City of Palo Alto (ID # 11078)

City Council Staff Report

Report Type: Action Items **Meeting Date: 2/24/2020**

Council Priority: Transportation and Traffic

Summary Title: Evaluation of the Neighborhood Traffic Safety and Bicycle Boulevard Phase 1 Project

Title: Evaluation of the Neighborhood Traffic Safety and Bicycle Boulevard Phase 1 Project, Including Acceptance of Findings Regarding Increasing Bicycle Usage, Affirmation or Approval of Project Modifications, Affirmation of Planned Education Activities and Process to Update Community Engagement, and Acknowledgement of Associated Actions by Staff

From: City Manager

Lead Department: Transportation

Recommendation:

Staff recommends that the City Council:

1. Accept this report on the Ross Road Bicycle Boulevard and Moreno/Amarillo Bicycle Boulevard project,
2. Affirm the implemented modifications that have been made to the Bicycle Boulevard Phase 1 plan originally approved by the City,
3. Approve proposed modifications including the designation of Ross Road and E. Meadow Drive as a two-way stop with the stops on E. Meadow Drive, the reassignment of stop controls on Louis Road at Moreno Avenue (west), at Moreno Avenue (east), at Fielding Drive, and at Amarillo Avenue, and the installation of supplemental warning and guide signs and pavement markings,
4. Affirm planned efforts by staff to enhance educational activities to address the observed unsafe behavior of motorists, bicyclists, and pedestrians,
5. Affirm that the community engagement process will be updated to reflect the lessons learned with the input of the Planning and Transportation Commission, and the Pedestrian and Bicycle Advisory Committee, and the City/School Traffic Safety Committee, and return the process to the City Council for discussion,

6. Acknowledge that the guidelines, criteria, and design standard for the application of speed humps will be updated, and
7. Acknowledge that the Office of Transportation is undertaking steps to build its staffing and capacity to manage projects like the Bicycle Boulevards.

Executive Summary

Following community reaction to the construction of Phase 1 of the Neighborhood Traffic Safety and Bicycle Boulevard (NTSBB), the City halted construction on the project in summer 2018. Since then, staff collected data and community feedback in order to evaluate the project. This report contains an evaluation of the data and community feedback that leads to recommendations for modifications of the existing project and a path to move forward with pending bicycle boulevard projects. The prioritization of pending bicycle boulevard projects will be brought to the City Council following community outreach and input.

Background

The construction of the Neighborhood Traffic Safety and Bicycle Boulevard (NTSBB) Phase 1 Project garnered a lot of community attention, and in response to significant resident feedback, the City paused the construction project in March 2018 in order to assess the remaining work and decided to formally terminate the construction contract in August 2018 after finishing work already in progress. The contractor was directed to close out and complete unfinished work and a notice of beneficial occupancy/substantial completion was issued on September 30, 2018. The devices installed remained in order to allow the public time to acclimate to the changes, to gather relevant data, and to obtain community feedback. The milestones that preceded the NTSBB Phase 1 Project and the milestones of the project itself are highlighted below in chronological order over the past few years:

- In 1982 Palo Alto established the first "bicycle boulevard" in the United States – turning Bryant Street north of East Meadow Drive into a street that prioritized bicycle safety and circulation.
- Palo Alto's Comprehensive Plan defines a bicycle boulevard as a "low volume through-street where bicycles have priority over automobiles, conflicts between bicycles and automobiles are minimized, and bicycle travel time is reduced by the removal of stop signs and other impediments to bicycle travel."
- In 2012 the City Council adopted the Bicycle + Pedestrian Transportation Plan (BPTP) with the goal of increasing bicycle use for local and work commute trips by 100% by the year 2020.
- Implementation of the Bicycle + Pedestrian Transportation Plan began in 2013 with the authorization of up to $1.2M per year over five years towards the construction of bicycle facilities.
- In 2014 the City Council awarded a contract to Alta Planning + Design, Inc. for the planning, conceptual design, and preliminary environmental assessment of the Bryant

Street Bicycle Boulevard update; the Greer Road Bicycle Boulevard; the Amarillo Avenue-Moreno Avenue Bicycle Boulevard; the Ross Road Bicycle Boulevard; and the Homer Avenue-Channing Avenue enhanced bikeway.

- In January 2015 the City Council approved the conceptual plans for the Maybell Avenue Bicycle Boulevard and the Churchill Avenue Enhanced Bikeway.
- In August 2015 the City Council approved the conceptual plans for the Park Boulevard Bicycle Boulevard and the Wilkie Way Bicycle Boulevard.
- In October 2015 the City Council held a study session on the Palo Alto Bicycle and Pedestrian Program.
- In November 2015 the City Council approved conceptual plans for the extension of the Bryant Street Bicycle Boulevard.
- In May 2016 the City Council approved the conceptual bicycle boulevard plans on Amarillo Avenue, Bryant Street, East Meadow Drive, Montrose Avenue, Moreno Avenue, Louis Road, Palo Alto Avenue, Amarillo Avenue-Moreno Avenue, Bryant Street Update, Louis Road-Montrose Avenue, and Ross Road; approved a professional services contract with Alta Planning + Design Inc. for the preparation of plans, specifications and estimates for the Amarillo Avenue-Moreno Avenue, Bryant Street Update, Louis Road-Montrose Avenue, and Ross Road bicycle boulevard projects; and approved a professional services contract with Fehr & Peers for the preparation of plans, specifications and estimates for the previously-approved Bryant Street Extension, Maybell Avenue, and Park Boulevard – Wilkie Way Bicycle Boulevard projects.
- In June 2016 the City budgeted $11.6 million in the 5-Year (FY 2017-2021) CIP toward the achievement of the Bicycle + Pedestrian Transportation Plan.
- In 2017 the City Council awarded a $9.6 million construction contract to Granite Construction Company for the NTSBB Phase 1 Project. The project consisted of nine segments that comprised the Ross Road, Amarillo-Moreno, Bryant Street, and Louis-Montrose bicycle boulevards.
- In September 2017 construction commenced on the Phase 1 project staged in a series of segments that was intended to minimize the disruption in the affected residential neighborhood. The project started on south Ross Road.
- Following the commencement of construction, a significant number of residents indicated that they were not familiar with the project and opposed the construction. Some residents who were aware of the project indicated they had assumed that a "bicycle boulevard" would replicate the devices on Bryant Street and had not expected bulbouts, speed humps with neckdowns, medians, and roundabouts. In addition to a lack of notification, the concerns expressed included the rationale for bicycle boulevards, the choice of design features, and the perceived negative impacts on motorists, bicyclists, emergency responders, transit vehicles, and seniors. In response to the public's concerns staff undertook the following actions:
    - Meetings with residents who had expressed concerns
    - Additional notifications and consultation with residents immediately adjacent to proposed treatments

- Updated city website “frequently-asked questions”
- Revamped the Project website with clearer information and a detailed construction schedule
- Participated in an on-camera interview for the Palo Alto Weekly – Behind the Headlines
- Conducted a Bicycle Boulevard Orientation at Ramos Park
- Developed a roundabout educational curriculum to be taught in 3rd, 5th, 6th and 8th grades that included materials sent home to over 1200 parents at schools with catchment areas that included the bicycle boulevard
- Set-up informational tables at all PAUSD schools with Walk and Roll routes that intersect with the Project and participated in two Principal Coffee events at El Carmelo and Palo Verde Elementary Schools
- Developed a roundabout education poster that ran in the Palo Alto Weekly and was used at five encouragement events and bike safety information booths
- Presented one five-minute overview of bicycle boulevard safety tips for all grades at an assembly at Palo Verde Elementary School
- Conducted Bicycle Boulevard Orientation events at Ramos Park and Greer Park to distribute safe bicycle riding information and answer questions about the project and transportation in general
- Designed and executed a mock roundabout children’s activity for a Safetyville presentation at the YMCA on Ross Road
- Rode pace-bikes up and down Ross Road exhibiting recommended bicyclist behavior
- Distributed an online questionnaire to gauge community perceptions of the Project
- Added project informational signage with contacts for feedback
- Installed temporary mock-ups of proposed treatments on the Amarillo and Greer area streets to demonstrate the treatments and enable feedback before permanent construction; this practice became a standard project precursor for subsequent projects
- Modified designs of some treatments (e.g., the turning radius for curb extensions at YMCA)
- Added devices and removed devices from the Plan (e.g., removal of the Amarillo/Greer roundabout)

- In March 2018 staff directed the contractor to pause work on segments that were not already under construction.
- In April 2018 the contractor was directed to complete the remaining work on Ross Road along with improvements on the Moreno/Amarillo Bicycle Boulevard.
- In June 2018 the City held a study session on the Phase 1 project. Approximately 150 people attended the meeting. Over 50 individuals spoke. Roughly half of the speakers spoke in support of the project and half of the speakers spoke in opposition to all or some aspects of the project. The six major themes from the study session included:
    1. Rationale for the Phase 1 Project

2. Continued work on the project after the City announced the pause in construction
3. Use of performance metrics in the evaluation of the project
4. Allowing road users and residents time to experience the actual effect of the project
5. Breakdown in the community engagement process
6. Impact of street treatments on older drivers

- In July 2018 the City Manager distributed an informational report to the City Council. The City would monitor the improvements that were installed and perform an evaluation that considered the perspectives of affected residents and road users and an assessment of relevant traffic data. It was anticipated that a 6-month status report would be provided in January 2019 and a final report would be provided in August 2019. Due, however, to vacancies in key positions and the demands of other priority projects, such as the grade separation of the Caltrain tracks and the evaluation of the Residential Parking Permit program, the evaluation of the NTSBB Phase 1 project was delayed.
- Through September 2018, the contractor completed the work on Ross Road and the Moreno/Amarillo Bicycle Boulevard.
- On September 30, 2018 the contractor was issued a Notice of Beneficial Occupancy/Substantial Completion, with punch list items to be completed. Punch list work continued through early November 2018.
- In 2019 consultant services were approved to assist in the NTSBB evaluation.

Discussion:

The NTSBB Phase 1 project consisted of 9 segments. Only 5 segments were completed; the 5 segments created two new bicycle boulevards – Ross Road and Moreno/Amarillo. For the purpose of brevity, the completed segments are referred to in this report as the Project. The Project that was completed was significantly truncated compared to the plan approved by the City Council. The major change was due to the termination of the construction contract and work on the last 4 of segments of Phase 1. On the work that was actually constructed for the 5 segments (the Project), there were many modifications that made the installed project vary from the original Project plan. Those modifications are identified in the following chart as either “added” (Project plan was modified to add this), “installed” (installed per Project plan), “deleted” (removed from the Project plan), or “retained” (kept, although Project plan proposed to remove them).

