	Blanco
James & Carrie	Blee
Robert	Bocanegra
Roberto & Juana Lorena	Bocanegra
Isable	Bohorquez
Philip	Bollman
Sylvia R	Bonales
Juan J & Silvia Y	Bonilla
Juan J & Silvia Y	Bonilla
Evelyn J	Boone
Felisitas	Borjon
Juan & Dalia	Borjon
Jose A & Raquel R	Botello
Marcela	Boughton-Maldonado
Caitlan Ann, Michael D, & Larry T	Bowlin
Ian C & Nancy Y	Boysen
Brook A	Brackett
Alicia	Brantton
Jorge M. & Maria Aracely	Bravo
Lori	Brazzill
Sinai Flores Alonso &	Brenda Lucia Camarillo
Chanel Y	Brewer
Rosaura V	Briones
Fernando T & Cynthia O	Briseno
Jose	Briseno
Maria T	Brito
Joe R Bustos Jr &	Brittany Henry
Alex M & Nohelli E	Brockman
Joseph	Brooks
Stephen John & Celina Teresa	Brotherman
Evelyn	Brothers
Alto	Brown
Brian	Brown
Margaret K	Brown
Robert E & Lenora G	Brown
Alan D & Raquel	Broyles
Antoinette	Bruner
Diana E	Bryan
Kermit Edwards	Bryant
Fredda M	Bryson
Rick A	Buchanan
Rodolfo & Linda A	Bueno
William D & Nadine M	Buhrman
Maria I	Bundick
Gabrielle A	Burchard
Guillermo	Burciaga

Eddie Lee	Burnett
Lillie Diane	Burnim
Bur Jesse J	Burns
Melissa White	Buschbaum
Roger R	Bustamante
Yolanda	Bustillos
Dolores	Bustos
Elvira	Bustos
Ruben	Bustos
David Cervantes	Bustos, Jr
Violet Sommers	Butler
Cluster R	Byars
Deborah	Byrd
Alicia	Cabrera
Enes	Cabric
Dorothy Maxine	Cadena
Mauricio & Soledad	Cagigas
Juan	Calbillo
Sandra	Caldera
Benito & Cynthia	Calderon
Carlos R & Claudia	Calderon
Irma	Calderon
James & Sylvia	Calderon
Javier F	Calderon
Jose L & Esmeralda	Calderon
Raul & Teresa A	Calderon
Ventura	Calderon, Jr
Faustino C	Calvario
Manuel & Rebecca	Calvillo
Jesse P & Linda	Calzada
Vicky	Calzada
Desidoro & Stella	Camacho
Guadalupe	Camacho
Jose E & Rosa G	Camacho
Pedro & Herlinda	Camacho
Jesus	Camacho, Jr
Wanda F	Camp
David J	Campa
Roberto G	Campa
Daniel	Campos
David A & Rosalinda	Campos
David A & Rosalinda	Campos
Hector Ivan	Campos
Joe Patrick	Campos
Juan	Campos
Martha Garza	Campos
Melissa	Campos
Nicolas	Campos

Nicolasa H	Campos
Pedro A	Campos
Pedro V	Campos
Rodolfo & Irene A	Campos
Veruio	Campos
Victor Manuel	Campos
Filiberto J	Camposano
Victoria & Romeo M	Canales
Manuel R	Canales, Sr
Santiago	Canela
Ausencio J	Canizalez
Carmen	Cano
Karen Lara	Cano
Adrian & Cesario	Cantu
Alan E & Nubia A	Cantu
Cesareo & Marcelina	Cantu
Cesario	Cantu
Luis Carlos & Monica	Cantu
Oscar Saucedo	Cantu
Ronald & Matilda	Cantu
Thomas	Cantu
Yolanda	Cantu
Clemente	Cantu, Jr
Guillermo	Cantu, Jr
Manuel & Elvia	Cardenas
Rafael & Josefina	Cardenas
Sandra Casso	Cardenas
Santos P & Andrea R	Cardenas
David V & Alice T	Cardona
Cecilio Alberto Rodriguez	Cardoza
Richard N	Cardwell, II
Jose Luis & Christina	Carielo
Antonio & Ortila	Carillo
German & Irma Perez &	Carlos Cardenas
Tommy Munoz &	Carlos Frederick
Maria	Carmona
Donald S Hurley &	Carolina Ziola
Richard M	Carranza
Crystal	Carrejo
David	Carreon
Gerardo & Barbara Ann H	Carreon
Manuel Dejesus	Carreon
Victor C	Carreon
Esperanza L	Carrera
Richard Ellis	Carrero
Eric Garza	Carrillo
Ernestina	Carrillo
Felix	Carrillo

Pedro M & Edith	Carrillo
Richard & Maria M	Carrillo
Hector R	Carrion
Curtis E	Carson, Jr.
Zita Beatrice	Carter
David R	Cartwright
Hugo Pena, Jr &	Casandra A Sanchez
Ilda Alicia	Casanova
Jessie Mae Arcos & Gilbert John	Casares
Angie	Casarez
Florence	Casarez
Richard	Casarez
Antonio & Diana	Casas
Lorenzo G	Casas, Jr
Juan J & Paz A	Casias
Thomas	Casias
Thomas	Casias
Abel	Casillas
Roseann R	Casillas
William Anthony	Casillas-Postalwait
Alma Graciela & Marco Antonio	Castaneda
Armando	Castaneda
Hilda V	Castaneda
Mario & Nora L	Castaneda
Ricardo G	Castaneda
Teresa De Jesus	Castaneda
Rose	Castano
Alfred	Castellano
Francisco	Castilla
Virginia	Castilleja
Alfred L	Castillo
Antonia	Castillo
Cesar A Avalos	Castillo
Daniel M. & Eva	Castillo
Eduardo Alonzo	Castillo
Eleodoro V & Irene	Castillo
Herlinda R	Castillo
Jamie & Linda V	Castillo
Jesse	Castillo
Michael R	Castillo
Minerva L	Castillo
Onesimo & Maria	Castillo
Pedro	Castillo
Ricardo J	Castillo
Rudolfo B	Castillo
Salvador & Avelina	Castillo
Sergio & Lucille S	Castillo

Simon	Castillo
Velia	Castillo
Virginia M	Castillo
Gerardo & Karla Lira	Castro
Joe P	Castro
Luis Arredondo	Castro
Manuela	Castro
Marcelo & Matilde	Castro
Marcelo R & Lucia	Castro
Maurilio W	Castro
Maurillo W & Rebecca S	Castro
Roger R	Castro
Teresa	Castro
Andrew	Cavazos
Baldomero Perez	Cavazos
David J	Cavazos
Kristina	Cavazos
Linda	Cavazos
Luis Felipe	Cazares
Alex R	Ceciliano
Arturo G & Jesusa M	Cedillo
Olga N	Cedillo
Rodolfo M & Maria A	Cedillo
Hector	Cegueda
Silvano	Celestino
Joseph I & Rosalinda	Celis
Anthony & Sarah	Centeno
Darrell	Centeno
Maria Socorro	Cerna
Sara Anna, Arturo J, & Alberto John	Cerna
Javier	Cervantes
Jesse	Cervantes
Louis P	Cervantes
Manuel S	Cervantes
Mark Steven	Cervantes
Louis P	Cervantes, Jr
Ernestine	Cevallos
Rodolfo M & Martha M	Chacon
Gloria Ann	Chairez
Christian	Chamberlain
Cecil R & Rose	Chambless
Tinnakorn & Lamai	Chandaeng
Gloria D Emeteria	Chapa
Juana H	Chapa
Joe & Rita	Charles
Mary Elva	Chavarria
Raul	Chavera
Dolores & Gerardo	Chavez

Gilberto & Jeanette	Chavez
Gilberto P	Chavez
Gloria	Chavez
Graciela I	Chavez
Jose	Chavez
Maclovio E & Rosalinda E	Chavez
Manuel V	Chavez
Paul G & Ofelia M	Chavez
Paul N	Chavez
Willibaldo T	Chavez
Edward & Estella	Chavira
Shu Min & Guofan	Chen
David C	Cheraso
Clara	Chiquillo
Maria Cristina	Chiquillo
Clyde Dean & Donna Jean	Chlouber
Dennis W	Christensen
Kevin Wing-Hung	Chu
Li-O	Chu
Gabriel	Chvarria
Roger D & Mary E	Cirilo
Blanca E & Eleazar	Cisneros
Denisse & Phillip	Cisneros
Esperanza A	Cisneros
Gonzalo & Maria G	Cisneros
Debbie	Clark
Michael H & Doris J	Clay
Lewis M	Clements
Kristy	Clendening
Jennifer C	Coffey
Fermine	Collaso
Roberto G & Mary E	Collazo
Christopher M	Collins
Welfredo	Colon
Juan M & Emma E	Colorado
Jessica Danielle	Conrad
Angelica	Contreras
Antonio & Lucille	Contreras
Armando V & Sandra	Contreras
Frances & Juan A	Contreras
Patricia A	Contreras
Veronica	Copenhaver
Irene E	Corbitt
Servando	Cordova
Francisco R	Cordova
Servando & Irma Y	Cordova
Jasti John & Elin Grace	Cornelius
John & Kim	Corona

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Michele A	Corona
Diana D	Coronado
Martin H & Rita	Coronado
Mary Lou	Coronado
Rene	Coronado
Mario A & Juanita R	Cortes
Adam	Cortez
Brenda L	Cortez
Daniel M	Cortez
Joe J & Julia	Cortez
Richard & Janet	Cortez
Alfredo R	Cortinas
John R & Cynthia E	Cotlong
Willard Jay & Gloria J	Couey
Ruth M	Cowie
Grace Ann	Coy
Dan C & Carol J	Cozby
Brad E	Crabtree
Joaquina	Criado
Jose guadalupe Torres &	Crista Fernandez Aguero
Jesus Reyes-Ortiz &	Cristina Galvan-Lara
Ben & Willie M	Crockett
Yolanda	Crouch
Javier & Maria	Cruz
Manuel J	Cruz
Sonia	Cruz
Vanessa	Cruz
Alma	Cruz-Cardona
Tomas Delarosa &	Crystal Huey
James Michael Confer &	Crystal Lopez Confer Maritza
Charles A Garza &	Crystal M Avila
Maria	Cuaresma-Jones
Dina Yvonne	Cuellar
Elizabeth D	Cuellar
Roland	Cuellar
Valentin L & Maria B	Cuellar
Maria De Jesus	Cueva
Kathleen R	Cummins
Andres C & Dominga	Cura
Elizabeth Ann	Curiel
Joe E & Gloria A	Curiel
Daniel A & Aubrie C	Cypert
Michael D & Libertad	Dabbs
Ronald E	Dailey
Juan Francisco Loera Ruiz &	Daisy A Romeu
Deborah Aide	Dallo
Jesus	Dallo
Joe	Dallo
Claudia Catherine	Dallo-Martinez
Gloria Villanueva &	Daniel Deleon
Rebecca R Moreno &	Daniel Rodriguez
Arabella Parlati	Daniels
Michael	Daniels
Ulysses & Maria	Daniels
Baishakhi	Das
Teresa A	Daugherty
Santiago M Anguiano Jr &	David A Cisneros
Valerie Siller &	David Arriaga
Matthew Gonzalez &	David Hernandez
Antonio & Guadalupe	Davila
Diana C	Davila
Jesus	Davila
Andrew	Davis
Danny James & Marilyn	Davis
Robert E	Davis
Stacy	Davis
Beatrice	De Haro
Henry	De Hoyos
Madolena F	De Hoyos
Santiago G	De Hoyos
Juanita G	De La
Jesus M & Wf	De La Cruz
Cesar & Alejandra	De La Garza
Dario E	De La Garza
Noelia F	De La Paz
Janie	De La Rosa
Josephine	De La Rosa
James A	De Luna
Melissa A	Deans
Daniel Pineda &	Debra P Salinas
Eloisa G	Decordova
James & Theresa	Decosta
Gilbert	Dehoyos
Henry C & Armandina	Dehoyos
Pablo A & Giovanna C	Dehoyos
Thomas & Rosa	Dehoyos
Anna M	Delacruz
Gerry	Delacruz
Magdalena	Delacruz
Maryann	Delacruz
Leticia Ann	Delacruzeduardo
Christopher	Delagarza
Maria	Delagarza
Victoria S	Delagarza
Rudolfo M & Gloria	Delaluz

Angel & Anna	Delarosa
John A & Viola A	Delarosa
Margarita	Delarosa
Ramon H	Delarosa
Rebecca S	Delarosa
Silvia	Delarosa
Juan & Maria	Delbosque
Cynthia A & Miguel	Deleon
Francisco	Deleon
Gloria G	Deleon
Guadalupe	Deleon
Kyle Emil & Allison G	Deleon
Philip	Deleon
Rogelio	Deleon
Sylvia	Deleon
Victor V & Debbie M	Deleon
Abel John	Deleon, Jr
Larry	Deleon, Jr
Edward Lee	Delgado
Irma	Delgado
Jose A & Janie	Delgado
Jose A & Janie	Delgado
Irene	Delossantos
Jesus A Ordonez Villalva &	Delsa Arelie Jackson
Cindy	Deluna
Daniel & Margarita	Deluna
Indalecio	Dena, Jr
Jose Angel Lozano &	Denise Olea Alma
Daniel Vasquez &	Denise Perez
Jennifer	Dent-Bozzano
Winston L	Deocampo
Patrick J	Deore
Balbina Diaz	Deperez
Paula Bernardo &	Derek Ng Ho
Doreteo Joe	Desoto
Gloria	Desoto
Herlinda	Desousa
Erick Calvillo &	Destiny Copper
Jovita Torres &	Diana A. Medina
Javier Barrera &	Diana M Reyes
William Alcedo &	Dianna Hsieh
Bryan C	Dias
Alma Leonor	Diaz
Jesse & Caprice	Diaz
Jesse William	Diaz
Jesus	Diaz
Julia C	Diaz
Maria T	Diaz
Maria Teresa	Diaz
Matilde	Diaz
Robert & Esther	Diaz
Newton Lloyd	Diem
Guadalupe	Dimas
J Carmelo Juarez &	Dionicia Montealvo
Joe S Garcia, Sr &	Dolores Jesusa
Antonio Sauceda	Dominguez
Carlos & Sylvia	Dominguez
David F & Amada S	Dominguez
Erlinda	Dominguez
Guadalupe	Dominguez
John A	Dominguez
Jose M & Elida R	Dominguez
Jose Maria	Dominguez
Joseph R & Teresa	Dominguez
Lisa	Dominguez
Maria R	Dominguez
Martina	Dominguez
Raul C & Carla T	Dominguez
Vilma	Dominguez
Enrique & San Juanita V	Donnell
Chris & Ann H	Donner
Linda O. Schubert &	Dorothy Solis, et. Al
Vicki R	Dorsey
Robert W	Douglas
Miguel Angel &	Dovalina
John M & Ana R	Drobiezewski
Carlos R	Duenas
Laura	Dugas
Adolph Gilbert	Duke
Bobbie	Duplessis
Francisco D & Vicenta R	Duque
Bonifacio & Martha A	Duran
Deborah R	Duran
Jesus J	Duran
Margarito & Beatrice	Duran
Maria R	Duran
Roberto & Petra V	Duran
Teresa O	Duran
Veronica Chavez	Duran
Earl L & Kirsten A	Duron
Rosa Maria	Eiten
Raphael	Eke
Albertina	Elias
Frances Y	Elias
Ray	Elias
Daniel C Gonzalez &	Elizabeth Lopez

Alberto G Arroyo &	Elizabeth M Ortiz
Mark	Elizalde
Diana E	Elizondo
Maria Elva Reyes	Elizondo
Maria Razo	Elizondo
Rogelio P	Elizondo
Tammy M	Elizondo
Theresa Ann	Elizondo
Sara Ann Brown &	Elleana M Illalan
James & Alda	Ellis
Gabriel Morales Alatorre &	Elvia Leticia Morales
Bruce E	Embrey
Edith D	Emeterio
Gabriel & Lilia	Enciso
Rita F	Enriquez
Steven Jay	Epstein
Francisco A	Erazo
Amber Bocanegra-Garza &	Eric A Tapia
William B & Caryn L	Erickson
Arlene C Rangel &	Ernest Roman, Jr
Francine V	Escamilla
Maria G	Escamilla
Norma	Escamilla
Daniel A & Christina D	Escarcega
Marie A & Martin A	Escareno
Andrew	Escobar
Byron J	Escobar
Cresencio	Escobar
Cruz & Blanca	Escobar
Epifanio & Adelaida	Escobar
Ernest	Escobar
Maria	Escobar
Socorro	Escobar
Alberta L	Escobedo
Casimiro & Mary	Escobedo
Jose F J	Escobedo
Maria Del Rosario	Escobedo
Maria Linda	Escobedo
Paula R	Escobedo
Roberto G	Escobedo
Reza Khaladj	Esmaily
Anna Marie & Feliciano D	Esparza
Diana Veronica	Esparza
Gilberto & Olga	Esparza
Guillermo A	Esparza
Guillermo A. & Carmen	Esparza
Jose G & Gloria	Esparza
Mercedes C	Esparza

Mercedes C	Esparza
Ramiro	Esparza
Santiaga	Esparza
Sarita	Esparza Juarez
Cipriano	Espino
Cipriano & Josefina	Espino
Cipriano & Josefina	Espino
Melchor M	Espinosa
Anastasia Z	Espinoza
Anna M	Espinoza
Diane Salinas	Espinoza
Emily	Espinoza
Genaro	Espinoza
Jose A & Delia V	Espinoza
Fred B	Espronceda
Nora	Esquilbel
Cynthia A	Esquivel
David	Esquivel
Esther	Esquivel
Gregory B	Esquivel
Gregory B	Esquivel
Jeannette	Esquivel
Jesus Rosales & Kimberly	Esquivel
Jesus S & Asencion	Esquivel
Raul & Maria E	Esquivel
Raul G	Esquivel
Stephanie	Esquivel
Nelvin A & Jessica	Esteban
Thelma Inez Muraida &	Esther Ortiz
Braulio Villarreal & Isabel Marie	Estrada
Jose Garza	Estrada
Raymundo M & Raymundo Jr	Estrada
Roland	Estrada
Jesus S & Anita	Estrello
Molly	Eureste
Glenda Perez &	Eva Cervantes
Pablo E Campos &	Evangeline Ortiz
Julieta & Charles	Evans
Nick	Evans
Samuel Torres &	Evelyn Hernandez
Martin & Laurie	Everett
Bruce	Far
Mohamad Saeed Ebad	Fardzadeh
Carla	Farias
Martin A & Melissa J	Farias
Romulo L	Farias
Syed Ali	Farooq

Robert	Favela
Robert C	Favela
David Reynosa, III &	Faye Suarez
Oscar & Elba	Feernandez
Elia B	Felan
Jose & Maria D	Felan
Josefina Reyes	Felan
Linda Marie	Felan
Patricia A	Felan
Tiburcio	Felan
Maria G Garcia &	Felipita C Ybarra
Ricardo Cevallos, Jr &	Felisa Alonzo
Juanita	Felix
Agustin A	Fernandez
Carlos & Gloria	Fernandez
Daniel E	Fernandez
David Raymond & Debra A	Fernandez
Dolores Salazar	Fernandez
Eduardo	Fernandez
Estevan	Fernandez
Evangeline	Fernandez
Franklin Pupo	Fernandez
George R & Alice	Fernandez
Gilbert H. & Pam	Fernandez
Jorge F	Fernandez
Juan Francisco & Peggy Ann	Fernandez
Louis R	Fernandez
Monica	Fernandez
Noe Martinez &	Fernandez
Orita A & Natalie	Fernandez
Ralph G & Lupe	Fernandez
Rosio	Fernandez
Arthur	Fernandez, Jr
Enrique Perez Sosa &	Fernando Perez Moreno
Natasha	Ficello
Ofelia S	Fierce
Ulides C	Figueredo
Eva L	Figueroa
Edna	Fillmore
Charlotte E	Fisher
Jennifer D	Fisher
Patricia Ann	Fisher
Oliver	Flaig
Abel T & Laura B	Flores
Alejandro	Flores
Ana Laura	Flores
Armando & Grace &	Flores
Baldemar R & Wife	Flores

Basilio A	Flores
Beatrice L	Flores
Courtland M	Flores
Daniel N & Mary Lou	Flores
Donny & Don R	Flores
Encarnacion	Flores
Eva Nicole	Flores
Francisco J	Flores
Hilda	Flores
Ismael & Maria	Flores
Jaime	Flores
Jose Antonio & Betty	Flores
Jose Damacio Ayala	Flores
Josephine	Flores
Juan I & Maria	Flores
Juan Jose Balderas	Flores
Maria	Flores
Maria Elisa	Flores
Mary P	Flores
Mericia	Flores
Micaela M	Flores
Ramiro & Cruz A	Flores
Ramon	Flores
Ramon A	Flores
Wenceslao B & Delia	Flores
Jesus Junior	Flores, III
Jose	Flores, Jr
Rodrigo	Flores, Jr
Gonzalo E	Floriano
Michele D & Gonzalo E	Floriano
Janie O	Fonseca
Merriel L	Forchion, Jr
Claudia	Fortunatti
Danielle Lomax & Michael Alan	Fox
Sonia	Fox
Richard V	Fragoso
Jose	Fraire
Gloria	Franco
Christopher H & Cynthia E	Franklin
Uladzimir	Frantskevich
Gary & Karen	Franz
Steven R & Maria R	Frederick
Patrick & Nora	Freeman
Steven R & Heather J	Fritsche
Sr Antonio & Verna M	Frye
Linda P	Fuentes
Mercedes	Fuentes
Nandan P	Gad

Ashley	Gagnon
Henry E	Gagnon, Jr
Joel G & Ruby H	Galan
Joselito & Elsa	Galapate
Rafael C & Rosa	Galaviz
Theodore	Galindo, IV
Diana	Gallardo
Debra	Gallego
Alfredo & Carmen	Gallegos
Christopher M	Gallegos
Diane C	Gallegos
Martha L	Gallegos
Ramiro P	Gallegos
Rogelio & Sylvia	Gallegos
Seferino & Martha	Gallegos
Victor M	Gallegos
Mario	Galvan
Mary Lou	Galvan
Tiffany M	Galvan
David J & Guadalupe	Gamboa
Catarina R	Gamez
Edward M & Anna D	Gamez
Gail	Gamez
Laurencio & Maria G	Gamez
Perla	Gamez
Mary	Gantt
Felipe & Juanita	Gaona
Juan & Eulalia T	Garay
Raul	Garay
Richard	Garay
Robert Castaneda & Theresa Jean	Garay
Lorenzo T & Dominga	Garcez
Adam	Garcia
Alfredo & Ninfa B	Garcia
Andres	Garcia
Anita V	Garcia
Antonio Rojas	Garcia
Barbara Ann	Garcia
Benito & Diana	Garcia
Cesario & Maria C	Garcia
Christina & Christopher A	Garcia
Cynthia Ann	Garcia
Daniel & Frances	Garcia
David & Jennifer	Garcia
David D	Garcia
David F & Mirta	Garcia
Debra Loray	Garcia
Delia Araceli	Garcia

Dominga	Garcia
Edward B	Garcia
Elias	Garcia
Elizabeth Jean	Garcia
Elvira & Manuel J & Daisy & Miguel	Garcia
Felipe	Garcia
Felipe D	Garcia
Francisco J	Garcia
Frank J	Garcia
Gustavo & Olga	Garcia
Hector M	Garcia
Ignacio & Maria Deroble	Garcia
Irene C	Garcia
Irene Jessica	Garcia
Irma M	Garcia
Ivan	Garcia
Jaclyne Renae	Garcia
Jorge	Garcia
Jose D & Cynthia	Garcia
Jose E & Angelina C	Garcia
Jose Miguel	Garcia
Juan A & Martha E	Garcia
Juan C & Aurora M	Garcia
Jubal	Garcia
Lawrence John & Elida O	Garcia
Lizeth Maria	Garcia
Louis & Brijida	Garcia
Manuel A	Garcia
Margaret	Garcia
Maria C	Garcia
Maria G	Garcia
Maria Victoria	Garcia
Martinliano Calderon	Garcia
Mary	Garcia
Mauricio	Garcia
Nelva A	Garcia
Norma	Garcia
Oscar S & Rosa M	Garcia
Patrick	Garcia
Paul	Garcia
Paul I	Garcia
Raul Luna	Garcia
Raul V & Maria A & Garcia Leonardo G & Elizabeth S	Garcia
Richard R	Garcia
Roberto & Monika	Garcia
Roberto & Rosalinda	Garcia
Roberto T & Mary C K	Garcia

Rodolfo D	Garcia
Rogelio	Garcia
Rosalinda Luna	Garcia
Rose Marie	Garcia
Ruben	Garcia
Ruby L	Garcia
Sandra Meyer	Garcia
Severa Q	Garcia
Steven	Garcia
Yolanda P	Garcia
Zeferina	Garcia
Daniel A.	Garcia, Jr
Gilbert M	Garcia, Jr
Sam	Garcia, Jr
Crespin & Pauline	Garibay
Maurice Armand	Garlet
Finley & Leslie F	Garrett
Shannon C	Garrett
Antonio & Leann	Garza
Cesar/Sergio/Juan	Garza
Cynthia Beatrice Martinez	Garza
Daniel	Garza
Daniel	Garza
Daniel & Amada S	Garza
Domingo D & Rosa M	Garza
Edgard U &	Garza
Esther	Garza
Guadalupe G	Garza
Gustavo M & Irma J	Garza
Hortencia R	Garza
Javier	Garza
Jose	Garza
Josie R	Garza
Juanita B	Garza
Luis P & Maria V	Garza
Melissa	Garza
Obdulia	Garza
Pablo C & Blanca L	Garza
Paulina	Garza
Presciliano	Garza
Ralph J	Garza
Ramiro & Sharon	Garza
Raul R	Garza
Rose Mary	Garza
Sara Morales	Garza
Frank L	Garza, IV
Carlos	Garza, Jr
Juan	Garza, Jr

Baltazar	Gasca
Brittanie	Gathright
Juan A & Bartola L	Gatica
Dale	Gattis
Martin S & Velinda G	Gauna
Rodolfo Cruz	Gauna, Jr
Alejandra	Gaytan
Sebastian Isaiah	Gaytan
Janice L	Gerick
Ana Joy Madriaga	Germino
Fausto & Mckenzie	Gil
Guadalupe G	Gil
Reyes R & Simona L	Gil
Craig	Gillon
Laurel D	Ginsberg
Janie Roussin &	Gloria Gutierrez
Maria Rosario	Godina
Apolonio P	Godines
Robert A & Araceli	Godines
Juan Gerardo & Guadalupe	Godinez
Alma D & Juan	Godoy
Gloria Y	Godoy
Melissa	Goede
Anibal	Gomez
Catarino C & Cipriana	Gomez
David	Gomez
David O & Rachel	Gomez
Dora Luz	Gomez
Ernestina	Gomez
Esmeralda Gonzalez	Gomez
Estella A	Gomez
Everardo	Gomez
Fred & Hongwei	Gomez
George & Maria C	Gomez
Isidoro & Guadalupe	Gomez
Jaime E & Juanita A	Gomez
Jesus	Gomez
Jose & Maria Juana	Gomez
Jose F & Petra	Gomez
Juanita P	Gomez
Mary Esther	Gomez
Michael & Dolores	Gomez
Michael M & Diane R	Gomez
Yolanda B	Gomez
Joe	Gomez, Jr
Michael H & Isabel A	Gongora
Adalberto	Gonzales
Adam C	Gonzales

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Al	Gonzales
Alonzo	Gonzales
Benny	Gonzales
Bertha Gutierrez	Gonzales
Carlos E & Sandy M	Gonzales
David R	Gonzales
Elias Jacob & Joy	Gonzales
Elpidia G	Gonzales
Esther	Gonzales
Eugene E	Gonzales
Evangelina M	Gonzales
Henry V & Betty J	Gonzales
Joe R & Leticia M	Gonzales
Leroy & Edna G	Gonzales
Louis Ortiz & Gloria G.	Gonzales
Lydia T	Gonzales
M Nelda	Gonzales
Maria A	Gonzales
Maria Concepcion	Gonzales
Michael A	Gonzales
Pablo A & Esther	Gonzales
Pete	Gonzales
Robert C	Gonzales
Roger	Gonzales
Rosalinda	Gonzales
Rudolfo & Isabel	Gonzales
Rudy	Gonzales
Charles Anthony	Gonzales, Jr
Gilbert	Gonzales, Jr
Andres R & Enedina B	Gonzalez
Abelardo Duarte	Gonzalez
Alejandro & Gloria	Gonzalez
Alejandro & Gloria E	Gonzalez
Alma	Gonzalez
Arthur A	Gonzalez
Daniel	Gonzalez
David Javier	Gonzalez
Diana	Gonzalez
Douglas Carrillo	Gonzalez
Elizabeth V & Rodolfo Z	Gonzalez
Eriberto & Enelida	Gonzalez
Esteban	Gonzalez
Francisco R	Gonzalez
Gerardo & Maria E	Gonzalez
Jacinto & Lucia R	Gonzalez
Jamie Leal	Gonzalez
Jose	Gonzalez
Jose A	Gonzalez

Jose C & Martha C	Gonzalez
Juan Ramon & Raquel E	Gonzalez
Julian Guadalupe	Gonzalez
Kelly	Gonzalez
Luis M & Herlinda	Gonzalez
Oscar S	Gonzalez
Paul A	Gonzalez
Perfecta S	Gonzalez
Rafael	Gonzalez
Robert C & Gina C	Gonzalez
Robert J & Elena	Gonzalez
Rosa	Gonzalez
Rudy & Irma	Gonzalez
Sally	Gonzalez
Santos Rosalio	Gonzalez
Sergio & Azucena	Gonzalez
Sixto	Gonzalez
Frank F	Gonzalez, III
Victor H	Gonzalez, Jr
Alfonso & Alma Karina	Gonzalez-Betancourt
Amanda	Goodman
Marie M	Goodman
William F	Gorton
Daniel M & Sylvia M	Govea
David & Diane	Gracia
Bruce & Marion	Grady
Irene G	Granado
Krista Rae	Greenwell
Alan Greg	Grigorian
Michael	Guajardo
Andres	Guardado
Andres & Martha C	Guardado
Emilio Antonio	Guardiola
Gilbert	Guardiola
Jo Ann	Gubanche
Carlos	Guedea
Carlos & Paulette K	Guedea
Manuel	Guereca
Anna M	Guerra
Karina	Guerra
Leonard & Maria A	Guerra
Martha G	Guerra
Nora	Guerra
Raul Eduardo	Guerra
Samantha Graciela	Guerra
Agustin	Guerra, III
Jesse R	Guerra, Sr
Cesario V & Elida H	Guerrero

Emilia	Guerrero
Henry D	Guerrero
Humberto	Guerrero
Irving Aleman	Guerrero
Petra Irene	Guerrero
Uri Benjamin Flores	Guerrero
Valente	Guerrero
Jamie	Guevara
Roxanne M	Guevara
Janette	Guillen
Marieluz	Guiterrez
Jason	Gumbardo
Jim Maxie	Gunnels
Adam	Gutierrez
Andrea	Gutierrez
Armando R. & Ana M.	Gutierrez
Arturo T & Anna	Gutierrez
Benigno & Anna Maria	Gutierrez
Brian J & Olivia A	Gutierrez
Carlos A & Maria G	Gutierrez
Christina Lozano	Gutierrez
Genobebo	Gutierrez
George & Juanita	Gutierrez
Janie	Gutierrez
John James	Gutierrez
Jose Alberto	Gutierrez
Juan	Gutierrez
Maria Luisa	Gutierrez
Martin & Martha S	Gutierrez
Paul A	Gutierrez
Ramona Y	Gutierrez
Raymond & Rebecca	Gutierrez
Richard & Gloria	Gutierrez
Yuri	Gutierrez
Eloy	Gutierrez, Jr
Martin	Gutierrez, Jr
Aurora	Guzman
Christian	Guzman
Jeanette J	Guzman
Maria	Guzman
Martin F & Rosa M	Guzman
Roger & Maria J	Guzman
Francisco	Guzman, III
Navreen A	Haji
Garrett M & Kaitlyn D	Hall
Shadana	Hampton
Theodore R	Hansford
Fred & Patricia A	Hardin

Richard & Margarita	Harlow
Scott & Ashley	Harmeyer
Carlos	Harris
Leonard & Vernon L	Harris
Mekcos Mardell	Harris
Sharon L	Harrison
Henry B	Harrison, Sr
Debbie S & Kevin K	Hart
Kathryn Riley	Hayes
Richard Ewing &	Hector Flores
Amy R	Heflin
Derrick	Hegmon
Payam & Gol Laleh	Heidari
Trinie A	Hellman
William E & Rachelle	Helmick
Patrick & Romo Anna Marie	Hemby
Thomas	Henao
William R & Kathy	Henderson
Richardo & Eulalia	Heredia
Sandra K & Ricky M	Hermosa
Abraham & Nubia	Hernandez
Alberto & Norma Alexandria	Hernandez
Alberto Chiguichon	Hernandez
Alfredo	Hernandez
Alfredo	Hernandez
Alvaro A	Hernandez
Alvaro R & Carmen A	Hernandez
Angelina	Hernandez
Argentina	Hernandez
Argentina & Juan T	Hernandez
Aurora	Hernandez
Belinda H	Hernandez
Carrie Jovita	Hernandez
Connie M	Hernandez
Cynthia Ann	Hernandez
David	Hernandez
Elida	Hernandez
Elsa	Hernandez
Emma	Hernandez
Enrique Ramirez	Hernandez
Felix C	Hernandez
Filomeno & Anna Maria	Hernandez
Florinda Garcia	Hernandez
Frances	Hernandez
Frank	Hernandez
Gabina R	Hernandez
Genoveva	Hernandez

Gloria M	Hernandez
Guadalupe Eva	Hernandez
Gustavo Leija & Celia Huerto	Hernandez
Hector H	Hernandez
Hector J. & Maria S.	Hernandez
Humberto	Hernandez
Irma	Hernandez
Jaime	Hernandez
Jaime & Rafael	Hernandez
Janie	Hernandez
Jose & Maria	Hernandez
Joseph D	Hernandez
Josephine R	Hernandez
Juan & Roxanna	Hernandez
Juan A	Hernandez
Juan G & Roxana	Hernandez
Juan Garza & Helen Ann	Hernandez
Juan T & Argentina V	Hernandez
Linda Lou	Hernandez
Manuela M.	Hernandez
Margarita	Hernandez
Maria D	Hernandez
Maria De La Luz	Hernandez
Mario & Lesly	Hernandez
Mark & Denise	Hernandez
Martin V	Hernandez
Martin Vasquez & Emilia Marquez	Hernandez
Melissa	Hernandez
Michael P	Hernandez
Mike G & Irma I	Hernandez
Nadine J	Hernandez
Ninfa	Hernandez
Oscar & Amanda Marie	Hernandez
Paul	Hernandez
Rafael	Hernandez
Rafael & Jaime	Hernandez
Rafael & Rafaela	Hernandez
Ramon & Margarita	Hernandez
Raul Sanchez	Hernandez
Rocio Rocha & Javier A Rocha	Hernandez
Rogelio V	Hernandez
Rojelio G	Hernandez
Rosa A	Hernandez
Rosa Campos	Hernandez
Rosendo	Hernandez
Ruben & Rachel	Hernandez
Rudy M & Judee E	Hernandez

Simon G	Hernandez
Simona G	Hernandez
Timoteo & Carmen	Hernandez
Tony	Hernandez
Vanessa J	Hernandez
Veronica Jo	Hernandez
Yolanda & Jaime R	Hernandez
Victor R	Hernandez, II
Armen Garcia	Herrera
Gloria E	Herrera
Guadalupe Cardenas	Herrera
Joe	Herrera
Lee & Pauline G	Herrera
Mark	Herrera
Osvaldo R	Herrera
Pauline	Herrera
Roman & Alma	Herrera
Modesto	Herrera, Jr
Jose Manuel	Herrera, Sr
Hector Manuel	Herrera-Fernandez
Jason	Hiatt
Sergio & Claudia	Hidalgo
Sandy C, Carolyn B, & Creston C	Hill
Robert	Hillyer
Estella	Hinojosa
Ivan C & Angelina	Hinojosa
Terry W	Hinton
Zachary M	Hlavinka
Christina L	Ho
Adelina L	Hodges
Enrique & Martha L	Hoffman
George E	Hogan
Rosalinda	Holguin
Theresa L	Hooper
Dilder & Hasan Mehmuda	Hossain
Larry G & Julieta	Housley
Maya	Hsu
Yung Chien Tai &	Hua Lee Mei
Joshua	Hubbard
James D	Hubberd
Nancy Arias & William	Huber
William Lee	Huber
Nancy	Hudspeth
Arturo & Olivia	Huerta
Francisco	Huerta
Francisco M	Huerta
Francisco M	Huerta
Francisco M	Huerta

Francisco M	Huerta
Francisco M	Huerta
Jesus M & Rita	Huerta
Victor Javier	Huerta Alcazar
Julia R & Oscar N	Huizar
Peter A & Linda L	Huizar
Rose Mary G &	Huizar
Charles P	Huron
Roger Frank & Carmen	Huron
Kum Sun	Hurst
Jose A & Norma A	Hurtado
Abigail R Espinoza &	Hurtado Reyes, Jr
Imtiaz	Hussain
Gary Mitchell & Brooke	Hydrick
Sammye Ruth	Hynes
Andres Alexis	Ibarra
Cecilia V	Ibarra
Edward J	Ibarra
Gerardo	Ibarra
Oralia A	Ibarra
Raul	Ibarra
Samuel C & Maria	Ibarra
Veronica	Ibarra
Walter H	Ibarra
Matin	Ibarrola
Luis Raul & Sara	Iglesias
Eusebio Garcia &	Iliana S Martinez
Vera	Iltis
Venise-Grace	Ingan
Refugio	Ipina
Martin	Iracheta
Juan S	Irineo
Arthur P Mazuca &	Irma M Garcia
Wilfredo A Sepulveda &	Irma Paredes
Carlos Campos-Davalos &	Irma Valdez-Cruz
Astin Genove	Irving
Juan O & Mary A	Isaac
Ashley & Benito	Islas
Cirilo	Islas
Cirilo Vargas	Islas
Cirilo Vargas	Islas
Cirilo Vargas & Josefa C	Islas
Khitam A & Mohammed	Ismail
Martiin & Lydia	Ituarte
Pablo	Iturbide
Michael D & Libertad	Ivarra
Sergio A	Izarraras
Mario & Maria	Izarraraz

Mario & Maria De	Izarraraz
Ernestina Antu	Izquerdo
Ernestina Antu	Izquierdo
Victor Delgado &	Jackie Ramirez
Brenda Annette	Jackman
Norman & Sheryl	Jackson
Sean A	Jackson
Citlaytl Valenzuela &	Jacob Arocha
Meredith Hayles	Jacobsen
Matthew M Swartz &	Jaime A Rodriguez
Rebecca R Cerrillo &	Jaime Cerrillo Hernandez
Delia Nacianceno	Jalomo
Ruben Ysaac	Jalomo
Victor Isacc Flores	Jamarillo
Robert & Ruby	James
Wallace A & Micaela T	James
Veronica W Cisneros &	James Anthony Ravizee
Gwendolyn E	Janssen
Arnold & Felicita	Jasso
Eduardo R & Andrea I	Jauregui
Maria Del Carmen Mendez &	Javier Rosendo
Manuel Lopez &	Jeanette Robinson
Betty Sue	Jeffery
Patricia	Jenkins
Carlos Delarosa &	Jennifer A Campa
Andre & Jennifer	Jennings
Karin Gumbelevicius &	Jeremy Hammond
Yolanda Rivera &	Jesse Hernandez
Pedro Gonzales, II &	Jessica Raquel Martinez
Nicolette M	Jessie
Qinglai	Jiang
Michael Randolph Ivy &	Jim Lee
Cassandra	Jimenez
Abigail F	Jimenez
Alfred	Jimenez
Ana Soledad	Jimenez
Carmen & Henry	Jimenez
Delia	Jimenez
Eduardo & Rose Marie	Jimenez
Emilio Palacios	Jimenez
Gilbert	Jimenez
Jose Guadalupe Palacios	Jimenez
Marco Antonio & Edna Martinez	Jimenez
Maria Teresa	Jimenez
Maria Z	Jimenez
Maricela S	Jimenez
Oralia & Alfonso	Jimenez

Richard R & Maria M	Jimenez
Valentin Z	Jimenez
Randy & Natacha	Jimmerson
Graciela G	Jiron
Hector Colunga &	Jo Ann C Salas
Jennifer Jackson &	Joe Acosta
David R Casanova &	Johnny L Wilkins
Annie Jefferson	Johnson
Lawrence & Nadine	Johnson
Steven Ryan & Rachael Michelle	Johnson
Sumita T	Jonak
Thurman & Nancy A	Jones
Sadruddin K	Jooma
Glen G	Jorczak
Francisco	Jorge
Francisco & Mary J	Jorge
Cynthia Y Alanis &	Jorge H Segovia
G & Amelia	Jose
Maria Reyna Tinajero &	Jose Antonio Solorio
Gloria L. Alvarado &	Jose P. Gonzalez
Sandy Frances Jimenez, Ellen M Rios &	Juan C
Karla Angelica Romero &	Juana Soledad Palominos
Jesse A	Juarez
Jessica	Juarez
Juan D	Juarez
Norma	Juarez
Charles R	Juarez, Jr
Gerardo Castillo Rivera &	Judith Narvaez Arias
Juan Carlos Ramirez &	Judith Yaneth Herrera
George	Judson
Nidia Araksa Ramirez &	Julio Abraham Gonzalez
Jose Montelongo &	Karina Contreras
Juan M Hernandez Delacruz &	Kassandra Ramirez
J L & Dianna	Kaupert
David Wayne Lint &	Kelley E Pena
Edward	Kennedy
Kristi Renee	Kenney
Yesenia	Kern
Jay	Khadem
Isaiah & Essie Lee	Kidd
Long Tien	Kieu
Barbara Anne	Kill
Jimmy & Yen	Kim
Sylvia	King
Theora W	King
Brandon Lee	Kingcaid
Gene G	Kiniskey

Matthew L & Victoria	Kleckner
Thomas W & Lynda D	Klimek
Tracy A & William D	Knight
Han Ma Eum	Korean
Monica	Kosta
Sanjay	Kumar
Michael D	Kung
Kalife	Kuri
Colin Sandford & Gloria A	Kyle
Jason Lee Brown &	Kylie B Grubb
Nicole C	Lackie
Josephine	Lafargue
Nisa N	Lagle
Luis A & Alicia G	Lainez
Ashley Ann & Larry D	Lamb
Kevin W & Kimberly K	Langbehn
Maria C	Lapenotiere
Cadena Johnny & Patsy Marie	Lara
Juan & Tina	Lara
Olivia C	Lara
Fernando & Irene	Lares
Juan Jose	Lares
Ralph G & Maria	Larochelle
Hao Chang Lan &	Laura Chen
Adolfo C Torres &	Laura J Segura
Juan J Arevalo &	Laura P Aleman
Cecilia Marie Becerra &	Lauren Catanza
Jerry D & Michelle	Laws
Christopher E	Lawton
Cesario	Lazaro
Duyen Ngoc	Le
Arthur L	Leal
Irma Jean	Leal
Jesus	Leal
Priscilla S	Leal
Robert M	Leal
Ruben	Leal
Elizabeth M Hernanez &	Leal Adolfo Garza, Jr
David & Amy	Leavitt
Ricardo G & Amalia	Ledesma
Ricardo T & Sylvia	Ledesma
Debbie	Lee
Brian	Leeper
Don & Carla M	Leeseberg
Patricio	Leija
Zoila Beatriz & Maria Luz	Lemus
Jose & Josefina	Leon

Marciano & Maria Enriqueta	Leon
Jose R & Medina Julia	Leon-Zayas
Christina R & Ignacio E	Lerma
Lydia F	Lerma
Samuel Martinez Vigil &	Leticia Garza De Martinez
Consuelo M	Levine
Frank M & Rosalinda	Levine
Juanita I & Roderick D	Lewis
Kenneth M	Lewis
S L	Lewis
Michael A & Emmalyn T	Ligon
Gloria A Guevara &	Lilia A Mendez-Escobar
Carlos & Aurora	Limon
Constantino Gomez	Limon
Luis & Maria Luisa	Limon
Mario	Lincon
Mario	Lincon
Vicki Cisneroz &	Linda G Garcia
David Andrew Kotzur &	Linda Rodriguez
Robert	Lingo
Rojelio L	Lira
Alejandro	Livar
Rolando	Llanes
Evelyn Fisher	Long
Luz Maria	Long
Dora	Longoria
Grace	Longoria
Jose L, Eric M, & Christina M	Longoria
Leonides & Maria	Longoria
Maria	Longoria
Sofia	Longoria
Dagoberto & Ana L	Lopez
Alfonso O & Esther	Lopez
Alfredo & Herrera Nancy	Lopez
Arturo	Lopez
Arturo & Elizabeth	Lopez
Atanacio Ismael	Lopez
Benito	Lopez
Benito C & Oralia V	Lopez
Benny C	Lopez
Carmen J & Maria G	Lopez
Charles	Lopez
Desiree	Lopez
Edward E	Lopez
Edward G & Linda D	Lopez
Edward Rodriguez	Lopez
Guadalupe & Concepcion	Lopez

Isabel	Lopez
Jerardo & Janina A	Lopez
Jesse G & Jeanette R	Lopez
Jose & Maria D	Lopez
Jose P	Lopez
Juan Antonio	Lopez
Juan Carlos	Lopez
Juan F	Lopez
Juan Manuel Arroyo	Lopez
Juan R & Margarita	Lopez
Juanita	Lopez
Justo Sanchez	Lopez
Juventina O	Lopez
Livier Noemi Corona	Lopez
Magali	Lopez
Maria Isabel	Lopez
Maria Isela	Lopez
Mario Juarez	Lopez
Miguel E & Ruby	Lopez
Nicolas Rodgriguez	Lopez
Raul O	Lopez
Raymundo & Catalina	Lopez
Richard C	Lopez
Rosemary & Fidel A	Lopez
Ruben S.	Lopez
Ruben S. & Caroline D.	Lopez
Sandy	Lopez
Stephanie	Lopez
Susana	Lopez
Teresa	Lopez
Victor	Lopez
Louis	Lopez, Jr.
Oliver R	Lopez, Jr.
Saturnino	Loredo
Virginia	Loredo
Tomasa G	Losoya
Priscilla M & Joshua J	Lowery
Sanjuan Antonio	Lowery, Jr
Juanita	Lowry
Cesar	Loya
Helen	Lozano
Hortencia G	Lozano
Jamie	Lucio
Lucinda N	Lucio
Rebeca Malagon &	Lucio Plata
Javier & Mary D	Lugo
Mary S	Lugo
Rosario	Lugo

Diana M Gomez &	Luis Alejandro Sanchez
Cristina Lee Sandoval &	Luis Fernando White-Garcia
Abe Joe	Lujan
Jimmy G & Consuelo	Lujan
Annette G	Luna
Blanca E	Luna
Corina	Luna
David A	Luna
Estela M	Luna
Hilda	Luna
Jovita R	Luna
Mary E	Luna
Matilda	Luna
Ricardo C & Orlando	Luna
Rudy & Beatrice	Luna
Saul	Luna
Silvestre C	Luna
Erick Jon & Sharon G	Lundberg
Thoai Duc & An Thi	Ly
Manuel T Segura &	Ma G Molina Ramirez
Ruben C Perales &	Ma Guadalupe Martinez
Victor M & Brenda W	Macha
Theresa Ann	Machado
Gustavo Eric	Macharro
Richardo	Machorro
Miguel Eugenio	Macias
Jose A	Madrigal
Jose Alejandro	Madrigal
Miguel & Mary Ann H	Madrigal
D & Alicia O	Magallanez
Mabe Alejandra & Lezama Alfredo	Magdaleno
Suleman	Makani
Alejandra	Maldonado
Antonio & Virginia	Maldonado
Felipe Barrera & Perla	Maldonado
Frank A	Maldonado
Guillermo A & Esther I	Maldonado
Jose Daniel	Maldonado
Leticia	Maldonado
Mary E	Maldonado
Mary Teresa	Maldonado
Paula C	Maldonado
Sylvia	Mancha
Alfonso	Mandujano
James M & Crystal L	Mann
Maria J Morales &	Manuel Basio
Eduardo Rodriguez Olquin &	Maragarita Canchola Sanchez

Santiago H Arguelles &	Marcelina Ramirez
Rene S	Marco
Marco Antonio Lopez Alvarez &	Marco Antonio Higadera Lopez Jr
Mary Ann	Marek
Josefa E	Marez
Edgaras	Margevicius
Yadira Hernanez-Cortez &	Marggie Lizette Villarreal
Jose Eduardo Mani Villa &	Maria Abelina C Diaz
Octavio Dominguez Meza &	Maria Antonio H Rodriguez
Arnoldo Betancourt &	Maria De Jesus
Jose Luis Aguilar &	Maria De Los A
Jose Luis Molina &	Maria Del Pilar
Fernando Valadez &	Maria Del Rosario
Pastor Chacha-Octavo &	Maria Dominguez
Marlon Rodriguez &	Maria Elena Casas
Eric Morin &	Maria I Martinez
Rsalinda G Lapp &	Maria I Martinez
Ricardo P Sottelo &	Maria Luisa Ramirez
Constaintino Quintanar &	Maria Martinez
Cristobal Cruz Echavarria &	Maria Ortega
Ricardo R Chacon &	Maria R Flores
Nohe Robledo &	Mariana Gaona
Jesus Tovar, Jr &	Maricela Cardenas
Alfonso & Alma R	Marin
Jose & Claudia	Marin
Jose Manuel	Marin
Maria Concepcion	Marin
Maria E & Jacqueline	Marin
Emmanuel & Yadira	Mariscal
Mario Francisco & Kassandra Nikol	Mariscal
Sergio Mario	Mariscal
Dora Ann & John W	Markle
Fernando Garza &	Marlene Villegas
Jose Juan Sanchez	Marmolejo
Carlos Ernesto	Marquez
Cindy	Marquez
Miguel & Anilu	Marquez
Ulises & Imelda	Marrufo
Armando Antonio Vasquez, Jr &	Martha E Maldonado
Eduardo G Vasquez &	Martha M Herrera
Rowland J	Martin, Jr
Amelia M	Martinez
Abel & Ernestina	Martinez
Alejandro M	Martinez
Amanda	Martinez
Andres & Martha	Martinez

Andrew & Rosemary	Martinez
Andrew A	Martinez
Anita F	Martinez
Arturo	Martinez
Charles Anthony	Martinez
Charles B. & Rosa L.	Martinez
Charles L & Maria	Martinez
Concepcion C	Martinez
Delia Deleon	Martinez
Diana	Martinez
Diana L	Martinez
Dustin G	Martinez
Eliseo & Beatriz C	Martinez
Eloise R	Martinez
Estanislado	Martinez
Estela M & Isaura R	Martinez
Esther A	Martinez
Eva C	Martinez
Fernando G	Martinez
Francisco	Martinez
Gabino & Guadalupe	Martinez
Gil S	Martinez
Gilberto C & Gil S	Martinez
Gilberto C & Joshua	Martinez
Guadalupe L & Myong S	Martinez
Hector	Martinez
Hector L & Adela F	Martinez
Hector L & Adela F	Martinez
Hortencia	Martinez
Isabel T	Martinez
Jairo S	Martinez
Jesus	Martinez
Joel Jr	Martinez
John C	Martinez
John C. & Richard	Martinez
Jose A	Martinez
Josephine S	Martinez
Joshua	Martinez
Juan A	Martinez
Juan F	Martinez
Juan F.	Martinez
Juan G & Estella	Martinez
Juan Luis	Martinez
Krystle	Martinez
Lydia Garcia	Martinez
Marcelino & Maria	Martinez
Margarita	Martinez
Maria Luisa	Martinez

Martin H & Linda	Martinez
Mary A	Martinez
Michael T	Martinez
Miguel Angel Torres	Martinez
Nicolas L	Martinez
Pablo F & Adriana	Martinez
Pamela	Martinez
Patricia B	Martinez
Patrick Lee	Martinez
Paul & Liza	Martinez
Regina	Martinez
Rene & Basti	Martinez
Richard	Martinez
Robert & Rachel P	Martinez
Robt & Guadalupe	Martinez
Salvador & Erlinda	Martinez
Salvador & Raquel	Martinez
Sonia Soto	Martinez
Stephanie C	Martinez
Steve E	Martinez
Steve E & Diana P	Martinez
Sylvia V	Martinez
Teresa	Martinez
Valerie Yvonne	Martinez
Victor	Martinez
Alfredo	Martinez, Jr
Julian R	Martinez, Jr
Manuel Dejesus	Martinez, Jr
Ramon	Martinez, Jr
Servando	Martinez, Jr
Hector	Martinez, Sr
Joshua Wesley	Mason
Jacquelyn Nicole	Masters
Angelita	Mata
Arturo Zavala	Mata
Jesus G	Mata
Linda R	Mata
Maria J	Mata
Marin	Mata
Valerie	Mata
Israel Olvera-Romero &	Matilde Salinas-Castanon
Theresa Blanca	Matito
Chloe Elizabeth Mullins &	Matthew De La Fuente
Hayde Guadalupe Garcia Mora &	Matthew James Sandoval
Andrew	Maurais
Andrea Faye	Maxwell
Thomas E & Jamie C	Mcbee
Beverly W	Mccall

Kenneth Marlo	Mccants
Malcolm M	Mcclendon
Evangeline	Mccolley
David A	Mcconkey
John J	Mccown
Russell L	Mccoy
Samuel & Viola L	Mcdaniel
Deborah	Mcgee
Emmer L	Mcintosh
Brian L & Patsy Jean	Mckibbin
Scott C	Mcmanus
Wm & Luz M	Mcmunn
William Lee	Mcmyne
Bradford	Mcvea
Rudy & Linda	Medelez
Blas V & Theresa F	Medellin
Idalia L	Medellin
Alicia	Medina
Andrew & Sandra A	Medina
Elvira L	Medina
Gloria	Medina
Jesus T	Medina
Jesus T & Nancy	Medina
Juana Leonor	Medina
Lionel J & Jo Ann	Medina
Maria L	Medina
Santa	Medina
Victor G.	Medina
Juan Jose	Medina, Jr
Lincon Maria	Medrano
Oscar J	Medrano, III
Efrain & Mejia Ivan	Mejia
Juan M	Mejia
Nancy M	Mejia
Rose Diane	Mejia
Fernando Conchas	Melendez
Oscar	Melendez
Alicia M	Melero
Alexander Christian Schwartz, Sr. &	Melissa Leal
James A	Melton
Iliana N	Menchaca
Richard G	Menchaca
Alicia & Pedro J	Mendez
Ernestina M.	Mendez
Hugo	Mendez
Jacquelyn R	Mendez
Norberto L & Carmen	Mendez
Nvia Loretta	Mendez
Rafael Lopez	Mendez
Raul H & Maria E	Mendez
Raul Matthew	Mendez
Daniel D	Mendez, Jr
Rosa M & Jacob	Mendiola
Elizabeth A	Mendoza
Guadalupe	Mendoza
Manuel H & Sylvia	Mendoza
Monica	Mendoza
Olga T	Mendoza
Antonio J & Maria	Menendez
Maria	Mercado
Ernesto Delcarmen Galmiche &	Mercedes Adriana Castandea
Paulo Cesar Yanez &	Mercedes Mireles
Beatrice	Merlos
John A	Mery
Veronica Esmerelda	Mesta
Joseph E & Peggy W	Meyer
Jamie	Meza
Juan A	Meza
Mary Louise C	Meza
Nicole	Meza
Melissa Torres &	Michael A Valdez
Sarah Beth Neira &	Michael Joseph Miller
Christopher L	Mick
Conrado Q Zurita, Maribel E Rosales, &	Miguel Angel Q Esquivel
Teresa H Guerrero &	Miguela Hernandez
Casey L	Miller
Jeffrey C	Miller
Robert Wayne	Miller
Zoila O	Miller
Patrick	Milligan
Janet M	Mills
Fermin & Delia B	Miranda
Arthur	Mireles
Bianca	Mireles
Jesus I	Mireles
Juana	Mireles
Louis M & Guadalupe	Mireles
Magdalena	Mireles
Nadine	Mireles
Norma A	Mireles
Robert F	Mireles
Steban F	Mireles
Steve F	Mireles
Steve F	Mireles
Patrick	Mireur

Bernadine	Mitchell
Frank	Mitchell
Frank	Mitchell
Frank & Zetta	Mitchell
David Cali	Mo
Viola	Moczygemba
Antonio & Norma	Mojica
Tina M	Molden
Alicia	Molina
David Danie	Molina
Hugo & Zandra	Molina
Illeana & Carlos	Molina
Manuel & Maria D	Molina
Norma Jean	Molina
Samantha J	Molina
Joseph	Molinaro
Jesse R & Esmeralda G	Molleda
Diamantina	Moncada
Fidencio & Jo Ann	Moncada
Ricardo	Moncada
Milon	Mondal
Gerardo Zuniga	Monreal
Agustin & Carmelina	Monsivas
Adiela Luz	Monssalve
Bertin H & Rosalina	Montalvo
Cynthia & Anna Lisa	Montalvo
Jose M.	Montalvo
Joseph & Brandy	Montalvo
Rebecca	Montalvo
Carlos Isidro & Suzanne H	Montanez
Rosaura I & Leon	Montealvo
Angelica B	Montejano
Juan E & Brenda	Montelongo
Jorge	Montes
Oscar	Montes
Oscar	Montoya
Russell	Montoya
Steve F	Montoya
Sylvia Ann	Montoya
Robert G	Mooneyham
Darwin L	Moore
Elaine E	Moore
Edwardo & Elia C	Mora
Guillermo	Mora
Fernando S	Mora, Jr
Antonio & Nancy R	Morado
Antonio G	Morado
Aileen	Morales
Chris Leann	Morales
Clementina Castaneda	Morales
Elena Reyes	Morales
Frank T & Dora V	Morales
Gabriel & Elvia L	Morales
Jesse & Angela	Morales
Joe G	Morales
Maria	Morales
Martin Reyes	Morales
Oziel S & Marisa	Morales
Rachel	Morales
Robert C	Morales
Sammy	Morales
Robbie M	Moralez
Richard O & Cecilia	Morante
Anna L	Moreno
Antonio & Juanita F	Moreno
Antonio Marco	Moreno
Christopher	Moreno
Crystal F	Moreno
David & Samanthia Y	Moreno
Eva A & Gilberto M	Moreno
Genesis	Moreno
Gregorio	Moreno
Guadalupe	Moreno
Guillermo F	Moreno
Jennifer Lopez	Moreno
Jesus G	Moreno
Jose & Marisela	Moreno
Juan J & Ofelia	Moreno
Lucia D	Moreno
Raul & Alma A	Moreno
Raymundo	Moreno
Roberto Daniel	Moreno
Rudolph	Moreno
Sofia	Moreno
Teodora	Moreno
Moses A	Moreno, III
Leslie	Morgan
Prince A	Morgan
Margarito & Ana L	Morones
Rosalie J	Morren
Michelle Gee	Morris
Lenny & Michelle E	Motley
Jimmy K & Janet	Moy
Ihsan	Mudassar
Charles E	Mueller, Jr
Juan	Mujica

Agustin	Mungia
Cecilia O	Muniz
Daniel & Minerva	Muniz
Maria Elena Juarez	Muniz
Matt D	Muniz
Ramiro R	Muniz
Reynaldo R	Muniz
Alejandro C	Munoz
Bryan & Laurie	Munoz
Carlos & Gilda	Munoz
Cinthia Patricia	Munoz
Cynthia	Munoz
Juan Gabreil	Munoz
Salvador D & Martina	Munoz
Sylvia	Munoz
Treva N	Murphy
Minerva	Murrah
Samuel G & Norma K	Nami
Firoozeh	Namiranian
Jose R & Maria	Nandin
Joanne B	Nanez
Melissa	Narro
Fidel Salas, Jr. &	Nataly Duran Carreon
Diana & Stephan	Natividad
Leodegario M & Luz M	Nava
Francisco C	Navarro
Jesus R & Selene I	Navarro
Jose Carlos	Navarro
Olivia G & Martin	Navarro
Francisco C Navarro &	Nayeli C Rodriguez
Francisco C Navarro &	Nayeli C Rodriguez
Louis E & Klara S	Nelson
Hector M & Christine	Nerio
Samer M Zaqtan &	Nesreen Nefz Harb
Maria A	Netardus
Stepanie	Neumann
Lillian Inez	Newton
Adija & Solomon K	Nfor
An	Nguyen
Huan & Dao Le	Nguyen
Thuy Duong	Nguyen
Thuyet T & Vu Cuong	Nguyen
Destiny Marie Carrero-Scherrer &	Nicholas James
Scott & Sandra	Nichols
Francisco	Nieto
Marilina	Nieves
Barbara E	Nine
Patricia Colunga	Nino

Conrad K	Nishwitz
Amalia Moreno &	Noe Casas
Jose Luis	Nolasco
Joe & Frances	Nombrano
Antonio F	Noriega
John R	Noriega
John R & Linda R	Noriega
Manuel	Noriega
Digna M	Norris
Gregory	Nottingham
Terry	Noveroske
Gino	Nucio
Richard A & Christine R	Nugent
Christopher	Nunez
J Concepcion	Nunez
Ruben & Martha	Nunez
Edith G	Nunez-Morales
Garrett J R & Chelsea	Oats
Carol Amy	Obanon
David & Lydia	Obaya
Noe	Ochoa
Rene A	Ochoa, Jr
Joe C	Ocon
Luis A & Jessica	Ocura
Jesus Cristian Nunez Gaona &	Odalis H Hernandez
Joely	Odis
Pete G & Wife	Ojeda
Sergio & Debra	Ojeda
Kelly & Melissa	Okane
Adedolapo Enuma	Okolo
Benito S. Lucio &	Olga G. Aguilera
Francisco J & Maria A	Oliva
Filberto T	Olivarez
Ricardo	Olivarez, Jr
Maechal & Maria M	Olivarri
Belen R	Olivo
Germin E & Deborah	Olivo
Anita L	Olmos
Dolores Margarita	Olmsted
German	Olvera
German & Monica	Olvera
Jonas & Sanjuana	Ontiveros
Edmundo	Oranday
Feliz M	Ordaz
San Juanita C	Ordaz
Manuel E & Iris G	Ornelas
Alfonso & Jennifer M	Orocio
Jesse	Orosco

Jesse James	Orosco, III
Andrew V	Orozco
Aurora S	Orozco
Arnulfo B & Maria Refugio	Ortega
Aurelio	Ortega
Louis	Ortega
Monica G.	Ortega
Felix	Ortega, Jr.
Juan & Rosario	Ortegon
Tom & Susie E	Ortegon
Ulises	Ortegon
Ana Cristina Torres	Ortiz
Candido G	Ortiz
Candido G & Maria E	Ortiz
Candido G & Maria E	Ortiz
Edward S	Ortiz
Elizabeth M & Ana M	Ortiz
Frank O Brien & Viola	Ortiz
Irma	Ortiz
Javier C & Bertha	Ortiz
Joe S & Erlinda	Ortiz
Juan U	Ortiz
Maria & Mariano	Ortiz
Maria S	Ortiz
Robert	Ortiz
Rodolfo Lopez & Norma Eliza	Ortiz
Roland A	Ortiz
Gabriel E	Osoria
Sarah	Otey-Ciesielczyk
Michael J	Otoole
Pablo J & Lucia E	Oviedo
Carrie A	Owens
Quan T Nguy &	P Nguyen Bich
Robert Alexander	Pace, Jr
Dora C	Pacheco
Dorothy & Rupert	Pacheco
Frank G & Vicky G	Pacheco
Jose	Pacheco
Priscilla G	Pacheco
Augustina R	Padilla
David	Padilla
David & Grace	Padilla
David & Grace	Padilla
David & Maria G	Padilla
Elida S	Padilla
Gustavo & Maria G	Padilla
Tomas	Padilla
Enrique	Padilla, Jr

Cecilio & Hope	Paez
Alice	Pakravan
Antonio V	Palacios
Carmen	Palacios
Juan F & Jacoba H	Palacios
Juan F & Jacoba H	Palacios
Rafael A	Palacios
Jose De Jesus	Palacios, Jr
Yyolany E	Palma
Guadalupe B	Palmarez
Eva V	Palomarez
Anthony	Palomo
Joe F & Shannon	Palomo
Lorenzo S	Palomo
Robin	Pals
Ruben Lopez, Jr &	Pamela Victora Salazar
Thomas P	Pangilinan
George G	Paniagua
Samuel G	Paniagua
Catherine	Pantoja
Miguel A	Paredes
Herman Elanders	Parham
Jesus Espiririon	Parker
Edward	Parra
Justo C & Martha N	Parra
Mary Helen	Parra
Sharon D	Passmore
Leticia	Pastrano
Tejaskumar & Rital	Patel
Fernando	Patino
Filiberto & Quirina	Patlan
Joyce J & Wardell L	Paze
Curtis L	Pearson
Katherine Guerrero &	Pedro Hernandez
Alex E & Dolores	Pena
Carlos A & Sylvia	Pena
David Leo	Pena
Doris	Pena
Eristea	Pena
Ignacio R & Martha J	Pena
John P	Pena
Larry V	Pena
Lydia	Pena
Maria I	Pena
Maria Juanita	Pena
Melissa Yvonne	Pena
Michael R & Teresa G	Pena
Rudy L & Mary Lou	Pena

Albert R	Pena, Jr
Jose H	Pena, Sr
Joshua Lee	Penrod
Alberto	Perales
Alberto & Rocio	Perales
Alma	Perales
Cruz	Perales
Angelica & Jason	Peralez
Aurelio Martin	Perea, Jr
Claudia	Pereida
Adela	Perez
Alicia	Perez
Benjamin D	Perez
Bonifacio Castro	Perez
Cristina Isabel	Perez
Daniel H & Rosemary V	Perez
Delia D	Perez
Francisco & Rosa Maria O	Perez
Gabino & Erika	Perez
German & Irman	Perez
Graciela Lina	Perez
Herminio M & Angelita	Perez
Ida Molina	Perez
Irma S	Perez
Janie V & Juan	Perez
Janie Vigil	Perez
Jesse A	Perez
Jesus E & Patricia H	Perez
Joe S & Lucy	Perez
Joel L	Perez
Jose	Perez
Juan G	Perez
Juan Gabriel	Perez
Juana L	Perez
Julio C & San Juanita	Perez
Lucy B	Perez
Luis R & Juliana A	Perez
Marcos	Perez
Maria Dejesus	Perez
Maria Del Socorro	Perez
Melody Gonzalez	Perez
Rafael	Perez
Raul & Alejandra	Perez
Reynaldo & Carmen	Perez
Reynaldo Jesus	Perez
Robert L	Perez
Rogelio & Sandra N	Perez
Rose Mary	Perez
Steven A & Julie L	Perez
Victor S & Maria T	Perez
Yvonne	Perez
Yvonne	Perez
Jose Luna	Perez, Jr
Marlenin	Periana-Lemas
D S	Perkins
Paul & Jemima	Perryman
Gloria Contreras	Pesina
Thanh	Pham
Darren T	Phelps
Winslow David & Lisa	Phillips
Cindy M & Joshua	Piccirillo
Ludy	Pimentel
Maria	Pina
Mark	Pina
Michael J	Pina
Ramon &	Pina
Raul	Pina, III
Juan G.	Pina, Jr.
Ernesto	Pinero
Darell M	Pittman
Victor F & Rachel J	Pitts
David Antonio	Pivaral
Elmer & Jennifer	Pivaral
Jose David	Pivarral
Leopoldo G & Nidia	Placeres
Cecilia	Plascencia
Norma I	Plata
Andres M & Carolina F	Plaza
Jose J	Poaree, Jr
Amparo R	Polendo
Pedro & Victoria Y	Pompa
Gonzalo & Pauline R	Ponce
Jamie T & Roselinda	Ponce
Jose Luis Fraire	Ponce
Antonio	Ponce, III
Antonio	Ponce, Jr
James E & Nancy H	Poole
Ronald & Christy	Poole
Maria Victoria	Portales
Miguel	Portales
Miguel Angel & Lizeth M	Portales
Gabriela	Portalez
Clifford & Suzette R	Porter
Antonio P & Betty	Portillo
Jorge S & Blanca G	Posada
Jose A & Maria D	Posada

Alfredo	Posada-Cano, Jr
Karen M	Powlas
Maria Elisa	Powlas
Alfonso	Prado
Pete	Prado
Carmelo & Alice R	Prieto
Joel Alonso &	Priscilla Marie Gonzales
Carolyn & Martin L	Prosper
Arnulfo C	Pruneda
Rosemary	Puentes
Baldemar	Puga
Elsie J	Puryear
Patricia D	Quijada
Efrain & Esmeralda	Quinones
Juan & Rosalinda	Quinones
Oscar	Quintanar
Heliodoro & Bertha	Quintanilla
Lisa	Quintanilla-Seward
Marcella R	Quintero
Vanessa	Quintero
Emilio & Andrea	Quiroga
Vicenta V	Quiroga
Angelita	Rabago
Richard A	Rabago
Khalid A & Eynass	Rafati
Mahmoud D	Rafati
Nizar M	Rafati
Vincent & Mary Cruz	Raigoza
Albert & Linda	Ramirez
Alex B	Ramirez
Christopher & Leticia	Ramirez
Daniel A & Rachel P	Ramirez
Domingo & Florence	Ramirez
Ernestine R	Ramirez
Felipe	Ramirez
Francisco	Ramirez
Gisela	Ramirez
Javier	Ramirez
Jesse & Yolanda	Ramirez
Jesus T & Marianita	Ramirez
Jose Cruz	Ramirez
Jose E	Ramirez
Juan & Marta	Ramirez
Juan R & Nicolasa	Ramirez
Lara	Ramirez
Larry	Ramirez
Luis J & Ernestina	Ramirez
Manuel R	Ramirez
Margaret & Louis	Ramirez
Mary Helen	Ramirez
Raymond S	Ramirez
Raymundo R	Ramirez
Robert & Paula	Ramirez
Rodolfo & Yassmin	Ramirez
Rosanna Michelle	Ramirez
Valerie V	Ramirez
Victor	Ramirez
Yvette	Ramirez
Francisco J	Ramirez, Jr
Isidro	Ramirez, Jr
Manuel V	Ramirez, Jr
Santiago	Ramirez, Jr
Salvador	Ramirez, Sr
Gerardo	Ramon
Joe R	Ramon
Luis	Ramon, Jr
Daniel	Ramos
David	Ramos
Elida	Ramos
Escolatica	Ramos
Irma Rosa	Ramos
Joe S & Sandra	Ramos
Maria Elena	Ramos
Raymundo & Laura E	Ramos
Robert & Maria F	Ramos
Roman B & Laura Ann	Ramos
Roman F & Linda	Ramos
Rose Mary	Ramos
Theodore & Veronica	Ramos
Willie & Maria Luisa	Ramos
Dennis R	Ramsey
Willie	Randle
Briana	Rangel
Florence C	Rangel
Henry	Rangel
Paul	Rangel
Raymond R	Rangel
Roman & Ramona	Rangel
Tommie O	Rangel
Sylvia R	Rangle
Natividad Villegas, Ariane I Molina, &	Raudel Villegas
Lucy V Rivera &	Raul L Perez
Curtis	Ray
Manuel	Razuri
Juan Miguel & Letticia	Rea
Ruben Al Robinson, Jr &	Rebecca Perez

Eleazar A	Recio
Ravinder & Diana L	Reddi
Roger & Marilyn	Reeck
Jose G & Jezabel Y	Regino
Matilda L	Reid
Nery J Cortez-Mendez &	Reina M Alvarenga-Mejia
Leandro	Renaud
Antonio C	Rendon
David R	Rendon
Gabriel H & Juanita A	Rendon
Rebecka & Anthony	Rendon
Teresa	Rendon
Jesus A	Rendon-Limon
Jesus A	Rendon-Limon
Macrina	Renk
Heidi	Renteria
Yvonne	Renteria
Jose Antonio	Renteria, II
Heriberto T & Matilde	Resendiz
Miguel Angel Arriaga	Resendiz
Adam	Reyes
Alma R Martiarena	Reyes
Celina Victoria	Reyes
Claudia	Reyes
Gilberto Salazar & Patricia T	Reyes
Irma F	Reyes
Javier	Reyes
Jose A & Irene	Reyes
Jose A & Irene	Reyes
Maria G	Reyes
Mary Lou M	Reyes
Oscar	Reyes
Ramiro	Reyes
Raymond & Angie	Reyes
Roberto C	Reyes
Roberto Lopez & Darling	Reyes
Ruben	Reyes
Ruben & Maria Elena	Reyes
Serena Andra & Michelle	Reyes
Thomas A & Rebecca L	Reyes
Tom C & Irene B	Reyes
Martin V	Reyes, Jr
Ruben	Reyes, Sr
Ernest V	Reygadas, Jr
Edward Q & Ophelia	Reyna
Louis & Maria P	Reyna
Thomas R	Reyna
Priscilla & Omar	Reynoso

Mildred J	Rhambo
Maria M Pachuca &	Ricardo Morales Avila
Regina Lydia Roseman &	Richard Louis Vargas
Paul Arthur	Richardson, Jr
Elsa C	Rico
Neal & Deborah	Riebe
Antonio R	Rigonan
Jorge G & Isabel N	Rincon
Rafael & Lucia G	Rincon
Antonio R	Riojas
Dolores	Riojas
Rosa Elia	Riojas
Edgar A	Rios
Guadalupe T	Rios
Jesse & Mary	Rios
John R & Emerald M	Rios
Jose Luis	Rios
Julio & Maria	Rios
Julio & Maria	Rios
Magalena R	Rios
Magdalena Mendez	Rios
Ricardo	Rios
Roy L & Esther M	Rios
Samantha & Anthony	Rios
Siomara & Edwardo Rios	Rios
Belisario P	Rivas
Drake & Caitlin J	Rivas
Judith G Baca	Rivas
Cesar & Anna	Rivas-Tellez
Alfredo Silva	Rivera
Antonio L & Luz A	Rivera
Edward & Brenda	Rivera
Jose	Rivera
Manuel S	Rivera
Mary Lou	Rivera
Olga Cecilia	Rivera
Ruben B & Yolanda	Rivera
Susana Garcia	Rivera
Eva M Garcia &	Robert A Martinez
Rosalva Vela Guzman &	Robert Vela Guzman
Ethel	Robinson
Leyland G	Robinson
Robert Allan	Robinson
Herman G	Robledo
Juan & Lo Yun-Ju	Robledo
Leticia	Robledo
Abelino	Robles
Francisco Javier & Jacinto Carrera	Robles

Lee & L S	Robles
Rigoberto & Maria	Robles
Rigoberto Gonzalez & Maria D	Robles
Virginia C	Robles
Virginia Carreon	Robles
Olga Leticia	Robleto
Thomas J	Rocco
Diana	Rocha
Robert	Rocha
San Juanita	Rocha
Alfredo & Guadalupe	Rodarte
Mary Beth	Rodarte
Brenda R Lara &	Rodrigo Dalva Hinojosa
Alma	Rodriguez
Adan Martinez	Rodriguez
Adrian	Rodriguez
Aladdin	Rodriguez
Alberto	Rodriguez
Alejandra R & Faustino A	Rodriguez
Alejandro H	Rodriguez
Alma J & Tomas	Rodriguez
Antonio D	Rodriguez
Antonio G	Rodriguez
Bernardino S	Rodriguez
Brisa D	Rodriguez
Christopher & Jacquelyn	Rodriguez
Claudia	Rodriguez
Dale	Rodriguez
E G & Minerva G	Rodriguez
Eduardo M & Leticia L	Rodriguez
Eleazar S	Rodriguez
Ernesto & Wf	Rodriguez
Esmeralda	Rodriguez
Estella	Rodriguez
Estella Sylvia	Rodriguez
Francisco C & Laura P	Rodriguez
Frank R & Erminia	Rodriguez
Gabriel & Clarisa A	Rodriguez
Gary	Rodriguez
Gilbert & Maria C	Rodriguez
Guillermo A	Rodriguez
Hector V	Rodriguez
Henry D & Rosita L	Rodriguez
Hugo G & San J	Rodriguez
Idelfonso	Rodriguez
Jesse G. & Lupe R.	Rodriguez
Jesse M & Mary H	Rodriguez
Jesus & Rosa R	Rodriguez

Jesus G & Patricia C	Rodriguez
Jim & Nancy	Rodriguez
Jimmy & Norma	Rodriguez
Joe A	Rodriguez
Jose F & Maria A	Rodriguez
Jose G	Rodriguez
Jose L & Aurora	Rodriguez
Jose P & Yolanda	Rodriguez
Jose T & Marisela S	Rodriguez
Juan C & Ana Maria	Rodriguez
Juan F	Rodriguez
Juan V	Rodriguez
Juanita Cruz	Rodriguez
Julio G	Rodriguez
Juventino	Rodriguez
Leticia	Rodriguez
Lillian	Rodriguez
Lori D	Rodriguez
Luis & Lidia	Rodriguez
Luis Alberto & Rosa Maria M	Rodriguez
Margaret J	Rodriguez
Maria Eugenia Soto	Rodriguez
Nilda H	Rodriguez
Noe S & Patricia P	Rodriguez
Oscar & Modesta S	Rodriguez
Raquel G	Rodriguez
Rene S	Rodriguez
Richard V & Aida S	Rodriguez
Robert & Mary Ann	Rodriguez
Robert L	Rodriguez
Roberta J	Rodriguez
Rodolfo A	Rodriguez
Rogelio	Rodriguez
Rosa Elia	Rodriguez
Rosario S	Rodriguez
Ruben	Rodriguez
Sandra	Rodriguez
Veronica	Rodriguez
Vicenta P	Rodriguez
Yvonne P	Rodriguez
Jesus Manuel	Rodriguez, Jr
Joe	Rodriguez, Jr
Jose	Rodriguez, Jr
Jose Luis	Rodriguez, Jr
Robert	Rodriguez, Jr
Catalina	Roel
Isaias T & Claudia R	Rojas
Jesus & Julia Ann	Rojas

Raul Reyes	Rojas
Raymond & Maria Elena	Rojas
Enrique	Rojas, Jr
Edlin L	Roldan
Carlos A	Roman
Ernesto & Minerva	Roman
Olga	Roman
Raymundo	Roman
Abelardo T & Alma E	Romero
Adan	Romero
Alfredo & Sylvia	Romero
Libino	Romero
Raul H & Sylvia B	Romero
Sylvia	Romero
Viola B	Romero
Felix J & Diana R	Romo
Felix Joseph	Romo
Joaquin	Romo
Joaquin	Romo
Joaquin & Rosa	Romo
Priscilla	Romo
Sandra Renae	Romo
Eduardo	Romo, Jr
Jorge Adalberto G Gonzalez &	Rosa O Huitron
Esau Villegas &	Rosalba Velazquez
Francisca	Rosales
Victor Manuel	Rosales
Joseph Carreon &	Rosalinda Rodriguez
Maria	Rosas
Morayma	Rosas
Octobiano G	Rosas
Kyle G & Precious	Ross
Paulet	Rouse
Eleanor	Rowand
Neil Calfas &	Roy Fred Gonzalez
Mario Alberto Serrato	Rubio
Guy Gerald & Katrina	Rudes
Malburn J & Debbie	Rudesill
Nichelle N	Rudnicky
Ronald	Ruggiero
Andrew G	Ruiz
Isaac & Judith P	Ruiz
Jesse A & Susana	Ruiz
Jose E & Blanca Leticia	Ruiz
Jose L	Ruiz
Luis Garcia	Ruiz
Maria G	Ruiz
Raquel R	Ruiz

Soledad	Ruiz
Teresa M	Ruiz
Kevin Bradford	Russell, Jr
Jorge Saucedo Sifuentes &	Ruth Garcia-Hernandez
Israel C Carias &	Ruth J Solis
Evelyn Villaflor	Sadsad
Barbara	Saenz
Efrain & Maria Dora	Saenz
Enrique R	Saenz
Maria	Saenz
Santiago Emmanuel & Mayda G	Sagastume
Ihsan A Al	Saidi
John Scott	Salamon
Christopher Thomas	Salas
Rosalinda	Salas
Jesse	Salas, Jr
Andrea	Salazar
Candelaria A	Salazar
Idalia T	Salazar
Joe L & Lou Ann Q	Salazar
Jorge A	Salazar
Jorge A & Julia	Salazar
Joy	Salazar
Manuel G	Salazar
Manuel G & Theresa	Salazar
Maria D	Salazar
Michelle Ann	Salazar
Pioquinto & Juana	Salazar
Raymundo C	Salazar
Salvador	Salazar
Silvia	Salazar
Antonia	Saldana
Carlos Contreras & Sabina C	Saldana
Cristian Francisco	Saldana
Roxanna Rae	Saldana
Florestela	Saldivar
Hortencia Salas	Saldivar
Joe L & Margie O	Saldivar
Ricardo S	Saldivar
Frank	Salgado
Marjie	Salgado
Alfonso	Salinas
Ariel	Salinas
Aurora	Salinas
Benjamin A	Salinas
Eduardo	Salinas
Edward D & Irene D	Salinas

