LOCATION:

RTC Administrative Building
1st Floor Conference Room
1105 Terminal Way, Reno

DATE April 17, 2020
TIME 9:00 a.m.

REGIONAL TRANSPORTATION COMMISSION
OF WASHOE COUNTY

Meeting via teleconference only pursuant to NRS 241.023 and Emergency Directive 006

PUBLIC NOTICE

I. Pursuant to Section 1 of Governor Steve Sisolak's Declaration of Emergency Directive 006 ("Directive 006"), the requirement contained in NRS 241.023(1)(b) that there be a physical location designated for meetings of public bodies where members of the public are permitted to attend and participate has been suspended. Pursuant to Section 3 of Directive 006, the requirements contained in NRS 241.020(4)(a) that public notice agendas be posted at physical locations within the State of Nevada has likewise been suspended. Pursuant to Section 5 of Directive 006, the requirement contained in NRS 241.020(3)(c) that physical locations be available for the public to receive supporting material for public meetings has been suspended.

II. The RTC has a standing item for accepting public input on topics relevant to the jurisdiction of the RTC. Because specific items may be taken out of order to accommodate the public and/or the Commission, public input on all items will be received under Item 2. Individuals providing public input will be limited to three minutes. Members of the public may provide public comment and also comment on Agenda Items without being physically present at the meeting by submitting their comments via online Public Comment Form (https://www.rtcwashoe.com/about/contact/contact-form/), or by emailing their comments to: rtcpubliccomments@rtcwashoe.com. Public commenters may also leave a voicemail at (775) 335-0018. Comments received prior to 4:00 p.m. on April 16, 2020, will be entered into the record.

III. The Commission may combine two or more agenda items for consideration and/or may remove an item from the agenda or delay discussion relating to an item on the agenda at any time.

IV. To access the supporting materials for the meeting, please click here: Meeting Materials. In addition, a member of the public may request supporting materials electronically from [insert name] at the following email address: [insert email address].

V. The RTC appreciates the publics patience and understanding during these difficult and challenging circumstances.

****ROLL CALL****

PLEDGE OF ALLEGIANCE TO THE FLAG

1. APPROVAL OF AGENDA *(For Possible Action)*

2. PUBLIC INPUT

2.1 Public Input - *pursuant to paragraph II under Public Notice near the top of this page*

3. CONSENT ITEMS

Minutes

3.1 Approve the minutes of the February 21, 2020, meeting *(For Possible Action)*

3.2 Approve the minutes of the March 20, 2020, meeting *(For Possible Action)*

Engineering

3.3 Acknowledge receipt of the monthly Engineering Activity Report *(For Possible Action)*

Public Transportation/Operations

3.4 Acknowledge receipt of the monthly Public Transportation/Operations Report *(For Possible Action)*

Planning

3.5 Acknowledge receipt of the monthly Planning Activity Report *(For Possible Action)*

3.6 Approve the RTC Affordable Housing Study *(For Possible Action)*

Administration

3.7 Acknowledge receipt of the monthly Procurement Activity Report *(For Possible Action)*

3.8 Acknowledge receipt of the report regarding indexed fuel taxes in Washoe County as required by NRS 373.065 *(For Possible Action)*

3.9 Acknowledge receipt the Fiscal Year 2021 RTC Tentative Budget *(For Possible Action)*

Procurement and Contracts

3.10 Approve a contract with Western Electric Group, LLC., in an amount not to exceed $56,381.79 for the installation of solar bus shelter lights at a hundred and four (104) locations throughout the system; authorize the RTC Executive Director to execute the agreement *(For Possible Action)*

3.11 Approve the purchase of a Ford F-550 utility flatbed truck with a crane, utilizing the State of Nevada vehicle procurement contract number PUR0000113 in the amount of $94,909; authorize the RTC Executive Director to execute the agreement *(For Possible Action)*

3.12 Approve a Professional Services Agreement (PSA) with LSC Transportation Consultants, Inc. to provide consultant services for the update of the Coordinated Human Services Transportation Plan (CTP) in an amount not to exceed $70,140; authorize the RTC Executive Director to execute the agreement *(For Possible Action)*

3.13 Acknowledge receipt of report on the status of the 2050 RTP *(For Possible Action)*

3.14 Acknowledge receipt of the 2019 Bicycle & Pedestrian Data Collection Annual Report *(For Possible Action)*

3.15 Approve a Professional Services Agreement (PSA) with Atkins North America, Inc. ("ATKINS") as the selected firm to provide Engineering Professional Services for the Sparks Boulevard Widening Project in an amount not to exceed $8,474,331; authorize the RTC Executive Director to execute the agreement

3.16 Approve a Professional Services Agreement (PSA) with Wood Rodgers Inc. to provide design and optional engineering during construction for the Sparks Consolidated 21-01: Packer Way and Wild Island Court Project in an amount not to exceed $328,325; authorize the RTC Executive Director to execute the agreement

3.17 Approve Amendment No. 4 to the existing Professional Services Agreement (PSA) between the RTC and Stantec Consulting for Engineering During Construction (EDC) services related to the Park Lane RAPID Station Project in an amount not to exceed $67,744 for a new not to exceed amount of $116,750; authorize the RTC Executive Director to execute the agreement

3.18 Approve Change Order (CO) No. 11 in the amount of $33,383 for additional work associated with safety, traffic movements, and drainage requested by the RTC on the Virginia Street Bus RAPID Transit (BRT) Extension Project; authorize the RTC Executive Director to execute CO No. 11

3.19 Approve Change Order (CO) No. 12 in the amount of $49,785 for additional trees added to the project by the City of Reno on the Virginia Street Bus RAPID Transit (BRT) Extension Project (Project); authorize the RTC Executive Director to execute CO No. 12

3.20 Approve Change Order (CO) No. 13 in the amount of $344,245 for landscape and irrigation changes to the Virginia Street Bus RAPID Transit (BRT) Extension Project (Project); authorize the RTC Executive Director to execute CO No. 13.

3.21 Approve Change Order (CO) No. 14 to include landscape soil as an eligible item in the Virginia Street Bus RAPID Transit (BRT) Extension Project's (Project) risk register; authorize the RTC Executive Director to execute CO No. 14

3.22 Approve Amendment No. 4 in the amount of $311,727 to the existing Professional Services Agreement (PSA) between the RTC and Nichols Consulting Engineers (NCE) for support during construction services for the Virginia Street RAPID Extension project; authorize the RTC Executive Director to execute the Amendment

3.23 Authorize the RTC Executive Director to sign a petition of abandonment, owner affidavit and other documents as may be necessary concerning the abandonment of an alleyway adjacent to Assessor Parcel Numbers (APNs) 007-183-11, 007-183-12, 007-183-13, 007-183-18 and 007-183-19, owned by the Regional Transportation Commission and located in the City of Reno

3.24 Acknowledge receipt of the Virginia Street Bus Rapid Transit (BRT) Extension monthly progress report *(For Possible Action)*

3.25 Acknowledge receipt of the Lemmon Valley monthly progress report *(For Possible Action)*

Interagency Agreements

3.26 Approve the Interlocal Cooperative Agreement (ICA) with the City of Reno for construction of improvements to be included in the Golden Valley Rehabilitation Project scheduled for construction in 2020; authorize the RTC Executive Director to execute the agreement.

~END OF CONSENT AGENDA~

4. METROPOLITAN PLANNING ORGANIZATION (MPO)

4.1 Approve the South Meadows Multimodal Transportation Study *(For Possible Action)*

5. DIRECTOR REPORTS

5.1 **RTC EXECUTIVE DIRECTOR REPORT** – *verbal report - no action required*

5.2 **FEDERAL REPORT** - *no action required*

5.3 **NDOT** Monthly updates/messages from NDOT Director Kristina Swallow – *no action required*

6. GENERAL ADMINISTRATION *(For Possible Action)*

Legal Issues - Report, discussion and possible action and/or direction to legal counsel and staff following receipt of information on legal issues. The RTC may, consistent with Chapter 241 of NRS, decide to interrupt the public meeting at any time to conduct a closed session to confer with legal counsel and possibly deliberate on legal issues. Any action on pending legal matters will be made when the public meeting is reconvened.

7. PUBLIC INPUT - *pursuant to paragraph II under Public Notice near the top of this page*

8. MEMBER ITEMS

9. ADJOURNMENT*(For Possible Action)*

April 17, 2020 **AGENDA ITEM 2.1**

TO: Regional Transportation Commission

FROM: Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: **Public Input**

This agenda item allows the public the opportunity to provide information on topics within the jurisdiction of the Regional Transportation Commission (RTC). Pursuant to Section 1 of Governor Steve Sisolak's Declaration of Emergency Directive 006 ("Directive 006"), the requirement contained in NRS 241.023(1)(b) that there be a physical location designated for meetings of public bodies where members of the public are permitted to attend and participate has been suspended.

Members of the public may provide public comment and also comment on Agenda Items without being physically present at the meeting by submitting their comments via online Public Comment Form (https://www.rtcwashoe.com/about/contact/contact-form/), or by emailing their comments to: rtcpubliccomments@rtcwashoe.com. Public commenters may also leave a voicemail at (775) 335-0018. Comments received prior to 4:00 p.m. on April 16, 2020, will be entered into the record.

AGENDA ITEM 3.1

REGIONAL TRANSPORTATION COMMISSION
WASHOE COUNTY, NEVADA

FRIDAY **9:00 A.M.** **Date February 21, 2020**

PRESENT:

Bob Lucey, Washoe County Commissioner, Chairman
Neoma Jardon, Reno City Council Member, Vice Chair
Vaughn Hartung, Washoe County Commissioner
Oscar Delgado, Reno City Council Member
Ron Smith, Sparks City Council Member

Amy Cummings, RTC Interim Executive Director
Dale Ferguson, Legal Counsel
Cole Mortensen, Deputy Director of NDOT (alternate)

NOT PRESENT:

Kristina Swallow, Director of NDOT

The regular monthly meeting, held in the Chambers of the Washoe County Commission, 1001 E. 9th Street, Reno, Nevada, was called to order by Chairman Lucey. Following the roll call and the Pledge of Allegiance to the Flag of our country, the Board conducted the following business:

RECOGNITION OF THE SPONSORS OF THE RTC NEW YEAR'S EVE FREE SAFE RIDE

Mr. Michael Moreno, RTC Public Affairs Manager, presented certificates to those present and spoke in recognition of the generous support of the RTC New Year's Eve Free Safe RIDE program sponsors. This was the 35th year of the program and 9,345 rides were taken. There was approximately an 8% decrease in ridership as compared to the previous year.

Presentation on the importance of the 2020 Census for Nevada

Mr. Michael Moreno, RTC Public Affairs Manager, stated that on March 12th, the public would begin receiving post cards as a reminder to complete the 2020 Census. Mr. Moreno was the Chair of the 2000 Census for the Washoe County Complete Count Committee and is Chair again for the 2020 Census. He then introduced Laura Thorwarth, the regional outreach coordinator for the NV Census 2020 Washoe County Complete Count Committee.

Ms. Thorwarth, thanked Mr. Moreno on behalf of Lieutenant Governor Kate Marshall and the State of Nevada. She then explained the importance of the Census and that the Federal Census is the same as the census she works on. This committee is charged with creating an outreach program to ensure that all Nevadans get their fair share of federal resources and congressional representation by encouraging full participation in the 2020 Census. She also provided information on the long and short census forms, what to watch out for pertaining to scams and how important it is to complete the census.

Item 1 APPROVAL OF AGENDA

At the request of Chairman Lucey, Item 5.1 was moved up to immediately precede the consent items.

On motion of Commissioner Hartung, seconded by Vice Chair Jardon, which motion unanimously carried, Chairman Lucey ordered that the agenda for this meeting be approved with the aforementioned change.

Item 2 .1 PUBLIC INPUT

Chairman Lucey opened the meeting to public input and called on anyone wishing to speak on topics relevant to the Regional Transportation Commission (RTC) that are not included in the current agenda.

Mr. Randy Boggan and Mrs. Cyndi Boggan submitted written comments pertaining to the speed limit on the Pyramid Highway, between Erin Drive and Egyptian Drive. They stated that there had been several deadly crashes in that area and now that the Stonebrook development is moving in, and with a goal of safety in mind, they would like to see the speed limit reduced to 45 mph and the installment of speed display signs added.

Mr. Ryan McKinney, local resident, said the RTC ACCESS drivers complain that they don't have as much flexibility as they used to, such as letting a passenger off at a different location than originally requested or picking up a passenger near their location when they aren't scheduled for it. The drivers are required to call dispatch for every little decision and would prefer to have more of an open communication between the drivers.

There being no one else wishing to speak, the Chair closed public input.

Item 2.2 ADVISORY COMMITTEES SUMMARY REPORT

On motion of Commissioner Hartung, seconded by Commissioner Delgado, which motion unanimously carried, Chairman Lucey ordered that receipt of the monthly Summary Report for the Technical, Citizens Multimodal and Regional Road Impact Fee Advisory Committees be acknowledged.

5.1 Approve the Transportation Leaders Against Human Trafficking Pledge and authorize RTC Interim Executive Director to sign the pledge *(For Possible Action)*

Interim Executive Director Cummings explained that preventing human trafficking is a critical issue for our country and for Northwestern Nevada. This item is for a pledge with the US Dept. of Transportation that lets the RTC affirm its commitment as part of the regional solution. Trafficking nationwide occurs at bus stops and transit stations so the RTC wants to ensure the operators for RIDE and ACCESS are trained on what to look for and how to respond. This also includes all of RTC's staff, but particularly the RTC customer service staff. The RTC would also like to develop a community outreach campaign through the transit system to let customers know what to look for and how they can help.

Chairman Lucey then introduced Assemblywoman Jill Tolls who addressed the Board to thank them for their interest and involvement. She explained the aspects of the program, with outreach being very

important and is where the RTC can be the most helpful. She shared a story of when she was very young and was confused on the public bus so did not get off at the correct stop. Fortunately, someone noticed her and realized that she wasn't where she should be, so reached out to support her and get to where she needed to be. Because of that, she ended up back at the correct school and to safety. This is what the RTC does on a daily basis and she is very grateful for our pledge.

The Assemblywoman went on to say that human trafficking is a major issue in our area and Nevada has been number one in calls to the human trafficking hotline for the past two years. The average age that a victim is recruited into human trafficking is 14 years old. This effects every age, race and cultural aspect of the community.

Chairman Lucey added that this is so important to our region because we sit right on the I-80 corridor, which is the major thoroughfare for the northern portion of the United States. This victimization occurs every single day and the RTC is extremely happy to participate in this program.

Vice Chair Jardon asked of the task force will train all of the RTC drivers.

Interim E.D. Cummings responded that the RTC is working with the task force and other not-for-profit organizations to develop the training. She also thanked both Keolis and Ride Right for their participation, stating that they are fully on board with this project. It should take one to two months to train all of the operators. Additionally, a contract is underway to develop printed materials for the buses and in the bathrooms at the transit centers, media sources will also be utilized.

Commissioner Hartung asked if this will be mandatory training.

Interim E.D. Cummings said that it is not mandatory but this action commits the RTC to do the training.

Commissioner Hartung believes it should be mandatory training.

On motion of Hartung, seconded by Vice Chair Jardon, which motion unanimously carried, Chairman Lucey ordered that the Transportation Leaders Against Human Trafficking Pledge be accepted and the Interim Executive Director is authorized to sign the pledge.

Item 3 .1 thru 3.17 CONSENT ITEMS

Minutes

3.1 Approve the minutes of the January 17, 2020, meeting *(For Possible Action)*

3.2 Approve the minutes of the January 17, 2020, workshop *(For Possible Action)*

Engineering

3.3 Acknowledge receipt of the monthly Engineering Activity Report *(For Possible Action)*

Public Transportation/Operations

3.4 Acknowledge receipt of the monthly Public Transportation/Operations Report *(For Possible Action)*

Planning

3.5 Acknowledge receipt of the monthly Planning Activity Report *(For Possible Action)*

3.6 Acknowledge receipt of the status update of the 2050 RTP *(For Possible Action)*

Finance

3.7 Acknowledge receipt of the monthly Procurement Activity Report *(For Possible Action)*

3.8 Acknowledge receipt of the Asset Donation Log for the third and fourth quarters of calendar year 2019. The log lists the items that were donated as outlined in RTC Management Policy P-58 effective through December 31, 2019 *(For Possible Action)*

Procurement and Contracts

3.9 Approve Change Order (CO) No. 07 in the amount of $11,585 for AT&T requested work to replace three utility vaults within the limits of the Virginia Street Bus RAPID Transit (BRT) Extension Project; authorize the Interim Executive Director to execute CO No. 07 *(For Possible Action)*

3.10 Approve Change Order (CO) No. 08, in the amount of $150,370 for modifications to Midtown transit stations, additional left turn striping at Plumb Lane intersection, and a safety hand rail on Tahoe Street work items on the Virginia Street Bus RAPID Transit Extension Project; authorize the Interim Executive Director to execute CO No. 08 *(For Possible Action)*

3.11 Approve Change Order (CO) No. 09 in the amount of $23,960 for additional work items for foundation elements necessary to support an art structure planned by the City of Reno for the roundabout at Center Street/Mary Street and Virginia Street as part of the Virginia Street Bus RAPID Transit Extension Project; authorize the Interim Executive Director to execute CO No. 09 *(For Possible Action)*

3.12 Approve Change Order (CO) No. 10 in the amount of $16,164 for additional work items on the Virginia Street Bus RAPID Transit Extension Project additional Portland cement concrete pavement along Cheney Street at the tie-in to Center Street and installation of additional signage at the intersection of Plumb Lane and South Virginia Street; authorize the Interim Executive Director to execute CO No. 10 *(For Possible Action)*

3.13 Approve a Professional Services Agreement (PSA) with Atkins North America, Inc. to provide design services and optional engineering during construction services for the ITS Phase 3 Project in an amount not to exceed $266,700; authorize the Interim Executive Director to execute the agreement *(For Possible Action)*

3.14 Approve Amendment No. 1 to the existing Professional Services Agreement (PSA) between the RTC and Poggemeyer Design Group, Inc. for engineering during construction (EDC) services, right-of-way acquisition services and final design services for the Mill Street Complete Street Project between I-580 and McCarran Boulevard, in the amount of $522,068, for a new total not to exceed amount of $710,350; authorize the Interim Executive Director to execute the amendment *(For Possible Action)*

3.15 Approve the contract with RFI Communications & Security Systems in an amount not to exceed $106,213, to replace, install and program closed circuit television systems (CCTV)

at seven RAPID transit stations; authorize the RTC Interim Executive Director to execute the agreement *(For Possible Action)*

Inter-Agency Agreements

3.16 Approve the Interlocal Cooperative Agreement for reimbursement to RTC with the City of Sparks for work that has been incorporated into the plans and specifications for the E Prater Way Rehabilitation Project; authorize the Interim Executive Director to execute the agreement *(For Possible Action)*

3.17 Approve the Interlocal Cooperative Agreement (ICA) with NDOT to provide funding to RTC for the implementation of the ED PASS Program; authorize the Interim Executive Director to execute the agreement *(For Possible Action)*

On motion of Mayor Smith, seconded by Commissioner Hartung, which motion carried unanimously, Chairman Lucey ordered that Consent Items 3.1 through 3.17 be approved.