Modifications to the Phase 1 Project for the Ross Road and Moreno/Amarillo Bicycle Boulevards							
		Design Features and Traffic Controls					
Street	**Segment**	**Round-about**	**Speed Hump**	**Bulbouts**	**Islands**	**Raised Intersections and Shared Path**	**All-Way Stop**
Ross Road	1	Installed: @ E. Meadow	Installed: @ S. Talisman @ S. Stone w/choker Added: @ S. Christine	Installed: @ Talisman	Installed: @ Corina	Installed raised inter: @ Mayview	Retained: @ Mayview
	2		Installed: @ S. YMCA w/neckdown @ S. Richardson w/neckdown @ S. Allen @ N. Stern w/ neckdown	Installed: @ YMCA @ Allen @ Stern			Retained: @ Ames
	3		Installed: @ S. Sutter w/neckdown	Installed: @ Clara	Installed: @ Colorado		
Amarillo Avenue	4	Deleted: @ Greer	Deleted: @ W. Tanland w/neckdown	Deleted: @ Ohlone School w/table @ Tanland w/table @ Tanland w/table	Deleted: @ Bayshore (chicane)		Retained: @ Greer

Modifications to the Phase 1 Project for the Ross Road and Moreno/Amarillo Bicycle Boulevards							
		Design Features and Traffic Controls					
Street	**Segment**	**Round-about**	**Speed Hump**	**Bulbouts**	**Islands**	**Raised Intersections and Shared Path**	**All-Way Stop**
Amarillo Avenue Louis Road Moreno Avenue	5	Installed: @ Ross		Installed: @ Moreno @ Amarillo Deleted: @ Ohlone School		Installed raised inter: @ Moreno @ Amarillo Installed shared path: @ E. Louis	Installed: @ Moreno @ Fielding

Each of the above modifications was made following a deliberative process that considered relevant factors. It is recommended that the City Council affirm the above modifications.

The issues addressed in this report began with the comments from the public engagement process in 2018. The issues were expanded from the comments received from all sources in 2019 and refined by the responses in the community surveys conducted in early 2020. The final list of issues form the sections that follow in this report.

The evaluation attempted to consider all relevant information. Unfortunately, only limited traffic data was collected before commencement of Project construction. Efforts to estimate past traffic volumes and speeds using data gathered and stored from cell phones and GPS devices was generally not fruitful. Therefore, the comparison of before and after vehicle volumes, vehicle speeds, and bicycle volumes was limited. On the other hand, all traffic collisions were considered, and the behavior of motorists, bicyclists, and pedestrians was captured by video. The perception of the community was obtained through surveys conducted in 2018 and 2020. In addition, the comments from the 2018 City Council study session and all comments received from individual members of the public and the observations of City staff were considered.

Did the Project Achieve Its Objectives?

The goal of bicycle boulevards, and therefore this Project, is to promote the usage of bicycles/alternative modes and to slow motor vehicle traffic. The metrics to determine how well this goal was achieved include the change in the number of bicyclists using the bicycle boulevards, indices that measure the safety of the roadway, the impacts on public service

providers, and the perception of the community. The Ross Road Bicycle Boulevard and the Moreno/Amarillo Bicycle Boulevard are discussed separately.

Ross Road Bicycle Boulevard

The Ross Road Bicycle Boulevard begins at Garland Drive (north of Oregon Expressway) and terminates at Louis Road. The Project increased the bicycle usage on Ross Road. Modification to the controls at the intersection of Ross Road and E. Meadow Drive is needed. The average weekday bicycle volumes prior to the construction of the Project was approximately 150. After the construction, the average weekday volume was approximately 230 (a 50% increase). The average weekend volumes remained about the same. The increase of weekday bicycle traffic suggests that more commuters are using the Ross Road Bicycle Boulevard. It is, however, unknown if the increase reflects growth in bicyclists or a diversion of bicycle traffic from other streets. Before the Project, the ratio of bicycles to total vehicle volume was 6.7%, a relatively high ratio. After the Project, the ratio climbed to a remarkable 11.0%.

While the volume of bicycles has increased, there have been collisions at some project locations. The traffic collisions on or near Ross Road for the 5-year period between January 1, 2015 and December 31, 2019 is shown in Attachment A. The total number of collisions on Ross Road averaged 3.6 per year before the construction and 5.3 per year following the construction. The increase is attributable to an increase in collisions at one location – the intersection of Ross Road and East Meadow Drive. Each of the four collisions that occurred at this location after the Project was completed was a broadside caused by the motorist who did not yield to a vehicle or bicyclist in the roundabout. Visibility was not an issue. Three of the four collisions involved a bicycle. While the cause of the collisions was driver error, the collisions point to the need for a more affirmative control that will be discussed in the next section of this report.

The other bicycle collisions that occurred after the completion of the Project included one at the intersection of Ross Road and Oregon Expressway and one at the intersection of Ross Road and Mayview Drive. Both were broadside collisions where the motorist did not yield the right-of-way to the bicyclist. There were 2 pedestrian-involved collisions before the Project, one at Loma Verde and the other at Mayview, and none after the Project was constructed.

An indicator of safety is the speed of vehicles. The higher the speed, the more difficult it is to avoid a collision and the greater the likelihood of a severe injury. The speeds on Ross Road were relatively low before the Project, a prerequisite for a bicycle boulevard. After the Project was completed, the 85th percentile speeds remained within 1 mile per hour (mph) of the 25-mph speed limit, except for the section of Ross Road south of Mayview Avenue, which was recorded at nearly 29 mph.

Another indicator of safety is the behavior of road users. The violations of the rules of the road vary by device and user. About 1.4% of the road users at roundabouts violate a rule. At speed humps/neckdowns the violation rate is 11.0%. The violations at speed humps have not yet resulted in reported collisions. The observed behavior at roundabouts and speed humps will be discussed later in this report.

The providers of public services potentially affected by the Project were interviewed. The Palo Alto Fire Department (PAFD) noted that there are a relatively high number of calls on Ross Road due to the YMCA. The PAFD vehicles slow at the roundabouts, similar to other vehicles. A representative of the Palo Alto Police Department noted that the Project has not affected their ability to provide services, that the roundabouts seem to be working well, but that behavior of some drivers at the speed humps and the roundabouts is a concern. The public transit provider, the Santa Clara Valley Transportation Agency, indicated that they did not have any concerns. GreenWaste expressed a concern that their trucks experienced some difficulty in making turns at the roundabouts.

Moreno/Amarillo Bicycle Boulevard

The Project did not increase bicycle usage on the Moreno/Amarillo Bicycle Boulevard, perhaps in part, because the majority of the devices that were planned were not installed. Key devices not installed included a roundabout at Greer, a speed tables/neckdown at Tanland and near Ohlone school, speed tables at three locations, and a median island and a chicane (neckdown) at West Bayshore Road. These devices were deleted following the installation of temporary devices and also due to consideration of the negative feedback from community members.

The Moreno/Amarillo Bicycle Boulevard consists of Moreno Avenue between Middlefield Road and Louis Road, Louis Road between Moreno Avenue and Amarillo Avenue, and Amarillo Avenue between Louis Road and West Bayshore Road. The average weekday bicycle volumes prior to the completion of the Project was 169. After the construction, the average weekday volume was 154. The 9.3% decrease is relatively small and not considered to be significant. The average weekend bicycle volumes decreased by 5.2% and are not considered to be significant. There was an increase in weekday pedestrian volumes from an average of 270 to 340, a 26% increase.

There were no reported bicycle or pedestrian-involved collisions from January 2017 through December 2019. That means the collision rate involving bicycles or pedestrians was zero for the periods both before and after construction. Overall there was an average of 1 collision of any sort per year. The 85th percentile speeds remained about the same on Moreno Avenue and Amarillo Avenue. The speeds were within 1 mph of the speed limit, except to the east of Greer where the 85th speed was recorded at 30 mph. The public service providers did not express any concerns about the Moreno/Amarillo Bicycle Boulevard.

Community Perspective

Based on the results from the 2020 community surveys, the majority of responding residents do not perceive that bicycling and walking increased. For the residents who live on the frontage of a bicycle boulevard, 39% believe bicycle and pedestrian traffic increased, but 43% perceive no change, and 6% believe bicycle traffic decreased. Twelve percent (12%) were not sure. The perception of nearby residents was slightly different, potentially in part because of the confusion of which street they were being asked to rate. Nevertheless, 19% believe that the bicycle and pedestrian traffic increased, 57% perceive no change, and 6% feel there was a decrease. Eighteen percent (18%) were not sure.

The perception of residents regarding changes in vehicle speed is consistent with the speed data. Three out of four residents (75%) believe the speed of vehicles either decreased or remained the same.

The majority of residents feel that the safety of bicyclists and pedestrians decreased including 47% of those who front onto a bicycle boulevard and 49% who live nearby. As users of the road (including residents and others), 40% of the bicyclists report that they feel unsafe, 38% of the motorists feel unsafe, and 15% of the pedestrians feel unsafe. Many of the motorists commented that their concern over safety related to possible collisions with bicyclists. Many of the comments identified the mixing of bicycle and auto traffic in the same travel lane as their primary concern over safety.

What modifications, if any, should be made to the Ross Road Bicycle Boulevard and the Moreno/Amarillo Bicycle Boulevard?

Since the Project was completed, staff has continued to monitor the two boulevards, and community members have continued to provide their input. Public inquiries that were received through the City's 311 system were referred to this evaluation. Recently the perspective of community members was solicited through surveys of residents on and near the two bicycle boulevards and other users of these roadways. A total of 480 survey responses were received that included nearly 1600 written comments. The input of public service providers, the public schools, and community facilities was obtained. Available before and after traffic volumes, speeds, and collisions were analyzed. A sampling of the actual behavior of motorists, bicyclists, and pedestrians was videotaped at four locations.

A summary of the responses to the community surveys, as of January 24, 2020, is shown in Attachment B. There are three categories of surveys that include (1) residents who front onto a bicycle boulevard, (2) residents near the bicycle boulevard, and (3) other users of the roadway (commuters). One of the questions, #10, asked the respondents to indicate if modifications to the roadway should be considered. Those who answered affirmatively was high - 76% of residents who front onto a bicycle boulevard, 83% of residents who live nearby, and 68% of other road users. These respondents provided a collective 320 comments although 112 did not identify specific modifications. The remaining 208 comments were boiled down into 8

categories of modifications including road narrowing, bike lanes, roundabouts, speed humps, Louis Road intersections, YMCA access, street closures, and stop signs.