Elda G	Salinas
Juanita L	Salinas
Michelle	Salinas
Natividad & Alicia	Salinas
Pablo & Eloina	Salinas
Paul D	Salinas
Rafael & Maria T	Salinas
Sergio Manzano &	Samantha Ann Torres
Mahamoudou & Miriam A	Samassekou
Norberto	Sanabria
Abel G	Sanchez
Amelia L	Sanchez
Ana Maria	Sanchez
Annette Lynn	Sanchez
Antonia G	Sanchez
Blanca E & Victor Manuel	Sanchez
Cruz R	Sanchez
Debbie Ann	Sanchez
Dickey E & Gloria B	Sanchez
Domingo G	Sanchez
Eduardo & Maria	Sanchez
Edward	Sanchez
Elizabeth Reyes	Sanchez
Enrique	Sanchez
Enrique & Maria	Sanchez
Estella P	Sanchez
Felipe Jr & Sandra	Sanchez
Frank N	Sanchez
Gerald & Beatrice	Sanchez
Hortencia	Sanchez
Jaime Rolando	Sanchez
Jesus & Lillian	Sanchez
Jesus Constante	Sanchez
Jose Luis	Sanchez
Josue & Esperanza	Sanchez
Juan M & Yolanda J	Sanchez
Leopoldo R	Sanchez
Luis & Josefa L	Sanchez
Lydia Esther	Sanchez
Maria E	Sanchez
Matthew Ray	Sanchez
Miriam Mar	Sanchez
Nicanor & Ana M	Sanchez
Ofelia	Sanchez
Paula	Sanchez
Ramon M & Romana J	Sanchez
Richard & Delma	Sanchez
Rodolfo	Sanchez

Rosalio & Raquel	Sanchez
Rosario Edieleyne Vazquez	Sanchez
Salvador	Sanchez
Salvador & Julia V.	Sanchez
Candelario	Sanchez, Jr
Esteban	Sanchez, Jr
Federico	Sanchez, Jr
Guadalupe	Sanchez, Jr
Nick	Sanchez, Jr
Nick & Ana	Sanchez, Jr
Angelina & Dennis A	Sanders
Eliseo	Sandoval
Hilaria	Sandoval
Joaquin & Cynthia D	Sandoval
Juan Carlos & Teresa R	Sandoval
Juan M & Christian	Sandoval
Manuel & Eloisa	Sandoval
Roy Vasquez	Sandoval
Rudy	Sandoval
Steve	Sandoval
Soledad M Martinez &	Sandy B Lopez
Luis Enrique	Santarelly
Juan C	Santellan
Aylin	Santos
Cecilia A	Santos
Gregorio	Santos
Javier J & Yvette O	Santos
Jesse	Santos
Juan A	Santos
Maria G	Santos
Vicente D	Santos
Yolanda Marie	Santos
Rudy	Santoscoy
Denis	Santoy
Jose Luis & Oralia	Sarabia
Petra T	Sarabia
Luis Daniel Baerga &	Sarah Baron-Baerga
Lauren Adriana Lundy &	Sarah Lee Lumberas
Adam & Lara Alison Nicole	Sauceda
Ascencion B & Maria	Sauceda
Elvia M	Sauceda
Bertha	Saucedo
Ruben	Saucedo
Nes	Sayag
Robert & R	Schilling
Roger & Libier Alcala	Schilling
Jason	Schmitt
Brian	Schoeman

Therese Ann	Schroeder
Richard R & Sherre	Schuetze
Sean & Amber	Schupbach
Mary Jane	Sciaraffa
Roger W & Claudia	Scott
Blanca	Searuggs
Martin A & Kimberly Ann	Seawell
Tyler J & Sara K	Sebastian
Linda Carolyn Cisneros &	Sebastian Perales
Roger O	Segovia
Florinda	Segura
Aaron Esquivel &	Selina Jacqueline Flores
Sandra Davis	Sena
Maria	Serafin
Antoine A	Serkis
Robert G	Serna
Guadalupe	Serrato
Luis A	Serrato
Albert P	Serratos
Milaris Colon &	Seth Anthony Stevenson
Mohammas Saeed Ebad Fardzadeh &	Shahla Barekat
Mrad A	Shaker
Rebeccahlynn Stern &	Shane Johnson
David B	Shea
Joel	Shell
Eldon & Gloria	Shewmaker
Jason & Short Tiffany	Short
Amanda L	Shotkoski
Marek	Sieczynski
Jose & Hortencia	Sifuentes
Maryann & Jerry	Sifuentes
Aureliano	Silva
Eduardo	Silva
Gustavo	Silva
Idalia A & Sidney	Silva
Luis A & Paula	Silva
Manuel S & Evangelina	Silva
Maria D	Silva
Zoe Alexandra	Silva
Edgar G Mercado &	Silvia Flores Mena
Patrick Scott	Sisente
Marisol	Sixtos
Johnny & Glenda	Slack
Jeffrey W & Leann	Smallen
Barbara D & Brian S	Smith
Elizabeth Carolina	Smith
Glenn Patrick	Smith
Johnnie D & Sonya R	Smith
Kaleena Felipe & Duncan Vincent	Smith
Peggy Laurene	Smythe
Perry E & Mary L	Snow
Morgan	Soe
Roberto	Sola
Jesus & Maria	Solano
Eduardo H	Solis
Jorge Ernesto	Solis
Julia I	Solis
Mary L	Solis
Michael J	Solis
Rocio & Javier	Solis
Roland U & Natalie L	Solis
Gary A Tovar &	Sondra Crosthwait
Manuel Vallejo &	Sonia Garcia Filoteo
Dahlia Rodriguez &	Sophia Juarez
Armandina	Soria
Christina F	Sosa
Juan M	Soto
Maria C	Soto
Mary Jane	Soto
Robert	Soto
Guillermo P	Soto, Jr
William C	Sparks
Mark Steven	Spaw
Boyd	Spears
Nousha Parkhill Davison &	Spencer G Davison
Keith L	Springer
Jason W	Stacy
Charles	Stanford
Elvira	Starin
James M & Ruby C	Stein
Alan J & Carolyn B	Stephan
Jesse A Garcia &	Stephanie Bernique-Garcia
Catherine Elizabeth	Sterling
Roderick D	Steward
Robert	Stewart
Oscar L	Stillman
Donnie L & Barbara A	Stillwell
John & Geraldine	Stotts
Olivia L	Strange
Victor D	Stremciuc
Cynthia C	Stroman
Martin James & Minako	Stuhler
Faye	Suarez
Guillermo	Suarez
Jose Y & Romana	Suarez
Jacqueline	Suchil

Thomas B Murray, III &	Suk Kyoung
Joseph Elliot	Swenning
Madison Arden & Kristi Kay-Lynn	Taber Smith
Santiago & Gloria M	Tailes
Victor E Colon &	Taisha Castro-Atiles
Marie	Takeshita
Elaine G	Talamantez
Jason M & Chalis F	Tam
Gregory	Tamez
Raymond & Estefana	Tamez
Anthony A Aguilar &	Tammie Moreno
Zhu & Guo	Tan
Benny & Elmo Quan	Tang
Nathan	Tanner
Ignacio	Tapia
Charles J	Tarver
Charles J & Kristi A	Tarver
Stefano Pietri &	Tatiana M Short
Lora & Loren	Tatum
Felix & Maria S	Tavarez
Lytle L	Taylor
Ng	Taylor
Sharon & Frederick D	Teal
Jeffrey D	Teart
Tadesse Gashaw & Aklilu Fre	Tegene
Inez R	Tellez
Nicholas	Tello
Albert	Teniente
Carlos	Tenorio
Juan Carlos	Tenorio
Robert	Tenorio
Alex A	Tenorio, Jr
Ricardo De Leon-Garcia &	Teresa De Jesus Armendariz-Ramirez
Fernando & Diane	Terrazas
Gabriel M	Terrazas
Hector	Terrazas
Luis A & Maria D	Terrazas
Yolanda H	Terrazas
Iran F Ricardo &	Thacarli Bohorquez
Luis Garcia Ruiz &	Thalia Samantha Gutierrez Morales
Barbara	Thapa
Allen & Elena	Tharp
Kristie Cheryl	Theis
Rene Guerrero &	Thelma Perez
Anthony T & Joni C	Thomas
Charles A & Teresa J	Thomas
Dottie Carol Jones	Thomas
Mychal	Thompson
Eric & Rosie	Thorne
Edgar O Cavazos &	Tiffany M Lopez
Clowean S	Tijerina
Eugene H & Lydia B	Tijerina
Mary Louise	Tijerina
Raul Puente & Lorene	Tijerina
Robert G	Tijerina
Robert G & Maria G	Tijerina
Roger	Tijerina
Juan	Tirado
David & Andrea	Tokar
Leonides	Tolentino
James W	Tolleson
Keanna Paige	Tollett
Amir	Tondivar
Melissa	Torralva
Celso M	Torres
David	Torres
Elizabeth	Torres
Ernestine Mosqueda	Torres
Esequiel	Torres
Esquiel	Torres
Eulalio A & Cruz F	Torres
Graciela	Torres
Gregory Jr & Martha C	Torres
Javier G	Torres
Josephine	Torres
Leticia	Torres
Louis R	Torres
Lucia	Torres
Maria G & Jesus R	Torres
Ralph G & Oralia V	Torres
Rosalva	Torres
Ruben G & Maria	Torres
Saul	Torres
Vidal	Torres
Jerry	Torres, Jr
Leondro	Torres, Jr
Juan	Torrijos
Gene	Toscano
Cecilia	Tovar
Celia	Tovar
Gilbert	Tovar
Joe A & Melissa A	Tovar
John & Herlinda L	Tovar
Jose Andres	Tovar
Vilma	Tovar

Dung & Hang Phung	Tran
Trung Binh	Tran
Roberto Rosas, Jr &	Travis Aaron Ethington
George & Amanda	Trejo
Irma	Trejo
Jesse & Joanna	Trejo
Mary Lou A	Trejo
Albino R & Linda A	Trevino
Ana Maria	Trevino
Berta	Trevino
Criselda A	Trevino
David & Elvira	Trevino
Guadalupe	Trevino
Gustavo & Carlos	Trevino
Juan A & M Leticia	Trevino
Juan A & Maria L	Trevino
Mary V	Trevino
Melanie C	Trevino
Michael	Trevino
Oscar G	Trevino
Raymond D & Martha	Trevino
Rudy A & Amber F	Trevino
Jonathan Palacios &	Trinidad Sauceda-Vasquez
Santos & Claribel	Troche
Jaime Angel Ebergenyi	Trueba
Javier & Roxanna	Trujillo
Virginia	Trujillo
Awng Seng & Mu Pli &	Tsai Hkawng
Peggy Sue	Turner
Kristopher R & Rebecca G	Tyler
Evangelos S	Tzivopoulos
Cecilia	Ugwu
Oghenesume D & Blessing E	Umugbe
Caleb & Castelleja Marisol	Urdiales
Pedro & Juanita	Urdiales
Virginia	Urdialez
Kathy A	Uribe
Maria & Benjamin	Uribe
Hector D	Uribe, Jr
Jesus Alejandro	Urrea
Derrick K & Davida M	Uzzle
Ani Baltayan &	Vache Chakmakian
Debra & Kenneth	Vail
Amy	Valadez
Edward & Stephanie	Valadez
Irene G	Valadez
Jesus Castaneda	Valadez
Raul V, Maria Q, & Kenia Y	Valadez

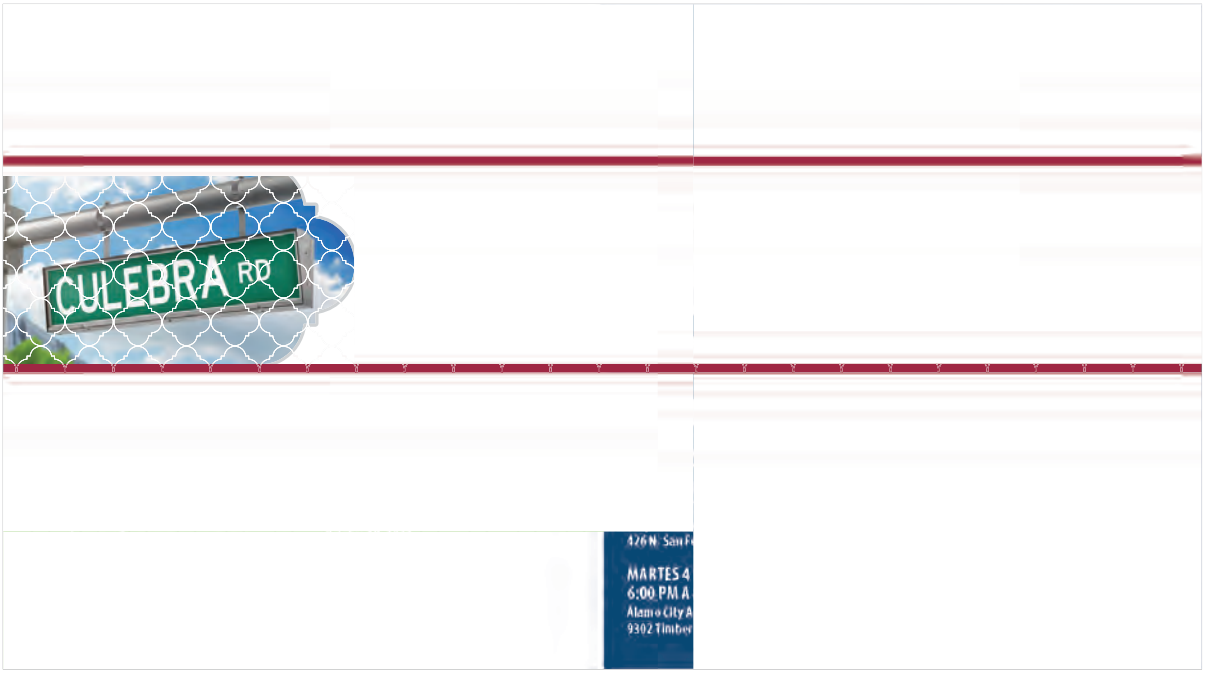
Robert A & Leslie Jo	Valadez
Elvira	Valdez
Francisco	Valdez
Francisco G & Bertha	Valdez
Frank & Oralia	Valdez
Gerardo R	Valdez
Henry F & Gloria	Valdez
Herminia M	Valdez
Leslie D	Valdez
Mario A	Valdez
Norma R	Valdez
Veronica	Valdez
Enriqueta O & Henry	Valdillez
Carolina L	Valencia
Miguel Angel & San Juana	Valenciana
Youless Jimmy	Valentine, Jr
Juan & Pilar	Valenzuela
Gregorio	Valenzuela-Quezada
Christopher John Valdez &	Valerie V Rivera
Valentin A & Maria	Valero
Frailan O	Vallejo
Jose & Olivia	Vallejo
Jose M	Vallejo
Rita Eglantina	Vallejo
Sylvia E	Vallejo
Richard A & Rita Anne	Van Dyke
Emerson	Vance
William Ronald	Vanderford
Guadalupe	Vara, Jr
Elvin	Varela
Elvin & Claudia	Varela
Elvin A & Claudia	Varela
Pablo	Varela
Javier	Varela-Gaytan
Adam R	Vargas
Evodio T & Adriana C	Vargas
Guillermo M	Vargas
Maria	Vargas
Ruth	Vargas-Martinez
Anna	Vasquez
Antonio	Vasquez
Gilbert	Vasquez
Gregorio V & Beatriz H	Vasquez
Hector M & Mary T	Vasquez
Isela	Vasquez
Jorge & Liliana M	Vasquez
Jorge P & Esperanza	Vasquez
Luis Ignacio & Melissa	Vasquez

Marco A	Vasquez
Maria Elena	Vasquez
Michelle	Vasquez
Reyna A	Vasquez
Ruben J	Vasquez
William G & Eloisa	Vasquez
Adan	Vasquez, Jr
Cruz	Vasquez, Jr
Oscar R	Vasquez, Jr
Masoud & Andrea J	Vaziri
Eliseo	Vazquez
Eliseo	Vazquez
Eliseo C	Vazquez
Jose J & Maria De Lourdes	Vazquez
Lorenzo A & Juanita	Vazquez
Valerie Siller	Vazquez
Ivan	Veda
Manuel & Erika	Vega
Margaruiete	Vega
Maria Del Consuelo	Vega
Reynaldo M	Vega
Adriana	Vela
Juan L Vela	Vela
Raul	Vela
Soledad	Vela
Esperanza Barron	Velasco
Angelica	Velasquez
Felicita	Velasquez
Guillermo	Velasquez
Jenny Lynn	Velasquez
Martin & Josephine	Velasquez
Robert M	Velasquez
Yolanda	Velasquez
Manuel & Simona A	Velazquez
Orfa Yoselin Trevino	Velazquez
Cesar R & Maria C	Velez
Evangeline	Velez
Pablo	Veliz
Baltazar	Vences
Luis Eduardo	Ventura-Diaz
Daniel U & Cinthia L	Vera
Jose	Verastique
Shailendra	Verma
Antonio Martinez &	Veronica Valenzuela
Arthur G	Viera, Jr
Heriberto C	Villa
Leticia	Villa
Tomas & Silvia	Villa

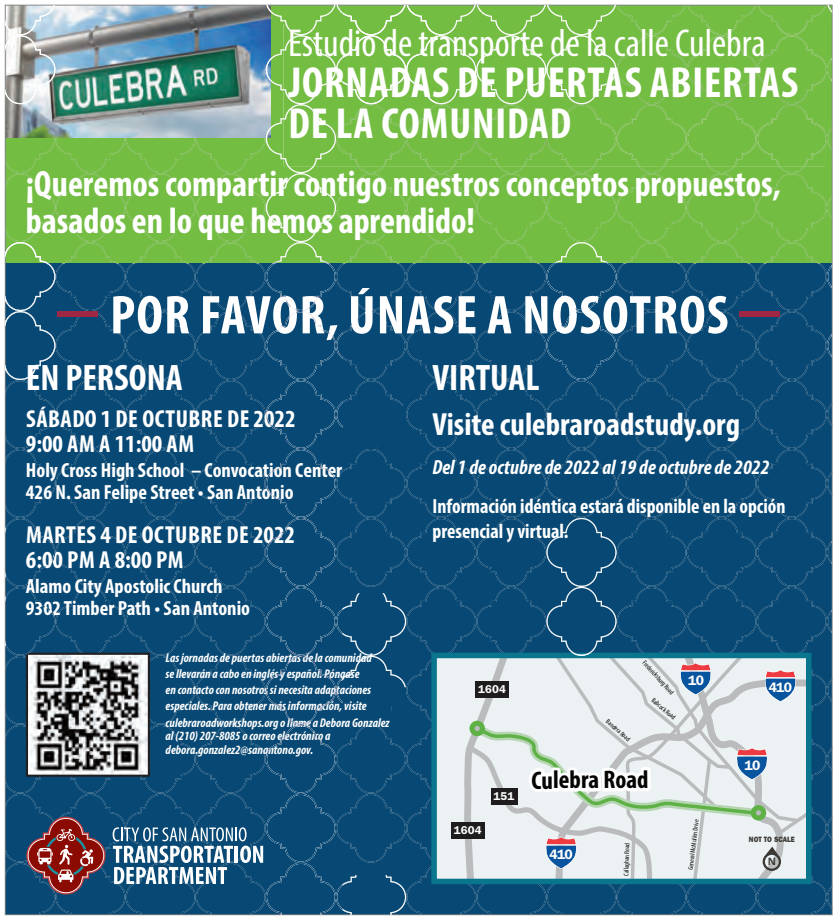
Joanne	Villalobos
Maria O	Villalobos
San Juana	Villalobos
Yolanda A & Victor M	Villalobos
Rosa Elia	Villalpando
Enrique	Villanueva
German & Cynthia	Villanueva
Juan Francisco	Villanueva
Pedro & Teresa	Villanueva
Roberto P	Villanueva
Teresa P	Villanueva
Encarnacion C	Villanueva, Jr
Arthur	Villarreal
Consuelo T	Villarreal
Diana G	Villarreal
Grace	Villarreal
Henry	Villarreal
Jaime Arnoldo & Diana	Villarreal
Juan C	Villarreal
Librado S & Maria D	Villarreal
Lorenzo R	Villarreal
Maria Luisa	Villarreal
Mary P	Villarreal
Melissa	Villarreal
Nancy Ann	Villarreal
Patricia M	Villarreal
Pedro	Villarreal
Raul & Carmen	Villarreal
Raymond & Sylvia	Villarreal
Andrea L	Villasenor
Giovani Daniel	Villasenor
Earl S & Amelia C	Villegas
Irene S	Villegas
Marcus A	Villegas
Moises	Villegas
Moises & Cynthia	Villegas
Moises B	Villegas
Rodrigo L & Sonia	Villegas
Maria C	Vinton
Alberto	Virgen
Alberto & Adriana	Virgen
Lena & Johannes	Visser
Yolanda	Viveiros
Lelia	Vosburgh
Thomas & Carmen	Vrzal
Henry	Vu
Khanh & Linh Ta	Vu
Michael & Mindy	Waala

Gloria F & Alva Norma F	Walker
Michael Todd & Robert	Walker
Tina M	Walker
John Warren	Walls
Steven Rene	Walsh
Gerald	Walter
Grace	Wanjie
Devin & Courtney	Warner
Jennifer S	Warren
Jennifer Nicoles	Waters
Charles M & Trina	Watson
Antonio J	Webb
Robert E & Maria H	Wechsler
John J & Gracie S	Wedell
Earl Benjamin & Betty Ann	Weimer
Samuel Edward	Welch
Jason E & Tina L	Wheat
Matthew & Alison	Whigham
Jeffrey Alan	White
Franklin T	Whitecotton
David	Whitson
Hector Capistran &	Wife
Emily & Kameron	Wilding
Lillian	Wiley
Robert	Willars
Melvin K	Williams
Risha A	Williams
Wendell	Williams, II
Brett D	Wilson
Jessie Mae	Woodard
Yuhunter	Woodard
Jeremy G	Wyles
Ashlie	Ximenez
Carlos Antelmo Figueroa Cardenas &	Yahaira Alejandra Hernandez
Cynthia	Yancy
Mary Jane	Yanez
Paulo Cesar	Yanez
Paulo Cesar & Mireles Mercedes	Yanez
Dong D	Yang
Li	Yang
Guadalupe G	Ybarra
Victoria M	Ybarra
Valerie A	Yeager
Emilio & Gladys A	Yebra
Maria G	Yebra
Kathy A	Yehl
Rebecca R	Yenne
David	York
Stella L	Young
Luis & Margarita A	Yruegas
Michael A	Ytuarte
Mary M	Yzaguirre
Armida & Jose	Zamarripa
Vanessa & Jose M	Zamarripa

Culebra Road Transportation Study | Community Open Houses Documentation




CULEBRA RD
Culebra Road Transportation Study
COMMUNITY OPEN HOUSES
CITY OF SAN ANTONIO
TRANSPORTATION
DEPARTMENT
We want to share our proposed concepts with you, based on what we have learned!
PLEASE JOIN US
IN PERSON
SATURDAY, OCTOBER 1, 2022
9:00 AM TO 11:00 AM
Holy Cross High School – Convocation Center
426 N. San Felipe Street • San Antonio
TUESDAY, OCTOBER 4, 2022
6:00 PM TO 8:00 PM
Alamo City Apostolic Church
9302 Timber Path • San Antonio
ONLINE
Visit culebraroadstudy.org
Available from October 1, 2022, through October 19, 2022
Identical information will be available at both in person options and online option.
The workshops will be conducted in English and Spanish. Please contact us if you need special accommodations.
For more information, visit culebraroadstudy.org or call Jacob Floyd at (210) 207-0256 or email at jacob.floyd@sanantonio.gov.
1604
10
410
151
Culebra Road
NOT TO SCALE


CULEBRA RD
Estudio de transporte de la calle Culebra
JORNADAS DE PUERTAS ABIERTAS DE LA COMUNIDAD
¡Queremos compartir contigo nuestros conceptos propuestos, basados en lo que hemos aprendido!
POR FAVOR, ÚNASE A NOSOTROS
EN PERSONA
SÁBADO 1 DE OCTUBRE DE 2022
9:00 AM A 11:00 AM
Holy Cross High School – Convocation Center
426 N. San Felipe Street • San Antonio
MARTES 4 DE OCTUBRE DE 2022
6:00 PM A 8:00 PM
Alamo City Apostolic Church
9302 Timber Path • San Antonio
VIRTUAL
Visite culebraroadstudy.org
Del 1 de octubre de 2022 al 19 de octubre de 2022
Información idéntica estará disponible en la opción presencial y virtual.
Las jornadas de puertas abiertas de la comunidad se llevarán a cabo en inglés y español. Póngase en contacto con nosotros si necesita adaptaciones especiales. Para obtener más información, visite culebraroadworkshops.org o llame a Debora Gonzalez al (210) 207-8085 o correo electrónico a debora.gonzalez2@sanantonio.gov.
CITY OF SAN ANTONIO
TRANSPORTATION
DEPARTMENT
1604
10
410
151
Culebra Road
NOT TO SCALE

APPENDIX A-3

Senate vote on same-sex marriage delayed

By Annie Karni
NEW YORK TIMES

Associated Press file photo

Sen. Tammy Baldwin, D-Wis., said the vote won't take place until after midterm elections.

WASHINGTON — Sen. Tammy Baldwin, D-Wis., said Thursday that the Senate would postpone an expected vote on legislation to provide federal protections for same-sex marriage until after the midterm elections in November, amid dimming hopes of drawing enough Republican support to ensure its passage.

Leading proponents of the Respect for Marriage Act said delaying action would increase their chance of getting the 10 Republican votes needed to push it through the evenly divided Senate, where 60 would be necessary to move it forward.

The decision to do so came as a relief to Republicans, the vast majority of whom oppose the measure and were worried that voting against it so close to the elections would alienate voters. It spared Republican senators in difficult reelection races a fraught choice between casting a vote that would anger the party's conservative base and one that would sour independent voters.

Polls show that a majority of Americans support same-sex marriage, but Republicans are split.

The abrupt change of plans was the latest surprising turn for the measure, which began as a messaging bill but morphed into a concerted legislative effort after an unexpected number of House Republicans voted for it.

"We're very confident that the bill will pass," Baldwin said Thursday. "But we will need a little more time."

Some Democrats, however, said they were angry with the decision to wait.

"We need to vote on equal marriage today," said Sen. Elizabeth Warren, D-Mass. "Every single member of Congress should be willing to go on the record. And if there are Republicans who don't want to vote on that before the election, I assume it is because they are on the wrong side of history."

The intense legislative push in the Senate began in July, after the House passed the same-sex marriage bill with 47 Republicans voting in favor. At the time, Sen. Chuck Schumer, D-N.Y., the majority leader, said he was encouraged by the amount of GOP support it garnered, and promised to work to find the necessary votes to move the measure past a filibuster and to a vote.

Baldwin expressed confidence she could bring at least 10 Republicans on board and said she expected even more to vote in favor of the legislation when it came to the floor.

Democrats have been pressing to enact the legislation after the Supreme Court ruling that overturned the nearly 50-year-old right to an abortion, and amid concerns that precedents protecting same-sex marriage rights could be the next to fall.

But the momentum on the issue faded as Democrats spent the final days before the August recess pushing through the Inflation Reduction Act, the core of President Joe Biden's domestic agenda.

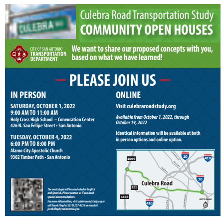
And since returning to Washington last week, Republican senators have expressed concerns about whether the bill would violate the religious liberty of those who do not accept same-sex marriages as valid. The bill would require the federal government to recognize same-sex marriages and mandate that same-sex spouses are given equal protections to heterosexual ones.

Schumer has been eager to hold a vote, even if only to put Republicans on the record voting against a broadly popular position on a social issue just weeks before the midterm elections.

He briefly floated the idea of linking the marriage equality legislation to a bill to fund the government that must pass by Sept. 30. And aides said Democrats on Thursday were considering moving to set up a floor vote next week on the marriage bill.

But Baldwin, who has been working with a bipartisan group of lawmakers on the legislation, demanded more time to find the Republican votes to pass the bill, rather than holding a vote this month in which it would fail at the hands of the GOP.

"I think we're in very good shape," said Sen. Susan Collins, R-Maine, one of the Republicans involved in the negotiations. "This bill is going to pass. I think we've managed to thread the needle on the religious liberty concerns. We've taken a lot of input."



HEARST
MEDIA SOLUTIONS
San Antonio Express News | ExpressNews.com | mySA.com

RECEIVED SEP 1? 2022

SAN ANTONIO EXPRESS - NEWS
AFFIDAVIT OF PUBLICATION

STATE OF TEXAS:
COUNTY OF BEXAR

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared: Geena Garza, who after being duly sworn, says that she is the Bookkeeper of HEARST NEWSPAPERS, LLC - dba: SAN ANTONIO EXPRESS - NEWS, a newspaper published in Bexar County, Texas and that the publication, of which the annexed is a true copy, was published to wit:

Customer ID	Customer	Order ID	Publication	Pub Date
20004325	POZNECKI CAMARILLO	34227221	SAE Express-News	09/16/22

Geena Garza (signature)
Geena Garza
Bookkeeper

Sworn and subscribed to before me, this 16th day of Sept A.D. 2022

Notary public in and for the State of Texas

4th Annual abilitySTRONG Parade Kicking off October 1

By Laura H. Aplin

The fourth annual abilitySTRONG Parade, San Antonio's annual Disability Pride Celebration, will take place on October 1 from 9 a.m. - 10:30 a.m. in downtown San Antonio. The abilitySTRONG Parade, presented by Wave Healthcare, LLC, is San Antonio's only disability pride parade seeking to change the way people think about and define disability. It is presented by disABILITYsa, City of San Antonio's Disability Access Office and Hemisfair's Inclusion Programming.

The parade's theme "Super Heroes: saving the world with unique abilities" will serve as the official kick-off event to the 16th annual AccessAbility fest, an annual free celebration, held in October during Texas Disability Awareness Month.

Currently, one in every seven individuals living in San Antonio has a disability. The parade is a public expression of the belief that disability is a natural and beautiful part of human diversity in which people living with disabilities can take pride.

This year's motto is "My Ability is Fierce" and leading the parade and march with the parade banner will be the men and women of City Council followed by its 2022 Grand Marshals, Batman of San Antonio and Tommy Flores, 2018 Fiesta Especial King.

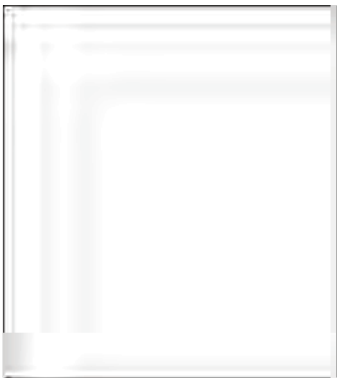
Immediately following the parade, the 16th Annual AccessAbility fest<http://www.accessabilityfest.org> will take place at Hemisfair's Yanaguana Garden and the Magik Theatre parking lot from 9:00 a.m. - 2:00 p.m. and feature numerous activities and exhibitors with information, products, programs and services that promote independence and inclusion where individuals with disabilities live, work and play. This FREE celebration also features live entertainment including Tejano artist Sunny Sauceda.

The Parade Grand Marshal Batman of San Antonio is Tommy Flores, 2018 Fiesta Especial King; City Council and Civic Members

Downtown - Parade will line up at 7:30 a.m. and stage along Avenue E in front of First Presbyterian Church and the San Antonio Express-News building. The route will step off at Avenue E, heading west on E. Houston Street, South on N. Main Ave, West on E. Commerce Street, South on South Flores St, East on E. Nueva St., South on South Alamo St. and finish at the dismount location. The judges' stand and VIP seating will be on a East Nueva and South Alamo at Hemisfair. The parade is estimated to last 1.5 hours and will conclude at 10:30 a.m. The parade route is 1.5 miles.

Immediately following the start of the parade, the 16th annual AccessAbility fest takes place from 9 a.m. to 2 p.m. This annual event is a free, family-friendly festival with a tree adoption, information booths, a costume contest, games, health screenings, food concessions, live entertainment, product and program demonstrations and an adaptive climbing wall coming in from No Limits Tahoe. The fest is a gateway to information, resources and opportunities for individuals overcoming barriers to independence and inclusion due to physical, cognitive, sensory and mental health challenges. AccessAbility fest is inclusive of individuals of all backgrounds and diversities.

For more information, go to www.abilitySTRONGParade.org<http://www.abilitystrongparade.org> or www.accessabilityfest.com<http://www.accessabilityfest.com>



Applicant Name: _____

ALTERNATIVE LANGUAGE
PUBLISHER'S AFFIDAVIT

STATE OF TEXAS §
COUNTY OF Bexar §

Before me, the undersigned notary public, on this day personally appeared

Roxanne Eguia, who being by me duly sworn, deposes
(name of person representing newspaper)

and says that (s)he is the Editor in Chief of the
(title of person representing newspaper)

La Prensa Texas; that said newspaper is
(name of newspaper)

generally circulated in Bexar County, Texas and
(same county as proposed facility)

is published primarily in Spanish language; that the
(alternative language)

enclosed notice was published in said newspaper on the following date(s):

September 14, 2022

Subscribed and sworn to before me this the 14th day of September,

2022, by _____
(newspaper representative's signature)

(Seal)

Yvette Tello
My Commission Expires
11/27/2022
ID No. 131860709

Notary Public in and for the State of Texas

Yvette Tello
Print or Type Name of Notary Public

My Commission Expires 11/27/2022

WEBSITE ANNOUNCEMENTS

On Aug. 31, 2022, the study webpage (culebraroadstudy.org) launched featuring the contents of the bilingual flyer and a link for interested persons to sign up for updates. On Sept. 16, 2022, the City of San Antonio launched the bilingual meeting information on www.SASpeakUp.com. The following documents both webpage updates.

Of note, between Aug. 31-Sept. 30, 2022, there were 684 unique visitors to the Culebraroadstudy.org, study webpage and 31 individuals signed up for future updates.

CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT

Culebra Road Transportation Study from Loop 1604 to I-10.

Haga clic aquí para obtener un folleto del evento en inglés y español.

Join Us!

Please join us for the second Culebra Road Community Open House series this October 2022! The City of San Antonio is studying transportation improvements to Culebra Road from Loop 1604 to I-10.

To sign up for email updates on the study, click the button below!

SIGN ME UP

In Person Community Open Houses

For individuals who would like to participate in person, please see below for details:

Saturday, October 1, 2022
9:00 a.m. to 11:00 a.m.
Holy Cross High School - Convocation Center
426 N. San Felipe Street
San Antonio, Texas 78228

Tuesday, October 4, 2022
6:00 - 8:00 p.m.
Alamo City Apostolic Church
9302 Timber Path
San Antonio, Texas 78250

Virtual Community Open House

Persons interested in participating in the Virtual Community Open House can view the pre-recorded presentation and other materials on this website (culebraroadstudy.org) starting on Saturday, October 1, 2022 at 9:00 a.m.

The Virtual Community Open House will be available for viewing until Wednesday, October 19, 2022 at 11:59 p.m.

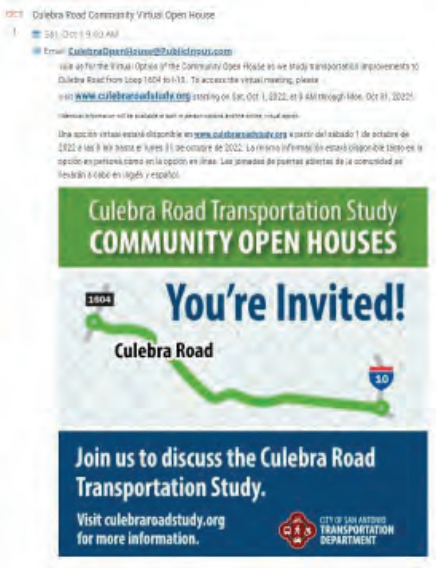
Identical information will be available at both in person and online options.

Bilingual Event Flyer

Event Flyer (pdf)

DOWNLOAD

The community open houses will be conducted in English and Spanish. Please contact us if you need special accommodations. For more information call Jacob Floyd at (210) 207-0256 or email at jacob.floyd@sanantonio.gov.



PARTNER COMMUNICATIONS EMAIL

On Sept. 16, 2022, an e-mail was sent to local partners and community organizations informing them of the meeting and asking for assistance getting the word out. The bilingual email included meeting details, a social media toolkit, social media graphics, and the flyer.

A follow up reminder e-mail was sent on Sept. 26, 2022.

The list of recipients and copies of the emails are included below.

Local Partners Sent Meeting Notice

Representing
Alamo Area Metropolitan Planning Organization
San Antonio Mobility Coalition
VIA Metropolitan Transit
Bike San Antonio
Activate San Antonio
Pedal SATX
WTS San Antonio
San Antonio Wheelman
San Antonio Walks
ULI San Antonio – Urban Land Institute
Texas Department of Transportation
Great Northwest Library
San Antonio Parks and Recreation Department
San Antonio Parks Foundation
San Antonio River Foundation
Edgewood ISD
Huppertz Elementary School
IDEA Hidden Meadow
Memorial High School
Mexican American Catholic College
Northside Independent School District
San Antonio Independent School District
St. Mary's University
Alamo City Black Chamber of Commerce
San Antonio Chamber of Commerce
San Antonio Hispanic Chamber of Commerce
South Texas Business Partnership
San Antonio Women's Chamber of Commerce

Representing
Barrio Barista
Birrieria y Taqueria Ay Arandas
El Rodeo Seafood and Taqueria
Mario's Tacos
Mariscos de Puerto
Culebra Creek Apartment Homes
Taurinos Mexican Restaurant # 2
Alamo City Apostolic Church
Basilica of the National Shrine of the Little Flower
Holy Rosary Catholic Church
West End Hope in Action Neighborhood Association
Northwest Crossing Neighborhood Association
Canterbury Farms Community Association
Hidden Meadow Neighborhood Association
Loma Vista Neighborhood Association
Mountain View Neighborhood Association
Pipers Meadow Neighborhood Association
Timber Ridge Neighborhood Association
University Park Neighborhood Association
Woodglen Neighborhood Association
Crown Meadows Neighborhood Association
Culebra Park Neighborhood Association
Great Northwest Community Improvement Association
Prospect Hill Neighborhood Association
Thunderbird Hills Neighborhood Association
Woodlawn Lake Neighborhood Association

Elizabeth Story

From: Jacob T. Floyd (Transportation) <[redacted]
Sent: Friday, September 16, 2022 4:05 PM
To: Jacob T. Floyd (Transportation); Debora Gonzalez (Transportation); Catherine J Hernandez (Transportation)
Subject: Join Us: Culebra Road Transportation Study Community Open Houses
Attachments: Culebra Road Community Open House.pdf; Oct 1 2022 - Culebra Rd Community Open House.ics; Oct 4 2022 - Culebra Rd Community Open House.ics

Dear Technical Advisory Group Member:

The City of San Antonio invites you to attend the second Community Open House series for the Culebra Road Transportation Study from Loop 1604 to I-10. Whether you drive, walk, bike, or ride transit on Culebra Road, the City of San Antonio wants to hear from you!

In 2021, the City heard from nearly 600 active participants during our last round of community outreach. As a result of the valuable feedback received, our designers are studying the possibility of wider and protected sidewalks, dedicated bicycle facilities, improved crosswalk connections, improved transit facilities, shade-providing trees, and multi-purpose traffic-calming devices.

Details for the Community Open Houses are below:

Saturday, October 1, 2022
9:00 a.m. to 11:00 a.m.
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San Antonio, TX 78228

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6:00 p.m. to 8:00 p.m.
Alamo City Apostolic Church
9302 Timber Path
San Antonio, TX 78250

Virtual Option
Participate online by visiting www.culebrasroadstudy.org from Saturday, October 1, 2022, through Monday, October 31, 2022. Identical information will be available at both in person options and the online option. All comments are requested to be postmarked or received on or before Wednesday, October 19, 2022, to be included in the official documentation of the open house series. Additional comments will still be welcome until Monday, October 31, 2022 to be included in the project file.

The community open houses will be conducted in English and Spanish. Please contact us if you need special communication or accommodation arrangements. For more information, please view the attached flyer, visit www.culebraroadstudy.org or call Jacob Floyd at [redacted].

Thank you,

The Culebra Road Corridor Study Team

1

Jacob Floyd, AICP, CNU-A
Transportation Planning Manager
Transportation Department
100 W. Houston St, 16th Floor | San Antonio, TX 78205
O: 210.207.0256
www.visionzerosa.com
www.sanantonio.gov/transportation

CITY OF SAN ANTONIO
TRANSPORTATION
DEPARTMENT

Elizabeth Story

From: Jacob T. Floyd (Transportation) [redacted]
Sent: Monday, September 26, 2022 4:31 PM
Cc: Jacob T. Floyd (Transportation); Debora Gonzalez (Transportation); Catherine J Hernandez (Transportation)
Subject: Reminder: Culebra Road Transportation Study Community Open Houses
Attachments: Culebra Road Community Open House.pdf; Oct 1 2022 - Culebra Rd Community Open House.ics; Oct 4 2022 - Culebra Rd Community Open House.ics

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Thank you,

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O: 210.207.0256
www.visionzerosa.com
www.sanantonio.gov/transportation

CITY OF SAN ANTONIO
TRANSPORTATION
DEPARTMENT

2

Email attachments included:

SOCIAL MEDIA KIT – ENGLISH


SOCIAL MEDIA TOOLKIT
City of San Antonio

CITY TO HOST COMMUNITY OPEN HOUSES REGARDING CULEBRA ROAD

We're hoping to engage the community on this project now more than ever. Will you help us spread the word?


How Can You Help?

Sample Posts:


Graphic Preview (jpgs are attached to the email):

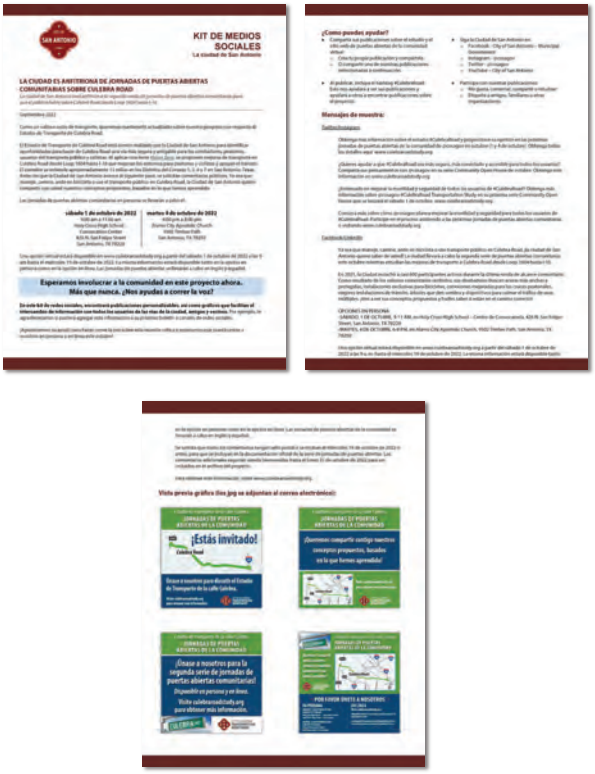
You're Invited!

You're Invited!

Join us for the second series of Community Open Houses!

Email attachments included:

SOCIAL MEDIA KIT – SPANISH

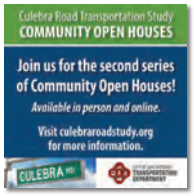


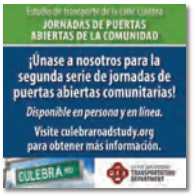
Email attachments included:

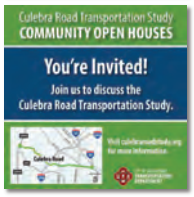
FLYER

Email attachments included:

IMAGES







TECHNICAL ADVISORY GROUP OUTREACH

On Sept. 16, 2022, an e-mail was sent to the membership of the study's Technical Advisory Group (TAG) to inform them of the meeting. The email included meeting details and the bilingual flyer.

A follow up reminder e-mail was sent on Sept. 26, 2022.

The list of recipients and copies of the emails are included below.

TAG Membership Sent Meeting Notice

Name	Representing
Abigail Kinnison	VIA Metropolitan Transit
Alanna Reed	City of San Antonio
Andrew Gutierrez	City of San Antonio
Arturo Herrera	VIA Metropolitan Transit
Bianca Thorpe	VIA Metropolitan Transit
Brandon Ross	City of San Antonio
Brenda Hicks-Sorensen	City of San Antonio
Brian Mast	San Antonio River Authority
Christina De La Cruz	City of San Antonio
Christopher Georges	City of San Antonio
Clifton Hall	Alamo Area Metropolitan Planning Organization
Clinton Eliason	City of San Antonio
Colleen Hord	City of San Antonio
Dale Picha	Texas Department of Transportation
Darcie Schipull	Texas Department of Transportation
David McBeth	City of San Antonio
David Pulido	Texas Department of Transportation
Dean White	San Antonio Police Department
Deborah Scharven	City of San Antonio
Emilio Rodriguez	City of San Antonio
Emily Royall	City of San Antonio
Eric Salazar	City of San Antonio
Erika Ragsdale	City of San Antonio
Guadalupe Campos	City of San Antonio
Harley Hubbard	City of San Antonio
Ian Benavidez	City of San Antonio
Isidro Martinez	Alamo Area Metropolitan Planning Organization
Jennifer Lopez-Garza	City of San Antonio
Jesse Quesada	City of San Antonio
Jessica Dovalina	City of San Antonio
Jose Salazar	City of San Antonio

Name	Representing
Joshua Jaeschke	City of San Antonio
Kathleen Buckalew	City of San Antonio
Kimberly Rendon	City of San Antonio
Laura Parker	City of San Antonio
Laura Reyna	City of San Antonio
Leroy San Miguel	Northside Independent School District
Lilly Banda	City of San Antonio
Marc Jacobson	City of San Antonio
Marcus Hammer	City of San Antonio
Mark C Bird	City of San Antonio
Mark Loiselle	City of San Antonio
Martin Molina	Edgewood Independent School District
Matt Jimenez	San Antonio Fire Department
Nadia Islam	San Antonio Housing Authority
Nora Gonzales	City of San Antonio
Robert Potter	City of San Antonio
Roberta Sparks	City of San Antonio
Rudy Nino	City of San Antonio
Sek Choy	City of San Antonio
Sonia Jiménez	Alamo Area Metropolitan Planning Organization

Elizabeth Story

From: Jacob T. Floyd (Transportation) <[redacted]
Sent: Friday, September 16, 2022 4:05 PM
To: Jacob T. Floyd (Transportation); Debora Gonzalez (Transportation); Catherine J Hernandez (Transportation)
Subject: Join Us: Culebra Road Transportation Study Community Open Houses
Attachments: Culebra Road Community Open House.pdf; Oct 1 2022 - Culebra Rd Community Open House.ics; Oct 4 2022 - Culebra Rd Community Open House.ics

Dear Technical Advisory Group Member:

The City of San Antonio invites you to attend the second Community Open House series for the Culebra Road Transportation Study from Loop 1604 to I-10. Whether you drive, walk, bike, or ride transit on Culebra Road, the City of San Antonio wants to hear from you!

In 2021, the City heard from nearly 600 active participants during our last round of community outreach. As a result of the valuable feedback received, our designers are studying the possibility of wider and protected sidewalks, dedicated bicycle facilities, improved crosswalk connections, improved transit facilities, shade-providing trees, and multi-purpose traffic-calming devices.

Details for the Community Open Houses are below:

Saturday, October 1, 2022
9:00 a.m. to 11:00 a.m.
Holy Cross High School – Convocation Center
426 N. San Felipe Street
San Antonio, TX 78228

Tuesday, October 4, 2022
6:00 p.m. to 8:00 p.m.
Alamo City Apostolic Church
9302 Timber Path
San Antonio, TX 78250

Virtual Option
Participate online by visiting www.culebrasroadstudy.org from Saturday, October 1, 2022, through Monday, October 31, 2022. Identical information will be available at both in person options and the online option. All comments are requested to be postmarked or received on or before Wednesday, October 19, 2022, to be included in the official documentation of the open house series. Additional comments will still be welcome until Monday, October 31, 2022 to be included in the project file.

The community open houses will be conducted in English and Spanish. Please contact us if you need special communication or accommodation arrangements. For more information, please view the attached flyer, visit www.culebraroadstudy.org or call Jacob Floyd at [redacted].

Thank you,

The Culebra Road Corridor Study Team

1

Jacob Floyd, AICP, CNU-A
Transportation Planning Manager
Transportation Department
100 W. Houston St, 16th Floor | San Antonio, TX 78205
O: 210.207.0256
www.visionzerosa.com
www.sanantonio.gov/transportation

CITY OF SAN ANTONIO TRANSPORTATION DEPARTMENT

Elizabeth Story

From: Jacob T. Floyd (Transportation) [redacted]
Sent: Monday, September 26, 2022 4:31 PM
Cc: Jacob T. Floyd (Transportation); Debora Gonzalez (Transportation); Catherine J Hernandez (Transportation)
Subject: Reminder: Culebra Road Transportation Study Community Open Houses
Attachments: Culebra Road Community Open House.pdf; Oct 1 2022 - Culebra Rd Community Open House.ics; Oct 4 2022 - Culebra Rd Community Open House.ics

Good afternoon Technical Advisory Group Member:

The City of San Antonio invites you to attend the second Community Open House series for the Culebra Road Transportation Study from Loop 1604 to I-10. Whether you drive, walk, bike, or ride transit on Culebra Road, the City of San Antonio wants to hear from you!

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Thank you,

The Culebra Road Corridor Study Team

Jacob Floyd, AICP, CNU-A
Transportation Planning Manager
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O: 210.207.0256
www.visionzerosa.com
www.sanantonio.gov/transportation

CITY OF SAN ANTONIO
TRANSPORTATION
DEPARTMENT

2

NEWS RELEASE

On Sept. 20, 2022, the City of San Antonio emailed out a news release describing the project and advertising the community open houses. A copy is included below.

Of note, the following news stories ran:

- Sept. 30: KSAT 12 aired story on the study and upcoming meetings
- Oct. 1: FOX 29 aired story about Oct. 1 meeting, study and upcoming meeting

Elizabeth Story

From: Joe Conger (Transportation) [redacted]
Sent: Tuesday, September 20, 2022 9:47 AM
To: Elizabeth Story
Subject: NEWS RELEASE: Residents invited to Share Feedback at Culebra Corridor Open Houses

From: City Communications & Engagement <Office.Communications@sanantonio.gov>
Sent: Tuesday, September 20, 2022 9:46 AM
Subject: NEWS RELEASE: Residents invited to Share Feedback at Culebra Corridor Open Houses

CITY OF SAN ANTONIO
TRANSPORTATION DEPARTMENT

FOR IMMEDIATE RELEASE
CONTACT: Joe Conger, 210-207-5010
[redacted]

Residents invited to Share Feedback at Culebra Corridor Open Houses

SAN ANTONIO (September 20, 2022) — Whether you drive, walk, bike, or ride transit on Culebra Road, the City of San Antonio wants to share our proposed concepts with you, based on what we have learned from previous meetings with residents. Residents are invited to participate in a second Community Open House series this October as the City studies transportation improvements to Culebra Road from Loop 1604 to Interstate-10.

In-person community open houses will be held on:

Saturday, October 1, 2022	**Tuesday, October 4, 2022**
9:00 a.m. to 11:00 a.m.	6:00 p.m. to 8:00 p.m.
Holy Cross High School – Convocation Center	Alamo City Apostolic Church
426 N. San Felipe Street	9302 Timber Path
San Antonio, TX 78228	San Antonio, TX 78250

1

Residents seeking to attend virtually may participate in an online open house at www.culebraroadstudy.org starting on Saturday, October 1, 2022, at 9 a.m. through Monday, October 31, 2022. The online open house will feature identical information as the in-person events. All events will be conducted in English and Spanish.

The City is conducting the Culebra Road Transportation Study to identify opportunities to make Culebra Road a safer and friendlier road for drivers, pedestrians, transit users and bicyclists. The team has developed proposed improvements that enhance pedestrian and bicyclist environments, and support transit. The corridor extends approximately 13 miles in Council Districts 1, 5, 6, and 7 in San Antonio, Texas.

Since April, the City has heard input from nearly 600 residents. As a result of the feedback received, City designers are studying the possibility of wider and protected sidewalks, dedicated bicycle facilities, improved crosswalk connections, improved transit facilities, shade-providing trees, and multi-purpose traffic-calming devices. At the October 2022 community open houses, participants can see our proposed concepts and provide feedback.

Comments may be submitted at the in-person meetings, at www.culebraroadstudy.org, or mailed to City of San Antonio Transportation Department c/o Poznecki-Camarillo, 5835 Callaghan Road, Suite 200, San Antonio, Texas 78228. All comments are requested to be postmarked or received on or before Wednesday, October 19, 2022, to be included in the official documentation of the open house series. Additional comments will still be welcome until Monday, October 31, 2022 to be included in the project file.

The community's participation is critical to help identify a unifying vision for Culebra Road.

For more information or for special accommodations, visit www.culebraroadstudy.org or call Jacob Floyd at (210) 207-0256 or by email at [redacted]

Culebra Road Transportation Study Area

2

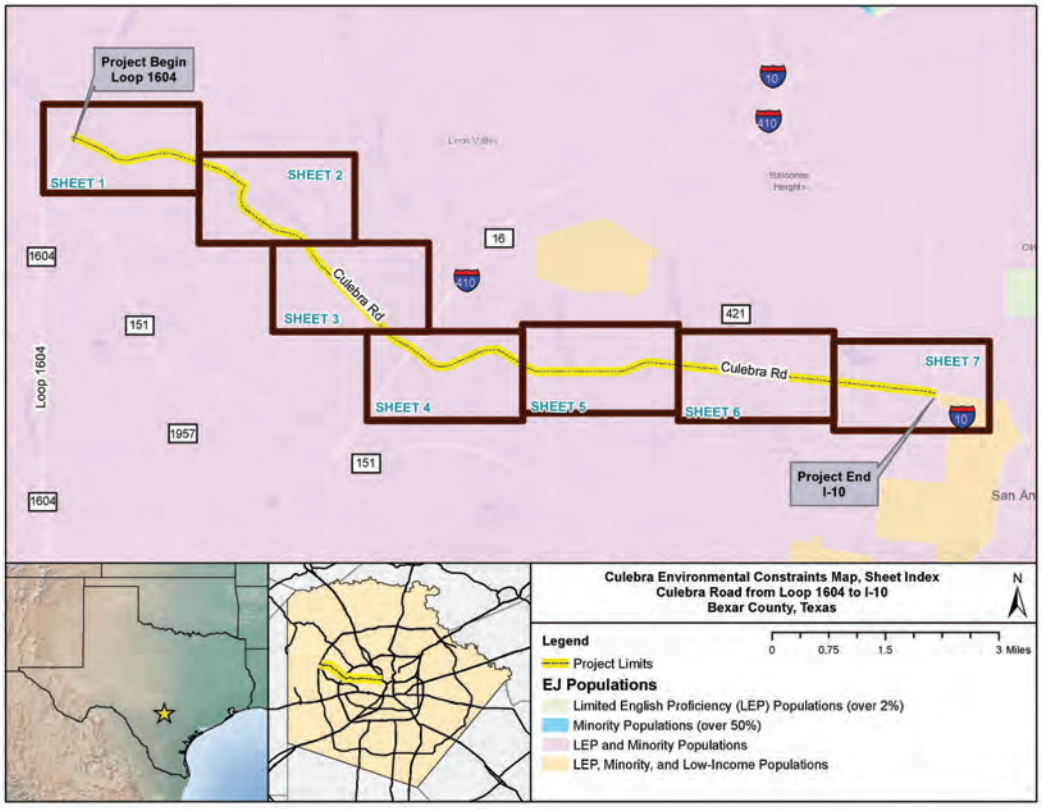
APPENDIX B

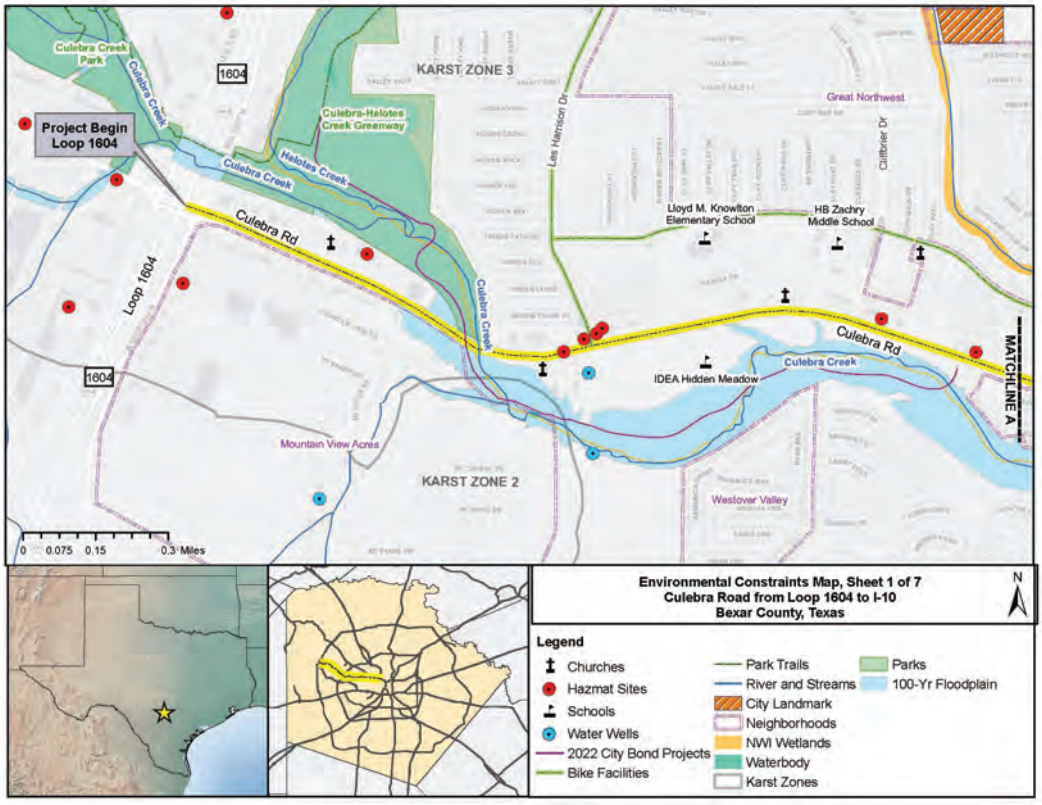
Multimodal Corridor Transportation Study

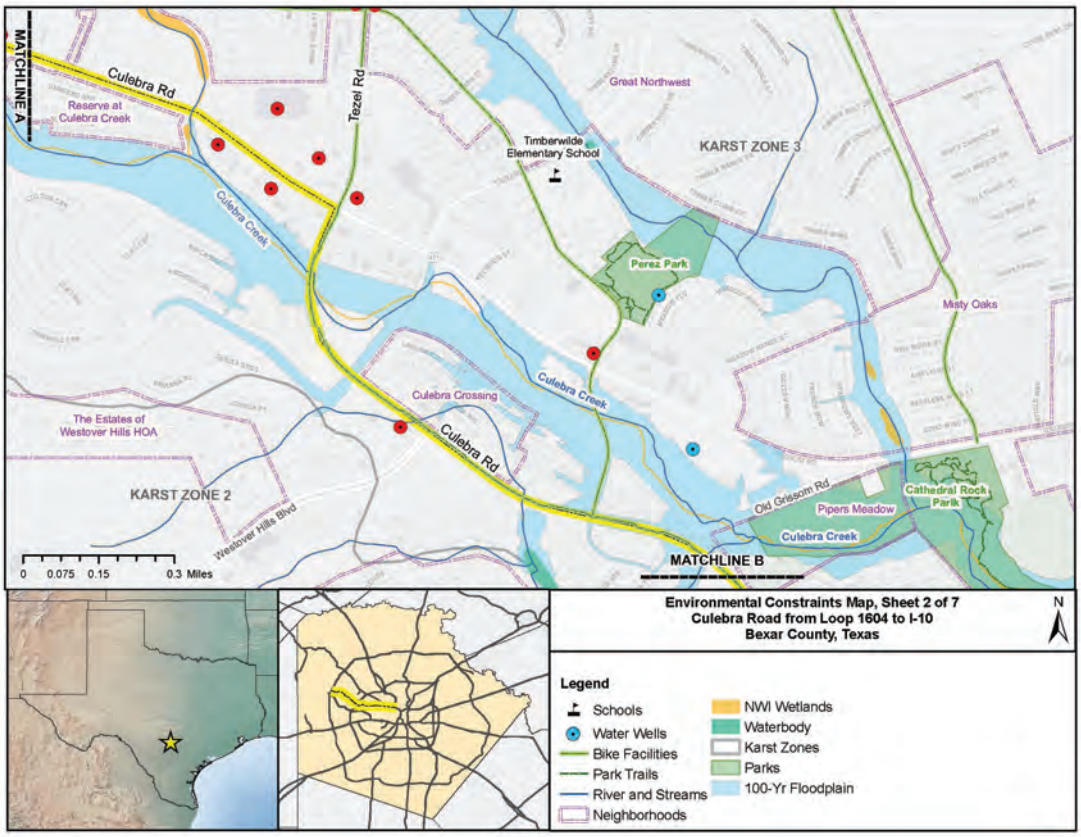
Appendix B: Culebra Environmental Constraints Map

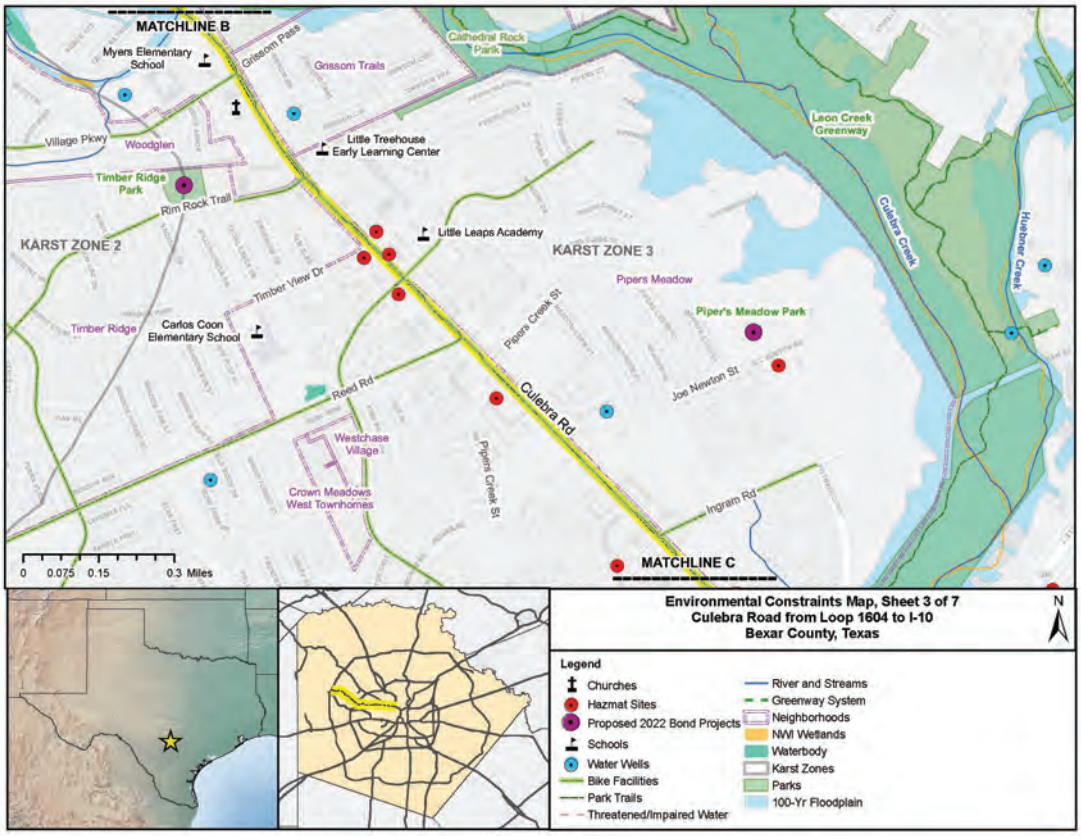
APPENDIX B

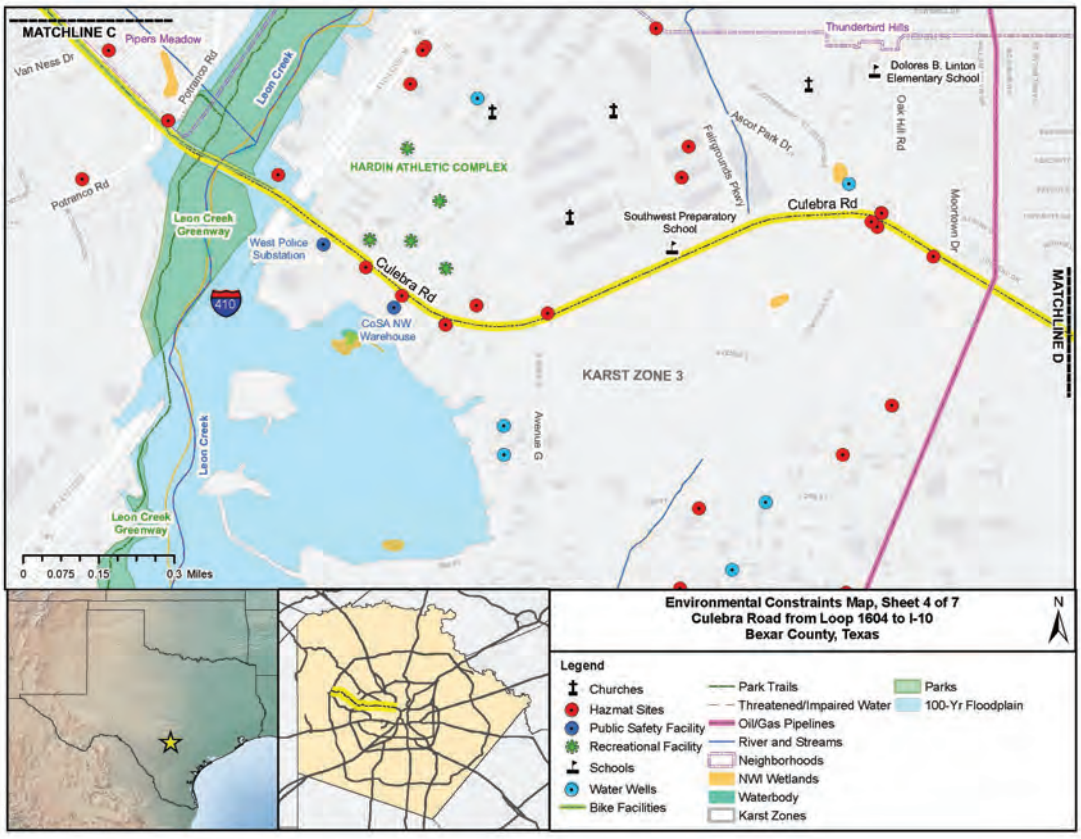
FIGURE 5: Environmental Constraints Map

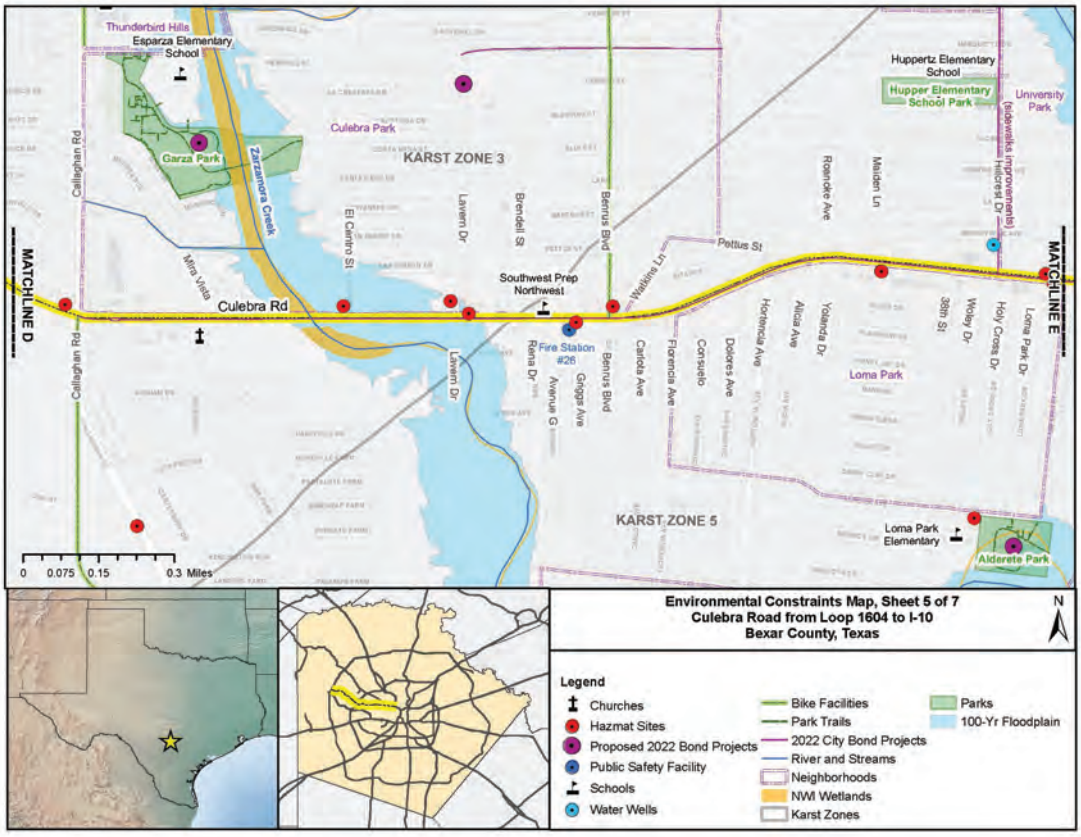





MATCHLINE A
Culebra Rd
Reserve at Culebra Creek
Tezel Rd
Great Northwest
Timberwilde Elementary School
KARST ZONE 3
Culebra Creek
Perez Park
Misty Oaks
Culebra Crossing
Culebra Creek
The Estates of Westover Hills HOA
Culebra Rd
KARST ZONE 2
Old Grissom Rd
Cathedral Rock Park
Pipers Meadow
Culebra Creek
Westover Hills Blvd
MATCHLINE B
0 0.075 0.15 0.3 Miles
Environmental Constraints Map, Sheet 2 of 7
Culebra Road from Loop 1604 to I-10
Bexar County, Texas
N
Legend
Schools
Water Wells
Bike Facilities
Park Trails
River and Streams
Neighborhoods
NWI Wetlands
Waterbody
Karst Zones
Parks
100-Yr Floodplain


MATCHLINE B
Myers Elementary School
Grissom Pass
Grissom Trails
Cathedral Rock Park
Leon Creek Greenway
Village Pkwy
Woodglen
Little Treehouse Early Learning Center
Timber Ridge Park
Rim Rock Trail
Culebra Creek
Huebner Creek
KARST ZONE 2
Little Leaps Academy
KARST ZONE 3
Timber View Dr
Pipers Meadow
Timber Ridge
Carlos Coon Elementary School
Pipers Creek St
Piper's Meadow Park
Joe Newton St
Reed Rd
Culebra Rd
Westchase Village
Crown Meadows West Townhomes
Pipers Creek St
Ingram Rd
MATCHLINE C
0 0.075 0.15 0.3 Miles
Environmental Constraints Map, Sheet 3 of 7
Culebra Road from Loop 1604 to I-10
Bexar County, Texas
N
Legend
Churches
Hazmat Sites
Proposed 2022 Bond Projects
Schools
Water Wells
Bike Facilities
Park Trails
Threatened/Impaired Water
River and Streams
Greenway System
Neighborhoods
NWI Wetlands
Waterbody
Karst Zones
Parks
100-Yr Floodplain


MATCHLINE C
Pipers Meadow
Van Ness Dr
Potranco Rd
Leon Creek
HARDIN ATHLETIC COMPLEX
Leon Creek Greenway
West Police Substation
410
CoSA NW Warehouse
KARST ZONE 3
Avenue G
Thunderbird Hills
Dolores B. Linton Elementary School
Oak Hill Rd
Fairgrounds Pkwy
Arcot Park Dr
Culebra Rd
Southwest Preparatory School
Moortown Dr
MATCHLINE D
0 0.075 0.15 0.3 Miles
Environmental Constraints Map, Sheet 4 of 7
Culebra Road from Loop 1604 to I-10
Bexar County, Texas
N
Legend
Churches
Hazmat Sites
Public Safety Facility
Recreational Facility
Schools
Water Wells
Bike Facilities
Park Trails
Threatened/Impaired Water
Oil/Gas Pipelines
River and Streams
Neighborhoods
NWI Wetlands
Waterbody
Karst Zones
Parks
100-Yr Floodplain


Thunderbird Hills
Esparza Elementary School
Culebra Park
Garza Park
Zarzamora Creek
KARST ZONE 3
Callaghan Rd
Mira Vista
Culebra Rd
MATCHLINE D
Southwest Prep Northwest
Fire Station #26
KARST ZONE 5
Lavern Dr
El Carlito St
Brendell St
Benrus Blvd
Walkins Ln
Pettus St
Huppertz Elementary School
Hupper Elementary School Park
University Park
Roanoke Ave
Malden Ln
Hortencia Ave
Alicia Ave
Yolanda Dr
Florencia Ave
Consuelo
Dolores Ave
Carlota Ave
Reina Dr
Avenue G
Griggs Ave
38th St
Wesley Dr
Holy Cross Dr
Loma Park Dr
Loma Park
Loma Park Elementary
Alderete Park
MATCHLINE E
0 0.075 0.15 0.3 Miles
Environmental Constraints Map, Sheet 5 of 7
Culebra Road from Loop 1604 to I-10
Bexar County, Texas
N
Legend
Churches
Hazmat Sites
Proposed 2022 Bond Projects
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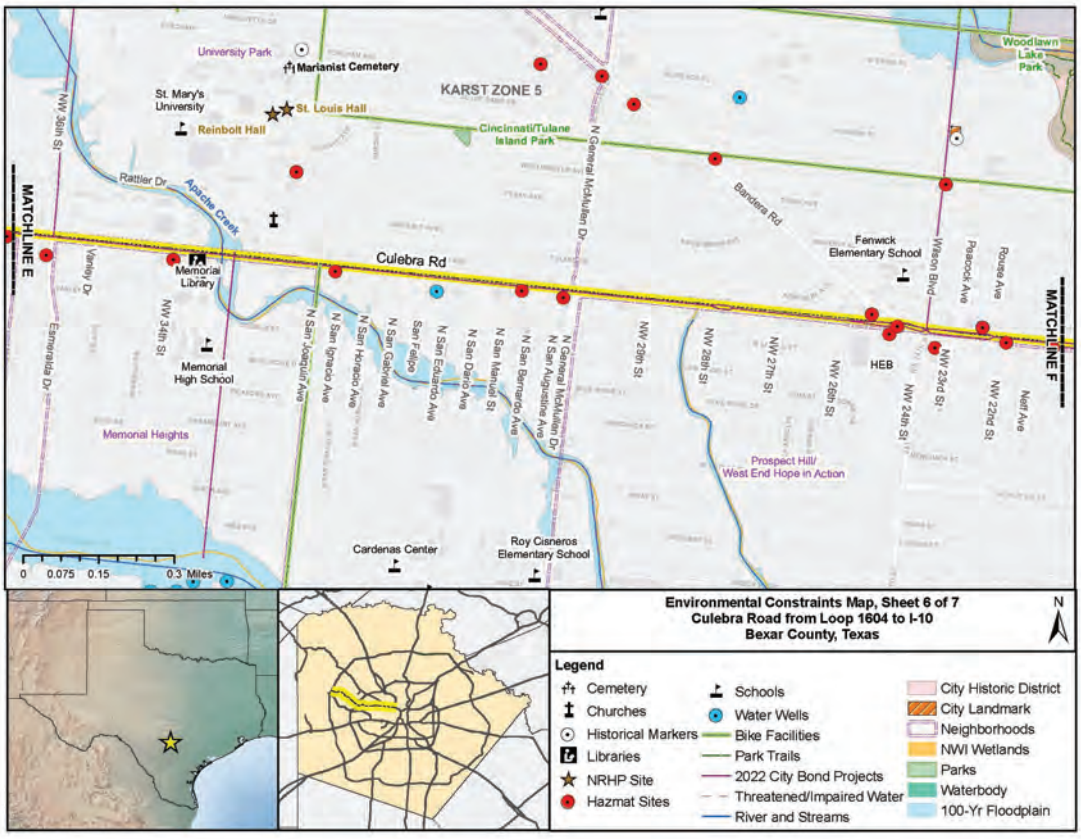
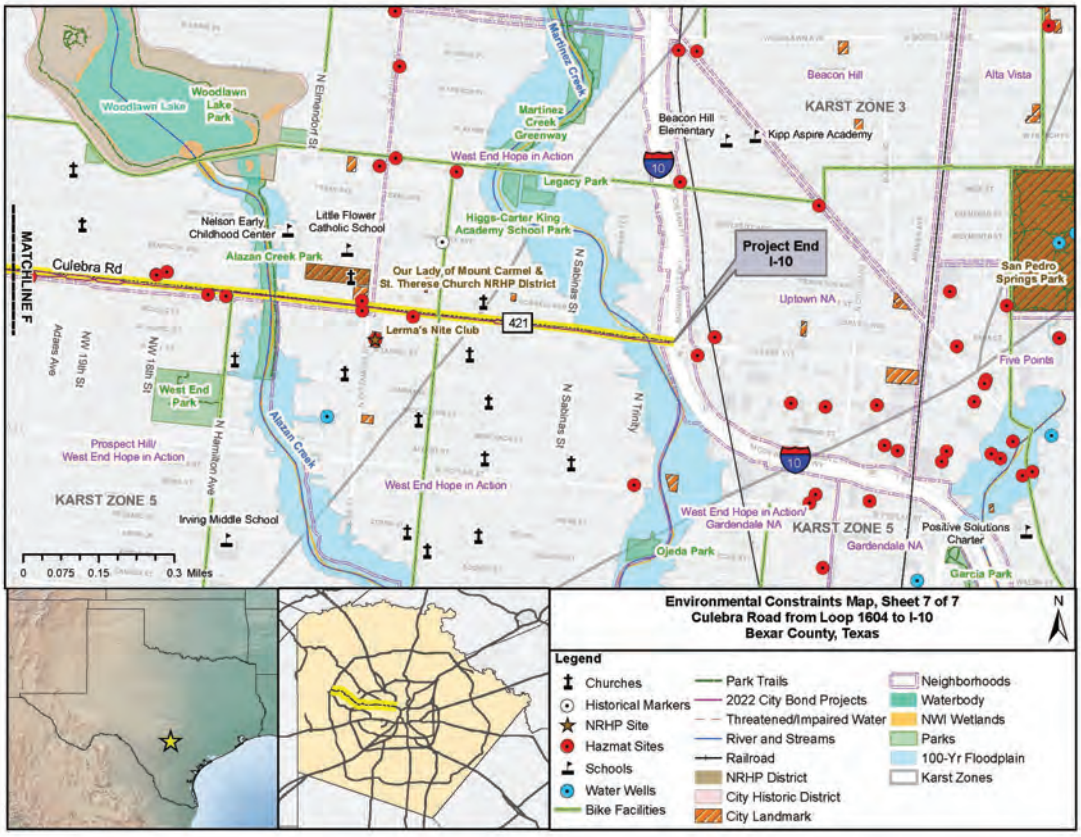

University Park
Marianist Cemetery
St. Mary's University
St. Louis Hall
Reinbolt Hall
KARST ZONE 5
Cincinnati/Tulane Island Park
Woodlawn Lake Park
MATCHLINE E
MATCHLINE F
Culebra Rd
Memorial Library
Memorial High School
Memorial Heights
Fenwick Elementary School
HEB
Prospect Hill/ West End Hope in Action
Cardenas Center
Roy Cisneros Elementary School
0 0.075 0.15 0.3 Miles
Environmental Constraints Map, Sheet 6 of 7
Culebra Road from Loop 1604 to I-10
Bexar County, Texas
N
Legend
Cemetery
Churches
Historical Markers
Libraries
NRHP Site
Hazmat Sites
Schools
Water Wells
Bike Facilities
Park Trails
2022 City Bond Projects
Threatened/Impaired Water
River and Streams
City Historic District
City Landmark
Neighborhoods
NWI Wetlands
Parks
Waterbody
100-Yr Floodplain


Woodlawn Lake Park
Martinez Creek Greenway
Beacon Hill
Alta Vista
KARST ZONE 3
Beacon Hill Elementary
Kipp Aspire Academy
West End Hope in Action
Legacy Park
Nelson Early Childhood Center
Little Flower Catholic School
Higgs-Carter King Academy School Park
Project End I-10
Culebra Rd
Alazan Creek Park
Our Lady of Mount Carmel & St. Therese Church NRHP District
San Pedro Springs Park
Uptown NA
Lerma's Nite Club
Five Points
West End Park
Prospect Hill/ West End Hope in Action
KARST ZONE 5
Irving Middle School
Ojeda Park
Gardendale NA
Positive Solutions Charter
Garcia Park
0 0.075 0.15 0.3 Miles
Environmental Constraints Map, Sheet 7 of 7
Culebra Road from Loop 1604 to I-10
Bexar County, Texas
N
Legend
Churches
Historical Markers
NRHP Site
Hazmat Sites
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Threatened/Impaired Water
River and Streams
Railroad
NRHP District
City Historic District
City Landmark
Neighborhoods
Waterbody
NWI Wetlands
Parks
100-Yr Floodplain
Karst Zones

APPENDIX C

Multimodal Corridor Transportation Study

Appendix C: Culebra Road Corridor Study -
Existing Conditions Memo (April 12, 2022)

APPENDIX C

Existing Conditions Technical Report

MEMO

TO: Debora Gonzalez, Project Manager

FROM: Jemal Ali, PE, PMP; Michael Trueblood, PE, PTOE; Julio Ramos, PE, PTOE

SUBJECT: 30900399A Culebra Road Corridor Study; Task 3: Existing Conditions Memo Rev 01

DATE: April 12, 2022

EXISTING CONDITIONS SUMMARY

WSP was contracted by the City of San Antonio to complete a Multimodal Planning Study for Culebra Road. The project limits are from Loop 1604 to IH-10, and the corridor extends approximately 13 miles. The project is located within northwest Bexar County, City of San Antonio, Texas. This memo summarizes the existing conditions of the corridor and documents the corridor characteristics, establishes how the corridor is currently functioning, identifies existing issues that may limit or challenge potential solutions or recommendations, and identifies deficiencies or safety issues that should be addressed. This memo also describes the review of available data, crash analyses, traffic data collection and field visit notes.