Item 4 PUBLIC HEARING

Approve the May 2020 RTC RIDE Service Adjustment, scheduled for May 2, 2020, including implementation of the new North Valleys FlexRIDE microtransit six-month demonstration service, extension of the existing RTC FlexRIDE microtransit six-month demonstration project, changes to Route 7, 9, 13, 25, and the Virginia Rapid, and elimination of Route 17 and 25L *(For Possible Action)*

A presentation was given by Jim Gee, RTC Service Planning and Innovation Manager, explaining that a second pilot project of the microtransit service is planned for the North Valleys area and will replace route 17, and route 7 will have some tweaks to provide efficient service. He then recapped the first microtransit pilot project which is ongoing in Sparks. Ridership has averaged about 150 passengers per weekday and on the weekend the average is 80 passengers. It replaced a fixed route that was averaging only about 50 passengers per day.

Mr. Gee described the three areas that will be covered in the North Valleys and the specific order the service will be implemented, showing a map of the planned service. There will be changes to route 25 and elimination of route 25L.

The next service change is to add coverage back to route 9 to include service around Renown Hospital.

The frequency of the Virginia Street RTC RAPID will be increased to every 10 minutes from every 12 minutes Monday through Friday.

Lastly, a service near Wooster High School will be changed to flip the orientation of the route so that the exiting from the bus will be on the same side of the road as the school. This should eliminate most of the jaywalking in the area.

Mr. Gee then explained that there is continuous process of looking at time adjustments using the data received at the RTC, adding that the feedback from the public information meetings was very positive.

Future plans will include the completion of the Virginia line (BRT), additional FlexRIDE services in Spanish Springs and the Somerset area, an extension of route 5 to Desert Skies Middle School, additional service on route 18 to address a service gap in the evening, and continued monitoring of the service to make improvements wherever possible. Those changes are scheduled for September. (*Presentations are available by contacting Denise Thompson at dthompson@rtcwashoe.com*.)

Vice Chair Jardon said she had been in contact with the Verdi Community Council who expressed an interest in talking with the RTC to discuss where the best FlexRIDE location would be, such as downtown Verdi.

Commissioner Hartung requested that the Spanish Springs FlexRIDE and the route 5 extension is needed now, not in September. If there is any way to accelerate the time schedule he would like to see it happen.

Chairman Lucey shares the concerns about transportation to the outlying areas and believes it is imperative to the growth of the economy.

Mr. Gee said he had just hit his two-month anniversary with the RTC and one of the reasons he wanted to come to Reno is that the city is growing and the RTC is a leader in the country for setting the trends. He is very excited to be a part of that process.

Interim E.D. Amy Cummings added that she was pleased to come out of the transportation workshop with the direction to include these improvements in the FY 2021 budget, so staff is trying to move on these items a soon as possible.

Vice Chair Jardon requested a draft of the FlexRIDE map for the Somerset/Mogul area.

This being a Public Hearing, Chairman Lucey opened the meeting to public input and called on anyone wishing to speak on this item.

Mr. Ryan McKinney, local resident, thanked Mr. Gee for the work he's been doing but asked if the survey has come back from the first demonstration FlexRIDE program in Sparks, and where are the extra vehicles going to come from. He would also like to see better education on how to use the FlexRIDE system.

Mr. Kevin Cummings from Fosdick Fulfillment said they have approximately 200 employees and surrounding businesses also have large staff levels. Most of them do not know how to use the App for transit, so if they call in, will the RTC have the ability to answer those calls.

Chairman Lucey said that Director Mark Maloney would meet with Mr. Cummings in the back to answer those questions.

There being no one else wishing to speak, the Chair closed public input.

Vice Chair Jardon commented that the FlexRIDE system was a bold step for the agency and commission to take, not knowing how well it would work, and it was so successful that there ended up

being triple the ridership that was anticipated. She thanked staff and her fellow commissioners for taking such a leap into technology.

Commissioner Hartung said that if FlexRIDE does exceed expectations, it could alleviate some of the capacity needed for roads.

Chairman Lucey said that the RTC is blocked into a very limited amount of money that can be spent on transit, so innovative ideas must take place. He added that there should be another means of revenue found legislatively to supplement transit.

On motion of Mayor Smith, seconded by Vice Chair Jardon, which motion unanimously carried, Chairman Lucey ordered that the May 2020 RTC RIDE Service Adjustment, scheduled for May 2, 2020, including implementation of the new North Valleys FlexRIDE microtransit six-month demonstration service, extension of the existing RTC FlexRIDE microtransit six-month demonstration project, changes to Route 7, 9, 13, 25, and the Virginia Rapid, and elimination of Route 17 and 25L be approved.

Item 5.1 thru 5.2 METROPOLITAN PLANNING (MPO)

5.1 Approve the Transportation Leaders Against Human Trafficking Pledge and authorize RTC Interim Executive Director to sign the pledge *(For Possible Action)* *Moved up on the agenda per Item 1.*

5.2 Approve the Americans with Disabilities Act (ADA) Transition Plan *(For Possible Action)*

Mr. Dan Doenges, Interim Director of Planning, addressed the Board to present the update to the ADA Transition Plan. The purpose is to improve accessibility for all citizens, specifically pertaining to RTC facilities and services. The plan sets out to develop a list of barriers, both physical and programmatic, and an outline, methodology and schedule with cost estimates to remove those barriers. The previous Plan was adopted in 2011 and focused on public rights-of-way on regional roads for sidewalks and connectivity. This update focuses on RTC facilities, RTC's six buildings and amenities, and approximately 360 of the 1,000 transit stops that RTC owns, so that any non-compliance issues could be programmed. He then provided some of the findings, such as missing signage, public restrooms with baby changing station clearance issues, etc. The greater part of the plan was looking at the bus stop compliance issues and improvements needed. (*Presentations are available by contacting Denise Thompson at dthompson@rtcwashoe.com.*)

Vice Chair Jardon asked if the improvements will begin in April and will her stop at Sharlands be included.

Interim E.D. Cummings added that the first 11 stops planned for improvements did not require right-of-way acquisition, but the majority of the stops do require right-of-way acquisition, including the stop at Sharlands. Also, she explained that the benches are not part of the ADA improvements but there is separate funding for bus stop amenities as a separate project.

Brian Stewart, RTC Director of Engineering, addressed the Board to say that Item 3.7 under consent is to award the contract for work on the first 11 stops. The Sharlands stop is not included because it is a robust stop location and will require more funding using fuel tax, adding that the fuel tax cannot be used for bus stop amenities.

Chairman Lucey said there are bus stops in his district that are just poles and stops, so a conversation needs to occur where improvements can be made together so the stops are shut down for a shorter period of time.

On motion of Vice Chair Jardon, seconded by Commissioner Hartung, which motion unanimously carried, Chairman Lucey ordered that the Americans with Disabilities Act (ADA) Transition Plan be approved.

Item 6.1 thru 6.3 DIRECTOR REPORTS

Item 6.1 RTC Executive Director Report

Interim E.D. Cummings spoke on topics of interest to the commissioners. Upon conclusion, she offered to answer any questions.

Commissioner Hartung asked if the roadway improvements on Eagle Canyon will be between Lemmon Valley Drive at Chickadee and Pyramid Highway at La Posada .

Interim E.D. Cummings confirmed, saying that the end points of the project are yet to be determined, so staff would like to get community input on that.

Commissioner Hartung asked what happens when tribal land is crossed.

Interim E.D. Cummings said the tribe is a proponent of this project and they have and will continue to participate in the project. Staff plans to be ready to meet with their tribal council at their request.

Commissioner Hartung has concerns for safety where the high school locations are.

Item 6.2 RTC Federal Report

A written report is included in the agenda materials and Interim E.D. Cummings mentioned the Notice of Funding opportunity that has come out for the BUILD grant. The RTC would like to resubmit the Pyramid Highway widening project for the BUILD grant this year.

Item 6.3 NDOT Director Report

Mr. Cole Mortensen, Deputy Director, said that there were 24 fatalities on the roads which matches the 2019 January fatalities. There were 12 pedestrian fatalities in the state which is up by 8 fatalities from the previous year. Washoe County had one pedestrian fatality which is down by one, so a little better.

Next, he provided a quick update of the Spaghetti Bowl Xpress project, stating that the contract was approved in December to begin construction as a design/build project. There is more information needed before construction can actually begin but it should begin in summer/fall of 2020.

He then introduced Denise Inda from traffic operations at NDOT who gave a presentation on advance signal warning systems. The purpose is to alert motorists of a signal ahead using signs or flashers. Most of the time, when a driver can easily see an upcoming signal, no advance warning is warranted. However, when it is warranted, there are three types of systems:

1. Signage only – when sight distance is adequate.
2. Passive System – includes signage and a continuous flashing beacon – when sight distance is adequate, but the intersection is isolated or unexpected.
3. Active Warning System – used when sight distances are limited with heavy vehicle volumes or adverse weather conditions.

Staff discovered that NDOT had not kept up with the current national guidance on these systems and proper use of these systems improves driver safety by reducing crashes. A study was done on the existing advance signal warning locations and guidance was then developed for the placement of the signs and systems to be in line with the national guidelines for use. In Washoe County there are 16 locations which have some type of advance warning system in place. Those will be studied to determine if changes are needed to particular locations or not. A public education plan will also take place to avoid driver confusion. (*Presentations are available by contacting Denise Thompson at dthompson@rtcwashoe.com*.)

Additional information will be brought to a future meeting as studies take place.

This concluded the NDOT updates and Mr. Mortensen offered to answer any questions.

Commissioner Hartung commented on the public comment letter received and read into the record earlier in the meeting. He explained that there had been a young man killed on a bicycle in the area mentioned and a Gubernatorial mandate was made to slow the speed limit to 45 mph. Later, studies showing the 40th percentile was traveling at a faster speed so the limit was raised. However, the traffic speeds through there now average 65 to 70 mph, so he believes the safety of that area has been compromised and agrees the speed limit should be reduced.

He continued discussion on the advance warning systems, saying that the residents of the area these systems are located on Pyramid are not happy.

Mayor Smith commented that the City of Sparks believes that NDOT is on the right track to take out some of the warning systems where they are no longer warranted. There is some confusion by the flashers because some flash all the time and some don't.

Vice Chair Jardon would like information for use of the Governor's Bowl for homeless services, housing projects, etc.

Chairman Lucey asked why the advance warning systems on Mt. Rose Highway are being reviewed for improvements when they already seem to work well.

Ms. Inda said that the systems throughout the entire state are being reviewed and some may not require improvements if they are working well.

Item 7 PUBLIC TRANSPORTATION AND OPERATIONS

7.1 Receive a report on the Regional Transportation Commission's (RTC) demonstration of the double decker bus and provide direction accordingly *(For Possible Action)*

Mr. David Carr, RTC Fleet and Facilities Manager, addressed the Board to give a presentation update on the demonstration of the double decker bus. The demonstration took place for three weeks in December and there were 75 trips and 158 surveys completed. The comments received were overwhelmingly positive. The demonstration bus was used on routes 5, 12, 17, the RAPID, the Lincoln Line and the Regional Connector.

Costs provided by Keolis for their use of a double decker bus in Las Vegas show that there is a little higher cost per mile to run. Also, the conventional hybrid bus currently running costs approximately $800,000 to purchase and the double decker is approximately $1,500,000.

Reno's demonstration bus had some higher amenities than would be used for everyday use, so many of the comments pertained to the better seats, etc.

- Very comfortable
- I love view
- It's a very fun idea
- Good option for tourism
- Futuristic
- Lots of seating upstairs
- Love the look, the idea is awesome, not sure cost effective.
- Comfortable, luxury*
- Love the whole thing
- Love view, big windows
- Reminds me of double decker buses in England
- Reminds me of Europe
- It's enjoyable

Contractor feedback is shown below:

- Operations
  - Positive feedback on drivability and handling
  - Have to be aware of overhead clearance (particularly wet or snow laden tree branches)
  - Cannot drive thru fueling and inspection area
  - Cannot keep upper floor under surveillance
  - Camber (tilt) would increase hazards by signs and posts
  - High profile affected by high winds

- Maintenance
  - Spills and biohazards harder to clean
  - End of shift cleanup more difficult and would take more time
  - Does not fit into bus wash / fuel bay
  - Any roof cleaning / work would require fall protection
  - Overhead collisions would be costly

Driver observations:
- Longer to load and unload – more time between stops
- Low ceiling height 5' 7"

- Long narrow row
- 49 seats
- One stair well
- Extra time required
  - Climb up and down stairs
  - Wait for passenger to be seated
- Issues with stairwell
  - Narrow – one way traffic
  - Bus must be stopped when passengers are using
  - Increases time at each stop
  - Fall hazard
  - Narrow emergency exit

Aisle is too narrow for wheelchair access:

- Similar issue on 35' first generation of Proterra E-buses
- 32 7/8" maximum aisle width
- 32 seats w/ 1 stair well
- Roomier past stairwell

Ultimately, it was decided that if RTC were to go forward with the purchase of a double decker bus, it would serve a BRT line the best. Currently, there is not high enough ridership to justify this option for now.

Mr. Carr provided some information that came out of a study done in San Francisco then gave some potential options for consideration.

Vice Chair Jardon thanked Mr. Carr for the demonstration project and believes that the double decker style bus is attractive to tourists and daily passengers. She agrees that if the RTC were to purchase one of these it should be used on the Virginia Street BRT route.

Mayor Smith pointed out that the double-decker is double the price of our usual coaches and because one is currently being built for Foothill Transit in the bay area, we should wait to see how that one performs before making any decisions. The Mayor also reminded everyone that if someone has small children or a bunch of groceries, they won't be going up top. Lastly, he believes it is too soon to consider and the price has to come down.

Chairman Lucey agrees that the double decker is eye catching and would add to the tourism experience, but also agrees that they are too expensive and provide some unique challenges for passengers and coach operators. With that said, he sees many benefits to using one on the Virginia Street corridor or on the Inter-City regional connector route, but we should wait until costs come down.

Interim E.D. Cummings added that the replacement schedule for the eight aged out coaches is in 2022 which will allow time for the electric vehicle to come online to look at as another option.

On motion of Vice Chair Jardon, seconded by Chairman Lucey, which motion unanimously carried, Chairman Lucey ordered that receipt of the report be acknowledged with the direction given.
(*Presentations are available by contacting Denise Thompson at dthompson@rtcwashoe.com*.)

Item 8.1 thru 8.2 ENGINEERING

8.1 Acknowledge receipt of the Virginia Street Bus Rapid Transit (BRT) Extension monthly progress report *(For Possible Action)*

Mr. Jeff Wilbrecht, RTC Project Manager, provided a brief presentation update on the project. He began, saying that the mild winter weather has allowed the project to move along very well with a large amount of concrete poured and work on the round-about beginning. Approximately $18.3 million has been spent on the project to date, which includes more than half of the project scope.

Mr. Wilbrecht provided several photos of the project and said that paving will begin near the end of February between Center Street and Mt. Rose Street. He also mentioned some of the outreach events that have been held where the public can ask questions and provide feedback.

On motion of Vice Chair Jardon, seconded by Commissioner Hartung, which motion unanimously carried, Chairman Lucey ordered that receipt of the Virginia Street Bus Rapid Transit (BRT) Extension monthly progress report be acknowledged.

8.2 Acknowledge receipt of the Lemmon Valley monthly progress report *(For Possible Action)*

Mr. Dale Keller, RTC Project Manager, gave a brief update on this project. Since last fall, the team has been hard at work and staying on schedule. The first segment is to widen Lemmon Drive from four lanes to six lanes from US 395 to Military Road. The purpose of this widening is to reduce crash volumes in that area, so studies are underway to determine the "hot spots."

Segment 2 goes along Swan Lake from Fleetwood Drive to Chickadee Drive where it is being widened from two lanes to four lanes. This portion of the project includes involvement from Washoe County and the City of Reno to find the best regional solution to provide safety and mobility around the year.

A technical advisory meeting was held to kick of this part of the project and was very well attended.

The project remains on schedule with the first segment to be ready for construction in early 2021. The second segment continues to progress and a preferred alternative still needs to be selected and brought to the Board for approval.

Commissioner Hartung, would still like the project to continue past Chickadee Drive to open up the developmental opportunities on the back side of the valley.

Interim E.D. Cummings said that an additional project for a continuation can be added to the identified needs to be looked at in the RTP.

On motion of Commissioner Hartung, seconded by Vice Chair Jardon, which motion unanimously carried, Chairman Lucey ordered that receipt of the Lemmon Valley Drive monthly progress report be acknowledged.

9.1 Legal Issues - Report, discussion and possible action and/or direction to legal counsel and staff following receipt of information on legal issues. The RTC may, consistent with Chapter 241 of NRS, decide to interrupt the public meeting at any time to conduct a closed session to confer with legal counsel and possibly deliberate on legal issues. Any action on pending legal matters will be made when the public meeting is reconvened.