1. Road Narrowing

Forty-one survey respondents (8.5%) commented that all design features should be removed and 45 (9.4%) more felt that all things that narrow the roadway should be removed. The modifications include the removal of mid-block curb extensions, intersection bulb-outs, and roundabouts. The removal of speed humps was mixed. The 86 respondents represent 47% of those who advocated specific modifications but just 18% of all survey respondents. The common belief of the respondents is that forcing bicycle traffic and automobile traffic to share the same travel lanes is illogical and inherently unsafe and that this problem is exacerbated when the bicyclist is a child and lacks the maturity and judgment of an adult. It was pointed out through other questions in the survey that there appears to be a lack of understanding of the rules of the road by both motorists and bicyclists. Some respondents relayed personal experiences to support their beliefs. Respondents did not point out that the lane sharing experience is common amongst other non-bicycle boulevard streets in Palo Alto.

During the 18-month period since the construction was completed, there were five reported collisions involving bicycles. Three of the collisions occurred at one intersection - Ross Road and E. Meadow Avenue. This location is addressed later in the report. The other collisions were broadsides where the motorist did not yield to an oncoming bicyclist. There were no sideswipe or rear-end collisions, the types of collisions that would be expected if the sharing of a travel lane was a problem.

To determine the actual behavior of road users, video cameras were set up at four locations on Ross Road. Of nearly 14,000 users observed at the roundabouts, 0.4% of the motorists, 3% of the bicyclists, and 11% of the pedestrians were observed violating some rule of the road. The violations included pedestrians walking outside of a marked crosswalk, vehicles not yielding the right-of-way, and bicyclists riding in the wrong direction. Of the 7,000 vehicles observed at speed humps/neckdowns 0.5% of the bicyclists and 12% of the motorists were observed crossing over the double yellow centerline, a violation of the State Vehicle Code. The above transgressions might be conscious decisions or inattention by the road user. The observations confirm the community's perception that there is a lack of understanding in the rules of the road and a lack in attention by some.

The collision data and the observation of road user behavior does not support the wholesale removal of all roundabouts, neckdowns, and bulb-outs. It does, however, support the need for further education of road users that is discussed later in this report.

2. Bike Lanes

Several dozen respondents to the community survey indicated that bike lanes would have been a better alternative to the sharing of travel lanes. On a residential street, the installation of bike lanes requires the removal of the on-street parking on at least one side of the road. This

places the bicyclist immediately adjacent to moving traffic and, depending on the design of the bike lanes, may be adjacent to parked vehicles and subject to being "doored," or colliding with the sudden opening of the door of a parked automobile. This shortcoming could be mitigated by providing space between the bike lane and vehicles, accomplished by the removal of all on-street parking. In either case, there is a tradeoff between the value of on-street parking and the goal of promoting bicycling. Staff does not believe that the residents of Ross Road and the Moreno-Amarillo Bicycle Boulevards would have supported the removal of their on-street parking in order to install bike lanes. This is an option that will be considered in the development of future bicycle boulevards.

3. Roundabouts

Roundabouts were installed at the intersections of Ross Road and Moreno Avenue and Ross Road and E. Meadow Drive. Operationally, they have functioned as expected with fewer delays for all users. No collisions have been reported at the Ross Road and Moreno Road roundabout. On the other hand, the Ross and E. Meadow roundabout has been the site of four collisions over an 18-month period. A collision diagram of this intersection is shown in Attachment C. Each of the collisions was a broadside where a motorist did not yield the right-of-way to the vehicle/bicyclist in the intersection. Three of the four collisions involved a bicyclist. In each collision, the primary cause of the collision was driver error.

Approximately 9,000 autos/trucks enter the intersection daily which, during an 18-month period, equates to nearly 6 million autos/trucks. The rate of 0.67 collisions per million vehicles entering is not alarming, but it is a concern that three of the four collisions involve a bicycle. The data supports a more assertive form of intersection control. The current regulation is to yield the right-of-way to vehicles within the roundabout that is reinforced with "Yield" signs at each of the approaches. Whereas the size of the "Yield" signs could be made larger, a more assertive regulation would be the installation of a 2-way Stop. Normally, the stopped approaches are those with the lesser traffic volumes, which in this case is Ross Road. The total vehicle volumes, that includes autos, trucks, and bicycles, over two 12-hour periods were 4,086 on Ross Road and 5,406 on E. Meadow Drive. Another stop on Ross Road, however, would negatively impact the attractiveness of the street as a bicycle boulevard. For that reason, adding stop signs on E. Meadow Drive is proposed.

As previously mentioned, the observed behavior of some users of the roundabouts and the apprehension articulated by other users' needs to be addressed. The summary of the observations of the road user behavior at the roundabouts at Ross/E. Meadow and at Ross/Moreno are shown in Attachment D. It was observed that roughly 1 in every 300 motorists does not yield the right-of-way. Roughly 1 in every 30 bicyclists does not yield the right-of-way, rides on the wrong side of the road, or goes in a clockwise direction in the roundabout. Eleven percent of the pedestrians walked outside of the marked crosswalks. A few crossed completely in the roadway in a diagonal direction through the intersections. These behaviors cannot be addressed through engineering. The role of education is discussed later in this report.

In addition, to address the concerns of GreenWaste and the Palo Alto Fire Department, as well as the observations of staff, the following modifications within the intersection are planned:

- Remove the band of river stones in the island and increase the depth of the concrete truck apron
- Increase the clearance from the edge of the truck apron to the signs within the center island
- Make the noses of the splitter islands fully mountable rounded concrete (remove river stones)
- Remove tactile domes in splitter islands
- Install red curb at the roundabout departure areas to prevent parked cars from blocking vehicles from making the left-turn in front of the center island

A community member pointed out that the dimensions of the Ross Road roundabouts differ from federal guidelines. This is true. Roundabouts are normally located on wide streets with high volumes and high speeds. The devices installed on Ross Road have the characteristics of a mini-roundabout or a neighborhood traffic circle, installed in other parts of Palo Alto. Perhaps a more accurate name for the devices installed or Ross Road is a "micro mini-roundabout" or an "expanded neighborhood traffic circle." For the sake of simplicity, the designers labeled the devices as roundabouts.

4. <u>Speed Humps</u>

Members of the public raised concerns related to speed humps that fall into two categories. The first is the desire to add more speed humps to reduce perceived speeding. The highest speeds are on Ross Road south of Mayview Avenue and on Amarillo Avenue east of Greer Road. The 85th percentile speeds are about 5 MPH above the 25 MPH speed limit. The City guidelines that relate to the use of speed humps is included in the 2001 document, "City of Palo Alto Neighborhood Traffic Calming Program." At least two of the following five criteria must be satisfied for consideration of traffic calming measures, including speed humps:

1. Minimum 85th percentile speed of 32 mph for local streets, and 35 mph for collector streets;
2. Minimum volume of 1,200 vehicles per day (vpd) for local streets and 4,000 vpd for collector streets;
3. Location within 1,000 feet walking distance of a school, senior citizen facility, facility for the disabled, park, community center, or other site with significant pedestrian activity;
4. Evidence (survey or field evaluation) of significant cut-through (i.e., through or non-neighborhood) traffic;
5. Unusual accident history (as defined by six or more crashes, or one fatal crash, in the prior three consecutive years—crashes due to parking, vehicle equipment, drug/alcohol, and certain other causes clearly not solvable by traffic calming will usually not be counted.

The request on Ross Road for a speed hump south of Mayview Avenue meets two of the above criteria – minimum volumes and proximity to a park. The same is true for the request for a speed hump on Amarillo Avenue east of Greer. The installation of speed humps and tables on Amarillo was part of the original plan that was rejected by the community and not installed. The installation of a speed hump on Ross Road will be considered following an update of the guidelines for the device.

The second category of concerns relates to the removal or modification of the combined slotted speed humps with neckdowns. The combination of devices encourages bicyclists to ride outside the door zone and in the travel lane at a point where some vehicles incorrectly use the slot in the speed hump and cross over the roadway centerline. There have been no reported collisions at these locations. Based on two days of video at the speed hump with neckdowns on Ross Road between Stone Lane and Talisman Drive and between Sutter Avenue and Clara Drive, 12% of autos were observed encroaching into the opposite lane of travel. A much smaller percentage of bicycles, 0.5%, crossed over the centerline. A breakdown of the observations is shown in Attachment E.

It was suggested that a bike lane be constructed to the right of the speed humps. Another suggestion was to eliminate the slot in the middle of the speed hump so that motorists are not encouraged to place their left wheel over the centerline of the street. The first suggestion would still result in the merging of bicycles at the point they encounter a parked vehicle. It would also require the removal of existing parking spaces. The second suggestion has merit but misses the reason for the slot. The slot is intended to be used by emergency responders to mitigate delays. The fact that other vehicles use the slot is not an issue until it occurs when another vehicle is encountered. It was surprising to find 3 instances where an auto passed bicycles at the speed hump. More surprising was finding 37 instances where a vehicle crossed the centerline when oncoming bicycles were close to the speed hump. Staff plans to review the value of continuing to use the slotted speed hump design with input from all emergency responders and reflect the findings in the design of both existing and future speed humps. Staff also plans to enhance its educational efforts on the safe use of speed humps.

5. <u>Louis Road Intersections</u>

The Project included an ambitious effort to build a series of raised intersections, widen sidewalks, and install landscaped areas and decorative pavement markings within the Louis Road right-of-way from Moreno Avenue to Amarillo Avenue. Each of the raised intersections traverses two distinct intersections. One set of intersections includes Louis and Moreno (west of Louis) and Louis and Moreno (east of Louis). The other set includes the intersections of Louis and Fielding and Amarillo. Each of the four intersections has 3 legs, which are controlled by a 2-way stop with one approach on Louis being uncontrolled. This means that one of the legs has the right-of-way and the others must yield. Residents and other roadway users, the Ohlone

Elementary School administration, and City staff all report that the intersection controls are unclear as to who has the right-of-way. Staff plans to modify the intersection controls as described below:

- Louis Road and Amarillo Avenue intersection - Change 2-way stop to a 3-way stop that returns the intersection control to what existed before the Project.
- Louis Road and Fielding Drive intersection - Change 2-way stop to a 1-way stop with Fielding stopping that returns the intersection control to what existed before the Project.
- Louis Road and Moreno Avenue (east) Intersection - Change the 2-way stop to a 1-way stop with Moreno (east) stopping that returns the intersection control to what existed before the Project.
- Louis Road and Moreno Avenue (west) Intersection - Change 2-way stop to an all-way stop.

Modifications in the pavement marking and signage are recommended to inform bicyclists that there are no bike lanes on Louis between Moreno and Amarillo and on Amarillo from Louis to Ohlone Elementary School and that either the widened sidewalks or the shared vehicle lane are available for the bicyclists use. Other warning and informational signs and pavement markings will be installed as needed.