The study area map showing the limits of the corridor is presented in **Figure 1.** The western and eastern ends of the project are part of the TxDOT system. On the west, FM 471/Culebra Road extends from Loop 1604 to Tezel Road. On the east, Spur 421/Culebra Road extends from NW 24th Street to I-10. Culebra Road is oriented in a northeasterly alignment. For purposes of this study, Culebra Road will be referred to as east-west and the intersecting roadways and side streets will be referred to as north-south orientation.

WSP USA
9311 San Pedro, Suite 700
San Antonio, TX 78216

Tel.: 210-247-4360
wsp.com

Figure 1 – Project Limits

Page 2

CORRIDOR CHARACTERISTICS

CORRIDOR REVIEW

Culebra Road is a 13 miles long project extends from IH-10 to Loop 1604. It is a principal/minor arterial ranging from four to seven lanes cross section spanning several land use characteristics.

Based on the land use characteristics, the corridor was reviewed in five sections as presented in Table 1and shown in **Figure 2.** The functional classification of Culebra Road is split into Principal Arterial where the road is intended to serve through traffic where access is carefully controlled and minor Arterial with more emphasis on land use accesses and lower level of traffic mobility than the Principal Arterial.

Table 1 – Culebra Road Segments and Functional Classification

Sections	Locations	Functional Class
Section A	I-10 to Bandera Road	Principal Arterial – Other
Section B	Bandera Road to Callaghan Road	Minor Arterial
Section C	Callaghan Road to IH-410	Minor Arterial
Section D	IH-410 to Tezel Road	Minor Arterial
Section E	Tezel Road to Loop 1604	Principal Arterial – Other

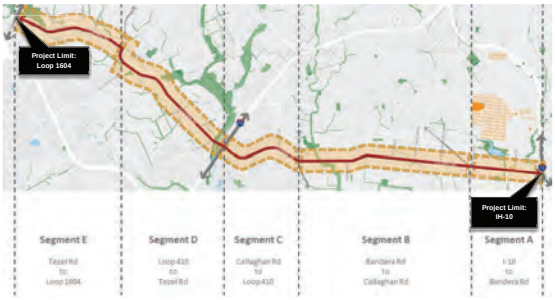

Figure 2 – Corridor Segments

Page 3

FIELD OBSERVATIONS

WSP performed site visits in December 2020 while traffic data was being collected and again in January 2021. The traffic data collection was conducted on a day with desirable weather conditions and good driving visibility. An overview of the information that was collected during the December field visit as well as collected from previous data is summarized below:

- Corridor length - 13 miles
- Corridor roadway functional classification - Principal Arterial – Other
- Area Type - Urbanized Area classification
- Posted Speed Limits:
  - Loop 1604 to Reed Road – 45 mph
  - Reed Road to I-10 – 40 mph
- Lane width - existing Lane width varies throughout the corridor. The following are typical approximate dimensions:
  - 6-lane, 2-way with Two Way Left Turn Lane (TWLTL) measured between 19th Street and 18th Street;
    - Outer lane - 12 to 14 feet
    - Middle lane – 11 feet
    - Inner lane – 10 feet
    - TWLT – 14 to 16 feet
  - 6-lane, 2-way with TWLTL with bike lane measured between Van Ness Road and Potranco Road;
    - Outer lane - 11 feet
    - Middle lane – 11 feet
    - Inner lane – 12 feet
    - TWLT – 16 feet
    - Bike lane – 5 feet
  - 4-lane, 2-way with TWLTL measured between Loma Park Drive and 36th Street;
    - Outer lane - 12 feet
    - Inner lane – 11 feet
    - TWLT – 14 to 15 feet
  - 4-lane, 2-way with median measured near idea school;
    - Outer lane – 13 to 14 feet
    - Inner lane – 11 feet
    - Median – 17 feet
  - 4-lane, 2-way without median measured West of Callaghan Road;
    - Outer lane – 12 to 13 feet
    - Inner lane – 11 to 12 feet

Page 4

- Roadway width
  - Curb-to-curb width for Loop 1604 to Tezel/Grissom is approximately 65 to 66 feet, except along a segment east of Loop 1604 which is 62 feet wide.
  - Tezel/Grissom to IH-410 is 92 to 94 feet wide
  - IH-410 to Avenue G is 58 feet wide;
  - Avenue G to Callaghan Road is 48 feet wide; and
  - Callaghan Road to Wilson Boulevard is 61 feet wide; and
  - Wilson Boulevard to IH-10 is 82 feet wide.
- Right-of-Way

  Apparent Right-of-Way (ROW) reviewed and approximate width is listed below. However, PCI is currently collecting ROW information along the corridor that will be included in the project base map.
  - 1604 to Tezel/Grissom is 120 feet
  - Tezel/Grissom to Old Grissom Rod is 100 feet
  - Old Grissom Rod to IH-410 is 100 feet wide
  - IH-410 to Moortown Drive = 80 feet
  - Moortown Drive to 490 feet West of El Centro = 100 feet
  - 490 feet West of El Centro St to Bandera = 80 feet
  - Bandera to IH-10 = 120 feet
- Lane Assignment
  - 6-lane, 2-way with Two Way Left Turn Lane (TWLTL) between SB I-10 Frontage Road and Bandera Road
  - 4-lane, 2-way with TWLTL between Bandera Road Callaghan Road;
  - 4-lane, 2-way between Callaghan Road and Avenue G;
  - 4-lane, 2-way with TWLTL between Avenue G and IH-410;
  - 6-lane, 2-way with TWLTL between IH-410 and Grissom Road;
  - 4-lane, 2-way with TWLTL between Grissom Road and Loop 1604
- Roadway surface condition appears to need improvement between Bandera and IH-410
- During the field visit, several instances occurred where pedestrians were spotted crossing mid-block across Culebra Road, especially at bus stop locations. In one instance, a pedestrian was seen crossing mid-block but did not use the dedicated mid-block crosswalks which were within 500 feet.
- Sidewalk condition and ADA requirements

  Sidewalk/curb conditions, missing sidewalk locations, and ADA requirements at the intersections were evaluated based on the site visit and a desktop review.
  - Missing sidewalks were observed at the following locations and included in the basemap - Appendix A:
    - Between Rogers Road to Nueces Canyon - south side;
    - Between Joe Newton and Ingram Road – north side;
    - Between Avenue G and Tomslick Ave – south side; and

    - Between Tomslick Ave and Callaghan Road– both north and south sides. It should be noted that there were a few discrepancies among sidewalk and sidewalk gaps between the data received from the City and the GIS database. The corrections were marked during the field visit to replicate existing field conditions.
  - 2010 ADA Standards for Accessible Design (403.5.3 Passing Spaces) require a 5 feet X 5 feet passing space for 200 feet where sidewalks width is less than 5 feet. Below is the list of locations where the existing sidewalk appeared to be less than 5 feet.
    - WB sidewalk between Moortown Dr and St Joseph's Way.
    - WB sidewalk between Mira Vista and Callaghan Road.
    - EB sidewalk between Mira Vista and Zarzamora Creek.
    - WB sidewalk between Camino Santa Maria and NW 36th St.
  - Existing ADA ramps do not have "Detectable Warnings" at:
    - Culebra Road at Culebra Station;
    - Culebra Road at NW 36th St;
    - Culebra Road at Memorial St;
    - Culebra Road atd Camino Santa Maria;
    - Culebra Road at N San Felipe Ave;
  - Existing ADA ramps do not met/improvements are necessary at:
    - Culebra Road at Alamo Downs Pkwy - has ADA ramps but no connectivity between South leg curbs ramps;
    - South leg crosswalk is missing at Culebra Road at NW 38th St,
    - The existing signal pole is in the center of the south leg curb ramp at the Culebra Road and IH-10 SBFR intersection; and
    - Several unsignalized intersections do not have detection warning surfaces and crosswalks.
- There are unsignalized mid-block crosswalks at the following locations between I-10 and IH-410
  - Standard crossing between Mira Vista and Zarzamora Creek close to the bus stop; and
  - Z-type crossing between 28th Street and Rollins Avenue.
- An existing Bike Lane along Culebra Road (5 feet bike lane separated by an 8" solid white line on both sides of the roadway) located between IH-410 and Grissom Road.
- No bicyclists were spotted during field visit.
- No bike amenities (bike racks) were spotted adjacent to the roadway.
- The bus stops summarized using GIS were consistent with those in the field.
- No on-street parking along the corridor.
- In the AM peak hour period, no congestion was spotted along the corridor. In the PM peak hour period, vehicles were queued at the IH-10, IH- 410 and Loop 1604 approaches. Loop 1604 queue extended to Rogers Road.
- Work zones were in place at the following locations; IH-410 and Loop 1604 interchange,

including on-going construction along the U-Turns. The sidewalk was closed in the eastbound direction approximately 50 feet east of Rogers Street.

CORRIDOR BASE MAPPING

The corridor base map was developed with an aerial image as background with apparent ROW identified. WSP extracted the following key elements from the GIS database provided by the City to include in the base map (refer to **Appendix A**):

- Bike facilities;
- Land uses;
- VIA bus network and bus stop locations;
- Apparent ROW; and
- Existing Sidewalk

During the site visit, there were a few discrepancies in sidewalk and sidewalk gaps compared with the GIS file received from the City. The data from the GIS layers are updated based on the field visit to reflect existing conditions as per the field visit.

In addition, the base map includes pavement markings, lane designations, land uses, historic landmarks.

The GIS maps highlighting Bike facilities and the VIA bus network are presented in **Figure 3** on page 9 and **Figure 4** on page 10. Eight routes (82, 88, 282, 288, 606, 610, 618 and 660) are serving the Culebra corridor as shown in **Figure 4**. Route 82 operates at 15 minute frequency during the peak hour. Routes 282 and 288 serve the corridor late nights. The rest of the routes are running with a 60 minute frequency.

LAND USES

WSP also mapped land uses from the GIS data received from the City. The corridor passes through predominantly residential areas throughout the project with commercial spaces on both sides of the road with the exception of the industrial land uses located between IH-410 and Callaghan Road where Southwest Research Institute and Gustafson Stadium are located. Schools (including Idea Hidden Meadow School located between Lee Harrison Drive and Selene Drive), churches and historical places (including Basilica of the National Shrine of the Little Flower) are scattered throughout the corridor. Five schools and seventeen churches are located within 500 feet of Culebra Road, as noted below:

- Schools
  - Little Flower Catholic Private School
  - Marin B. Fenwick Academy Public School
  - Southwest Preparatory School – Northwest Elementary Public School
  - Pauline Nelson Early Childhood Education Center
  - IDEA Hidden Meadow Public School

- Churches
  - Our Lady of Mount Carmel Church*
  - Westover Hills Assembly of God Church
  - Iglesia Cristiana Northwest Church
  - Saint Michaels Episcopal Church
  - Our Lady of Mount Carmel and Saint Therese Church*
  - Basilica of The National Shrine of The Little Flower*
  - Centro Cristiano International
  - Church of Christ Iglesiani Cristo
  - Congregation Vida Nueva
  - Fuente de Vida Christian Church
  - Hosanna Assembly of God Church
  - Korean United Baptist Church
  - Laurel Street Church of Christ
  - Luz Apostolica Church
  - Redemption Tabernacle
  - Village Parkway Baptist Church
  - West End Baptist Church

* Historical buildings

Figure 5 on page 11 illustrates the key land uses within the project limits.

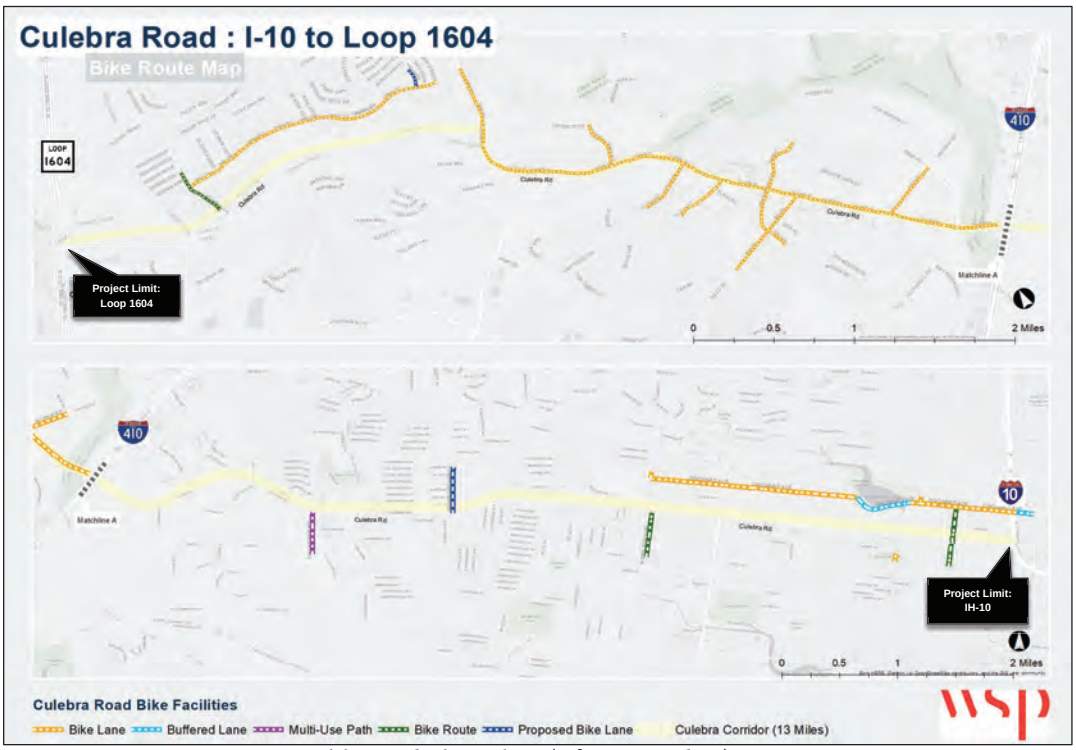

Figure 3 – Culebra Road Bike Facilities (refer to Appendix B)

Page 9

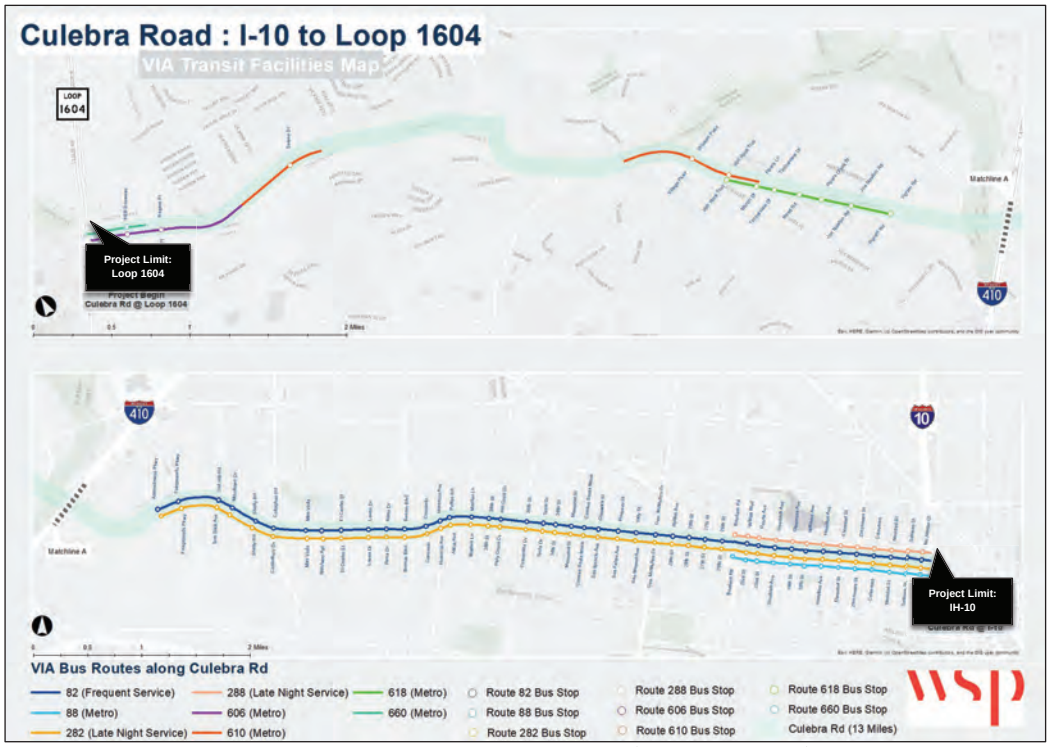

Figure 4 –Culebra Road VIA Bus Routes & Bus Stop Locations (refer to Appendix B)

Page 10

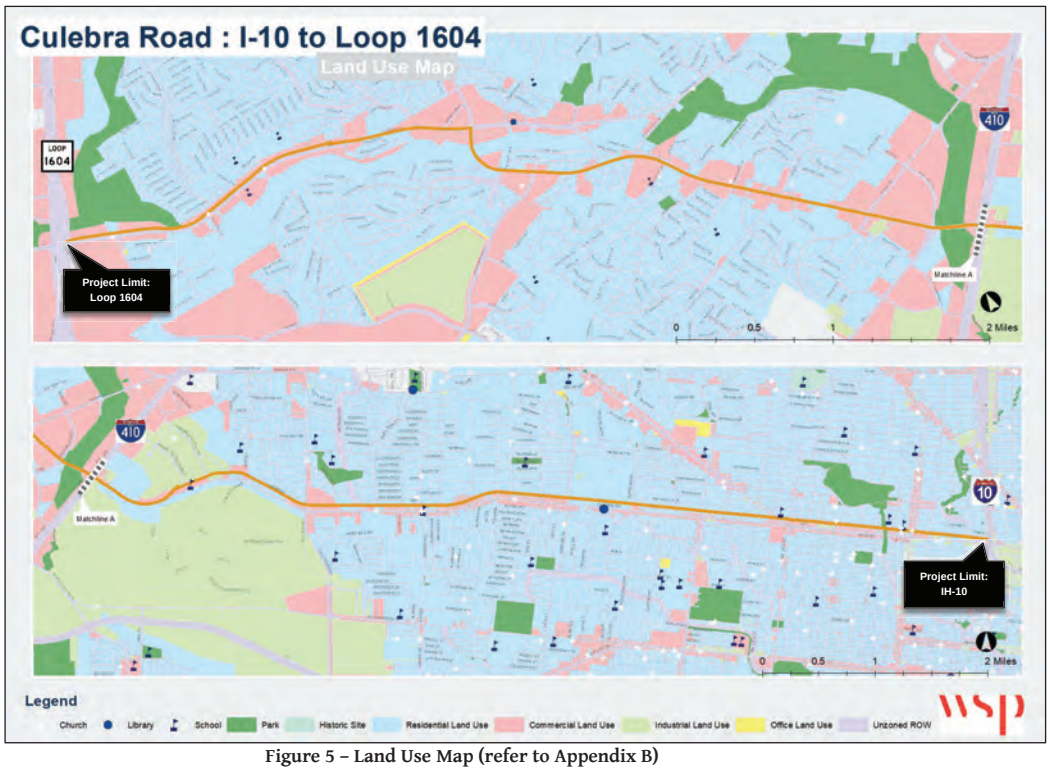

Figure 5 – Land Use Map (refer to Appendix B)

TRAFFIC DATA COLLECTION

To identify current traffic patterns along the corridor, typical weekday traffic counts were conducted at 38 project intersections as well as three 24-hour bi-directional counts. The turning movement counts included passenger car, bus, and heavy vehicle traffic, with additional counts performed to record bicycle and pedestrian activity along the corridor on December 15, 2020 from 7:00 AM - 9:00 AM for the AM peak period and from 4:00 PM - 6:00 PM for the PM peak period.

Table 2 includes a summary of the three 24-hour count locations along Culebra Road. This information was used to determine the corridor-wide morning and afternoon peak hours. The peak hours were determined to be 7:15 AM to 8:15 AM and 5:00 PM to 6:00 PM.

Table 2 – 24-hour Count Summary

Count Location	Eastbound	Westbound	Bi-Directional
1 - Between Loop 1604 and Rogers Road	17,890	17,642	**35,532**
2 - Between Ingram Road and Potranco Road	20,540	18,614	**39,154**
3 - Between N Hamilton Ave and Elmendorf Street	18,153	16,994	**35,147**

Table 3 summaries of the average AM and PM period heavy vehicle percentages along the corridor for each segment based on the AM and PM period counts. As show, Peak period counts collected are 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. On average, the AM has 3.0% heavy vehicles estimate whilst the PM is about 1.6%. Detailed analyses for each intersection are provided in Appendix D.

Table 3 – AM/PM Peak Period Heavy Vehicle Percentage Summary

	AM		PM	
Segment	Eastbound	Westbound	Eastbound	Westbound
1: Loop 1604 to Tezel/Grissom	2.1%	3.2%	1.1%	0.8%
2: Tezel to Micron Dr/Pipers Ln	2.2%	3.5%	1.6%	0.8%
3: Micron Dr/Pipers Ln to IH-410	2.5%	3.9%	2.3%	0.8%
4: IH-410 to Callaghan Road	3.2%	4.9%	2.5%	2.9%
5: Callaghan Road to Wilson Blvd	2.1%	2.5%	1.4%	1.2%
6: Wilson Boulevard to IH-10	2.2%	4.4%	2.4%	1.8%
Overall	2.4%	3.7%	1.9%	1.4%
Bi-Directional	3.0%		1.6%	

In addition to the data collection conducted in December 2020 the during COVID-19 pandemic, the following traffic data was reviewed:

1. Traffic counts prior to 2020 – provided from the City of San Antonio (TMC collected in April and June 2017; ATR collected on Year 2014/2015);

2. Traffic count data from SA Tomorrow Multimodal Transportation Plan – TMC collected in February and March 2015; and
3. Historical count data – obtained from the TxDOT Statewide Traffic Analysis and Reporting System (STARS II) Database or the TxDOT Statewide Planning Map.

Traffic data sources and Locations are presented in **Figure 6**:

Figure 6 – Traffic Data Location Map

Historical counts at Grissom Road/Tezel Road, Ingram Road, Callaghan Road and Zarzamora Street intersections are repeated in 2020 to develop COVID-19 factor (CF) to adjust the 2020 counts. Detailed traffic projection and COVID-19 count adjustment methodology memo is included in **Appendix C**. Detailed tabulated TMC and ATR data collected in December 2020 are included in **Appendix D**.

CRASH SUMMARY

Crash data was provided by City of San Antonio and consisted of crash data between January 1, 2017 - October 31, 2020. The data represented all vehicle, bicycle, and pedestrian crashes along on Culebra Road from Loop 1604 to I-10. Crashes were summarized for each study intersection as well as between each intersection. The crash summary focused on an evaluation of crash severity by location for vehicles, pedestrians, and bicycle crashes.

Table 3 to **Table 6** summarize the findings by crash year, travel mode, and severity.

A total of 3,488 crashes were recorded during January 1, 2017 - October 31, 2020 along Culebra Road. The majority of crashes (1,923) were corridor crashes that occurred between the study intersections, while the remaining 1,565 crashes occurred at intersections.

A total of 19 bicycle crashes were recorded, with 12 occurring at intersections. Similarly, 27 out of the 64 pedestrian crashes occurred at intersections.

As shown in Table 6, from a total of 64 pedestrian crashes, 37 are along the corridor while 27 are located at intersections. Most of the crashes (15 crashes) are with in Bandera Road to SB IH-410 FR followed by 11 crashes between SB I-10 FR to Bandera Road. The Zarzamora St intersection has the most pedestrian crashes (7 crashes) followed by Pipers Ln / Micron Dr (3 crashes). There were 11 fatal pedestrian crashes as shown in **Figure 8** on page 16.

Similarly, from a total of 19 bicycle crashes, 7 are along the corridor while 12 are located at intersections. Most of the crashes (3 crashes) are with in Bandera Road to SB IH-410 FR. The Cliffbrier Road intersection has the most bicycle crashes (3 crashes) followed by Reed Road (2 crashes). No bicycle fatal crashes were recorded during January 1, 2017 - October 31, 2020.

Detailed crash analyses tables for the corridor and intersections are presented in Appendix E.

Table 4 - Crash Summary by Year

Year	Total Crashes	Percentage
2017	890	*25.5%*
2018	898	*25.7%*
2019	979	*28.1%*
2020*	721	*20.7%*
Total Crashes (Jan 1, 2017 - Oct 31, 2020)		**3,488**

* 2020 crash counts are only from January 1 to October 31

Table 5 - Crash Type by Travel Mode

Transportation Mode	Angle	Head On	Left Turn	No Data[1]	Other	Rear End	Side swipe	Single Motor Vehicle	Total	Percent
Bicycle	0	0	0	0	0	0	1	18	**19**	*0.5%*
Pedestrian	0	0	0	0	0	2	0	62	**64**	*1.8%*
Vehicle	529	42	687	227	4	1243	334	339	**3405**	*97.6%*
Total	**529**	**42**	**687**	**227**	**4**	**1245**	**335**	**419**		
Percentage	*15.2%*	*1.2%*	*19.7%*	*6.5%*	*0.1%*	*35.7%*	*9.6%*	*12.0%*		
Total Crashes (Jan 1, 2017 - Oct 31, 2020)										**3,488**

Table 6 – Crash Severity

	Unknown	Not Injured	Injured	Fatal	Total Crashes
Total	**669**	**2197**	**606**	**16**	
Percentage	*19.2%*	*63.0%*	*17.4%*	*0.5%*	
Total Intersection Crashes (Jan 1, 2017 - Oct 31, 2020)					**3,488**

Table 7 – Pedestrian and Bicycle Crash Severity

Location	Unknown	Not Injured	Injured	Fatal	Total Crashes
Pedestrian					
At Intersection	1	3	21	2	27
On Segment	1	1	26	9	37
Total	2	4	47	11	64
Percentage	*3.1%*	*6.3%*	*73.4%*	*17.2%*	*100.0%*
Bicycle					
At Intersection	0	1	11	0	12
On Segment	0	0	7	0	7
Total	0	1	18	0	19
Percentage	*0.0%*	*5.3%*	*94.7%*	*0.0%*	*100.0%*

Figure 7 next page and **Figure 8** on page 17 illustrate the crashes locations and heat map along the study corridor. Additional crash summaries are included in **Appendix E.**

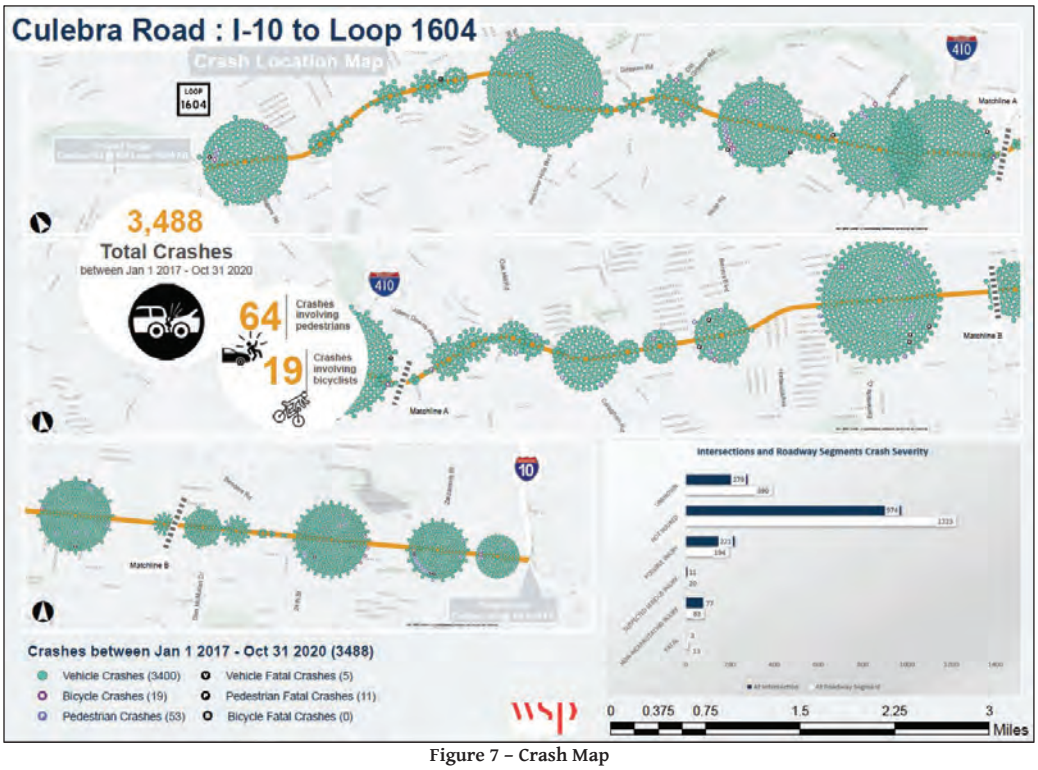

Figure 7 – Crash Map

Page 16

Figure 8 – Crash Heat Map

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EXISTING CONDITION OPERATIONAL ANALYSIS

Study area geometry, signal timings, and turning movement counts for each study intersection were input into Synchro 10 to evaluate AM and PM peak hour traffic operational characteristics. Corridor and intersection geometry were derived from the *SA Tomorrow* Synchro network, field observations, and aerial imagery. Average intersection delay for each intersection was calculated for both AM and PM peak hour.

Delay is defined as additional travel time experienced by a driver beyond that required to travel at the desired speed, measured in seconds. Based on the calculated delay, a Level of Service (LOS) is assigned to represent quality of service. The Highway Capacity Manual (HCM) defines six levels of service, ranging from A to F based on a quantitative value of performance measures. LOS A represents the best operating conditions during analysis periods and LOS F represents the worst conditions. A change of LOS indicates that roadway performance has transitioned from one given range of traveler-perceivable conditions to another range.

Table 8 shows the performance measures and the thresholds for assigning LOS.

Table 8 - Highway Capacity Manual Performance Measures

LOS Threshold	Signalized Intersection (sec/veh)	Unsignalized Intersection (TWSC)* (sec/veh)
LOS A	<=10	0-10
LOS B	>10-20	>10-15
LOS C	>20-35	>15-25
LOS D	>35-55	>25-35
LOS E	>55-80	>35-50
LOS F	>80	>50

* The overall intersection delay displayed for TWSC intersections is based on the highest turning movement delay calculated along the stop-controlled approach.

To develop 2020 existing traffic volumes for the traffic operation analyses, the December 2020 counts conducted during the COVID-19 pandemic were adjusted using a COVID-19 Factor (CF) of 1.30. The historical data collected in 2015 and 2017 were adjusted to 2020 using a growth rate developed from AAMPO's TDM model. Detailed traffic projection and COVID-19 count adjustment methodology memo is included in **Appendix C**.

Table 8 and **Table 9** show the Level of Service and Delay analysis results for the signalized and unsignalized intersections for the 2020 AM and PM Peak hours along the Culebra Road corridors. Synchro outputs are included in **Appendix F.**

Table 9 – Signalized Intersection Level of Service and Average Delay

No.	Intersection	AM Peak Hour		PM Peak Hour	
		Level of Service	Delay (s/veh)	Level of Service	Delay (s/veh)
1	LP1604 SBFR	F	160.0	F	108.1
2	LP1604 NBFR	F	171.8	F	187.2
3	Rogers Road	C	23.6	D	44.5
4	Les Harrison Dr	C	24.9	C	31.1
5	Cliffbrier Dr	B	11.0	B	13.5
6	Nueces Canyon/Village Park	B	16.8	B	14.3
7	Walmart/Commercial Properties	A	10.0	C	33.1
8	Grissom Road/Tezel Road	F	178.0	F	138.0
9	Arcadia Creek	C	21.2	A	3.4
10	Westover Hills Blvd/Ensenada	F	95.0	D	43.7
11	Ansley Bend Dr/Timber Path	B	19.3	C	28.7
12	Old Grissom Road	A	9.8	B	11.0
13	Village Pkwy/Grissom Pass	C	26.4	A	9.0
14	Rim Rock Trail/Commercial Property	B	10.9	B	18.4
15	Timber View Dr	D	35.9	A	6.4
16	Micron Dr/Pipers Ln	B	17.9	B	15.1
17	Reed Road	F	82.7	C	27.9
18	Ingram Road	C	20.6	F	128.1
19	Potranco Road	F	245.8	F	97.7
20	IH-410 SBFR	F	160.0	F	141.8
21	IH-410 NBFR	F	171.8	F	98.0
22	Commercial Properties/Baseball Field	C	24.0	B	10.1
23	Alamo Downs Pkwy	B	16.5	B	16.2
24	Tom Slick Ave/Oak Hill Road	C	20.9	D	41.3
25	Callaghan Road	C	33.5	D	39.3
26	El Centro St	B	14.2	B	15.0
27	Benrus Blvd	D	38.6	C	33.3
28	Alicia Ave	A	6.6	A	3.2
29	NW 38th St	B	11.7	A	8.9
30	Esmeralda Dr/NW 36th St	D	49.6	D	53.0
31	Memorial St/Rattler Dr	A	2.2	A	9.9
32	Camino Santa Maria	B	16.0	C	25.6
33	N San Felipe Ave	B	10.4	C	24.9
34	General McMullen Dr	D	36.0	D	52.7
35	Bandera Road	E	77.4	F	98.3
36	NW 24th St/Wilson	C	29.8	E	66.3
37	NW 19th St	A	5.3	B	10.4
38	Elmendorf St	A	7.1	B	14.3
39	N Zarzamora	C	33.3	D	37.6
40	IH-10 EBFR	C	31.8	E	69.6
41	IH-10 WBFR	C	29.2	C	33.2

As shown in **Table 9**, eight of the 41 signalized intersections (including Loop 1604) are operating at LOS F, two are operating at capacity (LOS E) and the remaining are operating at LOS D or better.

Table 10 – Unsignalized Intersection Level of Service and Average Delay

No	Intersection	Stop-Control Approach	Major Street Left Turn	AM Peak Hour				PM Peak Hour			
				LOS	Delay (s/veh)	Left Turn LOS	Left turn Delay (s/veh)	LOS	Delay (s/veh)	Left Turn LOS	Left turn Delay (s/veh)
1	Mountain View	NB	WBL	C	20.9	C	20.6	C	22.4	C	23.4
2	Coppertree Blvd	SB	EBL	F	78.7	B	10.1	F	>300	C	19.1
3	Camino Rosa	SB	EBL	C	20.8	B	10.1	F	77.3	C	24.7
4	Grissom Gate	WB	SBL	F	160.4	C	17.3	F	65.2	F	106.2
5	Pipers Creek St -SB	SB	EBL	F	56.3	C	15.5	F	>300	F	59.8
6	Pipers Creek St -NB	NB	WBL	F	218.3	F	>300	F	>300	F	155.5
7	Joe Newton St	SB	EBL	E	43.8	C	17.5	F	155.5	F	>300
8	Van Ness	EB	NBL	A	0	F	189.2	F	114.1	E	45.9
		WB	SBL	A	0	B	14.4	F	>300	F	90.7
9	Avenue G	NB	WBL	E	35.1	C	17.9	D	32.1	B	10.5
10	Fairgrounds Pkwy	SB	EBL	B	13.2	B	11.2	F	>300	B	12.9
11	Cantebury	NB	WBL	B	13.9	B	11	C	19.6	C	15.6
12	Hortencia Ave	NB	WBL	C	19.6	B	10.7	E	43.2	B	12.8
13	Mira Vista	SB	EBL	C	19.4	B	10.7	E	40.8	B	12.5
14	NW 34th St	NB	WBL	C	23.5	B	11.1	D	28.8	B	11.9
15	Neff Road	NB	WBL	F	156.4	D	33.8	F	>300	E	38.9
		SB	EBL	F	107.3	C	16.3	F	>300	F	55.3
16	N Hamilton	NB	WBL	F	>300	D	33.1	F	>300	D	28.5
		SB	EBL	F	>300	A	0	F	>300	E	47.6
17	Giffin Park Dr	NB	WBL	F	125.3	E	41.3	D	33.7	D	27
18	NW 28th St	NB	WBL	C	19.4	B	11.1	C	20.5	B	10.9
19	N Navidad Street	NB	WBL	D	30.6	A	0.0	C	19.8	A	0.0
		SB	EBL	C	15.6	A	0.0	D	25.9	A	0.0

Similarly, as shown in **Table 10**, thirteen stop control movements are operating at LOS F during the PM Peak. Six of the major Street Left turn movements are operating at unacceptable levels of service (LOS F) with delays at some movements are more than 300 seconds per vehicle.

ISSUES AND OPPORTUNITIES

WSP noted locations along the Culebra Road corridor where challenges and issues were evident as well as locations where potential opportunities are present. Below is a brief summary of those items noted.

ISSUES:

Generally, the issues noted below focused on safety and access for pedestrians and bicyclists. Motorists were also considered, but the primary focus is on the more vulnerable users of the corridor.

- The presence of a center two-way left-turn lane through most of the corridor adds to the roadway width that pedestrians must navigate when crossing and allows for left-turn movements to be conducted from both directions, into and out of side streets and driveways, with no traffic control in place. Left-turns into side streets and driveways present opportunities for pedestrian and bicyclist conflicts, resulting in crashes.

- Daily traffic volumes are between 35,000 to 40,000 vehicles per day (vpd) along the corridor with peak hour volumes highest in the PM peak period, ranging from 2,500 to 3,700 vehicles per hour. The greatest volumes during the peak hour were recorded in the area around Potranco Road. Reallocating ROW from travel lanes to other uses may increase congestion and delay.
- Sections of the Culebra Road have residential properties fronting the corridor with driveways intersecting the roadway which may present a challenge when developing multimodal improvements.
- Dense driveway spacing is present in areas where small commercial parcels are closely spaced. This creates conflicts with pedestrians, bicyclists and motorists. Driveway reduction and consolidation should be considered.
- Existing bike lanes are present on Culebra Road, between IH-410 and Tezel/Grissom Road. Bike facilities should be incorporated into the corridor further with connections to greenway trails and other bike facilities.
- The 5 feet bike lane is designated with an 8" solid white line, signing and the bike symbol. The most desirable bike facilities provide barrier separation from the traffic lanes or are off-roadway or are elevated, behind a curb. Most bicyclists do not feel safe riding close to high volumes of traffic traveling at 40 mph or higher.
- The corridor has gaps in sidewalks, lacks a buffer or separation from the adjacent traffic lane and lacks adequate lighting.
- Segments of the corridor include longtime neighborhood businesses with driveway and parking configurations that would not meet the City's current standards and will present challenges when developing improvements.
- A number of schools are located along Culebra Road or along intersecting cross-streets. Consideration must be given for school pick-up and drop-off operations, pedestrian and bicycle access when developing improvements.
- Numerous bridges and drainage structures are located along Culebra Road or cross the corridor and could limit the options where modifications are proposed. Also, consideration must be given to impacting drainage when proposing improvements.
- The segment of Culebra Road that includes the Southwest Research Institute (SWRI) has no curbs, sidewalk or drainage system. Also, the barbed-wire topped fencing along the SWRI property does not present an appealing "face" to the community.
- The 90-degree turn at the intersection with Tezel Road/Grissom Road creates confusion, distracts unfamiliar drivers and is not easy for drivers to navigate.
- The channelized right-turn lanes at the intersection with Potranco Road are not pedestrian-friendly since they encourage high-speed turns without being required to stop for the traffic signal.

OPPORTUNITIES:

The following items represent opportunities to improve the environment for pedestrians, transit users and bicyclists as well as improving the sense of place for the community.

- A significant portion of the corridor is wide with 5 lanes or 7 lanes. This presents an opportunity to reduce the number of lanes and to reallocate space to other users.
- The center two-way left-turn lane provides an opportunity to introduce a median to limit left-turn movements and reduce conflicts for pedestrians and bicyclists. The median would offer refuge space for pedestrians crossing the roadway and would reduce the total crossing distance. Medians will also offer opportunities for landscaping to create a sense of place and to narrow the field of vision for drivers which encourages slower travel speeds.
- Segments of the corridor have vacant parcels which could present opportunities for improvements that include transit, bicycle and pedestrian amenities as well as possible "pocket parks".
- Several existing and proposed greenway trails (Alazan Creek, Leon Creek) cross Culebra Road or are located nearby (Culebra Creek) and present opportunities for connections to bicycle facilities, pedestrian walkways and transit service.
- Several intersection alignments are non-traditional with skewed angles. These may be opportunities to improve the safety for all users and consider roundabouts.
- The segment of Culebra with the SWRI property offers an opportunity to introduce bike and pedestrian facilities with few driveway and cross-street conflicts. Landscaping and other treatments can help soften the security fencing.

APPENDICES

Appendix A – Culebra Road Base map

Appendix B – 11x17 Exhibits

Appendix C – Traffic Projection Methodology

Appendix D – Tabulated Traffic Count Data – collected on December 15, 2020.

Appendix E – Crash Maps and Analyses Exhibits

Appendix F – Existing Condition Analyses Synchro Outputs

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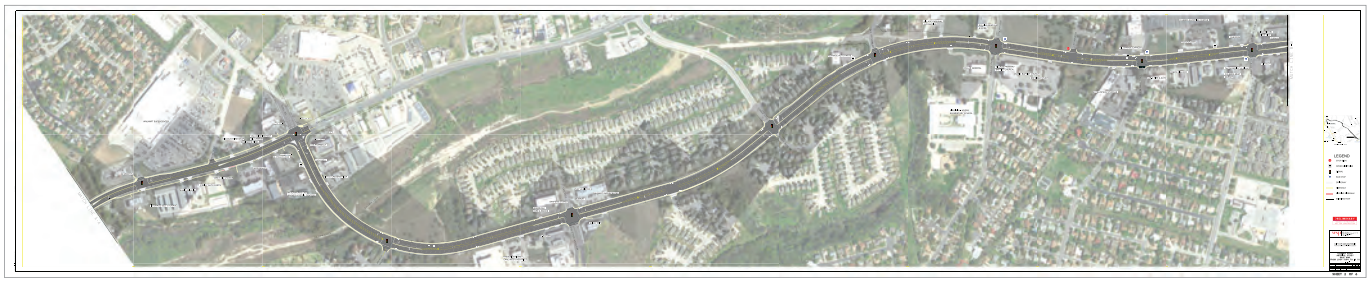
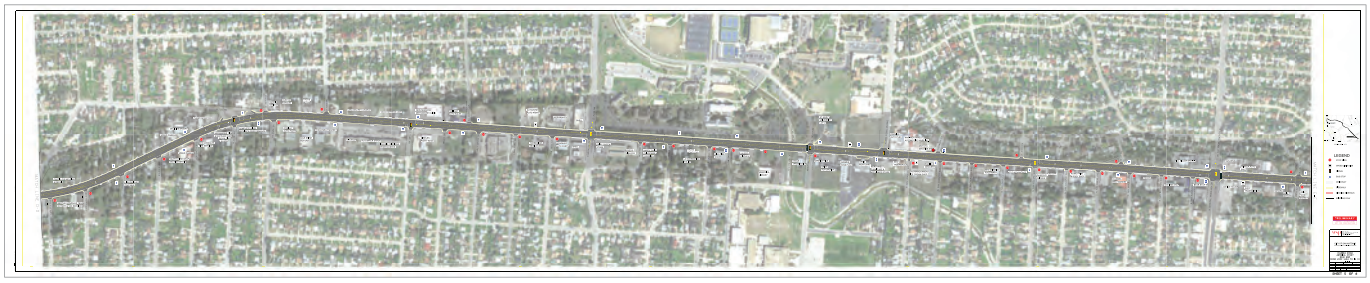
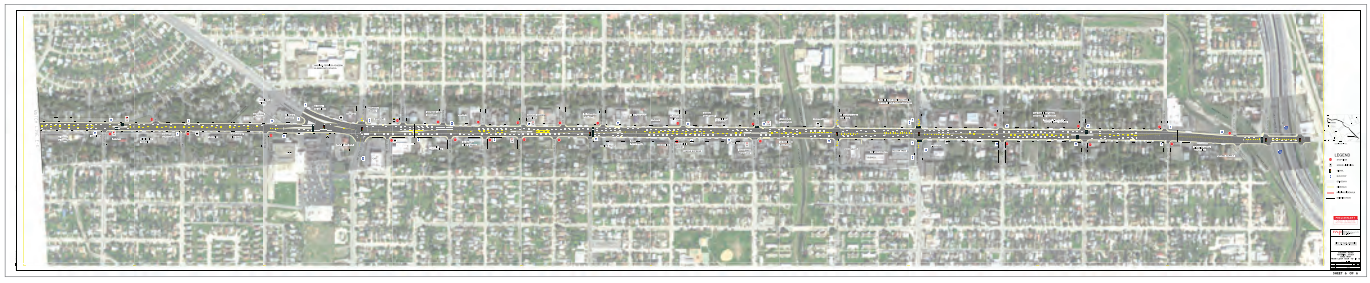
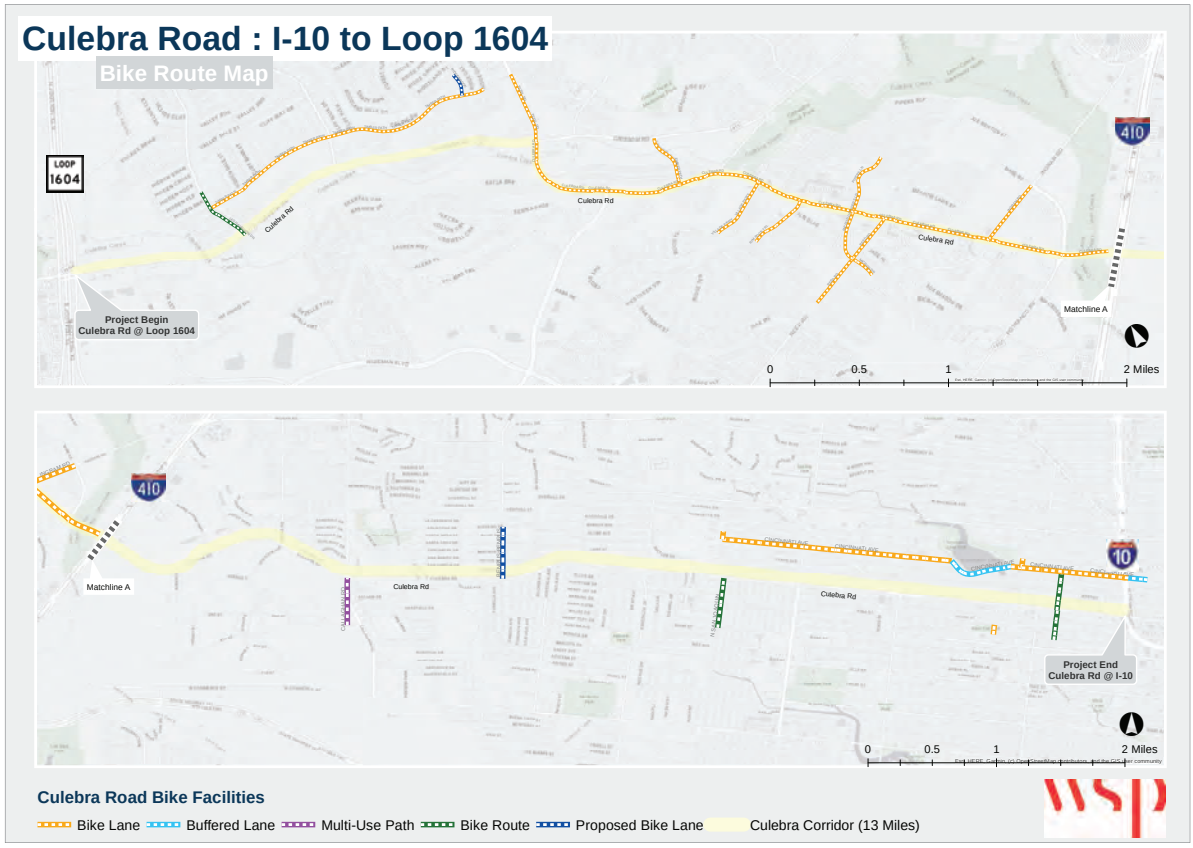
Appendix A – Culebra Road Basemap

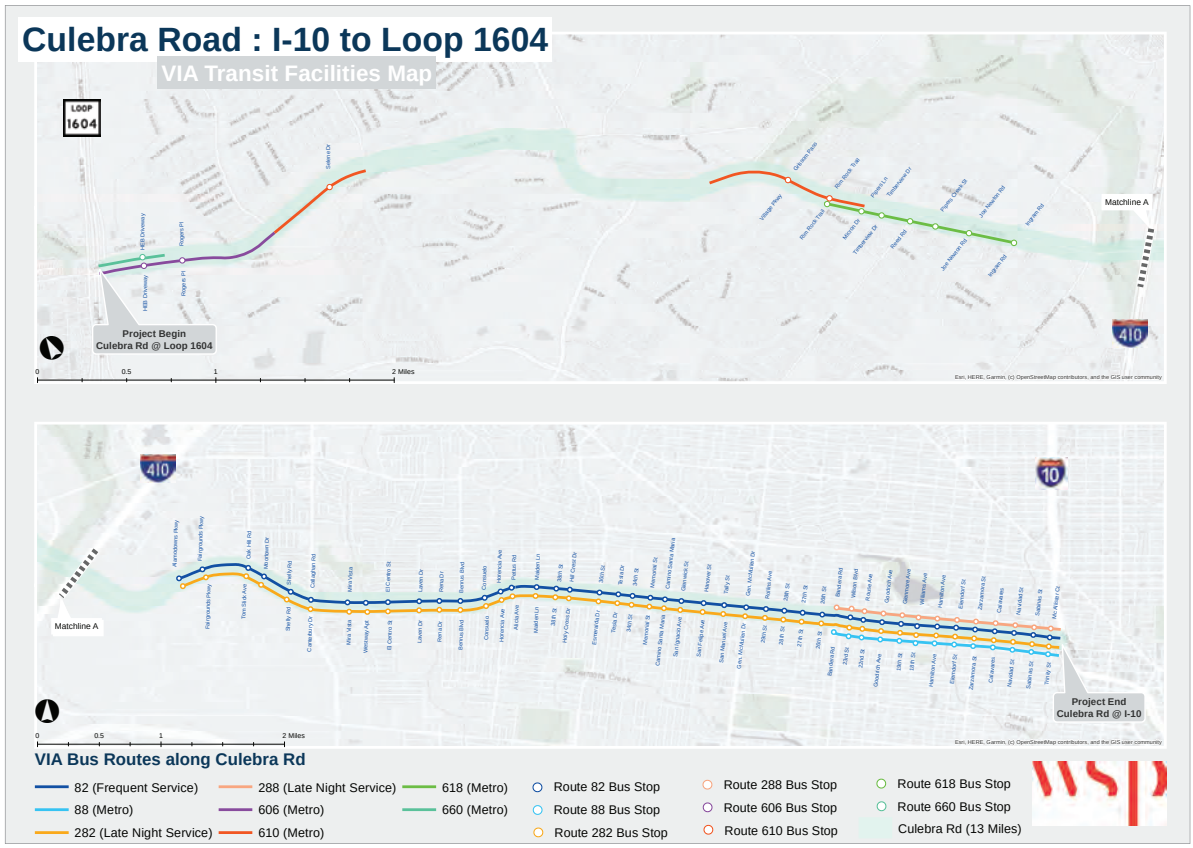


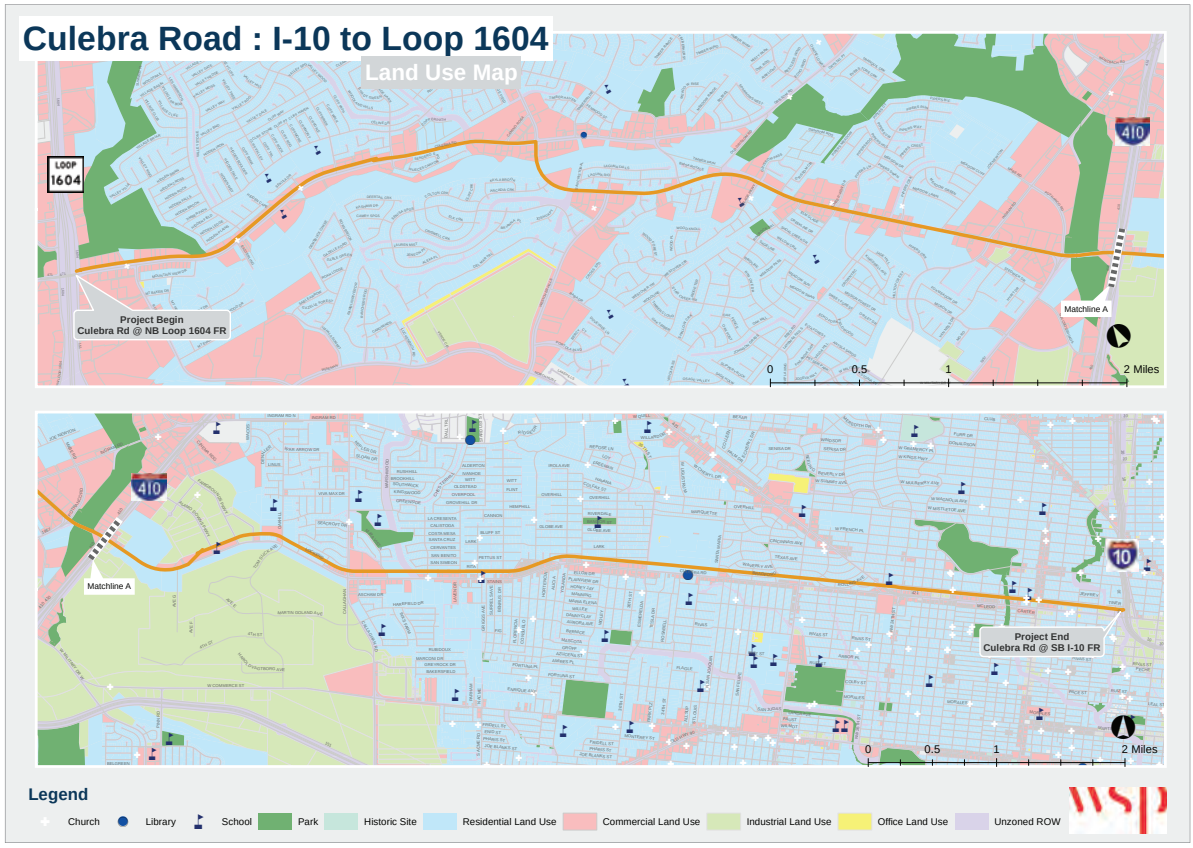




Appendix B – 11x17 Exhibits




Culebra Road : I-10 to Loop 1604
VIA Transit Facilities Map
LOOP 1604
Project Begin
Culebra Rd @ Loop 1604
Matchline A
410
Project End
Culebra Rd @ I-10
10
0
0.5
1
2 Miles
VIA Bus Routes along Culebra Rd
82 (Frequent Service)
88 (Metro)
282 (Late Night Service)
288 (Late Night Service)
606 (Metro)
610 (Metro)
618 (Metro)
660 (Metro)
Route 82 Bus Stop
Route 88 Bus Stop
Route 282 Bus Stop
Route 288 Bus Stop
Route 606 Bus Stop
Route 610 Bus Stop
Route 618 Bus Stop
Route 660 Bus Stop
Culebra Rd (13 Miles)


Culebra Road : I-10 to Loop 1604
Land Use Map
LOOP 1604
Project Begin
Culebra Rd @ NB Loop 1604 FR
Matchline A
410
Project End
Culebra Rd @ SB I-10 FR
10
0
0.5
1
2 Miles
Legend
Church
Library
School
Park
Historic Site
Residential Land Use
Commercial Land Use
Industrial Land Use
Office Land Use
Unzoned ROW

Appendix C – Traffic Projection Methodology

TO: Bianca Thorpe, P.E., Capital Programs Manager

FROM: Kerri Collins, PE, PTOE, LEED AP; Michael Trueblood, PE, PTOE; Jemal Ali, PMP

SUBJECT: Task 3: Culebra Road – Traffic Volume Projection Methodology Memo

DATE: February 2, 2021

This technical memorandum outlines our proposed methodology for the development of traffic projections as part of the Culebra Road Corridor Traffic Study located in San Antonio, Texas. Below is a map of the project showing the limits of the corridor at Loop 1604 and IH-10 (**Figure 1**).

Figure 1 – Study Area and Project Limits

The methodology was developed to forecast the existing traffic volumes to the future design year and to adjust 2020 traffic counts for pre-pandemic conditions. The projections will be used in the traffic analysis and evaluation of the proposed project options.

The traffic volumes will be developed to support analysis for the following years.

- Base Year 2020; and
- Future Analyses Year 2045

The following sources of data are used for the development of growth rates and adjustment factors:

- Traffic counts prior to 2020 – provided from the City of San Antonio;
- Project collected traffic counts – conducted in December 2020 during COVID-19 pandemic;

- Historical count data – obtained from the TxDOT Statewide Traffic Analysis and Reporting System (STARS II) Database or the TxDOT Statewide Planning Map; and
- Alamo Area Metropolitan Planning Organization (AAMPO) travel demand model (TDM) year 2017, 2025, 2035 and 2045 forecast traffic volumes.

Note that the AAMPO travel demand model is used to develop traffic growth rates.

PROPOSED METHODOLOGY

The following steps were used for developing traffic projections. The first step of the methodology includes developing a COVID Factor (CF) to adjust the traffic volumes collected during the pandemic to better represent typical conditions by applying a growth rate to historical data to forecast normal 2020 traffic patterns. The second step is to apply TDM-derived growth factors to the adjusted 2020 counts. The steps to develop traffic volumes and forecasts are as follows:

NORMALIZE 2020 BASE YEAR VOLUMES

Base year traffic volumes for the corridor will be normalized to pre-COVID conditions using a combination of counts collected in December 2020 adjusted with a COVID Factor using counts from previous years adjusted based upon a calculated growth rate to year 2020.

1. **Pre-pandemic TMC Counts** - Apply the growth rate from the AAMPO model to traffic counts conducted prior to 2020 to develop 2020 traffic volumes. Perform a reasonableness check.
2. **Counts Collected During Pandemic** – the following process is used to develop a Covid Factor (CF)
    - Compare the adjusted 2020 pre-COVID TMC (developed in 1) with the similar count location of 2020 counts to develop a COVID Factor (four locations identified)
    - Compare 2020 projected STARS II count locations to 2020 ATR counts recorded at the same location to develop a COVID Factor (CF) and apply to the latest COVID 2020 counts
    - Compare and develop the most appropriate COVID Factor from the above two methods.
    - Conduct reasonableness check to make sure no turning movement volumes are increased where it is not reasonable, i.e., where development is not expected to increase, where roadway does not continue for a long distance, etc.

ANNUAL GROWTH FACTOR

The AAMPO TDM will be used to develop annual growth factors based on volume projections directly from the AAMPO travel demand forecasts for 2017, 2025, 2035 and 2045 models. The forecasts will be used to develop the annual growth factors for the corridor; a process that includes a review of the consistency and reasonableness of the growth trends from the model relative to historic trends.

2045 FUTURE VOLUMES

AAMPO TDM growth rates will be applied to the 2020 revised traffic volumes to develop the future 2045 traffic volumes.

VOLUME PROJECTION CALCULATION

For the purpose of developing annual growth rates and projected traffic volumes, , the study corridor was divided into six segments shown in **Figure 2** and listed below based on the corridor characteristics such as land use, density, roadway configuration and connections with intersecting roads.

1. Segment 1: Loop 1604 to Tezel/Grissom
2. Segment 2: Tezel/Grissom to Micron Dr/Pipers Ln ;
3. Segment 3: Micron Dr/Pipers Ln to IH 410;
4. Segment 4: IH 10 to Callaghan Road,
5. Segment 5: Callaghan Road to Wilson Boulevard; and
6. Segment 6: Wilson Boulevard to IH-10

Figure 2 – Corridor Segments

APPLICATION OF THE AAMPO GROWTH RATE

Traffic volume outputs for the 2017, 2025, 2035 and 2045 horizon years were extracted from the AAMPO TDM for the roadway links along the Culebra Road corridor study area. The growth rates were calculated for each specific link in the network and aggregated into six segments using a volume weighted average as shown in **Table 1**. **Figure 3** shows a graph of how growth rates vary from link to link for different future year volumes. As shown in the table, the growth rate for each segment varies, thus the weighted average in the segment is used for each segment rate calculation. For the short-term future (2017 – 2025), the TDM annual growth rate for segment 2 and Segment 3 are 0.76%, -0.65%, respectively, which is very low. The 2017 TDM volumes for Segment 3 are higher compared with 2025 which results a negative growth rate, between Potranco Rd to IH 410 as an example. To be conservative, a 1.00% minimum growth rate is assumed for all corridor segments. **Table 2** summarizes the average growth rates by segment.

Table 1: TDM Traffic Volume Comparisons & Growth Rates

Segment	No.	Link from	Traffic Volumes				Annual Growth Rates		
			2017	2025	2035	2045	2017-2025	2025-2035	2035-2045
Segment 1	1	LP1604 SBFR	49603	61345	75053	87226	2.69%	2.04%	1.51%
	2	LP1604 NBFR	36353	41435	48806	55812	1.65%	1.65%	1.35%
	3	Rogers Rd	36353	41435	48806	55812	1.65%	1.65%	1.35%
	4	Mountain View	36353	41435	48806	55812	1.65%	1.65%	1.35%
	5	Les Harrison Dr	26012	29043	34301	40309	1.39%	1.68%	1.63%
	6	Cliffbrier Dr	25213	26978	31032	37009	0.85%	1.41%	1.78%
	7	Nueces Canyon/Village Park	25213	26978	31032	37009	0.85%	1.41%	1.78%
	8	Coppertree Blvd	25213	26978	31032	37009	0.85%	1.41%	1.78%
	9	Walmart/Commercial Properties	25213	26978	31032	37009	0.85%	1.41%	1.78%
	10	Camino Rosa	25213	26978	31032	37009	0.85%	1.41%	1.78%
Segment 2	11	Grissom Rd/Tezel Rd	42485	45225	50121	56540	0.78%	1.03%	1.21%
	12	Arcadia Creek	42982	46184	53315	63389	0.90%	1.45%	1.75%
	13	Westover Hills Blvd/Ensenada	37236	38683	46517	52216	0.48%	1.86%	1.16%
	14	Giffin Park Dr	37236	38683	46517	52216	0.48%	1.86%	1.16%
	15	Ansley Bend Dr/Timber Path	37236	38683	46517	52216	0.48%	1.86%	1.16%
	16	Old Grissom Rd	46795	50162	61301	66050	0.87%	2.03%	0.75%
	17	Village Pkwy/Grissom Pass	46795	50162	61301	66050	0.87%	2.03%	0.75%
	18	Grissom Gate	46795	50162	61301	66050	0.87%	2.03%	0.75%
	19	Rim Rock Trail/Commercial Property	44503	47543	57417	60393	0.83%	1.90%	0.51%
	20	Timber View Dr	44503	47543	57417	60393	0.83%	1.90%	0.51%
Segment 3	21	Micron Dr/Pipers Ln	41756	43711	53489	55628	0.57%	2.04%	0.39%
	22	Reed Rd	48273	46511	55385	58881	-0.46%	1.76%	0.61%
	23	Pipers Creek St (Both T Intersections)	49694	47654	56259	60038	-0.52%	1.67%	0.65%
	24	Joe Newton St	49694	47654	56259	60038	-0.52%	1.67%	0.65%
	25	Ingram Rd	45122	43616	51456	55620	-0.42%	1.67%	0.78%
	26	Van Ness	45122	43616	51456	55620	-0.42%	1.67%	0.78%
	27	Potranco Rd	58569	43878	51340	56858	-3.55%	1.58%	1.03%
	28	IH410 SBFR	49765	48963	55791	60508	-0.20%	1.31%	0.81%
	29	IH410 NBFR	27691	28960	32519	34984	0.56%	1.17%	0.73%
Segment 4	30	Commercial Properties/Baseball Field	22758	26555	29624	31877	1.95%	1.10%	0.74%
	31	Avenue G	22758	26555	29624	31877	1.95%	1.10%	0.74%
	32	Alamo Downs Pkwy	26338	30353	33962	36119	1.79%	1.13%	0.62%
	33	Fairgrounds Pkwy	26208	30952	34128	36276	2.10%	0.98%	0.61%
	34	Oakhill-Tom Slick	25239	29954	32608	35144	2.16%	0.85%	0.75%
Segment 5	35	Callaghan	23065	25721	28448	29649	1.37%	1.01%	0.41%
	36	Cantebury	23065	25721	28448	29649	1.37%	1.01%	0.41%
	37	Mira Vista	24452	26914	29453	30819	1.21%	0.91%	0.45%
	38	El Centro	21876	24528	26921	28910	1.44%	0.94%	0.72%
	39	Benrus	21181	24261	26696	27921	1.71%	0.96%	0.45%
	40	Hortencia Ave	20820	23472	26026	26943	1.51%	1.04%	0.35%
	41	Alicia Ave	24027	25245	27456	29595	0.62%	0.84%	0.75%
	42	38th St	21904	22093	24153	27461	0.11%	0.90%	1.29%
	43	Esmeralda Dr/NW 36th St	24635	26871	29655	31431	1.09%	0.99%	0.58%
	44	NW 34th St	24635	26871	29655	31431	1.09%	0.99%	0.58%
	45	Memorial St/Rattler Dr	23603	26308	28661	30520	1.37%	0.86%	0.63%
	46	Camino Santa Maria	23135	25096	27185	29247	1.02%	0.80%	0.73%
	47	N San Felipe Ave	26405	29801	32011	34475	1.52%	0.72%	0.74%
	48	General McMullen Dr	23513	25246	28188	32246	0.89%	1.11%	1.35%
	49	NW 28th St	23102	24835	27791	31769	0.91%	1.13%	1.35%
	50	Bandera Rd	23102	24835	27791	31769	0.91%	1.13%	1.35%
Segment 6	51	Wilson	37260	43323	47019	54295	1.90%	0.82%	1.45%
	52	Neff Rd	40055	46350	50387	57821	1.84%	0.84%	1.39%
	53	19th St	40587	46229	50543	57808	1.64%	0.90%	1.35%
	54	N Hamilton	40736	46702	51583	59297	1.72%	1.00%	1.40%
	55	Elmendorf	40736	46702	51583	59297	1.72%	1.00%	1.40%
	56	Zarzamora	47929	52997	58475	66872	1.26%	0.99%	1.35%
	57	N Navidad Street	50165	55325	61166	69739	1.23%	1.01%	1.32%
	58	IH10 EBFR	30014	32863	36324	41784	1.14%	1.01%	1.41%
Segment 1		LP 1604 to Grissom Rd/Tezel Rd	310739	349583	410932	480016	1.48%	1.63%	1.57%
Segment 2		Grissom Rd/Tezel Rd to Micron Dr/Pipers Ln	426566	453030	541724	595513	0.76%	1.80%	0.95%
Segment 3		Micron Dr/Pipers Ln to IH 410	415686	394563	463954	498175	-0.65%	1.63%	0.71%
Segment 4		IH 410 to Callaghan	123301	144369	159946	171293	1.99%	1.03%	0.69%
Segment 5		Callaghan to Wilson	372520	407818	448538	483835	1.14%	0.96%	0.76%
Segment 6		Wilson to IH 10	327482	370491	407080	466913	1.55%	0.95%	1.38%

Rates are calculated from the 2017, 2025, 2035 and 2045 TDM annual traffic volumes.

Figure 3 – Culebra Road Annual Growth Rates

Table 2: Annual Growth Rate Summary – from AAMPO TDM

Horizon Years	AAMPO TDM Growth Rate			Adjusted Growth Rate*		
	2017-2025	2025-2035	2035-2045	2017-2025	2025-2035	2035-2045
Segment 1	1.48%	1.63%	1.57%	1.48%	1.63%	1.57%
Segment 2	0.76%	1.80%	0.95%	1.00%	1.80%	1.00%
Segment 3	-0.65%	1.63%	0.71%	1.00%	1.63%	1.00%
Segment 4	1.99%	1.03%	0.69%	1.99%	1.03%	1.00%
Segment 5	1.14%	0.96%	0.76%	1.14%	1.00%	1.00%
Segment 6	1.55%	0.95%	1.38%	1.55%	1.00%	1.38%
Overall Corridor	0.88%	1.38%	1.03%	1.00%	1.38%	1.03%

* Assuming minimum 1% annual growth rate.

Rates are calculated from the 2017, 2025, 2035 and 2045 TDM annual traffic volumes.

RECOMMENDED GROWTH RATE

The growth rates that will be used to project pre-COVID counts to 2020 analyses year and 2020 adjusted traffic volumes to 2045 are summarized in **Table 3**. The future 2020 to 2045 annual growth rate is calculated from the AAMPO TDM annual rates assuming a minimum of 1.00% growth rate between 2017 to 2045 shown in **Table 2**.

Table 3: Recommended Annual Growth Rates by Forecast Year

Locations	Annual Growth Rates	
	2015 - 2020	2020 - 2045
1 – Segment 1	1.50%	1.60%
2 – Segment 2	1.00%	1.30%
3 – Segment 3	1.00%	1.25%
4 – Segment 4	2.00%	1.20%
5 – Segment 5	1.15%	1.05%
6 – Segment 6	1.55%	1.25%

Corrections to traffic turn movement counts (TMCs) taken in 2020 during COVID 19 were developed using two steps as summarized below:

a. Pre-COVID Counts - Apply annual growth rate developed in **Table 3** to traffic counts conducted prior to 2020 (Pre-COVID) to develop adjusted 2020 traffic volumes.

b. **COVID Factor via TMCs** – Compare adjusted 2020 (Pre-COVID) volumes with the actual 2020 counts taken during COVID-19 to develop COVID Factor. The results of this evaluation at four locations are shown in **Table 4**. As shown, the TMC based COVID Factor varies between 1.23 and 1.39 along the corridor with an average value of 1.31.

Table 4: COVID Factor (CF) from Pre-COVID TMC Projections vs Actual Counts During COVID-19

TMC Counts Intersection Locations	Pre-COVID Count Year	Intersection Volume			
		Pre-COVID Count	2020 Adjusted Count	2020 Actual Count	COVID Factor (CF)
Culebra @ Grissom Rd/Tezel Rd	2015	19,100	20,600	14,800	1.39
Culebra @ Ingram Rd	2015	16,200	17,000	13,400	1.27
Culebra @ Callaghan	2017	16,100	16,500	12,300	1.34
Culebra @ Zarzamora	2017	14,300	15,000	12,200	1.23
Overall Average			69,100	52,700	1.31

Note: Volumes are sum of Intersection TMC from 7AM to 9AM and 4PM to 6PM.

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San Antonio
Texas 78216

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c. COVID Factor via ATRs - Compare the adjusted 2020 Pre-COVID TxDOT STARS II counts with a similar count location as actual 2020 COVID counts to develop COVID Factor. The results of this evaluation at three locations are shown in **Table 5**. As shown in **Table 5**, the ATR-based COVID Factor varies between 1.02 to 1.19 along the corridor with an average value of 1.10.

Table 5: COVID Factor (CF) from Pre-COVID ATR Projections vs Actual Counts During COVID-19

ATR Counts Locations	STAR II Count Year	ATR 24 HR Volumes			
		STARR II Total Volume	2020 Projected Volume	2020 Existing Volume	COVID Factor (CF)
ATR 1 - Between LP 1604 and Rogers Rd	2019	41,600	42,300	35,500	1.19
ATR 2 - Between Ingram Rd and Potranco Rd	2019	42,500	43,000	39,200	1.10
ATR 3 - Between N Hamilton Ave and Elmendorf Street	2019	35,400	35,900	35,100	1.02
Overall			121,200	109,800	1.10

There are significant differences between COVID Factor estimates derived by the above two approaches. It is our recommendation to use the COVID factor estimate from Pre COVID counts shown in **Table 4,** where the peak hour volumes are considered. This correction recognizes that the previous level of travel activity may never return due to the dramatic reduction in the use of commercial office and retail space in the economy.

d. **Develop Adjusted 2020 Traffic Volumes -** The 2020 base year traffic volumes for the study were calculated by applying the annual growth rates to Pre-COVID AM and PM peak hour traffic counts, or by applying the COVID Factor (CF) to the 2020 COVID, AM and PM peak hour traffic counts.

2. **Step 4: Develop Future Traffic Volumes -** The future projected traffic volumes are calculated by applying the annual growth rates to adjusted 2020 daily, AM and PM peak hour volumes.

CONCLUSIONS

Based on available data and analyses results pertaining to corrections to counts for the COVID-19 pandemic and future growth rates, it is recommended that:

1. traffic counts taken in 2020 should be factored by applying a COVID Factor (CF) of 1.30 to account the impact of COVID pandemic on those counts
2. the growth rates shown in Table 3 be applied to the 2020 base year traffic volumes to generate the proposed future traffic volumes for the 2045 future analysis year.

Appendix D – Tabulated Traffic Count Data – collected on December 15, 2020.