Legal Counsel Dale Ferguson requested a legal briefing with the commissioners immediately following the April 17, 2020, Board Meeting.

Item 10 *PUBLIC INPUT*

Chairman Lucey opened the meeting to public input and called on anyone wishing to speak on topics relevant to the Regional Transportation Commission (RTC) that are not included in the current agenda.

Ms. Dora Martinez, local resident, asked to have an ADA accessible manner of filling out public comments for the Board. She also asked to have the signs at the transit centers detailing what bus is arriving/leaving moved to 60 inches off the ground and/or a bigger font. Sometimes the stops are not being announced, so she asked for staff to please remind the drivers. She also asked to have free rides for the 30th anniversary of the ADA. She would like everyone to keep their dogs on leashes, especially on the buses, and would like to have a seat at the table when ADA matters are being discussed. Lastly, she would like presenters to be more descriptive about what is on their presentations so visually impaired people can follow along better.

There being no one else wishing to speak, the Chair closed public input.

Item 11 MEMBER ITEMS

Chair Lucey agrees that all animals, including service animals, need to be leashed or in a carrier.

Interim E.D. Cummings introduced Michelle Kraus who is training to be the back-up for the board clerk.

Item 12 ADJOURNMENT

There being no further business to come before the Board, the meeting adjourned at 11:33 a.m.

_____
BOB LUCEY, Chairman
Regional Transportation Commission

AGENDA ITEM 3.2

REGIONAL TRANSPORTATION COMMISSION
WASHOE COUNTY, NEVADA

FRIDAY **9:03 A.M.** **March 20, 2020**

PRESENT:

Bob Lucey, Washoe County Commissioner, Chairman
Amy Cummings, RTC Interim Executive Director
Dale Ferguson, Legal Counsel

VIA TELEPHONE:

Neoma Jardon, Reno City Council Member, Vice Chair
Vaughn Hartung, Washoe County Commissioner
Oscar Delgado, Reno City Council Member
Kristopher Dahir, Sparks City Council Member (alternate)
Zev Kaplan, Special Counsel

NOT PRESENT:

Ron Smith, Mayor of Sparks
Kristina Swallow, Director of NDOT

The regular monthly meeting, held in the first floor conference room of the RTC Administrative Building, 1105 Terminal Way, Reno, Nevada, was called to order by Chairman Lucey.

Chairman Lucey first explained that four commissioners were attending via telephone and per Governor Sisolak's directive, those of us who were physically in the meeting room were practicing the recommended social distancing. The meeting was also being live-streamed via RTC's Facebook page.

Following the roll call and the Pledge of Allegiance to the Flag of our country, the Board conducted the following business:

Item 1 APPROVAL OF AGENDA

On motion of Commissioner Hartung, seconded by Commissioner Dahir, which motion unanimously carried, Chairman Lucey ordered that the agenda for this meeting be approved.

Item 2 .1 PUBLIC INPUT

Chairman Lucey opened the meeting to public input and called on anyone wishing to speak on topics relevant to the Regional Transportation Commission (RTC) that are not included in the current agenda.

There being no one wishing to speak, the Chair closed public input.

Item 3 .1 thru 3.11 CONSENT ITEMS

Minutes

3.1 Approve the minutes of the February 13, 2020, special meeting *(For Possible Action)*

Procurement and Contracts

3.2 Acknowledge receipt of the monthly Procurement Activity Report *(For Possible Action)*

3.3 Approve a Professional Services Agreement (PSA) with Nichols Consulting Engineers (NCE) to provide construction management for the Sun Valley Boulevard Corridor Project in an amount not to exceed $598,113, authorize the RTC Interim Executive Director to execute the agreement *(For Possible Action)*

3.4 Approve a Professional Services Agreement (PSA) with Eastern Sierra Engineering, P.C. ("ESE") to provide design services and optional engineering during construction for the Reno Consolidated 21-01 Project in an amount not to exceed $487,080, authorize the RTC Interim Executive Director to execute the agreement *(For Possible Action)*

3.5 Approve a Professional Services Agreement (PSA) with Stantec Consulting Services, Inc. to provide final design, bidding services and design support during construction for the Oddie/Wells Multi-modal Improvements Project in an amount not to exceed $1,272,305; authorize the RTC Interim Executive Director to execute the agreement *(For Possible Action)*

3.6 Approve a resolution regarding potential sale of five remnant parcels to the Board of Regents of the Nevada System of Higher Education on behalf of the University of Nevada, Reno after completion of the Virginia Street Bus RAPID Transit Extension Project and contingent on approval from the Federal Transit Administration (FTA) and compliance with all applicable state and federal laws and regulations *(For Possible Action)*

3.7 Approve a Professional Services Agreement (PSA) with CA Group to provide design and optional engineering during construction services for the Newport Lane Rehabilitation Project in an amount not to exceed $354,823; authorize the RTC Interim Executive Director to execute the agreement *(For Possible Action)*

3.8 Approve a Professional Services Agreement (PSA) with Lumos and Associates, Inc. to provide design and optional engineering during construction services for the Kings Row Rehabilitation Project in an amount not to exceed $692,030; authorize the Interim Executive Director to execute the agreement *(For Possible Action)*

3.9 Approve a transfer of right of way from the Regional Transportation Commission (RTC) to the Nevada Department of Transportation (NDOT) that was previously relinquished to RTC for a portion of Double R Boulevard *(For Possible Action)*

3.10 Approve Change Order No. 11 (CO 11) increasing the total contract amount of the agreement with Granite Construction, Inc. (Granite) for Construction Work Phase 2 Southeast Connector, between Clean Water Way and South Meadows Parkway, by $327,736 for a new total contract amount of $158,588,256; authorize the RTC Interim Executive Director to execute CO 11 *(For Possible Action)*

3.11 Approve the purchase of one 2019 Ford Transit vehicle utilizing the State of Nevada Fleet Vehicles procurement contract in the amount of $69,531 for Neighbor Network of Northern Nevada (N4) *(For Possible Action)*

On motion of Vice Chair Jardon, seconded by Commissioner Hartung, which motion carried unanimously, Chairman Lucey ordered that Consent Items 3.1 through 3.11 be approved.

Item 4.1 ENGINEERING

4.1 Approve the proposed FY 2021 Program of Projects (POP) *(For Possible Action)*

Mr. Brian Stewart, RTC Director of Engineering, addressed the room to provide a brief presentation on the proposed FY 2021 Program of Projects. He began, explaining that the RTC evaluates and approves fuel tax funded projects in terms of the criteria in NRS 373.140(2) as follow:

- The priorities established by the Regional Transportation Plan
- The relation of the proposed work to other projects already constructed or authorized
- The relative need for the project in comparison to others proposed
- The money available

He further explained that following approval by the RTC Board of Commissioners, the POP is presented to the Washoe County Commission for authorization to use fuel tax for those projects.

Only two new projects were added to the list this year, Sky Vista Capacity Improvements (Lemmon Drive to Silver Lake) and Mill Street Capacity Improvements (Lake to Terminal). The pavement Preservation and Reconstruction Program is included every year and includes an $18 million budget for FY 2021. Transportation spot improvements come in at $4.5 Million and Traffic Management & Intelligent Transportation systems projects are at $1.75 million. Lastly, the ADA Pedestrian Connectivity at Transit Stops projects are included at $2 million per year for three years.

Commissioner Hartung asked if the Sparks Boulevard widening planned for 2024 includes an interchange at Veterans Memorial Parkway and Greg Street.

Mr. Stewart said staff has been working with NDOT to put an interchange in at Sparks Boulevard and Interstate 80 which will most likely increase the schedule and the budget.

Commissioner Hartung clarified that he is referring to the intersection at Greg Street because there are huge traffic jams at that intersection during peak traffic times.

Mr. Stewart apologized for his misunderstanding and said that staff will be looking at that immediately and also during the active phase of the project that includes that intersection.

On motion of Hartung, seconded by Commissioner Dahir, which motion carried unanimously, Chairman Lucey ordered that the proposed FY 2021 Program of Projects (POP) be approved.
(*Presentations are available by contacting Denise Thompson at dthompson@rtcwashoe.com.*)

Item 5.1 thru 5.2 GENERAL ADMINISTRATION

5.1 Discussion and possible action to approve, reject or modify the Executive Director Employment Agreement for William Thomas *(For Possible Action)*

Chairman Lucey explained that all the commissioners have a copy of the agreement with Mr. Thomas and that it is included in the agenda packet for this meeting. He added that special counsel Zev Kaplan was on the phone and asked if he had anything to add.

Mr. Kaplan then highlighted the main differences between retired executive director Lee Gibson's agreement and this one as follow:

- The duties and scope remain the same
- The salary is lower than Mr. Gibson's salary was at his retirement. Mr. Gibson was paid $238,000 plus benefits and Mr. Thomas will be paid $220,000 and benefits.
- The RTC will provide a cell phone to Mr. Thomas for work purposes which will aid in compliance with public records laws when needed.
- The termination and severance pay section was taken from the Reno/Sparks Convention and Visitor's Authority director's contract and adds a bit of flexibility of the terms at the Board's discretion, but will not exceed six months' severance pay.
- Mr. Thomas will not receive an additional two weeks of personal leave as Mr. Gibson had.

Chairman Lucey then asked the commissioners if they had any questions or concerns pertaining to these changes. There were none.

On motion of Hartung, seconded by Vice Chair Jardon, which motion carried unanimously, Chairman Lucey ordered that the Executive Director Employment Agreement for William Thomas be approved and Chairman Lucey is authorized to execute the agreement on behalf of the Board.

5.2 Legal Issues - Report, discussion and possible action and/or direction to legal counsel and staff following receipt of information on legal issues. The RTC may, consistent with Chapter 241 of NRS, decide to interrupt the public meeting at any time to conduct a closed session to confer with legal counsel and possibly deliberate on legal issues. Any action on pending legal matters will be made when the public meeting is reconvened. *(For Possible Action)*

Legal Counsel Dale Ferguson said that both the federal and state courts have significantly modified their operations at this time, so he has modified the schedules for any current RTC litigation under way. If anything urgent arises, it can be handled telephonically if needed.

Item 6 PUBLIC INPUT

Chairman Lucey opened the meeting to public input and called on anyone wishing to speak on topics relevant to the Regional Transportation Commission (RTC) that are not included in the current agenda.

There being no one wishing to speak, the Chair closed public input.

Item 7 DIRECTOR ITEMS

Interim Executive Director Cummings briefed the Board on the RTC's emergency response to the emergency declaration with regard to COVID-19. Public transportation and construction are essential services and the RTC is committed to continuing to provide those services to the public while taking measures to protect the health and safety of staff. She then thanked the RTC contractors for continuing to provide the essential mobility to the members of our community. Other adjustments include closing the RTC administrative offices to the public, beginning at noon March 20, 2020. Limited staff will remain on site to provide the necessary tasks required to maintain operations but the majority of staff is working from home.

The Virginia Street project construction will be accelerated to take advantage of the shelter in place directive, closed businesses and reduced traffic volumes. The section of the project between Mary and Center Streets down to Mt. Rose Street will close to traffic in both directions. The hope is that when businesses are able to open again, that portion of the project will be almost completely finished. The RTC received strong support from the businesses. This change will go into effect March 21, 2020, transit will be rerouted around the project and a press release will go out to notify the public.

Commissioner Dahir asked if any publications are being put out by the RTC to notify the public about continued transit operations and if so, is it something the local entities can also use.

Ms. Cummings responded that the RTC does have a press release and she will ensure that everyone gets a copy who wants one.

Chairman Lucey added that all of the RTC information will also be disseminated form the Joint information Center.

Vice Chair Jardon asked if a press release will be going out on the accelerated construction on Virginia Street.

Ms. Cummings confirmed.

Item 8 MEMBER ITEMS

Commissioner Hartung congratulated Mr. Thomas and looks forward to a good year once things are back to normal. He added that at that time, he would like to discuss the provision of bus passes on an ongoing basis for programs such as Crossroads, 24/7, Step Two, etc. They have an urgent need and are essential to getting people back to working in the system.
Commissioner Dahir also welcomed Mr. Thomas and thanked Ms. Cummings for stepping in for and everything she did to keep the agency running without missing a beat.

Chairman Lucey thanked Ms. Cummings for everything she has done and said she will continue working for the RTC in her prior capacity once Mr. Thomas comes on board.

He also thanked the general public who may be watching or listening for their patience during this difficult time and thanked all of the RTC transit operators for their continued support during this challenging time.

Commissioner Hartung thanked Ms. Cummings for her exemplary job of taking care of the RTC and keeping communications going with the commissioners.

Item 9 ***ADJOURNMENT***

There being no further business to come before the Board, the meeting adjourned at 9:30 a.m.

_____
BOB LUCEY, Chairman
Regional Transportation Commission

April 17, 2020 **AGENDA ITEM 3.3**

TO: Regional Transportation Commission

FROM: Brian Stewart, P.E.
Engineering Director

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: RTC Engineering Activity Report

RECOMMENDATION

Acknowledge receipt of the monthly Engineering Activity Report.

BICYCLE AND PEDESTRIAN IMPROVEMENTS

Bus Stop Improvement and Connectivity Program

The program is a multi-year effort to upgrade existing bus stops to comply with state and federal requirements, including the Americans with Disabilities Act (ADA). The first phase of bus stop improvements located within public Right-of-Way (13 bus stops) advertised in February. Spanish Springs Construction was awarded the contract and construction is complete. The process of obtaining necessary easements for other locations is ongoing. Once easements are acquired, additional construction packages will be advertised. CA Group continues to work on design for other stops. A 100% Review Package for Phase 2 stops and a 60% Review Package for Phase 3 stops was submitted in February. Another 60% Review Package for Phase 4 stops will be submitted in April.

Center Street Cycle Track Project

The PSA with Headway Transportation was approved at the September 2019 Board Meeting. The scope of services for additional Traffic Analysis of the proposed alternative, which includes a two-way cycle track along Center Street from Cheney to 9th Street, is underway. A draft report with the results has been shared with stakeholders from City of Reno.

Mill Street (Terminal Way to McCarran Boulevard)

The scope of this project is to design and construct various complete street improvements along Mill Street from Terminal Way to McCarran Boulevard, as identified in the RTC Complete Streets Masterplan completed in July 2016, and the Mill/Terminal corridor study completed in March 2013. The emphasis of this project is to assess and identify improvements for pedestrians, bicyclists, and transit riders as well as motorists. Deficiencies in pedestrian access related to Charter Schools and AACT High School in the area as well as a number of ADA deficient bus stops have been addressed.

Preliminary design is complete and 90% plan comments have been received from the agencies. An Amendment to the design contract has been approved that will split the project into two phases and provide for construction management services. Phase 1 will be from Rock Boulevard to McCarran Boulevard and Phase 2 will be on Mill Street from Terminal Way to Rock Boulevard. Right-of-way impacts have been identified and the right-of-way process for Phase 1 is beginning. It is anticipated the two phases will be constructed consecutively over a 5-year timeframe.

CAPACITY/CONGESTION RELIEF PROJECTS

ITS Pilot Project, Design of Phase 2 ITS Connectivity

This pilot project will connect traffic signal systems of the City of Reno, the City of Sparks, Washoe County, and NDOT through fiber optic communication lines. This project also includes design of Phase 2A and 2B, which will expand communication to outlying signal systems and install ITS devices to monitor and remotely adjust traffic signals to respond to special events, changing traffic conditions, provide information to drivers and traffic incidents. Construction of the Pilot Project is complete. The ITS Phase 2A Project is complete. Phase 2B is currently under construction with a tentative completion in spring 2020.

Lemmon Drive Project

The project includes widening Lemmon Drive from US 395 to Military Road from four lanes to six lanes and widening Lemmon Drive from Fleetwood Drive to Chickadee Drive from two lanes to four lanes. Professional engineering services are underway with Jacobs Engineering Group, Inc. Preliminary design is ongoing for Segment 1 (US 395 to Military Rd). For Segment 2 (Fleetwood Drive to Chickadee Drive), the Technical Advisory Committee (TAC) met in March and developed a range of possible roadway alternatives to be evaluated. The RTC is working closely with Washoe County and the City of Reno to coordinate nearby regional improvements. A separate more detailed written report is provided this month also.

North Valleys Improvements

Package 3 constructed a new traffic signal at the Lemmon Drive/North Virginia Street intersection and it is substantially complete.

Package 3B is currently at 100% design. Package 3B includes adding capacity to the right turn lane at North Virginia Street/Business 395. This project also includes improvements to two bus stop pads located within the project area, and associated access and drainage improvements. Construction of this package is tentatively scheduled for spring of 2020, pending NDOT reviews.

Sparks Boulevard Project

The project seeks to increase safety, maintain roadway capacity, and improve bicycle and pedestrian facilities by widening Sparks Boulevard to six (6) lanes between Greg Street and Baring Boulevard. In October 2019, the RTC Board authorized the procurement for the selection of engineering design services. An anticipated Professional Services Agreement with the top-ranked firm will be presented to the RTC Board for possible action in April 2020.

Traffic Signal Timing 6 Project

Following a three year cycle schedule, the project includes review and timing optimization of approximately one-third (1/3) of the signals in the region per year. For 2020, this begins a new cycle where signals that were re-timed back in 2016, will be re-evaluated and re-timed to address the changes to traffic demand. For 2020, roughly 95 intersections will have revised timing implemented. Timing plans are developed in coordination with RTC/UNR. In the process, re-evaluation of the other settings such as vehicle passage times are calculated at each intersection to make sure it is up to current standards.

Progress as of April 2020

- Oddie Blvd (12 Signals) – Sutro Street to E 12th Street – Completed
- Updating Vehicle and Pedestrian Intervals at various intersections (approximately 120 signals) – In progress
- N. McCarran Blvd & Clear Acre (10 Signals) – Sutro Street to Sullivan Lane – New timing plans completed and ready to implement.