6. <u>YMCA Access</u>

The Project included the installation of bulb-outs at the YMCA. The intent of the device was to enhance the visibility of oncoming traffic and to decrease the speed of vehicles. There was one reported collision in the vicinity of the YMCA before the Project and no collisions after the Project was completed. The speed of vehicles has remained relatively constant, although it is the perception of the YMCA that speeds have decreased. During the construction period, in response to the concern from the YMCA, the radius of the bulb-outs at its driveway entrances were modified. A few individuals report that they still experience difficulties entering Ross Road, especially when there are large groups of bicyclists. The YMCA confirmed that they have received the same comments from its members but noted that some of its members do not appear to understand that bikes are to be treated the same as other vehicles. Further modifications to the YMCA bulb-outs are not needed at this time. The City will work with the YMCA to expand its efforts as appropriate on safety education efforts.

7. <u>Street Closure</u>

Community members suggested that streets be closed to auto traffic, thereby making the street safer for those on bicycles. It is noted that a partial street closure already exists on Ross Road at the intersection of Oregon Expressway. In the ideal world, street closures encourage "through" traffic to divert to the arterial street system, and the local traffic will use routes that do not negatively impact the residents of other streets. This effort, if not done carefully and with the engagement of all affected residents, can be very controversial. At the 2018 Study Session on bicycle boulevards, a councilmember noted that the street closure on Bryant Street

at Matadero Creek bridge seems to work well. Another councilmember recalled that the changes on Bryant Street were controversial and led to the City policy to not close streets in its residential neighborhoods.

Before a street is designated as a bicycle boulevard, the traffic volumes and the speed on the street must be relatively low. Any street closure would require that the conditions of California Vehicle Code 21101 are met.

8. Stop Signs

The installation of stop signs was requested to either more affirmatively assign right-of-way at an intersection or to reduce the speed of vehicles. The assignment of right-of-way was discussed in the previous sections on roundabouts and the Louis Road raised intersections.

There were two sets of requests to install stop signs to reduce excessive speeding. The installation of additional stop signs on Ross Road south of Mayview Avenue is not practical because of the spacing of intersections. Moreover, none of the intersections meet the warrants for all-way stops, and the placement of additional stops would negatively impact the attractiveness of Ross Road as a bicycle boulevard. A better alternative is a speed hump as discussed in the preceding section of this report.

The installation of stop signs to reduce excessive speeding on Amarillo Avenue east of Greer Road was considered. None of the intersections between Greer and Old Bayshore Road meet the City's warrant for all-way stops. To reduce excessive speeding, the above location has been referred to the Palo Alto Police Department for enforcement.

What role does education have in a successful bicycle boulevard?

The need to inform and educate motorists, bicyclists and pedestrians is apparent. It is evident from the observed behavior of some road users and the analysis of actual collisions. It is reiterated by members of the community and by City staff.

The City already has in place an excellent safety education program focused on school-age children. As resources become available, possible enhancement to more than 20 current safety educational activities have been identified that would include a greater effort with adults. It is the intent of the Office of Transportation to expand its traffic education program to address the needs in this report.

Did Meeting the Project Objectives Justify its Cost?

Community members have raised a concern about the cost of the Project and if it was the best use of City funds. A total of $6.4 million was expended on the contractual services related to the Project. This figure does not include the cost for conceptual planning and the cost of City staff. The expenditures for major services are shown below:

- Design, specifications, and construction estimates 827,059
- Construction 5,127,063
- Construction Management 455,703
- Total $6,407,308

The improvements were installed before the construction contract was terminated consisted of a variety of design features (i.e., roundabouts, speed humps, bulbouts, islands, raised intersections) and widened sidewalks and landscaping at 23 locations. An assortment of traffic control signs and markings and decorative pavement markings and new street lighting were also installed. On a per-location basis, the cost of the design features averaged about $260,000, which is high. The cost of special treatments, like those installed on Louis Road, needs to be weighed against the effectiveness provided by the expenditure. The cost-effectiveness of design elements will be a consideration in all future bicycle boulevard plans.

Due to the flux in the project, there were 41 change orders in the construction contract. The cost of these changes was nearly $700,000. The reason for the changes and costs are summarized below. A brief description of each change order is shown in Attachment F.

- Unforeseen conditions 164,020
- Quantity adjustments 12,000
- City requests 281,861
- Design error 240,861
- Total $698,742

The above design errors, for example, included drainage issues on Louis Road that required an additional $240,000 in construction to remedy related to the raised crosswalks. The circumstances regarding the design error will be reviewed by the City Administration to determine what, if any, further action should be taken.

How can the community be better engaged to avoid the breakdown in communications experienced in the NTSBB Phase 1 Project?

A major concern for members of the public and the City Council was an inadequate level of community engagement. Some people were not aware of the efforts to solicit community input, others did not understand the specifics of the project, and others could not determine if their earlier input had been considered. There is a definite need to improve the community engagement process.

The community should be encouraged to be involved at all stages of the development of future bicycle boulevard projects including the conceptual planning stage which is 3-5 years before the start of construction; at the design stage which is 1 to 2 years before the start of construction; and at the award of the construction contract which precedes the start of construction.

A practice of installing temporary devices, which is part of the development of traffic calming plans, could help to ensure the engagement of the affected residents. Temporary devices were installed on Amarillo Avenue and, based on community feedback, the plan was modified. The timing of when temporary devices are installed needs to be determined. It is much more efficient to install temporary devices during the design process versus the construction stage.

The community survey asked the question, "When the City implements a project like the bike boulevard project in the future, what is the best way to inform/notify you about the project?" The full results are shown in Attachment G. The top methods of communications are email, the U.S. mail, doorhangers, social media (Nextdoor), and posted signs. Attending community meetings was next, followed by neighbor-to-neighbor sharing, and lastly, direct contact by City staff or the construction team.

It is recommended that a community engagement process be developed by the Office of Transportation with the input of the Planning and Transportation Commission and the Pedestrian and Bicycle Advisory Committee, and the City/School Traffic Safety Committee, and that the process be discussed with the City Council.

How can the City be better equipped to manage controversial projects like bicycle boulevards?

To more successfully manage bicycle boulevard projects in the future, the Office of Transportation will initiate four undertakings. The first is to clearly define the performance metrics for each project to guide the course of the project and ensure that appropriate activities are underway (i.e., gathering of traffic volume and speeds, user behavior, and community surveys). The cost-effectiveness of devices will be used to guide the project design.

The second undertaking is the creation and/or updating of the guidelines and warrants for the installation of various roadway design features and traffic controls. This would include, but not be limited to the installation of roundabouts, speed humps, stop signs, and crosswalks. An updating of the 2001 guidelines for traffic calming should also occur. Staff is developing a neighborhood enhancement program that will include these elements.

A third undertaking is process improvements. An example is an update to the community engagement process, described in the preceding section of this report. Another example is the documentation of completed capital improvement projects. A final plan, commonly referred to as an "as-built," is prepared and approved by the "responsible" staff in the City. This process preserves the City's ability to claim design immunity in the event of litigation. A third example is the ability of the engineering staff to directly access the Palo Alto Police Department traffic collision database. There are readily available traffic collision data management applications. These applications lessen the workload of the Police Department and improve the timeliness of

engineering evaluations. Future projects of this size should also be broken down into smaller more focused and manageable segments that are properly sequenced.

The final undertaking is the development of the technical capacity of the Office of Transportation staff, which is an ongoing goal of the Office of Transportation. This effort is currently underway.

How should the City proceed with the remainder of the NTSBB projects including Phase 1 segments 6-9 and Phase 2?

The City must avoid the pitfalls encountered in the NTSBB Phase 1 Project by applying all of the "lessons learned." An updated community engagement process needs to be developed and discussed with the City Council. Performance metrics need to be established for bicycle boulevards that are used to guide the development of each project. City design guidelines are needed to ensure that the elements of a bicycle boulevard are appropriate for Palo Alto and are cost-effective. In concert with the above efforts, staff will review the status of all bicycle boulevard projects and prioritize the projects for consideration following community outreach.

Policy Implications:

Bicycle boulevards align with the following City policies from the 2030 Palo Alto Comprehensive Plan:

- Policy T-1.3: Reduce GHG and pollutant emissions associated with transportation by reducing VMT and per-mile emissions through increasing transit options, supporting biking and walking, and the use of zero-emission vehicle technologies to meet City and State goals for GHG reductions by 2030.
- Policy T-1.16: Promote personal transportation vehicles an alternative to cars (e.g. bicycles, skateboards, roller blades) to get to work, school, shopping, recreational facilities and transit stops.
- Policy T-3.5: When constructing or modifying roadways, plan for use of the roadway by all users.
- Policy T-3.14 Continue to prioritize the safety of school children in street modification projects that affect school travel routes, including during construction.
- Policy T-4.2: Continue to construct traffic calming measures to slow traffic on local and collector residential streets, and prioritize traffic calming measures for safety over congestion management.
- Policy T-6.1: Continue to make safety the first priority of citywide transportation planning. Prioritize pedestrian, bicycle and automobile safety over motor vehicle level of service at intersections and motor vehicle parking.
- Policy T-6.2: Pursue the goal of zero severe injuries and roadway fatalities on Palo Alto city streets.
- Policy T-6.6: Use engineering, enforcement and educational tools to improve safety for all users on City roadways.

- Policy T-6.8: Vigorously and consistently enforce speed limits and other traffic laws for both motor vehicle and bicycle traffic.

Resource Impact:

The resources needed to carry out the recommendations in this report can be accommodated within the adopted Fiscal Year 2019-20 budget for the Office of Transportation. However additional staffing resources may be necessary to complete the educational component, for which staff will return to Council.

Timeline:

Upon the affirmative action of the City Council, staff will (1) implement the proposed modifications to the Ross Road Bicycle Boulevard and the Moreno/Amarillo Bicycle Boulevard with estimated completion expected by June 2020, subject to the filling of key staff positions; (2) incorporate appropriate educational efforts in the Office of Transportation Fiscal Year 2020-21 Workplan; (3) develop a community engagement process with the input of the Planning and Transportation Commission, and the Pedestrian and Bicycle Advisory Committee, and the City/School Traffic Safety Committee, to be brought back to discuss with to the City Council by August 2020; and (5) provide a status report of the pending bicycle boulevard projects, that reflects the community engagement process discussed with the City Council, by November 2020.

Stakeholder Engagement

The input of the community was solicited through online and mail-in surveys that occurred in January 2020. Staff also shared the survey with nearby residents, and staff hand-provided the survey in person at the YMCA, and at yield signs in the project vicinity. Nearly 500 surveys were returned, and the surveys collectively contained more than 1600 written comments. In addition, this report incorporated comments provided at the June 2018 City Council study session meeting, service requests via Palo Alto 311, and comments submitted to staff by individual residents.