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

Traffic Counts Tabulated Data
Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

Data Collected: December 15, 2020

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

AM Turning Movement Counts

Data Collected: December 15, 2020

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	RBFCU Driveway												Site Code: Sig_1			
East/West Street:	Culebra Rd															
TOD:	AM	Date: 12/15/2020			Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	RBFCU Driveway Southbound				Culebra Rd Westbound				Rogers Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	1	2	0	17	122	0	0	8	0	14	0	2	193	32	0
7:15 AM	0	0	0	0	46	117	0	0	12	1	14	0	6	235	38	0
7:30 AM	1	0	0	0	51	157	0	0	13	4	21	0	4	273	53	0
7:45 AM	0	0	1	0	48	203	0	0	11	1	26	0	6	264	61	0
8:00 AM	0	0	1	0	40	192	2	0	21	3	14	0	5	189	52	0
8:15 AM	0	2	8	0	31	162	3	0	14	2	30	0	13	166	40	0
8:30 AM	2	1	8	0	41	170	2	0	11	1	16	0	18	180	50	0
8:45 AM	6	3	4	0	38	189	1	0	32	1	17	0	7	176	39	0
2-hour Total	9	7	24	0	312	1312	8	0	122	13	152	0	61	1676	365	0
7:15 AM - 8:15 AM*	**1**	**0**	**2**	**0**	**185**	**669**	**2**	**0**	**57**	**9**	**75**	**0**	**21**	**961**	**204**	**0**
Peak Hour Factor	0.250		0.500		0.907	0.824	0.250		0.679	0.563	0.721		0.875	0.880	0.836	
Heavy Vehicle Percentage	0.00%	0.00%	0.00%		1.92%	2.90%	0.00%		10.66%	0.00%	1.97%		1.64%	2.09%	3.29%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	RBFCU Driveway Southbound		Culebra Rd Westbound		Rogers Rd Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	1	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

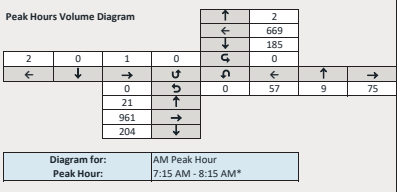

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Les Harrison Dr	Site Code: Sig_2
East/West Street:	Culebra Rd	
TOD: AM	Date: 12/15/2020	Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Les Harrison Dr Southbound				Culebra Rd Westbound				Apartments Driveway Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	43	0	35	0	5	116	7	1	18	1	6	0	20	164	17	0
7:15 AM	51	7	44	0	11	131	11	0	12	1	12	0	30	202	29	0
7:30 AM	41	4	56	0	21	177	11	0	24	7	30	0	21	194	25	0
7:45 AM	46	5	56	0	9	187	15	1	16	1	14	0	14	222	11	0
8:00 AM	38	2	61	0	5	137	13	0	2	0	3	0	24	182	2	0
8:15 AM	39	0	40	0	3	157	13	0	4	2	1	0	22	142	1	0
8:30 AM	34	1	51	0	5	194	17	0	4	0	0	0	22	181	0	0
8:45 AM	30	0	50	0	0	169	10	1	3	3	2	0	26	172	0	0
2-hour Total	322	19	393	0	59	1268	97	3	83	15	68	0	179	1459	85	0
7:15 AM - 8:15 AM*	**176**	**18**	**217**	**0**	**46**	**632**	**50**	**1**	**54**	**9**	**59**	**0**	**89**	**800**	**67**	**0**
Peak Hour Factor	0.863	0.643	0.889		0.548	0.845	0.833	0.250	0.563	0.321	0.492		0.742	0.901	0.578	
Heavy Vehicle Percentage	1.24%	0.00%	2.54%		3.39%	3.23%	3.09%	0.00%	0.00%	6.67%	2.94%		3.91%	2.88%	1.18%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Les Harrison Dr Southbound		Culebra Rd Westbound		Apartments Driveway Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	1	1	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

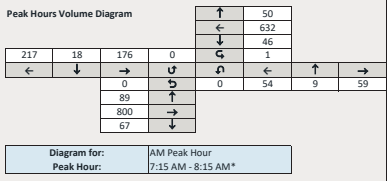

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

J:\30900399A CoSA Culebra Road Corridor Study\5.0 Project Data\5.1 Data Collection\5.1.3 Data Tabulation\30900399A CoSA Culebra Road_AM_Rev1

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Cliffbrier Dr	Site Code: Sig_3_____
East/West Street:	Culebra Rd	
TOD: AM	Date: 12/15/2020	Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Cliffbrier Dr Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	46	0	13	0	0	121	8	0	0	0	0	0	9	217	0	0
7:15 AM	47	0	22	0	0	150	19	0	0	0	0	0	9	222	0	0
7:30 AM	53	0	28	0	0	147	16	0	0	0	0	0	18	301	0	0
7:45 AM	55	0	22	0	0	172	25	0	0	0	0	0	18	291	0	0
8:00 AM	40	0	31	0	0	154	18	0	0	0	0	0	23	204	0	0
8:15 AM	41	0	35	0	0	152	25	0	0	0	0	0	22	167	0	0
8:30 AM	39	0	24	0	0	149	19	0	0	0	0	0	16	189	0	0
8:45 AM	27	0	20	0	0	166	18	0	0	0	0	0	9	176	0	0
2-hour Total	348	0	195	0	0	1211	148	0	0	0	0	0	124	1767	0	0
7:15 AM - 8:15 AM*	**195**	**0**	**103**	**0**	**0**	**623**	**78**	**0**	**0**	**0**	**0**	**0**	**68**	**1018**	**0**	**0**
Peak Hour Factor	0.886		0.831			0.906	0.780						0.739	0.846		
Heavy Vehicle Percentage	1.15%		2.05%			2.81%	2.70%						1.61%	2.09%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Cliffbrier Dr Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	1	0	0	0	1
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

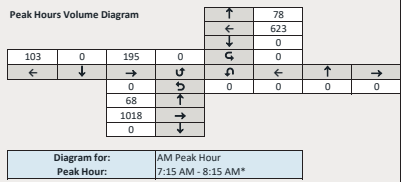

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

J:\30900399A CoSA Culebra Road Corridor Study\5.0 Project Data\5.1 Data Collection\5.1.3 Data Tabulation\30900399A CoSA Culebra Road_AM_Rev1

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					**Village Park**								**Site Code: Sig_4_____**			
East/West Street:					**Culebra Rd**											
TOD:	**AM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Village Park Southbound				Culebra Rd Westbound				Nueces Canyon Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	27	0	17	0	2	106	12	0	2	1	3	0	19	244	0	0
7:15 AM	34	0	26	0	0	139	9	0	0	3	4	0	18	249	0	0
7:30 AM	35	4	25	0	4	148	6	0	3	4	5	0	19	341	1	0
7:45 AM	32	4	24	0	0	158	7	0	4	2	5	0	19	319	2	0
8:00 AM	23	2	20	0	1	143	17	0	0	1	0	0	7	225	0	0
8:15 AM	19	0	27	0	2	154	10	0	1	0	3	0	12	208	1	0
8:30 AM	23	0	22	0	2	143	12	1	0	0	3	0	11	208	0	0
8:45 AM	18	1	23	0	3	143	9	0	6	0	3	0	11	187	1	0
2-hour Total	211	11	184	0	14	1134	82	1	16	11	26	0	116	1981	5	0
7:15 AM - 8:15 AM*	**124**	**10**	**95**	**0**	**5**	**588**	**39**	**0**	**7**	**10**	**14**	**0**	**63**	**1134**	**3**	**0**
Peak Hour Factor	0.886	0.625	0.913		0.313	0.930	0.574		0.438	0.625	0.700		0.829	0.831	0.375	
Heavy Vehicle Percentage	1.42%	0.00%	0.00%		21.43%	3.17%	0.00%	0.00%	6.25%	9.09%	3.85%		4.31%	1.62%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Village Park Southbound		Culebra Rd Westbound		Nueces Canyon Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	1	0	0	0	1
8:00 AM to 9:00 AM	0	0	0	1	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

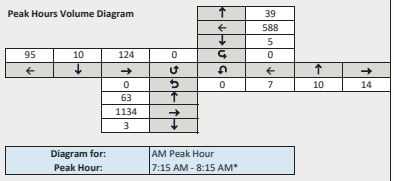

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					**Walmart Driveway**								**Site Code: Sig_5_____**			
East/West Street:					**Culebra Rd**											
TOD:	**AM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Walmart Driveway Southbound				Culebra Rd Westbound				Gas Station Driveway Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	1	0	4	0	0	117	5	0	1	0	3	0	4	259	3	0
7:15 AM	2	0	6	0	1	139	13	0	3	0	2	0	7	276	7	0
7:30 AM	4	0	7	0	2	149	5	0	0	1	6	0	7	267	3	0
7:45 AM	5	0	5	0	4	159	11	0	2	0	1	0	11	263	4	0
8:00 AM	3	0	7	0	2	152	10	0	3	0	6	0	5	239	6	0
8:15 AM	6	0	2	0	2	161	11	0	1	1	8	0	2	224	6	0
8:30 AM	4	1	10	0	4	148	8	0	2	2	9	0	7	225	9	0
8:45 AM	6	0	3	0	3	149	10	0	3	2	7	0	7	177	8	0
2-hour Total	31	1	44	0	18	1174	73	0	15	6	42	0	50	1930	46	0
7:15 AM - 8:15 AM*	**14**	**0**	**25**	**0**	**9**	**599**	**39**	**0**	**8**	**1**	**15**	**0**	**30**	**1045**	**20**	**0**
Peak Hour Factor	0.700		0.893		0.563	0.942	0.750		0.667	0.250	0.625		0.682	0.947	0.714	
Heavy Vehicle Percentage	6.45%	0.00%	4.55%		0.00%	3.24%	5.48%		6.67%	0.00%	0.00%		0.00%	1.92%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Walmart Driveway Southbound		Culebra Rd Westbound		Gas Station Driveway Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	2
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

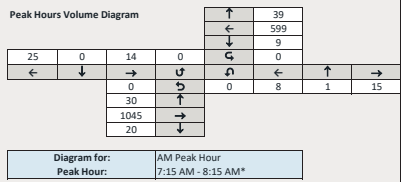

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Culebra Rd												Site Code: Sig_6_____			
East/West Street:																
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Culebra Rd Southbound				Westbound				Culebra Rd Northbound				Arcadia Creek Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	236	4	1	0	0	0	0	4	109	0	0	27	0	30	0
7:15 AM	0	284	7	0	0	0	0	0	6	146	0	0	13	0	25	0
7:30 AM	0	323	6	0	0	0	0	0	1	141	0	0	18	0	23	0
7:45 AM	0	323	14	0	0	0	0	0	6	170	0	0	20	0	31	0
8:00 AM	0	272	9	0	0	0	0	0	9	140	0	0	17	0	7	0
8:15 AM	0	192	11	0	0	0	0	0	4	138	0	0	25	0	22	0
8:30 AM	0	197	10	0	0	0	0	0	4	139	0	0	19	0	22	0
8:45 AM	0	216	11	0	0	0	0	0	4	150	0	0	10	0	16	0
2-hour Total	0	2043	72	1	0	0	0	0	38	1133	0	0	149	0	176	0
7:15 AM - 8:15 AM*	**0**	**1202**	**36**	**0**	**0**	**0**	**0**	**0**	**22**	**597**	**0**	**0**	**68**	**0**	**86**	**0**
Peak Hour Factor		0.930	0.643						0.611	0.878			0.850		0.694	
Heavy Vehicle Percentage		1.66%	1.39%	0.00%					18.42%	2.47%			4.03%		1.70%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Culebra Rd Southbound		Westbound		Culebra Rd Northbound		Arcadia Creek Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	2	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

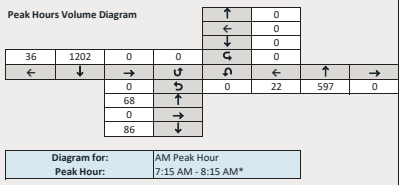

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Baseball Field Driveway												Site Code: Sig_7_____			
East/West Street:	Culebra Rd															
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Baseball Field Driveway Southbound				Culebra Rd Westbound				Driveway Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	3	0	0	106	0	0	1	0	1	0	0	235	0	0
7:15 AM	1	0	2	0	0	110	0	0	1	0	1	0	2	266	0	0
7:30 AM	0	0	2	0	0	146	0	0	1	0	0	0	0	299	1	0
7:45 AM	2	0	1	0	0	128	0	0	0	0	0	0	6	290	0	0
8:00 AM	2	0	2	0	1	130	1	0	0	0	0	0	1	237	0	0
8:15 AM	0	0	0	0	0	122	6	0	0	0	0	0	7	198	1	0
8:30 AM	1	0	3	0	0	113	9	0	1	0	0	0	25	167	1	0
8:45 AM	5	0	12	0	0	160	2	0	0	0	1	0	14	170	0	0
2-hour Total	11	0	25	0	1	1015	18	0	4	0	3	0	55	1862	3	0
7:15 AM - 8:15 AM*	**5**	**0**	**7**	**0**	**1**	**514**	**1**	**0**	**2**	**0**	**1**	**0**	**9**	**1092**	**1**	**0**
Peak Hour Factor	0.625		0.875		0.250	0.880	0.250		0.500		0.250		0.375	0.913	0.250	
Heavy Vehicle Percentage	27.27%		24.00%		0.00%	4.24%	88.89%		75.00%		0.00%		90.91%	1.50%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	1	0	0	0	1	0	0	0	0	0	0	1	1	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Baseball Field Driveway		Culebra Rd Westbound		Driveway Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	1
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

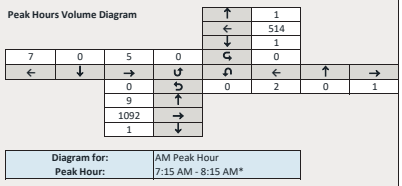

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					**Pettus St**								**Site Code: Sig_8_____**			
East/West Street:					**Culebra Rd**											
TOD:	**AM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Pettus St Southbound				Culebra Rd Westbound				Alicia Ave Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	6	0	2	0	0	74	6	0	0	0	0	0	0	115	0	0
7:15 AM	4	0	0	0	0	105	8	0	0	0	2	0	1	151	0	0
7:30 AM	5	0	3	0	3	132	8	0	1	1	1	0	2	195	0	0
7:45 AM	7	0	2	0	2	138	9	0	1	1	3	0	0	182	3	0
8:00 AM	2	0	1	0	2	114	12	0	0	0	2	0	1	141	1	0
8:15 AM	6	0	5	0	1	103	13	0	1	0	4	0	0	140	2	0
8:30 AM	7	0	3	0	2	94	5	0	0	0	5	0	0	119	2	0
8:45 AM	6	0	1	0	1	107	10	0	1	0	2	0	3	142	1	0
2-hour Total	43	0	17	0	11	867	71	0	4	2	19	0	7	1185	9	0
7:15 AM - 8:15 AM*	**18**	**0**	**6**	**0**	**7**	**489**	**37**	**0**	**2**	**2**	**8**	**0**	**4**	**669**	**4**	**0**
Peak Hour Factor	0.643		0.500		0.583	0.886	0.771		0.500	0.500	0.667		0.500	0.858	0.333	
Heavy Vehicle Percentage	0.00%		5.88%		0.00%	2.42%	1.41%		0.00%	0.00%	0.00%		0.00%	2.03%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Pettus St Southbound		Culebra Rd Westbound		Alicia Ave Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	2	0	0	0	0	0
8:00 AM to 9:00 AM	0	1	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

				↑	37		
				←	489		
				↓	7		
6	0	18	0	↰	0		
←	↓	→	↺	↶	←	↑	→
		0	↰	0	2	2	8
		4	↑				
		669	→				
		4	↓				

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					**NW 36th St**								**Site Code: Sig_9_____**			
East/West Street:					**Culebra Rd**											
TOD:	**AM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	NW 36th St Southbound				Culebra Rd Westbound				Esmerelda Dr Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	12	29	12	0	6	70	19	0	8	41	6	0	27	131	10	0
7:15 AM	17	32	25	0	8	79	18	0	14	58	10	0	19	161	9	0
7:30 AM	18	50	22	0	5	103	18	0	8	70	11	0	28	201	12	0
7:45 AM	24	43	21	0	9	116	27	0	15	68	8	0	31	182	16	0
8:00 AM	22	35	23	0	5	108	25	0	15	57	12	0	31	134	15	0
8:15 AM	11	31	9	0	7	85	16	0	14	47	9	0	25	151	11	0
8:30 AM	19	29	15	0	4	94	17	0	12	48	8	0	25	138	18	0
8:45 AM	16	32	10	0	7	102	22	0	14	61	11	0	31	140	13	0
2-hour Total	139	281	137	0	51	757	162	0	100	450	75	0	217	1238	104	0
7:15 AM - 8:15 AM*	**81**	**160**	**91**	**0**	**27**	**406**	**88**	**0**	**52**	**253**	**41**	**0**	**109**	**678**	**52**	**0**
Peak Hour Factor	0.844	0.800	0.910		0.750	0.875	0.815		0.867	0.904	0.854		0.879	0.843	0.813	
Heavy Vehicle Percentage	0.00%	1.42%	0.73%		7.84%	2.77%	0.62%		1.00%	0.89%	2.67%		0.92%	1.86%	0.96%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	NW 36th St Southbound		Culebra Rd Westbound		Esmeralda Dr Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	2	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

				↑	88		
				←	406		
				↓	27		
91	160	81	0	↰	0		
←	↓	→	↺	↶	←	↑	→
		0	↰	0	52	253	41
		109	↑				
		678	→				
		52	↓				

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					Rattler Dr											Site Code: Sig_10_____
East/West Street:					Culebra Rd											
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Rattler Dr Southbound				Culebra Rd Westbound				Memorial St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	0	0	7	90	1	0	1	0	3	0	0	145	4	0
7:15 AM	1	0	0	0	7	102	1	0	0	0	3	0	0	184	6	0
7:30 AM	0	0	1	0	11	126	2	0	2	0	5	0	0	231	7	0
7:45 AM	0	0	0	0	7	134	1	0	3	1	8	0	2	204	11	0
8:00 AM	1	0	1	0	7	127	0	0	2	0	5	0	0	172	5	0
8:15 AM	1	0	0	0	6	96	6	0	5	0	11	0	0	171	6	0
8:30 AM	0	0	0	0	7	121	3	0	4	0	6	0	0	142	11	0
8:45 AM	0	0	0	0	0	110	3	0	9	0	6	0	0	169	5	0
2-hour Total	3	0	2	0	52	906	17	0	26	1	47	0	2	1418	55	0
7:15 AM - 8:15 AM*	**2**	**0**	**2**	**0**	**32**	**489**	**4**	**0**	**7**	**1**	**21**	**0**	**2**	**791**	**29**	**0**
Peak Hour Factor	0.500		0.500		0.727	0.912	0.500		0.583	0.250	0.656		0.250	0.856	0.659	
Heavy Vehicle Percentage	0.00%		0.00%		1.92%	2.87%	0.00%		3.85%	0.00%	0.00%		0.00%	1.76%	5.45%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Rattler Dr Southbound		Culebra Rd Westbound		Memorial St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	1	0	0	1	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	2	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

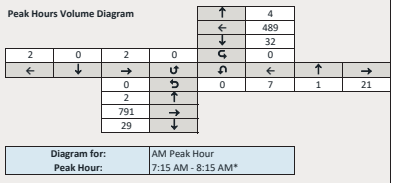

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					Camino Santa Maria											Site Code: Sig_11_____
East/West Street:					Culebra Rd											
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Camino Santa Maria Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	7	0	8	0	0	82	5	0	0	0	0	0	9	140	0	0
7:15 AM	7	0	8	0	0	102	11	0	0	0	0	0	11	180	0	0
7:30 AM	5	0	9	0	0	127	14	0	0	0	0	0	17	219	0	0
7:45 AM	9	0	6	0	0	138	7	0	0	0	0	0	21	192	0	0
8:00 AM	2	0	19	0	0	119	6	0	0	0	0	0	20	157	0	0
8:15 AM	3	0	9	0	0	103	10	0	0	0	0	0	22	156	0	0
8:30 AM	5	0	15	0	0	114	2	0	0	0	0	0	20	138	0	0
8:45 AM	3	0	16	0	0	99	8	0	0	0	0	0	19	158	0	0
2-hour Total	41	0	90	0	0	884	63	0	0	0	0	0	139	1340	0	0
7:15 AM - 8:15 AM*	**23**	**0**	**42**	**0**	**0**	**486**	**38**	**0**	**0**	**0**	**0**	**0**	**69**	**748**	**0**	**0**
Peak Hour Factor	0.639		0.553			0.880	0.679						0.821	0.854		
Heavy Vehicle Percentage	0.00%		4.44%			2.94%	0.00%						0.72%	2.24%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Camino Santa Maria Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	1	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

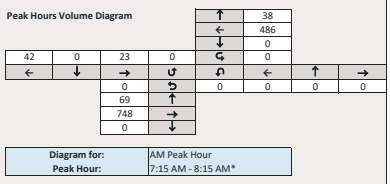

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	N San Felipe Ave	Site Code: Sig_12
East/West Street:	Culebra Rd	
TOD: AM	Date: 12/15/2020	Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	N San Felipe Ave Northbound				Culebra Rd Westbound				N San Felipe Ave Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	0	0	2	59	0	0	1	0	4	0	0	140	7	0
7:15 AM	0	0	0	0	6	97	0	0	3	0	1	0	0	177	6	0
7:30 AM	0	0	0	0	7	116	0	0	8	0	3	0	0	210	15	0
7:45 AM	0	0	0	0	7	115	0	0	18	0	8	0	0	201	11	0
8:00 AM	0	0	0	0	3	107	0	0	10	0	2	0	0	150	5	0
8:15 AM	0	0	0	0	5	100	0	0	5	0	2	0	0	156	4	0
8:30 AM	0	0	0	0	1	113	0	0	5	0	6	0	0	143	3	0
8:45 AM	0	0	0	0	4	93	0	0	4	0	6	0	0	159	5	0
2-hour Total	0	0	0	0	35	800	0	0	54	0	32	0	0	1336	56	0
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**23**	**435**	**0**	**0**	**39**	**0**	**14**	**0**	**0**	**738**	**37**	**0**
Peak Hour Factor					0.821	0.938			0.542		0.438			0.879	0.617	
Heavy Vehicle Percentage					0.00%	2.63%			0.00%		0.00%			1.12%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		N San Felipe Ave Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	1	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

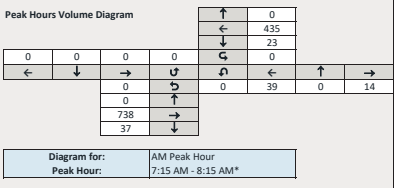

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	General McCullen Dr	Site Code: Sig_13
East/West Street:	Culebra Rd	
TOD: AM	Date: 12/15/2020	Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	General McCullen Dr Southbound				Culebra Rd Westbound				General McCullen Dr Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	4	37	4	0	15	55	5	0	24	55	29	0	11	103	29	0
7:15 AM	6	52	3	0	15	66	9	0	31	61	32	0	10	136	32	0
7:30 AM	8	55	5	0	26	83	6	0	34	109	46	0	12	176	22	0
7:45 AM	4	48	8	0	22	85	7	0	25	123	45	0	20	171	36	0
8:00 AM	10	49	5	0	32	80	5	0	32	78	35	0	12	114	31	0
8:15 AM	6	61	7	0	20	73	10	0	23	71	25	0	15	122	24	0
8:30 AM	8	53	6	0	21	71	6	0	32	82	28	0	10	112	26	0
8:45 AM	7	58	10	0	28	65	11	0	27	81	31	0	10	130	33	0
2-hour Total	53	413	48	0	179	578	59	0	228	660	271	0	100	1064	233	0
7:15 AM - 8:15 AM*	**28**	**204**	**21**	**0**	**95**	**314**	**27**	**0**	**122**	**371**	**158**	**0**	**54**	**597**	**121**	**0**
Peak Hour Factor	0.700	0.927	0.656		0.742	0.924	0.750		0.897	0.754	0.859		0.675	0.848	0.840	
Heavy Vehicle Percentage	0.00%	4.60%	10.42%		1.68%	2.77%	0.00%		2.63%	3.48%	0.74%		0.00%	1.79%	0.86%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	General McMullen Dr		Culebra Rd Westbound		General McMullen Dr Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	3	0	0	2	0	1	0
8:00 AM to 9:00 AM	0	1	0	3	0	2	1	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

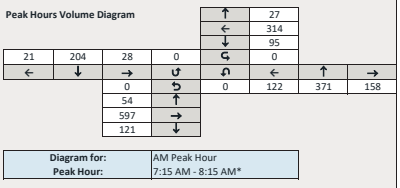

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Bandera Rd												Site Code: Sig_14 AM			
East/West Street:	Culebra Rd															
TOD: AM	Date: 12/15/2020				Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Bandera Rd Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	100	0	1	0	0	71	61	0	0	0	0	0	0	128	0	0
7:15 AM	97	0	1	0	0	84	64	0	0	0	0	0	0	170	0	0
7:30 AM	116	0	0	0	0	111	104	0	0	0	0	0	0	201	0	0
7:45 AM	127	0	0	0	0	99	115	0	0	0	0	0	0	230	0	0
8:00 AM	96	0	4	0	0	113	98	0	0	0	0	0	0	141	0	0
8:15 AM	93	0	1	0	0	109	102	0	0	0	0	0	0	164	0	0
8:30 AM	74	0	0	0	0	91	73	0	0	0	0	0	0	136	0	0
8:45 AM	87	0	2	0	0	106	88	0	0	0	0	0	0	166	0	0
2-hour Total	790	0	9	0	0	784	705	0	0	0	0	0	0	1336	0	0
7:15 AM - 8:15 AM*	**436**	**0**	**5**	**0**	**0**	**407**	**381**	**0**	**0**	**0**	**0**	**0**	**0**	**742**	**0**	**0**
Peak Hour Factor	0.858		0.313			0.900	0.828							0.807		
Heavy Vehicle Percentage	2.91%		0.00%			2.30%	3.26%							1.50%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Bandera Rd Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	1	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

				↑	381			
				←	407			
				↓	0			
5	0	436	0	↳	0			
←	↓	→	↺	↰	←	↑	→	
		0	↳	0	0	0	0	
		0	↑					
		742	→					
		0	↓					

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	IH 10 EBFR												Site Code: Sig_15 AM			
East/West Street:	Culebra Rd															
TOD: AM	Date: 12/15/2020				Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	IH 10 EBFR Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	20	4	98	0	5	98	0	0	0	0	0	0	0	104	165	0
7:15 AM	22	2	93	0	12	105	0	0	0	0	0	0	0	148	168	0
7:30 AM	24	6	110	0	22	120	0	0	0	0	0	0	0	168	202	0
7:45 AM	38	8	110	0	7	122	0	0	0	0	0	0	0	163	201	0
8:00 AM	25	11	83	0	12	146	0	0	0	0	0	0	0	151	210	0
8:15 AM	20	5	88	0	16	130	0	0	0	0	0	0	0	155	183	0
8:30 AM	18	4	86	0	17	104	0	0	0	0	0	0	0	136	147	0
8:45 AM	9	8	81	0	13	109	0	0	0	0	0	0	0	147	153	0
2-hour Total	176	48	749	0	104	934	0	0	0	0	0	0	0	1172	1429	0
7:15 AM - 8:15 AM*	**109**	**27**	**396**	**0**	**53**	**493**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**630**	**781**	**0**
Peak Hour Factor	0.717	0.614	0.900		0.602	0.844								0.938	0.930	
Heavy Vehicle Percentage	1.14%	8.33%	1.07%		1.92%	5.46%								2.65%	1.33%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	IH 10 EBFR Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	1	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	2	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

				↑	0			
				←	493			
				↓	53			
396	27	109	0	↳	0			
←	↓	→	↺	↰	←	↑	→	
		0	↳	0	0	0	0	
		0	↑					
		630	→					
		781	↓					

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:								**Site Code: Sig_16 AM**								
East/West Street:						**Culebra Rd**										
TOD:	**AM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Southbound				Culebra Rd Westbound				IH 10 WBFR Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	0	0	0	28	16	0	80	1	7	0	86	49	0	0
7:15 AM	0	0	0	0	0	28	20	0	89	1	13	0	110	58	0	0
7:30 AM	0	0	0	0	0	39	17	0	108	1	5	0	118	74	0	0
7:45 AM	0	0	0	0	0	30	16	0	105	4	9	0	121	82	0	0
8:00 AM	0	0	0	0	0	33	13	0	120	3	8	0	119	67	0	0
8:15 AM	0	0	0	0	0	26	14	0	115	4	10	0	117	52	0	0
8:30 AM	0	0	0	0	0	33	10	0	91	0	12	0	119	51	0	0
8:45 AM	0	0	0	0	0	36	10	0	93	2	13	0	98	47	0	0
2-hour Total	0	0	0	0	0	253	116	0	801	16	77	0	888	480	0	0
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**0**	**130**	**66**	**0**	**422**	**9**	**35**	**0**	**468**	**281**	**0**	**0**
Peak Hour Factor						0.833	0.825		0.879	0.563	0.673		0.967	0.857		
Heavy Vehicle Percentage						9.09%	1.72%		4.12%	0.00%	10.39%		0.79%	5.83%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		IH 10 WBFR Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

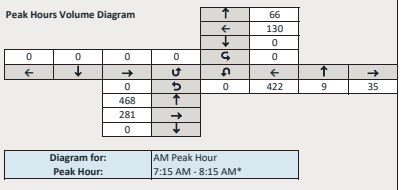

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:						**Tezel Rd**										
East/West Street:						**Grissom Rd**										
TOD:	**AM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Tezel Rd Southbound				Grissom Rd Westbound				Culebra Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	24	136	6	0	17	45	12	0	58	76	10	0	4	137	98	1
7:15 AM	24	154	3	0	25	81	10	0	60	75	16	0	14	160	106	0
7:30 AM	39	171	5	0	17	67	13	0	61	76	15	0	13	212	137	1
7:45 AM	24	166	8	0	30	102	19	0	70	108	16	0	26	220	137	0
8:00 AM	33	161	9	0	28	80	12	0	57	86	11	1	16	131	100	3
8:15 AM	29	107	7	0	18	82	16	0	83	86	8	0	21	134	77	2
8:30 AM	30	123	10	0	21	85	14	0	63	60	14	0	23	122	74	2
8:45 AM	12	110	11	0	25	74	14	0	65	90	15	0	24	101	90	2
2-hour Total	215	1128	59	0	181	616	110	0	517	657	105	1	141	1217	819	11
7:15 AM - 8:15 AM*	**120**	**652**	**25**	**0**	**100**	**330**	**54**	**0**	**248**	**345**	**58**	**1**	**69**	**723**	**480**	**4**
Peak Hour Factor	0.769	0.953	0.694		0.833	0.809	0.711		0.886	0.799	0.906	0.250	0.663	0.822	0.876	0.333
Heavy Vehicle Percentage	1.86%	1.33%	3.39%		3.87%	4.55%	5.45%		2.71%	3.96%	1.90%	0.00%	2.84%	1.64%	1.95%	0.00%
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Tezel Rd Southbound		Grissom Rd Westbound		Culebra Rd Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	2	0	0	0	0	0
8:00 AM to 9:00 AM	0	1	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

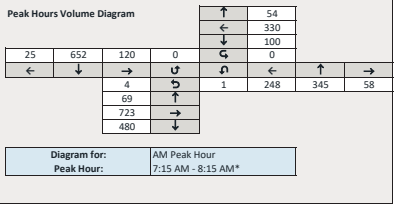

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					Ingram Rd								Site Code: Sig_18			
East/West Street:					Culebra Rd											
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Ingram Rd Southbound				Culebra Rd Westbound				Ingram Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	3	0	9	0	7	132	0	0	6	5	15	0	44	342	1	0
7:15 AM	7	5	22	0	5	136	4	0	5	10	26	0	46	449	6	0
7:30 AM	5	4	27	0	3	181	7	0	5	16	27	0	72	437	2	0
7:45 AM	8	4	24	0	6	195	6	0	6	13	21	0	62	425	3	0
8:00 AM	4	5	23	0	13	194	3	0	2	7	21	0	43	297	1	0
8:15 AM	11	6	26	0	10	197	6	0	3	9	17	0	46	287	4	0
8:30 AM	4	1	25	0	6	167	7	0	4	6	14	0	34	299	2	0
8:45 AM	10	5	29	0	8	195	3	0	4	4	7	0	36	269	3	0
2-hour Total	52	30	185	0	58	1397	36	0	35	70	148	0	383	2805	22	0
7:15 AM - 8:15 AM*	**24**	**18**	**96**	**0**	**27**	**706**	**20**	**0**	**18**	**46**	**95**	**0**	**223**	**1608**	**12**	**0**
Peak Hour Factor	0.750	0.900	0.889		0.519	0.905	0.714		0.750	0.719	0.880		0.774	0.895	0.500	
Heavy Vehicle Percentage	3.85%	6.67%	4.32%		1.72%	4.51%	5.56%		2.86%	0.00%	0.68%		2.35%	2.82%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Ingram Rd Southbound		Culebra Rd Westbound		Ingram Rd Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	1	0	3	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	1	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

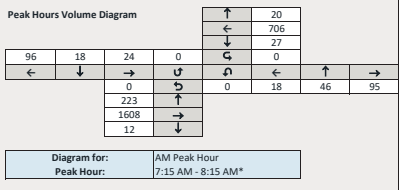

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					Callaghan Rd								Site Code: Sig_19 AM			
East/West Street:					Culebra Rd											
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Callaghan Rd Southbound				Culebra Rd Westbound				Callaghan Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	15	67	15	0	32	65	17	0	64	65	25	0	15	66	55	0
7:15 AM	23	79	20	0	34	76	14	0	65	115	33	0	25	94	69	0
7:30 AM	26	101	18	0	39	121	27	0	93	112	27	0	19	96	68	0
7:45 AM	40	100	20	0	38	111	24	0	97	115	37	0	19	89	68	0
8:00 AM	28	80	13	0	26	81	25	0	75	102	29	0	23	94	41	0
8:15 AM	34	53	10	0	34	95	22	0	74	76	34	0	20	74	46	0
8:30 AM	25	62	15	0	25	76	24	0	47	71	31	0	14	75	39	0
8:45 AM	20	57	16	0	30	91	31	0	57	79	35	0	16	75	63	0
2-hour Total	211	599	127	0	258	716	184	0	572	735	251	0	151	663	449	0
7:15 AM - 8:15 AM*	**117**	**360**	**71**	**0**	**137**	**389**	**90**	**0**	**330**	**444**	**126**	**0**	**86**	**373**	**246**	**0**
Peak Hour Factor	0.731	0.891	0.888		0.878	0.804	0.833		0.851	0.965	0.851		0.860	0.971	0.891	
Heavy Vehicle Percentage	2.37%	3.17%	7.09%		3.88%	3.21%	1.63%		2.97%	3.40%	3.98%		3.97%	3.62%	5.79%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Callaghan Rd Southbound		Culebra Rd Westbound		Callaghan Rd Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	5	0	0	0	1
8:00 AM to 9:00 AM	2	0	0	0	0	1	0	3
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

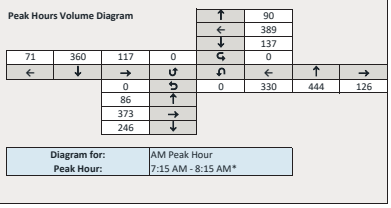

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					Zarzamora St									Site Code: Sig_20			
East/West Street:					Culebra Rd												
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs												
	Zarzamora St Southbound				Culebra Rd Westbound				Zarzamora St Northbound				Culebra Rd Eastbound				
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	
7:00 AM	6	19	8	0	26	142	7	0	14	23	25	0	8	249	22	0	
7:15 AM	6	35	11	0	35	128	4	0	25	49	33	0	14	237	19	0	
7:30 AM	8	29	5	0	51	163	2	0	22	33	38	0	9	327	28	0	
7:45 AM	9	34	5	0	52	147	4	0	37	41	31	0	25	314	21	0	
8:00 AM	7	34	11	0	34	178	7	0	26	45	33	0	21	271	23	0	
8:15 AM	8	24	13	0	33	138	11	0	32	39	34	0	10	255	13	0	
8:30 AM	10	28	11	0	21	156	11	0	24	32	37	0	17	261	26	0	
8:45 AM	8	25	16	0	48	158	3	0	30	37	33	0	20	228	30	0	
2-hour Total	62	228	80	0	300	1210	49	0	210	299	264	0	124	2142	182	0	
7:15 AM - 8:15 AM*	**30**	**132**	**32**	**0**	**172**	**616**	**17**	**0**	**110**	**168**	**135**	**0**	**69**	**1149**	**91**	**0**	
Peak Hour Factor	0.833	0.943	0.727		0.827	0.865	0.607		0.743	0.857	0.888		0.690	0.878	0.813		
Heavy Vehicle Percentage	1.61%	7.46%	5.00%		2.00%	3.97%	0.00%		2.38%	6.02%	1.14%		6.45%	2.01%	1.65%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Zarzamora St Southbound		Culebra Rd Westbound		Zarzamora St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	3	0
8:00 AM to 9:00 AM	0	1	3	2	3	5	3	1
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	1	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

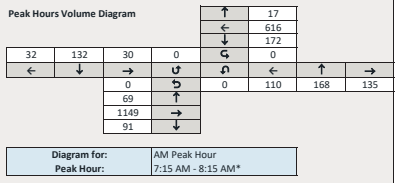

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:														Site Code: UnSig_1 AM			
East/West Street:					Culebra Rd												
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs												
	Southbound				Culebra Rd Westbound				Mountain View Northbound				Culebra Rd Eastbound				
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	
7:00 AM	0	0	0	0	6	131	0	0	4	0	2	0	0	205	0	0	
7:15 AM	0	0	0	0	7	209	0	0	3	0	3	0	0	225	1	0	
7:30 AM	0	0	0	0	13	219	0	0	2	0	4	0	0	309	1	0	
7:45 AM	0	0	0	0	7	232	0	0	2	0	1	0	0	264	1	0	
8:00 AM	0	0	0	0	9	207	0	0	3	0	2	0	0	202	1	0	
8:15 AM	0	0	0	0	10	197	0	0	0	0	5	0	0	168	1	0	
8:30 AM	0	0	0	0	5	197	0	0	3	0	2	0	0	171	1	0	
8:45 AM	0	0	0	0	8	217	0	0	3	0	3	0	0	189	2	0	
2-hour Total	0	0	0	0	65	1609	0	0	20	0	22	0	0	1733	8	0	
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**36**	**867**	**0**	**0**	**10**	**0**	**10**	**0**	**0**	**1000**	**4**	**0**	
Peak Hour Factor					0.692	0.934			0.833		0.625			0.809	1.000		
Heavy Vehicle Percentage					0.00%	2.92%			0.00%		0.00%			1.96%	0.00%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Mountain View Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

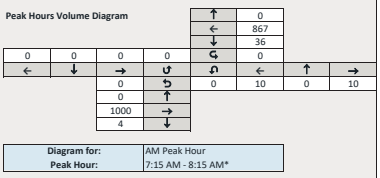

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Coppertree Blvd												Site Code: UnSig_2 AM			
East/West Street:	Culebra Rd															
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Coppertree Blvd Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	1	0	2	0	0	110	3	0	0	0	0	0	1	273	0	0
7:15 AM	2	0	3	0	0	159	0	0	0	0	0	0	0	286	0	0
7:30 AM	7	0	2	0	0	144	2	0	0	0	0	0	0	365	0	0
7:45 AM	1	0	3	0	0	175	4	0	0	0	0	0	2	376	0	0
8:00 AM	1	0	0	0	0	149	0	0	0	0	0	0	0	254	0	0
8:15 AM	1	0	2	0	0	177	1	0	0	0	0	0	0	217	0	0
8:30 AM	0	0	0	0	0	151	3	0	0	0	0	0	1	245	0	0
8:45 AM	3	0	2	0	0	152	1	0	0	0	0	0	0	196	0	0
2-hour Total	16	0	14	0	0	1217	14	0	0	0	0	0	4	2212	0	0
7:15 AM - 8:15 AM*	**11**	**0**	**8**	**0**	**0**	**627**	**6**	**0**	**0**	**0**	**0**	**0**	**2**	**1281**	**0**	**0**
Peak Hour Factor	0.393		0.667			0.896	0.375						0.250	0.852		
Heavy Vehicle Percentage	6.25%		0.00%			3.29%	7.14%						0.00%	1.67%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Coppertree Blvd Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	1	0	0	0	2
8:00 AM to 9:00 AM	0	0	0	1	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

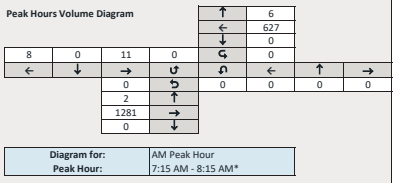

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Camino Rosa												Site Code: UnSig_3			
East/West Street:	Culebra Rd															
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Camino Rosa Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	1	0	14	0	0	87	6	1	0	0	0	0	12	276	0	0
7:15 AM	0	0	17	0	0	141	9	0	0	0	0	0	2	304	0	0
7:30 AM	2	0	20	0	0	161	1	1	0	0	0	0	11	340	0	0
7:45 AM	3	0	13	0	0	154	13	1	0	0	0	0	9	334	0	0
8:00 AM	1	0	13	0	0	143	2	0	0	0	0	0	11	260	0	0
8:15 AM	0	0	11	0	0	137	8	3	0	0	0	0	10	220	0	1
8:30 AM	4	0	17	0	0	144	4	7	0	0	0	0	7	201	0	0
8:45 AM	4	0	24	0	0	140	9	1	0	0	0	0	8	227	0	0
2-hour Total	15	0	129	0	0	1107	52	14	0	0	0	0	70	2162	0	1
7:15 AM - 8:15 AM*	**6**	**0**	**63**	**0**	**0**	**599**	**25**	**2**	**0**	**0**	**0**	**0**	**33**	**1238**	**0**	**0**
Peak Hour Factor	0.500		0.788			0.930	0.481	0.500					0.750	0.910		
Heavy Vehicle Percentage	0.00%		3.10%			2.62%	3.85%	0.00%					2.86%	2.50%		0.00%
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Camino Rosa Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	1
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	1
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

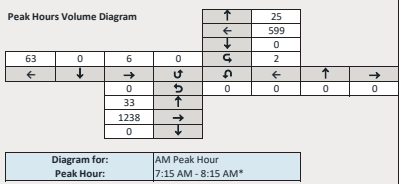

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Grisdsom Gate	Site Code: UnSig_4
East/West Street:	Culebra Rd	
TOD: AM	Date: 12/15/2020	Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Grisdsom Gate Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	5	0	5	0	0	164	2	0	0	0	0	0	1	270	0	0
7:15 AM	15	0	0	0	0	167	6	0	0	0	0	0	1	376	0	0
7:30 AM	12	0	4	0	0	194	0	0	0	0	0	0	2	372	0	0
7:45 AM	8	0	0	0	0	225	6	1	0	0	0	0	0	363	0	2
8:00 AM	5	0	1	0	0	204	10	0	0	0	0	0	1	323	0	0
8:15 AM	6	0	4	0	0	173	6	0	0	0	0	0	0	230	0	0
8:30 AM	8	0	2	0	0	174	6	0	0	0	0	0	1	279	0	0
8:45 AM	7	0	5	0	0	179	6	0	0	0	0	0	0	232	0	0
2-hour Total	66	0	21	0	0	1480	42	1	0	0	0	0	6	2445	0	2
7:15 AM - 8:15 AM*	**40**	**0**	**5**	**0**	**0**	**790**	**22**	**1**	**0**	**0**	**0**	**0**	**4**	**1434**	**0**	**2**
Peak Hour Factor	0.667		0.313			0.878	0.550	0.250					0.500	0.953		0.250
Heavy Vehicle Percentage	0.00%		0.00%			4.05%	50.00%	0.00%					16.67%	3.35%		0.00%
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Grissom Gate Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	1	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

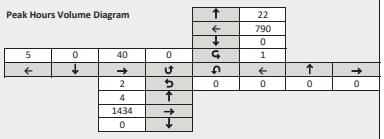

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Pipers Creek	Site Code: UnSig_5
East/West Street:	Culebra Rd	
TOD: AM	Date: 12/15/2020	Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Pipers Creek Southbound				Culebra Rd Westbound				Pipers Creek Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	2	0	2	0	3	162	1	0	3	0	8	0	0	402	4	0
7:15 AM	4	0	4	0	1	167	0	0	6	0	9	0	2	470	5	0
7:30 AM	2	0	5	0	4	183	2	0	8	0	11	0	2	499	5	0
7:45 AM	1	0	2	0	4	224	1	0	1	0	6	0	1	482	7	0
8:00 AM	4	0	3	0	5	177	0	0	6	0	4	0	1	324	7	0
8:15 AM	0	0	4	0	3	220	0	0	4	0	11	0	1	330	1	0
8:30 AM	2	0	1	0	5	172	0	0	2	0	0	0	2	344	4	0
8:45 AM	0	0	1	0	5	209	3	0	4	0	6	0	1	308	5	0
2-hour Total	15	0	22	0	30	1514	7	0	34	0	55	0	10	3159	38	0
7:15 AM - 8:15 AM*	**11**	**0**	**14**	**0**	**14**	**751**	**3**	**0**	**21**	**0**	**30**	**0**	**6**	**1775**	**24**	**0**
Peak Hour Factor	0.688		0.700		0.700	0.838	0.375		0.656		0.682		0.750	0.889	0.857	
Heavy Vehicle Percentage	6.67%		0.00%		0.00%	3.83%	0.00%		0.00%		1.82%		10.00%	2.47%	5.26%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Pipers Creek Southbound		Culebra Rd Westbound		Pipers Creek Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

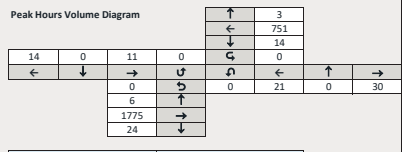

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					**Joe Newton St**								**Site Code: UnSig_6_____**			
East/West Street:					**Culebra Rd**											
TOD:	**AM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Joe Newton St Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	7	0	5	0	0	166	1	0	0	0	0	0	5	378	0	0
7:15 AM	1	0	7	0	0	155	2	0	0	0	0	0	5	483	0	0
7:30 AM	8	0	9	0	0	190	2	0	0	0	0	0	4	522	0	0
7:45 AM	10	0	5	0	0	209	5	0	0	0	0	0	12	464	0	0
8:00 AM	3	0	2	0	0	215	4	0	0	0	0	0	4	355	0	0
8:15 AM	5	0	4	0	0	193	7	0	0	0	0	0	4	318	0	1
8:30 AM	2	0	3	0	0	201	2	0	0	0	0	0	4	339	0	1
8:45 AM	4	0	5	0	0	215	2	0	0	0	0	0	6	323	0	0
2-hour Total	40	0	40	0	0	1544	25	0	0	0	0	0	44	3182	0	2
7:15 AM - 8:15 AM*	**22**	**0**	**23**	**0**	**0**	**769**	**13**	**0**	**0**	**0**	**0**	**0**	**25**	**1824**	**0**	**0**
Peak Hour Factor	0.550		0.639			0.894	0.650						0.521	0.874		
Heavy Vehicle Percentage	0.00%		0.00%			3.89%	4.00%						0.00%	2.45%		0.00%
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Joe Newton St Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	1	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	1

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

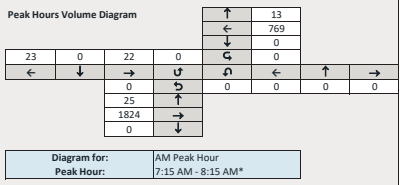

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					**Valero Driveway**								**Site Code: UnSig_7_____**			
East/West Street:					**Culebra Rd**											
TOD:	**AM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Valero Driveway Southbound				Culebra Rd Westbound				Van Ness Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	2	0	3	0	1	142	0	1	0	0	12	0	4	349	2	0
7:15 AM	2	0	3	0	1	151	0	0	0	1	7	0	1	466	0	0
7:30 AM	0	0	5	0	6	169	1	0	1	0	12	0	2	486	0	0
7:45 AM	2	1	5	0	3	219	0	0	0	0	7	0	3	433	1	0
8:00 AM	0	0	6	0	6	196	1	0	1	0	4	0	6	350	1	0
8:15 AM	0	0	6	0	6	214	1	0	1	0	6	0	2	302	1	0
8:30 AM	0	0	6	0	7	163	2	0	1	0	10	0	5	318	0	0
8:45 AM	1	0	4	0	3	204	0	0	3	0	4	0	2	294	1	0
2-hour Total	7	1	38	0	33	1458	5	1	7	1	62	0	25	2998	6	0
7:15 AM - 8:15 AM*	**4**	**1**	**19**	**0**	**16**	**735**	**2**	**0**	**2**	**1**	**30**	**0**	**12**	**1735**	**2**	**0**
Peak Hour Factor	0.500	0.250	0.792		0.667	0.839	0.500		0.500	0.250	0.625		0.500	0.892	0.500	
Heavy Vehicle Percentage	14.29%	0.00%	7.89%		0.00%	3.64%	0.00%	0.00%	0.00%	0.00%	1.61%		4.00%	2.43%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Valero Driveway Southbound		Culebra Rd Westbound		Van Ness Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	2	0	0	1	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

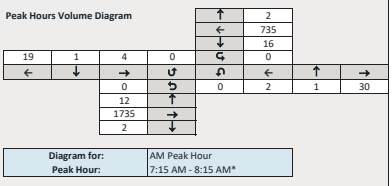

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street: **Site Code: UnSig_8_____**
East/West Street: **Culebra Rd**
TOD: **AM** Date: 12/15/2020 Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Southbound				Culebra Rd Westbound				Avenue G Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	0	0	3	113	0	0	0	0	1	0	0	189	43	0
7:15 AM	0	0	0	0	1	105	0	0	0	0	0	0	0	242	29	0
7:30 AM	0	0	0	0	0	142	0	0	0	0	0	0	0	240	45	0
7:45 AM	0	0	0	0	0	135	0	0	0	0	0	0	0	244	44	0
8:00 AM	0	0	0	0	2	121	0	0	0	0	0	0	0	218	49	0
8:15 AM	0	0	0	0	2	136	0	0	0	0	3	0	0	174	34	0
8:30 AM	0	0	0	0	1	122	0	0	0	0	0	0	0	151	15	0
8:45 AM	0	0	0	0	1	151	0	0	3	0	0	0	0	145	15	0
2-hour Total	0	0	0	0	10	1025	0	0	3	0	4	0	0	1603	274	0
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**3**	**503**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**944**	**167**	**0**
Peak Hour Factor					0.375	0.886								0.967	0.852	
Heavy Vehicle Percentage					0.00%	6.05%			0.00%		25.00%			2.18%	0.36%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Avenue G Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0		0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

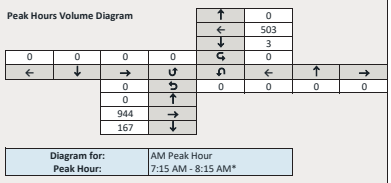

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street: Fairgrounds Pkwy **Site Code: UnSig_9_____**
East/West Street: **Culebra Rd**
TOD: **AM** Date: 12/15/2020 Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Fairgrounds Pkwy Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	2	0	4	0	0	120	9	0	0	0	0	0	9	192	0	0
7:15 AM	9	0	1	0	0	137	20	0	0	0	0	0	15	222	0	0
7:30 AM	4	0	1	0	0	177	33	0	0	0	0	0	11	236	0	0
7:45 AM	7	0	4	0	0	182	32	0	0	0	0	0	11	221	0	0
8:00 AM	5	0	8	0	0	134	24	0	0	0	0	0	11	213	0	0
8:15 AM	9	0	11	0	0	149	20	0	0	0	0	0	10	171	0	0
8:30 AM	4	0	3	0	0	124	21	0	0	0	0	0	6	154	0	0
8:45 AM	9	0	9	0	0	177	16	0	0	0	0	0	2	149	0	0
2-hour Total	49	0	41	0	0	1200	175	0	0	0	0	0	75	1558	0	0
7:15 AM - 8:15 AM*	**25**	**0**	**14**	**0**	**0**	**630**	**109**	**0**	**0**	**0**	**0**	**0**	**48**	**892**	**0**	**0**
Peak Hour Factor	0.694		0.438			0.865	0.826						0.800	0.945		
Heavy Vehicle Percentage	20.41%		7.32%			4.58%	5.14%						1.33%	2.57%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Fairgrounds Pkwy Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	1
8:00 AM to 9:00 AM	1	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

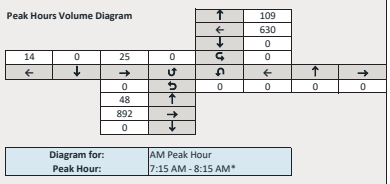

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:										Site Code: UnSig_10							
East/West Street:					Culebra Rd												
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs												
	Southbound				Culebra Rd Westbound				Cantebury St Northbound				Culebra Rd Eastbound				
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	
7:00 AM	0	0	0	0	12	105	0	0	2	0	17	0	0	95	17	0	
7:15 AM	0	0	0	0	14	147	0	0	0	0	19	0	0	131	15	0	
7:30 AM	0	0	0	0	20	189	0	0	0	0	26	0	0	132	20	0	
7:45 AM	0	0	0	0	16	163	0	0	0	0	22	0	0	153	17	0	
8:00 AM	0	0	0	0	13	139	0	0	0	0	15	0	0	138	20	0	
8:15 AM	0	0	0	0	3	146	0	0	1	0	18	0	0	131	19	0	
8:30 AM	0	0	0	0	7	137	0	0	0	0	7	0	0	110	10	0	
8:45 AM	0	0	0	0	2	132	0	0	0	0	11	0	0	123	14	0	
2-hour Total	0	0	0	0	87	1158	0	0	3	0	135	0	0	1013	132	0	
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**63**	**638**	**0**	**0**	**0**	**0**	**82**	**0**	**0**	**554**	**72**	**0**	
Peak Hour Factor					0.788	0.844					0.788			0.905	0.900		
Heavy Vehicle Percentage					0.00%	3.28%			0.00%		4.44%			3.26%	6.82%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Cantebury St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	1	0
8:00 AM to 9:00 AM	0	0	0	0	1	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

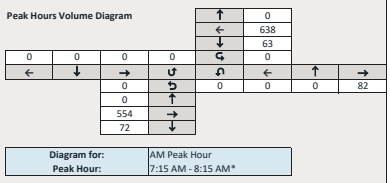

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:										Site Code: UnSig_11							
East/West Street:					Culebra Rd												
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs												
	Southbound				Culebra Rd Westbound				Hortencia Ave Northbound				Culebra Rd Eastbound				
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	
7:00 AM	0	0	0	0	5	69	0	0	4	0	5	0	0	111	2	0	
7:15 AM	0	0	0	0	5	94	0	0	5	0	11	0	0	147	2	0	
7:30 AM	0	0	0	0	5	132	0	0	2	0	23	0	0	179	2	0	
7:45 AM	0	0	0	0	2	136	0	0	7	0	15	0	0	167	3	0	
8:00 AM	0	0	0	0	5	104	0	0	9	0	9	0	0	134	0	0	
8:15 AM	0	0	0	0	3	99	0	0	4	0	5	0	0	134	1	0	
8:30 AM	0	0	0	0	4	99	0	0	3	0	7	0	0	127	1	0	
8:45 AM	0	0	0	0	3	95	0	0	3	0	10	0	0	120	0	0	
2-hour Total	0	0	0	0	32	828	0	0	37	0	85	0	0	1119	11	0	
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**17**	**466**	**0**	**0**	**23**	**0**	**58**	**0**	**0**	**627**	**7**	**0**	
Peak Hour Factor					0.850	0.857			0.639		0.630			0.876	0.583		
Heavy Vehicle Percentage					3.13%	0.12%			0.00%		1.18%			2.41%	0.00%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Hortencia Ave Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	1	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

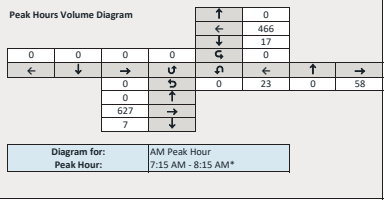

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	Mira Vista												Site Code: UnSig_12			
East/West Street:	Culebra Rd															
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Mira Vista Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	3	0	3	0	0	110	3	0	0	0	0	0	4	95	0	0
7:15 AM	1	0	7	0	0	143	3	0	0	0	0	0	9	142	0	0
7:30 AM	7	0	4	0	0	190	2	0	0	0	0	0	12	135	0	0
7:45 AM	4	0	9	0	0	184	6	0	0	0	0	0	8	160	0	0
8:00 AM	4	0	3	0	0	144	3	1	0	0	0	0	11	142	0	0
8:15 AM	3	0	8	0	0	145	6	0	0	0	0	0	4	144	0	0
8:30 AM	2	0	6	0	0	125	2	0	0	0	0	0	7	120	0	0
8:45 AM	2	0	7	0	0	141	0	0	0	0	0	0	3	112	0	0
2-hour Total	26	0	47	0	0	1182	25	1	0	0	0	0	58	1050	0	0
7:15 AM - 8:15 AM*	**16**	**0**	**23**	**0**	**0**	**661**	**14**	**1**	**0**	**0**	**0**	**0**	**40**	**579**	**0**	**0**
Peak Hour Factor	0.571		0.639			0.870	0.583	0.250					0.833	0.905		
Heavy Vehicle Percentage	7.69%		17.02%			2.54%	8.00%	0.00%					12.07%	2.86%		
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Mira Vista Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	5
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	1	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

			↑	14			
			←	661			
			↓	0			
23	0	16	↳	1			
←	↓	→	↺	↰	←	↑	→
		0	↳	0	0	0	0
		40	↑				
		579	→				
		0	↓				

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:	NW 34th St												Site Code: UnSig_13			
East/West Street:	Culebra Rd															
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Southbound				Culebra Rd Westbound				NW 34th St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	0	0	1	80	0	0	6	0	2	0	0	138	2	0
7:15 AM	0	0	0	0	0	108	0	0	3	0	0	0	0	190	5	0
7:30 AM	0	0	0	0	1	124	0	0	9	0	3	0	0	234	0	0
7:45 AM	0	0	0	0	2	145	0	0	6	0	2	0	0	210	4	0
8:00 AM	0	0	0	0	0	130	0	0	4	0	1	0	0	174	0	0
8:15 AM	0	0	0	0	0	99	0	0	6	0	1	0	0	181	0	0
8:30 AM	0	0	0	0	2	115	0	0	3	0	1	0	0	151	3	1
8:45 AM	0	0	0	0	0	129	0	0	2	0	2	0	0	175	1	0
2-hour Total	0	0	0	0	6	930	0	0	39	0	12	0	0	1453	15	1
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**3**	**507**	**0**	**0**	**22**	**0**	**6**	**0**	**0**	**808**	**9**	**0**
Peak Hour Factor					0.375	0.874			0.611		0.500			0.863	0.450	
Heavy Vehicle Percentage					0.00%	3.12%			0.00%		8.33%			2.00%	6.67%	0.00%
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		NW 34th St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	2	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

			↑	0			
			←	507			
			↓	3			
0	0	0	↳	0			
←	↓	→	↺	↰	←	↑	→
		0	↳	0	22	0	6
		0	↑				
		808	→				
		9	↓				

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					Neff Rd										Site Code: UnSig_14			
East/West Street:					Culebra Rd													
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs													
	Neff Rd Southbound				Culebra Rd Westbound				Neff Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	1	0	1	0	1	117	0	0	0	0	2	0	0	226	1	0
7:15 AM	0	0	0	0	1	155	0	0	0	1	0	0	0	288	1	0
7:30 AM	1	0	3	0	0	177	0	0	3	0	1	0	2	354	2	0
7:45 AM	1	1	1	0	1	207	1	0	1	0	2	0	0	387	0	0
8:00 AM	2	0	0	0	0	196	0	0	1	0	4	0	2	268	1	0
8:15 AM	0	1	0	0	1	196	0	0	2	0	1	0	1	276	1	0
8:30 AM	1	0	1	0	1	162	0	0	2	0	2	0	2	229	0	0
8:45 AM	1	0	0	0	0	180	0	0	1	0	2	0	1	266	0	0
2-hour Total	7	2	6	0	5	1390	1	0	10	1	14	0	8	2294	6	0
7:15 AM - 8:15 AM*	**4**	**1**	**4**	**0**	**2**	**735**	**1**	**0**	**5**	**1**	**7**	**0**	**4**	**1297**	**4**	**0**
Peak Hour Factor	0.500	0.250	0.333		0.500	0.888	0.250		0.417	0.250	0.438		0.500	0.838	0.500	
Heavy Vehicle Percentage	0.00%	50.00%	0.00%		0.00%	3.53%	0.00%		0.00%	0.00%	0.00%		0.00%	2.01%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Neff St Southbound		Culebra Rd Westbound		Neff St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	1	0	0	0	1	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

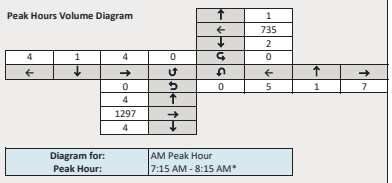

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					N Hamilton Ave										Site Code: UnSig_15_____			
East/West Street:					Culebra Rd													
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs													
	N Hamilton Ave Southbound				Culebra Rd Westbound				N Hamilton Ave Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	1	0	0	147	3	0	0	0	8	0	0	244	3	0
7:15 AM	0	0	1	0	0	158	2	0	0	0	19	0	0	289	5	0
7:30 AM	0	0	0	0	0	184	2	0	0	0	15	0	0	374	8	0
7:45 AM	0	0	1	0	0	209	0	1	0	0	16	0	0	363	12	0
8:00 AM	0	0	4	0	2	198	1	0	0	0	14	0	0	302	12	0
8:15 AM	0	0	1	0	0	204	0	0	0	0	11	0	0	276	5	0
8:30 AM	0	1	0	0	3	180	0	0	0	0	20	0	0	262	3	0
8:45 AM	0	0	1	0	2	188	1	0	0	0	17	0	0	291	1	0
2-hour Total	0	1	9	0	7	1468	9	1	0	0	120	0	0	2401	49	0
7:15 AM - 8:15 AM*	**0**	**0**	**6**	**0**	**2**	**749**	**5**	**1**	**0**	**0**	**64**	**0**	**0**	**1328**	**37**	**0**
Peak Hour Factor			0.375		0.250	0.896	0.625	0.250			0.842			0.888	0.771	
Heavy Vehicle Percentage		0.00%	0.00%		0.00%	3.61%	11.11%	0.00%			2.50%			2.08%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	N Hamilton Ave Southbound		Culebra Rd Westbound		N Hamilton Ave Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	1	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	1	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

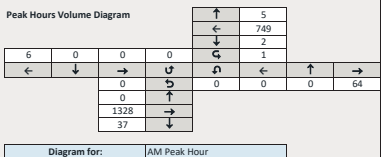

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:												Site Code: UnSig_16 AM			
East/West Street:					Culebra Rd										
TOD:	AM	Date:	12/15/2020		Raw Data: I:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs										
	Southbound				Culebra Rd Westbound				Grissom Park Dr Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	0	0	0	107	0	0	6	0	1	0	0	271	0	0
7:15 AM	0	0	0	0	1	137	0	0	2	0	4	0	0	294	2	0
7:30 AM	0	0	0	0	1	159	0	0	5	0	13	0	0	290	3	0
7:45 AM	0	0	0	0	1	162	0	0	2	0	4	0	0	341	2	0
8:00 AM	0	0	0	0	1	157	0	0	0	0	1	0	0	250	1	0
8:15 AM	0	0	0	0	0	129	0	0	2	0	2	0	0	208	1	0
8:30 AM	0	0	0	0	1	141	0	0	0	0	4	0	0	207	2	0
8:45 AM	0	0	0	0	1	135	0	0	0	0	2	0	0	227	2	0
2-hour Total	0	0	0	0	6	1127	0	0	17	0	31	0	0	2088	13	0
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**4**	**615**	**0**	**0**	**9**	**0**	**22**	**0**	**0**	**1175**	**8**	**0**
Peak Hour Factor					1.000	0.949			0.450		0.423			0.861	0.667	
Heavy Vehicle Percentage					16.67%	2.13%			0.00%		6.45%			1.39%	15.38%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Grissom Park Dr Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	1	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

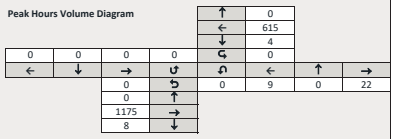

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:												Site Code: UnSig_17_____			
East/West Street:					Culebra Rd										
TOD:	AM	Date:	12/15/2020		Raw Data: I:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs										
	Southbound				Culebra Rd Westbound				NW 28th St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	0	0	0	73	0	0	1	0	6	0	0	149	1	0
7:15 AM	0	0	0	0	1	94	0	0	2	0	3	0	0	162	0	0
7:30 AM	0	0	0	0	1	113	0	0	3	0	6	0	0	236	1	0
7:45 AM	0	0	0	0	0	111	0	0	5	0	4	0	0	209	0	0
8:00 AM	0	0	0	0	0	126	0	0	4	0	2	0	0	169	0	0
8:15 AM	0	0	0	0	1	110	0	0	1	0	8	0	0	141	0	0
8:30 AM	0	0	0	0	0	94	0	0	2	0	4	0	0	157	0	0
8:45 AM	0	0	0	0	0	109	0	0	2	0	4	0	0	163	0	0
2-hour Total	0	0	0	0	3	830	0	0	20	0	37	0	0	1386	2	0
7:15 AM - 8:15 AM*	**0**	**0**	**0**	**0**	**2**	**444**	**0**	**0**	**14**	**0**	**15**	**0**	**0**	**776**	**1**	**0**
Peak Hour Factor					0.500	0.881			0.700		0.625			0.822	0.250	
Heavy Vehicle Percentage					0.00%	2.29%			0.00%		0.00%			1.59%	0.00%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		NW 28th St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	1	0	0
8:00 AM to 9:00 AM	0	0	1	0	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

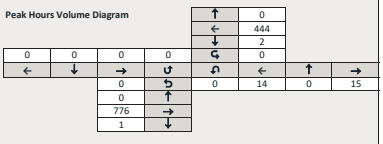

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

North/South Street:					N Navidad St								Site Code: UnSig_18_____			
East/West Street:					Culebra Rd											
TOD:	AM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	N Navidad St Southbound				Culebra Rd Westbound				N Navidad St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
7:00 AM	0	0	0	0	0	179	1	0	0	0	22	0	0	251	3	0
7:15 AM	0	0	1	0	0	191	0	0	0	0	18	0	0	299	6	0
7:30 AM	0	0	3	0	0	221	2	0	0	0	18	0	0	401	3	0
7:45 AM	0	0	0	0	0	217	3	0	0	0	14	0	0	351	9	0
8:00 AM	0	0	2	0	0	215	1	0	0	0	12	0	0	313	3	0
8:15 AM	0	0	1	0	0	199	1	0	0	0	18	0	0	313	2	0
8:30 AM	0	0	1	0	0	179	2	0	0	0	14	0	0	281	4	0
8:45 AM	0	0	7	0	0	191	2	0	0	0	18	0	0	286	1	0
2-hour Total	0	0	15	0	0	1592	12	0	0	0	134	0	0	2495	31	0
7:15 AM - 8:15 AM*	**0**	**0**	**6**	**0**	**0**	**844**	**6**	**0**	**0**	**0**	**62**	**0**	**0**	**1364**	**21**	**0**
Peak Hour Factor			0.500			0.955	0.500				0.861			0.850	0.583	
Heavy Vehicle Percentage			0.00%			3.71%	0.00%				50.00%			2.16%	9.68%	
OnStreet Bicycle Count (7:15 AM to 8:15 AM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 7:15 AM - 8:15 AM Peak Hour represents the corridor peak not the intersection peak.

	N Navidad St Southbound		Culebra Rd Westbound		N Navidad St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
7:00 AM to 8:00 AM	0	0	0	0	0	0	1	0
8:00 AM to 9:00 AM	0	0	0	1	0	0	0	0
Bicycle Counts - On Sidewalk								
7:00 AM to 8:00 AM	0	0	0	0	0	0	0	0
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

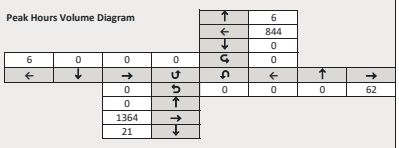

Diagram for:	AM Peak Hour
Peak Hour:	7:15 AM - 8:15 AM*

J:\30900399A CoSA Culebra Road Corridor Study\5.0 Project Data\5.1 Data Collection\5.1.3 Data Tabulation\309003994 CoSA Culebra Road_AM_Rev1

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

PM Turning Movement Counts

Data Collected: December 15, 2020

J:\30900399A CoSA Culebra Road Corridor Study\5.0 Project Data\5.1 Data Collection\5.1.3 Data Tabulation\309003994 CoSA Culebra Road_AM_Rev1

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	RBFCU Driveway	Site Code: Sig_1_____
East/West Street:	Culebra Rd	
TOD:	PM Date: 12/15/2020	Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	RBFCU Driveway Southbound				Culebra Rd Westbound				Rogers Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00 PM	6	8	25	0	49	286	2	0	66	4	60	0	18	215	34	0
4:15 PM	4	6	16	0	57	255	3	0	59	6	61	0	15	217	48	0
4:30 PM	3	6	17	0	53	269	5	0	82	8	68	0	14	233	51	0
4:45 PM	4	4	22	0	55	250	2	0	86	8	72	0	9	259	63	0
5:00 PM	9	5	20	0	51	262	7	0	64	4	102	0	15	257	48	0
5:15 PM	5	6	16	0	53	242	2	0	114	5	74	0	19	247	45	0
5:30 PM	5	7	20	0	57	321	4	0	63	2	86	0	19	279	45	0
5:45 PM	6	5	7	0	69	242	1	0	68	4	76	0	5	255	34	1
2-hour Total	42	47	143	0	444	2127	26	0	602	41	599	0	114	1962	368	1
5:00 PM - 6:00 PM*	**25**	**23**	**63**	**0**	**230**	**1067**	**14**	**0**	**309**	**15**	**338**	**0**	**58**	**1038**	**172**	**1**
Peak Hour Factor	0.694	0.821	0.788		0.833	0.831	0.500		0.678	0.750	0.828		0.763	0.930	0.896	0.250
Heavy Vehicle Percentage	0.00%	0.00%	0.00%		0.00%	1.03%	0.00%		0.50%	0.00%	0.33%		0.00%	1.17%	0.82%	0.00%
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	RBFCU Driveway Southbound		Culebra Rd Westbound		Rogers Rd Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	1	0	0	0	1
5:00 PM to 6:00 PM	0	0	0	2	1	0	1	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	1	0	0	0	0	0	0	1
5:00 PM to 6:00 PM	0	0	0	0	0	0	1	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

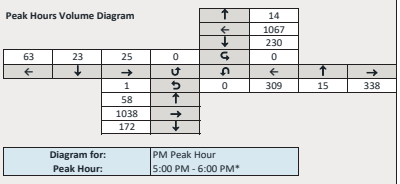

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Les Harrison Dr	Site Code: Sig_2_____
East/West Street:	Culebra Rd	
TOD:	PM Date: 12/15/2020	Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Les Harrison Dr Southbound				Culebra Rd Westbound				Apartments Driveway Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00 PM	33	3	41	0	11	282	33	0	16	7	10	0	66	247	8	0
4:15 PM	29	0	52	0	5	253	48	0	16	1	4	0	63	223	5	0
4:30 PM	29	0	58	0	2	291	38	0	5	1	2	0	76	211	1	0
4:45 PM	38	0	68	0	2	283	64	1	4	0	2	0	61	262	2	0
5:00 PM	24	0	47	0	3	257	51	0	0	1	2	0	79	274	2	0
5:15 PM	36	1	55	0	6	264	58	2	4	0	2	0	74	254	4	1
5:30 PM	40	0	67	0	5	281	64	0	9	1	4	0	86	261	9	0
5:45 PM	41	0	67	0	8	297	48	0	6	1	4	0	69	271	4	0
2-hour Total	270	4	455	0	42	2208	404	3	60	12	30	0	574	2003	35	1
5:00 PM - 6:00 PM*	**141**	**1**	**236**	**0**	**22**	**1099**	**221**	**2**	**19**	**3**	**12**	**0**	**308**	**1060**	**19**	**1**
Peak Hour Factor	0.860	0.250	0.881		0.688	0.925	0.863	0.250	0.528	0.750	0.750		0.895	0.967	0.528	0.250
Heavy Vehicle Percentage	0.74%	0.00%	0.88%		0.00%	0.50%	0.74%	0.00%	0.00%	0.00%	6.67%		0.52%	0.90%	0.00%	0.00%
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Les Harrison Dr Southbound		Culebra Rd Westbound		Apartments Driveway Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	1
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

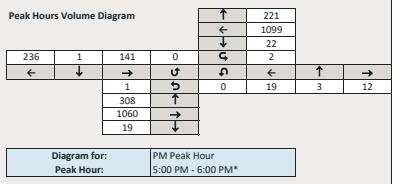

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Cliffbrier Dr												Site Code: Sig_3_____			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Cliffbrier Dr Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	44	0	38	0	0	272	49	0	0	0	0	0	33	242	0	0
4:15 PM	49	0	42	0	0	269	40	0	0	0	0	0	34	240	0	0
4:30 PM	34	0	23	0	0	296	46	0	0	0	0	0	25	247	0	0
4:45 PM	34	0	17	0	0	268	37	0	0	0	0	0	31	264	0	0
5:00 PM	33	0	20	0	0	292	40	0	0	0	0	0	23	266	0	0
5:15 PM	28	0	22	0	0	315	35	0	0	0	0	0	33	272	0	0
5:30 PM	25	0	24	0	0	306	39	0	0	0	0	0	45	249	0	0
5:45 PM	39	0	27	0	0	313	64	0	0	0	0	0	28	262	0	0
2-hour Total	286	0	213	0	0	2331	350	0	0	0	0	0	252	2042	0	0
5:00 PM - 6:00 PM*	**125**	**0**	**93**	**0**	**0**	**1226**	**178**	**0**	**0**	**0**	**0**	**0**	**129**	**1049**	**0**	**0**
Peak Hour Factor	0.801		0.861			0.973	0.695						0.717	0.964		
Heavy Vehicle Percentage	1.40%		1.88%		0.00%	0.94%	0.57%						0.00%	1.18%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Cliffbrier Dr Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	1
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	1
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	1
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

			↑	178			
			←	1226			
			↓	0			
93	0	125	0	↳	0		
←	↓	→	↺	↰	←	↑	→
		0	↳	0	0	0	0
		129	↑				
		1049	→				
		0	↓				

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Village Park												Site Code: Sig_4_____			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Village Park Southbound				Culebra Rd Westbound				Nueces Canyon Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	29	1	21	0	5	296	39	1	3	2	3	0	29	227	5	0
4:15 PM	21	0	26	0	3	289	42	0	0	0	4	0	33	265	5	1
4:30 PM	22	0	23	0	10	294	47	1	3	1	2	0	22	240	4	0
4:45 PM	16	0	25	0	3	289	47	0	0	0	1	0	50	257	4	1
5:00 PM	20	1	25	0	4	332	45	0	0	0	4	0	38	259	4	0
5:15 PM	18	2	31	0	5	298	41	0	2	0	7	0	24	270	1	0
5:30 PM	22	1	25	0	3	333	39	0	1	0	3	0	36	251	3	0
5:45 PM	22	2	32	0	6	322	46	1	1	0	3	0	32	261	4	0
2-hour Total	170	7	208	0	39	2453	346	3	10	3	27	0	264	2030	30	2
5:00 PM - 6:00 PM*	**82**	**6**	**113**	**0**	**18**	**1285**	**171**	**1**	**4**	**0**	**17**	**0**	**130**	**1041**	**12**	**0**
Peak Hour Factor	0.932	0.750	0.883		0.750	0.965	0.929	0.250	0.500		0.607		0.855	0.964	0.750	
Heavy Vehicle Percentage	0.59%	0.00%	0.00%		0.00%	0.90%	0.00%	0.00%	0.00%	0.00%	3.70%		0.00%	1.23%	3.33%	0.00%
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Village Park Southbound		Culebra Rd Westbound		Nueces Canyon Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	2	0	0	0	2
5:00 PM to 6:00 PM	0	0	1	1	0	0	0	2
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

			↑	171			
			←	1285			
			↓	18			
113	6	82	0	↳	1		
←	↓	→	↺	↰	←	↑	→
		0	↳	0	4	0	17
		130	↑				
		1041	→				
		12	↓				

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Walmart Driveway												Site Code: Sig_5_____			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Walmart Driveway Southbound				Culebra Rd Westbound				Gas Station Driveway Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	8	1	32	0	12	313	29	0	6	1	9	0	32	243	6	0
4:15 PM	14	0	28	0	7	293	31	0	5	1	8	0	23	252	5	0
4:30 PM	13	1	37	0	8	319	22	0	5	0	6	0	27	252	7	0
4:45 PM	13	0	24	0	5	313	27	0	7	3	6	0	23	228	7	0
5:00 PM	22	1	38	0	6	343	24	0	4	1	9	0	21	267	10	0
5:15 PM	15	1	33	0	7	298	31	0	7	3	10	0	27	243	9	0
5:30 PM	10	5	34	0	18	346	29	0	7	1	10	0	28	243	7	0
5:45 PM	10	3	32	0	4	332	30	0	16	0	11	0	22	263	7	0
2-hour Total	105	12	258	0	67	2557	223	0	57	10	69	0	203	1991	58	0
5:00 PM - 6:00 PM*	**57**	**10**	**137**	**0**	**35**	**1319**	**114**	**0**	**34**	**5**	**40**	**0**	**98**	**1016**	**33**	**0**
Peak Hour Factor	0.648	0.500	0.901		0.486	0.953	0.919		0.531	0.417	0.909		0.875	0.951	0.825	
Heavy Vehicle Percentage	1.90%	0.00%	0.78%		0.00%	0.98%	0.45%		0.00%	0.00%	2.90%		1.97%	1.26%	0.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Walmart Driveway Southbound		Culebra Rd Westbound		Gas Station Driveway Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	1	0	1	0
5:00 PM to 6:00 PM	0	0	2	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	2	0	0	0	2
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

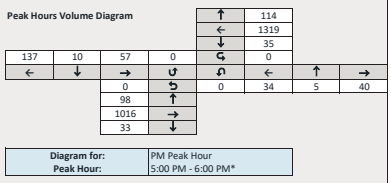

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Culebra Rd												Site Code: Sig_6			
East/West Street:																
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Culebra Rd Southbound				Westbound				Culebra Rd Northbound				Arcadia Creek Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	242	24	0	0	0	0	0	7	287	0	0	24	0	11	0
4:15 PM	0	260	43	0	0	0	0	0	14	375	0	0	14	0	7	0
4:30 PM	0	261	38	0	0	0	0	0	23	421	0	0	20	0	5	0
4:45 PM	0	275	29	0	0	0	0	0	16	409	0	0	26	0	19	0
5:00 PM	0	276	34	0	0	0	0	0	21	415	0	1	35	0	12	0
5:15 PM	0	268	39	0	0	0	0	0	31	404	0	0	22	0	16	0
5:30 PM	0	284	33	0	0	0	0	0	16	426	0	0	19	0	12	0
5:45 PM	0	255	31	0	0	0	0	0	32	422	0	0	21	0	11	0
2-hour Total	0	2121	271	0	0	0	0	0	160	3159	0	1	181	0	93	0
5:00 PM - 6:00 PM*	**0**	**1083**	**137**	**0**	**0**	**0**	**0**	**0**	**100**	**1667**	**0**	**1**	**97**	**0**	**51**	**0**
Peak Hour Factor		0.953	0.878						0.781	0.978		0.250	0.693		0.797	
Heavy Vehicle Percentage		1.13%	1.85%		0.00%				1.25%	0.70%		0.00%	1.10%		4.30%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Culebra Rd Southbound		Westbound		Culebra Rd Northbound		Arcadia Creek Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	1	0	1
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

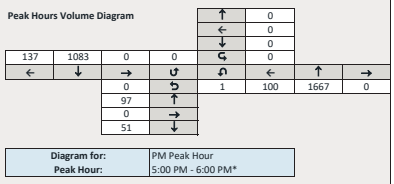

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Baseball Field Driveway												Site Code: Sig_7_____			
East/West Street:	Culebra Rd															
TOD:	PM	Date: 12/15/2020			Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Baseball Field Driveway Southbound				Culebra Rd Westbound				Driveway Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	1	0	3	0	0	271	3	0	1	0	0	0	0	201	0	0
4:15 PM	1	0	2	0	2	243	2	0	0	0	2	0	2	194	0	0
4:30 PM	1	0	1	0	0	251	6	0	2	0	0	0	5	197	1	0
4:45 PM	3	0	3	0	0	257	9	0	1	0	0	0	14	195	0	0
5:00 PM	4	0	14	0	0	311	2	0	3	0	1	0	16	201	1	0
5:15 PM	4	0	15	0	0	242	4	0	1	0	1	0	11	208	0	0
5:30 PM	11	0	14	0	0	232	0	0	0	0	1	0	3	185	0	0
5:45 PM	3	0	5	0	0	244	0	0	2	0	1	0	5	214	0	0
2-hour Total	28	0	57	0	2	2051	26	0	10	0	6	0	56	1595	2	0
5:00 PM - 6:00 PM*	**22**	**0**	**48**	**0**	**0**	**1029**	**6**	**0**	**6**	**0**	**4**	**0**	**35**	**808**	**1**	**0**
Peak Hour Factor	0.500		0.800			0.827	0.375		0.500		1.000		0.547	0.944	0.250	
Heavy Vehicle Percentage	27.27%		24.00%		0.00%	4.24%	88.89%		75.00%		0.00%		90.91%	1.50%	0.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Baseball Field Driveway		Culebra Rd Westbound		Driveway Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	1
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

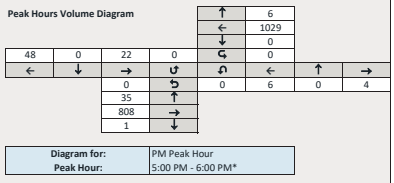

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Pettus St												Site Code: Sig_8			
East/West Street:	Culebra Rd															
TOD:	PM	Date: 12/15/2020			Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Pettus St Southbound				Culebra Rd Westbound				Alicia Ave Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	13	0	4	0	4	231	23	0	1	0	6	0	1	184	3	0
4:15 PM	6	0	0	0	1	218	20	0	2	0	4	0	2	215	0	0
4:30 PM	7	0	0	0	1	242	14	0	0	0	1	0	3	199	4	0
4:45 PM	13	0	1	0	9	211	30	0	2	1	4	0	0	193	2	0
5:00 PM	9	0	4	0	4	239	21	0	2	0	3	0	5	200	3	0
5:15 PM	7	1	3	0	2	260	28	0	2	0	3	0	1	205	6	0
5:30 PM	6	1	6	0	1	218	29	0	2	1	3	0	0	218	4	0
5:45 PM	9	1	2	0	6	232	17	0	1	0	2	0	1	195	8	0
2-hour Total	70	3	20	0	28	1851	182	0	12	2	26	0	13	1609	30	0
5:00 PM - 6:00 PM*	**31**	**3**	**15**	**0**	**13**	**949**	**95**	**0**	**7**	**1**	**11**	**0**	**7**	**818**	**21**	**0**
Peak Hour Factor	0.861	0.750	0.625		0.542	0.913	0.819		0.875	0.250	0.917		0.350	0.938	0.656	
Heavy Vehicle Percentage	0.00%	0.00%	0.00%		0.00%	1.24%	1.10%		0.00%	0.00%	0.00%		0.00%	0.99%	0.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Pettus St Southbound		Culebra Rd Westbound		Alicia Ave Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	1	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

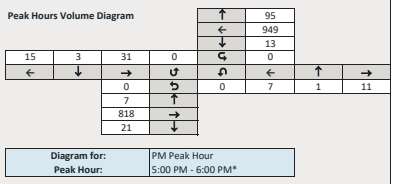

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	NW 36th St												Site Code: Sig_9			
East/West Street:	Culebra Rd															
TOD: PM	Date: 12/15/2020				Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	NW 36th St Southbound				Culebra Rd Westbound				Esmeralda Dr Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	37	67	29	0	16	218	30	0	25	57	13	0	19	175	20	0
4:15 PM	45	86	38	0	17	198	25	0	23	59	10	0	23	187	11	0
4:30 PM	29	70	32	0	11	205	35	0	32	74	11	0	31	193	13	0
4:45 PM	35	86	41	0	19	212	27	0	31	63	20	0	24	168	32	0
5:00 PM	32	82	31	0	20	232	25	0	18	49	12	0	33	186	20	0
5:15 PM	30	101	31	0	12	245	25	0	36	68	19	0	25	176	16	0
5:30 PM	30	80	28	0	24	204	22	0	28	54	15	0	27	175	22	0
5:45 PM	38	105	37	0	30	217	25	0	23	71	15	0	26	151	19	0
2-hour Total	276	677	267	0	149	1731	214	0	216	495	115	0	208	1411	153	0
5:00 PM - 6:00 PM*	**130**	**368**	**127**	**0**	**86**	**898**	**97**	**0**	**105**	**242**	**61**	**0**	**111**	**688**	**77**	**0**
Peak Hour Factor	0.855	0.876	0.858		0.717	0.916	0.970		0.729	0.852	0.803		0.841	0.925	0.875	
Heavy Vehicle Percentage	0.72%	0.30%	1.12%		0.00%	1.27%	0.93%		0.46%	0.00%	0.87%		0.48%	1.77%	0.65%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	NW 36th St Southbound		Culebra Rd Westbound		Esmeralda Dr Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	1	0	0	0	2	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	1	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

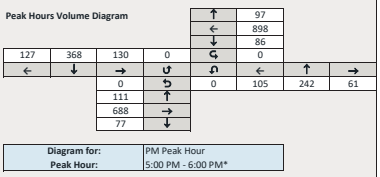

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Rattler Dr												Site Code: Sig_10			
East/West Street:	Culebra Rd															
TOD: PM	Date: 12/15/2020				Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Rattler Dr Southbound				Culebra Rd Westbound				Memorial St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	7	259	1	0	8	0	7	0	0	198	8	0
4:15 PM	2	0	0	0	14	242	0	0	12	0	20	0	0	230	11	0
4:30 PM	2	0	1	0	9	222	2	0	15	0	14	0	0	203	10	0
4:45 PM	1	0	3	0	6	249	2	0	7	0	9	0	0	216	7	0
5:00 PM	1	0	4	0	11	286	1	0	5	0	8	0	1	219	6	0
5:15 PM	1	0	0	0	10	279	0	0	12	0	7	0	0	227	7	0
5:30 PM	1	0	6	0	10	267	2	0	2	0	7	0	2	200	6	0
5:45 PM	2	0	0	0	11	273	0	0	11	0	5	0	1	197	13	0
2-hour Total	10	0	14	0	78	2077	8	0	72	0	77	0	4	1690	68	0
5:00 PM - 6:00 PM*	**5**	**0**	**10**	**0**	**42**	**1105**	**3**	**0**	**30**	**0**	**27**	**0**	**4**	**843**	**32**	**0**
Peak Hour Factor	0.625		0.417		0.955	0.966	0.375		0.625		0.844		0.500	0.928	0.615	
Heavy Vehicle Percentage	0.00%		0.00%		0.00%	1.20%	0.00%		0.00%		0.00%		0.00%	1.66%	1.47%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Rattler Dr Southbound		Culebra Rd Westbound		Memorial St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	1	0	0	0	2	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	1	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	1	1
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

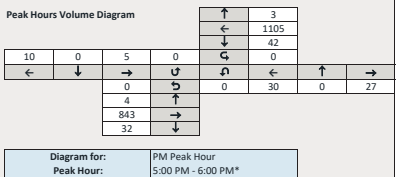

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

J:\30900399A CoSA Culebra Road Corridor Study\5.0 Project Data\5.1 Data Collection\5.1.3 Data Tabulation\309003994 CoSA Culebra Road_PM_Rev1

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Camino Santa Maria												Site Code: Sig_11			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Camino Santa Maria Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	13	0	26	0	0	240	14	0	0	0	0	0	22	184	0	0
4:15 PM	11	0	35	0	0	226	9	0	0	0	0	0	26	230	0	0
4:30 PM	13	0	26	0	0	225	9	0	0	0	0	0	18	202	0	0
4:45 PM	13	0	21	0	0	233	11	0	0	0	0	0	28	206	0	0
5:00 PM	15	0	40	0	0	275	15	0	0	0	0	0	24	205	0	0
5:15 PM	13	0	21	0	0	255	10	0	0	0	0	0	24	220	0	0
5:30 PM	10	0	33	0	0	260	12	0	0	0	0	0	25	179	0	0
5:45 PM	19	0	37	0	0	235	12	0	0	0	0	0	20	181	0	0
2-hour Total	107	0	239	0	0	1949	92	0	0	0	0	0	187	1607	0	0
5:00 PM - 6:00 PM*	**57**	**0**	**131**	**0**	**0**	**1025**	**49**	**0**	**0**	**0**	**0**	**0**	**93**	**785**	**0**	**0**
Peak Hour Factor	0.750		0.819			0.932	0.817						0.930	0.892		
Heavy Vehicle Percentage	0.00%		1.26%		0.00%	1.33%	0.00%						1.07%	1.62%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Camino Santa Maria Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