Due to the reduction of traffic in the region due to COVID-19, implementation of new signal timing is on hold until normal traffic pattern returns.

Traffic Engineering (TE) Spot 8 – Package 1 Project

The project was awarded to Titan Electrical Contracting. Underground work complete. Construction currently on hold pending arrival of traffic signal poles.

The scope of this project includes:

Flashing Yellow Arrow – East/West
Keystone Avenue at 7th Street
East Lincoln Way at Marina Gateway Drive
Mill Street at Kirman Avenue

Flashing Yellow Arrow – North/South
McCarran Boulevard at Neil Road

Battery Back-Up Systems
Mae Anne Avenue at Coit Plaza
Oddie Boulevard at I-80 Ramps (both sides)
Wells Avenue at I-80 Ramps (both sides)
Wells Avenue at 6th Street

Traffic Signal
Evans Avenue at Enterprise Road

Traffic Engineering (TE) Spot 8 – Package 2 Project

The project includes a new traffic signal and slurry seal at the intersection of Red Rock Road and Silver Lake Road, and capacity improvements at the North McCarran Boulevard and U.S. 395 Interchange.

Construction of the traffic signal at Red Rock/Silver Lake intersection is complete and as of March 30, 2020, the signal has been operating. Remaining work includes slurry seal. Dependent on weather, it is scheduled to be complete in late April/early May 2020.

Work on the McCarran portion of the project is slated to start at the same time as when the slurry seal is done at the intersection of Red Rock/Silver Lake. An additional westbound through lane and signal modifications are part of this improvement.

Traffic Engineering (TE) Spot 9 – Package 1 Project

The project includes:

- Traffic signal at the intersection of Sharlands Avenue and Mae Anne Avenue;
- Battery backup systems for signalized intersections on Sun Valley Drive from Scottsdale Road to 7th Street;
- Minor striping improvements to improve traffic flow at Pyramid Way at York Way; and
- Traffic study with potential improvement to southbound right turn lane at the intersection of Vista Boulevard and Baring Boulevard.

Design is underway with Westwood Professional Services as the design consultant. Project advertisement is scheduled for May 2020 with construction in spring/summer 2020.

Traffic Engineering (TE) Spot 9 – Package 2 Project

The project includes various traffic updates throughout the Reno/Incline area:

- Traffic signal cabinet and camera upgrades at various intersections in the Reno area;
- New traffic signal at the intersection of Rock Boulevard/Edison Way; and a
- 4th Street/Mesa/Woodland intersection study for future improvements.

Project is moving forward towards 100% design completion in mid-April. Advertisement for bidding will be begin in May.

CORRIDOR IMPROVEMENT PROJECTS

Arlington Avenue Bridges

The Arlington Avenue Bridges Project is a feasibility study to analyze possible replacement bridge types and aesthetic themes, document design and environmental criteria, improve safety and multi-modal access in the Wingfield Park area, and review flood-capacity requirements. The crossing of the Truckee River at Arlington Avenue has served the community of Reno and provided access to Wingfield Park for nearly a century. The bridges were built in the 1930s and while structurally safe to drive over they are showing signs of wear resulting from the variety of modifications over the years, their age, and the repeated exposure to flood events.

The team is working towards defining the lead agency from a funding perspective and preparing materials for upcoming TAC meetings. Preparation for the second Stakeholder Working Group meeting is ongoing. Stakeholder Working Group meeting 2 is anticipated to be held in May.

Kuenzli St. Conversion Project

This project includes the conversion of Kuenzli Street from its current one-way configuration to a two-way street from Giroux Street to Kirman Avenue. The main portion of the project is summarized below:

1. Kuenzli Street from Kirman Avenue to Giroux Street
    a. Surface treatment for preventative maintenance and striping revisions
    b. Conversion of one-way to two-way
    c. Signal modification associated with conversion
    d. Potential for addition of up to four transit stop pads
    e. Potential incorporation of conduit for City of Reno fiber optic installation. City of Reno to provide number and size of conduit desired (included as an optional task)
2. Kirman Avenue from the south end of the bridge over the Truckee River to East 2nd Street
    a. Surface treatment for preventative maintenance and striping revisions
    b. Striping and signal modifications to allow two-way movements on Kuenzli Street
    c. Pedestrian ramp replacement at Kirman Avenue and Kuenzli Street intersection
    d. Potential incorporation of conduit for City of Reno fiber optic installation. City of Reno to provide number and size of conduit desired (included as an optional task)
3. Giroux Street from Kuenzli Street to East 2nd Street
    a. Surface treatment for preventative maintenance and striping revisions
    b. Conversion of one-way to two-way
    c. Striping modifications to allow two-way movements
    d. May need modifications at roundabout.

Based on the traffic study, the project is moving forward with design with the above mention summary. The traffic signal at Kuenzli and Locust will be removed. The project is currently moving towards 90% design.

Oddie Boulevard/Wells Avenue Improvement Project

Sixty percent (60%) design plan submission to the cities of Reno and Sparks was provided in the middle of November 2019. A public meeting was held on Thursday, January 23, 2020, at the Washoe County Senior Center in Reno.

The agreement to move forward with Final Design services with Stantec Consulting Services, Inc. was approved. Final design is scheduled for the end of October 2020.

Pyramid Highway and US 395 Connection

The estimated cost of the overall project is $800 million and will relieve congestion on the Pyramid Highway, McCarran Boulevard and other regional roads and provide connectivity between the North Valleys, Sun Valley and Spanish Springs. The project is planned to occur in

multiple phases over approximately a 15 to 20 year period and is included in the RTP. NDOT has completed 30% design of Phase 1 of the project that consists of capacity and multimodal improvements on Pyramid from Queen Way to Golden View Drive. Design is anticipated to be complete in 2022. Pending funding, construction of Phase 1 could begin in 2023. The estimated cost of Phase 1 is approximately $56 million. The RTC with support from NDOT and others will be applying a second time for a BUILD grant from the Federal Highway Administration to help fund Phase 1.

Sun Valley Boulevard Corridor Improvement Project

Final Design for the Washoe County section between 7th Avenue and Highland Ranch Parkway is moving forward. The 100% Plans were submitted on March 18, 2020, to Washoe County and NDOT for their final comments/review. The goal is to start construction by June 2020 and be complete before school starts in August 2020. In lieu of a public meeting, a video of the project presentation and information is available at the project website: http://SunValleyBlvd.org. Public comments may be submitted directly through the website or via phone, email or letter to the project manager.

Inadequate drainage systems to handle existing storm water flow is presenting project challenges along the NDOT portion of this project between El Rancho and 7th Avenue. Discussion for a possible partnership with NDOT and Washoe County is occurring in order to address existing the drainage issues and the project design. Maintenance of the proposed new facilities may also present challenges to Washoe County, NDOT, and Sun Valley General Improvement District (GID).

Truckee River Shared Use Path Project

The proposed pathway will start at John Champion Memorial Park and continue along the south side of the Truckee River. The existing pathway in this segment of the river currently crosses to the north side of the river at the park as it continues eastward. The proposed pathway will be about 2,400 feet in length, continuing below Interstate 580 (I-580) to meet up with the existing pathway located near the Walmart east of I-580. This project was included in the fiscal year (FY) 2017 Program of Projects. The design portion of this project is funded through federal funds and includes oversight by NDOT through a Local Public Agency (LPA) agreement.

Thirty percent (30%) design plans are complete. Project documents have been submitted to NDOT for environmental documentation (NEPA Process) that is required for the project. Once NEPA is complete, RTC will begin the ROW acquisition of properties adjacent to the pathway. In addition, RTC has submitted the application for a 408 permit to Carson Truckee Water Conservancy District and United States Army Corp of Engineers.

Virginia Street RAPID Extension

A detailed monthly progress report will be given on this project during the board meeting. Additional information can be viewed at: http://virginiastreetproject.com/

PAVEMENT PRESERVATION PROJECTS

2020 Preventive Maintenance (Various Locations)
The 2020 Preventive Maintenance program is underway. This will provide patching, crack sealing, and slurry seal activities on approximately 200 lane miles of roadway. The project advertised on March 30, 2020 with a bid opening scheduled for April 20, 2020. Construction will start in spring 2020.

Golden Valley Road Rehab Project
The project includes rehabilitation/reconstruction of Golden Valley Road from Yorkshire Drive to North Virginia Street. Lumos & Associates, Inc. is the consultant for Design and Engineering During Construction services. Final design is under agency review. The scheduled construction start date is June 2020 with a scheduled completion in mid-August 2020.

Greg Street Rehab Project
The project includes corrective maintenance of Greg Street from McCarran Boulevard to the Union Pacific Railroad Tracks. Wood Rodgers, Inc. is the consultant for Design and Engineering During Construction. Final design is under agency review. The scheduled construction start date is June 2020 with a scheduled completion in mid-August 2020.

Lakeside Drive Rehab Project
The project includes rehabilitation/reconstruction of Lakeside Drive from Evans Creek Drive to McCarran Boulevard. Eastern Sierra Engineering is the consultant for Design and Engineering During Construction Services. An internal Kick-Off Meeting occurred on July 25, 2019 and a public Open House occurred at the Bartley Ranch School House on January 14, 2020. Construction is scheduled for early June 2020 with a scheduled completion in mid-August 2020. One hundred (100%) Design is under review with an advertise date of April 8, 2020 and bid opening scheduled for May 6, 2020.

Prater Way Rehab Project
The project includes rehabilitation/reconstruction of Prater Way from Howard Drive to Sparks Boulevard. Stantec Consulting Services, Inc. is the consultant for design and engineering during construction. The project advertised in February and the Construction contract has been awarded to Spanish Springs Construction, Inc. Construction is scheduled to start in April 2020 with a scheduled completion of October 2020.

Reno Consolidated 19-01- Sutro Street, 1st Street, Lake Street, and State Street Project
The project includes rehabilitation/reconstruction of the following street segments: Sutro Street from Commercial Row to 4th Street and from McCarran Boulevard to 1,400' north, 1st Street from Center to Lake, Lake Street Truckee River Bridge, and State Street from Virginia to Sinclair Street. Construction is complete with the exception of the section on Sutro from McCarran to Selmi Drive. Construction of this segment is currently underway and anticipated to be complete by the end of April 2020.

Reno Consolidated 20-01 – Mayberry Drive, California Avenue, and First Street

The project includes rehabilitation/reconstruction of the following street segments: Mayberry Drive from Memory Lane to California Avenue, California Avenue from Hunter Lake Drive to Booth Street, and First Street from Sierra Center to Virginia Street. Nichols Consulting Engineers (NCE) is working on preliminary design and a 30% design was submitted in March 2020. A design kick-off meeting was held in April 2020 that included multiple agency departments and utility companies. Great feedback was received and a 50% Review Package will be submitted in June 2020. Construction is anticipated to occur in 2021. The project team is preparing for the first Public Information Meeting, now anticipated to be held in May 2020.

Sparks Consolidated 19-01 – 15th Street, Franklin Way, Hulda Court, and El Rancho Sidewalk Project

The project includes rehabilitation/reconstruction of the following street segments: 15th Street from C Street to Prater Way, Franklin Way from the Rail Road crossing to East Greg Street, Hulda Court, and sidewalk improvements on El Rancho Drive from G Street to Oddie Boulevard. Construction on all streets listed above is substantially complete and the streets are open to traffic. Construction of the Rectangular Rapid Flashing Beacons (RRFB) at the Elementary Drive/El Rancho Drive intersection have been delayed due to easement acquisitions. The upgrades to the existing RRFBs between Elementary Drive and Oddie Boulevard are complete.

REPORT ON NEGOTIATED SETTLEMENT AGREEMENTS FOR THE ACQUISITION OF PROPERTY

Project	Property Owner	Purchase Amount	Amount Over Appraisal
TE Spot 8 Project – Package 1	Macy's West Stores, Inc.	$725.00	$0

CONTRACTS UP TO $50,000

Wood Rodgers in the amount of $50,000 for cost estimate preparation for 2050 Regional Transportation Plan update.

Nichols Consulting Engineers in the amount of $49,800 for technical writing and Standard Specifications for Public Works Construction "Orange Book" update.

ENGINEERING ON-CALL WORK ASSIGNMENTS

Attachment A summarizes the work assignments on the engineering pre-qualified on-call lists. Engineering Department consultant assignments are reported after Board approval of the professional services agreement with each firm.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

Attachment

On Call Consultant Summary

Civil Engineering Design and Construction Management Services			
BOARD APPROVAL DATE	**FIRM**	**PROJECT NAME**	**AMOUNT**
3/20/2020	CA Group	Newport Lane Rehabilitation Project	$354,823
3/20/2020	Eastern Sierra Engineering	Reno Consolidated 21-01 Project	$478,080
3/20/2020	Lumos & Associates, Inc.	Kings Row Rehabilitation Project	$692,030
3/20/2020	Nichols Consulting Engineers	Sun Valley Blvd. Corridor Project	$598,113
3/20/2020	Stantec Consulting, Inc.	Oddie/Wells Multi-Modal Improvements Project	$1,272,305

Traffic Engineering Services			
BOARD APPROVAL DATE	**FIRM**	**PROJECT NAME**	**AMOUNT**
2/21/2020	Atkins North America	ITS Phase 3 Project	$266,700

Engineering Design and Construction Management Services
List valid through June 20, 2022

Atkins North America, Inc.
CA Group, Inc.
Eastern Sierra Engineering, PC
Jacobs Engineering Group, Inc.
Lumos and Associates, Inc.
Nichols Consulting Engineers, CHTD
Stantec Consulting Services, Inc.
Wood Rodgers, Inc.

Traffic Engineering Services - Categories
List valid through April 19, 2022

Traffic Engineering	I.T.S.
CA Group, Inc.	Atkins North America, Inc.
Headway Transportation, LLC	Headway Transportation, LLC
Kimley-Horn & Associates, Inc.	Kimley-Horn & Associates, Inc.
Westwood dba. Slater Hanifan Group, Inc.	
Stantec, Inc.	

April 17, 2020 **AGENDA ITEM 3.4**

TO: Regional Transportation Commission

FROM: Mark Maloney
Director of Public Transportation and Operations

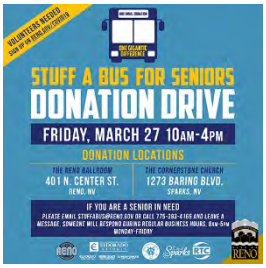
Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: RTC Public Transportation and Operations Report

RECOMMENDATION

Acknowledge receipt of the monthly Public Transportation and Operations Report.

HIGHLIGHTS

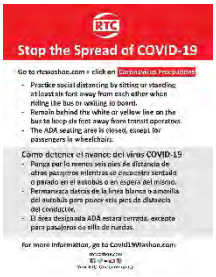


Community helps Stuff A Bus for Seniors - The RTC and our regional partners, including Washoe County, the City of Reno, the City of Sparks, the Downtown Reno Partnership, and The Row organized a Stuff A Bus for Seniors event on Friday, March 27, in Reno and Sparks. During these uncertain times, seniors in our community are afraid to leave their homes to get desperately needed supplies. Seniors are being urged to stay home and many are on a fixed income, unable to afford basic necessities, especially in the wake of the COVID-19 pandemic. Because of the community's generous donations, many seniors in the region will be able to get the essential items they need. On Monday, March 30, RTC ACCESS/MTM drivers delivered 31 packages. RTC and our regional partners are grateful for the donations received and the outpouring of support from our entire community during this event.

FOOD BANK OF NORTHERN NEVADA
together we can solve hunger.℠
MEMBER OF FEEDING AMERICA

RTC collaborates with Northern Nevada Food Bank – RTC and the Northern Nevada Food Bank join together to ensure vital home delivery of food boxes during these challenging times. As RTC ACCESS clients are identified, emergency food boxes will be delivered weekly by MTM drivers.

The RTC is also assisting Washoe County Human Services Agency – Senior Division (WCSS) to help deliver medications, groceries and other essential items to their RTC ACCESS eligible clients.



RTC Implements COVID-19 Precautionary Measures – The RTC has taken appropriate measures to inform the public of COVID-19 precautions by placing communications in each of the ACCESS vans, FlexRIDE vehicles, and RIDE buses. In the RIDE buses, these posters are displayed behind the coach operators, and are also being displayed on the monitors are Fourth Street Station, and on social media.

Additional measures include:

- Increased frequency of our sanitization and disinfection practices using a strong disinfectant approved for use against COVID-19 (novel coronavirus) on our transit vehicles and at RTC transit centers available for transit passenger use.
- RTC's transit operator, Keolis, has created stations where transit operators can pick up daily items such as gloves and sanitizing wipes. Keolis is also providing transit operators with information about how to stay safe.
- On RTC RIDE buses, the ADA section near the front of the bus is closed to passengers, with the exception of passengers in wheelchairs.
- RTC is recommending touchless methods to purchase transit passes. The best way to buy tickets is by using the Token Transit app on a smartphone or mobile device, or going online to https://www.rtcwashoe.com/public-transportation/buy-passes/. Ticket Vending Machines are also located outside at 4th Street Station and Centennial Plaza.
- RTC reminds transit passengers to practice social distancing by sitting or standing at least six feet away from each other when riding the bus or waiting to board.
- Transit passengers are also asked to remain behind the yellow or white line on the bus to keep six feet away from transit operators.
- RTC ACCESS paratransit service, operated by MTM, is only transporting one passenger at a time.

RTC RIDE

Keolis' Employee Appreciation breakfast event in honor of National Transit Operators' Day on Wednesday, March 18, was postponed due to Covid-19 precautions. This event will be rescheduled when appropriate.

Keolis Cares – On February 24, Keolis' management team put together 50 sock/hygiene kits that they donated to The Children's Cabinet. These kits will be given to at-risk youth in the Reno/Sparks area. Kits included new socks, shampoo/body wash, soap, deodorant, toothbrush/paste, razor and comb.

RTC ACCESS

MTM, Inc. was able to conduct its Employee Appreciation Luncheon in honor of National Transit Operators' Day on Wednesday, March 18. Operators and employees received bagged lunches in honor of their hard work and dedication.