Environmental Review

The NTSBB project was found to be exempt from the provisions of the CEQA pursuant to Class 1, section 15301, Existing Facilities, as the road work will facilitate bicycle and pedestrian use and will not increase roadway capacities.

Attachments:

Attachment A: Traffic Collisions
Attachment B: Community Survey Responses
Attachment C: Collision Diagram_Redacted
Attachment D: User Behavior at Roundabout

Attachment E: User Behavior at Speed Humps-Chokers
Attachment F: Change Orders Log
Attachment G: Preferred Method of Notification

Attachment 1 – Traffic Collision

Reported accidents on or at Ross Rd Jan 2016-Dec 2019.pdf (page 1 of 2)

Traffic Accidents on or near Ross Rd

January 1-December 31 2019

Occur Date	Occur Time	# Killed	# Injured	Violation	Collision Type	Involved Type	On Street	At/Or	#	Feet/Miles	Direction	Cross Street
1/16/2015	17:51		1	BASIC SPEED LAW	C-Rear End	C-Other Vehicle	OREGON EX	OR	558	FEET	E	ROSS RD
2/14/2015	20:58			DRIVE UNDER INFLUENCE/ALCOHOL	B-SideSwipe	E-Parked Vehicle	25008LK ROSS RD	OR	33	FEET	N	MORENO AVE
3/4/2015	8:50		1	BASIC SPEED LAW	C-Rear End	C-Other Vehicle	700BLK OREGON EX	OR	23	FEET	W	ROSS RD
3/16/2015	8:37		1	UNSAFE TURN	C-Rear End	E-Parked Vehicle	37008LK ROSS RD	OR	251	FEET	S	EAST MEADOW DRIVE
6/15/2015	9:15						3412 ROSS RD					
6/26/2015	13:15			INTERSECTION-FAIL TO STOP/YIELD	D-Broadside	C-Other Vehicle	800BLK E MEADOW DR	AT				ROSS RD
8/27/2015	0:05			DRIVE UNDER INFLUENCE/ALCOHOL	E-Hit Object	E-Parked Vehicle	38008LK LOUIS RD	OR	180	FEET	S	ROSS
9/8/2015	7:50		2	BASIC SPEED LAW	C-Rear End	C-Other Vehicle	800BLK OREGON EX	OR	100	FEET	E	ROSS RD
9/9/2015	7:51		1	UNSAFE TURN	B-SideSwipe	G-Bicycle	ROSS RD	OR	100	FEET	S	AMES AV
11/10/2015	14:47		1	FAILURE TO STOP AT RED LIGHT	A-Head-On	C-Other Vehicle	OREGON EX	AT				ROSS
4/25/2016	18:19		1	*YIELD RIGHT OF WAY TO PEDESTRIAN*	G-Auto/Pedestri	B-Pedestrian	700BLK LOMA VERDE AV	AT				ROSS RD
4/30/2016	13:16		3	BASIC SPEED LAW	C-Rear End	C-Other Vehicle	700BLK OREGON EX	OR	200	FEET	E	ROSS RD
5/18/2016	8:52		2	FOLLOWING TOO CLOSE	C-Rear End	C-Other Vehicle	800BLK OREGON EX	OR	178	FEET	E	ROSS RD
5/23/2016	8:09		1	LEFT TURN/FAIL TO YIELD RIGHT OF WAY	D-Broadside	G-Bicycle	E MEADOW DR	AT				ROSS RD
7/17/2016	16:12		1	FAIL TO YIELD RIGHT OF WAY	B-SideSwipe	C-Other Vehicle	38008LK LOUIS RD	OR	528	FEET	N	ROSS RD
9/23/2016	18:30		1	INTERSECTION-FAIL TO STOP/YIELD	D-Broadside	G-Bicycle	700BLK LOMA VERDE AV	AT				ROSS RD
12/10/2016	11:15		1	BASIC SPEED LAW	G-Auto/Pedestri	B-Pedestrian	37008LK ROSS RD	AT				MAYVIEW AVENUE
1/26/2017	7:51			FOLLOWING TOO CLOSE	C-Rear End	C-Other Vehicle	700BLK OREGON EX	OR	64	FEET	W	ROSS RD
3/22/2017	11:08			BASIC SPEED LAW	C-Rear End	C-Other Vehicle	OREGON EX	OR	15	FEET	E	ROSS RD
7/25/2017	17:00			UNSAFE TURN	B-SideSwipe	E-Parked Vehicle	34008LK ROSS RD	OR	69	FEET	S	STONE LN
9/28/2017	21:15			BASIC SPEED LAW	C-Rear End	C-Other Vehicle	38008LK LOUIS RD	OR	15	FEET	S	ROSS RD
10/24/2017	15:30						3412 ROSS RD					
11/10/2017	0:00						MORENO AV	OR	40	FEET	W	ROSS RD
2/24/2018	21:22			DRIVE UNDER INFLUENCE/ALCOHOL	E-Hit Object	E-Parked Vehicle	ROSS RD	OR	12	FEET	S	OREGON EXPRESSWAY
2/26/2018	21:45					C-Other Vehicle	3412 ROSS RD					
3/19/2018	8:17		1		B-SideSwipe	G-Bicycle	3000BLK ROSS RD	OR	50	FEET	N	WINTERGREEN WAY
5/7/2018	8:27		1	BASIC SPEED LAW	C-Rear End	C-Other Vehicle	800BLK OREGON EX	OR	90	FEET	E	ROSS RD
6/15/2018	12:05		3	BASIC SPEED LAW	C-Rear End	C-Other Vehicle	700BLK OREGON EX	OR	75	FEET	W	ROSS RD
7/20/2018	6:15			UNSAFE TURN	B-SideSwipe	E-Parked Vehicle	800BLK COLORADO AVE	OR	460	FEET	E	ROSS ROAD
8/17/2018	18:15			YIELD RIGHT OF WAY/FAIL TO OBEY	D-Broadside	C-Other Vehicle	E MEADOW DR	AT				ROSS RD
9/3/2018	10:24				B-SideSwipe	E-Parked Vehicle	3100BLK ROSS RD	OR	130	FEET	S	ALLEN CT
8/29/2018	12:12						3412 ROSS RD					
10/10/2018	17:17		1	OBEY OFFICIAL TRF SIGN/SIGNAL	D-Broadside	G-Bicycle	700BLK OREGON EX	AT				ROSS RD
10/5/2018	7:50		1		D-Broadside	G-Bicycle	3700 ROSS RD	AT				MAYVIEW AVE
11/8/2018	8:51		1	FAIL TO YIELD RIGHT OF WAY	B-SideSwipe	G-Bicycle	E MEADOW RD	AT				ROSS RD
12/27/2018	7:06		1	PEDEATRIAN FAILS TO YIELD RIGHT OF WAY TO VEHICLE	E-Hit Object	B-Pedestrian	LOUIS RD	OR	42	FEET	S	ROSS RD
1/11/2019	0:00			BASIC SPEED LAW	E-Hit Object	C-Other Vehicle	3412 ROSS RD	OR	200	FEET	W	ROSS RD
1/11/2019	0:00			BASIC SPEED LAW	E-Hit Object	C-Other Vehicle	3412 ROSS RD	OR	200	FEET	W	ROSS RD
4/25/2019	8:14		1	YIELD RIGHT OF WAY/FAIL TO OBEY	D-Broadside	G-Bicycle	800 E MEADOW DR	AT				ROSS RD

Traffic Accidents on or near Ross Rd

January 1-December 31 2019

Occur Date	Occur Time	# Killed	# Injured	Violation	Collision Type	Involved Type	On Street	At/Or	#	Feet/Miles	Direction	Cross Street
5/5/2019	19:23			UNSAFE TURN	B-SideSwipe	E-Parked Vehicle	800BLK AMES AV	OR	42	FEET	E	ROSS RD
5/6/2019	19:21		1	FOLLOWING TOO CLOSE	C-Rear End	C-Other Vehicle	800BLK OREGON EX	OR	30	FEET	E	ROSS RD
7/5/2019	18:07		1	UNSAFE TURN	B-SideSwipe	C-Other Vehicle	OREGON EX	OR	30	FEET	S	ROSS RD
8/14/2019	11:27			BASIC SPEED LAW	C-Rear End	C-Other Vehicle	OREGON EX	OR	16	FEET	E	ROSS RD
9/9/2019	7:00			BASIC SPEED LAW	E-Hit Object	I-Fixed Object	ROSS RD	AT				OREGON AVE
9/9/2019	15:00						ROSS RD	AT				E MEADOW DR

Total: 45

Attachment 2 - 2020 Community Survey Responses Page 1 of 6

Residents Front Onto Bicycle Boulevards

Q2. How often do you typically travel along the streets reference in the map?

	Responses	Percentage
Multiple times per day	78	92.9%
Once per day	4	4.8%
Less than once per day	2	2.4%
Never	0	0.0%
Total	84	100.0%

Q3. What mode of transportation do you most often use to travel on the streets shown in the map?

	Responses	Percentage
Bicycle	11	13.1%
Car/Automobile	49	58.3%
On Foot (pedestrian)	3	3.6%
All of the above equally	15	17.9%
Other	6	7.1%
Total	84	100.0%

Q4. On the street on which you live, comparing the conditions before the bicycle boulevard project began versus after the project was completed (not including the construction period), please state you perception of the following:

	Decreased	Increased	No Change	Not Sure	Total
Auto volumes	23	9	42	9	83
	27.7%	10.8%	50.6%	10.8%	100.0%
Bicyclists & peds	5	32	35	10	82
	6.1%	39.0%	42.7%	12.2%	100.0%
Speed of motorists	34	12	30	7	83
	41.0%	14.5%	36.1%	8.4%	100.0%
Safety of bicyclist and peds	39	26	9	9	83
	47.0%	31.3%	10.8%	10.8%	100.0%
Understanding Ross BB	46	15	7	15	83
	55.4%	18.1%	8.4%	18.1%	100.0%
Understanding M/A BB	20	8	15	37	80
	25.0%	10.0%	18.8%	46.3%	100.0%

Q5. As a user of the streets referenced on the map, how safe do you fell in the following situations?

	Safe	Neutral	Unsafe	Not Appl	Not User	Total
As a bicyclist	20	16	29	6	11	82
	24.4%	19.5%	35.4%	7.3%	13.4%	100.0%
As a pedestrian	44	21	18	0	1	84
	52.4%	25.0%	21.4%	0.0%	1.2%	100.0%
As a motorist	36	12	32	2	1	83
	43.4%	14.5%	38.6%	2.4%	1.2%	100.0%

Q7. Describe your comfort level using the roundabouts

	Comfortable	Not Comf.	Not Sure	Total
Immediately after constr.	43	36	3	82
	52.4%	43.9%	3.7%	100.0%
Today	51	28	4	83
	61.4%	33.7%	4.8%	100.0%

Q9. Are any parts of the bike boulevards confusing to you?