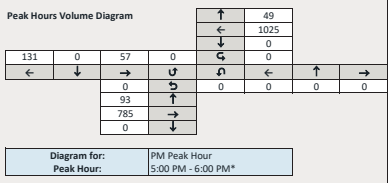

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	N San Felipe Ave												Site Code: Sig_12			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	N San Felipe Ave Northbound				Culebra Rd Westbound				N San Felipe Ave Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	7	229	0	0	16	0	6	0	0	200	5	0
4:15 PM	0	0	0	0	4	225	0	0	9	0	7	0	0	202	9	0
4:30 PM	0	0	0	0	4	231	0	0	10	0	10	0	0	210	12	0
4:45 PM	0	0	0	0	7	229	0	0	15	0	9	0	0	200	14	0
5:00 PM	0	0	0	0	9	273	0	0	13	0	10	0	0	224	11	0
5:15 PM	0	0	0	0	3	270	0	0	9	0	6	0	0	206	7	0
5:30 PM	0	0	0	0	6	270	0	0	8	0	4	0	0	201	5	0
5:45 PM	0	0	0	0	6	251	0	0	12	0	5	0	0	174	14	0
2-hour Total	0	0	0	0	46	1978	0	0	92	0	57	0	0	1617	77	0
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**24**	**1064**	**0**	**0**	**42**	**0**	**25**	**0**	**0**	**805**	**37**	**0**
Peak Hour Factor					0.667	0.974			0.808		0.625			0.898	0.661	
Heavy Vehicle Percentage					0.00%	1.11%			1.09%		1.75%			1.55%	0.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		N San Felipe Ave Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	2	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

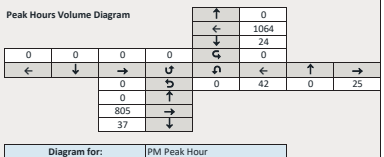

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	General McCullen Dr												Site Code: Sig_13			
East/West Street:	Culebra Rd															
TOD: PM	Date: 12/15/2020				Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	General McCullen Dr Southbound				Culebra Rd Westbound				General McCullen Dr Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	7	127	14	0	40	165	10	0	53	132	40	0	13	121	54	0
4:15 PM	12	98	11	0	55	165	14	0	50	105	48	1	24	133	50	0
4:30 PM	9	99	11	0	43	166	11	0	58	133	35	1	25	125	48	0
4:45 PM	10	99	15	0	52	192	14	0	49	117	48	0	25	134	53	0
5:00 PM	13	119	10	0	55	199	8	0	65	106	45	0	9	145	43	0
5:15 PM	6	124	15	0	47	200	19	0	59	108	40	0	17	161	44	0
5:30 PM	6	138	22	0	54	194	16	0	63	124	33	1	24	129	41	0
5:45 PM	9	113	13	0	51	186	11	0	53	114	47	2	24	132	44	0
2-hour Total	72	917	111	0	397	1467	103	0	450	939	336	5	161	1080	377	0
5:00 PM - 6:00 PM*	**34**	**494**	**60**	**0**	**207**	**779**	**54**	**0**	**240**	**452**	**165**	**3**	**74**	**567**	**172**	**0**
Peak Hour Factor	0.654	0.895	0.682		0.941	0.974	0.711		0.923	0.911	0.878	0.375	0.771	0.880	0.977	
Heavy Vehicle Percentage	1.39%	1.53%	0.00%		0.00%	1.43%	0.00%		0.22%	1.28%	1.49%	0.00%	0.62%	2.31%	0.27%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	General McMullen Dr		Culebra Rd Westbound		General McMullen Dr Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	1	2	3	1	3	0	0
5:00 PM to 6:00 PM	0	1	0	2	0	2	0	1
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	1	0	1
5:00 PM to 6:00 PM	0	1	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

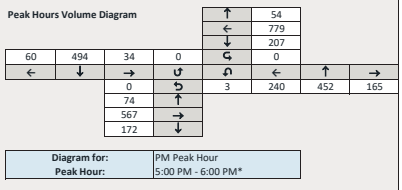

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Bandera Rd												Site Code: Sig_14 PM			
East/West Street:	Culebra Rd															
TOD: PM	Date: 12/15/2020				Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Bandera Rd Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	134	0	10	0	0	219	168	0	0	0	0	0	0	134	0	0
4:15 PM	136	0	8	0	0	203	147	0	0	0	0	0	0	154	0	0
4:30 PM	120	0	6	0	0	239	159	0	0	0	0	0	0	158	0	0
4:45 PM	142	0	5	0	0	215	169	0	0	0	0	0	0	136	0	0
5:00 PM	148	0	7	0	0	296	147	0	0	0	0	0	0	167	0	0
5:15 PM	155	0	3	0	0	208	183	0	0	0	0	0	0	150	0	0
5:30 PM	133	0	9	0	0	286	159	0	0	0	0	0	0	159	0	0
5:45 PM	148	0	6	0	0	208	205	0	0	0	0	0	0	161	0	0
2-hour Total	1116	0	54	0	0	1874	1337	0	0	0	0	0	0	1219	0	0
5:00 PM - 6:00 PM*	**584**	**0**	**25**	**0**	**0**	**998**	**694**	**0**	**0**	**0**	**0**	**0**	**0**	**637**	**0**	**0**
Peak Hour Factor	0.942		0.694			0.843	0.846							0.954		
Heavy Vehicle Percentage	1.70%		0.00%		0.00%	1.39%	1.12%							2.30%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Bandera Rd Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	1	0	0	0	0	0	1
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

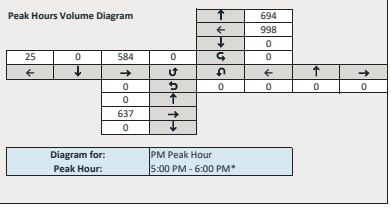

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:							IH 10 EBFR								Site Code: Sig_15			
East/West Street:							Culebra Rd											
TOD:	PM	Date:	12/15/2020		Raw Data:	J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs												
	IH 10 EBFR Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	25	7	134	0	20	230	0	0	0	0	0	0	0	138	162	0
4:15 PM	19	5	144	0	22	255	0	0	0	0	0	0	0	133	142	0
4:30 PM	18	3	137	0	27	228	0	0	0	0	0	0	0	152	129	0
4:45 PM	24	3	133	0	14	239	0	0	0	0	0	0	0	140	143	0
5:00 PM	10	3	128	0	15	256	0	0	0	0	0	0	0	139	137	0
5:15 PM	16	7	119	0	18	268	0	0	0	0	0	0	0	131	139	0
5:30 PM	12	3	131	0	11	290	0	0	0	0	0	0	0	154	118	0
5:45 PM	13	1	135	0	9	252	0	0	0	0	0	0	0	135	130	0
2-hour Total	137	32	1061	0	136	2018	0	0	0	0	0	0	0	1122	1100	0
5:00 PM - 6:00 PM*	**51**	**14**	**513**	**0**	**53**	**1066**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**559**	**524**	**0**
Peak Hour Factor	0.797	0.500	0.950		0.736	0.919								0.907	0.942	
Heavy Vehicle Percentage	0.73%	0.00%	1.13%		0.00%	1.83%								2.85%	2.64%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	IH 10 EBFR Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	2	0	2	0	0	0	0
5:00 PM to 6:00 PM	0	2	0	4	0	0	0	3
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

				↑	0		
				←	1066		
				↓	53		
513	14	51	0	↳	0		
←	↓	→	↺	↰	←	↑	→
		0	↳	0	0	0	0
		559	↑				
		524	→				
			↓				

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:																Site Code: Sig_16			
East/West Street:							Culebra Rd												
TOD:	PM	Date:	12/15/2020		Raw Data:	J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs													
	Southbound				Culebra Rd Westbound				IH 10 WBFR Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	0	74	29	0	181	1	19	0	100	69	0	0
4:15 PM	0	0	0	0	0	65	22	0	189	2	18	0	101	60	0	0
4:30 PM	0	0	0	0	0	85	28	0	175	3	11	0	119	51	0	0
4:45 PM	0	0	0	0	0	73	21	0	174	4	8	0	108	64	0	0
5:00 PM	0	0	0	0	0	104	26	0	180	4	8	0	99	45	0	0
5:15 PM	0	0	0	0	0	76	22	0	200	5	8	0	104	61	0	0
5:30 PM	0	0	0	0	0	97	20	0	188	2	9	0	107	47	0	0
5:45 PM	0	0	0	0	0	74	20	0	213	5	10	0	102	50	0	0
2-hour Total	0	0	0	0	0	648	188	0	1500	26	91	0	840	447	0	0
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**0**	**351**	**88**	**0**	**781**	**16**	**35**	**0**	**412**	**203**	**0**	**0**
Peak Hour Factor						0.844	0.846		0.917	0.800	0.875		0.963	0.832		
Heavy Vehicle Percentage					0.00%	3.24%	2.66%		1.33%	0.00%	0.00%		1.07%	5.15%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		IH 10 WBFR Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	1	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	1	1	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

				↑	88		
				←	351		
				↓	0		
0	0	0	0	↳	0		
←	↓	→	↺	↰	←	↑	→
		0	↳	0	781	16	35
		412	↑				
		203	→				
		0	↓				

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**Tezel Rd**								**Site Code: Sig_17**			
East/West Street:					**Grissom Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: I:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Tezel Rd Southbound				Grissom Rd Westbound				Culebra Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	34	118	11	0	32	171	30	0	160	173	25	0	40	132	117	3
4:15 PM	36	151	15	0	49	159	35	0	148	204	22	0	31	114	117	1
4:30 PM	27	120	10	0	52	152	21	0	167	255	32	1	31	118	116	1
4:45 PM	27	131	19	0	59	171	33	0	146	222	25	0	32	109	122	5
5:00 PM	34	144	20	0	48	161	31	0	177	253	36	0	26	116	122	2
5:15 PM	31	136	16	0	60	177	29	0	162	236	15	0	49	150	112	0
5:30 PM	38	137	20	0	58	189	27	0	172	226	27	0	38	92	117	2
5:45 PM	45	128	21	0	57	163	22	0	187	232	36	0	37	151	99	3
2-hour Total	272	1065	132	0	415	1343	228	0	1319	1801	218	1	284	982	922	17
5:00 PM - 6:00 PM*	**148**	**545**	**77**	**0**	**223**	**690**	**109**	**0**	**698**	**947**	**114**	**0**	**150**	**509**	**450**	**7**
Peak Hour Factor	0.822	0.946	0.917		0.929	0.913	0.879		0.933	0.936	0.792		0.765	0.843	0.922	0.583
Heavy Vehicle Percentage	2.57%	1.22%	0.76%		0.00%	0.67%	2.19%		1.14%	0.67%	0.46%	0.00%	0.35%	1.12%	1.74%	0.00%
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Tezel Rd Southbound		Grissom Rd Westbound		Culebra Rd Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	1	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	1	1
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	2	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

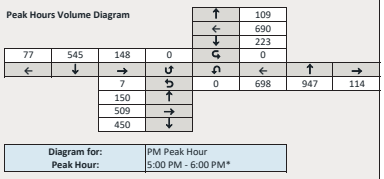

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**Ingram Rd**								**Site Code: Sig_18**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: I:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Ingram Rd Southbound				Culebra Rd Westbound				Ingram Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	13	9	72	0	7	382	9	0	11	11	17	0	53	273	4	0
4:15 PM	21	15	92	0	10	468	12	0	7	7	9	0	54	267	6	0
4:30 PM	22	22	104	0	13	395	12	0	10	12	22	0	50	315	7	1
4:45 PM	27	22	114	0	15	486	16	0	11	5	18	0	49	336	11	1
5:00 PM	41	31	120	1	14	427	16	0	9	9	26	0	49	263	7	0
5:15 PM	38	27	102	0	9	503	21	1	9	4	22	0	51	315	8	1
5:30 PM	22	28	101	0	20	479	10	0	18	3	24	0	34	286	8	1
5:45 PM	35	28	111	0	17	440	12	0	10	10	17	0	70	317	4	0
2-hour Total	219	182	816	1	105	3580	108	1	85	61	155	0	410	2372	55	4
5:00 PM - 6:00 PM*	**136**	**114**	**434**	**1**	**60**	**1849**	**59**	**1**	**46**	**26**	**89**	**0**	**204**	**1181**	**27**	**2**
Peak Hour Factor	0.829	0.919	0.904	0.250	0.750	0.919	0.702	0.250	0.639	0.650	0.856		0.729	0.931	0.844	0.500
Heavy Vehicle Percentage	0.91%	0.00%	1.23%	0.00%	0.00%	0.75%	0.00%	0.00%	0.00%	0.00%	1.94%		0.98%	2.70%	0.00%	0.00%
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Ingram Rd Southbound		Culebra Rd Westbound		Ingram Rd Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	1	2	2	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

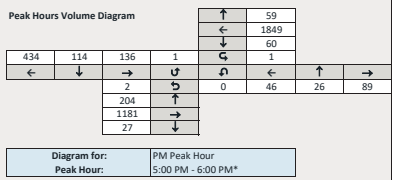

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Callaghan Rd												Site Code: Sig_19			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Callaghan Rd Southbound				Culebra Rd Westbound				Callaghan Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	59	98	23	0	50	131	43	0	76	110	54	0	24	131	84	0
4:15 PM	67	133	36	0	53	142	39	0	66	115	46	0	12	128	81	0
4:30 PM	60	115	21	0	50	145	49	0	84	109	47	0	15	114	81	0
4:45 PM	50	136	26	0	47	136	36	0	66	113	66	0	21	126	75	0
5:00 PM	65	135	27	0	43	139	48	0	83	125	51	0	19	122	80	0
5:15 PM	77	139	28	0	46	143	38	0	96	115	59	0	24	147	67	0
5:30 PM	76	160	32	0	53	130	43	0	71	136	52	0	17	128	80	0
5:45 PM	72	133	21	0	58	143	36	0	79	119	47	0	14	130	76	0
2-hour Total	526	1049	214	0	400	1109	332	0	621	942	422	0	146	1026	624	0
5:00 PM - 6:00 PM*	**290**	**567**	**108**	**0**	**200**	**555**	**165**	**0**	**329**	**495**	**209**	**0**	**74**	**527**	**303**	**0**
Peak Hour Factor	0.942	0.886	0.844		0.862	0.970	0.859		0.857	0.910	0.886		0.771	0.896	0.947	
Heavy Vehicle Percentage	0.95%	1.53%	2.80%		0.00%	2.07%	0.90%		3.22%	0.53%	0.95%		2.74%	1.17%	1.44%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Callaghan Rd Southbound		Culebra Rd Westbound		Callaghan Rd Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	2	1
5:00 PM to 6:00 PM	1	0	1	0	0	0	0	1
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

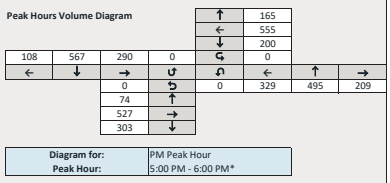

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Zarzamora St												Site Code: Sig_20			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Zarzamora St Southbound				Culebra Rd Westbound				Zarzamora St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	13	44	23	0	37	272	5	0	49	69	53	0	24	239	25	0
4:15 PM	10	56	12	0	49	293	15	0	35	63	38	0	29	236	50	0
4:30 PM	9	54	19	0	43	262	13	0	45	79	49	0	18	217	35	0
4:45 PM	7	60	14	0	48	294	17	0	49	52	36	0	26	213	48	0
5:00 PM	15	61	17	0	42	280	13	0	50	73	52	0	17	210	33	0
5:15 PM	9	53	18	0	39	329	13	0	50	72	49	0	25	243	48	0
5:30 PM	14	64	21	0	38	316	9	0	49	65	35	0	21	213	41	0
5:45 PM	16	55	19	0	45	318	11	0	43	60	39	0	24	231	47	0
2-hour Total	93	447	143	0	341	2364	96	0	370	533	351	0	184	1802	327	0
5:00 PM - 6:00 PM*	**54**	**233**	**75**	**0**	**164**	**1243**	**46**	**0**	**192**	**270**	**175**	**0**	**87**	**897**	**169**	**0**
Peak Hour Factor	0.844	0.910	0.893		0.911	0.945	0.885		0.960	0.925	0.841		0.870	0.923	0.880	
Heavy Vehicle Percentage	4.30%	2.91%	0.70%		0.00%	1.69%	3.13%		1.08%	2.44%	1.42%		1.09%	2.66%	1.83%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Zarzamora St Southbound		Culebra Rd Westbound		Zarzamora St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	2	3	3	0	1	6	4	2
5:00 PM to 6:00 PM	4	2	1	1	5	2	4	2
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	1	2	0	0	1	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

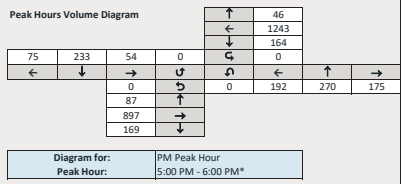

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:													**Site Code: UnSig_1**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Southbound				Culebra Rd Westbound				Mountain View Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	6	330	0	0	0	0	1	0	0	297	1	0
4:15 PM	0	0	0	0	15	303	0	0	0	0	1	0	0	281	0	0
4:30 PM	0	0	0	0	13	296	0	0	0	0	4	0	0	286	2	0
4:45 PM	0	0	0	0	6	293	0	0	0	0	6	0	0	337	1	0
5:00 PM	0	0	0	0	10	286	0	0	0	0	4	0	0	330	4	0
5:15 PM	0	0	0	0	12	300	0	0	0	0	3	0	0	335	0	0
5:30 PM	0	0	0	0	17	319	0	0	0	0	6	0	0	347	3	0
5:45 PM	0	0	0	0	16	278	0	0	0	0	5	0	0	312	5	0
2-hour Total	0	0	0	0	95	2405	0	0	0	0	30	0	0	2525	16	0
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**55**	**1183**	**0**	**0**	**0**	**0**	**18**	**0**	**0**	**1324**	**12**	**0**
Peak Hour Factor					0.809	0.927					0.750			0.954	0.600	
Heavy Vehicle Percentage					0.00%	0.79%					0.00%			0.99%	0.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Mountain View Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	1	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

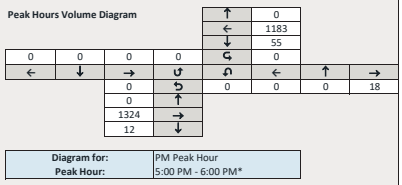

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**Coppertree Blvd**								**Site Code: UnSig_2**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Coppertree Blvd Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	1	0	2	0	0	360	3	0	0	0	0	0	0	283	0	0
4:15 PM	2	0	4	0	0	320	4	0	0	0	0	0	2	279	0	0
4:30 PM	2	0	0	0	0	358	6	0	0	0	0	0	2	282	0	0
4:45 PM	3	0	2	0	0	335	3	0	0	0	0	0	0	259	0	0
5:00 PM	3	0	3	0	0	354	3	0	0	0	0	0	3	287	0	0
5:15 PM	2	0	1	0	0	375	5	0	0	0	0	0	2	298	0	0
5:30 PM	1	0	3	0	0	355	11	0	0	0	0	0	2	262	0	0
5:45 PM	1	0	3	0	0	386	8	0	0	0	0	0	4	293	0	0
2-hour Total	15	0	18	0	0	2843	43	0	0	0	0	0	15	2243	0	0
5:00 PM - 6:00 PM*	**7**	**0**	**10**	**0**	**0**	**1470**	**27**	**0**	**0**	**0**	**0**	**0**	**11**	**1140**	**0**	**0**
Peak Hour Factor	0.583		0.833			0.952	0.614						0.688	0.956		
Heavy Vehicle Percentage	0.00%		0.00%		0.00%	0.88%	0.00%						0.00%	1.07%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Coppertree Blvd Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	2
5:00 PM to 6:00 PM	0	0	0	1	0	0	0	2
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	1
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

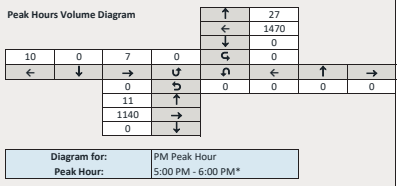

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**Camino Rosa**								**Site Code: UnSig_3**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Camino Rosa Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	4	0	32	0	0	334	29	3	0	0	0	0	18	286	0	0
4:15 PM	7	0	37	0	0	343	23	3	0	0	0	0	17	288	0	0
4:30 PM	6	0	43	0	0	323	23	4	0	0	0	0	22	269	0	0
4:45 PM	3	0	31	0	0	322	20	1	0	0	0	0	23	251	0	0
5:00 PM	1	0	23	0	0	357	25	2	0	0	0	0	18	278	0	1
5:15 PM	5	0	40	0	0	378	26	1	0	0	0	0	11	277	0	0
5:30 PM	5	0	39	0	0	373	30	6	0	0	0	0	21	289	0	0
5:45 PM	0	0	36	0	0	357	25	4	0	0	0	0	11	242	0	0
2-hour Total	31	0	281	0	0	2787	201	24	0	0	0	0	141	2180	0	1
5:00 PM - 6:00 PM*	**11**	**0**	**138**	**0**	**0**	**1465**	**106**	**13**	**0**	**0**	**0**	**0**	**61**	**1086**	**0**	**1**
Peak Hour Factor	0.550		0.863			0.969	0.883	0.542					0.726	0.939		0.250
Heavy Vehicle Percentage	0.00%		1.78%		0.00%	0.57%	0.00%	0.00%					0.71%	1.15%		0.00%
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Camino Rosa Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	1	0	0	0	0
5:00 PM to 6:00 PM	1	0	0	2	0	0	0	2
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	1

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

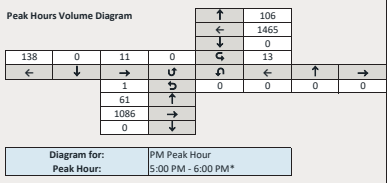

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**Grisdsom Gate**								**Site Code: UnSig_4**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Grisdsom Gate Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	7	0	3	0	0	391	6	0	0	0	0	0	5	288	0	0
4:15 PM	10	0	1	0	0	445	11	0	0	0	0	0	6	323	0	0
4:30 PM	3	0	2	0	0	439	11	1	0	0	0	0	3	310	0	0
4:45 PM	8	0	2	0	0	481	14	0	0	0	0	0	0	323	0	0
5:00 PM	8	0	2	0	0	463	11	0	0	0	0	0	2	330	0	0
5:15 PM	8	0	2	0	0	498	13	0	0	0	0	0	3	349	0	0
5:30 PM	8	0	5	0	0	472	12	0	0	0	0	0	5	332	0	0
5:45 PM	5	0	7	0	0	436	17	0	0	0	0	0	3	345	0	0
2-hour Total	57	0	24	0	0	3625	95	1	0	0	0	0	27	2600	0	0
5:00 PM - 6:00 PM*	**29**	**0**	**16**	**0**	**0**	**1869**	**53**	**0**	**0**	**0**	**0**	**0**	**13**	**1356**	**0**	**0**
Peak Hour Factor	0.906		0.571			0.938	0.779						0.650	0.971		
Heavy Vehicle Percentage	0.00%		0.00%		0.00%	1.08%	2.11%	0.00%					0.00%	2.12%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Grisdsom Gate Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	1	0	0	2	0	0	0	1
5:00 PM to 6:00 PM	0	0	0	1	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

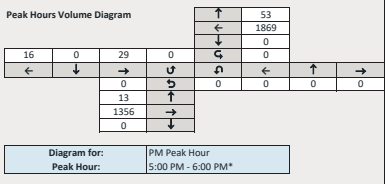

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Pipers Creek												Site Code: UnSig_5			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Pipers Creek Southbound				Culebra Rd Westbound				Pipers Creek Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	3	0	2	0	22	442	6	0	4	0	10	0	3	303	11	0
4:15 PM	1	0	10	0	11	503	2	0	8	0	6	0	7	335	12	0
4:30 PM	5	0	4	0	13	512	4	1	9	0	14	0	1	360	17	0
4:45 PM	2	0	7	0	18	539	3	0	10	0	14	0	3	353	18	0
5:00 PM	3	0	1	0	17	549	6	0	5	0	7	0	5	344	12	0
5:15 PM	1	0	5	0	15	548	3	0	13	0	9	0	3	349	12	0
5:30 PM	1	0	1	0	13	559	3	0	8	0	14	0	3	328	20	0
5:45 PM	3	0	3	0	13	541	6	2	7	0	10	0	3	361	25	0
2-hour Total	19	0	33	0	122	4193	33	3	64	0	84	0	28	2733	127	0
5:00 PM - 6:00 PM*	**8**	**0**	**10**	**0**	**58**	**2197**	**18**	**2**	**33**	**0**	**40**	**0**	**14**	**1382**	**69**	**0**
Peak Hour Factor	0.667		0.500		0.853	0.983	0.750	0.250	0.635		0.714		0.700	0.957	0.690	
Heavy Vehicle Percentage	0.00%		0.00%		0.00%	0.95%	0.00%	0.00%	0.00%		1.19%		7.14%	2.38%	1.57%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Pipers Creek Southbound		Culebra Rd Westbound		Pipers Creek Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	1	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	2	2	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

			↑	18			
			←	2197			
			↓	58			
10	0	8	0	↰	2		
←	↓	→	↺	↰	←	↑	→
		0	↻	0	33	0	40
		14	↑				
		1382	→				
		69	↓				

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:	Joe Newton St												Site Code: UnSig_6			
East/West Street:	Culebra Rd															
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Joe Newton St Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	5	0	7	0	0	497	12	0	0	0	0	0	9	303	0	0
4:15 PM	1	0	9	0	0	514	12	0	0	0	0	0	13	321	0	0
4:30 PM	5	0	11	0	0	505	8	0	0	0	0	0	13	366	0	0
4:45 PM	3	0	12	0	0	587	13	1	0	0	0	0	6	350	0	2
5:00 PM	1	0	8	0	0	554	6	0	0	0	0	0	11	359	0	0
5:15 PM	3	0	13	0	0	584	16	0	0	0	0	0	14	352	0	0
5:30 PM	2	0	19	0	0	564	13	0	0	0	0	0	11	339	0	1
5:45 PM	2	0	17	0	0	542	14	0	0	0	0	0	10	376	0	2
2-hour Total	22	0	96	0	0	4347	94	1	0	0	0	0	87	2766	0	5
5:00 PM - 6:00 PM*	**8**	**0**	**57**	**0**	**0**	**2244**	**49**	**0**	**0**	**0**	**0**	**0**	**46**	**1426**	**0**	**3**
Peak Hour Factor	0.667		0.750			0.961	0.766						0.821	0.948		0.375
Heavy Vehicle Percentage	0.00%		0.00%		0.00%	0.87%	1.06%	0.00%					0.00%	2.21%		0.00%
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Joe Newton St Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	1	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	1	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

			↑	49			
			←	2244			
			↓	0			
57	0	8	0	↰	0		
←	↓	→	↺	↰	←	↑	→
		3	↻	0	0	0	0
		46	↑				
		1426	→				
		0	↓				

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					Valero Driveway									Site Code: UnSig_7			
East/West Street:					Culebra Rd												
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs												
	Valero Driveway Southbound				Culebra Rd Westbound				Van Ness Northbound				Culebra Rd Eastbound				
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	
4:00:00 PM	5	0	7	0	8	393	0	0	0	0	4	0	6	286	1	0	
4:15 PM	0	1	6	0	8	443	1	1	0	0	3	0	1	297	2	0	
4:30 PM	1	0	8	0	7	449	2	0	2	0	7	0	1	369	2	0	
4:45 PM	2	0	5	0	11	465	0	1	0	0	4	0	4	343	3	0	
5:00 PM	4	0	12	0	12	473	0	1	0	0	5	0	3	375	3	0	
5:15 PM	0	0	9	0	8	513	1	0	1	0	4	0	5	360	3	0	
5:30 PM	2	0	9	0	10	480	0	0	1	0	1	0	7	337	0	0	
5:45 PM	2	0	17	0	16	481	3	0	1	0	7	0	6	360	5	0	
2-hour Total	16	1	73	0	80	3697	7	3	5	0	35	0	33	2727	19	0	
5:00 PM - 6:00 PM*	**8**	**0**	**47**	**0**	**46**	**1947**	**4**	**1**	**3**	**0**	**17**	**0**	**21**	**1432**	**11**	**0**	
Peak Hour Factor	0.500		0.691		0.719	0.949	0.333	0.250	0.750		0.607		0.750	0.955	0.550		
Heavy Vehicle Percentage	0.00%	0.00%	0.00%		0.00%	0.60%	0.00%	0.00%	0.00%		2.86%		0.00%	2.53%	0.00%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Valero Driveway Southbound		Culebra Rd Westbound		Van Ness Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	2	0	0	0	1
5:00 PM to 6:00 PM	0	0	1	0	0	0	2	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	1	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

				↑	4			
				←	1947			
				↓	46			
47	0	8	0	↳	1			
←	↓	→	↺	↰	←	↑	→	
		0	↳	0	3	0	17	
		21	↑					
		1432	→					
		11	↓					

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:														Site Code: UnSig_8			
East/West Street:					Culebra Rd												
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs												
	Southbound				Culebra Rd Westbound				Avenue G Northbound				Culebra Rd Eastbound				
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	
4:00:00 PM	0	0	0	0	0	246	0	0	35	0	2	0	0	199	4	0	
4:15 PM	0	0	0	0	0	242	0	0	12	0	0	0	0	198	1	0	
4:30 PM	0	0	0	0	0	231	0	0	12	0	2	0	0	194	3	0	
4:45 PM	0	0	0	0	0	248	0	0	22	0	0	0	0	196	1	1	
5:00 PM	0	0	0	0	0	282	0	0	23	0	6	0	0	189	0	0	
5:15 PM	0	0	0	0	0	253	0	0	11	0	3	0	0	218	0	0	
5:30 PM	0	0	0	0	0	218	0	0	9	0	0	0	0	194	1	0	
5:45 PM	0	0	0	0	0	238	0	0	11	0	3	0	0	210	2	0	
2-hour Total	0	0	0	0	0	1958	0	0	135	0	16	0	0	1598	12	1	
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**0**	**991**	**0**	**0**	**54**	**0**	**12**	**0**	**0**	**811**	**3**	**0**	
Peak Hour Factor						0.879			0.587		0.500			0.930	0.375		
Heavy Vehicle Percentage					0.00%	2.25%			0.00%		0.00%			1.88%	0.00%	0.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Avenue G Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

				↑	0			
				←	991			
				↓	0			
0	0	0	0	↳	0			
←	↓	→	↺	↰	←	↑	→	
		0	↳	0	54	0	12	
		0	↑					
		811	→					
		3	↓					

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street: Fairgrounds Pkwy — **Site Code:** UnSig_9_____
East/West Street: Culebra Rd
TOD: PM — Date: 12/15/2020 — Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Fairgrounds Pkwy Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	24	0	13	0	0	237	13	0	0	0	0	0	2	211	0	0
4:15 PM	15	0	18	0	0	206	34	0	0	0	0	0	1	213	0	0
4:30 PM	11	0	11	0	0	237	27	0	0	0	0	0	3	225	0	0
4:45 PM	15	0	11	0	0	216	23	0	0	0	0	0	3	198	0	0
5:00 PM	10	0	12	0	0	264	32	0	0	0	0	0	8	219	0	0
5:15 PM	11	0	17	0	0	224	23	0	0	0	0	0	3	224	0	0
5:30 PM	11	0	5	0	0	223	29	0	0	0	0	0	6	211	0	0
5:45 PM	10	0	4	0	0	245	37	0	0	0	0	0	1	220	0	0
2-hour Total	107	0	91	0	0	1852	218	0	0	0	0	0	27	1721	0	0
5:00 PM - 6:00 PM*	**42**	**0**	**38**	**0**	**0**	**956**	**121**	**0**	**0**	**0**	**0**	**0**	**18**	**874**	**0**	**0**
Peak Hour Factor	0.955		0.559			0.905	0.818						0.563	0.975		
Heavy Vehicle Percentage	1.87%		3.30%		0.00%	2.70%	2.29%						14.81%	1.98%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Fairgrounds Pkwy Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	1	0	0	0	0	0	1
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	1
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

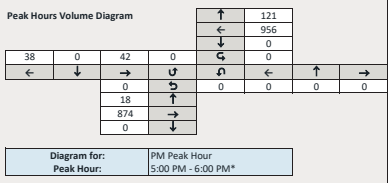

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street: — **Site Code:** UnSig_10
East/West Street: Culebra Rd
TOD: PM — Date: 12/15/2020 — Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs

	Southbound				Culebra Rd Westbound				Cantebury St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	12	225	0	0	0	0	6	0	0	235	27	0
4:15 PM	0	0	0	0	16	227	0	0	0	0	16	0	0	208	22	0
4:30 PM	0	0	0	0	22	237	0	0	0	0	21	0	0	212	25	0
4:45 PM	0	0	0	0	16	229	0	0	0	0	14	0	0	207	32	0
5:00 PM	0	0	0	0	16	232	0	0	0	0	18	0	0	203	33	0
5:15 PM	0	0	0	0	27	228	0	0	0	0	19	0	0	255	42	0
5:30 PM	0	0	0	0	11	222	0	0	0	0	21	0	0	201	39	0
5:45 PM	0	0	0	0	17	239	0	0	1	0	15	0	0	221	31	0
2-hour Total	0	0	0	0	137	1839	0	0	1	0	130	0	0	1742	251	0
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**71**	**921**	**0**	**0**	**1**	**0**	**73**	**0**	**0**	**880**	**145**	**0**
Peak Hour Factor					0.657	0.963			0.250		0.869			0.863	0.863	
Heavy Vehicle Percentage					0.00%	1.63%			0.00%		0.00%			1.15%	1.59%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Cantebury St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	1	0	1	0	1	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

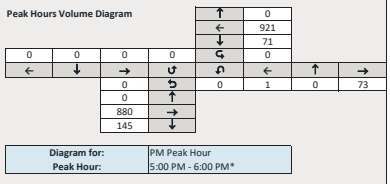

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:													Site Code: UnSig_11			
East/West Street:					Culebra Rd											
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Southbound				Culebra Rd Westbound				Hortencia Ave Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	10	218	0	1	5	0	13	0	0	170	5	0
4:15 PM	0	0	0	0	3	234	0	0	4	0	14	0	0	203	7	0
4:30 PM	0	0	0	0	8	219	0	0	6	0	8	0	0	188	1	0
4:45 PM	0	0	0	0	9	213	0	0	8	0	10	0	0	189	6	0
5:00 PM	0	0	0	0	7	236	0	0	6	0	8	0	0	194	6	0
5:15 PM	0	0	0	0	8	273	0	0	10	0	6	0	0	218	1	0
5:30 PM	0	0	0	0	12	212	0	0	8	0	5	0	0	207	5	0
5:45 PM	0	0	0	0	9	227	0	0	9	0	12	0	0	201	7	0
2-hour Total	0	0	0	0	66	1832	0	1	56	0	76	0	0	1570	38	0
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**36**	**948**	**0**	**0**	**33**	**0**	**31**	**0**	**0**	**820**	**19**	**0**
Peak Hour Factor					0.750	0.868			0.825		0.646			0.940	0.679	
Heavy Vehicle Percentage					0.00%	1.47%		0.00%	1.79%		1.32%			0.06%	5.26%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Hortencia Ave Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	1	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

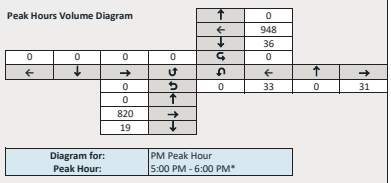

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					Mira Vista								Site Code: UnSig_12			
East/West Street:					Culebra Rd											
TOD:	PM	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Mira Vista Southbound				Culebra Rd Westbound				Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	7	0	9	0	0	230	4	0	0	0	0	0	6	226	0	0
4:15 PM	4	0	9	0	0	224	6	0	0	0	0	0	9	216	0	0
4:30 PM	6	0	7	0	0	237	10	0	0	0	0	0	5	197	0	0
4:45 PM	5	0	11	0	0	226	5	0	0	0	0	0	6	217	0	0
5:00 PM	8	0	8	0	0	224	9	0	0	0	0	0	8	218	0	0
5:15 PM	7	0	18	0	0	242	9	0	0	0	0	0	10	238	0	0
5:30 PM	9	0	12	0	0	217	7	0	0	0	0	0	11	209	0	0
5:45 PM	7	0	8	0	0	241	7	0	0	0	0	0	8	234	0	0
2-hour Total	53	0	82	0	0	1841	57	0	0	0	0	0	63	1755	0	0
5:00 PM - 6:00 PM*	**31**	**0**	**46**	**0**	**0**	**924**	**32**	**0**	**0**	**0**	**0**	**0**	**37**	**899**	**0**	**0**
Peak Hour Factor	0.861		0.639			0.955	0.889						0.841	0.944		
Heavy Vehicle Percentage	0.00%		1.22%		0.00%	0.22%	1.75%						0.00%	0.23%		
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Mira Vista Southbound		Culebra Rd Westbound		Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

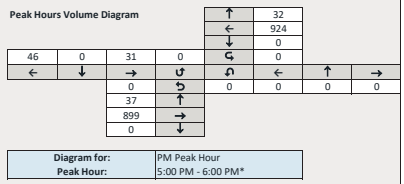

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**NW 34th St**										**Site Code: UnSig_13_____**	
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Southbound				Culebra Rd Westbound				NW 34th St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	4	262	0	0	2	0	4	0	0	203	1	0
4:15 PM	0	0	0	0	1	245	0	0	8	0	2	0	0	241	2	0
4:30 PM	0	0	0	0	2	248	0	0	7	0	7	0	0	214	2	0
4:45 PM	0	0	0	0	1	253	0	0	4	0	2	0	0	215	5	0
5:00 PM	0	0	0	0	1	303	0	0	2	0	4	0	0	224	7	0
5:15 PM	0	0	0	0	2	282	0	0	5	0	5	0	0	218	7	0
5:30 PM	0	0	0	0	3	270	0	0	4	0	2	0	0	209	4	0
5:45 PM	0	0	0	0	3	265	0	0	7	0	1	0	0	198	9	0
2-hour Total	0	0	0	0	17	2128	0	0	39	0	27	0	0	1722	37	0
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**9**	**1120**	**0**	**0**	**18**	**0**	**12**	**0**	**0**	**849**	**27**	**0**
Peak Hour Factor					0.750	0.924			0.643		0.600			0.948	0.750	
Heavy Vehicle Percentage					0.00%	1.32%			0.00%		11.11%			1.51%	2.70%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		NW 34th St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	1	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	4	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

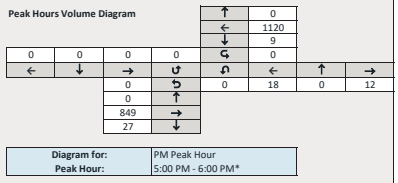

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**Neff Rd**										**Site Code: UnSig_14**	
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Neff Rd Southbound				Culebra Rd Westbound				Neff Rd Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	1	0	1	0	4	365	2	0	3	0	2	0	2	268	1	0
4:15 PM	2	0	0	0	3	323	5	0	1	0	1	0	0	291	3	0
4:30 PM	0	0	5	0	4	399	0	0	1	1	5	0	2	285	1	0
4:45 PM	0	0	7	0	1	338	1	0	1	0	2	0	5	250	5	0
5:00 PM	2	0	1	0	5	415	2	0	2	1	1	0	5	290	0	0
5:15 PM	1	0	2	0	2	381	0	0	1	0	3	0	2	273	1	0
5:30 PM	2	0	1	0	6	421	3	0	4	0	1	0	1	317	0	0
5:45 PM	0	0	1	0	5	386	1	0	1	0	2	0	1	270	3	0
2-hour Total	8	0	18	0	30	3028	14	0	14	2	17	0	18	2244	14	0
5:00 PM - 6:00 PM*	**5**	**0**	**5**	**0**	**18**	**1603**	**6**	**0**	**8**	**1**	**7**	**0**	**9**	**1150**	**4**	**0**
Peak Hour Factor	0.625		0.625		0.750	0.952	0.500		0.500	0.250	0.583		0.450	0.907	0.333	
Heavy Vehicle Percentage	0.00%		0.00%		0.00%	1.42%	0.00%		0.00%	0.00%	0.00%		0.00%	1.96%	0.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Neff St Southbound		Culebra Rd Westbound		Neff St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	1	1	0	0	0	2	0
5:00 PM to 6:00 PM	0	0	3	1	0	0	2	1
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

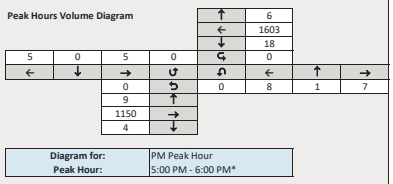

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**N Hamilton Ave**								**Site Code: UnSig_15**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: I:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	N Hamilton Ave Southbound				Culebra Rd Westbound				N Hamilton Ave Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	1	0	2	372	1	0	0	0	19	0	0	279	11	0
4:15 PM	0	0	1	0	2	356	1	0	0	0	18	0	0	281	9	0
4:30 PM	0	0	1	0	2	364	1	0	0	0	14	0	0	289	6	0
4:45 PM	0	0	3	0	1	366	0	0	0	0	12	0	0	285	10	0
5:00 PM	1	0	2	0	0	400	2	0	0	0	13	0	0	281	12	0
5:15 PM	1	0	3	0	2	425	1	0	0	0	11	0	0	289	5	0
5:30 PM	1	0	2	0	3	400	1	0	0	0	17	0	0	295	16	0
5:45 PM	1	0	2	0	0	416	3	0	0	0	15	0	0	277	8	0
2-hour Total	4	0	15	0	12	3099	10	0	0	0	119	0	0	2276	77	0
5:00 PM - 6:00 PM*	**4**	**0**	**9**	**0**	**5**	**1641**	**7**	**0**	**0**	**0**	**56**	**0**	**0**	**1142**	**41**	**0**
Peak Hour Factor	1.000		0.750		0.417	0.965	0.583				0.824			0.968	0.641	
Heavy Vehicle Percentage	0.00%		6.67%		0.00%	1.32%	0.00%				2.52%			2.11%	0.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	N Hamilton Ave Southbound		Culebra Rd Westbound		N Hamilton Ave Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	2	1	2	0	1	1
5:00 PM to 6:00 PM	0	0	1	1	0	0	1	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

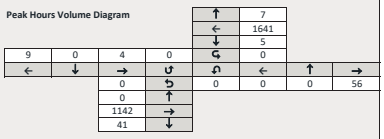

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

I:\30900399A CoSA Culebra Road Corridor Study\5.0 Project Data\5.1 Data Collection\5.1.3 Data Tabulation\30900399A CoSA Culebra Road_PM_Rev1

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:													**Site Code: UnSig_16**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: I:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Southbound				Culebra Rd Westbound				Grissom Park Dr Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	2	314	0	0	5	0	1	0	0	273	1	0
4:15 PM	0	0	0	0	4	333	0	0	3	0	1	0	0	268	7	0
4:30 PM	0	0	0	0	3	401	0	0	0	0	6	0	0	275	9	0
4:45 PM	0	0	0	0	5	385	0	0	2	0	3	0	0	316	6	0
5:00 PM	0	0	0	0	6	423	0	0	1	0	3	0	0	274	4	0
5:15 PM	0	0	0	0	7	390	0	0	2	0	2	0	0	301	8	0
5:30 PM	0	0	0	0	7	415	0	0	1	0	2	0	0	264	4	0
5:45 PM	0	0	0	0	3	388	0	0	5	0	5	0	0	281	5	0
2-hour Total	0	0	0	0	37	3049	0	0	19	0	23	0	0	2252	44	0
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**23**	**1616**	**0**	**0**	**9**	**0**	**12**	**0**	**0**	**1120**	**21**	**0**
Peak Hour Factor					0.821	0.955			0.450		0.600			0.930	0.656	
Heavy Vehicle Percentage					0.00%	0.49%			0.00%		8.70%			1.55%	2.27%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		Grissom Park Dr Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	2	0	0	0	1	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

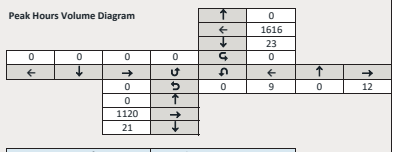

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

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1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:													**Site Code: UnSig_17**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	Southbound				Culebra Rd Westbound				NW 28th St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	0	0	0	228	0	0	2	0	1	0	0	175	0	0
4:15 PM	0	0	0	0	0	226	0	0	0	0	3	0	0	193	1	0
4:30 PM	0	0	0	0	1	250	0	0	2	0	2	0	0	172	0	0
4:45 PM	0	0	0	0	0	236	0	0	5	0	0	0	0	196	1	0
5:00 PM	0	0	0	0	0	282	0	1	3	0	5	0	0	207	1	0
5:15 PM	0	0	0	0	0	249	0	0	3	0	2	0	0	200	1	0
5:30 PM	0	0	0	0	0	285	0	0	2	0	1	0	0	171	0	0
5:45 PM	0	0	0	0	1	234	0	0	1	0	1	0	0	196	0	0
2-hour Total	0	0	0	0	2	1990	0	1	18	0	15	0	0	1510	4	0
5:00 PM - 6:00 PM*	**0**	**0**	**0**	**0**	**1**	**1050**	**0**	**1**	**9**	**0**	**9**	**0**	**0**	**774**	**2**	**0**
Peak Hour Factor					0.250	0.921		0.250	0.750		0.450			0.935	0.500	
Heavy Vehicle Percentage					0.00%	1.21%		0.00%	5.56%		0.00%			2.12%	25.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	Southbound		Culebra Rd Westbound		NW 28th St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	0	0	0	2	0
5:00 PM to 6:00 PM	0	0	1	0	0	0	2	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

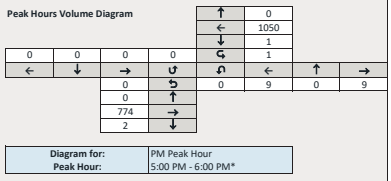

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

PM TURNING MOVEMENT COUNTS

North/South Street:					**N Navidad St**								**Site Code: UnSig_18_____**			
East/West Street:					**Culebra Rd**											
TOD:	**PM**	Date:	12/15/2020		Raw Data: J:\...\5.1 Data Collection\5.1.2 Raw Count Data\From GRAM\12 30 2020\Extracted TMC\WSP - 12-03713 - Culebra Rd - TMCs											
	N Navidad St Southbound				Culebra Rd Westbound				N Navidad St Northbound				Culebra Rd Eastbound			
Time	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
4:00:00 PM	0	0	3	0	0	342	2	0	0	0	9	0	0	307	8	0
4:15 PM	0	0	2	0	0	367	2	0	0	0	9	0	0	257	3	0
4:30 PM	0	0	6	0	0	350	2	0	0	0	13	0	0	304	4	0
4:45 PM	0	0	3	0	0	344	5	0	0	0	6	0	0	239	8	0
5:00 PM	0	0	7	0	0	362	2	0	0	0	7	0	0	288	8	0
5:15 PM	0	0	5	0	0	382	1	0	0	0	9	0	0	284	1	0
5:30 PM	0	0	1	0	0	394	5	0	0	0	3	0	0	265	8	0
5:45 PM	0	0	3	0	0	374	2	0	0	0	8	0	0	266	10	0
2-hour Total	0	0	30	0	0	2915	21	0	0	0	64	0	0	2210	50	0
5:00 PM - 6:00 PM*	**0**	**0**	**16**	**0**	**0**	**1512**	**10**	**0**	**0**	**0**	**27**	**0**	**0**	**1103**	**27**	**0**
Peak Hour Factor			0.571			0.959	0.500				0.750			0.957	0.675	
Heavy Vehicle Percentage			0.00%		0.00%	1.82%	0.00%				1.56%			2.62%	2.00%	
OnStreet Bicycle Count (5:00 PM - 6:00 PM)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* 5:00 PM - 6:00 PM Peak Hour represents the corridor peak not the intersection peak.

	N Navidad St Southbound		Culebra Rd Westbound		N Navidad St Northbound		Culebra Rd Eastbound	
Time	SB/W**	SB/E	WB/N	WB/S	NB/W	NB/E	EB/N	EB/S
Pedestrians Counts								
4:00 PM to 5:00 PM	0	0	0	1	0	0	1	0
5:00 PM to 6:00 PM	0	2	0	2	0	0	0	0
Bicycle Counts - On Sidewalk								
4:00 PM to 5:00 PM	0	0	0	0	0	0	0	0
5:00 PM to 6:00 PM	0	0	0	0	0	0	0	0

** SB/W - Pedestrian/cycle travelling southbound crossing eastbound approach (West leg)

Peak Hours Volume Diagram

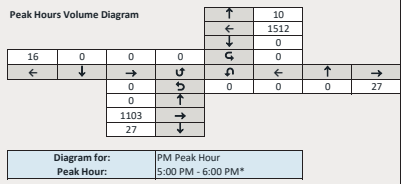

Diagram for:	PM Peak Hour
Peak Hour:	5:00 PM - 6:00 PM*

1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

AM TURNING MOVEMENT COUNTS

24HR ATR Counts

Data Collected: December 15, 2020

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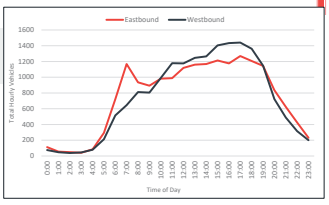
1/27/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

Field Data Collection
24 Hour Weekday ATR Counts

Data Date:	12/15/2020
Weekday:	Tue
Street Name:	Culebra Rd
Count Location:	Between Loop 1604 NBFR & Rogers Rd



Time	AM Direction EB	AM Direction WB	AM Hourly Totals EB	AM Hourly Totals WB	AM Hourly Totals TWO-WAY	PM Direction EB	PM Direction WB	PM Hourly Totals EB	PM Hourly Totals WB	PM Hourly Totals TWO-WAY
12:00	34	22				292	322			
12:15	41	20	113	75	**188**	270	297	1,118	1,175	**2,293**
12:30	17	17				296	271			
12:45	21	16				260	285			
01:00	18	10				281	314			
01:15	9	12	56	48	**104**	271	303	1,159	1,246	**2,405**
01:30	12	16				301	354			
01:45	17	10				306	275			
02:00	9	8				329	313			
02:15	16	15	49	38	**87**	272	308	1,168	1,265	**2,433**
02:30	12	6				279	321			
02:45	12	9				288	323			
03:00	10	16				306	317			
03:15	8	9	41	45	**86**	290	341	1,213	1,404	**2,617**
03:30	9	6				299	351			
03:45	14	14				318	395			
04:00	15	16				267	377			
04:15	17	19	85	79	**164**	280	330	1,176	1,433	**2,609**
04:30	13	17				298	368			
04:45	40	27				331	358			
05:00	45	36				320	346			
05:15	61	45	293	212	**505**	311	372	1,269	1,440	**2,709**
05:30	83	64				343	404			
05:45	104	67				295	318			
06:00	109	91				330	367			
06:15	151	118	721	515	**1,236**	287	347	1,206	1,362	**2,568**
06:30	214	152				305	299			
06:45	247	154				284	349			
07:00	227	132				298	336			
07:15	279	129	1,167	646	**1,813**	296	325	1,144	1,147	**2,291**
07:30	330	170				266	251			
07:45	331	215				284	235			
08:00	246	214				239	192			
08:15	219	184	935	812	**1,747**	210	213	835	722	**1,557**
08:30	248	189				211	162			
08:45	222	225				175	155			
09:00	212	163				176	136			
09:15	217	207	892	805	**1,697**	155	122	624	489	**1,113**
09:30	229	228				152	124			
09:45	234	207				141	107			
10:00	234	253				114	90			
10:15	236	227	981	990	**1,971**	128	83	426	316	**742**
10:30	223	255				91	78			
10:45	288	255				93	65			
11:00	269	262				76	70			
11:15	254	292	988	1,178	**2,166**	65	51	231	200	**431**
11:30	262	310				47	42			
11:45	203	314				43	37			
Total			**6,321**	**5,443**	**11,764**			**11,569**	**12,199**	**23,768**
Daily Total			**17,890**	**17,642**	**35,532**					

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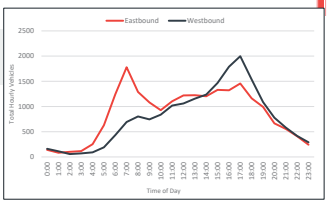
1/13/2021

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

Field Data Collection
24 Hour Weekday ATR Counts

Data Date:	12/15/2020
Weekday:	Tue
Street Name:	Culebra Rd
Count Location:	Between Ingram Rd & Potranco Rd

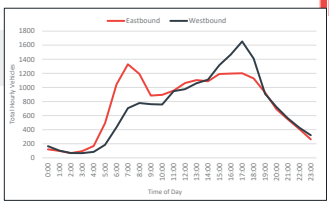


Time	AM					PM				
	Direction		Hourly Totals			Direction		Hourly Totals		
	EB	WB	EB	WB	TWO-WAY	EB	WB	EB	WB	TWO-WAY
12:00	51	61				320	260			
12:15	33	40	141	161	**302**	271	248	1,221	1,060	**2,281**
12:30	27	36				318	270			
12:45	30	24				312	282			
01:00	19	31				297	299			
01:15	17	32	83	112	**195**	299	265	1,225	1,155	**2,380**
01:30	26	30				335	290			
01:45	21	19				294	301			
02:00	26	18				320	281			
02:15	26	14	102	57	**159**	299	278	1,203	1,236	**2,439**
02:30	26	12				316	344			
02:45	24	13				268	333			
03:00	21	12				289	349			
03:15	19	20	117	70	**187**	330	354	1,331	1,467	**2,798**
03:30	31	20				345	356			
03:45	46	18				367	408			
04:00	52	22				295	401			
04:15	57	15	252	91	**343**	301	453	1,323	1,789	**3,112**
04:30	61	27				377	458			
04:45	82	27				350	477			
05:00	99	23				385	486			
05:15	157	36	628	191	**819**	364	522	1,458	1,998	**3,456**
05:30	188	52				340	490			
05:45	184	80				369	500			
06:00	219	88				288	460			
06:15	266	105	1,243	434	**1,677**	320	418	1,162	1,536	**2,698**
06:30	392	102				265	338			
06:45	366	139				289	320			
07:00	364	144				293	276			
07:15	475	152	1,779	694	**2,473**	280	270	992	1,087	**2,079**
07:30	498	176				208	261			
07:45	442	222				211	280			
08:00	354	203				173	238			
08:15	308	221	1,289	803	**2,092**	186	182	667	778	**1,445**
08:30	328	172				178	186			
08:45	299	207				130	172			
09:00	249	179				153	158			
09:15	281	184	1,082	745	**1,827**	154	178	557	584	**1,141**
09:30	273	191				126	121			
09:45	279	191				124	127			
10:00	245	210				104	132			
10:15	243	217	928	839	**1,767**	118	103	410	417	**827**
10:30	256	210				108	93			
10:45	184	202				80	89			
11:00	275	229				68	94			
11:15	271	228	1,104	1,020	**2,124**	68	78	243	290	**533**
11:30	281	277				54	62			
11:45	277	286				53	56			
Total			**8,748**	**5,217**	**13,965**			**11,792**	**13,197**	**25,189**
Daily Total			**20,540**	**18,614**	**39,154**					

Project Number: 30900399A
CoSA Culebra Road Corridor Study
TX 1604 to I-10

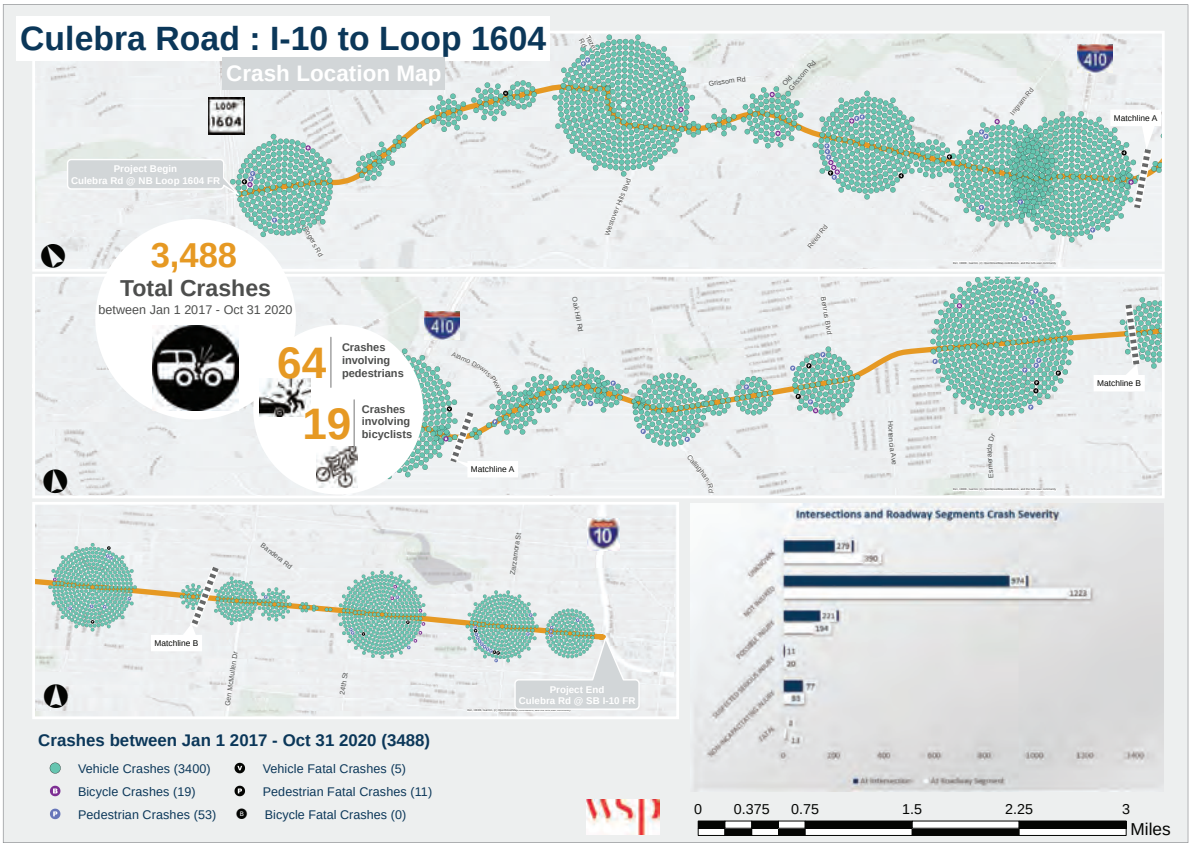
Field Data Collection
24 Hour Weekday ATR Counts

Data Date:	12/15/2020
Weekday:	Tue
Street Name:	Culebra Rd
Count Location:	Between N Hamilton Ave & Elmendorf St



Time	AM					PM				
	Direction		Hourly Totals			Direction		Hourly Totals		
	EB	WB	EB	WB	TWO-WAY	EB	WB	EB	WB	TWO-WAY
12:00	37	50				271	227			
12:15	34	45	121	165	**286**	275	250	1,062	976	**2,038**
12:30	31	42				255	243			
12:45	19	28				261	226			
01:00	26	28				278	237			
01:15	23	30	99	103	**202**	245	256	1,105	1,059	**2,164**
01:30	25	20				307	275			
01:45	25	25				275	291			
02:00	15	21				286	268			
02:15	16	18	67	68	**135**	275	278	1,088	1,111	**2,199**
02:30	15	14				277	275			
02:45	21	15				250	290			
03:00	20	14				276	310			
03:15	18	10	96	67	**163**	290	321	1,191	1,316	**2,507**
03:30	25	16				304	337			
03:45	33	27				321	348			
04:00	37	19				298	375			
04:15	29	13	168	85	**253**	299	359	1,197	1,468	**2,665**
04:30	47	25				303	367			
04:45	55	28				297	367			
05:00	69	39				295	402			
05:15	111	35	493	185	**678**	301	428	1,202	1,653	**2,855**
05:30	159	48				313	404			
05:45	154	63				293	419			
06:00	179	87				287	364			
06:15	240	89	1,043	435	**1,478**	285	361	1,128	1,410	**2,538**
06:30	298	103				297	369			
06:45	326	156				259	316			
07:00	252	150				265	283			
07:15	308	160	1,329	706	**2,035**	304	243	927	909	**1,836**
07:30	389	186				174	209			
07:45	380	210				184	174			
08:00	316	201				186	198			
08:15	287	204	1,193	779	**1,972**	183	186	691	722	**1,413**
08:30	282	183				176	177			
08:45	308	191				146	161			
09:00	220	195				146	147			
09:15	230	195	885	762	**1,647**	138	139	546	560	**1,106**
09:30	224	181				139	126			
09:45	211	191				123	148			
10:00	216	184				116	134			
10:15	215	286	895	757	**1,652**	110	117	409	429	**838**
10:30	237	176				103	89			
10:45	227	191				80	89			
11:00	241	227				81	103			
11:15	236	277	955	948	**1,903**	68	85	263	321	**584**
11:30	240	217				56	72			
11:45	238	227				58	61			
Total			**7,344**	**5,060**	**12,404**			**10,809**	**11,934**	**22,743**
Daily Total			**18,153**	**16,994**	**35,147**					

Appendix E – Crash Maps and Analyses Exhibits



Total Crashes = 3,488
between 01/01/2017 - 10/31/2020

Culebra Rd Arterial Study
Crash Analysis

COLLISION TYPE CRASH SUMMARY

Transportation Mode	Angle	Head On	Left Turn	No Data[1]	Other	Rear End	Side swipe	Single Motor Vehicle	Total	Percentage
Bicycle	0	0	0	0	0	0	1	18	**19**	0.5%
Pedestrian	0	0	0	0	0	2	0	62	**64**	1.8%
Vehicle	529	42	687	227	4	1243	334	339	**3405**	97.6%
Total	**529**	**42**	**687**	**227**	**4**	**1245**	**335**	**419**		
Percentage	15.2%	1.2%	19.7%	6.5%	0.1%	35.7%	9.6%	12.0%		
Total Crashes (Jan 1 2017 - Oct 31 2020)									**3,488**	

CRASH SUMMARY BY YEAR

Transportation Mode	Total Crashes	Percentage
2017	890	25.5%
2018	898	25.7%
2019	979	28.1%
2020	721	20.7%
Total Crashes (Jan 1 2017 - Oct 31 2020)	**3,488**	

Total Crashes = 3,488
between 01/01/2017 - 10/31/2020

Culebra Rd Arterial Study
Roadway Segment Crash Analysis

CRASH SUMMARY BY COLLISION TYPE

	Segment Name (Miles)	Segment Extent	Angle	Head On	Left Turn	No Data[1]	Other	Rear End	Side swipe	Single Motor Vehicle	Total	Percentage
Culebra Road	Culebra Segment 1 (1.75)	SB I-10 FR to Bandera Rd	38	10	29	1	0	185	69	60	**392**	20.38%
	Culebra Segment 2 (5.5)	Bandera Rd to SB Loop 410 FR	53	10	73	65	3	263	85	94	**646**	33.59%
	Culebra Segment 3 (3.3)	SB Loop 410 FR to Grisson Rd	67	7	59	43	0	243	78	73	**570**	29.64%
	Culebra Segment 4 (2.45)	Grissom Rd to NB Loop 1604 FR	31	5	44	24	0	135	37	39	**315**	16.38%
	Total		**189**	**32**	**205**	**133**	**3**	**826**	**269**	**266**		
	Percentage		9.8%	1.7%	10.7%	6.9%	0.2%	43.0%	14.0%	13.8%		
	Total Crashes (Jan 1 2017 - Oct 31 2020)											**1,923**

CRASH SUMMARY BY SEVERITY

	Segment Name (Miles)	Segment Extent	Unknown	Not Injured	Injured	Fatal	Total	Percentage
Culebra Road	Culebra Segment 1 (1.75)	SB I-10 FR to Bandera Rd	82	244	63	3	**392**	20.38%
	Culebra Segment 2 (5.5)	Bandera Rd to SB Loop 410 FR	139	394	108	5	**646**	33.59%
	Culebra Segment 3 (3.3)	SB Loop 410 FR to Grisson Rd	106	377	84	3	**570**	29.64%
	Culebra Segment 4 (2.45)	Grissom Rd to NB Loop 1604 FR	63	208	42	2	**315**	16.38%
	Total		**390**	**1223**	**297**	**13**		
	Percentage		20.3%	63.6%	15.4%	0.7%		
	Total Crashes (Jan 1 2017 - Oct 31 2020)							**1,923**

Total Crashes = 3,488
between 01/01/2017 - 10/31/2020

Culebra Rd Arterial Study
Roadway Segment Crash Analysis

PEDESTRIAN CRASH SUMMARY BY SEVERITY

	Segment Name (Miles)	Segment Extent	Unknown	Not Injured	Injured	Fatal	Total	Percentage
Culebra Road	Culebra Segment 1 (1.75)	SB I-10 FR to Bandera Rd	0	1	8	2	**11**	**29.73%**
	Culebra Segment 2 (5.5)	Bandera Rd to SB Loop 410 FR	1	0	10	4	**15**	**40.54%**
	Culebra Segment 3 (3.3)	SB Loop 410 FR to Grisson Rd	0	0	6	2	**8**	**21.62%**
	Culebra Segment 4 (2.45)	Grissom Rd to NB Loop 1604 FR	0	0	2	1	**3**	**8.11%**
	Total		**1**	**1**	**26**	**9**		
	Percentage		2.7%	2.7%	70.3%	24.3%		
	Total Crashes (Jan 1 2017 - Oct 31 2020)							**37**

BICYCLE CRASH SUMMARY BY SEVERITY

	Segment Name (Miles)	Segment Extent	Unknown	Not Injured	Injured	Fatal	Total	Percentage
Culebra Road	Culebra Segment 1 (1.75)	SB I-10 FR to Bandera Rd	0	0	1	0	**1**	**14.29%**
	Culebra Segment 2 (5.5)	Bandera Rd to SB Loop 410 FR	0	0	3	0	**3**	**42.86%**
	Culebra Segment 3 (3.3)	SB Loop 410 FR to Grisson Rd	0	0	1	0	**1**	**14.29%**
	Culebra Segment 4 (2.45)	Grissom Rd to NB Loop 1604 FR	0	0	2	0	**2**	**28.57%**
	Total		**0**	**0**	**7**	**0**		
	Percentage		0.0%	0.0%	100.0%	0.0%		
	Total Crashes (Jan 1 2017 - Oct 31 2020)							**7**

Total Crashes = 3,488
between 01/01/2017 - 10/31/2020

Culebra Rd Arterial Study
Intersection Crash Analysis

CRASH SEVERITY SUMMARY

S. No	Intersecting Street Name	Unknown	Not Injured	Injured	Fatal	Total Crashes
1	26th St	0	1	0	0	1
2	27th St	0	1	0	0	1
3	28th St	2	2	2	0	6
4	34th St	1	3	3	0	7
5	38th St	3	5	1	0	9
6	Adaes Ave	0	2	0	0	2
7	Alamo Downs Pkwy	1	11	6	0	18
8	Alicia Ave / Pettus Rd	0	6	2	0	8
9	Ansley Bend Dr / Timberpath Dr	2	5	0	0	7
10	Arcadia Creek	1	6	3	0	10
11	Ascot Park	1	0	2	0	3
12	Augustine St	0	1	0	0	1
13	Avenue G	0	1	0	0	1
14	Bandera Rd	4	27	4	0	35
15	Benrus Rd	3	17	2	0	22
16	Brendall St	0	0	2	0	2
17	Calaveras St	2	9	4	0	15
18	Callaghan Rd	11	32	11	0	54
19	Camino Rosa Rd	6	20	8	0	34
20	Camino Santa Maria Rd	4	8	5	0	17
21	Canterbury Rd	0	7	1	0	8
22	Cliffbriar Rd	1	7	5	0	13
23	Clover Creek Rd	1	9	2	0	12
24	Connally Loop Rd	1	2	2	0	5
25	Consuelo St	0	1	1	0	2
26	Coppertree Rd	0	2	1	0	3
27	Cornell St	0	2	0	0	2
28	Drive-way	0	12	2	0	14
29	Easterling Rd	1	0	1	0	2
30	El Centro Rd	7	2	2	0	11
31	Elmendorf Rd	6	23	6	0	35
32	Esmeralda Dr / 36th St	16	36	14	0	66
33	Fairgrounds Pkwy	1	12	4	0	17
34	Florencia Rd	1	1	0	0	2
35	Gen McMullen Dr	8	21	3	0	32
36	Glenmore Ave / 19th St	4	11	7	0	22
37	Goodrich Rd	0	1	0	0	1
38	Griffin Park Rd	0	1	1	0	2
39	Griggs Ave	0	3	1	0	4
40	Grissom Rd / Tezel Rd	16	37	9	0	62
41	Grosenbacher Rd	1	2	0	0	3
42	Hamilton Rd	0	8	3	0	11
43	Hanover Rd	0	3	0	0	3
44	Hillcrest Rd	1	3	2	0	6
45	Holy Cross Rd	0	1	0	0	1
46	Hortencia Rd	1	2	2	0	5
47	Ingram Rd	10	21	14	0	45
48	Interstate 10	1	3	0	0	4
49	Jo Ann Rd	1	1	0	0	2
50	Joe Newton Rd	0	12	3	0	15
51	Laven Rd	2	2	1	0	5
52	Les Harrison Rd	1	3	0	0	4
53	Lt. Geronimo Rd	0	1	0	0	1
54	Loop 1604	1	8	0	0	9
55	Loop 410	35	101	21	0	157
56	Malden Rd	1	3	1	0	5
57	McCallister Rd	1	2	0	0	3
58	Memorial Ave	3	9	6	0	18
59	Mira Vista Rd	0	2	0	0	2
60	Moortown Rd	0	4	2	0	6
61	Mountain View Rd	1	2	1	0	4
62	Navidad Rd	0	6	1	0	7
63	Neff Rd	1	3	1	0	5
64	Not Reported	4	9	5	0	18
65	Nueces Canyon	0	5	2	0	7
66	Oak Hill Rd / Tom Slick Rd	7	9	5	0	21
67	Old Grissom Rd	6	3	6	0	15
68	Patranco Rd	14	47	11	0	72
69	Pipers Ln / Micron Dr	7	37	15	0	59
70	Reed Rd	5	15	8	0	28
71	Rimrock Trail Rd	2	17	6	1	26
72	Roanoke St	1	1	0	0	2
73	Rogers Rd	7	27	17	0	51
74	Rollins Ave / 29th St	5	8	2	0	15
75	Rosebell St	0	1	1	0	2
76	Rouse Ave / 22nd St	0	4	2	0	6
77	Sabinas Rd	3	18	3	0	24
78	San Augustine Ave	1	8	3	0	12
79	San Bernardo Ave	0	5	0	0	5
80	San Dario Ave	0	1	0	0	1
81	San Felipe Ave	1	3	1	0	5
82	San Gabriel Ave	0	2	0	0	2
83	San Horancio Ave	0	2	0	0	2
84	San Ignacio Ave / Glenwick St	0	4	0	0	4
85	San Joaquin Ave	0	2	2	0	4
86	San Manuel Ave	0	1	0	0	1
87	Selene Dr	1	3	2	0	6
88	Shelly St	0	1	1	0	2
89	Stillwater Park Rd	0	2	1	0	3
90	Talley Rd	0	6	0	0	6
91	Tesla Rd	0	5	0	0	5
92	Timberview Dr	2	10	3	0	15
93	Van Ness Dr	0	1	2	0	3
94	Village Pkwy / Grissom Pass	1	18	9	0	28
95	Watkins Ln	0	2	0	0	2
96	Westover Hills Blvd / Ensenada	12	47	11	0	70
97	Williams Ave / 18th St	3	7	3	0	13
98	Wilson Blvd / 24th St	15	35	2	0	52
99	Wisley Dr	0	1	0	0	1
100	Yolanda Rd	0	4	2	0	6
101	Zarzamora St	17	54	9	2	82
	Total	***279***	***974***	***309***	***3***	
	Percentage	17.8%	62.2%	19.7%	0.2%	
	Total Intersection Crashes (Jan 1 2017 - Oct 31 2020)					1,565

Total Crashes = 3,488
between 01/01/2017 - 10/31/2020

Culebra Rd Arterial Study
Intersection Crash Analysis

COLLISION TYPE CRASH SUMMARY

S. No	Intersecting Street Name	Angle	Head On	Left Turn	No Data[1]	Other	Rear End	Side swipe	Single Motor Vehicle	Crash Percentage	Total Crashes
1	26th St	1	0	0	0	0	0	0	0	0.06%	1
2	27th St	1	0	0	0	0	0	0	0	0.06%	1
3	28th St	2	0	1	0	0	3	0	0	0.38%	6
4	34th St	2	0	2	0	0	2	1	0	0.45%	7
5	38th St	4	0	0	0	0	5	0	0	0.58%	9
6	Adaes Ave	1	0	0	0	0	1	0	0	0.13%	2
7	Alamo Downs Pkwy	1	0	7	0	0	7	0	3	1.15%	18
8	Alicia Ave / Pettus Rd	2	0	4	0	0	0	0	2	0.51%	8
9	ley Bend Dr / Timberpath	0	0	5	0	0	2	0	0	0.45%	7
10	Arcadia Creek	4	0	3	0	0	2	0	1	0.64%	10
11	Ascot Park	1	0	1	0	0	1	0	0	0.19%	3
12	Augustine St	1	0	0	0	0	0	0	0	0.06%	1
13	Avenue G	0	0	1	0	0	0	0	0	0.06%	1
14	Bandera Rd	3	0	6	1	0	11	6	8	2.24%	35
15	Benrus Rd	10	0	6	0	1	3	2	0	1.41%	22
16	Brendall St	0	0	1	0	0	0	0	1	0.13%	2
17	Calaveras St	10	0	2	0	0	2	1	0	0.96%	15
18	Callaghan Rd	1	0	2	50	0	0	1	0	3.45%	54
19	Camino Rosa Rd	6	2	15	0	0	7	1	3	2.17%	34
20	Camino Santa Maria Rd	3	0	6	0	0	7	0	1	1.09%	17
21	Canterbury Rd	5	0	0	1	0	1	0	1	0.51%	8
22	Cliffbriar Rd	3	0	2	0	0	2	0	6	0.83%	13
23	Clover Creek Rd	2	0	6	1	0	2	0	1	0.77%	12
24	Connally Loop Rd	1	0	0	0	0	3	0	1	0.32%	5
25	Consuelo St	0	1	0	0	0	1	0	0	0.13%	2
26	Coppertree Rd	0	0	1	0	0	2	0	0	0.19%	3
27	Cornell St	1	0	1	0	0	0	0	0	0.13%	2
28	Drive-way	2	0	3	0	0	8	0	1	0.89%	14
29	Easterling Rd	1	0	1	0	0	0	0	0	0.13%	2
30	El Centro Rd	3	0	1	0	0	6	0	1	0.70%	11
31	Elmendorf Rd	20	1	6	0	0	5	1	2	2.24%	35
32	Esmeralda Dr / 36th St	21	0	25	0	0	16	2	2	4.22%	66
33	Fairgrounds Pkwy	3	0	5	1	0	7	0	1	1.09%	17
34	Florencia Rd	0	0	1	0	0	1	0	0	0.13%	2
35	Gen McMullen Dr	5	0	1	22	0	3	1	0	2.04%	32
36	Glenmore Ave / 19th St	5	0	9	0	0	4	1	3	1.41%	22
37	Goodrich Rd	0	0	0	0	0	0	0	1	0.06%	1
38	Griffin Park Rd	0	0	1	0	0	1	0	0	0.13%	2
39	Griggs Ave	2	0	0	0	0	2	0	0	0.26%	4
40	Grissom Rd / Tezel Rd	10	0	16	3	0	21	6	6	3.96%	62
41	Grosenbacher Rd	0	0	0	0	0	3	0	0	0.19%	3
42	Hamilton Rd	2	0	6	0	0	1	0	2	0.70%	11
43	Hanover Rd	2	0	0	0	0	1	0	0	0.19%	3
44	Hillcrest Rd	2	0	3	0	0	1	0	0	0.38%	6
45	Holy Cross Rd	1	0	0	0	0	0	0	0	0.06%	1
46	Hortencia Rd	0	0	4	0	0	0	0	1	0.32%	5
47	Ingram Rd	7	0	26	0	0	8	2	2	2.88%	45
48	Interstate 10	1	0	1	0	0	2	0	0	0.26%	4
49	Jo Ann Rd	0	0	2	0	0	0	0	0	0.13%	2
50	Joe Newton Rd	6	1	6	0	0	0	1	1	0.96%	15
51	Laven Rd	2	0	0	0	0	1	0	2	0.32%	5
52	Les Harrison Rd	0	0	0	0	0	2	0	2	0.26%	4
53	Lt. Geronimo Rd	0	0	0	0	0	1	0	0	0.06%	1
54	Loop 1604	3	0	4	0	0	2	0	0	0.58%	9
55	Loop 410	21	0	41	10	0	59	10	16	10.03%	157
56	Malden Rd	2	0	1	0	0	1	0	1	0.32%	5
57	McCallister Rd	1	0	1	0	0	1	0	0	0.19%	3
58	Memorial Ave	1	0	5	0	0	8	0	4	1.15%	18
59	Mira Vista Rd	0	0	2	0	0	0	0	0	0.13%	2
60	Moortown Rd	0	0	2	0	0	4	0	0	0.38%	6
61	Mountain View Rd	1	0	1	1	0	1	0	0	0.26%	4
62	Navidad Rd	2	0	1	0	0	2	0	2	0.45%	7
63	Neff Rd	2	0	1	0	0	2	0	0	0.32%	5
64	Not Reported	3	0	9	0	0	4	1	1	1.15%	18
65	Nueces Canyon	1	0	3	0	0	3	0	0	0.45%	7
66	Oak Hill Rd / Tom Slick Rd	7	0	4	1	0	6	0	3	1.34%	21
67	Old Grissom Rd	1	1	7	0	0	5	1	0	0.96%	15
68	Patranco Rd	17	0	10	0	0	40	3	2	4.60%	72
69	Pipers Ln / Micron Dr	18	1	17	0	0	10	2	11	3.77%	59
70	Reed Rd	5	0	9	0	0	4	1	9	1.79%	28
71	Rimrock Trail Rd	7	0	11	0	0	3	1	4	1.66%	26
72	Roanoke St	0	0	2	0	0	0	0	0	0.13%	2
73	Rogers Rd	13	0	22	1	0	10	2	3	3.26%	51
74	Rollins Ave / 29th St	6	0	1	1	0	4	0	3	0.96%	15
75	Rosebell St	0	0	0	0	0	0	1	0	0.13%	2
76	Rouse Ave / 22nd St	3	0	1	0	0	1	1	0	0.38%	6
77	Sabinas Rd	8	0	10	0	0	2	0	4	1.53%	24
78	San Augustine Ave	3	0	8	0	0	1	0	0	0.77%	12
79	San Bernardo Ave	3	0	0	0	0	2	0	0	0.32%	5
80	San Dario Ave	0	0	1	0	0	0	0	0	0.06%	1
81	San Felipe Ave	1	0	1	0	0	3	0	0	0.32%	5
82	San Gabriel Ave	1	0	0	0	0	1	0	0	0.13%	2
83	San Horancio Ave	0	0	0	0	0	1	0	1	0.13%	2
84	San Ignacio Ave / Glenwick St	1	0	1	0	0	1	0	1	0.26%	4
85	San Joaquin Ave	0	0	3	0	0	1	0	0	0.26%	4
86	San Manuel Ave	0	0	0	0	0	1	0	0	0.06%	1
87	Selene Dr	2	0	3	0	0	0	0	1	0.38%	6
88	Shelly St	0	0	0	0	0	2	0	0	0.13%	2
89	Stillwater Park Rd	1	0	0	0	0	0	0	2	0.19%	3
90	Talley Rd	2	0	0	0	0	4	0	0	0.38%	6
91	Tesla Rd	1	0	2	0	0	1	0	1	0.32%	5
92	Timberview Dr	2	0	6	0	0	5	1	1	0.96%	15
93	Van Ness Dr	1	0	1	0	0	1	0	0	0.19%	3
94	Village Pkwy / Grissom Pass	1	0	17	1	0	6	0	3	1.79%	28
95	Watkins Ln	1	0	0	0	0	1	0	0	0.13%	2
96	Westover Hills Blvd / Ensenada	6	0	42	0	0	17	1	4	4.47%	70
97	Williams Ave / 18th St	4	0	4	0	0	3	2	0	0.83%	13
98	Wilson Blvd / 24th St	10	1	10	0	0	21	5	5	3.32%	52
99	Wisley Dr	1	0	0	0	0	0	0	0	0.06%	1
100	Yolanda Rd	3	0	2	0	0	1	0	0	0.38%	6
101	Zarzamora St	14	2	27	0	0	16	8	15	5.24%	82
	Total	***340***	***10***	***482***	***94***	***1***	***419***	***66***	***153***		
	Percentage	21.7%	0.6%	30.8%	6.0%	0.1%	26.8%	4.2%	9.8%		
	Total Intersection Crashes (Jan 1 2017 - Oct 31 2020)										1,565