In response to the COVID-19 pandemic, MTM Transit Reno has implemented several changes over the past several weeks. They have added five new electronic sanitizer dispensers in their building which is being refilled weekly by their vendor CINTAS. They have placed two in the drivers' room, one near their office hallway, one at the entrance of the conference room, and one in the maintenance shop. Management has been providing regular communications to its employees regarding COVID-19. Important literature about the virus including how to protect oneself are displayed throughout the facility, in restrooms and on the operators' information board and their safety board.

TRANSIT DEMAND MANAGEMENT (TDM) UPDATE -

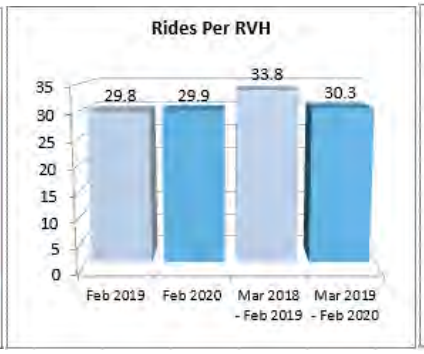
- Vanpools increased to 209 with over 120 of those serving the Tahoe Reno Industrial Center (TRIC).
- The City of Reno planning department has a draft update of its zoning code out for public comment. This draft (18.04.606(e)) contains a requirement for all employers with 50 or more employees to have a trip reduction program. RTC staff is working with Washoe County and Reno Planners to implement this program.
- RTC staff is working with a developer to have access to subsided bus passes through Token Transit on the developer's web site.
- RTC staff is moving ahead with the Transportation Management Association (TMA) with a third pre-workshop meeting held last month and plans to hold a workshop in May with the TRIC employers. Staff will email out a flyer for the event with a doodle link for employers to pick between several dates.
- Staff tabled an event at the Chamber of Commerce Alliance on February 12.
- Staff presented at the Truckee North Tahoe TMA meeting on February 6.

- RTC staff returned to both UNR and TMCC in February to hand out brochures to students, faculty and staff. RTC staff will continue this outreach effort throughout the spring semester.
- RTC staff also met with the Graduate Student council to update them on the ridership success of the program March 3. Staff had planned to present to the ASUN council in March. Likely this will not occur until next fall.

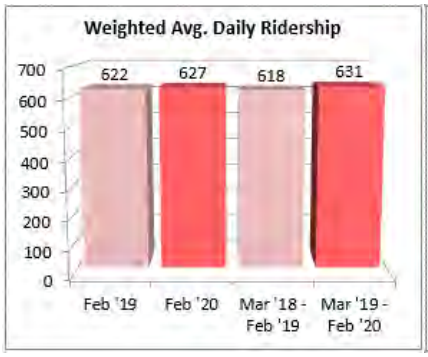
Reno Earth Day - Plans were underway to participate in Reno Earth Day Events on Sunday, April 19. Due to the COVID-19 pandemic, those events have been canceled.

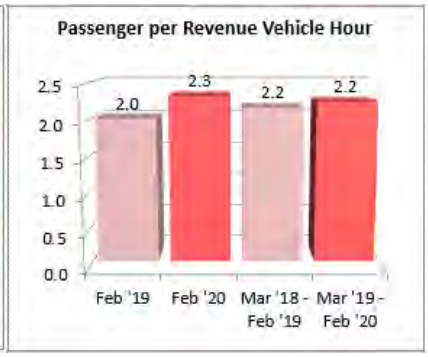
FEBRUARY 2020 TRANSIT PERFORMANCE

RTC RIDE



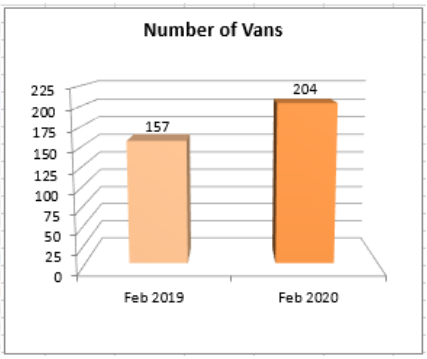
RTC ACCESS





TART

RTC VANPOOL



Attachments

RTC Transit Performance Statistics[1]

Performance Indicator	Current month compared with same month last year			Current 12-months compared with previous year		
	Feb 2020	Percent Change	Feb 2019	Mar 2019 - Feb 2020	Percent Change	Mar 2018 - Feb 2019
Monthly Ridership*	614,660	1.5%	605,322	8,020,971	-5.3%	8,466,194
Weighted Avg. Daily Ridership*	21,670	0.2%	21,619	22,165	-5.2%	23,376
Revenue Vehicle Hours (RVH)	20,540	1.1%	20,322	264,313	5.6%	250,188
Rides Per RVH	29.9	0.5%	29.8	30.3	-10.3%	33.8
Revenue Vehicle Miles (RVM)	232,909	5.0%	221,724	2,907,769	3.5%	2,809,597
Complaints Per 25,000 Rides	3.42	19.9%	2.85	3.69	-3.3%	3.82
On-Time Performance[2]	88.8%	0.3%	88.6%	90.1%	1.0%	89.2%

Performance Indicator	Jan 2020	Percent Change	Jan 2019	Feb 2019 - Jan 2020	Percent Change	Feb 2018 - Jan 2019
Revenue	$413,659	-7.7%	$448,043	$4,781,669	-10.6%	$5,347,607
Farebox Recovery Ratio	15.7%	-13.8%	18.2%	15.0%	-26.0%	20.3%
Subsidy per Ride	$3.56	17.7%	$3.02	$3.38	37.1%	$2.46

[1] RTC Transit includes RTC RIDE, RTC RAPID, RTC REGIONAL CONNECTOR, SIERRA SPIRIT, and UNR Midtown Direct

[2] Percent of trips zero min. early and five minutes or less late

* - May 2019, the RTC started using a new passenger counting system. Data before May 2019 is adjusted for the new method.

RTC ACCESS Performance Statistics

Performance Indicator	Current month compared with same month last year			Current 12-months compared with previous year		
	Feb '20	**Percent Change**	**Feb '19**	**Mar '19 - Feb '20**	**Percent Change**	**Mar '18 - Feb '19**
Monthly Ridership	17,382	2.8%	16,906	225,128	-4.7%	236,287
Weighted Avg. Daily Ridership	627	0.8%	622	631	2.0%	618
Revenue Vehicle Hours	7,475	-11.3%	8,423	100,295	-1.9%	102,199
Passenger per Revenue Vehicle Hour (does not include taxi data)	2.33	15.9%	2.01	2.24	4.0%	2.16
Revenue Vehicle Miles (RVM)	130,704	-0.3%	131,084	1,706,024	5.7%	1,613,694
Complaints per 1,000 Rides	0.75	110.7%	0.35	0.48	-28.5%	0.68
ADA Capacity Denials	0	0.0%	0	0	0.0%	0
Other Denials	0	0.0%	0	0	-100.0%	7
Accidents per 100,000 Miles	0.77	-66.6%	2.29	0.64	4.4%	0.61
On-Time Performance (does not include taxi data)	89.6%	-4.9%	94.2%	91.0%	-2.0%	92.8%
Taxi On-Time Performance	0.0%	0.0%	0.0%	0.0%	-100.0%	84.0%
Performance Indicator	**June '19**	**Percent Change**	**June '18**	**July '18 - Jun '19**	**Percent Change**	**July '17 - Jun '18**
Revenue*	$182,571	5.5%	$173,014	$2,146,148	9.0%	$1,968,426
Farebox Recovery Ratio*	24.70%	-5.18%	26.05%	24.99%	11.41%	22.43%
Subsidy per Passenger*	$20.87	32.5%	$15.75	$19.04	-4.2%	$19.88

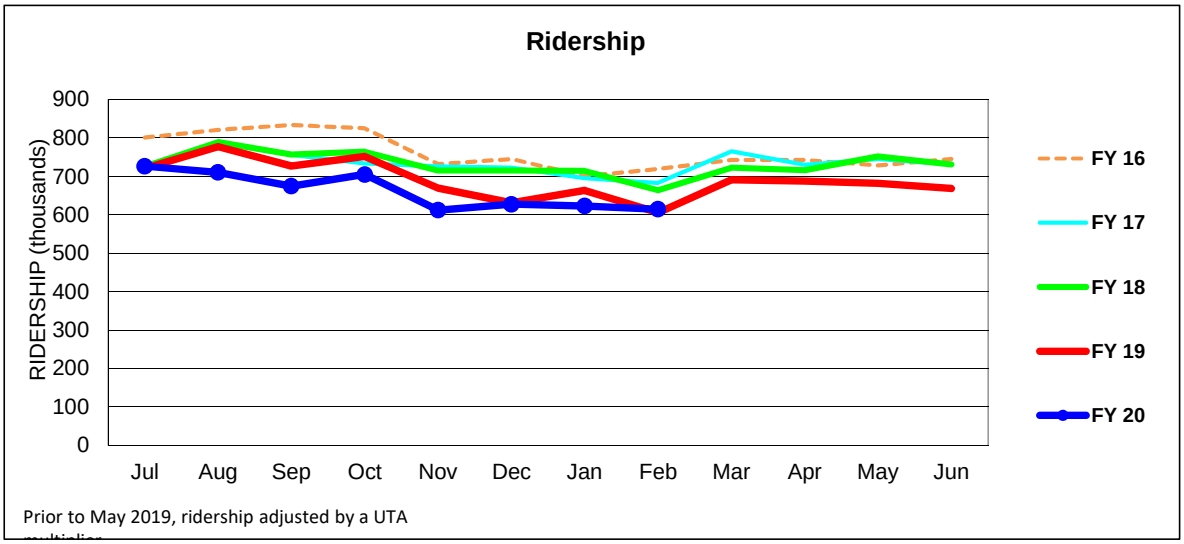
*June 2019 data is the latest available.

TART Performance Statistics

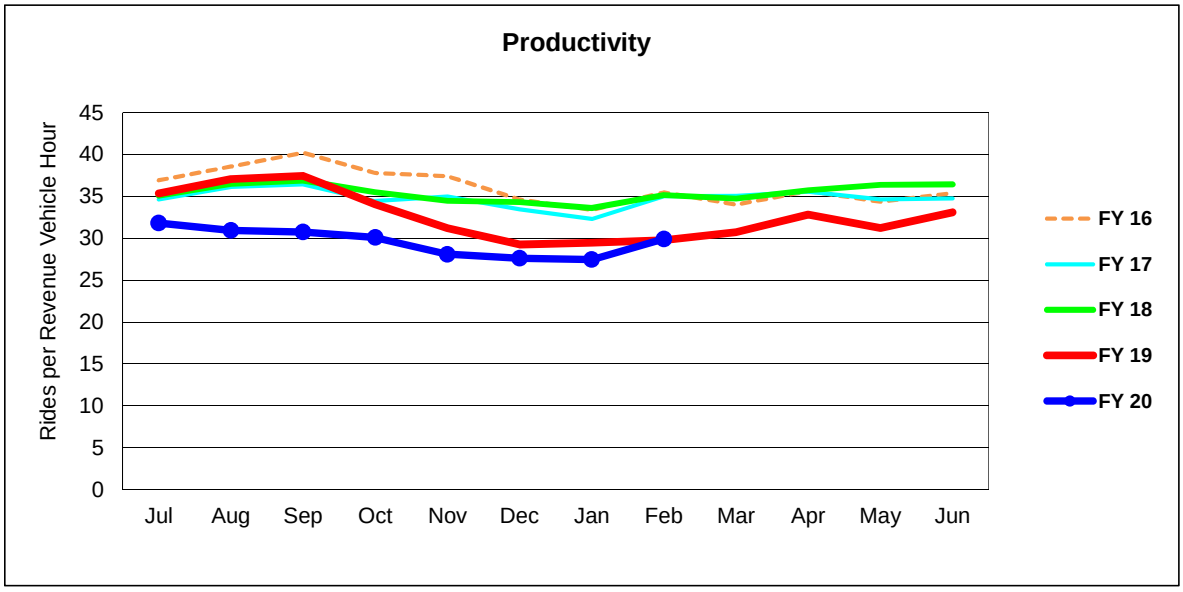
Performance Indicator	Current month compared with same month last year			Current 12-months compared with previous year		
	Feb 2020	Percent Change	Feb 2019	Mar 2019 - Feb 2020	Percent Change	Mar 2018 - Feb 2019
Monthly Ridership	5,701	6.6%	5,346	44,499	-1.6%	45,224
Weighted Avg. Daily Ridership	197.1	3.2%	190.9	122.9	-2.0%	125.4
Revenue Vehicle Hours (RVH)	361	21.0%	299	4,514	3.8%	4,349
Rides per RVH	15.8	-11.9%	17.9	9.9	-5.2%	10.4
Revenue Vehicle Miles (RVM)	5,710	-12.3%	6,514	92,459	-0.7%	93,139
Revenue*	$0	-100.0%	$4,654	$32,970	-31.5%	$48,117
Farebox Recovery Ratio*	0.0%	-100.0%	13.0%	6.0%	-35.9%	9.4%
Subsidy per Ride	$7.77	33.7%	$5.81	$11.60	12.7%	$10.29

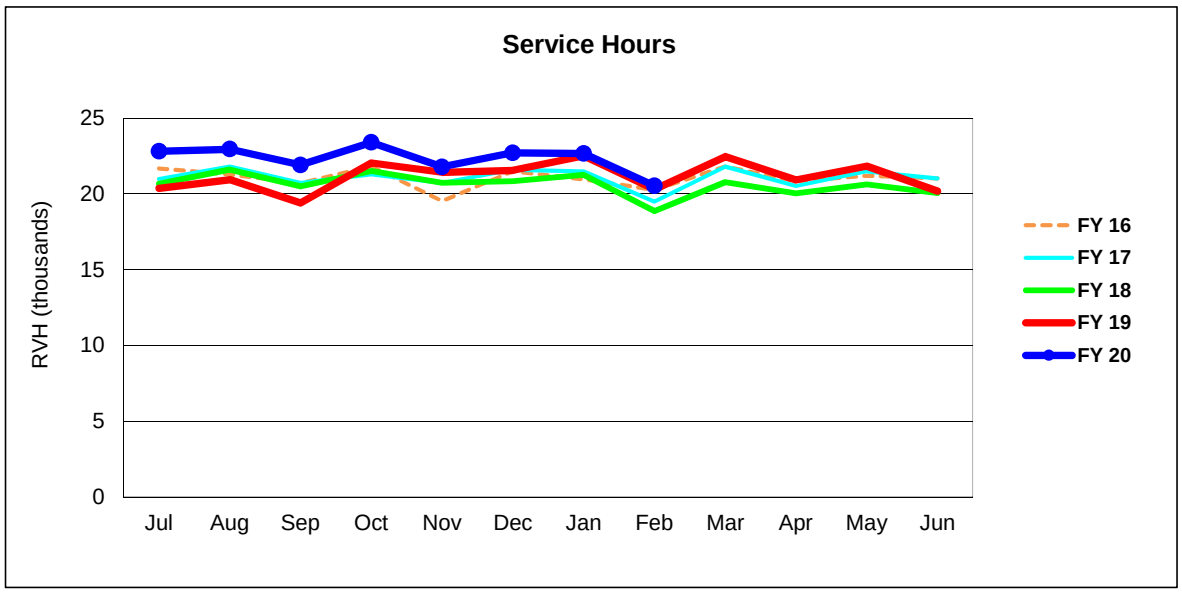
* - Effective December 12, 2019 TART started providing free rides for a two-year trial period.