	Responses	Percentage
Yes	28	33.7%
No	47	56.6%
Not Sure	8	9.6%
Total	83	100.0%

Q10. Do you feel there should be any modifications to the streets referenced in the map?

	Responses	Percentage
Mixed feelings - slight conc	19	22.9%
No - keep as is	10	12.0%
No - build more BB	10	12.0%
Yes	44	53.0%
Total	83	100.0%

Q11. When the City implements a project like the bike boulevard project in the future, what is the best way to inform/notify you about the project? Check all that apply.

	Responses	Percentage
Email	55	68.8%
U.S. Mail	47	58.8%
Doorhanger	44	55.0%
Nextdoor	41	51.3%
Posted signs	38	47.5%
Community Meeting	23	28.8%
Other	14	17.5%
Neighbor-to-neighbor share	12	15.0%
Someone Knocking at Door	11	13.8%
City staff	8	10.0%
Construction Team	4	5.0%
Number of responses	80	

2020 Community Survey Response
Residents Near Bicycle Boulevards

Q2. How often do you typically travel along the streets refenence in the map?

	Responses	Percentage
Multiple times per day	88	65.7%
Once per day	19	14.2%
Less than once per day	26	19.4%
Never	1	0.7%
Total	134	100.0%

Q3. What mode of transportation do you most often use to travel on the streets refeenced in the map?

	Responses	Percentage
Bicycle	30	22.2%
Car/Automobile	73	54.1%
On Foot (pedestrian)	6	4.4%
All of the above equally	17	12.6%
Other	9	6.7%
Total	135	100.0%

Q4. On the street on which you live, comparing the conditions before the bicycle boulevard project began versus after the project was completed (not including the construction period), please state you perception of the following:

	Decreased	Increased	No Change	Not Sure	Total
Auto volumes	11	14	88	19	132
	8.3%	10.6%	66.7%	14.4%	100.0%
Bicyclists & peds	8	25	75	23	131
	6.1%	19.1%	57.3%	17.6%	100.0%
Speed of motorists	27	16	72	16	131
	20.6%	12.2%	55.0%	12.2%	100.0%
Safety of bicyclist and peds	65	15	38	14	132
	49.2%	11.4%	28.8%	10.6%	100.0%
Understanding Ross BB	79	16	18	18	131
	60.3%	12.2%	13.7%	13.7%	100.0%
Understanding M/A BB	52	7	26	45	130
	40.0%	5.4%	20.0%	34.6%	100.0%

Q5. As a user of the streets referenced on the map, how safe do you fell in the following situations?

	Safe	Neutral	Unsafe	Not Appl	Not User	Total
As a bicyclist	17	14	75	9	16	131
	13.0%	10.7%	57.3%	6.9%	12.2%	100.0%
As a pedestrian	43	41	27	12	10	133
	32.3%	30.8%	20.3%	9.0%	7.5%	100.0%
As a motorist	31	22	72	4	4	133
	23.3%	16.5%	54.1%	3.0%	3.0%	100.0%

Q7. Describe your comfort level using the roundabouts

	Comfortable	Not Comf.	Not Sure	Total
Immediately after constr.	42	84	8	134
	31.3%	62.7%	6.0%	100.0%
Today	55	74	5	134
	41.0%	55.2%	3.7%	100.0%

Q9. Are any parts of the bike boulevards confusing to you?

	Responses	Percentage
Yes	58	43.3%
No	63	47.0%
Not Sure	13	9.7%
Total	134	100.0%

Q10. Do you feel there should be any modifications to the streets referenced in the map?

	Responses	Percentage
Mixed feelings - slight conc	21	15.8%
No - keep as is	9	6.8%
No - build more BB	14	10.5%
Yes	89	66.9%
Total	133	100.0%

Q11. When the City implements a project like the bike boulevard project in the future, what is the best way to inform/notify you about the project? Check all that apply.

	Responses	Percentage
Email	106	79.1%
Nextdoor	85	63.4%
U.S. Mail	79	59.0%
Posted signs	72	53.7%
Doorhanger	60	44.8%
Community Meeting	49	36.6%
Neighbor-to-neighbor share	25	18.7%
Other	24	17.9%
City staff	11	8.2%
Construction Team	6	4.5%
Someone Knocking at Door	5	3.7%
Number of responses	134	

2020 Community Survey Responses
Other Road Users

Q2. How often do you typically travel along the streets referenced in the map?

	Responses	Percentage
Multiple times per day	118	46.1%
Once per day	56	21.9%
Less than once per day	70	27.3%
Never	12	4.7%
Total	256	100.0%

Q3. What mode of transportation do you most often use to travel on the streets referenced in the map?

	Responses	Percentage
Bicycle	113	44.1%
Car/Automobile	92	35.9%
On Foot (pedestrian)	14	5.5%
All of the above equally	24	9.4%
Other	13	5.1%
Total	256	100.0%

Q4. What is your perception of the following since the modifications have been installed:

	Decreased	Increased	No Change	Not Sure	Total
Safety of bicyclist and peds	104	78	46	27	255
	40.8%	30.6%	18.0%	10.6%	100.0%
Understanding Ross BB	107	61	38	48	254
	42.1%	24.0%	15.0%	18.9%	100.0%
Understanding M/A BB	69	46	49	90	254
	27.2%	18.1%	19.3%	35.4%	100.0%

Q5. As a user of the streets referenced on the map, how safe do you fell in the following situations?

	Safe	Neutral	Unsafe	Not Appl	Not User	Total
As a bicyclist	79	52	83	12	25	251
	31.5%	20.7%	33.1%	4.8%	10.0%	100.0%
As a pedestrian	109	68	27	18	28	250
	43.6%	27.2%	10.8%	7.2%	11.2%	100.0%
As a motorist	68	44	74	13	53	252
	27.0%	17.5%	29.4%	5.2%	21.0%	100.0%

Q7. Describe your comfort level using the roundabouts

	Comfortable	Not Comf.	Not Sure	Total
Immediately after constr.	96	119	39	254
	37.8%	46.9%	15.4%	100.0%
Today	140	81	31	252
	55.6%	32.1%	12.3%	100.0%

Q9. Are any parts of the bike boulevards confusing to you?

	Responses	Percentage
Yes	81	32.7%
No	129	52.0%
Not Sure	38	15.3%
Total	248	100.0%

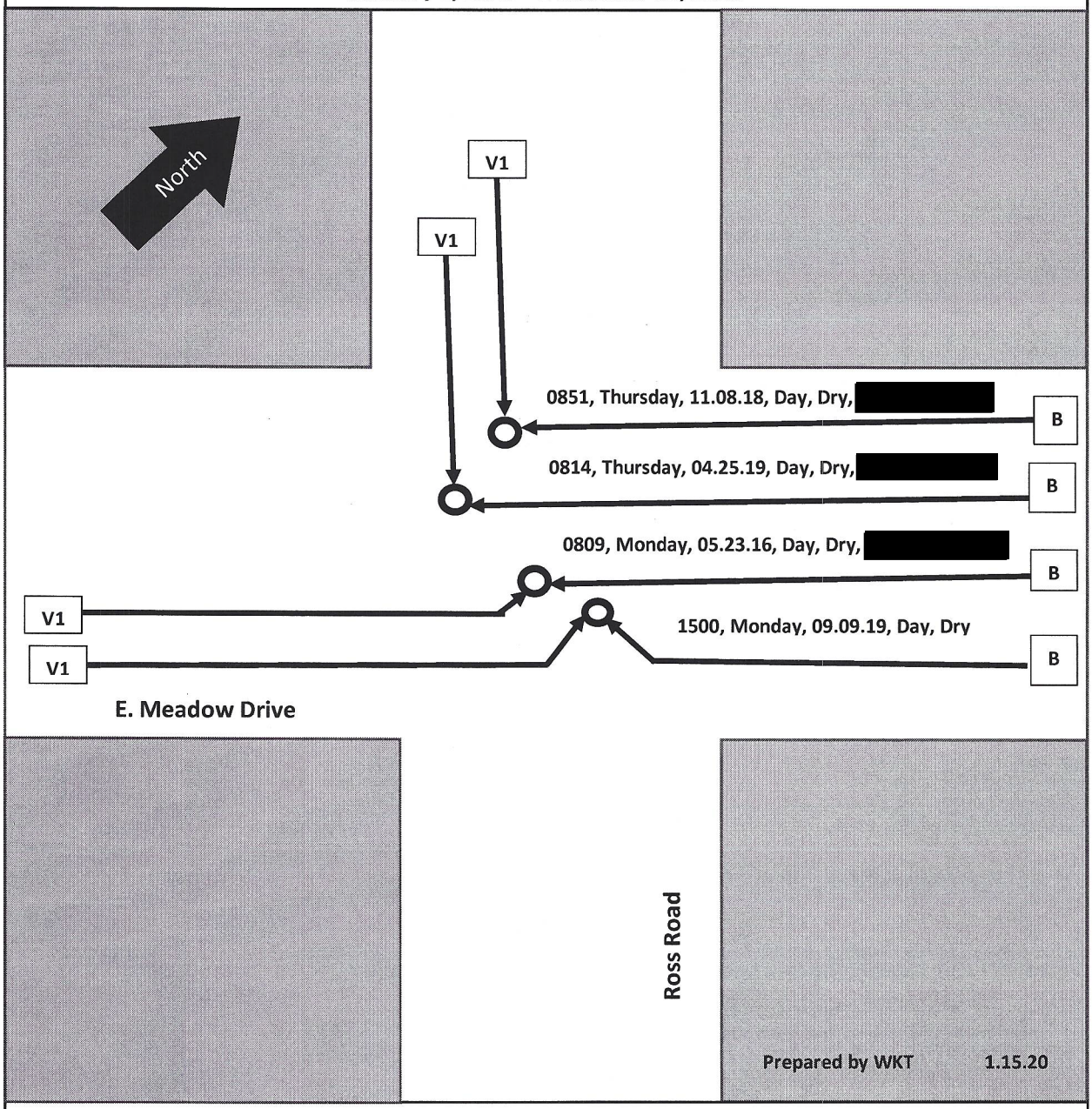
Q10. Do you feel there should be any modifications to the streets referenced in the map?