Total Crashes = 3,488
between 01/01/2017 - 10/31/2020

Culebra Rd Arterial Study
Intersection Crash Analysis

BICYCLE INTERSECTION CRASH SUMMARY BY COLLISION TYPE

S. No	Intersecting Street Name	Rear End	Single Motor Vehicle	Total	Percentage
1	Cliffbrier Rd		3	3	25.00%
2	Hamilton Rd		1	1	8.33%
3	Ingram Rd		1	1	8.33%
4	Pipers Ln / Micron Dr		1	1	8.33%
5	Reed Rd		2	2	16.67%
6	Rimrock Trail Rd		1	1	8.33%
7	Rogers Rd	1		1	8.33%
8	Stillwater Park Rd		1	1	8.33%
9	Village Pkwy / Grissom Pass		1	1	8.33%
	Total	**1**	**11**		
	Percentage	8.33%	91.67%		
	Total Crashes (Jan 1 2017 - Oct 31 2020)			**12**	

PEDESTRIAN INTERSECTION CRASH SUMMARY BY COLLISION TYPE

S. No	Intersecting Street Name	Rear End	Single Motor Vehicle	Total	Percentage
1	Alamo Downs Pkwy	0	1	1	3.70%
2	Alicia Ave / Pettus Rd	0	1	1	3.70%
3	Bandera Rd	0	1	1	3.70%
4	Camino Rosa Rd	0	1	1	3.70%
5	Esmeralda Dr / 36th St	0	1	1	3.70%
6	Laven Rd	0	1	1	3.70%
7	Memorial Ave	0	2	2	7.41%
8	Oak Hill Rd / Tom Slick Rd	0	1	1	3.70%
3	Patranco Rd	0	1	1	3.70%
4	Pipers Ln / Micron Dr	0	3	3	11.11%
5	Reed Rd	0	1	1	3.70%
6	Rogers Rd	0	1	1	3.70%
7	Rollins Ave / 29th St	0	1	1	3.70%
8	Sabinas Rd	0	2	2	7.41%
9	Wilson Blvd / 24th St	0	2	2	7.41%
10	Zarzamora St	1	6	7	25.93%
	Total	**1**	**26**		
	Percentage	3.70%	96.30%		
	Total Crashes (Jan 1 2017 - Oct 31 2020)			**27**	

Total Crashes = 3,488
between 01/01/2017 - 10/31/2020

Culebra Rd Arterial Study
Assumptions

Crash Collision Type	Assumption
ANGLE - BOTH GOING STRAIGHT	Angle
ANGLE - BOTH LEFT TURN	LT
ANGLE - ONE LEFT TURN-ONE STOPPED	LT
ANGLE - ONE RIGHT TURN-ONE LEFT TURN	Angle
ANGLE - ONE RIGHT TURN-ONE STOPPED	Angle
ANGLE - ONE STRAIGHT-ONE BACKING	Angle
ANGLE - ONE STRAIGHT-ONE LEFT TURN	LT
ANGLE - ONE STRAIGHT-ONE RIGHT TURN	Angle
ANGLE - ONE STRAIGHT-ONE STOPPED	Angle
No Data[1]	No Data[1]
ONE MOTOR VEHICLE - BACKING	SMV
ONE MOTOR VEHICLE - GOING STRAIGHT	SMV
ONE MOTOR VEHICLE - OTHER	SMV
ONE MOTOR VEHICLE - TURNING LEFT	SMV
ONE MOTOR VEHICLE - TURNING RIGHT	SMV
OPPOSITE DIRECTION - BOTH GOING STRAIGHT	Head On
OPPOSITE DIRECTION - BOTH LEFT TURNS	LT
OPPOSITE DIRECTION - ONE BACKING-ONE STOPPED	Rear End
OPPOSITE DIRECTION - ONE LEFT TURN-ONE STOPPED	LT
OPPOSITE DIRECTION - ONE RIGHT TURN-ONE LEFT TURN	Angle
OPPOSITE DIRECTION - ONE STRAIGHT-ONE BACKING	Angle
OPPOSITE DIRECTION - ONE STRAIGHT-ONE LEFT TURN	LT
OPPOSITE DIRECTION - ONE STRAIGHT-ONE STOPPED	Head On
OTHER	Other
SAME DIRECTION - BOTH GOING STRAIGHT-REAR END	Rear End
SAME DIRECTION - BOTH GOING STRAIGHT-SIDESWIPE	Side Swipe
SAME DIRECTION - BOTH LEFT TURN	LT
SAME DIRECTION - BOTH RIGHT TURN	Angle
SAME DIRECTION - ONE LEFT TURN-ONE STOPPED	LT
SAME DIRECTION - ONE RIGHT TURN-ONE STOPPED	Angle
SAME DIRECTION - ONE STRAIGHT-ONE LEFT TURN	LT
SAME DIRECTION - ONE STRAIGHT-ONE RIGHT TURN	Angle
SAME DIRECTION - ONE STRAIGHT-ONE STOPPED	Rear End

Total Crashes = 3,488
between 01/01/2017 - 10/31/2020

Culebra Rd Arterial Study
Assumptions

Crash Severity Type	Assumption
Killed	Fatal
Suspected serious injury	Injured
Incapacitating serious injury	Injured
Possible injury	Injured
Not injured	Not Injured
Unknown	Unknown

Abbreviations	
Road	Rd
Frontage Road	FR
Street	St
Avenue	Ave
Drive	Dr
Number	#
Serial Number	S.No
Left Turn	LT
Single Motor Vehicle	SMV
Not applicable since crashes were collected only until Oct 31 2020.	NA[1]
Southbound	NB
Northbound	SB
Eastbound	EB
Westbound	WB

Appendix F – Existing Condition Analyses Synchro Outputs

wsp

2020 AM Peak Hour

HCM Signalized Intersection Capacity Analysis
4654: Loop 1604 NB Frontage & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	247	1610	0	0	700	180	566	111	325	0	0	0
Future Volume (vph)	247	1610	0	0	700	180	566	111	325	0	0	0
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	5.1	5.1			5.6	5.6	5.1	5.1	5.1			
Lane Util. Factor	0.91	0.91			0.91	1.00	0.91	0.91	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)	1695	3566			5353	1667	1695	3445	1667			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)	1695	3566			5353	1667	1695	3445	1667			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	303	1976	0	0	859	221	695	136	399	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	173	0	0	293	0	0	0
Lane Group Flow (vph)	273	2006	0	0	859	48	347	484	106	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	1 11	1 11			2		4	4				
Permitted Phases						2			4			
Actuated Green, G (s)	73.9	73.9			30.4	30.4	19.9	19.9	19.9			
Effective Green, g (s)	73.9	73.9			30.4	30.4	19.9	19.9	19.9			
Actuated g/C Ratio	0.53	0.53			0.22	0.22	0.14	0.14	0.14			
Clearance Time (s)					5.6	5.6	5.1	5.1	5.1			
Vehicle Extension (s)					1.0	1.0	1.0	1.0	1.0			
Lane Grp Cap (vph)	894	1882			1162	361	240	489	236			
v/s Ratio Prot	0.16	c0.56			c0.16		c0.20	0.14				
v/s Ratio Perm						0.03			0.06			
v/c Ratio	0.31	1.07			0.74	0.13	1.45	1.39dl	0.45			
Uniform Delay, d1	18.6	33.0			51.1	44.2	60.0	59.9	55.0			
Progression Factor	0.13	0.52			1.12	2.15	1.00	1.00	1.00			
Incremental Delay, d2	0.1	35.3			2.1	0.1	222.6	37.5	0.5			
Delay (s)	2.5	52.5			59.4	95.0	282.6	97.5	55.5			
Level of Service	A	D			E	F	F	F	E			
Approach Delay (s)		46.5			66.7			136.1			0.0	
Approach LOS		D			E			F			A	

Intersection Summary			
HCM 2000 Control Delay	75.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
9990: Loop 1604 SB Frontage & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1107	582	300	1000	0	0	0	0	762	449	234
Future Volume (vph)	0	1107	582	300	1000	0	0	0	0	762	449	234
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)		5.7	5.7	5.1	5.1					5.1	5.1	5.1
Lane Util. Factor		0.91	1.00	0.91	0.91					0.91	0.91	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.98	1.00
Satd. Flow (prot)		5353	1667	1695	3563					1695	3490	1667
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.98	1.00
Satd. Flow (perm)		5353	1667	1695	3563					1695	3490	1667
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	0	1233	648	334	1113	0	0	0	0	848	500	261
RTOR Reduction (vph)	0	0	178	0	0	0	0	0	0	0	0	149
Lane Group Flow (vph)	0	1233	470	301	1146	0	0	0	0	441	907	112
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm	Split	NA					Perm	NA	Perm
Protected Phases		6		5 15	5 15						8	
Permitted Phases			6							8		8
Actuated Green, G (s)		41.3	41.3	55.9	55.9					26.9	26.9	26.9
Effective Green, g (s)		41.3	41.3	55.9	55.9					26.9	26.9	26.9
Actuated g/C Ratio		0.29	0.29	0.40	0.40					0.19	0.19	0.19
Clearance Time (s)		5.7	5.7							5.1	5.1	5.1
Vehicle Extension (s)		1.0	1.0							1.0	1.0	1.0
Lane Grp Cap (vph)		1579	491	676	1422					325	670	320
v/s Ratio Prot		0.23		0.18	c0.32							
v/s Ratio Perm			c0.28							c0.26	0.26	0.07
v/c Ratio		0.78	0.96	0.45	0.81					1.36	1.35	0.35
Uniform Delay, d1		45.2	48.5	30.7	37.2					56.5	56.5	49.0
Progression Factor		1.00	1.00	0.05	0.70					1.00	1.00	1.00
Incremental Delay, d2		3.9	31.4	0.1	0.3					179.5	168.9	0.2
Delay (s)		49.1	79.9	1.8	26.5					236.0	225.4	49.2
Level of Service		D	E	A	C					F	F	D
Approach Delay (s)		59.7			21.4			0.0			199.7	
Approach LOS		E			C			A			F	

Intersection Summary				
HCM 2000 Control Delay	94.1	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.02			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.5	
Intersection Capacity Utilization	102.6%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

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HCM 6th Signalized Intersection Summary
4754: Culebra Rd & Micron Dr/Pipers Ln 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	18	38	99	24	27	20	900	35	37	2550	139
Future Volume (veh/h)	154	18	38	99	24	27	20	900	35	37	2550	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	180	21	44	116	28	32	23	1050	41	43	2975	162
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	80	67	207	80	67	306	3625	141	329	2951	158
Arrive On Green	0.06	0.04	0.04	0.06	0.04	0.04	0.14	0.72	0.72	0.04	1.00	1.00
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5002	195	1767	4922	263
Grp Volume(v), veh/h	180	21	44	116	28	32	23	709	382	43	2025	1112
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1820	1767	1689	1808
Q Serve(g_s), s	7.0	1.5	3.9	1.3	2.1	2.5	0.0	10.2	10.2	1.5	0.0	83.9
Cycle Q Clear(g_c), s	7.0	1.5	3.9	1.3	2.1	2.5	0.0	10.2	10.2	1.5	0.0	83.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.15
Lane Grp Cap(c), veh/h	203	80	67	207	80	67	306	2448	1319	329	2025	1084
V/C Ratio(X)	0.89	0.26	0.65	0.56	0.35	0.47	0.08	0.29	0.29	0.13	1.00	1.03
Avail Cap(c_a), veh/h	222	187	158	226	187	158	306	2448	1319	419	2043	1094
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	0.25	0.25	0.25
Uniform Delay (d), s/veh	62.4	64.9	66.0	60.5	65.1	52.7	51.3	6.7	6.7	13.1	0.0	0.0
Incr Delay (d2), s/veh	29.2	0.6	3.9	1.1	1.0	1.9	0.0	0.3	0.5	0.0	10.0	20.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.7	1.6	4.0	1.0	1.2	0.7	3.3	3.7	0.6	2.8	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	91.6	65.5	69.9	61.7	66.1	54.7	51.3	7.0	7.3	13.1	10.0	20.9
LnGrp LOS	F	E	E	E	E	D	D	A	A	B	A	F
Approach Vol, veh/h		245			176			1114			3180	
Approach Delay, s/veh		85.5			61.1			8.0			13.8	
Approach LOS		F			E			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	106.8	13.5	11.9	25.0	89.6	13.5	11.9
Change Period (Y+Rc), s	5.0	* 5.3	4.5	5.9	* 5.3	* 5.3	4.5	5.9
Max Green Setting (Gmax), s	10.0	* 85	10.5	14.1	* 10	* 85	10.5	14.1
Max Q Clear Time (g_c+I1), s	3.5	12.2	3.3	5.9	2.0	85.9	9.0	4.5
Green Ext Time (p_c), s	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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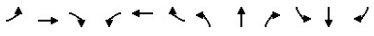
HCM 6th Signalized Intersection Summary
4755: Culebra Rd & Timber View Dr 02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	30	167	123	48	116	124	850	25	43	2388	31
Future Volume (veh/h)	77	30	167	123	48	116	124	850	25	43	2388	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	93	36	202	148	58	140	150	1026	30	52	2882	37
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	127	43	242	90	85	206	171	3489	102	435	3368	43
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.11	1.00	1.00	0.02	0.65	0.65
Sat Flow, veh/h	1175	243	1366	1133	482	1164	1767	5058	148	1767	5155	66
Grp Volume(v), veh/h	93	0	238	148	0	198	150	685	371	52	1884	1035
Grp Sat Flow(s),veh/h/ln	1175	0	1610	1133	0	1646	1767	1689	1829	1767	1689	1844
Q Serve(g_s), s	9.0	0.0	20.0	4.8	0.0	15.8	6.1	0.0	0.0	1.4	61.2	62.1
Cycle Q Clear(g_c), s	24.8	0.0	20.0	24.8	0.0	15.8	6.1	0.0	0.0	1.4	61.2	62.1
Prop In Lane	1.00		0.85	1.00		0.71	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	127	0	285	90	0	292	171	2329	1261	435	2206	1204
V/C Ratio(X)	0.73	0.00	0.83	1.64	0.00	0.68	0.88	0.29	0.29	0.12	0.85	0.86
Avail Cap(c_a), veh/h	127	0	285	90	0	292	196	2329	1261	524	2206	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.94	0.94	0.94	0.65	0.65	0.65
Uniform Delay (d), s/veh	66.3	0.0	55.6	69.0	0.0	53.9	40.1	0.0	0.0	7.7	19.0	19.2
Incr Delay (d2), s/veh	16.9	0.0	17.9	331.3	0.0	5.2	27.2	0.3	0.6	0.0	3.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	9.5	11.6	0.0	7.0	6.1	0.1	0.2	0.5	22.1	25.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.2	0.0	73.5	400.3	0.0	59.0	67.4	0.3	0.6	7.7	22.0	24.7
LnGrp LOS	F	A	E	F	A	E	E	A	A	A	C	C
Approach Vol, veh/h		331			346			1206			2971	
Approach Delay, s/veh		76.2			205.0			8.7			22.7	
Approach LOS		E			F			A			C	

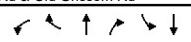
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	102.1		30.0	13.0	97.0		30.0				
Change Period (Y+Rc), s	5.0	* 5.5		* 5.2	5.0	* 5.5		* 5.2				
Max Green Setting (Gmax), s	10.0	* 90		* 25	10.0	* 90		* 25				
Max Q Clear Time (g_c+I1), s	13.4	2.0		26.8	8.1	64.1		26.8				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.0	10.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	35.9
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
4758: Culebra Rd & Old Grissom Rd 02/03/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	213	109	867	202	110	2000
Future Volume (veh/h)	213	109	867	202	110	2000
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	260	133	1059	247	134	2442
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	283	252	3458	1074	367	3834
Arrive On Green	0.16	0.16	0.68	0.68	0.07	1.00
Sat Flow, veh/h	1767	1572	5233	1572	1767	5233
Grp Volume(v), veh/h	260	133	1059	247	134	2442
Grp Sat Flow(s),veh/h/ln	1767	1572	1689	1572	1767	1689
Q Serve(g_s), s	20.3	10.9	11.7	8.3	3.2	0.0
Cycle Q Clear(g_c), s	20.3	10.9	11.7	8.3	3.2	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	283	252	3458	1074	367	3834
V/C Ratio(X)	0.92	0.53	0.31	0.23	0.36	0.64
Avail Cap(c_a), veh/h	367	327	3458	1074	451	3834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.71	0.71
Uniform Delay (d), s/veh	57.9	53.9	8.9	8.4	6.1	0.0
Incr Delay (d2), s/veh	21.0	0.6	0.2	0.5	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.7	4.4	4.0	2.7	1.0	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	78.9	54.6	9.1	8.8	6.3	0.6
LnGrp LOS	E	D	A	A	A	A
Approach Vol, veh/h	393		1306			2576
Approach Delay, s/veh	70.7		9.1			0.9
Approach LOS	E		A			A

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	10.4	101.3				111.7		28.3				
Change Period (Y+Rc), s	5.2	* 5.7				5.7		5.9				
Max Green Setting (Gmax), s	5.2	* 83				99.3		29.1				
Max Q Clear Time (g_c+I1), s	15.3	13.7				2.0		22.3				
Green Ext Time (p_c), s	0.0	2.7				9.9		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
4756: Culebra Rd & Rim Rock Trl

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	7	102	2	3	19	56	1000	5	43	2336	35
Future Volume (vph)	66	7	102	2	3	19	56	1000	5	43	2336	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.2	5.2		5.0		5.0	6.8		5.0	5.7	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85		0.89		1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1568		1643		1752	5032		1752	5025	
Flt Permitted		0.73	1.00		0.98		0.04	1.00		0.22	1.00	
Satd. Flow (perm)		1339	1568		1617		69	5032		412	5025	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	77	8	119	2	4	22	65	1167	6	50	2725	41
RTOR Reduction (vph)	0	0	99	0	20	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	85	20	0	8	0	65	1173	0	50	2765	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		12.3	12.3		12.5		111.6	107.2		110.9	107.4	
Effective Green, g (s)		12.3	12.3		12.5		111.6	107.2		110.9	107.4	
Actuated g/C Ratio		0.09	0.09		0.09		0.80	0.77		0.79	0.77	
Clearance Time (s)		5.2	5.2		5.0		5.0	6.8		5.0	5.7	
Vehicle Extension (s)		1.0	1.0		1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)		117	137		144		107	3853		359	3854	
v/s Ratio Prot							c0.02	0.23		0.00	c0.55	
v/s Ratio Perm		c0.06	0.01		0.00		0.46			0.11		
v/c Ratio		0.73	0.14		0.06		0.61	0.30		0.14	0.72	
Uniform Delay, d1		62.2	59.0		58.3		15.9	5.0		3.1	8.4	
Progression Factor		1.00	1.00		1.00		1.93	0.75		1.04	0.94	
Incremental Delay, d2		17.2	0.2		0.1		6.2	0.2		0.0	0.7	
Delay (s)		79.4	59.2		58.4		36.8	3.9		3.3	8.7	
Level of Service		E	E		E		D	A		A	A	
Approach Delay (s)		67.6			58.4			5.7			8.6	
Approach LOS		E			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	73.1%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

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HCM Signalized Intersection Capacity Analysis
4757: Culebra Rd & Village Pkwy/Grissom Pass

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	20	230	19	32	27	130	915	12	6	2109	108
Future Volume (vph)	111	20	230	19	32	27	130	915	12	6	2109	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9	5.9	5.9	5.9		5.0	5.1		5.0	5.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.93		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1769	1568	1752	1716		1752	5026		1752	4999	
Flt Permitted		0.71	1.00	0.95	1.00		0.05	1.00		0.25	1.00	
Satd. Flow (perm)		1310	1568	1752	1716		85	5026		464	4999	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	130	23	268	22	37	32	152	1068	14	7	2460	126
RTOR Reduction (vph)	0	0	197	0	24	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	153	71	22	45	0	152	1081	0	7	2584	0
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	3		5	2		1	6	
Permitted Phases	4		4				2			6		
Actuated Green, G (s)		20.0	20.0	6.7	6.7		96.4	90.6		82.2	81.4	
Effective Green, g (s)		20.0	20.0	6.7	6.7		96.4	90.6		82.2	81.4	
Actuated g/C Ratio		0.14	0.14	0.05	0.05		0.69	0.65		0.59	0.58	
Clearance Time (s)		5.9	5.9	5.9	5.9		5.0	5.1		5.0	5.5	
Vehicle Extension (s)		1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)		187	224	83	82		172	3252		279	2906	
v/s Ratio Prot				0.01	c0.03		c0.06	0.22		0.00	0.52	
v/s Ratio Perm		c0.12	0.05				c0.55			0.01		
v/c Ratio		0.82	0.32	0.27	0.55		0.88	0.33		0.03	0.89	
Uniform Delay, d1		58.2	53.9	64.3	65.2		44.0	11.1		12.0	25.4	
Progression Factor		1.00	1.00	1.00	1.00		1.41	0.56		0.87	0.77	
Incremental Delay, d2		22.4	0.3	0.6	4.5		35.9	0.3		0.0	3.5	
Delay (s)		80.6	54.2	64.9	69.7		98.0	6.5		10.4	23.0	
Level of Service		F	D	E	E		F	A		B	C	
Approach Delay (s)		63.8			68.5			17.8			23.0	
Approach LOS		E			E			B			C	

Intersection Summary				
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.87			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.3	
Intersection Capacity Utilization	80.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

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HCM Signalized Intersection Capacity Analysis
4759: Ansley Bend Dr/Timber Path & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	1785	5	15	841	158	23	2	46	266	8	90
Future Volume (vph)	106	1785	5	15	841	158	23	2	46	266	8	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.7		5.2	5.7			5.9		5.9	5.9	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00		0.95	0.95	
Frt	1.00	1.00		1.00	0.98			0.91		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	0.98	
Satd. Flow (prot)	1752	5034		1752	4917			1656		1665	1584	
Flt Permitted	0.95	1.00		0.95	1.00			0.98		0.95	0.98	
Satd. Flow (perm)	1752	5034		1752	4917			1656		1665	1584	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	120	2015	6	17	950	178	26	2	52	300	9	102
RTOR Reduction (vph)	0	0	0	0	18	0	0	49	0	0	26	0
Lane Group Flow (vph)	120	2021	0	17	1110	0	0	31	0	210	175	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases												
Actuated Green, G (s)	13.9	84.4		2.5	73.0			7.4		23.0	23.0	
Effective Green, g (s)	13.9	84.4		2.5	73.0			7.4		23.0	23.0	
Actuated g/C Ratio	0.10	0.60		0.02	0.52			0.05		0.16	0.16	
Clearance Time (s)	5.2	5.7		5.2	5.7			5.9		5.9	5.9	
Vehicle Extension (s)	1.0	1.0		1.0	1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	173	3034		31	2563			87		273	260	
v/s Ratio Prot	c0.07	c0.40		0.01	0.23			c0.02		c0.13	0.11	
v/s Ratio Perm												
v/c Ratio	0.69	0.67		0.55	0.43			0.35		0.77	0.67	
Uniform Delay, d1	61.0	18.4		68.2	20.7			64.0		56.0	55.0	
Progression Factor	1.24	0.52		1.20	0.45			1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.1		9.9	0.5			0.9		11.1	5.3	
Delay (s)	76.5	9.7		91.5	9.9			64.9		67.1	60.3	
Level of Service	E	A		F	A			E		E	E	
Approach Delay (s)		13.5			11.1			64.9			63.8	
Approach LOS		B			B			E			E	

Intersection Summary				
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.7	
Intersection Capacity Utilization	71.2%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

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HCM Signalized Intersection Capacity Analysis
4760: Westover Hills Blvd/Ensenada & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1300	354	450	425	30	297	7	514	37	83	12
Future Volume (vph)	5	1300	354	450	425	30	297	7	514	37	83	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.2		5.2	5.8		6.1	6.1	6.1	5.9	5.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.91	0.91	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1752	4874		1752	4987		1595	3204	1568	1752	1810	
Flt Permitted	0.44	1.00		0.07	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	816	4874		133	4987		1595	3204	1568	1752	1810	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	6	1534	418	531	501	35	350	8	606	44	98	14
RTOR Reduction (vph)	0	35	0	0	5	0	0	0	363	0	4	0
Lane Group Flow (vph)	6	1917	0	531	531	0	175	183	243	44	108	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			
Actuated Green, G (s)	50.6	49.8		90.2	84.2		21.4	21.4	21.4	10.6	10.6	
Effective Green, g (s)	50.6	49.8		90.2	84.2		21.4	21.4	21.4	10.6	10.6	
Actuated g/C Ratio	0.36	0.36		0.64	0.60		0.15	0.15	0.15	0.08	0.08	
Clearance Time (s)	5.2	6.2		5.2	5.8		6.1	6.1	6.1	5.9	5.9	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lane Grp Cap (vph)	300	1733		488	2999		243	489	239	132	137	
v/s Ratio Prot	0.00	0.39		c0.27	0.11		0.11	0.06		0.03	c0.06	
v/s Ratio Perm	0.01			c0.43					c0.15			
v/c Ratio	0.02	1.11		1.09	0.18		0.72	0.37	1.01	0.33	0.79	
Uniform Delay, d1	28.6	45.1		45.1	12.4		56.4	53.3	59.3	61.3	63.6	
Progression Factor	1.62	1.21		1.04	1.57		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	56.2		65.0	0.1		8.6	0.2	62.1	0.5	24.4	
Delay (s)	46.5	110.5		112.0	19.6		65.0	53.5	121.4	61.9	88.0	
Level of Service	D	F		F	B		E	D	F	E	F	
Approach Delay (s)		110.3			65.6			98.3			80.7	
Approach LOS		F			E			F			F	

Intersection Summary				
HCM 2000 Control Delay	94.9	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.08			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.4	
Intersection Capacity Utilization	90.7%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

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HCM 6th Signalized Intersection Summary
4753: Reed Rd/Driveway & Culebra Rd
02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	2640	16	63	937	0	51	1	245	5	5	5
Future Volume (veh/h)	11	2640	16	63	937	0	51	1	245	5	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	0	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	13	3046	18	73	1081	0	59	1	283	6	6	6
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	0	3	3	3	3	3	3
Cap, veh/h	415	2609	15	95	3760	0	236	4	217	80	79	62
Arrive On Green	0.01	0.73	0.73	0.02	0.74	0.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1767	3593	21	1767	5233	0	1343	26	1572	334	571	452
Grp Volume(v), veh/h	13	1493	1571	73	1081	0	60	0	283	18	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1852	1767	1689	0	1369	0	1572	1357	0	0
Q Serve(g_s), s	0.3	101.7	101.7	1.6	9.8	0.0	0.0	0.0	19.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	101.7	101.7	1.6	9.8	0.0	5.8	0.0	19.3	5.8	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.00	0.98		1.00	0.33		0.33
Lane Grp Cap(c), veh/h	415	1280	1345	95	3760	0	240	0	217	221	0	0
V/C Ratio(X)	0.03	1.17	1.17	0.77	0.29	0.00	0.25	0.00	1.31	0.08	0.00	0.00
Avail Cap(c_a), veh/h	527	1280	1345	179	3760	0	240	0	217	221	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.42	0.42	0.42	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.2	19.2	19.2	42.2	5.9	0.0	54.5	0.0	60.3	52.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	78.7	79.5	4.9	0.2	0.0	0.2	0.0	166.7	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	61.2	64.6	1.9	3.0	0.0	1.9	0.0	17.7	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.2	97.8	98.7	47.1	6.1	0.0	54.7	0.0	227.1	52.6	0.0	0.0
LnGrp LOS	A	F	F	D	A	A	D	A	F	D	A	A
Approach Vol, veh/h		3077			1154			343			18	
Approach Delay, s/veh		97.9			8.7			196.9			52.6	
Approach LOS		F			A			F			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	108.9		25.0	8.3	106.7		25.0				
Change Period (Y+Rc), s	4.9	* 5		* 5.7	* 4.9	* 5		* 5.7				
Max Green Setting (Gmax), s	1.8	* 95		* 19	* 10	* 95		* 19				
Max Q Clear Time (g_c+I1), s	2.3	11.8		21.3	3.6	103.7		7.8				
Green Ext Time (p_c), s	0.0	2.7		0.0	0.0	0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	82.7
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
4750: Loop 410 NBFR & Culebra Rd
02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1850	1600	0	0	550	67	236	694	238	0	0	0
Future Volume (vph)	1850	1600	0	0	550	67	236	694	238	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.9		5.7	5.7	5.7			
Lane Util. Factor	0.91	0.91			0.91		0.91	0.91	1.00			
Frt	1.00	1.00			0.98		1.00	1.00	0.85			
Flt Protected	0.95	0.98			1.00		0.95	1.00	1.00			
Satd. Flow (prot)	1595	3306			4954		1595	3352	1568			
Flt Permitted	0.95	0.58			1.00		0.95	1.00	1.00			
Satd. Flow (perm)	1595	1939			4954		1595	3352	1568			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	2045	1768	0	0	608	74	261	767	263	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	122	0	0	0
Lane Group Flow (vph)	1247	2566	0	0	671	0	235	793	141	0	0	0
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	1 11	1 2 11			2		4 14	4 14				
Permitted Phases									4 14			
Actuated Green, G (s)	66.9	86.0			19.1		39.4	39.4	39.4			
Effective Green, g (s)	66.9	86.0			19.1		39.4	39.4	39.4			
Actuated g/C Ratio	0.48	0.61			0.14		0.28	0.28	0.28			
Clearance Time (s)					4.9							
Vehicle Extension (s)					1.0							
Lane Grp Cap (vph)	762	1844			675		448	943	441			
v/s Ratio Prot	c0.78	0.66			0.14		0.15	c0.24				
v/s Ratio Perm		c0.19							0.09			
v/c Ratio	1.64	1.39			0.99		0.52	0.84	0.32			
Uniform Delay, d1	36.5	27.0			60.4		42.4	47.4	39.7			
Progression Factor	0.40	0.39			1.28		1.00	1.00	1.00			
Incremental Delay, d2	287.0	176.5			32.5		0.5	6.6	0.2			
Delay (s)	301.8	186.9			109.9		42.9	53.9	39.9			
Level of Service	F	F			F		D	D	D			
Approach Delay (s)		224.5			109.9			49.1			0.0	
Approach LOS		F			F			D			A	

Intersection Summary			
HCM 2000 Control Delay	171.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.57		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	32.5
Intersection Capacity Utilization	124.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4751: Potranco Rd & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	2600	79	200	650	35	191	369	880	141	92	6
Future Volume (vph)	13	2600	79	200	650	35	191	369	880	141	92	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.7		5.0	5.4		6.1	6.1	6.1	6.6	6.6	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	0.91	0.91	
Frt	1.00	1.00		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	0.98	
Satd. Flow (prot)	1752	5014		1752	4998		1752	3505	1568	1595	3274	
Flt Permitted	0.36	1.00		0.06	1.00		0.95	1.00	1.00	0.95	0.98	
Satd. Flow (perm)	656	5014		104	4998		1752	3505	1568	1595	3274	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	14	2844	86	219	711	38	209	404	962	154	101	7
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	163	0	2	0
Lane Group Flow (vph)	14	2928	0	219	746	0	209	404	800	86	174	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			
Actuated Green, G (s)	67.5	65.7		86.6	79.8		24.8	24.8	24.8	10.5	10.5	
Effective Green, g (s)	67.5	65.7		86.6	79.8		24.8	24.8	24.8	10.5	10.5	
Actuated g/C Ratio	0.48	0.47		0.62	0.57		0.18	0.18	0.18	0.08	0.08	
Clearance Time (s)	5.0	5.7		5.0	5.4		6.1	6.1	6.1	6.6	6.6	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	2.0	2.0	
Lane Grp Cap (vph)	330	2352		247	2848		310	620	277	119	245	
v/s Ratio Prot	0.00	c0.58		c0.10	0.15		0.12	0.12		c0.05	0.05	
v/s Ratio Perm	0.02			0.45					c0.51			
v/c Ratio	0.04	1.24		0.89	0.26		0.67	0.65	2.89	0.72	0.71	
Uniform Delay, d1	18.9	37.1		46.1	15.2		53.8	53.6	57.6	63.3	63.3	
Progression Factor	1.00	1.00		1.08	1.43		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	113.9		25.2	0.2		4.5	1.9	859.6	16.7	7.8	
Delay (s)	18.9	151.1		74.9	22.0		58.3	55.5	917.2	80.0	71.1	
Level of Service	B	F		E	C		E	E	F	F	E	
Approach Delay (s)		150.5			34.0			582.4			74.0	
Approach LOS		F			C			F			E	

Intersection Summary				
HCM 2000 Control Delay	245.8	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.50			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.4	
Intersection Capacity Utilization	132.1%	ICU Level of Service	H	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
5750: Loop 410 SBFR & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2900	700	250	500	0	0	0	0	551	74	371
Future Volume (vph)	0	2900	700	250	500	0	0	0	0	551	74	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.8	4.8					5.9	5.9	5.9
Lane Util. Factor		0.91	1.00	0.91	0.91					0.91	0.91	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.96	1.00
Satd. Flow (prot)		5036	1568	1595	3349					1595	3230	1568
Flt Permitted		1.00	1.00	0.95	0.74					0.95	0.96	1.00
Satd. Flow (perm)		5036	1568	1595	2487					1595	3230	1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	0	3205	774	276	553	0	0	0	0	609	82	410
RTOR Reduction (vph)	0	0	187	0	0	0	0	0	0	0	0	343
Lane Group Flow (vph)	0	3205	587	248	581	0	0	0	0	304	387	67
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		6		5 15	5 6 15					8 18	8 18	
Permitted Phases			6									8 18
Actuated Green, G (s)		61.1	61.1	40.3	101.4					23.0	23.0	23.0
Effective Green, g (s)		61.1	61.1	40.3	101.4					23.0	23.0	23.0
Actuated g/C Ratio		0.44	0.44	0.29	0.72					0.16	0.16	0.16
Clearance Time (s)		4.9	4.9									
Vehicle Extension (s)		1.0	1.0									
Lane Grp Cap (vph)		2197	684	459	2049					262	530	257
v/s Ratio Prot		c0.64		c0.16	0.08					c0.19	0.12	
v/s Ratio Perm			0.37		0.12							0.04
v/c Ratio		1.46	0.86	0.54	0.28					1.16	1.12dl	0.26
Uniform Delay, d1		39.5	35.6	42.0	6.7					58.5	55.6	51.1
Progression Factor		1.13	1.48	0.23	0.47					1.00	1.00	1.00
Incremental Delay, d2		206.7	1.4	0.3	0.0					106.0	4.4	0.2
Delay (s)		251.1	54.1	10.0	3.2					164.5	60.0	51.3
Level of Service		F	D	A	A					F	E	D
Approach Delay (s)		212.8			5.2			0.0			85.6	
Approach LOS		F			A			A			F	

Intersection Summary				
HCM 2000 Control Delay	160.0	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.28			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	32.5	
Intersection Capacity Utilization	124.9%	ICU Level of Service	H	
Analysis Period (min)	15			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.				
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
57: Tom Slick Ave/Oak Hill Rd & Culebra Rd
02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1050	250	36	750	200	11	8	5	123	71	109
Future Volume (vph)	120	1050	250	36	750	200	11	8	5	123	71	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	5.3	4.4	4.9		5.2	5.2	5.2	5.1	5.1	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	3471	1553	1736	3362		1736	1827	1553	1736	1661	
Flt Permitted	0.18	1.00	1.00	0.18	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	330	3471	1553	329	3362		1736	1827	1553	1736	1661	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor (vph)	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%
Adj. Flow (vph)	143	1251	298	43	893	238	13	10	6	146	85	130
RTOR Reduction (vph)	0	0	82	0	13	0	0	0	6	0	42	0
Lane Group Flow (vph)	143	1251	216	43	1118	0	13	10	0	146	173	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2					4			
Actuated Green, G (s)	100.5	92.2	92.2	91.0	87.1		6.0	6.0	6.0	17.9	17.9	
Effective Green, g (s)	100.5	92.2	92.2	91.0	87.1		6.0	6.0	6.0	17.9	17.9	
Actuated g/C Ratio	0.72	0.66	0.66	0.65	0.62		0.04	0.04	0.04	0.13	0.13	
Clearance Time (s)	4.4	5.3	5.3	4.4	4.9		5.2	5.2	5.2	5.1	5.1	
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0	1.0	1.0	
Lane Grp Cap (vph)	331	2285	1022	253	2091		74	78	66	221	212	
v/s Ratio Prot	c0.03	c0.36		0.00	0.33		c0.01	0.01		0.08	c0.10	
v/s Ratio Perm	0.28		0.14	0.11					0.00			
v/c Ratio	0.43	0.55	0.21	0.17	0.53		0.18	0.13	0.00	0.66	0.82	
Uniform Delay, d1	9.5	12.8	9.5	9.9	15.0		64.6	64.5	64.1	58.2	59.5	
Progression Factor	1.05	0.96	1.33	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.6	0.3	0.1	1.0		0.4	0.3	0.0	5.6	20.0	
Delay (s)	10.2	12.9	12.9	10.0	16.0		65.0	64.8	64.1	63.8	79.5	
Level of Service	B	B	B	B	B		E	E	E	E	E	
Approach Delay (s)		12.6			15.7			64.8			73.1	
Approach LOS		B			B			E			E	

Intersection Summary				
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	61.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1101: Culebra Rd & Alamo Downs Pkwy
02/03/2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	54	1450	620	150	67	86
Future Volume (vph)	54	1450	620	150	67	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	5.3		5.0	5.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.97		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3465	3370		1736	1553
Flt Permitted		0.85	1.00		0.95	1.00
Satd. Flow (perm)		2962	3370		1736	1553
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	106%	106%	106%	106%	106%	106%
Adj. Flow (vph)	63	1689	722	175	78	100
RTOR Reduction (vph)	0	0	9	0	0	90
Lane Group Flow (vph)	0	1752	888	0	78	10
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		6 26	2 22		8 28	
Permitted Phases	6 26					8 28
Actuated Green, G (s)		105.6	105.6		13.8	13.8
Effective Green, g (s)		105.6	105.6		13.8	13.8
Actuated g/C Ratio		0.75	0.75		0.10	0.10
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)		2234	2541		171	153
v/s Ratio Prot			0.26		c0.04	
v/s Ratio Perm		c0.59				0.01
v/c Ratio		0.78	0.35		0.46	0.06
Uniform Delay, d1		10.3	5.7		59.6	57.2
Progression Factor		1.53	1.23		1.00	1.00
Incremental Delay, d2		1.2	0.0		0.7	0.1
Delay (s)		17.1	7.1		60.3	57.3
Level of Service		B	A		E	E
Approach Delay (s)		17.1	7.1		58.6	
Approach LOS		B	A		E	

Intersection Summary				
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.6	
Intersection Capacity Utilization	85.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

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HCM 6th Signalized Intersection Summary
1105: Benrus Blvd & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	720	8	7	550	75	21	30	32	126	18	66
Future Volume (veh/h)	100	720	8	7	550	75	21	30	32	126	18	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	117	840	9	8	642	88	24	35	37	147	21	77
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	986	11	812	1960	268	93	133	118	208	24	85
Arrive On Green	0.02	0.09	0.09	0.82	1.00	1.00	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1781	3602	39	1781	3140	430	299	714	636	864	132	456
Grp Volume(v), veh/h	117	414	435	8	363	367	96	0	0	245	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1863	1781	1777	1793	1649	0	0	1452	0	0
Q Serve(g_s), s	6.3	27.6	27.6	0.0	0.0	0.0	0.0	0.0	0.0	14.1	0.0	0.0
Cycle Q Clear(g_c), s	6.3	27.6	27.6	0.0	0.0	0.0	5.7	0.0	0.0	19.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.24	0.25		0.39	0.60		0.31
Lane Grp Cap(c), veh/h	304	486	510	812	1109	1119	343	0	0	317	0	0
V/C Ratio(X)	0.39	0.85	0.85	0.01	0.33	0.33	0.28	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	340	887	930	812	1109	1119	509	0	0	468	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.5	52.2	52.2	5.6	0.0	0.0	42.1	0.0	0.0	47.8	0.0	0.0
Incr Delay (d2), s/veh	0.3	16.0	15.4	0.0	0.8	0.8	0.2	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	15.3	15.9	0.0	0.2	0.2	2.5	0.0	0.0	7.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	68.2	67.6	5.6	0.8	0.8	42.3	0.0	0.0	50.1	0.0	0.0
LnGrp LOS	D	E	E	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		966			738			96			245	
Approach Delay, s/veh		64.2			0.8			42.3			50.1	
Approach LOS		E			A			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.5	80.0		27.5	54.6	37.9		27.5				
Change Period (Y+Rc), s	4.4	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	8	* 60		* 35	* 11	* 60		* 35				
Max Q Clear Time (g_c+I1), s	8.3	2.0		7.7	2.0	29.6		21.8				
Green Ext Time (p_c), s	0.0	2.8		0.2	0.0	3.3		0.5				

Intersection Summary		
HCM 6th Ctrl Delay	38.6	
HCM 6th LOS	D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
1104: Culebra Rd & El Centro St 02/03/2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	800	700	15	25	104
Future Volume (vph)	30	800	700	15	25	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.1	5.1		5.2	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frt	1.00	1.00	1.00		0.89	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	3539	3528		1644	
Flt Permitted	0.95	1.00	1.00		0.99	
Satd. Flow (perm)	1770	3539	3528		1644	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	35	923	808	17	29	120
RTOR Reduction (vph)	0	0	1	0	102	0
Lane Group Flow (vph)	35	923	824	0	47	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA	NA		Prot	
Protected Phases	1	6 26	2 22		8 28	
Permitted Phases						
Actuated Green, G (s)	4.3	81.3	72.6		18.1	
Effective Green, g (s)	4.3	81.3	72.6		18.1	
Actuated g/C Ratio	0.04	0.68	0.60		0.15	
Clearance Time (s)	4.4					
Vehicle Extension (s)	1.0					
Lane Grp Cap (vph)	63	2397	2134		247	
v/s Ratio Prot	c0.02	c0.26	c0.23		c0.03	
v/s Ratio Perm						
v/c Ratio	0.56	0.39	0.39		0.19	
Uniform Delay, d1	56.9	8.4	12.2		44.5	
Progression Factor	1.00	1.00	1.06		1.00	
Incremental Delay, d2	5.9	0.0	0.0		0.1	
Delay (s)	62.8	8.5	13.0		44.7	
Level of Service	E	A	B		D	
Approach Delay (s)		10.5	13.0		44.7	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1107: NW 38th St & Culebra Rd

02/03/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	960	12	17	680	65	128
Future Volume (vph)	960	12	17	680	65	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.4		5.4	5.4	5.2	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.91	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	3533		1770	3539	1668	
Flt Permitted	1.00		0.23	1.00	0.98	
Satd. Flow (perm)	3533		427	3539	1668	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	1050	13	19	744	71	140
RTOR Reduction (vph)	1	0	0	0	68	0
Lane Group Flow (vph)	1062	0	19	744	143	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	6 26			2 22	4 24	
Permitted Phases			2 22			
Actuated Green, G (s)	81.4		81.4	81.4	17.4	
Effective Green, g (s)	81.4		81.4	81.4	17.4	
Actuated g/C Ratio	0.68		0.68	0.68	0.14	
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	2396		289	2400	241	
v/s Ratio Prot	c0.30			0.21	c0.09	
v/s Ratio Perm			0.04			
v/c Ratio	0.44		0.07	0.31	0.60	
Uniform Delay, d1	8.9		6.5	7.9	48.0	
Progression Factor	1.13		0.44	0.41	1.00	
Incremental Delay, d2	0.0		0.0	0.0	2.6	
Delay (s)	10.0		2.9	3.2	50.6	
Level of Service	B		A	A	D	
Approach Delay (s)	10.0			3.2	50.6	
Approach LOS	B			A	D	

Intersection Summary				
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.2	
Intersection Capacity Utilization	49.1%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1113: NW 24th St/Wilson Blvd & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	1350	136	146	736	42	145	145	201	56	127	45
Future Volume (vph)	24	1350	136	146	736	42	145	145	201	56	127	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.4		5.0	13.4		4.4	6.0	6.0	4.4	6.4	
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5016		1770	6356		1770	1863	1583	1770	3401	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5016		1770	6356		1770	1863	1583	1770	3401	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	27	1541	155	167	840	48	165	165	229	64	145	51
RTOR Reduction (vph)	0	9	0	0	6	0	0	0	188	0	32	0
Lane Group Flow (vph)	27	1687	0	167	882	0	165	165	41	64	164	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)	3.6	60.4		12.0	42.8		18.2	21.3	21.3	6.5	9.2	
Effective Green, g (s)	3.6	60.4		12.0	42.8		18.2	21.3	21.3	6.5	9.2	
Actuated g/C Ratio	0.03	0.50		0.10	0.36		0.15	0.18	0.18	0.05	0.08	
Clearance Time (s)	5.0	4.4		5.0	13.4		4.4	6.0	6.0	4.4	6.4	
Vehicle Extension (s)	0.5	0.5		0.5	1.0		0.5	1.0	1.0	0.5	1.0	
Lane Grp Cap (vph)	53	2524		177	2266		268	330	280	95	260	
v/s Ratio Prot	0.02	c0.34		c0.09	0.14		c0.09	c0.09		0.04	c0.05	
v/s Ratio Perm									0.03			
v/c Ratio	0.51	0.67		0.94	0.39		0.62	0.50	0.15	0.67	0.63	
Uniform Delay, d1	57.3	22.3		53.7	28.8		47.6	44.5	41.7	55.7	53.7	
Progression Factor	1.52	0.19		0.89	1.56		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.1		50.1	0.5		2.9	0.4	0.1	13.8	3.4	
Delay (s)	87.4	4.3		97.7	45.4		50.6	45.0	41.8	69.5	57.2	
Level of Service	F	A		F	D		D	D	D	E	E	
Approach Delay (s)		5.6			53.7			45.3			60.2	
Approach LOS		A			D			D			E	

Intersection Summary				
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	41.6	
Intersection Capacity Utilization	69.5%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

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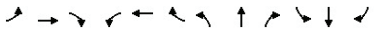
HCM 6th Signalized Intersection Summary
1114: Elmendorf St & Culebra Rd
02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1500	115	34	980	42	40	42	18	40	42	18
Future Volume (veh/h)	110	1500	115	34	980	42	40	42	18	40	42	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	124	1694	130	38	1106	47	45	47	20	45	47	20
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	481	3675	282	254	3743	159	89	67	25	89	67	25
Arrive On Green	0.03	0.77	0.77	0.04	1.00	1.00	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1767	4799	368	1767	4983	212	525	758	279	525	758	279
Grp Volume(v), veh/h	124	1191	633	38	749	404	112	0	0	112	0	0
Grp Sat Flow(s),veh/h/ln	1767	1689	1789	1767	1689	1817	1562	0	0	1562	0	0
Q Serve(g_s), s	2.0	15.3	15.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	15.3	15.4	0.6	0.0	0.0	8.4	0.0	0.0	8.4	0.0	0.0
Prop In Lane	1.00		0.21	1.00		0.12	0.40		0.18	0.40		0.18
Lane Grp Cap(c), veh/h	481	2587	1370	254	2537	1365	181	0	0	181	0	0
V/C Ratio(X)	0.26	0.46	0.46	0.15	0.30	0.30	0.62	0.00	0.00	0.62	0.00	0.00
Avail Cap(c_a), veh/h	603	2587	1370	401	2537	1365	488	0	0	488	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.0	5.1	5.1	4.1	0.0	0.0	53.6	0.0	0.0	53.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.6	1.1	0.1	0.3	0.5	1.3	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	4.3	4.8	0.2	0.1	0.2	3.4	0.0	0.0	3.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.1	5.7	6.2	4.2	0.3	0.5	54.9	0.0	0.0	54.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1948			1191			112			112	
Approach Delay, s/veh		5.7			0.5			54.9			54.9	
Approach LOS		A			A			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.7	95.0		16.2	7.0	96.8		16.2				
Change Period (Y+Rc), s	4.8	4.9		* 5.6	* 4.8	4.9		* 5.6				
Max Green Setting (Gmax), s	12	58.1		* 34	* 12	58.1		* 34				
Max Q Clear Time (g_c+I1), s	4.0	2.0		10.4	2.6	17.4		10.4				
Green Ext Time (p_c), s	0.0	2.7		0.2	0.0	5.1		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	7.1
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
165: NW 19th St & Culebra Rd
02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	1590	28	41	930	1	39	1	53	7	5	1
Future Volume (vph)	7	1590	28	41	930	1	39	1	53	7	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	5.6		4.8	5.6			5.0			5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1752	5023		1752	5035			1667			1781	
Flt Permitted	0.26	1.00		0.09	1.00			0.86			1.00	
Satd. Flow (perm)	486	5023		172	5035			1460			1828	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	8	1757	31	45	1028	1	43	1	59	8	6	1
RTOR Reduction (vph)	0	1	0	0	0	0	0	44	0	0	1	0
Lane Group Flow (vph)	8	1787	0	45	1029	0	0	59	0	0	14	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			3	
Permitted Phases	6			2			4			3		
Actuated Green, G (s)	83.3	82.6		88.9	85.4			10.9			2.6	
Effective Green, g (s)	83.3	82.6		88.9	85.4			10.9			2.6	
Actuated g/C Ratio	0.69	0.69		0.74	0.71			0.09			0.02	
Clearance Time (s)	4.8	5.6		4.8	5.6			5.0			5.0	
Vehicle Extension (s)	0.5	1.0		1.0	1.0			1.0			1.0	
Lane Grp Cap (vph)	344	3457		173	3583			132			39	
v/s Ratio Prot	0.00	c0.36		c0.01	0.20							
v/s Ratio Perm	0.02			0.18				c0.04			c0.01	
v/c Ratio	0.02	0.52		0.26	0.29			0.45			0.36	
Uniform Delay, d1	5.6	9.0		5.9	6.3			51.7			57.9	
Progression Factor	0.34	0.39		1.20	0.31			1.00			1.00	
Incremental Delay, d2	0.0	0.5		0.3	0.2			0.9			2.1	
Delay (s)	1.9	4.0		7.4	2.1			52.6			59.9	
Level of Service	A	A		A	A			D			E	
Approach Delay (s)		4.0			2.4			52.6			59.9	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th TWSC
32: Mountain View & Culebra Rd 02/03/2021

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1350	5	36	867	10	10
Future Vol, veh/h	1350	5	36	867	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1994	7	53	1281	15	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2001	0	2745	1001
Stage 1	-	-	-	-	1998	-
Stage 2	-	-	-	-	747	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	283	-	16	241
Stage 1	-	-	-	-	91	-
Stage 2	-	-	-	-	429	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	283	-	~ 13	241
Mov Cap-2 Maneuver	-	-	-	-	70	-
Stage 1	-	-	-	-	91	-
Stage 2	-	-	-	-	349	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	-	-	283	-
HCM Lane V/C Ratio	0.061	-	-	0.188	-
HCM Control Delay (s)	20.9	-	-	20.6	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

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HCM 6th TWSC
58: Culebra Road/Culebra Rd & Camino Rosa 02/03/2021

Intersection	
Int Delay, s/veh	0.8

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	6	63	33	1340	599	25
Future Vol, veh/h	6	63	33	1340	599	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	8	89	47	1893	846	35

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1905	441	881	0	-	0
Stage 1	864	-	-	-	-	-
Stage 2	1041	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	60	561	757	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	60	561	757	-	-	-
Mov Cap-2 Maneuver	60	-	-	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	299	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	20.8	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	757	-	325
HCM Lane V/C Ratio	-	-	0.062	-	0.3
HCM Control Delay (s)	-	-	10.1	0	20.8
HCM Lane LOS	-	-	B	A	C
HCM 95th %tile Q(veh)	-	-	0.2	-	1.2

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HCM 6th Signalized Intersection Summary
1004: Nueces Canyon/Village Park & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1300	3	5	588	39	7	10	14	124	10	95
Future Volume (veh/h)	70	1300	3	5	588	39	7	10	14	124	10	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1969	1969	1969	1969	1969	1969	1969	1969	1969	1969	1969	1969
Adj Flow Rate, veh/h	103	1920	4	7	869	58	10	15	21	183	15	140
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	503	2776	6	179	2519	168	80	311	264	257	17	276
Arrive On Green	0.04	0.72	0.71	0.01	0.71	0.69	0.16	0.16	0.16	0.17	0.16	0.17
Sat Flow, veh/h	1875	3830	8	1875	3559	238	1297	1969	1668	1312	108	1668
Grp Volume(v), veh/h	103	937	987	7	457	470	10	15	21	198	0	140
Grp Sat Flow(s),veh/h/ln	1875	1870	1967	1875	1870	1926	1297	1969	1668	1419	0	1668
Q Serve(g_s), s	2.1	38.7	38.7	0.2	13.2	13.3	1.1	0.9	1.5	18.2	0.0	10.7
Cycle Q Clear(g_c), s	2.1	38.7	38.7	0.2	13.2	13.3	20.1	0.9	1.5	19.1	0.0	10.7
Prop In Lane	1.00		0.00	1.00		0.12	1.00		1.00	0.92		1.00
Lane Grp Cap(c), veh/h	503	1356	1426	179	1324	1363	80	311	264	291	0	276
V/C Ratio(X)	0.20	0.69	0.69	0.04	0.34	0.34	0.12	0.05	0.08	0.68	0.00	0.51
Avail Cap(c_a), veh/h	623	1356	1426	331	1324	1363	211	510	433	440	0	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.8	10.6	10.6	11.0	7.9	8.0	67.5	50.0	50.2	57.3	0.0	53.2
Incr Delay (d2), s/veh	0.1	2.9	2.8	0.0	0.7	0.7	0.3	0.0	0.0	1.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	14.6	15.3	0.1	5.0	5.2	0.4	0.5	0.6	6.7	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.9	13.5	13.4	11.0	8.6	8.7	67.7	50.0	50.3	58.3	0.0	53.8
LnGrp LOS	A	B	B	B	A	A	E	D	D	E	A	D
Approach Vol, veh/h		2027			934			46			338	
Approach Delay, s/veh		13.1			8.7			54.0			56.4	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	103.1		27.8	6.7	105.5		27.8				
Change Period (Y+Rc), s	5.0	* 6.1		* 5.7	5.0	* 6.1		* 5.7				
Max Green Setting (Gmax), s	13.0	* 74		* 36	13.0	* 74		* 36				
Max Q Clear Time (g_c+I1), s	4.1	15.3		22.1	2.2	40.7		21.1				
Green Ext Time (p_c), s	0.0	0.6		0.0	0.0	1.6		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
1102: Culebra Rd & Coppertree Blvd 02/03/2021

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	1430	627	6	11	8
Future Vol, veh/h	5	1430	627	6	11	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	2162	948	9	17	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	957	0	-	0	2050	479
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	1097	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	714	-	-	-	48	533
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	281	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	714	-	-	-	47	533
Mov Cap-2 Maneuver	-	-	-	-	47	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	281	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	78.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	714	-	-	-	76
HCM Lane V/C Ratio	0.011	-	-	-	0.378
HCM Control Delay (s)	10.1	-	-	-	78.7
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0	-	-	-	1.5

HCM Signalized Intersection Capacity Analysis
1001: Rogers Rd/RBFCU Driveway & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1300	240	185	669	2	57	9	75	1	5	2
Future Volume (vph)	21	1300	240	185	669	2	57	9	75	1	5	2
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	4.7	4.0	5.3	4.0	4.0		4.0	5.1	4.4	5.1	5.1	5.1
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1845	3689	1650	1845	3688		1752	1779	1650	1845	1942	1650
Flt Permitted	0.29	1.00	1.00	0.04	1.00		0.95	0.96	1.00	0.95	1.00	1.00
Satd. Flow (perm)	562	3689	1650	86	3688		1752	1779	1650	1845	1942	1650
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	31	1920	355	273	988	3	84	13	111	1	7	3
RTOR Reduction (vph)	0	0	49	0	0	0	0	0	104	0	0	3
Lane Group Flow (vph)	31	1920	306	273	991	0	48	49	7	1	7	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2					4			3
Actuated Green, G (s)	87.9	85.4	85.4	113.6	106.4		7.8	7.8	7.8	2.4	2.4	2.4
Effective Green, g (s)	87.9	87.8	86.5	114.3	108.4		8.9	7.8	8.5	2.4	2.4	2.4
Actuated g/C Ratio	0.63	0.63	0.62	0.82	0.77		0.06	0.06	0.06	0.02	0.02	0.02
Clearance Time (s)	4.7	6.4	6.4	4.7	6.0		5.1	5.1	5.1	5.1	5.1	5.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	375	2313	1019	369	2855		111	99	100	31	33	28
v/s Ratio Prot	0.00	c0.52		c0.13	0.27		0.03	c0.03		0.00	c0.00	
v/s Ratio Perm	0.05		0.19	0.48					0.00			0.00
v/c Ratio	0.08	0.83	0.30	0.74	0.35		0.43	0.49	0.07	0.03	0.21	0.00
Uniform Delay, d1	9.9	20.3	12.5	45.4	4.9		63.1	64.2	62.0	67.7	67.9	67.6
Progression Factor	1.13	1.23	1.65	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.3	0.1	6.6	0.3		1.0	1.4	0.1	0.2	1.2	0.0
Delay (s)	11.2	25.3	20.8	51.9	5.2		64.1	65.6	62.1	67.8	69.0	67.6
Level of Service	B	C	C	D	A		E	E	E	E	E	E
Approach Delay (s)		24.4			15.3			63.4			68.5	
Approach LOS		C			B			E			E	

Intersection Summary				
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.9	
Intersection Capacity Utilization	76.9%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1002: Culebra Rd & Les Harrison Dr

02/03/2021

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	89	1100	117	1	46	632	50	54	9	59	176	18
Future Volume (vph)	89	1100	117	1	46	632	50	54	9	59	176	18
Ideal Flow (vphpl)	2000	2000	1900	2000	1900	2000	2000	1900	1900	1900	2000	1900
Total Lost time (s)	4.0	4.0			4.9	4.0		5.4	5.4		4.2	5.4
Lane Util. Factor	1.00	0.95			1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	0.99			1.00	0.99		1.00	0.87		1.00	0.86
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1845	3636			1752	3649		1752	1605		1845	1589
Flt Permitted	0.23	1.00			0.06	1.00		0.19	1.00		0.69	1.00
Satd. Flow (perm)	453	3636			117	3649		350	1605		1347	1589
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	127	1571	167	1	66	903	71	77	13	84	251	26
RTOR Reduction (vph)	0	5	0	0	0	4	0	0	67	0	0	197
Lane Group Flow (vph)	127	1733	0	0	67	970	0	77	30	0	251	139
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	pm+pt	NA		Perm	NA		Perm	NA
Protected Phases	1	6		5	5	2			4			8
Permitted Phases	6			2	2			4			8	
Actuated Green, G (s)	80.4	74.7			77.0	73.0		24.9	24.9		24.9	24.9
Effective Green, g (s)	82.2	76.8			77.0	75.1		24.9	24.9		26.1	24.9
Actuated g/C Ratio	0.69	0.64			0.64	0.63		0.21	0.21		0.22	0.21
Clearance Time (s)	4.9	6.1			4.9	6.1		5.4	5.4		5.4	5.4
Vehicle Extension (s)	0.5	1.0			0.5	1.0		1.0	1.0		1.0	1.0
Lane Grp Cap (vph)	386	2327			129	2283		72	333		292	329
v/s Ratio Prot	c0.02	c0.48			0.02	0.27			0.02			0.09
v/s Ratio Perm	0.21				0.31			c0.22			0.19	
v/c Ratio	0.33	0.74			0.52	0.42		1.07	0.09		0.86	0.42
Uniform Delay, d1	7.7	14.9			16.6	11.4		47.6	38.4		45.2	41.3
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	2.2			1.5	0.6		126.4	0.0		20.7	0.3
Delay (s)	7.9	17.1			18.1	12.0		174.0	38.5		65.9	41.6
Level of Service	A	B			B	B		F	D		E	D
Approach Delay (s)		16.4				12.4			98.4			52.0
Approach LOS		B				B			F			D

Intersection Summary				
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.3	
Intersection Capacity Utilization	85.6%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1002: Culebra Rd & Les Harrison Dr 02/03/2021

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	217
Future Volume (vph)	217
Ideal Flow (vphpl)	2000
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.91
Growth Factor (vph)	130%
Adj. Flow (vph)	310
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	3%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

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HCM Signalized Intersection Capacity Analysis
1003: Culebra Rd & Cliffbrier 02/03/2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	68	1218	623	78	195	103
Future Volume (vph)	68	1218	623	78	195	103
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1863	3725	3663		1863	1667
Flt Permitted	0.18	1.00	1.00		0.95	1.00
Satd. Flow (perm)	352	3725	3663		1863	1667
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor (vph)	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	99	1779	910	114	285	150
RTOR Reduction (vph)	0	0	11	0	0	0
Lane Group Flow (vph)	99	1779	1013	0	285	150
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	NA		Prot	pt+ov
Protected Phases	1	6	2		8	1 8
Permitted Phases	6					6
Actuated Green, G (s)	41.0	41.0	32.2		13.4	59.4
Effective Green, g (s)	42.0	42.6	33.8		14.4	60.4
Actuated g/C Ratio	0.65	0.66	0.52		0.22	0.93
Clearance Time (s)	5.0	5.6	5.6		5.0	
Vehicle Extension (s)	0.5	1.0	1.0		1.0	
Lane Grp Cap (vph)	339	2441	1904		412	1549
v/s Ratio Prot	0.02	c0.48	0.28		c0.15	0.03
v/s Ratio Perm	0.17					0.06
v/c Ratio	0.29	0.73	0.53		0.69	0.10
Uniform Delay, d1	6.0	7.4	10.4		23.3	0.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	2.0	1.1		4.0	0.0
Delay (s)	6.1	9.3	11.4		27.3	0.2
Level of Service	A	A	B		C	A
Approach Delay (s)		9.2	11.4		17.9	
Approach LOS		A	B		B	

Intersection Summary				
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	61.6%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1005: Gas Station/Walmart Drwy & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	1350	30	9	599	39	8	1	15	14	5	25
Future Volume (vph)	30	1350	30	9	599	39	8	1	15	14	5	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.8		4.5	5.8	5.8	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3528		1770	3539	1583	1770	1597		1770	1631	
Flt Permitted	0.32	1.00		0.09	1.00	1.00	0.82	1.00		0.77	1.00	
Satd. Flow (perm)	594	3528		174	3539	1583	1521	1597		1433	1631	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	40	1809	40	12	803	52	11	1	20	19	7	34
RTOR Reduction (vph)	0	1	0	0	0	12	0	19	0	0	33	0
Lane Group Flow (vph)	40	1848	0	12	803	40	11	2	0	19	8	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			3	
Permitted Phases	6			2		2	4			3		
Actuated Green, G (s)	112.0	112.0		111.9	110.6	110.6	4.9	4.9		5.2	5.2	
Effective Green, g (s)	112.0	112.0		111.9	110.6	110.6	4.9	4.9		5.2	5.2	
Actuated g/C Ratio	0.77	0.77		0.77	0.76	0.76	0.03	0.03		0.04	0.04	
Clearance Time (s)	4.5	5.8		4.5	5.8	5.8	5.4	5.4		5.4	5.4	
Vehicle Extension (s)	0.5	0.5		1.0	1.0	1.0	0.5	0.5		0.5	0.5	
Lane Grp Cap (vph)	484	2725		154	2699	1207	51	53		51	58	
v/s Ratio Prot	0.00	c0.52		0.00	c0.23			0.00			0.01	
v/s Ratio Perm	0.06			0.06		0.03	c0.01			c0.01		
v/c Ratio	0.08	0.68		0.08	0.30	0.03	0.22	0.03		0.37	0.14	
Uniform Delay, d1	4.2	7.9		12.4	5.3	4.2	68.2	67.8		68.3	67.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.4		0.1	0.3	0.1	0.8	0.1		1.7	0.4	
Delay (s)	4.2	9.3		12.5	5.6	4.2	69.0	67.8		70.0	68.1	
Level of Service	A	A		B	A	A	E	E		E	E	
Approach Delay (s)		9.2			5.6			68.2			68.7	
Approach LOS		A			A			E			E	

Intersection Summary				
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	21.1	
Intersection Capacity Utilization	66.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1017: Culebra Rd & Grissom Rd & Tezel Rd 02/03/2021

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	4	69	740	520	100	330	54	1	248	345	58	120
Future Volume (vph)	4	69	740	520	100	330	54	1	248	345	58	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	5.7	5.7	4.8	5.7			4.9	5.8		4.7
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95			0.97	0.95		0.97
Frt		1.00	1.00	0.85	1.00	0.98			1.00	0.98		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.95
Satd. Flow (prot)		1752	3505	1568	1752	3431			3400	3429		3400
Flt Permitted		0.20	1.00	1.00	0.95	1.00			0.26	1.00		0.95
Satd. Flow (perm)		375	3505	1568	1752	3431			948	3429		3400
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	6	103	1106	777	149	493	81	1	371	516	87	179
RTOR Reduction (vph)	0	0	0	176	0	9	0	0	0	10	0	0
Lane Group Flow (vph)	0	109	1106	601	149	565	0	0	372	593	0	179
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	custom	Prot	NA	Perm	Prot	NA		custom	Prot	NA		Prot
Protected Phases		1	6		5	2			7	4		3
Permitted Phases	1			6				7				
Actuated Green, G (s)		19.7	45.1	45.1	14.5	40.3			15.1	48.6		10.8
Effective Green, g (s)		19.7	45.1	45.1	14.5	40.3			15.1	48.6		10.8
Actuated g/C Ratio		0.14	0.32	0.32	0.10	0.29			0.11	0.35		0.08
Clearance Time (s)		4.4	5.7	5.7	4.8	5.7			4.9	5.8		4.7
Vehicle Extension (s)		1.0	1.0	1.0	1.0	1.0			1.0	1.0		1.0
Lane Grp Cap (vph)		52	1129	505	181	987			102	1190		262
v/s Ratio Prot			0.32		0.09	0.16				c0.17		0.05
v/s Ratio Perm		c0.29		c0.38					c0.39			
v/c Ratio		2.10	0.98	1.19	0.82	0.57			3.65	0.50		0.68
Uniform Delay, d1		60.1	47.0	47.5	61.5	42.5			62.5	36.1		62.9
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.32	0.76		1.00
Incremental Delay, d2		552.4	22.3	103.7	24.0	2.4			1214.7	0.1		5.8
Delay (s)		612.5	69.3	151.2	85.5	44.9			1297.5	27.4		68.7
Level of Service		F	E	F	F	D			F	C		E
Approach Delay (s)			131.0			53.3				512.0		
Approach LOS			F			D				F		

Intersection Summary				
HCM 2000 Control Delay	178.0	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.52			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	100.3%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1017: Culebra Rd & Grissom Rd & Tezel Rd 02/03/2021

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (vph)	652	25
Future Volume (vph)	652	25
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	5.6	
Lane Util. Factor	0.95	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	3486	
Flt Permitted	1.00	
Satd. Flow (perm)	3486	
Peak-hour factor, PHF	0.87	0.87
Growth Factor (vph)	130%	130%
Adj. Flow (vph)	974	37
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	1009	0
Heavy Vehicles (%)	3%	3%
Turn Type	NA	
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	44.3	
Effective Green, g (s)	44.3	
Actuated g/C Ratio	0.32	
Clearance Time (s)	5.6	
Vehicle Extension (s)	1.0	
Lane Grp Cap (vph)	1103	
v/s Ratio Prot	c0.29	
v/s Ratio Perm		
v/c Ratio	0.91	
Uniform Delay, d1	46.0	
Progression Factor	1.00	
Incremental Delay, d2	11.3	
Delay (s)	57.4	
Level of Service	E	
Approach Delay (s)	59.1	
Approach LOS	E	

Intersection Summary

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HCM 6th TWSC
64: Griffin Park Dr & Culebra Rd 02/03/2021

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1480	10	4	750	9	22
Future Vol, veh/h	1480	10	4	750	9	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2138	14	6	1083	13	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2152	0	2590	1076
Stage 1	-	-	-	-	2145	-
Stage 2	-	-	-	-	445	-
Critical Hdwy	-	-	5.34	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	-	-	3.12	-	3.82	3.92
Pot Cap-1 Maneuver	-	-	105	-	45	185
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	560	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	105	-	39	185
Mov Cap-2 Maneuver	-	-	-	-	42	-
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	56.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	42	185	-	-	105	-
HCM Lane V/C Ratio	0.31	0.172	-	-	0.055	-
HCM Control Delay (s)	125.3	28.5	-	-	41.3	1.9
HCM Lane LOS	F	D	-	-	E	A
HCM 95th %tile Q(veh)	1	0.6	-	-	0.2	-

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HCM 6th TWSC
1000: Culebra Rd & Grissom Gate 02/03/2021

Intersection	
Int Delay, s/veh	2.5

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	4	1900	875	22	40	5
Future Vol, veh/h	4	1900	875	22	40	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	5	2600	1197	30	55	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1227	0	-	0	2262	614
Stage 1	-	-	-	-	1212	-
Stage 2	-	-	-	-	1050	-
Critical Hdwy	5.38	-	-	-	5.78	7.18
Critical Hdwy Stg 1	-	-	-	-	6.68	-
Critical Hdwy Stg 2	-	-	-	-	6.08	-
Follow-up Hdwy	3.14	-	-	-	3.84	3.94
Pot Cap-1 Maneuver	298	-	-	-	66	369
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	265	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	298	-	-	-	66	369
Mov Cap-2 Maneuver	-	-	-	-	66	-
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	265	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	160.4
HCM LOS			F

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1
Capacity (veh/h)	-	-	298	- 73
HCM Lane V/C Ratio	-	-	0.018	- 0.844
HCM Control Delay (s)	-	-	17.3	0 160.4
HCM Lane LOS	-	-	C	A F
HCM 95th %tile Q(veh)	-	-	0.1	- 4.1

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HCM 6th Signalized Intersection Summary
1006: Culebra Rd & Arcadia Creek 02/03/2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	68	86	22	597	1202	36
Future Volume (veh/h)	68	86	22	597	1202	36
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	126	32	872	1756	53
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	166	148	770	4206	1801	54
Arrive On Green	0.09	0.09	0.43	0.82	0.71	0.71
Sat Flow, veh/h	1781	1585	1781	5274	5261	154
Grp Volume(v), veh/h	99	126	32	872	1173	636
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1843
Q Serve(g_s), s	7.5	11.0	1.5	5.1	45.5	45.6
Cycle Q Clear(g_c), s	7.5	11.0	1.5	5.1	45.5	45.6
Prop In Lane	1.00	1.00	1.00			0.08
Lane Grp Cap(c), veh/h	166	148	770	4206	1204	652
V/C Ratio(X)	0.60	0.85	0.04	0.21	0.97	0.98
Avail Cap(c_a), veh/h	447	397	770	4206	1914	1036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.09	0.09
Uniform Delay (d), s/veh	60.9	62.5	23.0	2.6	19.9	19.9
Incr Delay (d2), s/veh	1.3	5.2	0.0	0.1	3.9	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	9.6	0.6	1.2	8.7	9.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	62.2	67.7	23.0	2.7	23.8	26.2
LnGrp LOS	E	E	C	A	C	C
Approach Vol, veh/h	225			904	1809	
Approach Delay, s/veh	65.3			3.4	24.6	
Approach LOS	E			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		121.0		19.0	66.2	54.8
Change Period (Y+Rc), s		5.7		5.9	5.7	* 5.3
Max Green Setting (Gmax), s		93.3		35.1	10.0	* 79
Max Q Clear Time (g_c+I1), s		7.1		13.0	3.5	47.6
Green Ext Time (p_c), s		1.0		0.1	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Notes
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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HCM 6th TWSC
68: Culebra Rd & Pipers Creek St. (SB) 02/03/2021

Intersection						
Int Delay, s/veh	0.5					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	2300	751	3	11	14
Future Vol, veh/h	6	2300	751	3	11	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	9	3322	1085	4	16	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1089	0	-	0	2434	545
Stage 1	-	-	-	-	1087	-
Stage 2	-	-	-	-	1347	-
Critical Hdwy	5.36	-	-	-	5.76	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	6.06	-
Follow-up Hdwy	3.13	-	-	-	3.83	3.93
Pot Cap-1 Maneuver	352	-	-	-	54	411
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	183	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	352	-	-	-	54	411
Mov Cap-2 Maneuver	-	-	-	-	54	-
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	183	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	56.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	352	-	-	-	105
HCM Lane V/C Ratio	0.025	-	-	-	0.344
HCM Control Delay (s)	15.5	0	-	-	56.3
HCM Lane LOS	C	A	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	1.4

HCM 6th TWSC
70: Pipers Creek St. (NB) & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	33.7					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2300	24	14	800	21	30
Future Vol, veh/h	2300	24	14	800	21	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3322	35	20	1156	30	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	3357	0	3842	1679
Stage 1	-	-	-	-	3340	-
Stage 2	-	-	-	-	502	-
Critical Hdwy	-	-	5.36	-	5.76	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	6.06	-
Follow-up Hdwy	-	-	3.13	-	3.83	3.93
Pot Cap-1 Maneuver	-	-	24	-	~ 8	71
Stage 1	-	-	-	-	~ 7	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	24	-	0	71
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	~ 7	-
Stage 2	-	-	-	-	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0	118.4	218.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	71	-	-	24	-
HCM Lane V/C Ratio	1.038	-	-	0.843	-
HCM Control Delay (s)	218.3	-	-	$ 360.7	114.2
HCM Lane LOS	F	-	-	F	F
HCM 95th %tile Q(veh)	5.4	-	-	2.5	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th TWSC
78: Culebra Rd & Joe Newton St 02/03/2021

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	2300	800	13	23	22
Future Vol, veh/h	25	2300	800	13	23	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	210	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	36	3286	1143	19	33	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1162	0	-	0	2539	581
Stage 1	-	-	-	-	1153	-
Stage 2	-	-	-	-	1386	-
Critical Hdwy	5.36	-	-	-	5.76	7.16
Critical Hdwy Stg 1	-	-	-	-	6.66	-
Critical Hdwy Stg 2	-	-	-	-	6.06	-
Follow-up Hdwy	3.13	-	-	-	3.83	3.93
Pot Cap-1 Maneuver	324	-	-	-	47	390
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	174	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	324	-	-	-	42	390
Mov Cap-2 Maneuver	-	-	-	-	98	-
Stage 1	-	-	-	-	172	-
Stage 2	-	-	-	-	174	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	43.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	324	-	-	-	155
HCM Lane V/C Ratio	0.11	-	-	-	0.415
HCM Control Delay (s)	17.5	-	-	-	43.8
HCM Lane LOS	C	-	-	-	E
HCM 95th %tile Q(veh)	0.4	-	-	-	1.8

HCM 6th TWSC
84: Culebra Rd & Van Ness/Valero Drive-way 02/03/2021

Intersection	
Int Delay, s/veh	15.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	30	4	1	19	16	700	2	12	2150	4
Future Vol, veh/h	2	1	30	4	1	19	16	700	2	12	2150	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	1	41	6	1	26	22	968	3	17	2973	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3442	4025	1490	2238	4027	486	2979	0	0	971	0	0
Stage 1	3010	3010	-	1014	1014	-	-	-	-	-	-	-
Stage 2	432	1015	-	1224	3013	-	-	-	-	-	-	-
Critical Hdwy	6.46	6.56	7.16	6.46	6.56	7.16	5.36	-	-	5.36	-	-
Critical Hdwy Stg 1	7.36	5.56	-	7.36	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.76	5.56	-	6.76	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.83	4.03	3.93	3.83	4.03	3.93	3.13	-	-	3.13	-	-
Pot Cap-1 Maneuver	7	3	96	44	3	449	38	-	-	401	-	-
Stage 1	7	30	-	193	312	-	-	-	-	-	-	-
Stage 2	521	312	-	169	30	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	0	96	-	0	449	38	-	-	401	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-
Stage 1	7	30	-	193	0	-	-	-	-	-	-	-
Stage 2	-	0	-	92	30	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			61.7	0.1
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	38	-	-	-	-	401	-	-
HCM Lane V/C Ratio	0.582	-	-	-	-	0.041	-	-
HCM Control Delay (s)	189.2	59	-	-	-	14.4	0	-
HCM Lane LOS	F	F	-	-	-	B	A	-
HCM 95th %tile Q(veh)	2.1	-	-	-	-	0.1	-	-

HCM 6th Signalized Intersection Summary
1018: Ingram Rd & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	223	2050	20	27	706	20	18	46	95	24	18	96
Future Volume (veh/h)	223	2050	20	27	706	20	18	46	95	24	18	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	315	2897	28	38	998	28	25	65	134	34	25	136
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	492	3737	36	108	3391	95	186	175	149	162	186	158
Arrive On Green	0.07	0.73	0.73	0.02	0.67	0.67	0.02	0.10	0.10	0.02	0.10	0.10
Sat Flow, veh/h	1753	5132	49	1753	5025	141	1753	1841	1560	1753	1841	1560
Grp Volume(v), veh/h	315	1888	1037	38	665	361	25	65	134	34	25	136
Grp Sat Flow(s),veh/h/ln	1753	1675	1832	1753	1675	1815	1753	1841	1560	1753	1841	1560
Q Serve(g_s), s	7.9	51.9	52.5	1.0	11.9	11.9	1.9	4.9	12.6	2.6	1.8	12.7
Cycle Q Clear(g_c), s	7.9	51.9	52.5	1.0	11.9	11.9	1.9	4.9	12.6	2.6	1.8	12.7
Prop In Lane	1.00		0.03	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	492	2439	1334	108	2261	1225	186	175	149	162	186	158
V/C Ratio(X)	0.64	0.77	0.78	0.35	0.29	0.29	0.13	0.37	0.90	0.21	0.13	0.86
Avail Cap(c_a), veh/h	785	2439	1334	199	2261	1225	203	175	149	168	186	158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.9	12.5	12.6	19.5	9.8	9.8	59.1	62.8	66.3	58.7	60.6	65.5
Incr Delay (d2), s/veh	0.5	2.5	4.5	0.7	0.3	0.6	0.3	0.5	45.1	0.6	0.1	34.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	17.3	19.9	0.6	4.2	4.6	0.9	2.3	6.8	1.2	0.9	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	15.0	17.1	20.2	10.1	10.4	59.4	63.3	111.3	59.4	60.7	99.6
LnGrp LOS	A	B	B	C	B	B	E	E	F	E	E	F
Approach Vol, veh/h		3240			1064			224			195	
Approach Delay, s/veh		14.9			10.5			91.6			87.6	
Approach LOS		B			B			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	105.3	7.4	20.0	7.4	113.2	6.6	20.9
Change Period (Y+Rc), s	5.0	* 5.4	4.0	5.9	5.0	5.4	4.0	5.9
Max Green Setting (Gmax), s	35.0	* 75	4.0	14.1	10.0	99.6	4.0	14.1
Max Q Clear Time (g_c+I1), s	9.9	13.9	4.6	14.6	3.0	54.5	3.9	14.7
Green Ext Time (p_c), s	0.4	2.1	0.0	0.0	0.0	11.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	20.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
97: Avenue G & Culebra Rd

02/03/2021

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1250	200	3	550	5	5
Future Vol, veh/h	1250	200	3	550	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	120	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1711	274	4	753	7	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1985	0	2233	993
Stage 1	-	-	-	-	1848	-
Stage 2	-	-	-	-	385	-
Critical Hdwy	-	-	4.16	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	2.23	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	283	-	36	242
Stage 1	-	-	-	-	109	-
Stage 2	-	-	-	-	654	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	283	-	35	242
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	109	-
Stage 2	-	-	-	-	645	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	35.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	133	-	-	283	-
HCM Lane V/C Ratio	0.103	-	-	0.015	-
HCM Control Delay (s)	35.1	-	-	17.9	-
HCM Lane LOS	E	-	-	C	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC
127: Culebra Rd & Fairground Parkway 02/03/2021

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	48	1190	650	100	25	14
Future Vol, veh/h	48	1190	650	100	25	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	67	1663	909	140	35	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1049	0	-	0	1945	525
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	966	-
Critical Hdwy	4.18	-	-	-	6.88	6.98
Critical Hdwy Stg 1	-	-	-	-	5.88	-
Critical Hdwy Stg 2	-	-	-	-	5.88	-
Follow-up Hdwy	2.24	-	-	-	3.54	3.34
Pot Cap-1 Maneuver	647	-	-	-	55	492
Stage 1	-	-	-	-	320	-
Stage 2	-	-	-	-	325	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	647	-	-	-	0	492
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	325	-

Approach	EB	WB	SB
HCM Control Delay, s	5.4	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	647	-	-	-	492
HCM Lane V/C Ratio	0.104	-	-	-	0.111
HCM Control Delay (s)	11.2	5.2	-	-	13.2
HCM Lane LOS	B	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.4