RTC Transit
Fiscal Year Comparisons

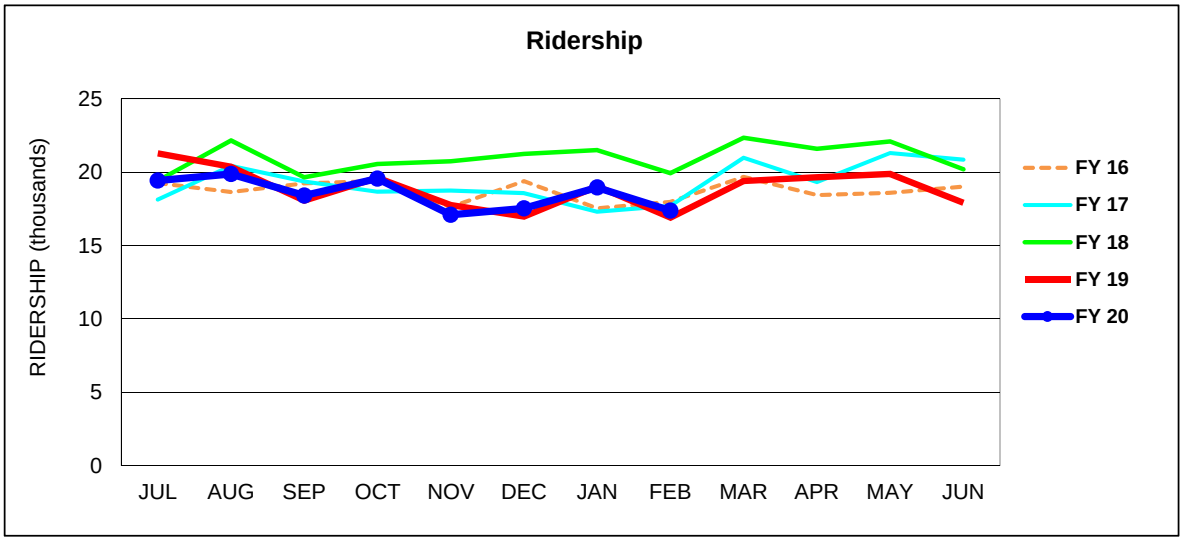


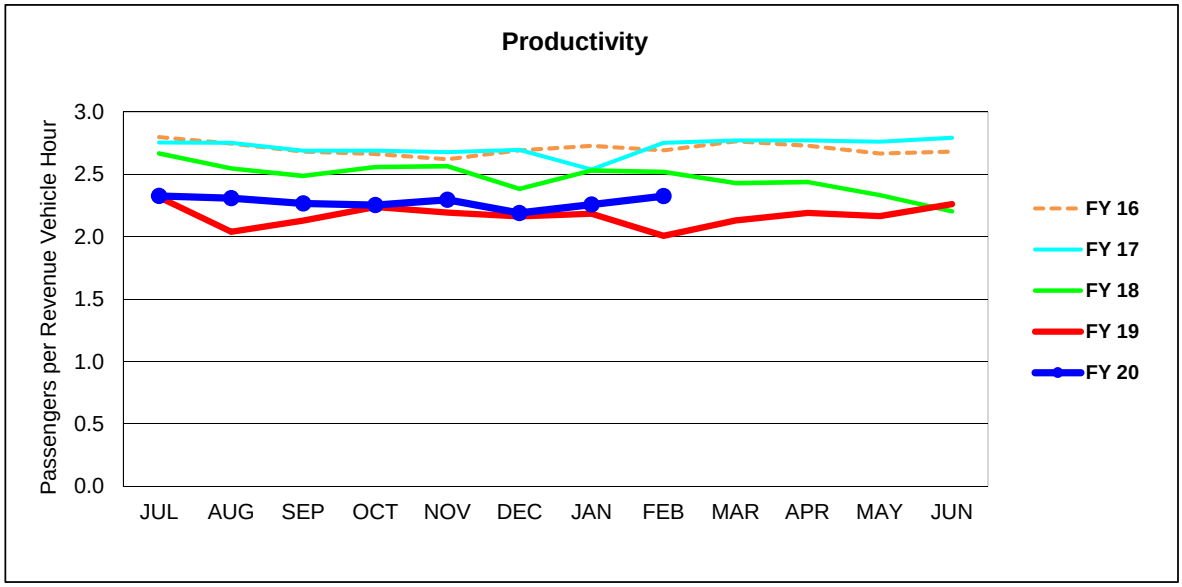
Prior to May 2019, ridership adjusted by a UTA multiplier

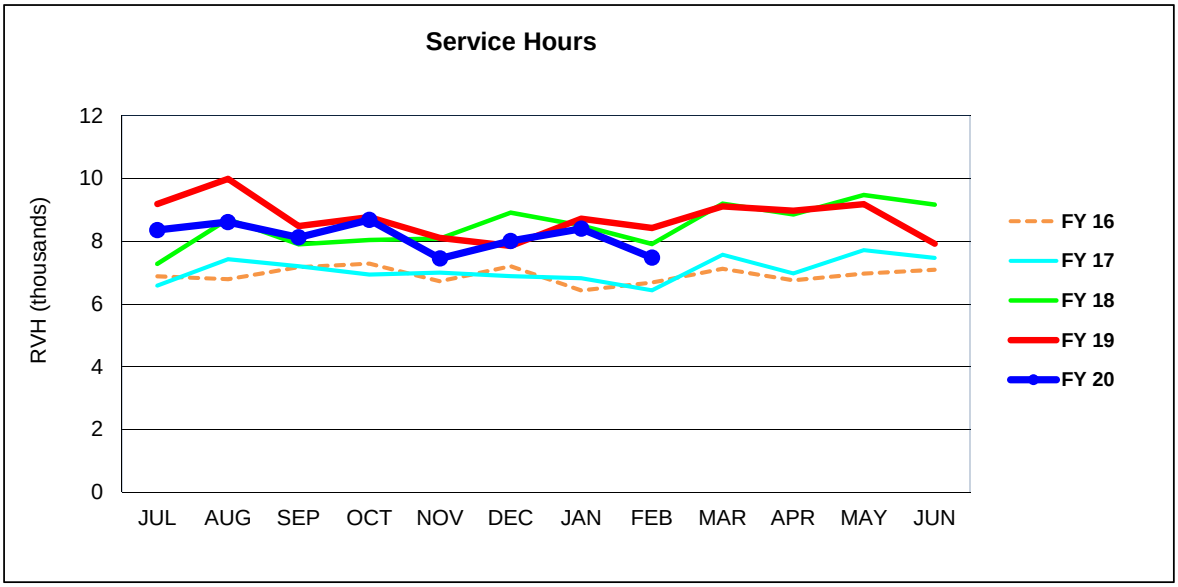




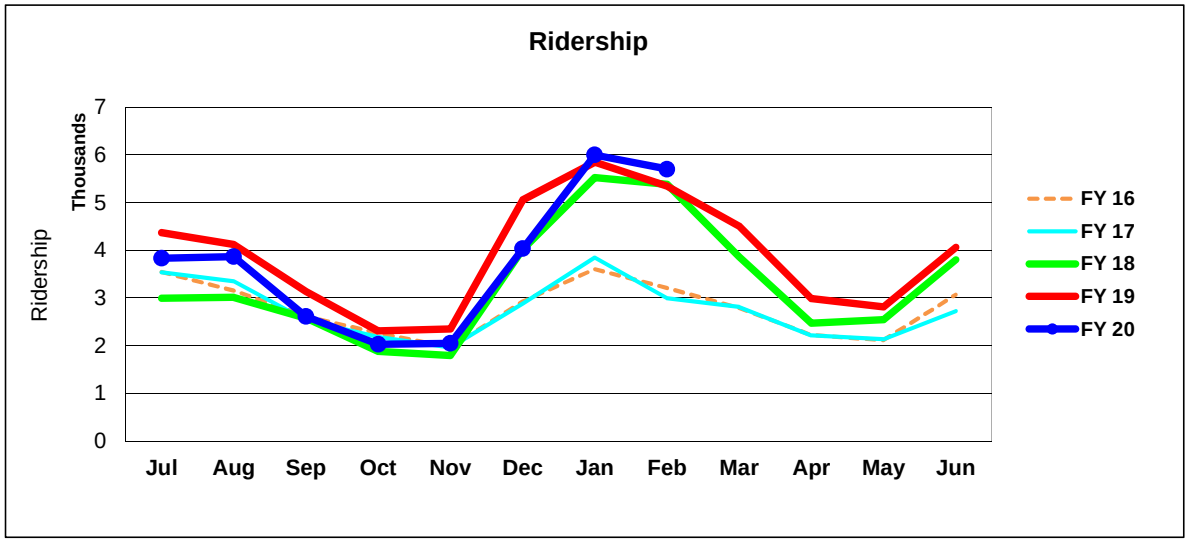
RTC ACCESS
Fiscal Year Comparisons

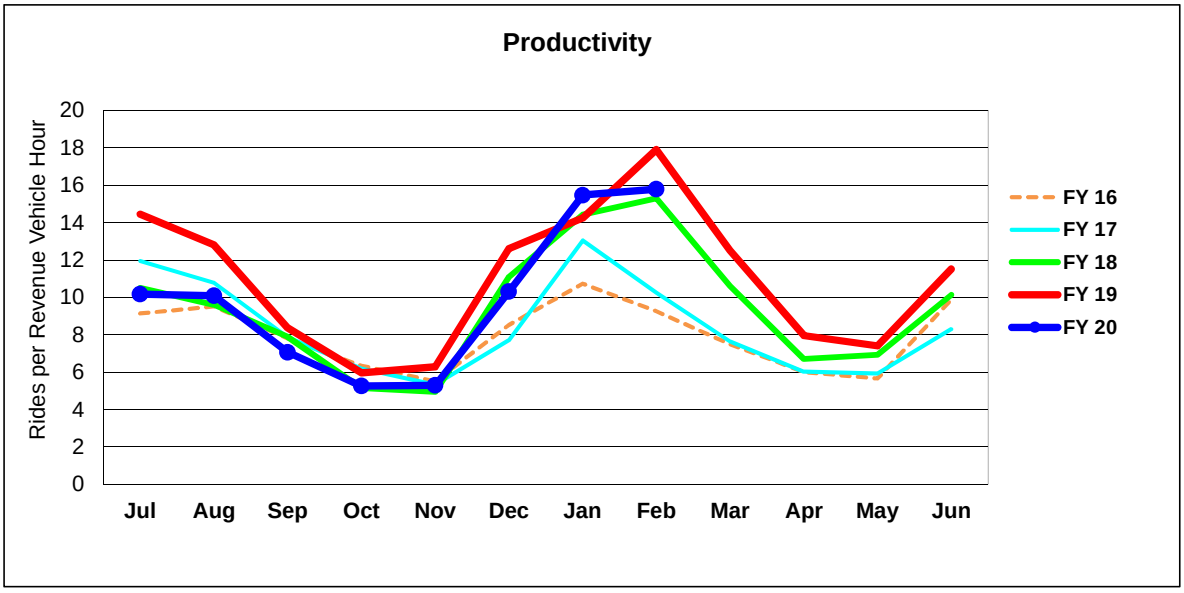


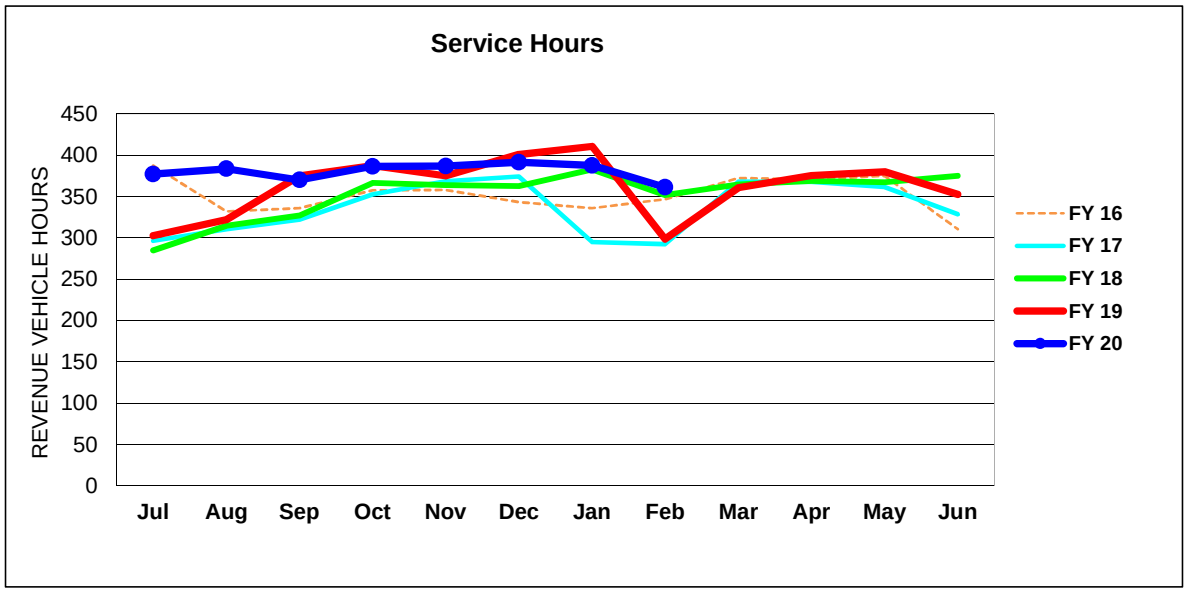




TART - Nevada
Fiscal Year Comparisons







April 17, 2020 **AGENDA ITEM 3.5**

TO: Regional Transportation Commission

FROM: Dan Doenges, PTP, RSP
Planning Manager/Interim Director of Planning

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: RTC Planning Department Report

RECOMMENDATION

Acknowledge receipt of the monthly Planning Activity Report.

PLANNING STUDIES

Virginia Street Bus RAPID Transit Extension Project
Staff continue to support community outreach efforts and provide technical support for the Small Starts process for this project. The Virginia Street project team continues extensive outreach activities with Midtown businesses and other stakeholders, identified under community outreach activities.

South Meadows Multimodal Transportation Study
The South Meadows Multimodal Transportation Study identifies needs and transportation improvements for regional roads in the study area. The study focuses on traffic operations, safety, pedestrian and bicycle connectivity, and transit service needs. The first public meeting for the project was held on March 26, 2019, at Damonte Ranch High School. The second public meeting was held on Tuesday, November 5, 2019, at Zeppelin restaurant, located at 1445 South Meadows Parkway in Reno. RTC presented transportation improvement alternatives that addressed safety, traffic operations, and community concerns identified in the study area. RTC staff met with residents of the Curti Ranch neighborhood on December 5, 2019 to discuss their transportation concerns. The project team developed a draft study report. Project documents including the draft report are available on the RTC website under Metropolitan Planning, Corridor Studies. The final report will be presented to the RTC Board at their April meeting for approval.

University Area Multimodal Transportation Study
The University Area Multimodal Transportation Study will take into account the current and future development plans slated to occur on or near the university campus in the coming years and will identify needed connectivity, safety, and access improvements for vehicle and alternative transportation modes on regional roads. In addition, it will include an in-depth analysis of land use

and roadway network scenarios in the UNR Gateway District. The project team has had ongoing meetings with staff from the University of Nevada, Reno and the City of Reno to discuss project details. Following data collection efforts and extensive public outreach, a project Technical Advisory Committee (TAC) workshop was held on September 9, 2019, to discuss future roadway network alternatives. Scenarios were reviewed on December 27, 2019, at a subsequent TAC meeting. The project team analyzed model run results and conducting analysis on future conditions. These analysis results from various network scenarios were reviewed at the most recent project TAC meeting on March 31st to receive feedback and comments.

ADA Transition Plan Update

February 21, 2020, the ADA Transition Plan was adopted by the RTC Board. The completed document is available on the RTC website (www.rtcwashoe.com).

Eagle Canyon Extension Alignment Alternatives and Planning and Environmental Linkages (PEL) Study

The purpose of the study is to enhance mobility and connectivity between the growing communities Spanish Springs and Lemmon Valley and to facilitate safe and equitable access to economic and recreational opportunities while preserving the character and heritage of the area. Goals of the study include evaluation of traffic operations and safety on the existing Eagle Canyon Drive, development of a Planning and Environmental Linkages (PEL) checklist to assist with the environmental process during future project development, and to identify a preferred alignment for the proposed new roadway. Traffic counts were conducted on Eagle Canyon Drive. In addition, drone footage was taken of traffic patterns during peak school hours in the vicinity of Spanish Springs High School and Shaw Middle School. Preliminary model runs were also developed for new roadway alignment alternatives for the Eagle Canyon Extension. Two public meetings were held March 10 and 12 at Lemmon Valley Elementary School and Spanish Springs High School, respectively. In addition, a survey seeking public input on the study was launched on March 10 and well remain open until April 30. There have been 563 responses to date. Staff is working with the consultant team to refine the corridor analysis and compile public comments.

2050 Regional Transportation Plan (RTP)

A schedule and outreach plan has been developed for the 2050 RTP. Staff is currently analyzing existing conditions, evaluating financial assumptions, and developing the vision and goals for the plan. RTC staff has been meeting with staff of the local jurisdictions to discuss project needs and priorities. Staff has also compiled responses from the RTC Technical and Citizens Multimodal Advisory Committees, as well as RTC staff, as to the vision of the regional transportation system in 2050. This information will be used to guide future public outreach.

To date, there have been several outreach events to gather input on the vision for the 2050 RTP. Staff presented to the Washoe County Commission on February 11, Reno City Council on February 12, and Sparks City Council on March 9. In addition, a workshop with businesses in the Sparks industrial area was held on February 26 at Baldini's, and the first public meeting for the RTP was held the following day at the Discovery Museum. The second agency working group meeting was held via conference call on March 19. In addition to the public meetings, a visioning survey was launched on February 25 and will remain open until May 1. As of this staff report, there have been approximately 300 responses.

Bicycle and Pedestrian Planning

RTC is collaborating with other partner agencies on several initiatives to improve bicycle and pedestrian safety & facilities:

- Bicycle and Pedestrian Count Program – The 2019 Annual Bicycle, Pedestrian, and Wheelchair Annual Report will be on the April 17, 2020, Board agenda for adoption.
- The RTC continues to partner with the Truckee Meadows Bicycle Alliance (TMBA). This week TMBA announced that Bike Month normally celebrated in May nationally and locally, has been postponed until September 2020. Details will be shared as they are available.

Vision Zero Truckee Meadows

- Vision Zero had a task force meeting on February 13, 2020.
- The draft walking audit report for Wooster High School has been completed. Due to the current health pandemic, March's meeting was cancelled and is planned to be rescheduled. This effort is headed by NDOT but includes many agency stakeholders.
- A subcommittee is working to determine if pedestrian mandated court classes are a viable option for our region.
- The next meeting is scheduled for April 9th.

MPO Certification Review

Staff completed the Metropolitan Planning Organization (MPO) Certification Review with the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) on September 25th. No corrective actions were received.

Sustainability Planning

The RTC continues to advance initiatives outlined in the RTC Sustainability Plan through the Green Team comprised of agency staff, such as the Sustainable Purchasing Policy and the tracking of paper usage in an effort to achieve a ten percent reduction. RTC also participates in the City of Reno Sustainability & Climate Advisory Committee and continues to be an active member in the regional SPINN Committee. Staff is finalizing the RTC Annual Report for the American Public Transportation Association (APTA) Sustainability Program, of which RTC has been recognized at a Sliver-level designation.

RTC Affordable Housing Study

The project team has developed an inventory of potential candidate sites for affordable housing near transit routes, and a draft report was presented to the project Technical Advisory Committee for review and comment at their last meeting on January 15. It is anticipated that the final report will be presented to the Board at their April 17, 2020, meeting for approval.

Development Review

RTC staff routinely review development proposals from the local jurisdictions of Washoe County and the Cities of Reno and Sparks. Staff from Planning, Engineering and Public Transportation have reviewed and commented on the following number of development proposals from each of the jurisdictions since the last Board meeting:

- Washoe County – 4
- City of Reno – 9
- City of Sparks – 2

This does not include proposals that were reviewed on which staff did not have any comments.