	Responses	Percentage
Mixed feelings - slight conc	68	27.6%
No - keep as is	34	13.8%
No - build more BB	45	18.3%
Yes	99	40.2%
Total	246	100.0%

Attachment 3

Collision Diagram at Ross Road and East Meadow Drive

January 1, 2015 – December 31, 2019



LEGEND

V1	Direction of automobile
B	Direction of bicycle
O	Collision between automobile and bicycle, injury sustained by bicyclist

Attachment 4 - User Behavior at Roundabout Page 1 of 4

Observations

Roundabout

Location: Ross Rd & E Meadow Dr

Date: 1/14/20

Start: 7:00 AM

Start Time	N/B Ross Road								S/B Ross Road							
	Vehicle			Bicycle			Ped	Viol.	Vehicle			Bicycle			Ped	Viol.
	Right	Thru	Left	Right	Thru	Left			Right	Thru	Left	Right	Thru	Left		
7:00	7	22	12	0	0	4	5	1	17	32	4	71	16	1	5	22
8:00	20	49	23	0	3	4	3	0	31	70	15	27	6	3	6	17
9:00	16	28	8	0	1	0	13	0	39	50	4	3	4	0	6	0
10:00	13	33	12	0	1	0	5	0	46	53	2	5	4	0	2	1
11:00	6	34	10	1	3	1	7	0	58	48	9	3	4	1	5	0
12:00	12	35	6	0	1	0	4	0	48	39	8	0	0	0	3	0
13:00	10	45	8	0	1	0	2	0	26	39	5	3	6	0	7	1
14:00	15	46	12	0	3	0	4	0	37	43	12	3	2	0	6	4
15:00	30	50	10	19	13	0	8	2	37	38	13	0	2	0	13	0
16:00	13	50	13	2	10	0	5	2	40	34	7	3	7	0	4	2
17:00	29	45	23	1	6	0	10	0	47	54	8	0	5	0	5	0

Start Time	W/B East Meadow Drive								E/B East Meadow Drive							
	Vehicle			Bicycle			Ped	Viol.	Vehicle			Bicycle			Ped	Viol.
	Right	Thru	Left	Right	Thru	Left			Right	Thru	Left	Right	Thru	Left		
7:00	9	73	10	1	90	20	4	2	10	47	28	0	1	2	4	3
8:00	9	123	7	0	59	4	5	4	28	94	54	1	7	1	6	0
9:00	7	57	3	1	8	0	7	2	24	61	25	0	4	5	12	2
10:00	4	45	4	0	1	0	6	1	13	39	38	0	3	3	7	3
11:00	7	42	2	0	2	0	0	1	10	29	29	0	1	3	16	3
12:00	4	35	6	0	4	0	5	1	12	49	24	2	3	4	4	3
13:00	5	47	4	0	1	0	7	1	8	38	26	0	4	3	8	4
14:00	6	80	7	1	3	0	9	1	8	56	32	0	8	3	5	0
15:00	3	84	3	1	4	1	14	1	17	77	28	4	74	53	3	5
16:00	5	91	6	0	3	0	8	1	13	77	33	3	24	13	7	2
17:00	12	114	12	4	6	0	12	3	30	103	35	1	6	6	7	5

Observations
Roundabout

Location: Ross Rd & E Meadow Dr

Date: 1/15/20

Start: 7:00 AM

Start Time	N/B Ross Road								S/B Ross Road							
	Vehicle			Bicycle			Ped	Violation	Vehicle			Bicycle			Ped	Violation
	Right	Thru	Left	Right	Thru	Left			Right	Thru	Left	Right	Thru	Left		
7:00	10	22	12	0	1	4	5	0	20	30	2	71	15	0	5	25
8:00	23	63	22	0	1	6	8	0	37	65	5	30	6	1	10	19
9:00	21	23	10	0	1	0	4	0	45	60	9	2	4	1	8	2
10:00	15	36	9	1	3	0	0	0	34	41	10	1	3	0	1	1
11:00	6	34	9	0	5	4	4	1	50	46	8	1	5	0	5	0
12:00	14	47	6	0	3	1	8	0	45	36	7	1	2	0	7	0
13:00	16	36	9	13	10	0	6	2	42	51	3	1	3	0	6	0
14:00	13	35	10	3	7	0	7	1	43	41	3	2	2	0	2	2
15:00	23	52	17	3	9	2	0	3	41	47	4	1	3	0	5	1
16:00	23	38	11	1	5	0	3	2	49	38	6	4	5	0	4	3
17:00	24	65	28	1	8	1	2	2	53	46	9	6	4	0	1	3

Start Time	W/B East Meadow Drive								E/B East Meadow Drive							
	Vehicle			Bicycle			Ped	Violation	Vehicle			Bicycle			Ped	Violation
	Right	Thru	Left	Right	Thru	Left			Right	Thru	Left	Right	Thru	Left		
7:00	7	82	10	0	109	15	3	2	8	35	28	1	4	0	5	1
8:00	11	134	7	0	54	3	13	3	30	103	46	1	7	1	5	3
9:00	5	92	19	0	3	0	4	0	9	65	39	2	1	3	10	2
10:00	4	39	5	0	0	0	7	0	10	35	31	0	0	5	11	4
11:00	5	57	9	1	4	0	1	1	13	38	21	0	1	0	5	3
12:00	5	59	4	2	2	0	1	0	11	62	40	0	1	1	5	2
13:00	8	86	9	1	5	0	10	2	4	65	26	1	46	25	7	3
14:00	7	60	3	0	0	0	5	0	13	67	36	1	32	37	6	2
15:00	5	84	7	0	1	0	6	1	18	82	32	3	53	18	9	4
16:00	7	74	7	1	6	2	11	3	8	71	40	5	7	12	2	3
17:00	8	148	4	1	3	0	3	1	25	108	37	2	9	10	6	4

Observations
Roundabout

Location: Ross Rd & Moreno Ave

Date: 1/14/20

Start: 7:00 AM

Start Time	N/B Ross Road								S/B Ross Road							
	Vehicle			Bicycle			Ped	Viol.	Vehicle			Bicycle			Ped	Viol.
	Right	Thru	Left	Right	Thru	Left			Right	Thru	Left	Right	Thru	Left		
7:00	1	16	4	0	3	0	7	2	8	24	1	1	5	1	2	0
8:00	3	33	6	2	4	0	10	1	8	24	7	0	2	0	6	0
9:00	0	25	5	0	2	0	4	1	3	17	2	0	0	0	4	0
10:00	3	24	8	1	1	0	6	3	6	22	2	0	1	0	4	0
11:00	4	24	2	0	1	0	8	1	10	18	1	0	1	0	0	0
12:00	3	26	5	0	5	0	3	2	6	17	2	0	0	0	1	0
13:00	3	18	11	0	3	0	5	0	5	18	3	0	1	0	1	0
14:00	2	20	6	2	0	0	5	1	3	15	2	0	2	2	3	0
15:00	5	30	5	2	7	0	7	2	7	17	6	0	6	1	2	0
16:00	5	12	7	1	2	0	12	3	1	26	3	0	3	0	5	1
17:00	2	27	7	1	2	3	11	8	12	20	2	0	2	1	6	0

Start Time	W/B Moreno Ave								E/B Moreno Ave							
	Vehicle			Bicycle			Ped	Viol.	Vehicle			Bicycle			Ped	Viol.
	Right	Thru	Left	Right	Thru	Left			Right	Thru	Left	Right	Thru	Left		
7:00	1	22	1	5	2	1	4	2	4	12	7	0	1	0	3	0
8:00	1	48	7	4	4	3	2	1	12	44	11	0	1	0	2	1
9:00	2	18	3	0	1	3	4	4	10	12	12	0	2	0	3	2
10:00	2	15	3	0	2	1	1	0	7	10	6	0	1	0	3	0
11:00	0	13	1	0	1	0	1	0	7	17	5	0	1	0	0	0
12:00	1	14	1	0	2	0	0	0	8	14	5	0	2	0	5	0
13:00	0	7	4	0	1	1	0	0	9	21	7	0	1	0	2	0
14:00	2	25	8	0	2	0	1	0	20	37	7	0	3	0	3	2
15:00	0	24	5	0	1	0	0	1	13	35	4	1	7	0	2	0
16:00	1	21	2	0	1	1	6	2	19	31	7	0	1	0	0	0
17:00	0	27	3	0	2	1	4	2	24	38	6	1	4	0	4	1

Observations
Roundabout

Location: Ross Rd & Moreno Ave

Date: 1/15/20

Start: 7:00 AM

Start Time	N/B Ross Road								S/B Ross Road							
	Vehicle			Bicycle			Ped	Viol.	Vehicle			Bicycle			Ped	Viol.
	Right	Thru	Left	Right	Thru	Left			Right	Thru	Left	Right	Thru	Left		
7:00	1	17	4	1	1	0	7	1	13	16	1	0	4	0	1	0
8:00	9	33	10	2	3	0	15	2	4	32	15	0	4	0	4	1
9:00	4	31	5	0	4	1	5	3	6	24	2	1	1	0	6	2
10:00	4	19	13	1	0	0	5	3	4	20	0	0	2	0	4	0
11:00	2	22	9	0	2	0	9	4	3	28	1	0	1	0	1	0
12:00	6	32	6	0	1	0	4	1	8	19	4	0	1	0	0	0
13:00	4	36	5	2	2	0	4	2	5	22	4	0	4	1	2	1
14:00	3	24	5	1	7	0	7	2	6	21	3	0	2	1	2	0
15:00	2	20	8	1	1	1	11	4	10	19	3	0	1	2	2	2
16:00	2	24	9	3	1	1	9	2	6	28	2	0	2	1	6	2
17:00	3	23	8	0	3	4	2	1	9	32	3	0	3	0	5	1

Start Time	W/B Moreno Ave								E/B Moreno Ave							
	Vehicle			Bicycle			Ped	Viol.	Vehicle			Bicycle			Ped	Viol.
	Right	Thru	Left	Right	Thru	Left			Right	Thru	Left	Right	Thru	Left		
7:00	0	18	3	4	4	1	0	0	7	10	5	1	0	0	0	0
8:00	3	52	17	3	4	2	3	1	10	41	9	0	3	0	2	1
9:00	4	8	2	1	3	1	3	2	5	21	9	1	3	0	0	0
10:00	3	13	2	0	1	0	1	0	3	18	4	0	3	0	4	1
11:00	0	15	2	1	1	0	1	0	10	15	6	0	1	0	3	2
12:00	3	19	1	0	1	0	0	0	12	26	5	0	1	0	1	0
13:00	2	12	2	1	1	1	1	2	13	41	7	0	0	0	4	2
14:00	1	17	7	0	1	0	3	1	14	26	11	0	8	1	1	0
15:00	0	23	3	0	0	0	0	0	20	38	7	0	5	0	6	0
16:00	2	16	6	1	3	1	5	2	20	32	8	1	6	1	3	0
17:00	4	31	4	0	0	0	1	0	21	31	9	1	2	0	7	0