HCM 6th Signalized Intersection Summary
1019: Callaghan Rd & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	500	290	137	400	100	330	444	126	117	360	71
Future Volume (veh/h)	100	500	290	137	400	100	330	444	126	117	360	71
Initial Q (Qb), veh	0	0	0	0	0		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	143	714	0	196	571	0	471	634	0	167	514	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	434	1366		393	1433		537	909		232	596	
Arrive On Green	0.07	0.39	0.00	0.09	0.41	0.00	0.16	0.26	0.00	0.07	0.17	0.00
Sat Flow, veh/h	1767	3526	1572	1767	3618	0	3428	3618	0	3428	3618	0
Grp Volume(v), veh/h	143	714	0	196	571	0	471	634	0	167	514	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	0	1714	1763	0	1714	1763	0
Q Serve(g_s), s	4.8	15.6	0.0	6.6	11.5	0.0	13.4	16.3	0.0	4.8	14.2	0.0
Cycle Q Clear(g_c), s	4.8	15.6	0.0	6.6	11.5	0.0	13.4	16.3	0.0	4.8	14.2	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	434	1366		393	1433		537	909		232	596	
V/C Ratio(X)	0.33	0.52		0.50	0.40		0.88	0.70		0.72	0.86	
Avail Cap(c_a), veh/h	589	1366		551	1433		703	955		497	744	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.7	23.5	0.0	17.2	21.0	0.0	41.2	33.6	0.0	45.7	40.4	0.0
Incr Delay (d2), s/veh	0.2	1.4	0.0	0.4	0.8	0.0	8.2	1.7	0.0	1.6	7.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	6.4	0.0	2.5	4.6	0.0	6.2	7.1	0.0	2.1	6.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.9	25.0	0.0	17.6	21.9	0.0	49.4	35.3	0.0	47.2	47.7	0.0
LnGrp LOS	B	C		B	C		D	D		D	D	
Approach Vol, veh/h		857	A		767	A		1105	A		681	A
Approach Delay, s/veh		23.6			20.8			41.3			47.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	45.8	11.3	31.7	13.1	44.0	20.2	22.8
Change Period (Y+Rc), s	4.5	* 5.2	4.5	* 5.9	4.5	* 5.2	4.5	* 5.9
Max Green Setting (Gmax), s	15.5	* 23	14.5	* 27	17.5	* 21	20.5	* 21
Max Q Clear Time (g_c+I1), s	13.3	13.5	6.8	18.3	8.6	17.6	15.4	16.2
Green Ext Time (p_c), s	0.0	1.0	0.1	1.3	0.1	0.7	0.2	0.7

Intersection Summary	
HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
1007: Drive-way/Northside ISD & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1450	1	1	514	1	2	5	1	5	5	7
Future Volume (vph)	9	1450	1	1	514	1	2	5	1	5	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.8		4.4	5.0			5.8			5.8	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			0.95	
Frt	1.00	1.00		1.00	1.00			0.99			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1719	3438		1719	3437			1763			3177	
Flt Permitted	0.34	1.00		0.06	1.00			0.90			0.87	
Satd. Flow (perm)	616	3438		104	3437			1606			2808	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	13	2071	1	1	734	1	3	7	1	7	7	10
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	9	0
Lane Group Flow (vph)	13	2072	0	1	735	0	0	10	0	0	15	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6 26		5	2 22			4 24			8 28	
Permitted Phases	6 26			2 22			4 24			8 28		
Actuated Green, G (s)	104.6	104.6		105.9	105.3			7.2			7.2	
Effective Green, g (s)	104.6	104.6		105.9	105.3			7.2			7.2	
Actuated g/C Ratio	0.75	0.75		0.76	0.75			0.05			0.05	
Clearance Time (s)	4.4			4.4								
Vehicle Extension (s)	1.0			0.2								
Lane Grp Cap (vph)	472	2568		85	2585			82			144	
v/s Ratio Prot	0.00	c0.60		c0.00	0.21							
v/s Ratio Perm	0.02			0.01				c0.01			0.01	
v/c Ratio	0.03	0.81		0.01	0.28			0.12			0.10	
Uniform Delay, d1	7.1	11.3		21.2	5.5			63.4			63.3	
Progression Factor	1.09	2.62		1.12	1.13			1.00			1.00	
Incremental Delay, d2	0.0	0.2		0.0	0.0			0.2			0.1	
Delay (s)	7.8	29.7		23.7	6.2			63.6			63.4	
Level of Service	A	C		C	A			E			E	
Approach Delay (s)		29.5			6.2			63.6			63.4	
Approach LOS		C			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	27.6
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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HCM 6th TWSC
129: Canterbury Dr & Culebra Rd

02/03/2021

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	610	80	63	638	0	82
Future Vol, veh/h	610	80	63	638	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	160	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	871	114	90	911	0	117

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	985	0	-	493
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.16	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.23	-	-	3.33
Pot Cap-1 Maneuver	-	-	691	-	0	519
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	691	-	-	519
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	519	-	-	691	-
HCM Lane V/C Ratio	0.226	-	-	0.13	-
HCM Control Delay (s)	13.9	-	-	11	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.4	-

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HCM 6th TWSC
137: Culebra Rd & Mira Vista 02/03/2021

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	650	670	15	16	23
Future Vol, veh/h	40	650	670	15	16	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	58	939	968	22	23	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	990	0	-	0	1565	495
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	586	-
Critical Hdwy	4.16	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	2.23	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	688	-	-	-	101	517
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	517	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	688	-	-	-	83	517
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	517	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	688	-	-	-	306
HCM Lane V/C Ratio	0.084	-	-	-	0.184
HCM Control Delay (s)	10.7	0.8	-	-	19.4
HCM Lane LOS	B	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7

HCM 6th TWSC
142: Hortencia Ave & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	700	7	17	555	23	58
Future Vol, veh/h	700	7	17	555	23	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1046	10	25	829	34	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1056	0	1516	528
Stage 1	-	-	-	-	1051	-
Stage 2	-	-	-	-	465	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	661	-	111	498
Stage 1	-	-	-	-	300	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	661	-	103	498
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	300	-
Stage 2	-	-	-	-	560	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	19.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	366	-	-	661	-
HCM Lane V/C Ratio	0.331	-	-	0.038	-
HCM Control Delay (s)	19.6	-	-	10.7	0.4
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

HCM 6th TWSC
148: NW 34th St & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	808	9	3	507	22	6
Future Vol, veh/h	808	9	3	507	22	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1154	13	4	724	31	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1167	0	1531	584
Stage 1	-	-	-	-	1161	-
Stage 2	-	-	-	-	370	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	594	-	108	455
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	594	-	107	455
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	662	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	23.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	-	-	594	-
HCM Lane V/C Ratio	0.171	-	-	0.007	-
HCM Control Delay (s)	23.5	-	-	11.1	0.1
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

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HCM 6th TWSC
158: NW 28th St & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	776	1	2	405	14	15
Future Vol, veh/h	776	1	2	405	14	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1160	1	3	605	21	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1161	0	1470	581
Stage 1	-	-	-	-	1161	-
Stage 2	-	-	-	-	309	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	597	-	118	457
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	718	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	597	-	117	457
Mov Cap-2 Maneuver	-	-	-	-	212	-
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	712	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	293	-	-	597	-
HCM Lane V/C Ratio	0.148	-	-	0.005	-
HCM Control Delay (s)	19.4	-	-	11.1	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

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HCM Signalized Intersection Capacity Analysis
1008: Alicia Ave/Pettus & Culebra Rd

02/05/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	669	4	7	489	0	2	2	8	18	0	6
Future Volume (vph)	4	669	4	7	489	0	2	2	8	18	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.1	5.1		5.1	5.1			5.2			5.2	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)	1770	3536		1770	3539			1681			1734	
Flt Permitted	0.37	1.00		0.27	1.00			0.94			0.77	
Satd. Flow (perm)	692	3536		508	3539			1592			1385	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	6	977	6	10	714	0	3	3	12	26	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	11	0	0	33	0
Lane Group Flow (vph)	6	983	0	10	714	0	0	7	0	0	2	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2 22			6 26			4 24			8 28	
Permitted Phases	2 22			6 26			4 24			8 28		
Actuated Green, G (s)	92.5	92.5		92.5	92.5			7.1			7.1	
Effective Green, g (s)	92.5	92.5		92.5	92.5			7.1			7.1	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.06			0.06	
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)	533	2725		391	2727			94			81	
v/s Ratio Prot		c0.28			0.20							
v/s Ratio Perm	0.01			0.02				c0.00			0.00	
v/c Ratio	0.01	0.36		0.03	0.26			0.07			0.03	
Uniform Delay, d1	3.2	4.4		3.2	3.9			53.3			53.2	
Progression Factor	1.32	1.43		1.04	0.88			1.00			1.00	
Incremental Delay, d2	0.0	0.1		0.0	0.1			0.1			0.0	
Delay (s)	4.2	6.3		3.4	3.5			53.5			53.2	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		6.3			3.5			53.5			53.2	
Approach LOS		A			A			D			D	

Intersection Summary				
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.34			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4	
Intersection Capacity Utilization	38.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
1009: Esmeralda Dr/NW 36th St & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	700	52	27	406	88	52	253	41	81	160	91
Future Volume (veh/h)	109	700	52	27	406	88	52	253	41	81	160	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	156	1000	74	39	580	126	74	361	59	116	229	130
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	811	2135	158	104	657	142	149	426	69	142	336	184
Arrive On Green	0.14	0.21	0.21	0.01	0.07	0.07	0.05	0.14	0.14	0.04	0.15	0.15
Sat Flow, veh/h	1781	3354	248	1781	2905	629	1781	3062	496	1781	2217	1212
Grp Volume(v), veh/h	156	530	544	39	354	352	74	208	212	116	182	177
Grp Sat Flow(s),veh/h/ln	1781	1777	1826	1781	1777	1757	1781	1777	1781	1781	1777	1652
Q Serve(g_s), s	4.6	31.3	31.4	2.1	23.7	23.8	4.5	13.7	13.9	3.2	11.6	12.2
Cycle Q Clear(g_c), s	4.6	31.3	31.4	2.1	23.7	23.8	4.5	13.7	13.9	3.2	11.6	12.2
Prop In Lane	1.00		0.14	1.00		0.36	1.00		0.28	1.00		0.73
Lane Grp Cap(c), veh/h	811	1131	1162	104	402	397	149	247	248	142	269	250
V/C Ratio(X)	0.19	0.47	0.47	0.37	0.88	0.89	0.50	0.84	0.86	0.81	0.68	0.71
Avail Cap(c_a), veh/h	811	1131	1162	268	752	744	208	410	411	214	410	381
HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	29.6	29.6	40.5	53.9	54.0	47.7	50.4	50.5	55.6	48.1	48.4
Incr Delay (d2), s/veh	0.0	1.3	1.2	0.8	23.3	24.0	1.0	3.5	4.4	7.9	1.1	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	15.2	15.6	0.9	13.9	13.8	2.0	6.3	6.5	3.8	5.2	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.2	30.9	30.8	41.3	77.2	78.0	48.6	53.8	54.8	63.4	49.2	49.8
LnGrp LOS	C	C	C	D	E	E	D	D	D	E	D	D
Approach Vol, veh/h		1230			745			494			475	
Approach Delay, s/veh		30.9			75.7			53.5			52.9	
Approach LOS		C			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.2	32.3	10.5	22.0	6.0	81.6	9.0	23.5
Change Period (Y+Rc), s	5.2	* 5.2	5.3	* 5.3	3.0	* 5.2	3.0	5.3
Max Green Setting (Gmax), s	5	* 51	10.0	* 28	14.0	* 52	10.0	27.7
Max Q Clear Time (g_c+I1), s	6.6	25.8	5.2	15.9	4.1	33.4	6.5	14.2
Green Ext Time (p_c), s	0.0	1.3	0.0	0.7	0.0	2.1	0.0	1.2

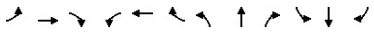
Intersection Summary	
HCM 6th Ctrl Delay	49.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1010: Memorial St/Rattler Dr & Culebra Rd

02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	791	29	32	489	4	7	1	21	2	5	2
Future Volume (veh/h)	2	791	29	32	489	4	7	1	21	2	5	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	1143	42	46	706	6	10	1	30	3	7	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	666	2853	105	481	3009	26	49	6	48	47	47	17
Arrive On Green	0.00	1.00	1.00	0.04	1.00	1.00	0.04	0.04	0.04	0.04	0.04	0.04
Sat Flow, veh/h	1781	3496	128	1781	3611	31	282	139	1149	232	1118	405
Grp Volume(v), veh/h	3	581	604	46	347	365	41	0	0	13	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1847	1781	1777	1865	1570	0	0	1754	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.5	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.5	0.0	0.0	3.0	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.02	0.24		0.73	0.23		0.23
Lane Grp Cap(c), veh/h	666	1450	1508	481	1481	1554	103	0	0	110	0	0
V/C Ratio(X)	0.00	0.40	0.40	0.10	0.23	0.23	0.40	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	820	1450	1508	603	1481	1554	280	0	0	301	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.0	0.0	0.0	1.6	0.0	0.0	56.5	0.0	0.0	55.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.0	0.3	0.3	0.9	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.3	0.1	0.1	0.1	1.2	0.0	0.0	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.0	0.8	0.8	1.7	0.3	0.3	57.5	0.0	0.0	55.7	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	E	A	A	E	A	A
Approach Vol, veh/h		1188			758			41			13	
Approach Delay, s/veh		0.8			0.4			57.5			55.7	
Approach LOS		A			A			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	105.1		10.2	6.8	103.0		10.2				
Change Period (Y+Rc), s	4.4	* 5.1		* 5.2	* 4.4	* 5.1		* 5.2				
Max Green Setting (Gmax), s	11	* 76		* 19	* 11	* 76		* 19				
Max Q Clear Time (g_c+I1), s	2.0	2.0		5.0	2.5	2.0		2.8				
Green Ext Time (p_c), s	0.0	1.3		0.0	0.0	2.4		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	2.2
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1012: San Felipe Ave & Culebra Rd

02/03/2021

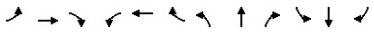
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	738	37	23	435	39	14
Future Volume (veh/h)	738	37	23	435	39	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1078	54	34	635	57	20
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2639	132	406	2975	97	34
Arrive On Green	0.51	0.51	0.07	1.00	0.08	0.08
Sat Flow, veh/h	3537	172	1781	3647	1262	443
Grp Volume(v), veh/h	556	576	34	635	78	0
Grp Sat Flow(s),veh/h/ln	1777	1839	1781	1777	1728	0
Q Serve(g_s), s	23.1	23.1	0.4	0.0	5.2	0.0
Cycle Q Clear(g_c), s	23.1	23.1	0.4	0.0	5.2	0.0
Prop In Lane		0.09	1.00		0.73	0.26
Lane Grp Cap(c), veh/h	1362	1410	406	2975	133	0
V/C Ratio(X)	0.41	0.41	0.08	0.21	0.59	0.00
Avail Cap(c_a), veh/h	1362	1410	547	2975	386	0
HCM Platoon Ratio	0.67	0.67	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.94	0.94	1.00	0.00
Uniform Delay (d), s/veh	12.4	12.4	4.7	0.0	53.5	0.0
Incr Delay (d2), s/veh	0.8	0.8	0.0	0.2	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	10.5	0.1	0.1	2.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.3	13.2	4.7	0.2	55.0	0.0
LnGrp LOS	B	B	A	A	E	A
Approach Vol, veh/h	1132			669	78	
Approach Delay, s/veh	13.3			0.4	55.0	
Approach LOS	B			A	E	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		105.5		14.5	8.5	97.1
Change Period (Y+Rc), s		* 5.1		* 5.2	* 4.4	* 5.1
Max Green Setting (Gmax), s		* 83		* 27	* 14	* 65
Max Q Clear Time (g_c+I1), s		2.0		7.2	2.4	25.1
Green Ext Time (p_c), s		2.1		0.1	0.0	3.5

Intersection Summary	
HCM 6th Ctrl Delay	10.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1013: Gen McMullen Dr & Culebra Rd 02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	597	121	95	314	27	122	371	158	28	204	21
Future Volume (veh/h)	54	597	121	95	314	27	122	371	158	28	204	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	79	872	177	139	459	39	178	542	231	41	298	31
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	459	1282	260	247	1503	127	395	1110	495	236	798	82
Arrive On Green	0.01	0.14	0.14	0.06	0.46	0.46	0.09	0.31	0.31	0.03	0.25	0.25
Sat Flow, veh/h	1781	2943	597	1767	3290	279	1767	3526	1572	1767	3225	333
Grp Volume(v), veh/h	79	526	523	139	245	253	178	542	231	41	162	167
Grp Sat Flow(s),veh/h/ln	1781	1777	1763	1767	1763	1805	1767	1763	1572	1767	1763	1796
Q Serve(g_s), s	2.9	33.7	33.8	5.2	10.5	10.6	8.7	14.9	14.2	2.1	9.1	9.3
Cycle Q Clear(g_c), s	2.9	33.7	33.8	5.2	10.5	10.6	8.7	14.9	14.2	2.1	9.1	9.3
Prop In Lane	1.00		0.34	1.00		0.15	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	459	774	768	247	805	825	395	1110	495	236	436	444
V/C Ratio(X)	0.17	0.68	0.68	0.56	0.30	0.31	0.45	0.49	0.47	0.17	0.37	0.38
Avail Cap(c_a), veh/h	549	774	768	328	805	825	506	1110	495	348	436	444
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	43.4	43.4	23.0	20.6	20.6	28.5	33.3	33.0	32.7	37.4	37.5
Incr Delay (d2), s/veh	0.1	4.4	4.5	0.7	1.0	1.0	0.3	0.1	0.3	0.1	2.4	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	17.0	16.9	2.1	4.4	4.6	3.7	6.4	5.3	0.9	4.2	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.2	47.9	47.9	23.8	21.5	21.5	28.8	33.4	33.3	32.8	39.8	39.9
LnGrp LOS	B	D	D	C	C	C	C	C	C	C	D	D
Approach Vol, veh/h		1128			637			951			370	
Approach Delay, s/veh		45.8			22.0			32.5			39.1	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	43.1	11.5	58.0	15.5	35.0	9.0	60.5
Change Period (Y+Rc), s	4.4	* 5.3	* 4.4	* 5.7	* 4.8	* 5.3	* 4.4	* 5.7
Max Green Setting (Gmax), s	3	* 38	* 13	* 39	* 18	* 30	* 11	* 42
Max Q Clear Time (g_c+I1), s	16.9	7.2	35.8	10.7	11.3	4.9	12.6	
Green Ext Time (p_c), s	0.0	1.5	0.0	1.3	0.0	0.6	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	36.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
1011: Camino Santa Maria & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	748	0	5	450	38	5	5	5	23	5	42
Future Volume (vph)	69	748	0	5	450	38	5	5	5	23	5	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2			5.2			5.2			5.2	
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	
Frt	1.00	1.00			0.99			0.95			0.92	
Flt Protected	0.95	1.00			1.00			0.98			0.98	
Satd. Flow (prot)	1770	3539			3496			1750			1683	
Flt Permitted	0.33	1.00			0.94			0.92			0.89	
Satd. Flow (perm)	612	3539			3300			1644			1515	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	100	1080	0	7	650	55	7	7	7	33	7	61
RTOR Reduction (vph)	0	0	0	0	4	0	0	6	0	0	54	0
Lane Group Flow (vph)	100	1080	0	0	708	0	0	15	0	0	47	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6 26		5	2 22			4 24			8 28	
Permitted Phases	6 26			2 22			4 24			8 28		
Actuated Green, G (s)	86.3	85.5			63.9			13.7			13.7	
Effective Green, g (s)	86.3	85.5			63.9			13.7			13.7	
Actuated g/C Ratio	0.72	0.71			0.53			0.11			0.11	
Clearance Time (s)	4.4											
Vehicle Extension (s)	1.0											
Lane Grp Cap (vph)	606	2521			1757			187			172	
v/s Ratio Prot	0.02	c0.31										
v/s Ratio Perm	0.10				0.21			0.01			c0.03	
v/c Ratio	0.17	0.43			0.40			0.08			0.27	
Uniform Delay, d1	9.1	7.1			16.7			47.5			48.6	
Progression Factor	1.51	1.51			1.10			1.00			1.00	
Incremental Delay, d2	0.0	0.1			0.2			0.1			0.3	
Delay (s)	13.8	10.9			18.5			47.6			48.9	
Level of Service	B	B			B			D			D	
Approach Delay (s)		11.1			18.5			47.6			48.9	
Approach LOS		B			B			D			D	

Intersection Summary					
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.43				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.2		
Intersection Capacity Utilization	64.8%	ICU Level of Service	C		
Analysis Period (min)	15				

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1014: Culebra Rd & Bandera Rd 02/03/2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	790	387	361	436	5
Future Volume (vph)	0	790	387	361	436	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		13.8	4.4	4.0	5.6	
Lane Util. Factor		0.95	0.95	0.88	0.94	
Frt		1.00	1.00	0.85	1.00	
Flt Protected		1.00	1.00	1.00	0.95	
Satd. Flow (prot)		3539	3539	2787	4997	
Flt Permitted		1.00	1.00	1.00	0.95	
Satd. Flow (perm)		3539	3539	2787	4997	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor (vph)	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	0	1194	585	546	659	8
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	0	1194	585	546	666	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Turn Type		NA	NA	Free	Prot	
Protected Phases		11	7 9 11		12 10	
Permitted Phases				Free		
Actuated Green, G (s)		36.3	70.3	120.0	12.7	
Effective Green, g (s)		36.3	56.5	120.0	12.7	
Actuated g/C Ratio		0.30	0.47	1.00	0.11	
Clearance Time (s)		13.8				
Vehicle Extension (s)		0.2				
Lane Grp Cap (vph)		1070	1666	2787	528	
v/s Ratio Prot		c0.34	c0.17		c0.13	
v/s Ratio Perm				c0.20		
v/c Ratio		1.12	0.35	0.20	1.26	
Uniform Delay, d1		41.9	20.1	0.0	53.6	
Progression Factor		0.54	0.55	1.00	1.00	
Incremental Delay, d2		62.0	0.0	0.1	132.3	
Delay (s)		84.5	11.1	0.1	186.0	
Level of Service		F	B	A	F	
Approach Delay (s)		84.5	5.8		186.0	
Approach LOS		F	A		F	

Intersection Summary			
HCM 2000 Control Delay	77.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	41.6
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

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HCM 6th TWSC
10: N Navidad St & Culebra Rd 02/03/2021

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1250	20	0	890	6	0	0	62	0	0	6
Future Vol, veh/h	0	1250	20	0	890	6	0	0	62	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	0	1826	29	0	1300	9	0	0	91	0	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	928	-	-	655
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.18	-	-	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.94	-	-	3.94
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	229	0	0	347
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	229	-	-	347
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	30.6	15.6
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	229	-	-	-	-	347
HCM Lane V/C Ratio	0.395	-	-	-	-	0.025
HCM Control Delay (s)	30.6	-	-	-	-	15.6
HCM Lane LOS	D	-	-	-	-	C
HCM 95th %tile Q(veh)	1.8	-	-	-	-	0.1

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HCM 6th TWSC
159: Neff Rd & Culebra Rd
02/03/2021

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	1297	4	2	765	1	5	1	7	4	1	4
Future Vol, veh/h	4	1297	4	2	765	1	5	1	7	4	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	1961	6	3	1156	2	8	2	11	6	2	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1158	0	0	1967	0	0	2445	3140	984	1960	3142	579
Stage 1	-	-	-	-	-	-	1976	1976	-	1163	1163	-
Stage 2	-	-	-	-	-	-	469	1164	-	797	1979	-
Critical Hdwy	5.36	-	-	5.36	-	-	6.46	6.56	7.16	6.46	6.56	7.16
Critical Hdwy Stg 1	-	-	-	-	-	-	7.36	5.56	-	7.36	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.76	5.56	-	6.76	5.56	-
Follow-up Hdwy	3.13	-	-	3.13	-	-	3.83	4.03	3.93	3.83	4.03	3.93
Pot Cap-1 Maneuver	325	-	-	128	-	-	33	11	211	66	11	391
Stage 1	-	-	-	-	-	-	40	105	-	152	265	-
Stage 2	-	-	-	-	-	-	495	265	-	312	105	-
Platoon blocked, %			-			-						
Mov Cap-1 Maneuver	325	-	-	128	-	-	27	10	211	53	10	391
Mov Cap-2 Maneuver	-	-	-	-	-	-	27	10	-	53	10	-
Stage 1	-	-	-	-	-	-	40	105	-	152	248	-
Stage 2	-	-	-	-	-	-	452	248	-	292	105	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	156.4	107.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	41	325	-	-	128	-	-	48
HCM Lane V/C Ratio	0.479	0.019	-	-	0.024	-	-	0.283
HCM Control Delay (s)	156.4	16.3	0	-	33.8	0.7	-	107.3
HCM Lane LOS	F	C	A	-	D	A	-	F
HCM 95th %tile Q(veh)	1.7	0.1	-	-	0.1	-	-	1

HCM 6th TWSC
167: N Hamilton Ave & Culebra Rd
02/03/2021

Intersection												
Int Delay, s/veh	19.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1328	37	2	815	5	5	5	64	5	5	6
Future Vol, veh/h	0	1328	37	2	815	5	5	5	64	5	5	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1897	53	3	1164	7	7	7	91	7	7	9

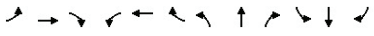
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1171	0	0	1950	0	0	2399	3101	975	1936	3124	586
Stage 1	-	-	-	-	-	-	1924	1924	-	1174	1174	-
Stage 2	-	-	-	-	-	-	475	1177	-	762	1950	-
Critical Hdwy	5.36	-	-	5.36	-	-	6.46	6.56	7.16	6.46	6.56	7.16
Critical Hdwy Stg 1	-	-	-	-	-	-	7.36	5.56	-	7.36	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.76	5.56	-	6.76	5.56	-
Follow-up Hdwy	3.13	-	-	3.13	-	-	3.83	4.03	3.93	3.83	4.03	3.93
Pot Cap-1 Maneuver	321	-	-	131	-	-	35	11	214	69	11	387
Stage 1	-	-	-	-	-	-	43	111	-	149	262	-
Stage 2	-	-	-	-	-	-	491	261	-	328	108	-
Platoon blocked, %			-			-						
Mov Cap-1 Maneuver	321	-	-	131	-	-	14	10	214	16	10	387
Mov Cap-2 Maneuver	-	-	-	-	-	-	14	10	-	16	10	-
Stage 1	-	-	-	-	-	-	43	111	-	149	245	-
Stage 2	-	-	-	-	-	-	435	244	-	176	108	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	$ 459.5	$ 563.7
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	64	321	-	-	131	-	-	19
HCM Lane V/C Ratio	1.652	-	-	-	0.022	-	-	1.203
HCM Control Delay (s)	$ 459.5	0	-	-	33.1	0.7	-	$ 563.7
HCM Lane LOS	F	A	-	-	D	A	-	F
HCM 95th %tile Q(veh)	9.4	0	-	-	0.1	-	-	3.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th Signalized Intersection Summary
1020: Zarzamora & Culebra Rd 02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	1100	91	180	700	17	110	168	135	30	132	32
Future Volume (veh/h)	69	1100	91	180	700	17	110	168	135	30	132	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	95	1521	126	249	968	24	152	232	187	41	183	44
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	727	2182	181	307	1110	28	234	266	226	215	208	50
Arrive On Green	0.74	0.92	0.92	0.14	0.22	0.22	0.10	0.14	0.14	0.09	0.14	0.14
Sat Flow, veh/h	1767	4767	395	1767	5084	126	1767	1856	1572	1767	1445	348
Grp Volume(v), veh/h	95	1077	570	249	643	349	152	232	187	41	0	227
Grp Sat Flow(s),veh/h/ln	1767	1689	1784	1767	1689	1833	1767	1856	1572	1767	0	1793
Q Serve(g_s), s	0.0	9.0	9.0	15.7	22.0	22.1	9.9	14.7	10.3	0.0	0.0	14.9
Cycle Q Clear(g_c), s	0.0	9.0	9.0	15.7	22.0	22.1	9.9	14.7	10.3	0.0	0.0	14.9
Prop In Lane	1.00		0.22	1.00		0.07	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	727	1546	817	307	737	400	234	266	226	215	0	258
V/C Ratio(X)	0.13	0.70	0.70	0.81	0.87	0.87	0.65	0.87	0.83	0.19	0.00	0.88
Avail Cap(c_a), veh/h	727	1546	817	307	1207	655	307	563	477	220	0	453
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.6	3.1	3.1	44.9	45.3	45.3	50.3	50.3	27.4	50.0	0.0	50.4
Incr Delay (d2), s/veh	0.0	2.3	4.3	14.0	13.4	22.2	1.1	3.5	3.0	0.2	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.8	2.4	7.9	10.4	12.3	4.4	7.1	4.0	1.1	0.0	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.6	5.5	7.5	58.9	58.7	67.5	51.4	53.8	30.4	50.1	0.0	54.3
LnGrp LOS	A	A	A	E	E	E	D	D	C	D	A	D
Approach Vol, veh/h		1742			1241			571			268	
Approach Delay, s/veh		6.3			61.2			45.5			53.7	
Approach LOS		A			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	31.3	16.2	22.8	21.0	60.0	16.0	22.9
Change Period (Y+Rc), s	5.1	* 5.1	5.7	* 5.6	* 4.2	* 5.1	* 4.2	5.7
Max Green Setting (Gmax), s	4.6	* 43	10.8	* 36	* 17	* 37	* 17	30.3
Max Q Clear Time (g_c+I1), s	12.0	24.1	2.0	16.7	17.7	11.0	11.9	16.9
Green Ext Time (p_c), s	0.0	2.1	0.0	0.5	0.0	4.3	0.0	0.4

Intersection Summary		
HCM 6th Ctrl Delay	33.3	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
1015: IH 10 SBFR & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	650	665	53	499	0	0	0	0	109	27	396
Future Volume (vph)	0	650	665	53	499	0	0	0	0	109	27	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					5.7	5.7	5.7
Lane Util. Factor		0.95	1.00		0.95					0.95	0.95	1.00
Frt		1.00	0.85		1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00		1.00					0.95	0.97	1.00
Satd. Flow (prot)		3124	1398		3109					1484	1516	1398
Flt Permitted		1.00	1.00		0.79					0.95	0.97	1.00
Satd. Flow (perm)		3124	1398		2473					1484	1516	1398
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	0	889	910	73	683	0	0	0	0	149	37	542
RTOR Reduction (vph)	0	0	502	0	0	0	0	0	0	0	0	307
Lane Group Flow (vph)	0	889	408	0	756	0	0	0	0	92	94	235
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		6		5	5 6					8	8	
Permitted Phases			6									8
Actuated Green, G (s)		35.4	35.4		53.7					14.6	14.6	14.6
Effective Green, g (s)		35.4	35.4		53.7					14.6	14.6	14.6
Actuated g/C Ratio		0.42	0.42		0.64					0.17	0.17	0.17
Clearance Time (s)		5.0	5.0							5.7	5.7	5.7
Vehicle Extension (s)		1.7	1.7							1.0	1.0	1.0
Lane Grp Cap (vph)		1316	589		1719					257	263	242
v/s Ratio Prot		0.28			c0.10					0.06	0.06	
v/s Ratio Perm			c0.29		0.19							c0.17
v/c Ratio		0.68	0.69		0.44					0.36	0.36	0.97
Uniform Delay, d1		19.7	19.9		7.6					30.6	30.6	34.5
Progression Factor		1.00	1.00		1.67					1.00	1.00	1.00
Incremental Delay, d2		2.8	6.6		0.1					0.3	0.3	48.5
Delay (s)		22.4	26.4		12.7					30.9	30.9	83.0
Level of Service		C	C		B					C	C	F
Approach Delay (s)		24.5			12.7			0.0			69.7	
Approach LOS		C			B			A			E	

Intersection Summary				
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	15.7	
Intersection Capacity Utilization	100.1%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1016: IH 10 NBFR & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	475	285	0	0	130	66	422	9	35	0	0	0
Future Volume (vph)	475	285	0	0	130	66	422	9	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9			4.7		5.5	5.5				
Lane Util. Factor		0.95			0.95		0.95	0.95				
Frt		1.00			0.95		1.00	0.98				
Flt Protected		0.97			1.00		0.95	0.96				
Satd. Flow (prot)		3432			3361		1681	1662				
Flt Permitted		0.67			1.00		0.95	0.96				
Satd. Flow (perm)		2385			3361		1681	1662				
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	643	386	0	0	176	89	571	12	47	0	0	0
RTOR Reduction (vph)	0	0	0	0	60	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	1029	0	0	205	0	320	302	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	1	1 2			2		4	4				
Permitted Phases												
Actuated Green, G (s)		44.1			27.3		24.8	24.8				
Effective Green, g (s)		44.1			27.3		24.8	24.8				
Actuated g/C Ratio		0.53			0.33		0.30	0.30				
Clearance Time (s)					4.7		5.5	5.5				
Vehicle Extension (s)					1.3		1.0	1.0				
Lane Grp Cap (vph)		1461			1092		496	490				
v/s Ratio Prot		c0.14			0.06		c0.19	0.18				
v/s Ratio Perm		c0.23										
v/c Ratio		1.82dl			0.19		0.65	0.62				
Uniform Delay, d1		15.0			20.4		25.8	25.5				
Progression Factor		2.09			1.00		1.00	1.00				
Incremental Delay, d2		1.0			0.4		2.2	1.6				
Delay (s)		32.5			20.8		27.9	27.1				
Level of Service		C			C		C	C				
Approach Delay (s)		32.5			20.8			27.5			0.0	
Approach LOS		C			C			C			A	

Intersection Summary				
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	15.7	
Intersection Capacity Utilization	71.1%	ICU Level of Service	C	
Analysis Period (min)	15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Culebra Arterial Study 7:15 am 12/15/2020 2020 AM Existing Condition Synchro 10 Report
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2020 PM Peak Hour

HCM Signalized Intersection Capacity Analysis
4654: Loop 1604 NB Frontage & Culebra Rd
02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	1300	0	0	1400	300	886	371	357	0	0	0
Future Volume (vph)	240	1300	0	0	1400	300	886	371	357	0	0	0
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	5.1	5.1			5.6	5.6	5.1	5.1	5.1			
Lane Util. Factor	0.91	0.91			0.91	1.00	0.91	0.91	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)	1712	3601			5406	1683	1712	3508	1683			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)	1712	3601			5406	1683	1712	3508	1683			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	270	1462	0	0	1575	338	997	417	402	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	184	0	0	226	0	0	0
Lane Group Flow (vph)	243	1490	0	0	1575	154	498	916	176	0	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	1 11	1 11			2		4	4				
Permitted Phases						2			4			
Actuated Green, G (s)	72.9	72.9			30.4	30.4	20.9	20.9	20.9			
Effective Green, g (s)	72.9	72.9			30.4	30.4	20.9	20.9	20.9			
Actuated g/C Ratio	0.52	0.52			0.22	0.22	0.15	0.15	0.15			
Clearance Time (s)					5.6	5.6	5.1	5.1	5.1			
Vehicle Extension (s)					1.0	1.0	1.0	1.0	1.0			
Lane Grp Cap (vph)	891	1875			1173	365	255	523	251			
v/s Ratio Prot	0.14	c0.41			c0.29		c0.29	0.26				
v/s Ratio Perm						0.09			0.10			
v/c Ratio	0.27	0.79			1.34	0.42	1.95	1.88dl	0.70			
Uniform Delay, d1	18.7	27.4			54.8	47.2	59.5	59.5	56.6			
Progression Factor	0.03	0.27			1.16	0.72	1.00	1.00	1.00			
Incremental Delay, d2	0.0	1.5			158.6	0.2	442.8	346.0	7.0			
Delay (s)	0.7	8.9			222.3	34.4	502.4	405.5	63.6			
Level of Service	A	A			F	C	F	F	E			
Approach Delay (s)		7.7			189.1			356.4			0.0	
Approach LOS		A			F			F			A	

Intersection Summary				
HCM 2000 Control Delay	187.2	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.18			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.5	
Intersection Capacity Utilization	105.4%	ICU Level of Service	G	
Analysis Period (min)	15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Culebra Road Corridor Study 5:00 pm 12/15/2020 2020 PM Existing Condition
WSP - San Antonio
Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis
9990: Loop 1604 SB Frontage & Culebra Rd
02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1052	476	500	1780	0	0	0	0	480	310	215
Future Volume (vph)	0	1052	476	500	1780	0	0	0	0	480	310	215
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)		5.7	5.7	5.1	5.1					5.1	5.1	5.1
Lane Util. Factor		0.91	1.00	0.91	0.91					0.91	0.91	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.98	1.00
Satd. Flow (prot)		5406	1683	1712	3599					1712	3531	1683
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.98	1.00
Satd. Flow (perm)		5406	1683	1712	3599					1712	3531	1683
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	0	1159	525	551	1962	0	0	0	0	529	342	237
RTOR Reduction (vph)	0	0	102	0	0	0	0	0	0	0	0	197
Lane Group Flow (vph)	0	1159	423	496	2017	0	0	0	0	286	585	40
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type		NA	Perm	Split	NA					Perm	NA	Perm
Protected Phases		6		5 15	5 15						8	
Permitted Phases			6							8		8
Actuated Green, G (s)		43.3	43.3	56.9	56.9					23.9	23.9	23.9
Effective Green, g (s)		43.3	43.3	56.9	56.9					23.9	23.9	23.9
Actuated g/C Ratio		0.31	0.31	0.41	0.41					0.17	0.17	0.17
Clearance Time (s)		5.7	5.7							5.1	5.1	5.1
Vehicle Extension (s)		1.0	1.0							1.0	1.0	1.0
Lane Grp Cap (vph)		1671	520	695	1462					292	602	287
v/s Ratio Prot		0.21		0.29	c0.56							
v/s Ratio Perm			c0.25							c0.17	0.17	0.02
v/c Ratio		0.69	0.81	0.71	1.38					0.98	0.97	0.14
Uniform Delay, d1		42.5	44.6	34.7	41.5					57.8	57.7	49.3
Progression Factor		1.00	1.00	0.19	0.59					1.00	1.00	1.00
Incremental Delay, d2		2.4	13.0	0.3	171.2					46.3	29.4	0.1
Delay (s)		44.9	57.6	6.8	195.9					104.1	87.1	49.4
Level of Service		D	E	A	F					F	F	D
Approach Delay (s)		48.9			158.6			0.0			83.4	
Approach LOS		D			F			A			F	

Intersection Summary				
HCM 2000 Control Delay	108.1	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.16			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.5	
Intersection Capacity Utilization	105.4%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group

Culebra Road Corridor Study 5:00 pm 12/15/2020 2020 PM Existing Condition
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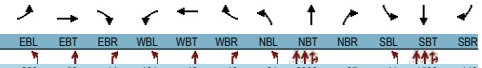
HCM 6th Signalized Intersection Summary
4754: Culebra Rd & Micron Dr/Pipers Ln 02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	58	14	101	42	46	81	2300	87	41	1500	143
Future Volume (veh/h)	260	58	14	101	42	46	81	2300	87	41	1500	143
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	294	65	16	114	47	52	91	2597	98	46	1694	161
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	250	92	78	229	88	75	272	3441	129	158	3177	301
Arrive On Green	0.11	0.05	0.05	0.10	0.05	0.05	0.06	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	1795	1885	1598	1795	1885	1598	1795	5091	190	1795	4781	453
Grp Volume(v), veh/h	294	65	16	114	47	52	91	1743	952	46	1215	640
Grp Sat Flow(s),veh/h/ln	1795	1885	1598	1795	1885	1598	1795	1716	1851	1795	1716	1804
Q Serve(g_s), s	15.5	4.8	1.2	4.3	3.4	4.5	2.3	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	15.5	4.8	1.2	4.3	3.4	4.5	2.3	0.0	0.0	1.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.25
Lane Grp Cap(c), veh/h	250	92	78	229	88	75	272	2319	1251	158	2280	1199
V/C Ratio(X)	1.18	0.71	0.21	0.50	0.53	0.70	0.33	0.75	0.76	0.29	0.53	0.53
Avail Cap(c_a), veh/h	250	257	218	229	190	161	346	2319	1251	252	2280	1199
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.77	0.77	0.85	0.85	0.85
Uniform Delay (d), s/veh	63.8	65.6	50.3	57.8	65.2	65.8	6.7	0.0	0.0	7.1	0.0	0.0
Incr Delay (d2), s/veh	112.6	3.7	0.5	0.6	1.9	4.3	0.2	1.8	3.4	0.3	0.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.8	2.4	0.6	3.8	1.7	1.9	0.8	0.6	1.2	0.4	0.2	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	176.3	69.3	50.8	58.5	67.1	70.0	6.9	1.8	3.4	7.4	0.8	1.5
LnGrp LOS	F	E	D	E	E	E	A	A	A	A	A	A
Approach Vol, veh/h		375			213			2786			1901	
Approach Delay, s/veh		152.4			63.2			2.5			1.2	
Approach LOS		F			E			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	99.9	19.7	12.7	9.2	98.3	20.0	12.4
Change Period (Y+Rc), s	5.0	* 5.3	5.9	* 5.9	5.0	* 5.3	4.5	5.9
Max Green Setting (Gmax), s	10.0	* 80	10.5	* 19	10.0	* 80	15.5	14.1
Max Q Clear Time (g_c+I1), s	3.2	2.0	6.3	6.8	4.3	2.0	17.5	6.5
Green Ext Time (p_c), s	0.0	9.7	0.0	0.1	0.0	4.8	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	15.1
HCM 6th LOS	B

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
4755: Culebra Rd & Timber View Dr 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	31	79	123	31	84	146	2384	57	75	1500	52
Future Volume (veh/h)	71	31	79	123	31	84	146	2384	57	75	1500	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	78	34	86	135	34	92	160	2608	62	82	1641	57
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	191	84	212	197	80	216	325	3530	83	176	3403	118
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.09	1.00	1.00	0.06	1.00	1.00
Sat Flow, veh/h	1275	473	1197	1282	450	1217	1795	5172	122	1795	5107	177
Grp Volume(v), veh/h	78	0	120	135	0	126	160	1725	945	82	1102	596
Grp Sat Flow(s),veh/h/ln	1275	0	1670	1282	0	1666	1795	1716	1863	1795	1716	1853
Q Serve(g_s), s	8.1	0.0	8.9	14.6	0.0	9.4	4.2	0.0	0.0	2.1	0.0	0.0
Cycle Q Clear(g_c), s	17.5	0.0	8.9	23.5	0.0	9.4	4.2	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		0.72	1.00		0.73	1.00		0.07	1.00		0.10
Lane Grp Cap(c), veh/h	191	0	296	197	0	295	325	2342	1272	176	2286	1235
V/C Ratio(X)	0.41	0.00	0.41	0.69	0.00	0.43	0.49	0.74	0.74	0.47	0.48	0.48
Avail Cap(c_a), veh/h	191	0	296	197	0	295	438	2342	1272	318	2286	1235
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.39	0.39	0.39	0.88	0.88	0.88
Uniform Delay (d), s/veh	59.1	0.0	51.1	61.5	0.0	51.3	6.2	0.0	0.0	6.7	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.3	8.0	0.0	0.4	0.2	0.8	1.6	0.6	0.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	3.8	5.2	0.0	4.0	1.3	0.3	0.6	0.7	0.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	0.0	51.4	69.5	0.0	51.6	6.3	0.8	1.6	7.3	0.6	1.2
LnGrp LOS	E	A	D	E	A	D	A	A	A	A	A	A
Approach Vol, veh/h		198			261			2830			1780	
Approach Delay, s/veh		54.6			60.9			1.4			1.1	
Approach LOS		D			E			A			A	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	8.9	101.1	30.0	11.2	98.8	30.0
Change Period (Y+Rc), s	5.0	* 5.5	* 5.2	5.0	* 5.5	* 5.2
Max Green Setting (Gmax), s	15.0	* 85	* 25	15.0	* 85	* 25
Max Q Clear Time (g_c+I1), s	14.1	2.0	19.5	6.2	2.0	25.5
Green Ext Time (p_c), s	0.0	9.4	0.1	0.0	4.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	6.4
HCM 6th LOS	A

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
4758: Culebra Rd & Old Grissom Rd 02/03/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	257	114	2100	301	206	1304
Future Volume (veh/h)	257	114	2100	301	206	1304
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	275	122	2250	322	221	1397
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	299	266	3302	1025	241	3864
Arrive On Green	0.17	0.17	0.85	0.85	0.14	1.00
Sat Flow, veh/h	1795	1598	5316	1598	1795	5316
Grp Volume(v), veh/h	275	122	2250	322	221	1397
Grp Sat Flow(s),veh/h/ln	1795	1598	1716	1598	1795	1716
Q Serve(g_s), s	21.1	9.6	21.4	5.7	8.0	0.0
Cycle Q Clear(g_c), s	21.1	9.6	21.4	5.7	8.0	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	299	266	3302	1025	241	3864
V/C Ratio(X)	0.92	0.46	0.68	0.31	0.92	0.36
Avail Cap(c_a), veh/h	527	469	3302	1025	314	3864
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.72	0.72	0.85	0.85
Uniform Delay (d), s/veh	57.4	52.7	5.2	4.1	28.5	0.0
Incr Delay (d2), s/veh	7.0	0.5	0.8	0.6	20.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	3.9	4.1	1.6	8.3	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	64.5	53.1	6.1	4.7	49.2	0.2
LnGrp LOS	E	D	A	A	D	A
Approach Vol, veh/h	397		2572		1618	
Approach Delay, s/veh	61.0		5.9		6.9	
Approach LOS	E		A		A	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	35.3	95.5			110.8	29.2
Change Period (Y+Rc), s	5.2	* 5.7			5.7	5.9
Max Green Setting (Gmax), s	16	* 67			87.3	41.1
Max Q Clear Time (g_c+I1), s	10.6	23.4			2.0	23.1
Green Ext Time (p_c), s	0.0	8.4			3.8	0.2

Intersection Summary		
HCM 6th Ctrl Delay		11.0
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
4756: Culebra Rd & Rim Rock Trl 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	5	72	17	12	39	150	2400	18	90	1520	70
Future Volume (vph)	91	5	72	17	12	39	150	2400	18	90	1520	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.2	5.2		5.0		5.0	6.8		5.0	5.7	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85		0.92		1.00	1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1796	1599		1714		1787	5130		1787	5102	
Flt Permitted		0.63	1.00		0.90		0.10	1.00		0.04	1.00	
Satd. Flow (perm)		1187	1599		1563		191	5130		75	5102	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	101	6	80	19	13	43	166	2653	20	99	1680	77
RTOR Reduction (vph)	0	0	71	0	35	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	107	9	0	40	0	166	2672	0	99	1754	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		15.6	15.6		15.8		107.9	99.1		108.0	99.7	
Effective Green, g (s)		15.6	15.6		15.8		107.9	99.1		108.0	99.7	
Actuated g/C Ratio		0.11	0.11		0.11		0.77	0.71		0.77	0.71	
Clearance Time (s)		5.2	5.2		5.0		5.0	6.8		5.0	5.7	
Vehicle Extension (s)		1.0	1.0		1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)		132	178		176		247	3631		159	3633	
v/s Ratio Prot							c0.04	c0.52		0.04	0.34	
v/s Ratio Perm		c0.09	0.01		0.03		0.47			0.44		
v/c Ratio		0.81	0.05		0.22		0.67	0.74		0.62	0.48	
Uniform Delay, d1		60.8	55.6		56.5		7.8	12.5		29.4	8.8	
Progression Factor		1.00	1.00		1.00		1.56	1.49		1.35	0.84	
Incremental Delay, d2		28.7	0.0		0.2		3.9	0.9		5.0	0.4	
Delay (s)		89.5	55.6		56.8		16.1	19.5		44.6	7.9	
Level of Service		F	E		E		B	B		D	A	
Approach Delay (s)		75.0			56.8			19.3			9.8	
Approach LOS		E			E			B			A	

Intersection Summary				
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	80.7%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4757: Culebra Rd & Village Pkwy/Grissom Pass 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	2	70	19	4	28	144	2291	21	27	1500	70
Future Volume (vph)	41	2	70	19	4	28	144	2291	21	27	1500	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9	5.9	5.9	5.9		5.0	5.1		5.0	5.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1795	1599	1787	1632		1787	5128		1787	5101	
Flt Permitted		0.71	1.00	0.95	1.00		0.10	1.00		0.04	1.00	
Satd. Flow (perm)		1336	1599	1787	1632		196	5128		78	5101	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	44	2	75	20	4	30	154	2455	22	29	1607	75
RTOR Reduction (vph)	0	0	70	0	29	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	46	5	20	5	0	154	2478	0	29	1679	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	3		5	2		1	6	
Permitted Phases	4		4				2			6		
Actuated Green, G (s)		8.7	8.7	5.1	5.1		109.3	101.7		98.6	96.0	
Effective Green, g (s)		8.7	8.7	5.1	5.1		109.3	101.7		98.6	96.0	
Actuated g/C Ratio		0.06	0.06	0.04	0.04		0.78	0.73		0.70	0.69	
Clearance Time (s)		5.9	5.9	5.9	5.9		5.0	5.1		5.0	5.5	
Vehicle Extension (s)		1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)		83	99	65	59		242	3725		86	3497	
v/s Ratio Prot				c0.01	0.00		c0.04	c0.48		0.01	0.33	
v/s Ratio Perm		c0.03	0.00				0.46			0.23		
v/c Ratio		0.55	0.05	0.31	0.09		0.64	0.67		0.34	0.48	
Uniform Delay, d1		63.8	61.8	65.7	65.2		8.3	10.1		10.2	10.3	
Progression Factor		1.00	1.00	1.00	1.00		3.02	0.41		1.75	0.70	
Incremental Delay, d2		4.5	0.1	1.0	0.2		2.8	0.7		0.8	0.4	
Delay (s)		68.2	61.8	66.7	65.4		27.8	4.8		18.6	7.6	
Level of Service		E	E	E	E		C	A		B	A	
Approach Delay (s)		64.3			65.9			6.1			7.8	
Approach LOS		E			E			A			A	

Intersection Summary				
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.3	
Intersection Capacity Utilization	72.8%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Culebra Road Corridor Study 5:00 pm 12/15/2020 2020 PM Existing Condition Synchro 10 Report
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HCM Signalized Intersection Capacity Analysis
4759: Ansley Bend Dr/Timber Path & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	1271	18	31	1752	386	10	7	18	250	18	105
Future Volume (vph)	183	1271	18	31	1752	386	10	7	18	250	18	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.7		5.2	5.7			5.9		5.9	5.9	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00		0.95	0.95	
Frt	1.00	1.00		1.00	0.97			0.93		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	0.98	
Satd. Flow (prot)	1787	5125		1787	4997			1727		1698	1605	
Flt Permitted	0.95	1.00		0.95	1.00			0.99		0.95	0.98	
Satd. Flow (perm)	1787	5125		1787	4997			1727		1698	1605	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	207	1435	20	35	1978	436	11	8	20	282	20	119
RTOR Reduction (vph)	0	1	0	0	21	0	0	19	0	0	36	0
Lane Group Flow (vph)	207	1454	0	35	2393	0	0	20	0	217	168	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases												
Actuated Green, G (s)	19.9	89.4		5.5	75.0			5.3		17.1	17.1	
Effective Green, g (s)	19.9	89.4		5.5	75.0			5.3		17.1	17.1	
Actuated g/C Ratio	0.14	0.64		0.04	0.54			0.04		0.12	0.12	
Clearance Time (s)	5.2	5.7		5.2	5.7			5.9		5.9	5.9	
Vehicle Extension (s)	1.0	1.0		1.0	1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	254	3272		70	2676			65		207	196	
v/s Ratio Prot	c0.12	0.28		0.02	c0.48			c0.01		c0.13	0.10	
v/s Ratio Perm												
v/c Ratio	0.81	0.44		0.50	0.89			0.30		1.05	0.86	
Uniform Delay, d1	58.3	12.8		65.9	29.0			65.6		61.4	60.3	
Progression Factor	0.80	1.07		0.96	0.53			1.00		1.00	1.00	
Incremental Delay, d2	11.2	0.3		1.4	3.7			1.0		75.8	28.0	
Delay (s)	57.7	14.0		64.9	19.1			66.5		137.3	88.3	
Level of Service	E	B		E	B			E		F	F	
Approach Delay (s)		19.4			19.7			66.5			113.5	
Approach LOS		B			B			E			F	

Intersection Summary				
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.7	
Intersection Capacity Utilization	87.0%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
4760: Westover Hills Blvd/Ensenada & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	950	413	335	1488	25	786	15	574	9	35	11
Future Volume (vph)	21	950	413	335	1488	25	786	15	574	9	35	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	6.2		5.2	5.8		6.1	6.1	6.1	5.9	5.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.91	0.91	1.00	1.00	1.00	
Frt	1.00	0.95		1.00	1.00		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1787	4902		1787	5123		1626	3266	1599	1787	1813	
Flt Permitted	0.13	1.00		0.07	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	248	4902		140	5123		1626	3266	1599	1787	1813	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	22	1018	442	359	1594	27	842	16	615	10	38	12
RTOR Reduction (vph)	0	54	0	0	1	0	0	0	381	0	9	0
Lane Group Flow (vph)	23	1407	0	359	1620	0	421	437	234	10	41	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6			2					4			
Actuated Green, G (s)	51.1	48.3		80.5	72.5		35.7	35.7	35.7	6.0	6.0	
Effective Green, g (s)	51.1	48.3		80.5	72.5		35.7	35.7	35.7	6.0	6.0	
Actuated g/C Ratio	0.37	0.34		0.58	0.52		0.26	0.26	0.26	0.04	0.04	
Clearance Time (s)	5.2	6.2		5.2	5.8		6.1	6.1	6.1	5.9	5.9	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lane Grp Cap (vph)	121	1691		393	2652		414	832	407	76	77	
v/s Ratio Prot	0.00	0.29		c0.17	0.32		c0.26	0.13		0.01	c0.02	
v/s Ratio Perm	0.07			c0.35					0.15			
v/c Ratio	0.19	0.83		0.91	0.61		1.02	0.97dl	0.58	0.13	0.54	
Uniform Delay, d1	28.6	42.1		43.5	23.8		52.1	44.9	45.5	64.5	65.6	
Progression Factor	1.07	1.33		0.85	0.39		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	4.6		13.8	0.5		48.6	0.3	1.2	0.3	3.6	
Delay (s)	31.0	60.8		50.8	9.7		100.7	45.1	46.8	64.8	69.2	
Level of Service	C	E		D	A		F	D	D	E	E	
Approach Delay (s)		60.3			17.2			61.7			68.5	
Approach LOS		E			B			E			E	

Intersection Summary				
HCM 2000 Control Delay	43.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.4	
Intersection Capacity Utilization	92.6%	ICU Level of Service	F	
Analysis Period (min)	15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

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HCM 6th Signalized Intersection Summary
4753: Reed Rd/Driveway & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1583	27	348	2350	0	64	5	195	3	5	5
Future Volume (veh/h)	1	1583	27	348	2350	0	64	5	195	3	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	0	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	1	1714	29	377	2544	0	69	5	211	3	5	5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	0	1	1	1	1	1	1
Cap, veh/h	117	2343	40	325	3859	0	238	16	220	65	104	86
Arrive On Green	0.00	0.65	0.65	0.10	0.75	0.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1795	3604	61	1795	5316	0	1363	113	1598	245	754	625
Grp Volume(v), veh/h	1	850	893	377	2544	0	74	0	211	13	0	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1874	1795	1716	0	1476	0	1598	1624	0	0
Q Serve(g_s), s	0.0	44.3	44.6	14.1	34.2	0.0	4.1	0.0	18.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	44.3	44.6	14.1	34.2	0.0	6.0	0.0	18.4	0.9	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.00	0.93		1.00	0.23		0.38
Lane Grp Cap(c), veh/h	117	1164	1218	325	3859	0	253	0	220	256	0	0
V/C Ratio(X)	0.01	0.73	0.73	1.16	0.66	0.00	0.29	0.00	0.96	0.05	0.00	0.00
Avail Cap(c_a), veh/h	296	1164	1218	325	3859	0	253	0	220	256	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.77	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.0	16.3	16.4	38.6	8.7	0.0	54.5	0.0	59.9	52.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.1	3.0	101.1	0.9	0.0	0.2	0.0	48.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.3	18.2	16.4	10.7	0.0	2.4	0.0	10.4	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	19.5	19.4	139.8	9.6	0.0	54.7	0.0	108.3	52.4	0.0	0.0
LnGrp LOS	B	B	B	F	A	A	D	A	F	D	A	A
Approach Vol, veh/h		1744			2921			285			13	
Approach Delay, s/veh		19.4			26.4			94.4			52.4	
Approach LOS		B			C			F			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	110.0		25.0	19.0	96.0		25.0				
Change Period (Y+Rc), s	4.9	* 5		* 5.7	* 4.9	* 5		* 5.7				
Max Green Setting (Gmax), s	14	* 91		* 19	* 14	* 91		* 19				
Max Q Clear Time (g_c+I1), s	2.0	36.2		20.4	16.1	46.6		2.9				
Green Ext Time (p_c), s	0.0	10.7		0.0	0.0	4.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay	27.9		
HCM 6th LOS	C		

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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HCM Signalized Intersection Capacity Analysis
4750: Loop 410 NBFR & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	900	655	0	0	1250	120	568	475	276	0	0	0
Future Volume (vph)	900	655	0	0	1250	120	568	475	276	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.9		5.7	5.7	5.7			
Lane Util. Factor	0.91	0.91			0.91		0.91	0.91	1.00			
Frt	1.00	1.00			0.99		1.00	1.00	0.85			
Flt Protected	0.95	0.98			1.00		0.95	0.98	1.00			
Satd. Flow (prot)	1626	3360			5068		1626	3369	1599			
Flt Permitted	0.95	0.59			1.00		0.95	0.98	1.00			
Satd. Flow (perm)	1626	2005			5068		1626	3369	1599			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	974	709	0	0	1353	130	615	514	299	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	202	0	0	0
Lane Group Flow (vph)	545	1138	0	0	1475	0	369	760	97	0	0	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	1 11	1 2 11			2		4 14	4 14				
Permitted Phases									4 14			
Actuated Green, G (s)	59.0	92.1			33.1		33.3	33.3	33.3			
Effective Green, g (s)	59.0	92.1			33.1		33.3	33.3	33.3			
Actuated g/C Ratio	0.42	0.66			0.24		0.24	0.24	0.24			
Clearance Time (s)					4.9							
Vehicle Extension (s)					1.0							
Lane Grp Cap (vph)	685	1890			1198		386	801	380			
v/s Ratio Prot	c0.34	0.25			c0.29		c0.23	0.23				
v/s Ratio Perm		0.14							0.06			
v/c Ratio	0.80	0.60			1.23		0.96	0.95	0.26			
Uniform Delay, d1	35.3	13.6			53.5		52.6	52.5	43.3			
Progression Factor	0.23	0.19			0.82		1.00	1.00	1.00			
Incremental Delay, d2	2.5	0.2			109.9		34.0	19.9	0.1			
Delay (s)	10.4	2.7			153.9		86.6	72.4	43.4			
Level of Service	B	A			F		F	E	D			
Approach Delay (s)		5.2			153.9			70.0			0.0	
Approach LOS		A			F			E			A	

Intersection Summary				
HCM 2000 Control Delay	73.4	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.11			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	32.5	
Intersection Capacity Utilization	145.1%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
4751: Potranco Rd & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1450	300	300	1900	76	482	342	333	72	378	26
Future Volume (vph)	20	1450	300	300	1900	76	482	342	333	72	378	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.7		5.0	5.4		6.1	6.1	6.1	6.6	6.6	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	0.91	0.91	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	5004		1787	5106		1787	3574	1599	1626	3388	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	5004		1787	5106		1787	3574	1599	1626	3388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	22	1570	325	325	2057	82	522	370	360	78	409	28
RTOR Reduction (vph)	0	21	0	0	3	0	0	0	299	0	4	0
Lane Group Flow (vph)	22	1874	0	325	2136	0	522	370	61	70	441	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases									4			
Actuated Green, G (s)	3.8	50.9		28.4	75.8		23.9	23.9	23.9	13.4	13.4	
Effective Green, g (s)	3.8	50.9		28.4	75.8		23.9	23.9	23.9	13.4	13.4	
Actuated g/C Ratio	0.03	0.36		0.20	0.54		0.17	0.17	0.17	0.10	0.10	
Clearance Time (s)	5.0	5.7		5.0	5.4		6.1	6.1	6.1	6.6	6.6	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	2.0	2.0	
Lane Grp Cap (vph)	48	1819		362	2764		305	610	272	155	324	
v/s Ratio Prot	0.01	c0.37		c0.18	0.42		c0.29	0.10		0.04	c0.13	
v/s Ratio Perm									0.04			
v/c Ratio	0.46	1.03		0.90	0.77		1.71	0.61	0.23	0.45	1.36	
Uniform Delay, d1	67.1	44.6		54.4	25.3		58.0	53.7	50.1	59.8	63.3	
Progression Factor	0.92	1.09		0.98	1.47		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.2	28.0		3.0	0.2		333.8	1.2	0.2	0.8	181.8	
Delay (s)	64.0	76.5		56.5	37.3		391.8	54.9	50.2	60.6	245.1	
Level of Service	E	E		E	D		F	D	D	E	F	
Approach Delay (s)		76.4			39.8			194.0			220.0	
Approach LOS		E			D			F			F	

Intersection Summary				
HCM 2000 Control Delay	97.7	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.18			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.4	
Intersection Capacity Utilization	112.5%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
5750: Loop 410 SBFR & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1383	473	450	1380	0	0	0	0	173	655	837
Future Volume (vph)	0	1383	473	450	1380	0	0	0	0	173	655	837
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.8	4.8					5.9	5.9	5.9
Lane Util. Factor		0.91	1.00	0.91	0.91					0.91	0.91	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)		5136	1599	1626	3418					1626	3419	1599
Flt Permitted		1.00	1.00	0.95	0.72					0.95	1.00	1.00
Satd. Flow (perm)		5136	1599	1626	2478					1626	3419	1599
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	0	1482	507	482	1479	0	0	0	0	185	702	897
RTOR Reduction (vph)	0	0	108	0	0	0	0	0	0	0	0	166
Lane Group Flow (vph)	0	1482	399	434	1527	0	0	0	0	166	721	731
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		6		5 15	5 6 15					8 18	8 18	
Permitted Phases			6									8 18
Actuated Green, G (s)		42.1	42.1	54.3	96.4					28.0	28.0	28.0
Effective Green, g (s)		42.1	42.1	54.3	96.4					28.0	28.0	28.0
Actuated g/C Ratio		0.30	0.30	0.39	0.69					0.20	0.20	0.20
Clearance Time (s)		4.9	4.9									
Vehicle Extension (s)		1.0	1.0									
Lane Grp Cap (vph)		1544	480	630	2070					325	683	319
v/s Ratio Prot		c0.29		0.27	c0.29					0.10	0.21	
v/s Ratio Perm			0.25		0.22							c0.46
v/c Ratio		0.96	0.83	0.69	0.74					0.51	1.06	2.29
Uniform Delay, d1		48.1	45.6	35.8	13.8					49.9	56.0	56.0
Progression Factor		1.25	1.46	0.33	0.30					1.00	1.00	1.00
Incremental Delay, d2		7.1	6.1	0.2	0.1					0.6	50.1	590.5
Delay (s)		67.2	72.5	12.2	4.2					50.5	106.1	646.5
Level of Service		E	E	B	A					D	F	F
Approach Delay (s)		68.6			6.0			0.0			372.6	
Approach LOS		E			A			A			F	

Intersection Summary				
HCM 2000 Control Delay	141.8	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.34			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	32.5	
Intersection Capacity Utilization	145.1%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
57: Tom Slick Ave/Oak Hill Rd & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	1000	11	8	980	200	131	203	25	186	13	116
Future Volume (vph)	103	1000	11	8	980	200	131	203	25	186	13	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.3	5.3	4.4	4.9		5.2	5.2	5.2	5.1	5.1	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	3505	1568	1752	3416		1752	1845	1568	1752	1596	
Flt Permitted	0.06	1.00	1.00	0.15	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	108	3505	1568	268	3416		1752	1845	1568	1752	1596	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor (vph)	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%
Adj. Flow (vph)	127	1233	14	10	1208	247	161	250	31	229	16	143
RTOR Reduction (vph)	0	0	7	0	9	0	0	0	26	0	121	0
Lane Group Flow (vph)	127	1233	7	10	1446	0	161	250	5	229	38	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2					4			
Actuated Green, G (s)	78.6	73.2	73.2	65.5	64.5		24.0	24.0	24.0	21.8	21.8	
Effective Green, g (s)	78.6	73.2	73.2	65.5	64.5		24.0	24.0	24.0	21.8	21.8	
Actuated g/C Ratio	0.56	0.52	0.52	0.47	0.46		0.17	0.17	0.17	0.16	0.16	
Clearance Time (s)	4.4	5.3	5.3	4.4	4.9		5.2	5.2	5.2	5.1	5.1	
Vehicle Extension (s)	1.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0	1.0	1.0	
Lane Grp Cap (vph)	179	1832	819	135	1573		300	316	268	272	248	
v/s Ratio Prot	c0.05	0.35		0.00	c0.42		0.09	c0.14		c0.13	0.02	
v/s Ratio Perm	0.35		0.00	0.03					0.00			
v/c Ratio	0.71	0.67	0.01	0.07	0.92		0.54	0.79	0.02	0.84	0.15	
Uniform Delay, d1	33.5	24.6	16.0	21.9	35.3		52.9	55.6	48.2	57.4	51.1	
Progression Factor	1.39	0.74	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.3	1.8	0.0	0.1	10.2		0.9	11.9	0.0	19.7	0.1	
Delay (s)	55.9	20.1	16.0	22.0	45.5		53.9	67.5	48.2	77.1	51.2	
Level of Service	E	C	B	C	D		D	E	D	E	D	
Approach Delay (s)		23.4			45.3			61.2			66.5	
Approach LOS		C			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	80.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1101: Culebra Rd & Alamo Downs Pkwy 02/03/2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	920	1100	61	123	107
Future Volume (vph)	14	920	1100	61	123	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	5.3		5.0	5.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3502	3477		1752	1568
Flt Permitted		0.91	1.00		0.95	1.00
Satd. Flow (perm)		3192	3477		1752	1568
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor (vph)	106%	106%	106%	106%	106%	106%
Adj. Flow (vph)	17	1134	1356	75	152	132
RTOR Reduction (vph)	0	0	2	0	0	28
Lane Group Flow (vph)	0	1151	1429	0	152	104
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		6 26	2 22		8 28	
Permitted Phases	6 26					8 28
Actuated Green, G (s)		98.5	98.5		20.9	20.9
Effective Green, g (s)		98.5	98.5		20.9	20.9
Actuated g/C Ratio		0.70	0.70		0.15	0.15
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)		2245	2446		261	234
v/s Ratio Prot			c0.41		c0.09	
v/s Ratio Perm		0.36				0.07
v/c Ratio		0.51	0.58		0.58	0.44
Uniform Delay, d1		9.6	10.4		55.5	54.3
Progression Factor		0.68	1.51		1.00	1.00
Incremental Delay, d2		0.1	0.2		2.1	0.5
Delay (s)		6.6	16.0		57.6	54.7
Level of Service		A	B		E	D
Approach Delay (s)		6.6	16.0		56.3	
Approach LOS		A	B		E	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

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HCM 6th Signalized Intersection Summary
1105: Benrus Blvd & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	1000	18	23	1000	98	11	25	18	144	48	98
Future Volume (veh/h)	62	1000	18	23	1000	98	11	25	18	144	48	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	68	1094	20	25	1094	107	12	27	20	158	52	107
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	259	1264	23	615	2036	199	88	189	123	214	58	116
Arrive On Green	0.01	0.12	0.12	0.60	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1795	3598	66	1795	3296	322	233	853	557	762	264	523
Grp Volume(v), veh/h	68	544	570	25	594	607	59	0	0	317	0	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1873	1795	1791	1827	1643	0	0	1549	0	0
Q Serve(g_s), s	3.2	35.8	35.9	0.0	0.0	0.0	0.0	0.0	0.0	20.8	0.0	0.0
Cycle Q Clear(g_c), s	3.2	35.8	35.9	0.0	0.0	0.0	3.2	0.0	0.0	24.0	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.18	0.20		0.34	0.50		0.34
Lane Grp Cap(c), veh/h	259	629	658	615	1106	1128	400	0	0	388	0	0
V/C Ratio(X)	0.26	0.87	0.87	0.04	0.54	0.54	0.15	0.00	0.00	0.82	0.00	0.00
Avail Cap(c_a), veh/h	348	849	888	615	1106	1128	551	0	0	529	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.7	50.3	50.3	15.7	0.0	0.0	37.6	0.0	0.0	45.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	12.7	12.3	0.0	1.9	1.8	0.1	0.0	0.0	5.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	19.4	20.2	0.3	0.6	0.6	1.4	0.0	0.0	9.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	63.0	62.5	15.7	1.9	1.8	37.7	0.0	0.0	50.6	0.0	0.0
LnGrp LOS	C	E	E	B	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1182			1226			59			317	
Approach Delay, s/veh		60.8			2.1			37.7			50.6	
Approach LOS		E			A			D			D	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	9.0	79.2	31.8	41.0	47.3	31.8
Change Period (Y+Rc), s	4.4	* 5.1	* 5.2	* 5.1	* 5.1	* 5.2
Max Green Setting (Gmax), s	15.5	* 57	* 38	* 11	* 57	* 38
Max Q Clear Time (g_c+I1), s	5.2	2.0	5.2	2.0	37.9	26.0
Green Ext Time (p_c), s	0.0	5.5	0.1	0.0	4.3	0.6

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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HCM Signalized Intersection Capacity Analysis
1104: Culebra Rd & El Centro St 02/03/2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	60	1125	1100	39	22	76
Future Volume (vph)	60	1125	1100	39	22	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.1	5.1		5.2	
Lane Util. Factor	1.00	0.95	0.95		1.00	
Frt	1.00	1.00	0.99		0.89	
Flt Protected	0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1787	3574	3556		1665	
Flt Permitted	0.15	1.00	1.00		0.99	
Satd. Flow (perm)	275	3574	3556		1665	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	69	1298	1269	45	25	88
RTOR Reduction (vph)	0	0	2	0	75	0
Lane Group Flow (vph)	69	1298	1312	0	38	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA	NA		Prot	
Protected Phases	1	6 26	2 22		8 28	
Permitted Phases	6 26					
Actuated Green, G (s)	81.9	81.2	73.8		18.2	
Effective Green, g (s)	81.9	81.2	73.8		18.2	
Actuated g/C Ratio	0.68	0.68	0.61		0.15	
Clearance Time (s)	4.4					
Vehicle Extension (s)	1.0					
Lane Grp Cap (vph)	225	2418	2186		252	
v/s Ratio Prot	0.01	c0.36	c0.37		c0.02	
v/s Ratio Perm	0.20					
v/c Ratio	0.31	0.54	0.60		0.15	
Uniform Delay, d1	19.3	9.9	14.1		44.2	
Progression Factor	1.00	1.00	1.12		1.00	
Incremental Delay, d2	0.3	0.1	0.3		0.1	
Delay (s)	19.6	10.0	16.1		44.3	
Level of Service	B	A	B		D	
Approach Delay (s)		10.5	16.1		44.3	
Approach LOS		B	B		D	

Intersection Summary				
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.0	
Intersection Capacity Utilization	59.0%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1107: NW 38th St & Culebra Rd 02/03/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1120	34	74	1300	44	51
Future Volume (vph)	1120	34	74	1300	44	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.4		5.4	5.4	5.2	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.93	
Flt Protected	1.00		0.95	1.00	0.98	
Satd. Flow (prot)	3559		1787	3574	1705	
Flt Permitted	1.00		0.19	1.00	0.98	
Satd. Flow (perm)	3559		356	3574	1705	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	1200	36	79	1393	47	55
RTOR Reduction (vph)	1	0	0	0	40	0
Lane Group Flow (vph)	1235	0	79	1393	62	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	6 26			2 22	4 24	
Permitted Phases			2 22			
Actuated Green, G (s)	85.7		85.7	85.7	13.1	
Effective Green, g (s)	85.7		85.7	85.7	13.1	
Actuated g/C Ratio	0.71		0.71	0.71	0.11	
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	2541		254	2552	186	
v/s Ratio Prot	0.35			c0.39	c0.04	
v/s Ratio Perm			0.22			
v/c Ratio	0.49		0.31	0.55	0.33	
Uniform Delay, d1	7.5		6.3	8.0	49.4	
Progression Factor	0.47		1.37	1.33	1.00	
Incremental Delay, d2	0.1		0.2	0.1	0.4	
Delay (s)	3.6		8.8	10.7	49.8	
Level of Service	A		A	B	D	
Approach Delay (s)	3.6			10.6	49.8	
Approach LOS	A			B	D	

Intersection Summary				
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.2	
Intersection Capacity Utilization	61.2%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1113: NW 24th St/Wilson Blvd & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	1500	167	160	1850	34	190	176	220	49	182	81
Future Volume (vph)	39	1500	167	160	1850	34	190	176	220	49	182	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.4		5.0	13.4		4.4	6.0	6.0	4.4	6.4	
Lane Util. Factor	1.00	0.91		1.00	0.86		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	5058		1787	6454		1787	1881	1599	1787	3410	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	5058		1787	6454		1787	1881	1599	1787	3410	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	45	1731	193	185	2135	39	219	203	254	57	210	93
RTOR Reduction (vph)	0	11	0	0	2	0	0	0	198	0	46	0
Lane Group Flow (vph)	45	1913	0	185	2172	0	219	203	56	57	257	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)	5.4	54.7		13.0	35.3		19.7	26.4	26.4	6.1	12.4	
Effective Green, g (s)	5.4	54.7		13.0	35.3		19.7	26.4	26.4	6.1	12.4	
Actuated g/C Ratio	0.05	0.46		0.11	0.29		0.16	0.22	0.22	0.05	0.10	
Clearance Time (s)	5.0	4.4		5.0	13.4		4.4	6.0	6.0	4.4	6.4	
Vehicle Extension (s)	0.5	0.5		0.5	1.0		0.5	1.0	1.0	0.5	1.0	
Lane Grp Cap (vph)	80	2305		193	1898		293	413	351	90	352	
v/s Ratio Prot	0.03	c0.38		c0.10	c0.34		c0.12	0.11		0.03	c0.08	
v/s Ratio Perm									0.03			
v/c Ratio	0.56	0.83		0.96	1.14		0.75	0.49	0.16	0.63	0.73	
Uniform Delay, d1	56.1	28.6		53.2	42.4		47.8	40.9	37.8	55.9	52.2	
Progression Factor	1.50	0.18		0.93	1.28		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3		46.5	70.7		8.8	0.3	0.1	10.2	6.6	
Delay (s)	84.7	5.5		95.9	124.8		56.6	41.3	37.9	66.1	58.8	
Level of Service	F	A		F	F		E	D	D	E	E	
Approach Delay (s)		7.3			122.6			45.0			59.9	
Approach LOS		A			F			D			E	

Intersection Summary				
HCM 2000 Control Delay	66.3	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.07			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	41.6	
Intersection Capacity Utilization	79.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

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HCM 6th Signalized Intersection Summary
1114: Elmendorf St & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	1550	51	26	2000	24	93	21	16	31	55	78
Future Volume (veh/h)	49	1550	51	26	2000	24	93	21	16	31	55	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	1678	55	28	2165	26	101	23	17	34	60	84
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	3600	118	206	3657	44	160	35	20	71	100	121
Arrive On Green	0.01	0.23	0.23	0.03	1.00	1.00	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1781	5078	166	1781	5201	62	733	238	133	237	675	814
Grp Volume(v), veh/h	53	1125	608	28	1416	775	141	0	0	178	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1840	1781	1702	1859	1104	0	0	1726	0	0
Q Serve(g_s), s	1.0	34.1	34.1	0.5	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.0	34.1	34.1	0.5	0.0	0.0	15.5	0.0	0.0	11.7	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.03	0.72		0.12	0.19		0.47
Lane Grp Cap(c), veh/h	223	2413	1305	206	2394	1307	215	0	0	292	0	0
V/C Ratio(X)	0.24	0.47	0.47	0.14	0.59	0.59	0.65	0.00	0.00	0.61	0.00	0.00
Avail Cap(c_a), veh/h	337	2413	1305	330	2394	1307	402	0	0	516	0	0
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.32	0.32	0.32	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.8	26.4	26.4	9.8	0.0	0.0	50.4	0.0	0.0	48.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.6	1.2	0.0	0.3	0.6	1.3	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	15.7	17.2	0.2	0.1	0.2	4.2	0.0	0.0	5.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.0	27.1	27.6	9.9	0.3	0.6	51.7	0.0	0.0	49.3	0.0	0.0
LnGrp LOS	A	C	C	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1786			2219			141			178	
Approach Delay, s/veh		26.6			0.6			51.7			49.3	
Approach LOS		C			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	89.3		23.4	6.6	90.0		23.4				
Change Period (Y+Rc), s	4.8	4.9		* 5.6	* 4.8	4.9		* 5.6				
Max Green Setting (Gmax), s	10.0	60.1		* 34	* 10	60.1		* 34				
Max Q Clear Time (g_c+I1), s	3.0	2.0		17.5	2.5	36.1		13.7				
Green Ext Time (p_c), s	0.0	6.9		0.3	0.0	4.5		0.4				

Intersection Summary			
HCM 6th Ctrl Delay	15.0		
HCM 6th LOS	B		

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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HCM Signalized Intersection Capacity Analysis
165: NW 19th St & Culebra Rd

02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1650	39	56	2050	4	61	0	54	1	5	1
Future Volume (vph)	9	1650	39	56	2050	4	61	0	54	1	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	5.6		4.8	5.6			5.0			5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.94			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1770	5067		1770	5084			1700			1820	
Flt Permitted	0.05	1.00		0.08	1.00			0.83			1.00	
Satd. Flow (perm)	90	5067		146	5084			1448			1831	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
Adj. Flow (vph)	10	1883	45	64	2340	5	70	0	62	1	6	1
RTOR Reduction (vph)	0	1	0	0	0	0	0	103	0	0	1	0
Lane Group Flow (vph)	10	1927	0	64	2345	0	0	29	0	0	7	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			3	
Permitted Phases	6			2			4			3		
Actuated Green, G (s)	84.9	84.2		90.9	87.2			10.5			1.2	
Effective Green, g (s)	84.9	84.2		90.9	87.2			10.5			1.2	
Actuated g/C Ratio	0.71	0.70		0.76	0.73			0.09			0.01	
Clearance Time (s)	4.8	5.6		4.8	5.6			5.0			5.0	
Vehicle Extension (s)	0.5	1.0		1.0	1.0			1.0			1.0	
Lane Grp Cap (vph)	73	3555		160	3694			126			18	
v/s Ratio Prot	0.00	0.38		c0.01	c0.46							
v/s Ratio Perm	0.10			0.29				c0.02			c0.00	
v/c Ratio	0.14	0.54		0.40	0.63			0.23			0.39	
Uniform Delay, d1	7.2	8.6		6.3	8.3			51.0			59.0	
Progression Factor	0.68	1.26		1.71	0.78			1.00			1.00	
Incremental Delay, d2	0.2	0.4		0.5	0.7			0.3			5.0	
Delay (s)	5.1	11.3		11.3	7.2			51.3			64.0	
Level of Service	A	B		B	A			D			E	
Approach Delay (s)		11.2			7.3			51.3			64.0	
Approach LOS		B			A			D			E	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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HCM 6th TWSC
32: Mountain View & Culebra Rd

02/03/2021

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1480	12	55	1300	0	18
Future Vol, veh/h	1480	12	55	1300	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	2047	17	76	1798	0	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2064	0	-	1032
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.12	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.21	-	-	3.31
Pot Cap-1 Maneuver	-	-	271	-	0	232
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	271	-	-	232
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	22.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	232	-	-	271	-
HCM Lane V/C Ratio	0.107	-	-	0.281	-
HCM Control Delay (s)	22.4	-	-	23.4	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	0.4	-	-	1.1	-

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HCM 6th TWSC
58: Culebra Rd & Camino Rosa 02/03/2021

Intersection	
Int Delay, s/veh	9

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	11	134	61	1155	1400	106
Future Vol, veh/h	11	134	61	1155	1400	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	15	185	84	1597	1936	147

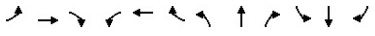
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2977	1042	2083	0	-	0
Stage 1	2010	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Critical Hdwy	6.82	6.92	4.12	-	-	-
Critical Hdwy Stg 1	5.82	-	-	-	-	-
Critical Hdwy Stg 2	5.82	-	-	-	-	-
Follow-up Hdwy	3.51	3.31	2.21	-	-	-
Pot Cap-1 Maneuver	~ 11	228	266	-	-	-
Stage 1	91	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	0	228	266	-	-	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	332	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	77.3	11.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	266	-	228
HCM Lane V/C Ratio	-	-	0.317	-	0.88
HCM Control Delay (s)	-	-	24.7	11.2	77.3
HCM Lane LOS	-	-	C	B	F
HCM 95th %tile Q(veh)	-	-	1.3	-	7.1