COMMUNITY AND MEDIA OUTREACH ACTIVITIES

RTC staff conducted the following outreach activities from March 17 – April 17:

March 17	RTC St. Patrick's Day FREE Safe RIDE Free Transit Event
March 18	Regional Information Center Daily Meeting - COVID-19 Response
March 19	Regional Information Center Daily Meeting - COVID-19 Response
March 20	NV Health Response Statewide Coordination Meeting - COVID-19 Response
March 20	RTC Board Meeting
March 21	Regional Information Center Daily Meeting - COVID-19 Response
March 22	Regional Information Center Daily Meeting - COVID-19 Response
March 23	Regional Information Center Daily Meeting - COVID-19 Response
March 23	NV Health Response Statewide Coordination Meeting - COVID-19 Response
March 24	Regional Information Center Daily Meeting - COVID-19 Response
March 24	NV Health Response Statewide Coordination Meeting - COVID-19 Response
March 25	Regional Information Center Daily Meeting - COVID-19 Response
March 25	NV Health Response Statewide Coordination Meeting - COVID-19 Response
March 26	Regional Information Center Daily Meeting - COVID-19 Response
March 26	NV Health Response Statewide Coordination Meeting - COVID-19 Response
March 27	Regional Information Center Daily Meeting - COVID-19 Response
March 27	NV Health Response Statewide Coordination Meeting - COVID-19 Response
March 28	Regional Information Center Daily Meeting - COVID-19 Response
March 29	Regional Information Center Daily Meeting - COVID-19 Response
March 30	Regional Information Center Daily Meeting - COVID-19 Response
March 30	NV Health Response Statewide Coordination Meeting - COVID-19
March 31	Regional Information Center Daily Meeting - COVID-19 Response
March 31	NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 1	NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 1	Regional Information Center Daily Meeting - COVID-19 Response
April 2	NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 2	Regional Information Center Daily Meeting - COVID-19 Response
April 3	NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 3	Regional Information Center Daily Meeting - COVID-19 Response
April 4	Regional Information Center Daily Meeting - COVID-19 Response

April 5 Regional Information Center Daily Meeting - COVID-19 Response
April 6 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 6 Regional Information Center Daily Meeting - COVID-19 Response
April 7 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 7 Regional Information Center Daily Meeting - COVID-19 Response
April 8 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 8 Regional Information Center Daily Meeting - COVID-19 Response
April 8 Sun Valley Blvd. Project Virtual Community Meeting-Sun Valley Blvd. Project
April 9 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 9 Regional Information Center Daily Meeting - COVID-19 Response
April 10 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 10 Regional Information Center Daily Meeting - COVID-19 Response
April 11 Regional Information Center Daily Meeting - COVID-19 Response
April 12 Regional Information Center Daily Meeting - COVID-19 Response
April 13 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 13 Regional Information Center Daily Meeting - COVID-19 Response
April 14 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 14 Regional Information Center Daily Meeting - COVID-19 Response
April 15 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 15 Regional Information Center Daily Meeting - COVID-19 Response
April 16 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 16 Regional Information Center Daily Meeting - COVID-19 Response
April 17 NV Health Response Statewide Coordination Meeting - COVID-19 Response
April 17 Regional Information Center Daily Meeting - COVID-19 Response

Media Relations & Social Media

The RTC issued five news releases and participated in 29 media interviews on various topics, including the Virginia Street Project construction acceleration and COVID-19 precautions for construction workers, the selection of Bill Thomas as the Executive Director, Stuff A Bus for Seniors, traffic improvements at Red Rock Road/Silver Lake Road intersection, transit-safety precautions during COVID-19, the St. Patrick's Day free ride. and more.

Social media was used to promote RTC's Road Ahead segments, the 2020 Census, Stuff A Bus for Seniors, Regional COVID-19 briefings, the 2050 Regional Transportation Plan, transit-safety precautions during COVID-19, the South Meadows Multimodal Transportation Study draft report, bus cleaning procedures during COVID-19, ways to support Midtown businesses, the Eagle Canyon Extension Study, the new traffic signal at Red Rock Road/Silver Lake Road, Token Transit mobile passes, RTC's approval of Bill Thomas' contract, the acceleration of Virginia Street Project construction, RTC offices closed to the public and information about how to contact staff during business hours, St. Patrick's Day free transit, and the RTC Board meeting.

Social media metrics for the month of March: 79,435 impressions on Facebook, Twitter, YouTube and Instagram.

Informational Materials and Video Production
Four topics were broadcast on KOLO-TV for The Road Ahead with RTC. Segments included a Virginia Street Project update, the 2050 Regional Transportation Plan and survey, NDOT Exit Numbers changing, and the Sun Valley Blvd. Project meeting.

COORDINATION WITH PARTNER AGENCIES

Truckee Meadows Regional Planning Agency (TMRPA)
The RTC continues to have coordination meetings with staff from the TMRPA as the agencies progress with the Shared Work Program. Areas for collaboration include population and employment forecasts, the Regional Plan update, affordable housing studies, and analysis of demographic and socioeconomic issues.

Nevada Department of Transportation (NDOT)
The RTC continues to have coordination meetings with staff from NDOT. Areas for collaboration include development of local public agency agreements between NDOT and RTC, maintenance of the regional travel demand model, bicycle and pedestrian improvements, transportation alternatives projects, coordination regarding funding and the State Transportation Improvement Program, One Nevada statewide plan, the I-80 and US 395 widening and improvements to the Spaghetti Bowl, and other ongoing transportation studies.

Statewide Transportation Planning
RTC meets monthly with staff from NDOT, the Federal Highway Administration (FHWA), RTC of Southern Nevada, Tahoe Regional Planning Agency, Tahoe Transportation District and the Carson Area Metropolitan Planning Organization to discuss statewide transportation planning issues. Other topics addressed include statewide data for performance measures analysis, comments on proposed rulemaking, and reauthorization of federal transportation legislation.

April 17, 2020 **AGENDA ITEM 3.6**

TO: Regional Transportation Commission

FROM: Daniel Doenges, PTP, RSP
Planning Manager/Interim Director of Planning

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: RTC Affordable Housing Study

RECOMMENDATION

Approve the RTC Affordable Housing Study.

SUMMARY

The Reno-Sparks region is facing a significant challenge relating to housing affordability. Public transportation is an important resource for area residents and provides access to essential services. Affordable housing in close proximity to transit routes offers improved access to services and increases transit ridership. This study identified opportunities for the development of affordable housing in transit corridors. RTC coordinated the study with staff at the Truckee Meadows Regional Planning Agency, City of Reno, City of Sparks, Washoe County, and Reno Housing Authority, as well as representatives of Truckee Meadows Healthy Communities initiative regarding ongoing analysis of regional housing needs.

The study evaluated vacant parcels throughout the region and then identified three locations for more detailed analysis about the feasibility for affordable housing development. The report includes a market analysis and conceptual site plans for consideration at these locations. It is not anticipated that RTC would develop any housing projects. However, there are potential opportunities for RTC-owned parcels that are no longer needed for transportation use to be sold and developed into affordable housing. Additionally, there could be a potential opportunity for private or public sector partners to develop affordable housing in conjunction with future RTC transit facility improvements. The sites considered include the following:

- Clear Acre Lane site - owned by RTC, no longer needed for future roadway project
- South Virginia Street site - construction of full-sized RAPID station planned for this site, the property is privately owned
- Neil Road site – relocation of Meadowood Mall transit transfer station under study for this site, the property is privately owned

- Airway Drive parcels – owned by RTC, no longer needed for transportation use; due to small size and variable shapes, micro housing may be the most suitable housing use for these parcels. Detailed site plans were not developed for these parcels.

FISCAL IMPACT

Funding for this item is included in the approved FY 2019 budget and there is no additional costs in connection with this agenda item.

PREVIOUS ACTIONS BY BOARD

January 17, 2020	Discussed at RTC Board Workshop
July 19, 2019	Acknowledged receipt of report on the RTC Affordable Housing Study; provide direction accordingly.
May 20, 2019	Approved the FY 2020-2021 UPWP
May 20, 2019	Approved the FY 2020 RTC Budget
October 22, 2018	Approved Professional Services Agreement with Wood Rodgers, Inc.
January 19, 2018	Approved Procurement for Professional Services for RTC Affordable Housing Study
May 18, 2017	Approved the FY 2018-2019 UPWP

ADDITIONAL BACKGROUND

Previous milestones completed for this study are provided below:

- HOME Consortium – RTC presented information about the study and sought input from this regional committee that addresses affordable housing needs at their meetings on March 12 and September 10, 2019.
- Mayor's Forum on Affordable Housing – Held on September 4, 2019, RTC presented information and preliminary concepts about the RTC Affordable Housing Study in an open-house format.
- Public Workshop – Held on September 12, 2019, at the McKinley Arts and Culture Center, RTC presented the draft Affordable Housing Study to the general public for comment.
- Builders Infrastructure & Planning Meeting – Held on September 19, 2019, RTC presented the draft findings of the affordable housing study for comment to the Builders industry association.
- Presentations to RTC Board of Commissioners – RTC staff presented findings from the study and sought input from the RTC Board on July 19, 2019 and January 17, 2020.
- RTC Citizens Multimodal Advisory Committee (CMAC) and Technical Advisory Committee (TAC) – The study was presented to the standing RTC advisory committees for input on July 10, 2019.

DRAFT

RTC Affordable Housing Study

April 2020

WOOD RODGERS

1361 Corporate Boulevard
Reno, NV 89502

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Defining Affordability and Strategies to Overcome It

Affordable housing is an important issue in our region. Our community is growing so quickly that finding affordable housing continues to be a challenge for many of our neighbors. Having affordable housing near transit stops helps people have access to essential services and enhances their quality of life.

The Reno-Sparks-Washoe County region is facing a significant challenge related to housing affordability. Housing affordability is a complex, multi-faceted issue and requires a multi-faceted approach. Overcoming this problem requires close consultation with a variety of agencies, public and private partners, and stakeholders to arrive at an approach that addresses the needs of our region. The Regional Transportation Commission of Washoe County (RTC) builds on the work of other regional housing research from the Truckee Meadows Regional Planning Agency (TMRPA), the City of Reno, and other state and federal agencies. The RTC is undertaking this study to identify opportunities for the development of affordable housing in the transit service area because affordable housing in close proximity to transit routes offers improved access to services and increases transit ridership.

This study approaches the issue of housing affordability pragmatically, seeking to develop public/private partnerships and assemble a variety of stakeholders to: a) determine what affordability is, b) evaluate the potential for RTC-owned properties to support affordability policy initiatives in the region, c) create concepts for viable affordable housing development at selected sites and, d) explore how joint development funding from the Federal Transit Administration (FTA) can support the goals presented in this document.

Joint developments involve a public/private partnership, requiring involvement of public entities to make initial investments to publicly owned property like transit centers, streets or accessible pedestrian amenities in order for private investment to develop or redevelop these properties to their greatest potential. The process involved the selection of public and private parcels within the Transit Service Area either containing an existing or planned transit facility or parcels owned entirely by the RTC.

The federal guideline for housing affordability is when a household spends no more than 30% of their income on housing costs, including rent or mortgages and utilities. The US Department of Housing and Urban Development (HUD) considers households who exceed this 30% limit "cost-burdened" and these households may experience challenges paying housing costs as well as other necessities like food, clothing, transportation or medical care.[1] For Nevada, the specific definition of affordable housing in 2018 was, "housing affordable for a family with a total gross income that does not exceed 80 percent of median gross income for the county."[2] Recent updates to this definition further define affordable housing using three tiers of affordability based on ratios of gross household income to housing costs. The updated definition and breakdown of the tiers can be found in Appendix F. An additional subpopulation of cost-burdened population households are the "housing insecure", meaning households spending more than 50% of their income on housing costs. This population is particularly vulnerable to poor housing conditions and housing displacement.

For this report, an economic consultant, RCG Economics, provided an analysis of affordability in the region to contextualize the current housing climate (Appendix A)[3]. RCG Economics used the definition of affordable housing from Nevada Revised Statute (NRS) and 2018 household income data from Woods & Poole Economics. Based on this analysis, approximately 40% of households in the Reno-Sparks area are cost-burdened. Furthermore, approximately 50% of Reno-Sparks households are unlikely to qualify for a home loan and must rent. This is significant, as this analysis also found that average rental prices for a studio apartment would cost-burden at least 25% of households in the area. Affordability is similarly challenging for homeowners. Approximately 62% of monthly mortgage payments are unaffordable for median income households without experiencing cost burden. This places even more of the population outside of the range of affordable homeownership. Of all metropolitan areas in the United States with populations of 40,000 people or more, the Reno-Sparks area was the fifth least affordable according to the National Association of Homebuilders "Housing Affordability Index."

"Housing affordable for a family with a total gross income that does not exceed 80 percent of median gross income for the county."

*2018 Affordable Housing Definition, Nevada Revised Statute 278.0105**

**Note: In 2019, this definition was updated to define affordable housing by different tiers of affordability. This analysis was completed prior to the update to NRS. Refer to Appendix F for the amended language.*

Another factor affecting affordability is the cost of transportation. Although housing costs are relatively fixed, with a defined rent or mortgage over a lease or loan period, transportation costs can be broken into a variety of different costs that may change over time including insurance, repairs, tires, and fuel. The volatility, or unpredictability, of gas prices can be particularly impactful to households already vulnerable to cost burden. Areas outside of transit services without nearby employment centers and walkable environments can make residents dependent on personal automobiles to commute to work and complete other necessary activities of daily living.

The Housing and Transportation Affordability Index, developed by Center for Neighborhood Technology, provides a comprehensive view of affordability that includes the cost of housing and transportation at the neighborhood level based on location-efficiency. Location-efficiency is characterized as: "Places that are compact, close to jobs and services, with a variety of transportation choices [and] allow people to spend less time, energy, and money on transportation."[4]

According to the affordability index, Reno and Sparks have no neighborhoods that meet the criteria for location-efficiency. On average, households in the region spend approximately $12,000 on annual transportation costs, or roughly 23% of their income. Transportation costs are largely for personal automobiles, with only 2-3% of the working population estimated to be using transit services to commute to employment in the Reno-Sparks area. Combined, housing and transportation costs consume approximately 50% of the average household's annual income in the area. In comparison, the average household in the nation in a location-efficient neighborhood spends approximately 9% of their annual household income on transportation. This low affordability index score demonstrates the existence of opportunities to improve location-efficiency as well as transit ridership in the Reno-Sparks area.

There are many ways to make housing more affordable, including subsidies, increasing the supply of housing, and reducing product costs. The State of Nevada has several state and federal sources for assistance. The Nevada Housing Division aids in affordable housing funding most directly by, "working with its partners to make the best use of resources such as tax credit and bond funding in support of fulfilling its mission to provide affordable housing opportunities to individuals and families throughout Nevada."[5] LIHTC is the largest federal tax-incentive program in Nevada and nation-wide for producing affordable rental housing. In Nevada, the tax credit funding has aided in the construction or rehabilitation of 75% of affordable multi-family housing units in Nevada.

Opportunity zones are an additional incentive to encourage affordable housing. This is part of a new program established by the "Tax Cuts and Jobs Act of 2017" that provides tax incentives for long-term private investment in low-income communities. Specifically, this program provides tax deferment for eligible investors in a Designated Qualified Opportunity Zone, as designated by the United States Internal Revenue Service (IRS).

"Places that are compact, close to jobs and services, with a variety of transportation choices allow people to spend less time, energy, and money on transportation."

Location-Efficiency Metric, Housing and Transportation Affordability Index (htaindex.cnt.org)

Example of City of Reno Transitional Housing development, Village on Sage Street
(Image Source: Community Foundation of Western Nevada)

The local jurisdictions also have more concentrated efforts to provide housing assistance. A notable example is the Washoe County HOME Consortium, a partnership with Washoe County, the cities of Reno and Sparks and other stakeholders to provide economic opportunities for low-income residents, using financial assistance from the HUD. Additionally, the City of Sparks leases land to low income housing developments and the City of Reno recently donated land to transitional housing development in 2019 (Example above). Reno and Sparks also offer density bonuses and parking reductions to serve as incentives to encourage affordable housing projects. Other jurisdictional resources include tax abatements, fee waivers and subsidies.

Another option may be joint development, as defined by the Federal Transit Authority (FTA). This type of development partners with public or private entities to construct, residential, commercial, mixed use or other non-transit development that is co-located with a public transportation project. Although this approach has not currently been used for transit projects within the region, there are opportunities to promote joint development. In addition, the RTC owns property that was acquired for construction of transportation improvements. In some instances, portions of property owned by the RTC are no longer needed after construction of the project. These are referred to as "remnant parcels." This study evaluated these parcels for suitability for future housing development. The "Study Approach" section of this document expands on this approach more specifically.

Existing Regional Affordability Studies

In 2018, Nevada was the fastest growing state in the nation with a 2.2% growth rate.[6] *Although ten-year population projections predict the growth rate to slow slightly in Nevada, the number of available housing units are likely to be insufficient to accommodate additional growth, particularly in northern Nevada. Several agencies have completed housing studies in the area to understand the root of this issue and suggest policy solutions to resolve it. This section provides a brief summary of each study to contextualize this effort by the RTC.*

Analysis of Impediments to Fair Housing Choice (2016)[7]

To receive federal block grant funding for federal housing and community development from the HUD, municipalities must complete a review of impediments to fair housing choice. BBC Research & Consulting developed this report, also known as an Analysis of Impediments or AI, for the cities of Reno, Sparks and Washoe County in 2016. The focus of this report is to determine whether the jurisdictions follow the "Federal Fair Housing Act" that prohibits discrimination based on race, color, national origin, religion, disability or familial status in the sale, rental and financing of dwelling. This report is required to determine how well cities are implementing the policies in the Act and assess conditions for fair housing choice, meaning adequate housing options are equally available to all residents of Reno, Sparks and Washoe County. Focus groups of residents and stakeholders noted the most serious barriers to fair housing choice in this region are the lack of affordable apartments near public transit. This study also comprehensively reviewed existing zoning and land use policies in these cities and how they relate to addressing housing choice and affordability; the jurisdictions did not have serious policy barriers to fair housing choice, but the report does provide support for community concerns surrounding affordability in the region.

The conclusion of the study found a need for housing that is affordable, accessible and proximate to public transit to reduce or eliminate barriers to housing choice for residents with disabilities.