Attachment 5 - User Behavior at Speed Humps/Chokers Page 1 of 4

Speed Hump/Choker

Location: Ross Rd between Stone Ln & Talisman Dr

Date: 1/14/20

Start: 7:00 AM

Start Time	N/B Ross Rd						S/B Ross Rd					
	Vehicle				Bicycle		Vehicle				Bicycle	
	Right of Center Line	Left of Center Line			Right of Center Line	Left of Center Line	Right of Center Line	Left of Center Line			Right of Center Line	Left of Center Line
		No Bike	S/B Bike	N/B Bike				No Bike	N/B Bike	S/B Bike		
7:00	60	6	0	0	2	0	38	9	0	3	82	0
8:00	113	10	0	1	8	0	98	7	0	0	24	0
9:00	62	3	0	0	7	1	79	9	0	0	6	0
10:00	74	15	0	0	3	0	90	8	0	1	8	0
11:00	73	5	0	0	6	0	97	12	0	0	8	0
12:00	56	3	0	0	3	0	93	3	0	0	1	0
13:00	57	13	0	0	3	0	64	4	0	0	6	0
14:00	77	13	0	0	6	0	73	10	0	0	5	0
15:00	74	4	0	3	61	0	67	13	0	0	3	0
16:00	73	6	0	2	23	0	74	3	0	0	8	0
17:00	89	6	0	1	15	0	110	15	0	0	5	0

Observations
Speed Hump/Choker

Location: Ross Rd between Stone Ln & Talisman Dr

Date: 1/15/2020

Start: 7:00 AM

Start Time	N/B Ross Rd						S/B Ross Rd					
	Vehicle				Bicycle		Vehicle				Bicycle	
	Right of Center Line	Left of Center Line			Right of Center Line	Left of Center Line	Right of Center Line	Left of Center Line			Right of Center Line	Left of Center Line
		No Bike	S/B Bike	N/B Bike				No Bike	N/B Bike	S/B Bike		
7:00	52	7	0	0	3	0	43	6	0	3	76	0
8:00	126	12	0	0	5	0	104	2	0	1	28	0
9:00	74	7	0	0	6	0	99	10	0	0	6	0
10:00	72	8	0	0	6	0	71	7	0	0	6	0
11:00	52	9	0	0	5	0	89	11	0	0	6	0
12:00	75	6	0	1	3	0	74	4	0	0	3	0
13:00	60	5	1	2	30	0	78	11	0	0	5	0
14:00	66	5	0	3	47	0	77	6	0	0	3	0
15:00	75	11	0	0	19	0	85	6	0	0	6	0
16:00	73	8	0	2	13	0	83	7	0	2	5	0
17:00	107	13	0	0	21	0	95	16	1	0	10	0

Observations
Speed Hump/Choker

Location: Ross Rd between Sutter Ave & Clara Dr
Date: 1/14/2020
Start: 7:00 AM

Start Time	N/B Ross Rd						S/B Ross Rd					
	Vehicle				Bicycle		Vehicle				Bicycle	
	Right of Center Line	Left of Center Line			Right of Center Line	Left of Center Line	Right of Center Line	Left of Center Line			Right of Center Line	Left of Center Line
		No Bike	S/B Bike	N/B Bike				No Bike	N/B Bike	S/B Bike		
7:00	37	13	0	0	13	0	19	7	0	1	26	0
8:00	67	9	0	2	13	1	67	11	0	0	7	0
9:00	30	12	0	0	3	0	43	5	0	0	5	0
10:00	51	9	0	0	3	0	33	4	0	0	4	0
11:00	32	12	0	0	4	0	42	2	0	0	2	0
12:00	37	7	0	0	6	0	37	7	0	0	0	0
13:00	28	5	0	0	3	0	32	11	0	0	5	0
14:00	35	8	0	0	5	1	43	11	0	1	6	0
15:00	50	6	0	1	21	1	54	7	0	0	16	0
16:00	37	10	0	0	5	0	54	10	0	0	9	0
17:00	54	10	0	1	8	0	62	15	0	0	6	0

Observations

Speed Hump/Choker

Location: Ross Rd between Sutter Ave & Clara Dr

Date: 1/15/2020

Start: 7:00 AM

Start Time	N/B Ross Rd						S/B Ross Rd					
	Vehicle				Bicycle		Vehicle				Bicycle	
	Right of Center Line	Left of Center Line			Right of Center Line	Left of Center Line	Right of Center Line	Left of Center Line			Right of Center Line	Left of Center Line
		No Bike	S/B Bike	N/B Bike				No Bike	N/B Bike	S/B Bike		
7:00	31	10	0	0	11	0	19	3	0	1	21	0
8:00	66	15	0	2	11	0	78	9	0	0	9	0
9:00	43	3	0	0	4	0	38	5	0	0	3	0
10:00	42	8	0	0	2	0	36	8	0	0	4	0
11:00	33	7	0	0	2	0	42	3	0	0	2	0
12:00	35	10	0	0	3	0	33	6	0	0	3	0
13:00	43	4	0	0	7	0	38	5	0	0	3	0
14:00	35	10	0	0	14	1	45	10	0	0	8	0
15:00	43	13	0	0	9	0	38	9	0	1	9	0
16:00	40	5	0	2	11	0	60	14	0	2	12	0
17:00	41	8	1	0	7	0	64	15	0	2	6	0

Attachment 6 - Change Orders Log Page 1 of 2
NTSBB Phase 1 Granite Construction Contract

Cor #	Description	Reason for Change	$ Approved
1	Underground Utility Conflicts - SD/Gas/Water	Unforeseen Condition	$25,436
2	Asphalt Grinding at on side of one island	Design Error	$10,344
4	Exploratory Potholing Round 2 Segment 1	Unforeseen Condition	$25,452
5	Granite Support Work to expose the existing 6" line.	Unforeseen Condition	$7,698
6	Revised Staking Segment 2	Unforeseen Condition	$18,361
7	8" Transite Pipe at Talisman	Unforeseen Condition	$8,657
8	AC Milling - Asphalt Work at E. Meadow and Ross R.	Unforeseen Condition	$15,591
9	New Construction Signs Per Request by City Manager	City Request	$3,566
10	Ross and Mayview - Trench Drain Add	Design Error	$21,100
11	Exploratory Potholing	Unforeseen Condition	$68,878
13	(5) Frame and Grates (COPA did not have them)	City Request	$5,168
14	Added QTY of 6" Curb at Speed Hump Planters	Design Error	$0
16	AC Milling Asphalt Work and Gas Line Conflict Clara & Ross	Design Error	$13,180
17	Added Trench Drain and SD Credits at Luis and Moreno	Design Error	$580
18	Added Survey Work Per Bulletins	Unforeseen Condition	$4,765
19	Colorado and Sandra Ln - Added Crosswalks, Ramps, Signage	City Request	$0
20	Louis Rd Additional Grind and Pave 2"	Design Error	$221,601
21	Louis and Moreno - Qty Adjustment of 4" Mod Curb & Gutter	Design Error	$0
22	Electrical Conduit (Reduction and Addition of Conduit Runs)	City Request	$26,429
23	Extra Catch Basin - Line Item 74	City Request	$4,000
24	Added Speed Hump - Christine and Ross	City Request	$2,414
25	Louis Rd Additional Saw Cutting and Demo over box culvert Rolled Curb	Design Error	$9,726
26	Louis and Moreno - Re-grading Work on North Side	Design Error	$5,972
27	Amarillo and Bryant Temporary Measures	City Request	$31,033
28	Louis Work Delay - 5/10 Start Work Suspension Cost	City Request	$28,706
29	Amarillo Work Suspension (Cost and Days)	City Request	$10,025
30	Remove All Temp. Measures	City Request	$13,623
31	Louis Work Delay #2 - Start Work Suspension Cost	City Request	$69,385
32	Agreed Surcharge for approved CORs That Excluded It	City Request	$2,291
33	YMCA Driveways Alterations	City Request	$9,596
35	Utility Adjacent Bust - Adjust Covers	Design Error	$12,000
36	AC and Concrete Fixes Along Amarillo	City Request	$30,570
37	ID Fix at Louis and Moreno Box Culvert	Unforeseen Condition	$3,024
38	Rolled Curb at Ross/Moreno	Design Error	$8,916
39	Temp. Measures Watering	City Request	$3,334

40	Expansion Anchors for Ballard and Relocation	City Request	$7,625
41	Materials in Hand/Closeout Cost	City Request	$38,096
	Approved PCOs - Credits		
12	Landscaping Changes - Box Trees	City Request	($4,000)
15	Mayview, E. Meadow, Talisman, Clara - Savings per revised design.	Unforeseen Condition	($64,400)
Total			**$698,742**

Summary Per Reason	Total Cost
Unforeseen Condition	$164,020
Design Error	$240,861
City Request	$281,861
Quantity Adjustment	$12,000
Total	**$698,742**

Attachment 7 - Preferred Method of Notification: 2020 Community Response to Question 11

"When the City implements a project like the bike boulevard project in the future, what is the best way to inform/notify you about the project? Check all that apply."

Residents who live near a bicycle boulevard, in descending order of preference

	Responses	Percentage
Email	55	68.8%
U.S. Mail	47	58.8%
Doorhanger	44	55.0%
Nextdoor	41	51.3%
Posted signs	38	47.5%
Community Meeting	23	28.8%
Other	14	17.5%
Neighbor-to-neighbor share	12	15.0%
Someone Knocking at Door	11	13.8%
City staff	8	10.0%
Construction Team	4	5.0%
Number of responses	80	

Residents who live near a bicycle boulevard, in descending order of preference

	Responses	Percentage
Email	106	79.1%
Nextdoor	85	63.4%
U.S. Mail	79	59.0%
Posted signs	72	53.7%
Doorhanger	60	44.8%
Community Meeting	49	36.6%
Neighbor-to-neighbor share	25	18.7%
Other	24	17.9%
City staff	11	8.2%
Construction Team	6	4.5%
Someone Knocking at Door	5	3.7%
Number of responses	134	

Combination of all residents, in descending order of preference

	On BB	Near BB	Total
Email	55	106	161
U.S. Mail	47	79	126
Doorhanger	44	60	104
Nextdoor	41	85	126
Posted signs	38	72	110
Community Meeting	23	49	72
Other	14	24	38
Neighbor-to-neighbor share	12	25	37
Someone Knocking at Door	11	5	16
City staff	8	11	19
Construction Team	4	6	10
Number of responses	80	134	214