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th Signalized Intersection Summary
1004: Nueces Canyon/Village Park & Culebra Rd 02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	1160	12	18	1285	171	4	5	17	82	6	113
Future Volume (veh/h)	135	1160	12	18	1285	171	4	5	17	82	6	113
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984	1984
Adj Flow Rate, veh/h	179	1539	16	24	1705	227	5	7	23	109	8	150
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	251	2912	30	315	2535	330	83	204	173	189	10	185
Arrive On Green	0.04	0.76	0.75	0.03	0.76	0.74	0.10	0.10	0.10	0.12	0.10	0.11
Sat Flow, veh/h	1890	3823	40	1890	3354	437	1303	1984	1682	1350	99	1682
Grp Volume(v), veh/h	179	758	797	24	942	990	5	7	23	117	0	150
Grp Sat Flow(s),veh/h/ln	1890	1885	1977	1890	1885	1906	1303	1984	1682	1449	0	1682
Q Serve(g_s), s	3.1	22.4	22.5	0.4	34.1	37.3	0.5	0.4	1.7	10.6	0.0	12.2
Cycle Q Clear(g_c), s	3.1	22.4	22.5	0.4	34.1	37.3	11.6	0.4	1.7	11.0	0.0	12.2
Prop In Lane	1.00		0.02	1.00		0.23	1.00		1.00	0.93		1.00
Lane Grp Cap(c), veh/h	251	1436	1506	315	1425	1440	83	204	173	216	0	185
V/C Ratio(X)	0.71	0.53	0.53	0.08	0.66	0.69	0.06	0.03	0.13	0.54	0.00	0.81
Avail Cap(c_a), veh/h	452	1436	1506	406	1425	1440	175	344	292	322	0	304
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	6.6	6.7	5.5	8.3	8.9	66.9	56.5	57.1	60.7	0.0	60.9
Incr Delay (d2), s/veh	1.4	1.4	1.3	0.0	2.4	2.7	0.1	0.0	0.1	0.8	0.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	7.8	8.2	0.1	12.2	13.6	0.2	0.2	0.7	4.0	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	8.0	8.0	5.6	10.8	11.6	67.0	56.6	57.2	61.5	0.0	64.1
LnGrp LOS	C	A	A	A	B	B	E	E	E	E	A	E
Approach Vol, veh/h		1734			1956			35			267	
Approach Delay, s/veh		9.4			11.1			58.5			63.0	
Approach LOS		A			B			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.1	109.8		20.1	9.2	110.7		20.1				
Change Period (Y+Rc), s	5.0	* 6.1		* 5.7	5.0	* 6.1		* 5.7				
Max Green Setting (Gmax), s	20.0	* 79		* 24	11.0	* 88		* 24				
Max Q Clear Time (g_c+I1), s	5.1	39.3		13.6	2.4	24.5		14.2				
Green Ext Time (p_c), s	0.1	1.7		0.0	0.0	1.2		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
1102: Culebra Rd & Coppertree Blvd 02/03/2021

Intersection						
Int Delay, s/veh	2.4					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	1245	1500	27	7	10
Future Vol, veh/h	11	1245	1500	27	7	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	15	1686	2031	37	9	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2068	0	-	0	2923	1034
Stage 1	-	-	-	-	2050	-
Stage 2	-	-	-	-	873	-
Critical Hdwy	4.12	-	-	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.21	-	-	-	3.51	3.31
Pot Cap-1 Maneuver	270	-	-	-	12	231
Stage 1	-	-	-	-	86	-
Stage 2	-	-	-	-	371	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	270	-	-	-	11	231
Mov Cap-2 Maneuver	-	-	-	-	11	-
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	371	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	$ 376.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	270	-	-	-	25
HCM Lane V/C Ratio	0.055	-	-	-	0.921
HCM Control Delay (s)	19.1	-	-	-	$ 376.1
HCM Lane LOS	C	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	2.8

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1001: Rogers Rd/RBFCU Driveway & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	1135	180	230	1067	14	309	15	338	25	23	63
Future Volume (vph)	58	1135	180	230	1067	14	309	15	338	25	23	63
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Total Lost time (s)	4.7	4.0	5.3	4.0	4.0		4.0	5.1	4.4	5.1	5.1	5.1
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1881	3762	1683	1881	3755		1787	1799	1683	1881	1980	1683
Flt Permitted	0.11	1.00	1.00	0.06	1.00		0.95	0.96	1.00	0.95	1.00	1.00
Satd. Flow (perm)	211	3762	1683	116	3755		1787	1799	1683	1881	1980	1683
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	82	1604	254	325	1508	20	437	21	478	35	32	89
RTOR Reduction (vph)	0	0	50	0	0	0	0	0	240	0	0	85
Lane Group Flow (vph)	82	1604	204	325	1528	0	227	231	238	35	33	4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2					4			3
Actuated Green, G (s)	69.4	63.2	63.2	92.7	81.8		24.3	24.3	24.3	6.8	6.8	6.8
Effective Green, g (s)	69.4	65.6	64.3	93.4	83.8		25.4	24.3	25.0	6.8	6.8	6.8
Actuated g/C Ratio	0.50	0.47	0.46	0.67	0.60		0.18	0.17	0.18	0.05	0.05	0.05
Clearance Time (s)	4.7	6.4	6.4	4.7	6.0		5.1	5.1	5.1	5.1	5.1	5.1
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	178	1762	772	393	2247		324	312	300	91	96	81
v/s Ratio Prot	0.02	c0.43		c0.15	0.41		0.13	0.13		c0.02	0.02	
v/s Ratio Perm	0.21		0.12	0.40					c0.14			0.00
v/c Ratio	0.46	0.91	0.26	0.83	0.68		0.70	0.74	0.79	0.38	0.34	0.05
Uniform Delay, d1	21.2	34.5	23.3	44.8	19.0		53.7	54.9	55.0	64.6	64.4	63.5
Progression Factor	1.62	1.34	1.86	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	5.6	0.5	12.7	1.7		5.5	8.0	12.6	1.0	0.8	0.1
Delay (s)	34.6	51.6	43.9	57.5	20.7		59.2	62.9	67.6	65.6	65.2	63.6
Level of Service	C	D	D	E	C		E	E	E	E	E	E
Approach Delay (s)		49.9			27.2			64.4			64.4	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1002: Culebra Rd & Les Harrison Dr

02/03/2021

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	308	1170	19	2	22	1099	221	19	3	12	141	1
Future Volume (vph)	308	1170	19	2	22	1099	221	19	3	12	141	1
Ideal Flow (vphpl)	2000	2000	1900	2000	1900	2000	2000	1900	1900	1900	2000	1900
Total Lost time (s)	4.0	4.0			4.9	4.0		5.4	5.4		4.2	5.4
Lane Util. Factor	1.00	0.95			1.00	0.95		1.00	1.00		1.00	1.00
Frt	1.00	1.00			1.00	0.97		1.00	0.88		1.00	0.85
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1881	3753			1787	3668		1787	1655		1881	1600
Flt Permitted	0.06	1.00			0.14	1.00		0.21	1.00		0.74	1.00
Satd. Flow (perm)	114	3753			263	3668		400	1655		1474	1600
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	421	1601	26	3	30	1504	302	26	4	16	193	1
RTOR Reduction (vph)	0	1	0	0	0	12	0	0	14	0	0	274
Lane Group Flow (vph)	421	1626	0	0	33	1794	0	26	6	0	193	50
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	pm+pt	NA		Perm	NA		Perm	NA
Protected Phases	1	6		5	5	2			4			8
Permitted Phases	6			2	2			4			8	
Actuated Green, G (s)	94.7	87.4			66.8	64.4		18.8	18.8		18.8	18.8
Effective Green, g (s)	95.6	89.5			66.8	66.5		18.8	18.8		20.0	18.8
Actuated g/C Ratio	0.76	0.72			0.53	0.53		0.15	0.15		0.16	0.15
Clearance Time (s)	4.9	6.1			4.9	6.1		5.4	5.4		5.4	5.4
Vehicle Extension (s)	0.5	1.0			0.5	1.0		1.0	1.0		1.0	1.0
Lane Grp Cap (vph)	458	2687			169	1951		60	248		235	240
v/s Ratio Prot	c0.19	0.43			0.00	0.49			0.00			0.03
v/s Ratio Perm	c0.51				0.10			0.06			c0.13	
v/c Ratio	0.92	0.61			0.20	0.92		0.43	0.03		0.82	0.21
Uniform Delay, d1	41.6	8.9			13.9	26.8		48.3	45.3		50.8	46.6
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	23.0	1.0			0.2	8.5		1.8	0.0		19.2	0.2
Delay (s)	64.6	9.9			14.1	35.3		50.1	45.3		70.0	46.7
Level of Service	E	A			B	D		D	D		E	D
Approach Delay (s)		21.2				35.0			48.0			55.4
Approach LOS		C				C			D			E

Intersection Summary				
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	14.3	
Intersection Capacity Utilization	99.0%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1002: Culebra Rd & Les Harrison Dr

02/03/2021

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	236
Future Volume (vph)	236
Ideal Flow (vphpl)	2000
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Growth Factor (vph)	130%
Adj. Flow (vph)	323
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	1%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
1003: Culebra Rd & Cliffbrier 02/03/2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	129	1195	1226	178	125	93
Future Volume (vph)	129	1195	1226	178	125	93
Ideal Flow (vphpl)	2000	2000	2000	2000	2000	2000
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1881	3762	3691		1881	1683
Flt Permitted	0.05	1.00	1.00		0.95	1.00
Satd. Flow (perm)	103	3762	3691		1881	1683
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor (vph)	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	177	1635	1678	244	171	127
RTOR Reduction (vph)	0	0	6	0	0	0
Lane Group Flow (vph)	177	1635	1916	0	171	127
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA	NA		Prot	pt+ov
Protected Phases	1	6	2		8	1 8
Permitted Phases	6					6
Actuated Green, G (s)	104.8	104.8	88.9		14.6	124.4
Effective Green, g (s)	105.8	106.4	90.5		15.6	125.4
Actuated g/C Ratio	0.81	0.82	0.70		0.12	0.96
Clearance Time (s)	5.0	5.6	5.6		5.0	
Vehicle Extension (s)	0.5	1.0	1.0		1.0	
Lane Grp Cap (vph)	246	3079	2569		225	1623
v/s Ratio Prot	c0.07	0.43	c0.52		c0.09	0.02
v/s Ratio Perm	0.52					0.06
v/c Ratio	0.72	0.53	0.75		0.76	0.08
Uniform Delay, d1	36.1	3.8	12.5		55.4	0.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.1	0.7	2.0		12.7	0.0
Delay (s)	44.2	4.4	14.5		68.1	0.1
Level of Service	D	A	B		E	A
Approach Delay (s)		8.3	14.5		39.1	
Approach LOS		A	B		D	

Intersection Summary				
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	76.2%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1005: Gas Station/Walmart Drwy & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	1120	33	35	1380	114	34	5	40	57	10	137
Future Volume (vph)	98	1120	33	35	1380	114	34	5	40	57	10	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.8		4.5	5.8	5.8	5.4	5.4		5.4	5.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.87		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	3559		1787	3574	1599	1787	1631		1787	1618	
Flt Permitted	0.05	1.00		0.12	1.00	1.00	0.38	1.00		0.72	1.00	
Satd. Flow (perm)	95	3559		219	3574	1599	724	1631		1349	1618	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	131	1501	44	47	1849	153	46	7	54	76	13	184
RTOR Reduction (vph)	0	1	0	0	0	35	0	50	0	0	159	0
Lane Group Flow (vph)	131	1544	0	47	1849	118	46	11	0	76	38	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			3	
Permitted Phases	6			2		2	4			3		
Actuated Green, G (s)	87.8	87.8		90.8	89.5	89.5	10.4	10.4		10.2	10.2	
Effective Green, g (s)	87.8	87.8		90.8	89.5	89.5	10.4	10.4		10.2	10.2	
Actuated g/C Ratio	0.63	0.63		0.65	0.64	0.64	0.07	0.07		0.07	0.07	
Clearance Time (s)	4.5	5.8		4.5	5.8	5.8	5.4	5.4		5.4	5.4	
Vehicle Extension (s)	0.5	0.5		1.0	1.0	1.0	0.5	0.5		0.5	0.5	
Lane Grp Cap (vph)	165	2232		259	2284	1022	53	121		98	117	
v/s Ratio Prot	0.05	c0.43		0.01	c0.52			0.01			0.02	
v/s Ratio Perm	0.44			0.10		0.07	c0.06			c0.06		
v/c Ratio	0.79	0.69		0.18	0.81	0.12	0.87	0.09		0.78	0.32	
Uniform Delay, d1	37.3	17.2		22.5	18.9	9.8	64.1	60.4		63.8	61.6	
Progression Factor	0.84	1.55		1.47	1.41	2.04	1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.9	1.6		0.1	1.4	0.1	74.2	0.1		28.7	0.6	
Delay (s)	50.4	28.1		33.1	28.0	20.2	138.4	60.5		92.4	62.2	
Level of Service	D	C		C	C	C	F	E		F	E	
Approach Delay (s)		29.9			27.6			94.0			70.6	
Approach LOS		C			C			F			E	

Intersection Summary				
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.1	
Intersection Capacity Utilization	90.9%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1017: Culebra Rd & Grissom Rd & Tezel Rd

02/03/2021

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	7	150	520	485	223	690	109	720	1000	114	148	545
Future Volume (vph)	7	150	520	485	223	690	109	720	1000	114	148	545
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.4	5.7	5.7	4.8	5.7		4.9	5.8		4.7	5.6
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		0.97	0.95		0.97	0.95
Frt		1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.98
Flt Protected		0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)		1787	3574	1599	1787	3501		3467	3519		3467	3508
Flt Permitted		0.26	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)		482	3574	1599	1787	3501		3467	3519		3467	3508
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	9	197	683	637	293	906	143	945	1313	150	194	716
RTOR Reduction (vph)	0	0	0	398	0	9	0	0	6	0	0	8
Lane Group Flow (vph)	0	206	683	239	293	1040	0	945	1457	0	194	809
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	custom	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA
Protected Phases		1	6		5	2		7	4		3	8
Permitted Phases	1			6								
Actuated Green, G (s)		15.6	29.3	29.3	22.2	36.3		39.4	56.9		10.6	28.1
Effective Green, g (s)		15.6	29.3	29.3	22.2	36.3		39.4	56.9		10.6	28.1
Actuated g/C Ratio		0.11	0.21	0.21	0.16	0.26		0.28	0.41		0.08	0.20
Clearance Time (s)		4.4	5.7	5.7	4.8	5.7		4.9	5.8		4.7	5.6
Vehicle Extension (s)		1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0
Lane Grp Cap (vph)		53	747	334	283	907		975	1430		262	704
v/s Ratio Prot			0.19		0.16	c0.30		c0.27	c0.41		0.06	c0.23
v/s Ratio Perm		c0.43		0.15								
v/c Ratio		3.89	0.91	0.72	1.04	1.15		0.97	1.02		0.74	1.15
Uniform Delay, d1		62.2	54.1	51.5	58.9	51.9		49.7	41.5		63.4	56.0
Progression Factor		1.06	0.68	1.59	1.00	1.00		1.08	1.27		1.00	1.00
Incremental Delay, d2		1333.7	14.5	9.8	63.0	79.0		19.2	26.8		9.4	83.0
Delay (s)		1399.6	51.5	91.7	121.9	130.9		72.9	79.6		72.8	139.0
Level of Service		F	D	F	F	F		E	E		E	F
Approach Delay (s)			250.3			128.9			77.0			126.3
Approach LOS			F			F			E			F

Intersection Summary			
HCM 2000 Control Delay	138.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	122.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1017: Culebra Rd & Grissom Rd & Tezel Rd

02/03/2021

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	77
Future Volume (vph)	77
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.99
Growth Factor (vph)	130%
Adj. Flow (vph)	101
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	1%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

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HCM 6th TWSC
64: Griffin Park Dr & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1200	21	23	1500	9	12
Future Vol, veh/h	1200	21	23	1500	9	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1592	28	31	1990	12	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1620	0	2464	810
Stage 1	-	-	-	-	1606	-
Stage 2	-	-	-	-	858	-
Critical Hdwy	-	-	5.34	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	-	-	3.12	-	3.82	3.92
Pot Cap-1 Maneuver	-	-	194	-	52	277
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	340	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	194	-	52	277
Mov Cap-2 Maneuver	-	-	-	-	86	-
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	340	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	33.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	86	277	-	-	194	-
HCM Lane V/C Ratio	0.139	0.057	-	-	0.157	-
HCM Control Delay (s)	53.5	18.8	-	-	27	0
HCM Lane LOS	F	C	-	-	D	A
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0.5	-

HCM 6th TWSC
1000: Culebra Rd & Grissom Gate 02/03/2021

Intersection						
Int Delay, s/veh	14.5					
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	1980	53	13	1300	29	16
Future Vol, veh/h	1980	53	13	1300	29	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	2681	72	18	1760	39	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2753	0	3457	1377
Stage 1	-	-	-	-	2717	-
Stage 2	-	-	-	-	740	-
Critical Hdwy	-	-	5.32	-	5.72	7.12
Critical Hdwy Stg 1	-	-	-	-	6.62	-
Critical Hdwy Stg 2	-	-	-	-	6.02	-
Follow-up Hdwy	-	-	3.11	-	3.81	3.91
Pot Cap-1 Maneuver	-	-	52	-	~ 15	117
Stage 1	-	-	-	-	~ 19	-
Stage 2	-	-	-	-	395	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	52	-	0	117
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	~ 19	-
Stage 2	-	-	-	-	0	-

Approach	NB	SB	SW
HCM Control Delay, s	0	35.1	65.2
HCM LOS			F

Minor Lane/Major Mvmt	NBT	NBR	SBL	SBT	SWLn1
Capacity (veh/h)	-	-	52	-	117
HCM Lane V/C Ratio	-	-	0.339	-	0.521
HCM Control Delay (s)	-	-	106.2	34.4	65.2
HCM Lane LOS	-	-	F	D	F
HCM 95th %tile Q(veh)	-	-	1.2	-	2.4

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th Signalized Intersection Summary
1006: Culebra Rd & Arcadia Creek 02/03/2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	97	51	100	1750	1083	137
Future Volume (veh/h)	97	51	100	1750	1083	137
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	127	67	131	2298	1422	180
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	151	135	350	4286	3549	449
Arrive On Green	0.08	0.08	0.06	1.00	1.00	1.00
Sat Flow, veh/h	1795	1598	1795	5316	4795	585
Grp Volume(v), veh/h	127	67	131	2298	1055	547
Grp Sat Flow(s),veh/h/ln	1795	1598	1795	1716	1716	1780
Q Serve(g_s), s	9.8	5.6	2.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.8	5.6	2.2	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.33
Lane Grp Cap(c), veh/h	151	135	350	4286	2632	1365
V/C Ratio(X)	0.84	0.50	0.37	0.54	0.40	0.40
Avail Cap(c_a), veh/h	245	218	425	4286	2632	1365
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.69	0.69	0.09	0.09
Uniform Delay (d), s/veh	63.2	61.3	2.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	6.5	1.1	0.2	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	5.0	0.5	0.1	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.6	62.3	2.8	0.3	0.0	0.1
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	194			2429	1602	
Approach Delay, s/veh	67.1			0.5	0.1	
Approach LOS	E			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		122.3		17.7	9.2	113.1
Change Period (Y+Rc), s		5.7		5.9	5.0	* 5.7
Max Green Setting (Gmax), s		109.3		19.1	10.0	* 95
Max Q Clear Time (g_c+I1), s		2.0		11.8	4.2	2.0
Green Ext Time (p_c), s		3.7		0.1	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	3.4
HCM 6th LOS	A

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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HCM 6th TWSC
68: Culebra Rd & Pipers Creek St. (SB) 02/03/2021

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1451	2197	18	8	10
Future Vol, veh/h	14	1451	2197	18	8	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	19	1925	2914	24	11	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2938	0	-	0	3734	1469
Stage 1	-	-	-	-	2926	-
Stage 2	-	-	-	-	808	-
Critical Hdwy	5.32	-	-	-	5.72	7.12
Critical Hdwy Stg 1	-	-	-	-	6.62	-
Critical Hdwy Stg 2	-	-	-	-	6.02	-
Follow-up Hdwy	3.11	-	-	-	3.81	3.91
Pot Cap-1 Maneuver	42	-	-	-	~ 10	101
Stage 1	-	-	-	-	14	-
Stage 2	-	-	-	-	364	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	42	-	-	-	~ 10	101
Mov Cap-2 Maneuver	-	-	-	-	~ 10	-
Stage 1	-	-	-	-	14	-
Stage 2	-	-	-	-	364	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	$ 542.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	42	-	-	-	20
HCM Lane V/C Ratio	0.442	-	-	-	1.194
HCM Control Delay (s)	146.3	0	-	-	$ 542.6
HCM Lane LOS	F	A	-	-	F
HCM 95th %tile Q(veh)	1.6	-	-	-	3.2

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

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HCM 6th TWSC
70: Pipers Creek St. (NB) & Culebra Rd 02/03/2021

Intersection	
Int Delay, s/veh	17.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1382	69	58	2215	33	40
Future Vol, veh/h	1382	69	58	2215	33	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1833	92	77	2938	44	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1925	0	3208	963
Stage 1	-	-	-	-	1879	-
Stage 2	-	-	-	-	1329	-
Critical Hdwy	-	-	5.32	-	5.72	7.12
Critical Hdwy Stg 1	-	-	-	-	6.62	-
Critical Hdwy Stg 2	-	-	-	-	6.02	-
Follow-up Hdwy	-	-	3.11	-	3.81	3.91
Pot Cap-1 Maneuver	-	-	138	-	~ 20	221
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	191	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	138	-	~ 20	221
Mov Cap-2 Maneuver	-	-	-	-	~ 20	-
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	191	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	$ 862.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	40	-	-	138	-
HCM Lane V/C Ratio	2.421	-	-	0.558	-
HCM Control Delay (s)	$ 862.2	-	-	59.8	0
HCM Lane LOS	F	-	-	F	A
HCM 95th %tile Q(veh)	10.5	-	-	2.8	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
78: Culebra Rd & Joe Newton St 02/03/2021

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	46	1400	2244	49	8	57
Future Vol, veh/h	46	1400	2244	49	8	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	210	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	61	1857	2977	65	11	76

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	3042	0	-	0	3875	1521
Stage 1	-	-	-	-	3010	-
Stage 2	-	-	-	-	865	-
Critical Hdwy	5.32	-	-	-	5.72	7.12
Critical Hdwy Stg 1	-	-	-	-	6.62	-
Critical Hdwy Stg 2	-	-	-	-	6.02	-
Follow-up Hdwy	3.11	-	-	-	3.81	3.91
Pot Cap-1 Maneuver	~ 37	-	-	-	~ 8	93
Stage 1	-	-	-	-	12	-
Stage 2	-	-	-	-	340	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	~ 37	-	-	-	0	93
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	340	-

Approach	EB	WB	SB
HCM Control Delay, s	17.6	0	155.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	~ 37	-	-	-	93
HCM Lane V/C Ratio	1.649	-	-	-	0.927
HCM Control Delay (s)	$ 554.2	-	-	-	155.5
HCM Lane LOS	F	-	-	-	F
HCM 95th %tile Q(veh)	6.5	-	-	-	5.3

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
84: Culebra Rd & Van Ness/Valero Drive-way 02/03/2021

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	5	17	47	5	8	46	1900	4	21	1400	11
Future Vol, veh/h	3	5	17	47	5	8	46	1900	4	21	1400	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	4	7	23	62	7	11	61	2520	5	28	1857	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3055	4568	936	3447	4573	1263	1872	0	0	2525	0	0
Stage 1	1921	1921	-	2645	2645	-	-	-	-	-	-	-
Stage 2	1134	2647	-	802	1928	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	7.12	6.42	6.52	7.12	5.32	-	-	5.32	-	-
Critical Hdwy Stg 1	7.32	5.52	-	7.32	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.72	5.52	-	6.72	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.81	4.01	3.91	3.81	4.01	3.91	3.11	-	-	3.11	-	-
Pot Cap-1 Maneuver	14	~ 1	230	~ 8	~ 1	139	147	-	-	68	-	-
Stage 1	44	114	-	~ 13	48	-	-	-	-	-	-	-
Stage 2	195	48	-	314	114	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 1	230	-	~ 1	139	147	-	-	68	-	-
Mov Cap-2 Maneuver	-	~ 1	-	-	~ 1	-	-	-	-	-	-	-
Stage 1	44	114	-	~ 13	48	-	-	-	-	-	-	-
Stage 2	155	48	-	267	114	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			1.1	1.3
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	147	-	-	-	-	68	-	-
HCM Lane V/C Ratio	0.415	-	-	-	-	0.41	-	-
HCM Control Delay (s)	45.9	0	-	-	-	90.7	0	-
HCM Lane LOS	E	A	-	-	-	F	A	-
HCM 95th %tile Q(veh)	1.8	-	-	-	-	1.6	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th Signalized Intersection Summary
1018: Ingram Rd & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	1181	27	60	1800	59	46	26	89	136	114	434
Future Volume (veh/h)	204	1181	27	60	1800	59	46	26	89	136	114	434
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	279	1616	37	82	2463	81	63	36	122	186	156	594
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	265	3332	76	256	2910	95	165	123	104	302	244	207
Arrive On Green	0.11	0.64	0.64	0.03	0.57	0.57	0.04	0.06	0.06	0.11	0.13	0.13
Sat Flow, veh/h	1795	5176	119	1795	5119	167	1795	1885	1598	1795	1885	1598
Grp Volume(v), veh/h	279	1071	582	82	1646	898	63	36	122	186	156	594
Grp Sat Flow(s),veh/h/ln	1795	1716	1864	1795	1716	1855	1795	1885	1598	1795	1885	1598
Q Serve(g_s), s	15.0	22.6	22.6	2.7	55.7	56.7	4.5	2.5	9.1	13.2	11.0	18.1
Cycle Q Clear(g_c), s	15.0	22.6	22.6	2.7	55.7	56.7	4.5	2.5	9.1	13.2	11.0	18.1
Prop In Lane	1.00		0.06	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	2208	1200	256	1951	1055	165	123	104	302	244	207
V/C Ratio(X)	1.05	0.49	0.49	0.32	0.84	0.85	0.38	0.29	1.17	0.62	0.64	2.87
Avail Cap(c_a), veh/h	265	2208	1200	326	1961	1060	216	123	104	302	244	207
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	12.9	12.9	12.4	25.0	25.3	57.8	62.4	65.4	51.8	57.8	60.9
Incr Delay (d2), s/veh	70.4	0.8	1.4	0.3	4.7	8.7	0.5	0.5	142.8	2.8	4.3	856.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.0	8.2	9.2	1.0	22.1	25.5	2.1	1.2	7.8	6.1	5.5	56.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.2	13.7	14.3	12.7	29.7	33.9	58.3	62.9	208.3	54.6	62.1	917.0
LnGrp LOS	F	B	B	B	C	C	E	E	F	D	E	F
Approach Vol, veh/h		1932			2626			221			936	
Approach Delay, s/veh		29.0			30.6			141.8			603.1	
Approach LOS		C			C			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	85.0	20.0	15.0	9.5	95.5	11.0	24.0
Change Period (Y+Rc), s	5.0	* 5.4	5.0	5.9	5.0	5.4	5.0	* 5.9
Max Green Setting (Gmax), s	15.0	* 80	15.0	9.1	10.0	84.6	10.0	* 15
Max Q Clear Time (g_c+I1), s	17.0	58.7	15.2	11.1	4.7	24.6	6.5	20.1
Green Ext Time (p_c), s	0.0	7.4	0.0	0.0	0.0	3.9	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		128.1
HCM 6th LOS		F

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC
97: Avenue G & Culebra Rd
02/03/2021

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	750	3	5	991	54	12
Future Vol, veh/h	750	3	5	991	54	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	120	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1037	4	7	1371	75	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1041	0	1739	521
Stage 1	-	-	-	-	1039	-
Stage 2	-	-	-	-	700	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	664	-	78	500
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	454	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	664	-	77	500
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	449	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	32.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	222	-	-	664	-
HCM Lane V/C Ratio	0.411	-	-	0.01	-
HCM Control Delay (s)	32.1	-	-	10.5	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	1.9	-	-	0	-

HCM 6th TWSC
127: Culebra Rd & Fairground Parkway
02/03/2021

Intersection	
Int Delay, s/veh	14.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	874	900	121	42	38
Future Vol, veh/h	18	874	900	121	42	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	1209	1245	167	58	53

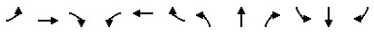
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1412	0	-	0	1984	706
Stage 1	-	-	-	-	1329	-
Stage 2	-	-	-	-	655	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	479	-	-	-	~ 53	378
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	479	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	479	-	-	-	~ 45	378
Mov Cap-2 Maneuver	-	-	-	-	~ 45	-
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	$ 349.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	479	-	-	-	77
HCM Lane V/C Ratio	0.052	-	-	-	1.437
HCM Control Delay (s)	12.9	1	-	-	$ 349.8
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	8.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th Signalized Intersection Summary
1019: Callaghan Rd & Culebra Rd 02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	600	303	200	555	165	329	495	209	290	567	108
Future Volume (veh/h)	74	600	303	200	555	165	329	495	209	290	567	108
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	98	796	0	265	736	0	436	657	0	385	752	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	317	1091		355	1319		497	891		448	840	
Arrive On Green	0.05	0.30	0.00	0.12	0.37	0.00	0.14	0.25	0.00	0.13	0.23	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3676	0	3483	3676	0	3483	3676	0
Grp Volume(v), veh/h	98	796	0	265	736	0	436	657	0	385	752	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	0	1742	1791	0	1742	1791	0
Q Serve(g_s), s	3.7	19.9	0.0	9.7	16.3	0.0	12.3	16.9	0.0	10.8	20.3	0.0
Cycle Q Clear(g_c), s	3.7	19.9	0.0	9.7	16.3	0.0	12.3	16.9	0.0	10.8	20.3	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	317	1091		355	1319		497	891		448	840	
V/C Ratio(X)	0.31	0.73		0.75	0.56		0.88	0.74		0.86	0.90	
Avail Cap(c_a), veh/h	499	1091		441	1319		505	1006		470	971	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	31.1	0.0	22.1	25.1	0.0	42.0	34.6	0.0	42.7	37.1	0.0
Incr Delay (d2), s/veh	0.2	4.3	0.0	3.8	1.7	0.0	15.1	2.0	0.0	13.5	9.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	8.8	0.0	4.1	6.9	0.0	6.3	7.5	0.0	5.5	9.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.6	35.4	0.0	25.9	26.8	0.0	57.1	36.6	0.0	56.2	46.1	0.0
LnGrp LOS	C	D		C	C		E	D		E	D	
Approach Vol, veh/h		894	A		1001	A		1093	A		1137	A
Approach Delay, s/veh		34.0			26.6			44.8			49.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	42.0	17.4	30.8	16.2	35.7	18.8	29.4
Change Period (Y+Rc), s	4.5	* 5.2	4.5	* 5.9	4.5	* 5.2	4.5	* 5.9
Max Green Setting (Gmax), s	5.5	* 23	13.5	* 28	16.5	* 22	14.5	* 27
Max Q Clear Time (g_c+I1), s	5.7	18.3	12.8	18.9	11.7	21.9	14.3	22.3
Green Ext Time (p_c), s	0.0	0.9	0.0	1.4	0.1	0.0	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	39.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
1007: Drive-way/Northside ISD & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	720	1	5	1029	6	6	0	4	22	5	48
Future Volume (vph)	35	720	1	5	1029	6	6	0	4	22	5	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.8		4.4	5.0			5.8			5.8	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			0.95	
Frt	1.00	1.00		1.00	1.00			0.95			0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99	
Satd. Flow (prot)	1703	3405		1703	3403			1646			3033	
Flt Permitted	0.12	1.00		0.25	1.00			0.79			0.86	
Satd. Flow (perm)	211	3405		440	3403			1348			2654	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	51	1052	1	7	1503	9	9	0	6	32	7	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	14	0	0	64	0
Lane Group Flow (vph)	51	1053	0	7	1512	0	0	1	0	0	45	0
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6 26		5	2 22			4 24			8 28	
Permitted Phases	6 26			2 22			4 24			8 28		
Actuated Green, G (s)	102.7	99.3		98.7	98.1			12.5			12.5	
Effective Green, g (s)	102.7	99.3		98.7	98.1			12.5			12.5	
Actuated g/C Ratio	0.73	0.71		0.71	0.70			0.09			0.09	
Clearance Time (s)	4.4			4.4								
Vehicle Extension (s)	1.0			0.2								
Lane Grp Cap (vph)	191	2415		315	2384			120			236	
v/s Ratio Prot	c0.01	0.31		0.00	c0.44							
v/s Ratio Perm	0.19			0.02				0.00			c0.02	
v/c Ratio	0.27	0.44		0.02	0.63			0.01			0.19	
Uniform Delay, d1	20.0	8.6		9.4	11.3			58.1			59.1	
Progression Factor	0.38	0.40		1.32	0.93			1.00			1.00	
Incremental Delay, d2	0.2	0.0		0.0	0.4			0.0			0.1	
Delay (s)	7.7	3.5		12.4	10.8			58.1			59.2	
Level of Service	A	A		B	B			E			E	
Approach Delay (s)		3.7			10.8			58.1			59.2	
Approach LOS		A			B			E			E	

Intersection Summary					
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		27.6	
Intersection Capacity Utilization	54.9%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

HCM 6th TWSC
129: Canterbury Dr & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	930	150	71	921	0	73
Future Vol, veh/h	930	150	71	921	0	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	160	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1314	212	100	1301	0	103

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1526	0	-	763
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.12	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.21	-	-	3.31
Pot Cap-1 Maneuver	-	-	438	-	0	349
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	438	-	-	349
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	19.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	349	-	-	438	-
HCM Lane V/C Ratio	0.296	-	-	0.229	-
HCM Control Delay (s)	19.6	-	-	15.6	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	1.2	-	-	0.9	-

HCM 6th TWSC
137: Culebra Rd & Mira Vista 02/03/2021

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	950	924	32	31	46
Future Vol, veh/h	37	950	924	32	31	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	1314	1278	44	43	64

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1322	0	-	0	2059	661
Stage 1	-	-	-	-	1300	-
Stage 2	-	-	-	-	759	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	529	-	-	-	49	410
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	428	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	529	-	-	-	~ 32	410
Mov Cap-2 Maneuver	-	-	-	-	108	-
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	428	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	44.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	529	-	-	-	193
HCM Lane V/C Ratio	0.097	-	-	-	0.552
HCM Control Delay (s)	12.5	2.1	-	-	44.5
HCM Lane LOS	B	A	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	2.9

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
142: Hortencia Ave & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	2.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	920	19	36	930	33	31
Future Vol, veh/h	920	19	36	930	33	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1314	27	51	1329	47	44

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1341	0	2095	671
Stage 1	-	-	-	-	1328	-
Stage 2	-	-	-	-	767	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	515	-	~ 45	401
Stage 1	-	-	-	-	214	-
Stage 2	-	-	-	-	421	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	515	-	~ 28	401
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	214	-
Stage 2	-	-	-	-	262	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	43.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	182	-	-	515	-
HCM Lane V/C Ratio	0.502	-	-	0.1	-
HCM Control Delay (s)	43.2	-	-	12.8	2.2
HCM Lane LOS	E	-	-	B	A
HCM 95th %tile Q(veh)	2.5	-	-	0.3	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th TWSC
148: NW 34th St & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	910	27	9	1120	18	12
Future Vol, veh/h	910	27	9	1120	18	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1259	37	12	1549	25	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1296	0	2077	648
Stage 1	-	-	-	-	1278	-
Stage 2	-	-	-	-	799	-
Critical Hdwy	-	-	4.12	-	6.82	6.92
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	-	-	2.21	-	3.51	3.31
Pot Cap-1 Maneuver	-	-	536	-	47	415
Stage 1	-	-	-	-	227	-
Stage 2	-	-	-	-	406	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	536	-	39	415
Mov Cap-2 Maneuver	-	-	-	-	141	-
Stage 1	-	-	-	-	227	-
Stage 2	-	-	-	-	341	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	28.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	192	-	-	536	-
HCM Lane V/C Ratio	0.216	-	-	0.023	-
HCM Control Delay (s)	28.8	-	-	11.9	0.9
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

HCM 6th TWSC
158: NW 28th St & Culebra Rd 02/03/2021

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	800	2	1	1050	9	9
Future Vol, veh/h	800	2	1	1050	9	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1130	3	1	1484	13	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1133	0	1876	567
Stage 1	-	-	-	-	1132	-
Stage 2	-	-	-	-	744	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	612	-	63	467
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	612	-	62	467
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	427	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	258	-	-	612	-
HCM Lane V/C Ratio	0.099	-	-	0.002	-
HCM Control Delay (s)	20.5	-	-	10.9	0
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th Signalized Intersection Summary
1008: Alicia Ave/Pettus & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	920	21	13	949	95	7	1	11	31	3	0
Future Volume (veh/h)	7	920	21	13	949	95	7	1	11	31	3	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	10	1259	29	18	1299	130	10	1	15	42	4	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	0
Cap, veh/h	355	3109	72	435	2857	285	63	11	44	122	6	0
Arrive On Green	1.00	1.00	1.00	0.87	0.87	0.87	0.05	0.05	0.05	0.05	0.05	0.00
Sat Flow, veh/h	378	3579	82	432	3289	328	462	251	973	1421	135	0
Grp Volume(v), veh/h	10	630	658	18	705	724	26	0	0	46	0	0
Grp Sat Flow(s),veh/h/ln	378	1791	1870	432	1791	1826	1686	0	0	1557	0	0
Q Serve(g_s), s	0.3	0.0	0.0	0.7	10.2	10.3	0.0	0.0	0.0	1.6	0.0	0.0
Cycle Q Clear(g_c), s	10.7	0.0	0.0	0.7	10.2	10.3	1.8	0.0	0.0	3.3	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.18	0.38		0.58	0.91		0.00
Lane Grp Cap(c), veh/h	355	1556	1625	435	1556	1586	118	0	0	128	0	0
V/C Ratio(X)	0.03	0.40	0.41	0.04	0.45	0.46	0.22	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	355	1556	1625	435	1556	1586	302	0	0	300	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.5	0.0	0.0	1.1	1.7	1.7	55.5	0.0	0.0	56.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.8	0.8	0.2	1.0	0.9	0.3	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.3	0.0	1.6	1.7	0.8	0.0	0.0	1.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.7	0.8	0.8	1.3	2.7	2.7	55.9	0.0	0.0	56.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	E	A	A	E	A	A
Approach Vol, veh/h		1298			1447			26			46	
Approach Delay, s/veh		0.8			2.6			55.9			56.8	
Approach LOS		A			A			E			E	

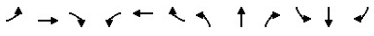
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		109.3		10.7		109.3		10.7				
Change Period (Y+Rc), s		* 5.1		* 5.2		* 5.1		* 5.2				
Max Green Setting (Gmax), s		* 90		* 20		* 90		* 20				
Max Q Clear Time (g_c+I1), s		12.7		3.8		12.3		5.3				
Green Ext Time (p_c), s		6.3		0.0		7.8		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	3.2	
HCM 6th LOS	A	

Notes
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1009: Esmeralda Dr/NW 36th St & Culebra Rd

02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	740	77	86	898	97	105	242	61	142	368	127
Future Volume (veh/h)	111	740	77	86	898	97	105	242	61	142	368	127
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	147	982	102	114	1191	129	139	321	81	188	488	168
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	243	1861	193	292	1827	197	202	479	119	270	452	155
Arrive On Green	0.02	0.19	0.19	0.01	0.18	0.18	0.08	0.17	0.17	0.08	0.17	0.17
Sat Flow, veh/h	1795	3275	340	1795	3260	352	1795	2842	707	1795	2619	896
Grp Volume(v), veh/h	147	537	547	114	653	667	139	201	201	188	333	323
Grp Sat Flow(s),veh/h/ln	1795	1791	1824	1795	1791	1822	1795	1791	1758	1795	1791	1724
Q Serve(g_s), s	4.1	32.4	32.5	3.2	40.5	40.7	7.6	12.6	12.9	10.0	20.7	20.7
Cycle Q Clear(g_c), s	4.1	32.4	32.5	3.2	40.5	40.7	7.6	12.6	12.9	10.0	20.7	20.7
Prop In Lane	1.00		0.19	1.00		0.19	1.00		0.40	1.00		0.52
Lane Grp Cap(c), veh/h	243	1018	1037	292	1004	1021	202	302	296	270	309	297
V/C Ratio(X)	0.60	0.53	0.53	0.39	0.65	0.65	0.69	0.66	0.68	0.70	1.08	1.09
Avail Cap(c_a), veh/h	332	1018	1037	396	1004	1021	255	354	347	270	309	297
HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	34.2	34.2	15.9	38.0	38.1	38.5	46.7	46.9	39.0	49.7	49.7
Incr Delay (d2), s/veh	0.8	1.7	1.7	0.3	3.3	3.3	3.2	2.4	2.9	6.5	73.3	77.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	16.0	16.3	1.3	20.3	20.7	3.5	5.8	5.9	5.1	15.5	15.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	35.9	35.9	16.2	41.3	41.4	41.7	49.1	49.8	45.4	122.9	127.0
LnGrp LOS	C	D	D	B	D	D	D	D	D	D	F	F
Approach Vol, veh/h		1231			1434			541			844	
Approach Delay, s/veh		34.3			39.3			47.4			107.2	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	72.4	13.0	25.5	8.1	73.4	12.5	26.0
Change Period (Y+Rc), s	3.0	* 5.2	3.0	5.3	3.0	* 5.2	3.0	5.3
Max Green Setting (Gmax), s	12.0	* 58	10.0	23.7	12.0	* 58	13.0	20.7
Max Q Clear Time (g_c+I1), s	6.1	42.7	12.0	14.9	5.2	34.5	9.6	22.7
Green Ext Time (p_c), s	0.0	2.7	0.0	0.6	0.0	2.2	0.0	0.0

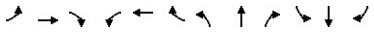
Intersection Summary	
HCM 6th Ctrl Delay	53.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1010: Memorial St/Rattler Dr & Culebra Rd

02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	885	32	42	1105	3	30	5	27	5	5	10
Future Volume (veh/h)	4	885	32	42	1105	3	30	5	27	5	5	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	1186	43	56	1481	4	40	7	36	7	7	13
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	2760	100	362	2932	8	89	15	46	54	44	56
Arrive On Green	0.00	0.53	0.53	0.02	0.81	0.81	0.07	0.07	0.07	0.07	0.07	0.07
Sat Flow, veh/h	1781	3498	127	1781	3636	10	663	223	679	242	653	831
Grp Volume(v), veh/h	5	602	627	56	724	761	83	0	0	27	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1848	1781	1777	1869	1565	0	0	1727	0	0
Q Serve(g_s), s	0.1	24.8	24.8	0.7	16.0	16.0	4.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	24.8	24.8	0.7	16.0	16.0	6.2	0.0	0.0	1.8	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	0.48		0.43	0.26		0.48
Lane Grp Cap(c), veh/h	306	1402	1458	362	1433	1507	150	0	0	154	0	0
V/C Ratio(X)	0.02	0.43	0.43	0.15	0.51	0.51	0.55	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	456	1402	1458	481	1433	1507	284	0	0	295	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.38	0.38	0.38	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.4	11.8	11.8	5.2	3.8	3.8	55.0	0.0	0.0	53.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.9	0.0	0.5	0.5	1.2	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.9	11.3	0.2	4.0	4.2	2.5	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.4	12.8	12.7	5.2	4.3	4.3	56.2	0.0	0.0	53.2	0.0	0.0
LnGrp LOS	A	B	B	A	A	A	E	A	A	D	A	A
Approach Vol, veh/h		1234			1541			83			27	
Approach Delay, s/veh		12.7			4.3			56.2			53.2	
Approach LOS		B			A			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.9	101.9		13.3	6.9	99.8		13.3
Change Period (Y+Rc), s	4.4	* 5.1		* 5.2	* 4.4	* 5.1		* 5.2
Max Green Setting (Gmax), s	11.6	* 76		* 19	* 11	* 76		* 19
Max Q Clear Time (g_c+I1), s	2.1	18.0		8.2	2.7	26.8		3.8
Green Ext Time (p_c), s	0.0	3.4		0.1	0.0	2.6		0.0

Intersection Summary	
HCM 6th Ctrl Delay	9.9
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1012: San Felipe Ave & Culebra Rd 02/03/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	815	37	24	1064	42	25
Future Volume (veh/h)	815	37	24	1064	42	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	1152	52	34	1503	59	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	1263	57	143	1549	514	305
Arrive On Green	0.36	0.36	0.07	0.87	0.48	0.48
Sat Flow, veh/h	3585	157	1795	3676	1067	633
Grp Volume(v), veh/h	591	613	34	1503	95	0
Grp Sat Flow(s),veh/h/ln	1791	1857	1795	1791	1718	0
Q Serve(g_s), s	37.7	37.7	1.3	42.3	3.6	0.0
Cycle Q Clear(g_c), s	37.7	37.7	1.3	42.3	3.6	0.0
Prop In Lane		0.08	1.00		0.62	0.37
Lane Grp Cap(c), veh/h	648	672	143	1549	827	0
V/C Ratio(X)	0.91	0.91	0.24	0.97	0.11	0.00
Avail Cap(c_a), veh/h	969	1004	286	2474	827	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.47	0.47	1.00	0.00
Uniform Delay (d), s/veh	36.5	36.5	27.2	7.4	17.1	0.0
Incr Delay (d2), s/veh	6.0	5.8	0.1	3.8	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.9	17.5	0.5	3.9	1.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.4	42.3	27.3	11.3	17.3	0.0
LnGrp LOS	D	D	C	B	B	A
Approach Vol, veh/h	1204			1537	95	
Approach Delay, s/veh	42.4			11.6	17.3	
Approach LOS	D			B	B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		57.0		63.0	8.5	48.5
Change Period (Y+Rc), s		* 5.1		* 5.2	* 4.4	* 5.1
Max Green Setting (Gmax), s		* 83		* 27	* 14	* 65
Max Q Clear Time (g_c+I1), s		44.3		5.6	3.3	39.7
Green Ext Time (p_c), s		6.7		0.1	0.0	3.7

Intersection Summary	
HCM 6th Ctrl Delay	24.9
HCM 6th LOS	C

Notes
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Culebra Road Corridor Study 5:00 pm 12/15/2020 2020 PM Existing Condition Synchro 10 Report
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HCM 6th Signalized Intersection Summary
1013: Gen McMullen Dr & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	600	172	207	779	54	240	452	165	34	494	60
Future Volume (veh/h)	74	600	172	207	779	54	240	452	165	34	494	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	100	812	233	280	1055	73	325	612	223	46	669	81
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	237	1018	292	315	1467	101	350	1164	519	236	609	74
Arrive On Green	0.05	0.37	0.37	0.11	0.43	0.43	0.16	0.33	0.33	0.03	0.19	0.19
Sat Flow, veh/h	1795	2746	788	1795	3399	235	1795	3582	1598	1795	3217	389
Grp Volume(v), veh/h	100	529	516	280	556	572	325	612	223	46	372	378
Grp Sat Flow(s),veh/h/ln	1795	1791	1743	1795	1791	1843	1795	1791	1598	1795	1791	1815
Q Serve(g_s), s	4.1	31.7	31.7	11.1	30.7	30.7	17.3	16.7	13.1	2.5	22.7	22.7
Cycle Q Clear(g_c), s	4.1	31.7	31.7	11.1	30.7	30.7	17.3	16.7	13.1	2.5	22.7	22.7
Prop In Lane	1.00		0.45	1.00		0.13	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	237	664	646	315	773	795	350	1164	519	236	339	343
V/C Ratio(X)	0.42	0.80	0.80	0.89	0.72	0.72	0.93	0.53	0.43	0.20	1.10	1.10
Avail Cap(c_a), veh/h	322	664	646	381	773	795	407	1164	519	342	339	343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.66	0.66	0.66	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	33.7	33.7	25.6	28.1	28.1	33.8	33.0	31.8	37.6	48.7	48.7
Incr Delay (d2), s/veh	0.3	6.6	6.7	17.2	5.7	5.6	23.9	0.2	0.2	0.1	78.0	78.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	14.5	14.1	5.9	13.8	14.2	9.5	7.3	5.0	1.1	17.4	17.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.5	40.3	40.5	42.8	33.8	33.7	57.7	33.2	32.0	37.8	126.6	127.0
LnGrp LOS	C	D	D	D	C	C	E	C	C	D	F	F
Approach Vol, veh/h		1145			1408			1160			796	
Approach Delay, s/veh		39.0			35.6			39.8			121.7	
Approach LOS		D			D			D			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	44.3	17.6	50.2	24.2	28.0	10.3	57.5				
Change Period (Y+Rc), s	4.4	* 5.3	* 4.4	* 5.7	* 4.8	* 5.3	* 4.4	* 5.7				
Max Green Setting (Gmax), s	3.5	* 36	* 18	* 36	* 23	* 23	* 12	* 43				
Max Q Clear Time (g_c+I1), s	4.5	18.7	13.1	33.7	19.3	24.7	6.1	32.7				
Green Ext Time (p_c), s	0.0	1.6	0.1	1.0	0.1	0.0	0.0	1.9				

Intersection Summary	
HCM 6th Ctrl Delay	52.7
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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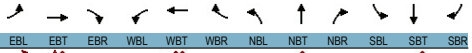
HCM Signalized Intersection Capacity Analysis
1011: Camino Santa Maria & Culebra Rd
02/03/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	800	5	5	1025	49	5	5	5	57	5	131
Future Volume (vph)	93	800	5	5	1025	49	5	5	5	57	5	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.2			5.2			5.2			5.2	
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	
Frt	1.00	1.00			0.99			0.95			0.91	
Flt Protected	0.95	1.00			1.00			0.98			0.99	
Satd. Flow (prot)	1787	3571			3549			1767			1684	
Flt Permitted	0.06	1.00			0.95			0.91			0.89	
Satd. Flow (perm)	113	3571			3369			1635			1526	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	130	1118	7	7	1433	68	7	7	7	80	7	183
RTOR Reduction (vph)	0	0	0	0	3	0	0	5	0	0	23	0
Lane Group Flow (vph)	130	1125	0	0	1505	0	0	16	0	0	247	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6 26		5	2 22			4 24			8 28	
Permitted Phases	6 26			2 22			4 24			8 28		
Actuated Green, G (s)	73.4	73.4			62.1			25.8			25.8	
Effective Green, g (s)	73.4	73.4			62.1			25.8			25.8	
Actuated g/C Ratio	0.61	0.61			0.52			0.22			0.22	
Clearance Time (s)	4.4											
Vehicle Extension (s)	1.0											
Lane Grp Cap (vph)	165	2184			1743			351			328	
v/s Ratio Prot	c0.05	0.31										
v/s Ratio Perm	0.44				c0.45			0.01			c0.16	
v/c Ratio	0.79	0.51			0.86			0.04			0.75	
Uniform Delay, d1	44.2	13.2			25.3			37.3			44.1	
Progression Factor	0.70	1.44			0.77			1.00			1.00	
Incremental Delay, d2	18.8	0.2			3.9			0.0			8.4	
Delay (s)	49.8	19.2			23.2			37.3			52.6	
Level of Service	D	B			C			D			D	
Approach Delay (s)		22.4			23.2			37.3			52.6	
Approach LOS		C			C			D			D	

Intersection Summary				
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.2	
Intersection Capacity Utilization	99.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

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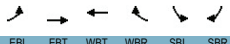
HCM Signalized Intersection Capacity Analysis
1014: Culebra Rd & Bandera Rd
02/03/2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	810	998	694	584	25
Future Volume (vph)	0	810	998	694	584	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		13.8	4.4	4.0	5.6	
Lane Util. Factor		0.95	0.95	0.88	0.94	
Frt		1.00	1.00	0.85	0.99	
Flt Protected		1.00	1.00	1.00	0.95	
Satd. Flow (prot)		3574	3574	2814	5031	
Flt Permitted		1.00	1.00	1.00	0.95	
Satd. Flow (perm)		3574	3574	2814	5031	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	0	1097	1351	940	791	34
RTOR Reduction (vph)	0	0	0	0	4	0
Lane Group Flow (vph)	0	1097	1351	940	821	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type		NA	NA	Free	Prot	
Protected Phases		11	7 9 11		12 10	
Permitted Phases				Free		
Actuated Green, G (s)		27.2	63.7	120.0	16.1	
Effective Green, g (s)		27.2	49.9	120.0	16.1	
Actuated g/C Ratio		0.23	0.42	1.00	0.13	
Clearance Time (s)		13.8				
Vehicle Extension (s)		0.2				
Lane Grp Cap (vph)		810	1486	2814	674	
v/s Ratio Prot		c0.31	c0.38		c0.16	
v/s Ratio Perm				c0.33		
v/c Ratio		1.35	0.91	0.33	1.22	
Uniform Delay, d1		46.4	32.9	0.0	51.9	
Progression Factor		1.35	0.64	1.00	1.00	
Incremental Delay, d2		164.9	0.9	0.0	111.1	
Delay (s)		227.7	22.1	0.0	163.0	
Level of Service		F	C	A	F	
Approach Delay (s)		227.7	13.0		163.0	
Approach LOS		F	B		F	

Intersection Summary				
HCM 2000 Control Delay	98.3	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.07			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	41.6	
Intersection Capacity Utilization	60.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

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HCM 6th TWSC
10: N Navidad St & Culebra Rd 02/03/2021

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑				↱			↱
Traffic Vol, veh/h	0	1200	27	0	1585	10	0	0	27	0	0	16
Future Vol, veh/h	0	1200	27	0	1585	10	0	0	27	0	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1576	35	0	2081	13	0	0	35	0	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	806	-	-	1047
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	7.14	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.92	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	279	0	0	193
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	279	-	-	193
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	19.8	25.9
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	279	-	-	-	-	193
HCM Lane V/C Ratio	0.127	-	-	-	-	0.109
HCM Control Delay (s)	19.8	-	-	-	-	25.9
HCM Lane LOS	C	-	-	-	-	D
HCM 95th %tile Q(veh)	0.4	-	-	-	-	0.4

HCM 6th TWSC
159: Neff Rd & Culebra Rd 02/03/2021

Intersection												
Int Delay, s/veh	17.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			✣			✣	
Traffic Vol, veh/h	9	1400	4	18	1670	6	8	1	7	5	5	5
Future Vol, veh/h	9	1400	4	18	1670	6	8	1	7	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1957	6	25	2334	8	11	1	10	7	7	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2342	0	0	1963	0	0	2973	4378	982	3197	4377	1171
Stage 1	-	-	-	-	-	-	1986	1986	-	2388	2388	-
Stage 2	-	-	-	-	-	-	987	2392	-	809	1989	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	84	-	-	131	-	-	15	2	213	11	~ 2	159
Stage 1	-	-	-	-	-	-	39	105	-	20	65	-
Stage 2	-	-	-	-	-	-	240	65	-	309	105	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	84	-	-	131	-	-	-	2	213	~ 5	~ 2	159
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	2	-	~ 5	~ 2	-
Stage 1	-	-	-	-	-	-	39	105	-	20	65	-
Stage 2	-	-	-	-	-	-	205	65	-	291	105	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4		$ 3601.3
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	84	-	-	131	-	-	4
HCM Lane V/C Ratio	-	0.15	-	-	0.192	-	-	5.242
HCM Control Delay (s)	-	55.3	0	-	38.9	0		$ 3601.3
HCM Lane LOS	-	F	A	-	E	A	-	F
HCM 95th %tile Q(veh)	-	0.5	-	-	0.7	-	-	4.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM 6th TWSC
167: N Hamilton Ave & Culebra Rd
02/03/2021

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1320	41	5	1725	7	5	5	56	4	5	9
Future Vol, veh/h	5	1320	41	5	1725	7	5	5	56	4	5	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1733	54	7	2265	9	7	7	74	5	7	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2274	0	0	1787	0	0	2698	4062	894	2995	4085	1137
Stage 1	-	-	-	-	-	-	1774	1774	-	2284	2284	-
Stage 2	-	-	-	-	-	-	924	2288	-	711	1801	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	91	-	-	160	-	-	23	~ 3	244	15	~ 2	168
Stage 1	-	-	-	-	-	-	56	134	-	24	74	-
Stage 2	-	-	-	-	-	-	262	73	-	355	130	-
Platoon blocked, %			-			-						
Mov Cap-1 Maneuver	91	-	-	160	-	-	-	0	244	-	0	168
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-	-	0	-
Stage 1	-	-	-	-	-	-	56	0	-	24	74	-
Stage 2	-	-	-	-	-	-	222	73	-	-	0	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	0.1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	91	-	-	160	-	-	-
HCM Lane V/C Ratio	-	0.072	-	-	0.041	-	-	-
HCM Control Delay (s)	-	47.6	15.7	-	28.5	0	-	-
HCM Lane LOS	-	E	C	-	D	A	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-	0.1	-	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

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HCM 6th Signalized Intersection Summary
1020: Zarzamora & Culebra Rd
02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	1000	200	164	1390	46	192	270	175	54	233	75
Future Volume (veh/h)	87	1000	200	164	1390	46	192	270	175	54	233	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	1368	274	224	1902	63	263	369	239	74	319	103
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	1832	367	303	2339	77	280	525	445	225	274	89
Arrive On Green	0.11	0.86	0.86	0.08	0.46	0.46	0.12	0.28	0.28	0.05	0.20	0.20
Sat Flow, veh/h	1781	4267	854	1781	5076	168	1781	1870	1585	1781	1354	437
Grp Volume(v), veh/h	119	1091	551	224	1275	690	263	369	239	74	0	422
Grp Sat Flow(s),veh/h/ln	1781	1702	1717	1781	1702	1840	1781	1870	1585	1781	0	1792
Q Serve(g_s), s	4.5	15.1	15.2	8.2	38.7	38.9	13.7	21.2	15.3	3.9	0.0	24.3
Cycle Q Clear(g_c), s	4.5	15.1	15.2	8.2	38.7	38.9	13.7	21.2	15.3	3.9	0.0	24.3
Prop In Lane	1.00		0.50	1.00		0.09	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	186	1462	737	303	1568	848	280	525	445	225	0	363
V/C Ratio(X)	0.64	0.75	0.75	0.74	0.81	0.81	0.94	0.70	0.54	0.33	0.00	1.16
Avail Cap(c_a), veh/h	251	1462	737	328	1568	848	280	525	445	305	0	363
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	5.9	5.9	19.6	27.9	27.9	33.3	38.7	36.6	36.1	0.0	47.9
Incr Delay (d2), s/veh	1.2	3.1	6.0	6.6	4.7	8.5	37.6	3.6	0.7	0.3	0.0	99.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.9	3.5	3.7	16.0	18.2	8.8	10.2	6.0	1.7	0.0	20.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	9.0	11.9	26.2	32.6	36.4	70.9	42.3	37.3	36.4	0.0	147.4
LnGrp LOS	C	A	B	C	C	D	E	D	D	D	A	F
Approach Vol, veh/h		1761			2189			871			496	
Approach Delay, s/veh		11.0			33.1			49.5			130.8	
Approach LOS		B			C			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	60.4	9.6	39.4	14.4	56.6	19.0	30.0
Change Period (Y+Rc), s	4.2	* 5.1	* 4.2	* 5.7	* 4.2	* 5.1	* 4.2	5.7
Max Green Setting (Gmax), s	11	* 51	* 11	* 28	* 12	* 50	* 15	24.3
Max Q Clear Time (g_c+I1), s	6.5	40.9	5.9	23.2	10.2	17.2	15.7	26.3
Green Ext Time (p_c), s	0.0	4.1	0.0	0.6	0.0	4.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

Notes
User approved pedestrian interval to be less than phase max green.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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HCM Signalized Intersection Capacity Analysis
1015: IH 10 SBFR & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	630	590	53	1080	0	0	0	0	51	14	513
Future Volume (vph)	0	630	590	53	1080	0	0	0	0	51	14	513
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					5.7	5.7	5.7
Lane Util. Factor		0.95	1.00		0.95					0.95	0.95	1.00
Frt		1.00	0.85		1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00		1.00					0.95	0.97	1.00
Satd. Flow (prot)		3185	1425		3178					1513	1549	1425
Flt Permitted		1.00	1.00		0.79					0.95	0.97	1.00
Satd. Flow (perm)		3185	1425		2526					1513	1549	1425
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	0	844	791	71	1447	0	0	0	0	68	19	688
RTOR Reduction (vph)	0	0	537	0	0	0	0	0	0	0	0	159
Lane Group Flow (vph)	0	844	254	0	1518	0	0	0	0	43	44	529
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		6		5	5 6					8	8	
Permitted Phases			6									8
Actuated Green, G (s)		27.0	27.0		46.0					22.3	22.3	22.3
Effective Green, g (s)		27.0	27.0		46.0					22.3	22.3	22.3
Actuated g/C Ratio		0.32	0.32		0.55					0.27	0.27	0.27
Clearance Time (s)		5.0	5.0							5.7	5.7	5.7
Vehicle Extension (s)		1.7	1.7							1.0	1.0	1.0
Lane Grp Cap (vph)		1023	458		1530					401	411	378
v/s Ratio Prot		0.26			c0.22					0.03	0.03	
v/s Ratio Perm			0.18		c0.32							c0.37
v/c Ratio		0.83	0.56		0.99					0.11	0.11	1.40
Uniform Delay, d1		26.3	23.5		18.8					23.3	23.3	30.8
Progression Factor		1.00	1.00		1.36					1.00	1.00	1.00
Incremental Delay, d2		7.6	4.8		17.0					0.0	0.0	195.5
Delay (s)		33.9	28.3		42.7					23.4	23.4	226.4
Level of Service		C	C		D					C	C	F
Approach Delay (s)		31.2			42.7			0.0			203.6	
Approach LOS		C			D			A			F	

Intersection Summary				
HCM 2000 Control Delay	69.6	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.12			
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	15.7	
Intersection Capacity Utilization	116.2%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

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HCM Signalized Intersection Capacity Analysis
1016: IH 10 NBFR & Culebra Rd 02/03/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	450	230	0	0	351	88	781	16	35	0	0	0
Future Volume (vph)	450	230	0	0	351	88	781	16	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.7			4.7		5.5	5.5				
Lane Util. Factor		0.95			0.95		0.95	0.95				
Frt		1.00			0.97		1.00	0.99				
Flt Protected		0.97			1.00		0.95	0.96				
Satd. Flow (prot)		3426			3432		1681	1674				
Flt Permitted		0.57			1.00		0.95	0.96				
Satd. Flow (perm)		2017			3432		1681	1674				
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor (vph)	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%	130%
Adj. Flow (vph)	591	302	0	0	461	116	1026	21	46	0	0	0
RTOR Reduction (vph)	0	0	0	0	26	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	893	0	0	551	0	544	545	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	1	2 1			2		4	4				
Permitted Phases												
Actuated Green, G (s)		36.4			27.3		32.5	32.5				
Effective Green, g (s)		36.4			27.3		32.5	32.5				
Actuated g/C Ratio		0.43			0.33		0.39	0.39				
Clearance Time (s)					4.7		5.5	5.5				
Vehicle Extension (s)					1.3		1.0	1.0				
Lane Grp Cap (vph)		1026			1115		650	647				
v/s Ratio Prot		c0.09			0.16		0.32	c0.33				
v/s Ratio Perm		c0.28										
v/c Ratio		3.03dl			0.49		0.84	0.84				
Uniform Delay, d1		21.7			22.8		23.3	23.4				
Progression Factor		1.60			1.00		1.00	1.00				
Incremental Delay, d2		5.1			1.6		8.8	9.4				
Delay (s)		39.7			24.4		32.2	32.8				
Level of Service		D			C		C	C				
Approach Delay (s)		39.7			24.4			32.5			0.0	
Approach LOS		D			C			C			A	

Intersection Summary				
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.86			
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	15.7	
Intersection Capacity Utilization	91.1%	ICU Level of Service	F	
Analysis Period (min)	15			

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

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APPENDIX D

Multimodal Corridor Transportation Study

Appendix D: Culebra Road – Traffic Volume Projecting Methodology Memo
(February 2, 2021)

APPENDIX D

TO: Bianca Thorpe, P.E., Capital Programs Manager

FROM: Kerri Collins, PE, PTOE, LEED AP; Michael Trueblood, PE, PTOE; Jemal Ali, PMP

SUBJECT: Task 3: Culebra Road – Traffic Volume Projection Methodology Memo

DATE: February 2, 2021

This technical memorandum outlines our proposed methodology for the development of traffic projections as part of the Culebra Road Corridor Traffic Study located in San Antonio, Texas. Below is a map of the project showing the limits of the corridor at Loop 1604 and IH-10 (**Figure 1**).

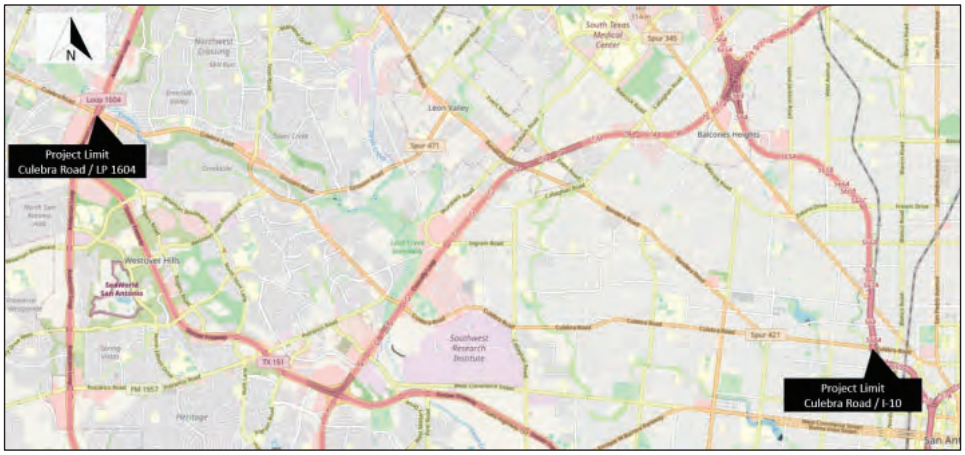

Figure 1 – Study Area and Project Limits

The methodology was developed to forecast the existing traffic volumes to the future design year and to adjust 2020 traffic counts for pre-pandemic conditions. The projections will be used in the traffic analysis and evaluation of the proposed project options.

The traffic volumes will be developed to support analysis for the following years.

- Base Year 2020; and
- Future Analyses Year 2045

The following sources of data are used for the development of growth rates and adjustment factors:

- Traffic counts prior to 2020 – provided from the City of San Antonio;
- Project collected traffic counts – conducted in December 2020 during COVID-19 pandemic;

- Historical count data – obtained from the TxDOT Statewide Traffic Analysis and Reporting System (STARS II) Database or the TxDOT Statewide Planning Map; and
- Alamo Area Metropolitan Planning Organization (AAMPO) travel demand model (TDM) year 2017, 2025, 2035 and 2045 forecast traffic volumes.

Note that the AAMPO travel demand model is used to develop traffic growth rates.

PROPOSED METHODOLOGY

The following steps were used for developing traffic projections. The first step of the methodology includes developing a COVID Factor (CF) to adjust the traffic volumes collected during the pandemic to better represent typical conditions by applying a growth rate to historical data to forecast normal 2020 traffic patterns. The second step is to apply TDM-derived growth factors to the adjusted 2020 counts. The steps to develop traffic volumes and forecasts are as follows:

NORMALIZE 2020 BASE YEAR VOLUMES

Base year traffic volumes for the corridor will be normalized to pre-COVID conditions using a combination of counts collected in December 2020 adjusted with a COVID Factor using counts from previous years adjusted based upon a calculated growth rate to year 2020.

1. **Pre-pandemic TMC Counts** - Apply the growth rate from the AAMPO model to traffic counts conducted prior to 2020 to develop 2020 traffic volumes. Perform a reasonableness check.
2. **Counts Collected During Pandemic** – the following process is used to develop a Covid Factor (CF)
    - Compare the adjusted 2020 pre-COVID TMC (developed in 1) with the similar count location of 2020 counts to develop a COVID Factor (four locations identified)
    - Compare 2020 projected STARS II count locations to 2020 ATR counts recorded at the same location to develop a COVID Factor (CF) and apply to the latest COVID 2020 counts
    - Compare and develop the most appropriate COVID Factor from the above two methods.
    - Conduct reasonableness check to make sure no turning movement volumes are increased where it is not reasonable, i.e., where development is not expected to increase, where roadway does not continue for a long distance, etc.

ANNUAL GROWTH FACTOR

The AAMPO TDM will be used to develop annual growth factors based on volume projections directly from the AAMPO travel demand forecasts for 2017, 2025, 2035 and 2045 models. The forecasts will be used to develop the annual growth factors for the corridor; a process that includes a review of the consistency and reasonableness of the growth trends from the model relative to historic trends.

2045 FUTURE VOLUMES

AAMPO TDM growth rates will be applied to the 2020 revised traffic volumes to develop the future 2045 traffic volumes.

VOLUME PROJECTION CALCULATION

For the purpose of developing annual growth rates and projected traffic volumes, , the study corridor was divided into six segments shown in **Figure 2** and listed below based on the corridor characteristics such as land use, density, roadway configuration and connections with intersecting roads.

1. Segment 1: Loop 1604 to Tezel/Grissom
2. Segment 2: Tezel/Grissom to Micron Dr/Pipers Ln ;
3. Segment 3: Micron Dr/Pipers Ln to IH 410;
4. Segment 4: IH 10 to Callaghan Road,
5. Segment 5: Callaghan Road to Wilson Boulevard; and
6. Segment 6: Wilson Boulevard to IH-10

Figure 2 – Corridor Segments

APPLICATION OF THE AAMPO GROWTH RATE

Traffic volume outputs for the 2017, 2025, 2035 and 2045 horizon years were extracted from the AAMPO TDM for the roadway links along the Culebra Road corridor study area. The growth rates were calculated for each specific link in the network and aggregated into six segments using a volume weighted average as shown in **Table 1**. **Figure 3** shows a graph of how growth rates vary from link to link for different future year volumes. As shown in the table, the growth rate for each segment varies, thus the weighted average in the segment is used for each segment rate calculation. For the short-term future (2017 – 2025), the TDM annual growth rate for segment 2 and Segment 3 are 0.76%, -0.65%, respectively, which is very low. The 2017 TDM volumes for Segment 3 are higher compared with 2025 which results a negative growth rate, between Potranco Rd to IH 410 as an example. To be conservative, a 1.00% minimum growth rate is assumed for all corridor segments. **Table 2** summarizes the average growth rates by segment.

Table 1: TDM Traffic Volume Comparisons & Growth Rates

Segment	No.	Link from	Traffic Volumes				Annual Growth Rates		
			2017	2025	2035	2045	2017-2025	2025-2035	2035-2045
Segment 1	1	LP1604 SBFR	49603	61345	75053	87226	2.69%	2.04%	1.51%
	2	LP1604 NBFR	36353	41435	48806	55812	1.65%	1.65%	1.35%
	3	Rogers Rd	36353	41435	48806	55812	1.65%	1.65%	1.35%
	4	Mountain View	36353	41435	48806	55812	1.65%	1.65%	1.35%
	5	Les Harrison Dr	26012	29043	34301	40309	1.39%	1.68%	1.63%
	6	Cliffbrier Dr	25213	26978	31032	37009	0.85%	1.41%	1.78%
	7	Nueces Canyon/Village Park	25213	26978	31032	37009	0.85%	1.41%	1.78%
	8	Coppertree Blvd	25213	26978	31032	37009	0.85%	1.41%	1.78%
	9	Walmart/Commercial Properties	25213	26978	31032	37009	0.85%	1.41%	1.78%
	10	Camino Rosa	25213	26978	31032	37009	0.85%	1.41%	1.78%
Segment 2	11	Grissom Rd/Tezel Rd	42485	45225	50121	56540	0.78%	1.03%	1.21%
	12	Arcadia Creek	42982	46184	53315	63389	0.90%	1.45%	1.75%
	13	Westover Hills Blvd/Ensenada	37236	38683	46517	52216	0.48%	1.86%	1.16%
	14	Giffin Park Dr	37236	38683	46517	52216	0.48%	1.86%	1.16%
	15	Ansley Bend Dr/Timber Path	37236	38683	46517	52216	0.48%	1.86%	1.16%
	16	Old Grissom Rd	46795	50162	61301	66050	0.87%	2.03%	0.75%
	17	Village Pkwy/Grissom Pass	46795	50162	61301	66050	0.87%	2.03%	0.75%
	18	Grissom Gate	46795	50162	61301	66050	0.87%	2.03%	0.75%
	19	Rim Rock Trail/Commercial Property	44503	47543	57417	60393	0.83%	1.90%	0.51%
	20	Timber View Dr	44503	47543	57417	60393	0.83%	1.90%	0.51%
Segment 3	21	Micron Dr/Pipers Ln	41756	43711	53489	55628	0.57%	2.04%	0.39%
	22	Reed Rd	48273	46511	55385	58881	-0.46%	1.76%	0.61%
	23	Pipers Creek St (Both T Intersections)	49694	47654	56259	60038	-0.52%	1.67%	0.65%
	24	Joe Newton St	49694	47654	56259	60038	-0.52%	1.67%	0.65%
	25	Ingram Rd	45122	43616	51456	55620	-0.42%	1.67%	0.78%
	26	Van Ness	45122	43616	51456	55620	-0.42%	1.67%	0.78%
	27	Potranco Rd	58569	43878	51340	56858	-3.55%	1.58%	1.03%
	28	IH410 SBFR	49765	48963	55791	60508	-0.20%	1.31%	0.81%
	29	IH410 NBFR	27691	28960	32519	34984	0.56%	1.17%	0.73%
Segment 4	30	Commercial Properties/Baseball Field	22758	26555	29624	31877	1.95%	1.10%	0.74%
	31	Avenue G	22758	26555	29624	31877	1.95%	1.10%	0.74%
	32	Alamo Downs Pkwy	26338	30353	33962	36119	1.79%	1.13%	0.62%
	33	Fairgrounds Pkwy	26208	30952	34128	36276	2.10%	0.98%	0.61%
	34	Oakhill-Tom Slick	25239	29954	32608	35144	2.16%	0.85%	0.75%
Segment 5	35	Callaghan	23065	25721	28448	29649	1.37%	1.01%	0.41%
	36	Cantebury	23065	25721	28448	29649	1.37%	1.01%	0.41%
	37	Mira Vista	24452	26914	29453	30819	1.21%	0.91%	0.45%
	38	El Centro	21876	24528	26921	28910	1.44%	0.94%	0.72%
	39	Benrus	21181	24261	26696	27921	1.71%	0.96%	0.45%
	40	Hortencia Ave	20820	23472	26026	26943	1.51%	1.04%	0.35%
	41	Alicia Ave	24027	25245	27456	29595	0.62%	0.84%	0.75%
	42	38th St	21904	22093	24153	27461	0.11%	0.90%	1.29%
	43	Esmeralda Dr/NW 36th St	24635	26871	29655	31431	1.09%	0.99%	0.58%
	44	NW 34th St	24635	26871	29655	31431	1.09%	0.99%	0.58%
	45	Memorial St/Rattler Dr	23603	26308	28661	30520	1.37%	0.86%	0.63%
	46	Camino Santa Maria	23135	25096	27185	29247	1.02%	0.80%	0.73%
	47	N San Felipe Ave	26405	29801	32011	34475	1.52%	0.72%	0.74%
	48	General McMullen Dr	23513	25246	28188	32246	0.89%	1.11%	1.35%
	49	NW 28th St	23102	24835	27791	31769	0.91%	1.13%	1.35%
	50	Bandera Rd	23102	24835	27791	31769	0.91%	1.13%	1.35%
Segment 6	51	Wilson	37260	43323	47019	54295	1.90%	0.82%	1.45%
	52	Neff Rd	40055	46350	50387	57821	1.84%	0.84%	1.39%
	53	19th St	40587	46229	50543	57808	1.64%	0.90%	1.35%
	54	N Hamilton	40736	46702	51583	59297	1.72%	1.00%	1.40%
	55	Elmendorf	40736	46702	51583	59297	1.72%	1.00%	1.40%
	56	Zarzamora	47929	52997	58475	66872	1.26%	0.99%	1.35%
	57	N Navidad Street	50165	55325	61166	69739	1.23%	1.01%	1.32%
	58	IH10 EBFR	30014	32863	36324	41784	1.14%	1.01%	1.41%
Segment 1		LP 1604 to Grissom Rd/Tezel Rd	310739	349583	410932	480016	1.48%	1.63%	1.57%
Segment 2		Grissom Rd/Tezel Rd to Micron Dr/Pipers Ln	426566	453030	541724	595513	0.76%	1.80%	0.95%
Segment 3		Micron Dr/Pipers Ln to IH 410	415686	394563	463954	498175	-0.65%	1.63%	0.71%
Segment 4		IH 410 to Callaghan	123301	144369	159946	171293	1.99%	1.03%	0.69%
Segment 5		Callaghan to Wilson	372520	407818	448538	483835	1.14%	0.96%	0.76%
Segment 6		Wilson to IH 10	327482	370491	407080	466913	1.55%	0.95%	1.38%

Rates are calculated from the 2017, 2025, 2035 and 2045 TDM annual traffic volumes.

Figure 3 – Culebra Road Annual Growth Rates

Table 2: Annual Growth Rate Summary – from AAMPO TDM

Horizon Years	AAMPO TDM Growth Rate			Adjusted Growth Rate*		
	2017-2025	2025-2035	2035-2045	2017-2025	2025-2035	2035-2045
Segment 1	1.48%	1.63%	1.57%	1.48%	1.63%	1.57%
Segment 2	0.76%	1.80%	0.95%	1.00%	1.80%	1.00%
Segment 3	-0.65%	1.63%	0.71%	1.00%	1.63%	1.00%
Segment 4	1.99%	1.03%	0.69%	1.99%	1.03%	1.00%
Segment 5	1.14%	0.96%	0.76%	1.14%	1.00%	1.00%
Segment 6	1.55%	0.95%	1.38%	1.55%	1.00%	1.38%
Overall Corridor	0.88%	1.38%	1.03%	1.00%	1.38%	1.03%

* Assuming minimum 1% annual growth rate.

Rates are calculated from the 2017, 2025, 2035 and 2045 TDM annual traffic volumes.

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RECOMMENDED GROWTH RATE

The growth rates that will be used to project pre-COVID counts to 2020 analyses year and 2020 adjusted traffic volumes to 2045 are summarized in **Table 3**. The future 2020 to 2045 annual growth rate is calculated from the AAMPO TDM annual rates assuming a minimum of 1.00% growth rate between 2017 to 2045 shown in **Table 2**.

Table 3: Recommended Annual Growth Rates by Forecast Year

Locations	Annual Growth Rates	
	2015 - 2020	2020 - 2045
1 – Segment 1	1.50%	1.60%
2 – Segment 2	1.00%	1.30%
3 – Segment 3	1.00%	1.25%
4 – Segment 4	2.00%	1.20%
5 – Segment 5	1.15%	1.05%
6 – Segment 6	1.55%	1.25%

Corrections to traffic turn movement counts (TMCs) taken in 2020 during COVID 19 were developed using two steps as summarized below:

a. Pre-COVID Counts - Apply annual growth rate developed in **Table 3** to traffic counts conducted prior to 2020 (Pre-COVID) to develop adjusted 2020 traffic volumes.
b. COVID Factor via TMCs – Compare adjusted 2020 (Pre-COVID) volumes with the actual 2020 counts taken during COVID-19 to develop COVID Factor. The results of this evaluation at four locations are shown in **Table 4**. As shown, the TMC based COVID Factor varies between 1.23 and 1.39 along the corridor with an average value of 1.31.

Table 4: COVID Factor (CF) from Pre-COVID TMC Projections vs Actual Counts During COVID-19

TMC Counts Intersection Locations	Pre-COVID Count Year	Intersection Volume			
		Pre-COVID Count	2020 Adjusted Count	2020 Actual Count	COVID Factor (CF)
Culebra @ Grissom Rd/Tezel Rd	2015	19,100	20,600	14,800	1.39
Culebra @ Ingram Rd	2015	16,200	17,000	13,400	1.27
Culebra @ Callaghan	2017	16,100	16,500	12,300	1.34
Culebra @ Zarzamora	2017	14,300	15,000	12,200	1.23
Overall Average			69,100	52,700	1.31

Note: Volumes are sum of Intersection TMC from 7AM to 9AM and 4PM to 6PM.

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c. COVID Factor via ATRs - Compare the adjusted 2020 Pre-COVID TxDOT STARS II counts with a similar count location as actual 2020 COVID counts to develop COVID Factor. The results of this evaluation at three locations are shown in **Table 5**. As shown in **Table 5**, the ATR-based COVID Factor varies between 1.02 to 1.19 along the corridor with an average value of 1.10.

Table 5: COVID Factor (CF) from Pre-COVID ATR Projections vs Actual Counts During COVID-19

ATR Counts Locations	STAR II Count Year	ATR 24 HR Volumes			
		STARR II Total Volume	2020 Projected Volume	2020 Existing Volume	COVID Factor (CF)
ATR 1 - Between LP 1604 and Rogers Rd	2019	41,600	42,300	35,500	1.19
ATR 2 - Between Ingram Rd and Potranco Rd	2019	42,500	43,000	39,200	1.10
ATR 3 - Between N Hamilton Ave and Elmendorf Street	2019	35,400	35,900	35,100	1.02
Overall			121,200	109,800	1.10

There are significant differences between COVID Factor estimates derived by the above two approaches. It is our recommendation to use the COVID factor estimate from Pre COVID counts shown in **Table 4,** where the peak hour volumes are considered. This correction recognizes that the previous level of travel activity may never return due to the dramatic reduction in the use of commercial office and retail space in the economy.

d. **Develop Adjusted 2020 Traffic Volumes** - The 2020 base year traffic volumes for the study were calculated by applying the annual growth rates to Pre-COVID AM and PM peak hour traffic counts, or by applying the COVID Factor (CF) to the 2020 COVID, AM and PM peak hour traffic counts.

2. **Step 4: Develop Future Traffic Volumes** - The future projected traffic volumes are calculated by applying the annual growth rates to adjusted 2020 daily, AM and PM peak hour volumes.

CONCLUSIONS

Based on available data and analyses results pertaining to corrections to counts for the COVID-19 pandemic and future growth rates, it is recommended that:

1. traffic counts taken in 2020 should be factored by applying a COVID Factor (CF) of 1.30 to account the impact of COVID pandemic on those counts
2. the growth rates shown in Table 3 be applied to the 2020 base year traffic volumes to generate the proposed future traffic volumes for the 2045 future analysis year.

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