Housing Demand Forecast and Needs Assessment (2016)[8]

During the update process for the ReImagine Reno Master Plan in 2016, the City of Reno partnered with Economic & Planning Systems, Inc. to complete a report on housing demand and compile a needs assessment. This assessment provided a technical analysis of the housing-related policies within the Master Plan, prepared a forecast for future housing demands and identified any housing gaps. The forecast in the report builds upon the work completed by the Truckee Meadows Regional Planning Agency (TMRPA) during the same time period, using the same housing types as the TMRPA study to estimate future demand (e.g. low, moderate and high-density single family, etc.). The primary strain on housing prices and affordability identified in this report are the low wages of residents. Household income in the region has risen by only half the rate of inflation since 2000.

Cost burden is the most common affordability issue in Reno and limits housing choice. The report breaks down the ability to pay for rent or a mortgage by employment type and the number of jobs required by each employee type to pay housing costs. For someone earning $23,000, the average income for individuals working in entertainment/accommodations (casinos and hospitality), this individual would need to work approximately 3 jobs to qualify for a mortgage for a median home price of $256,000. For the same individual to pay rent, the average number of jobs required to pay the median rental rate of $750 was 1.4 jobs without experiencing cost burden. Other burgeoning industries in the area include manufacturing, which pays an average of $56,000 a year. To afford the median home price in this industry, the average manufacturing employee would need to work 1.2 jobs, but would be able to afford the median rental rate without working multiple jobs or being cost-burdened. To confidently afford a house in 2016, a household needed to earn at least $70,000. Although the recent addition of manufacturing industry has diversified the economy and employment opportunities in Reno, issues with affordability will continue to remain if housing prices do not decrease or income does not increase.

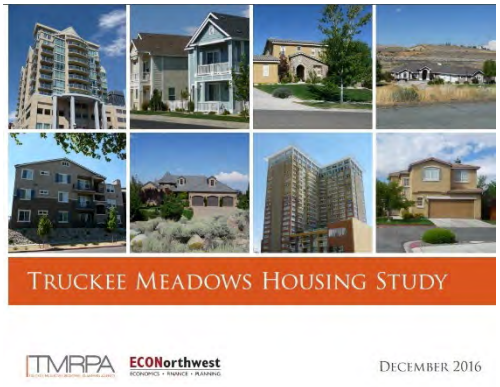
"Many of the new homes planned and being constructed in Reno are priced higher than what is affordable for the average worker"

Housing Demand Forecast and Needs Assessment (2016)

A second component to this study analyzes preferences using data from the National Association of Realtors' 2013 Community Preference Survey and 2015 Community and Transportation Preference Surveys. The study determines a possible mismatch of available stock, with respondents indicating a preference for housing supply types differing from the existing housing stock. The report finds that, while the majority of residents prefer a single family, detached house, there is also growing interest in higher density units in proximity to everyday amenities. The report suggests this trend will continue and demand will increase for these types of housing due to a shift in demographics of the region, with a projected increase in senior residents and an expressed interest by younger demographics to live in walkable communities rather than conventional suburbs. The report found the existing housing stock insufficient to meet these preferences and suggested exploring ways to encourage higher density, walkable communities near necessary services like shopping, schools and medical facilities as well as located in close distance to public transportation.

Truckee Meadows Housing Study (2016)[9]

The TMRPA completed the 2016 Truckee Meadows Housing Study in response to substantial growth in the region. This study involved collaboration with the City of Reno during their earlier demand forecast as well as other municipalities to gain a regional understanding of housing.



The TMRPA uncovered several existing issues related to affordability. In 2016, over 1/3 (36%) of residents in the region fell under the classification of "cost-burdened" and over 55% of residents had an income too low to afford a house in the median sales price range. For the most vulnerable population making less than $20,000, only 4% of existing housing units are affordable. One potential cause for this unaffordability identified by the Housing Study is a mismatch of existing housing stock with the needs of residents. The majority of housing stock is moderate-density single family detached housing (45%) with a smaller proportion of higher-density housing that could fill the "Missing Middle", or housing that is affordable for residents at or close to the median household income for the region.

Housing Our Future – Truckee Meadows Regional Strategy for Housing Affordability (2019)[10]

Most recently, the TMRPA released the Truckee Meadows Regional Housing Study (2019). This study provides a comprehensive analysis of existing and future trends impacting housing needs throughout the region. This housing study, built upon a 2016 preliminary housing study (referenced above) also completed by the TMRPA, includes updates on certain elements to reflect recent demographic changes and dives more deeply into affordability disparities in the community. Affordability problems affect both home owners and renters at a range of income levels in Reno, Sparks and Washoe County.

Residential vacancy rates, or the percentage of units or buildings that are vacant, can be a signal of a tightening housing market. The residential vacancy rate has been decreasing in northern Nevada since 2010. In 2018, the HUD reported an overall vacancy rate of 6.4% in the Reno housing market, with an even smaller 3.5% vacancy rate for apartments. Average home values doubled between 2012 and 2017 and values are expected to increase by 14% by 2021.[11]

The lack of available housing stock to accommodate population and job growth in the area will continue to produce affordability concerns.

An additional problem identified in the Regional Housing Study is mismatch between housing types and household sizes as well as the increasing disproportion between housing cost and household income. The majority of households (64%) contain one to two people. However, only 41% of the housing stock are one to two-bedroom units. This mismatch can lead to problems with the affordability, as households may be forced to pay for more space than they need. Housing in the region overall consists of predominantly single-family, detached homes (60%). The study supports exploration of denser housing development in areas closer to amenities and transit services to meet affordability and housing preference needs.

Nevada Housing Division
Annual Housing Progress Report (2019)[13]

Nevada Revised Statute requires Washoe County to annually adopt a housing plan with an inventory of housing conditions, projections of future needs and demands, and strategies to provide housing, including affordable housing, to residents. The most recent progress report notes downward trends in homeownership and affordable rental units. Since 2006, homeownership rates have decreased from a high of 65.7% in 2006 to 55.0% in 2017. Rent has also been increasing faster than renter household income over the past 16 years and the proportion of households experiencing severe rent burden has been increasing since 2000 and is projected to continue increasing. Homelessness has also been increasing in Washoe County since 2015 and is currently well above the national average rate.

The report provides a count of the total housing units by jurisdiction subsidized to improve affordability either through the Low Income Housing Tax Credit program (LIHTC), HOME, public housing, USDA Rural Development funding, or other sources. As of 2017, Reno had a total of 6,499 affordable units and added 230 units in 2018, bringing the total unit count to 6,449. Sparks had 1,063 existing units in 2017 and added 40 in 2018, bringing the approximate total of affordable units to 1,103. Unincorporated Washoe County does not have any affordable housing units. More than 30,000 affordable housing units are needed in the region to accommodate low income households based on population size and projected growth.

Study Approach & Site Selection Process

The site evaluation and preliminary design presented herein all encourage private-public partnerships. One mechanism to consider is "joint development" as defined by the Federal Transit Administration (FTA). "Joint development" in this context refers to, "a public transportation project that integrally relates to, and often co-locates with commercial, residential, mixed-use or other non-transit development." [12]

This concept is similar to, though distinct from, "transit-oriented developments." Transit-oriented developments (TODs) are a type of development located within a 10-minute walk or 0.5 miles from a heavily used rail or bus line. Typically, these types of developments are denser than conventional developments and concentrate attention to design and policy elements that improve quality of life, public health, economic development, environmental quality, community character or transit ridership.

A successful joint development project has the potential to provide transportation services to not only to the overall population within these areas, but also to improve housing options for individuals dependent on transit services. An additional component to this type of public transportation project is the contribution to fair housing choice and accessible transit services. The most recent Analysis of Impediments to Fair Housing Choice report completed in 2016 for the cities of Reno, Sparks and Washoe County found the scarcity of affordable housing near transit services to be a serious impediment for certain populations.

Neighborhood choice for people with mobility concerns, such as individuals with disabilities or impairments, can be limited to areas within the range of the RTC service area. The paratransit service, RTC ACCESS, and the standard fixed route bus lines do not extend to every area of Washoe County. If an individual is dependent on transit services to arrive safely and reliably at their destination, it is likely they will locate themselves within the Transit Service Area. The site selection process of this study sought to provide necessary affordable housing near existing transit services and in areas with particular need.

In an effort to identify opportunities for new affordable housing projects near existing transit routes, the RTC engaged with Wood Rodgers to identify sites within the Truckee Meadows that could be developed or redeveloped with an affordable housing project. An economic consultant, Leland Consulting Group, also provided guidance and analysis during the site selection phase. As a part of the study, opportunities for public-private partnerships and/or joint development agreements were identified.

Based on the Transit Service Area boundary and existing transit routes (Refer to map on following page), Wood Rodgers created a mapping tool that used several initial criteria to identify potential sites. Criteria included:

Table 1 – Initial Site Selection Criteria

Criteria	Condition
Ownership / Vacancy[15]	Publicly owned, vacant parcels
Acreage[16]	1 ½ acres
Qualified census tract (QCT) boundary[17]	Within boundary
Opportunity zone boundary[18]	Within boundary

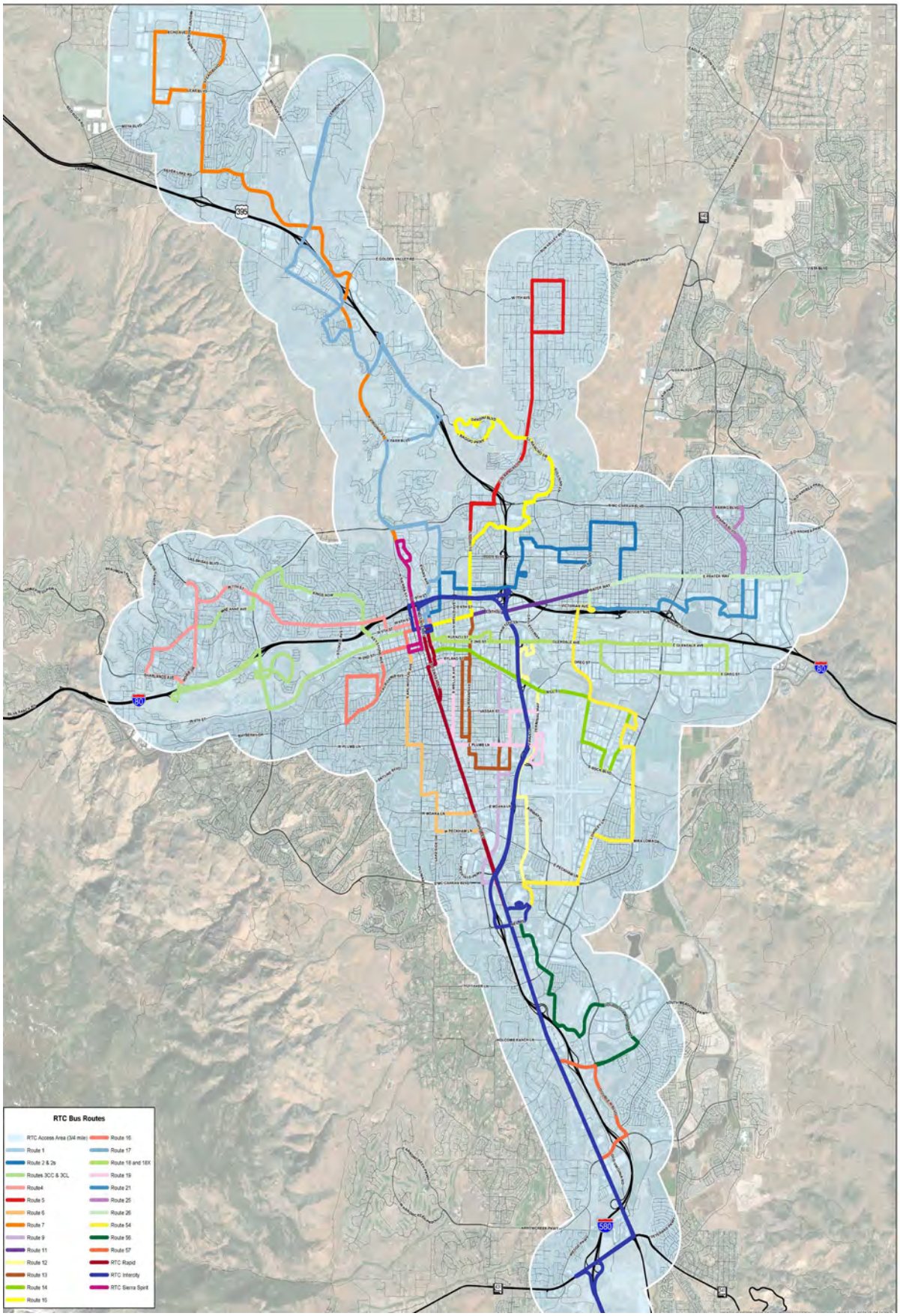


Figure 1: RTC Transit Service Area Map

Kick Off Meeting / TAC Meeting #1

The initial site criteria were presented to the Affordable Housing Technical Advisory Committee (TAC) and the Reno Housing Authority (RHA) on February 21, 2019 which consisted of representatives from City of Reno, City of Sparks, Washoe County, State of Nevada, Reno Housing Authority and Truckee Meadows Regional Planning Agency. The TAC confirmed the selection criteria was appropriate and also provided feedback on the initial site selection, which included approximately 50 sites throughout Reno, Sparks, and Washoe County (Refer to Figure 2 - Initial Site Selection below). The TAC suggested additional criteria to further evaluate the sites and narrow the list included below:

Table 2 – Additional Site Selection Criteria

Criteria	Condition
Zoning[19]	Achievable entitlement process
Topography[20]	Flat or limited slope
Access to Services[21,22]	Proximity to transit and Walkscore/Bikescore

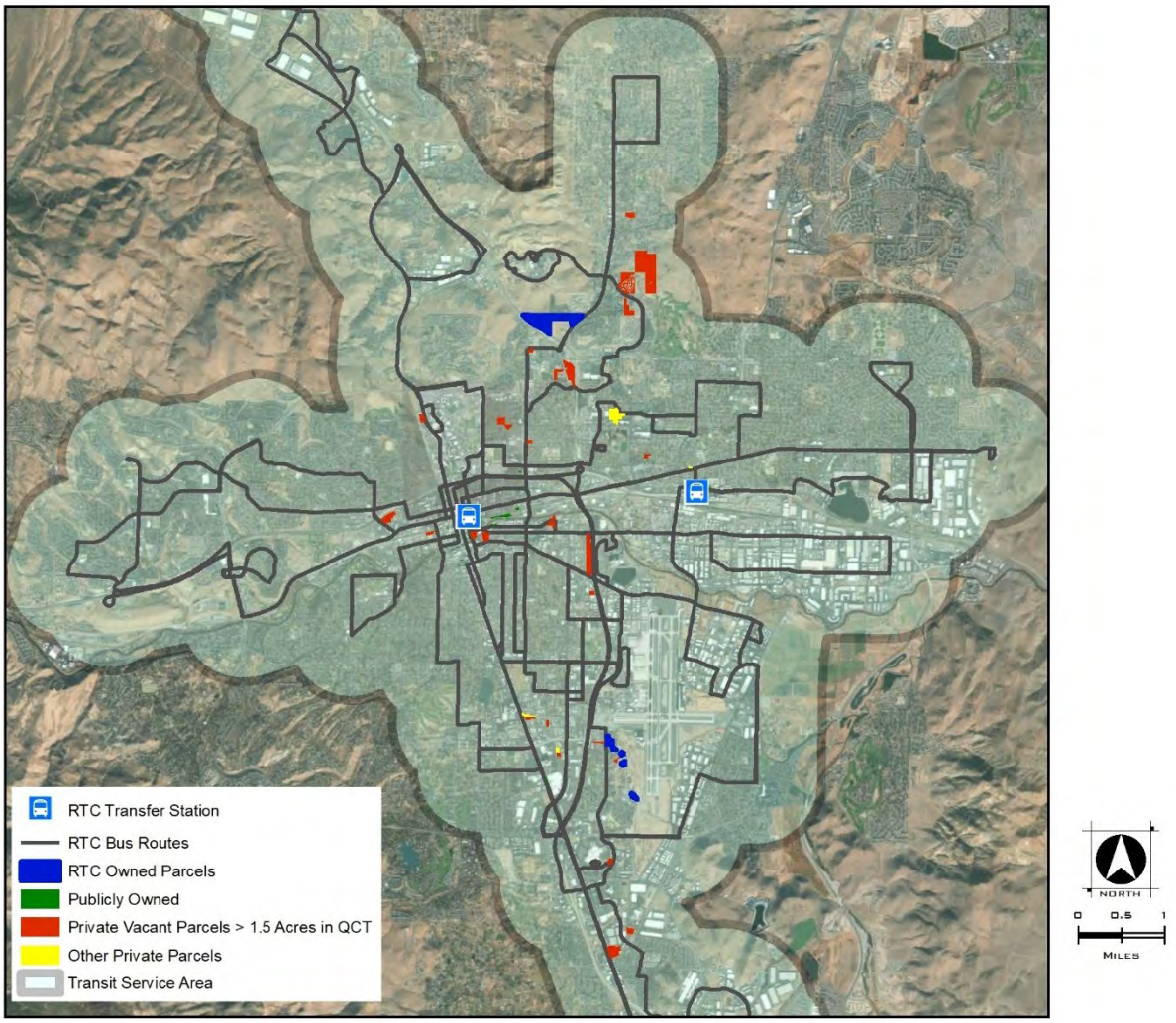


Figure 2: Initial Site Selection Exhibit

TAC Meeting #2

Wood Rodgers and RTC Staff reviewed the initial sites with the added criteria and identified the top 25 sites. The top 25 sites were presented on May 15, 2019 as the "preferred sites" to the TAC and affordable housing stakeholders for feedback.

Based on feedback from the TAC and affordable housing stakeholders, the "preferred sites" were further refined into two Tiers with seven Tier 1 sites considered as the best opportunities to support affordable housing and transit (Refer to Figure 3 – Tier 1 and 2 Sites).

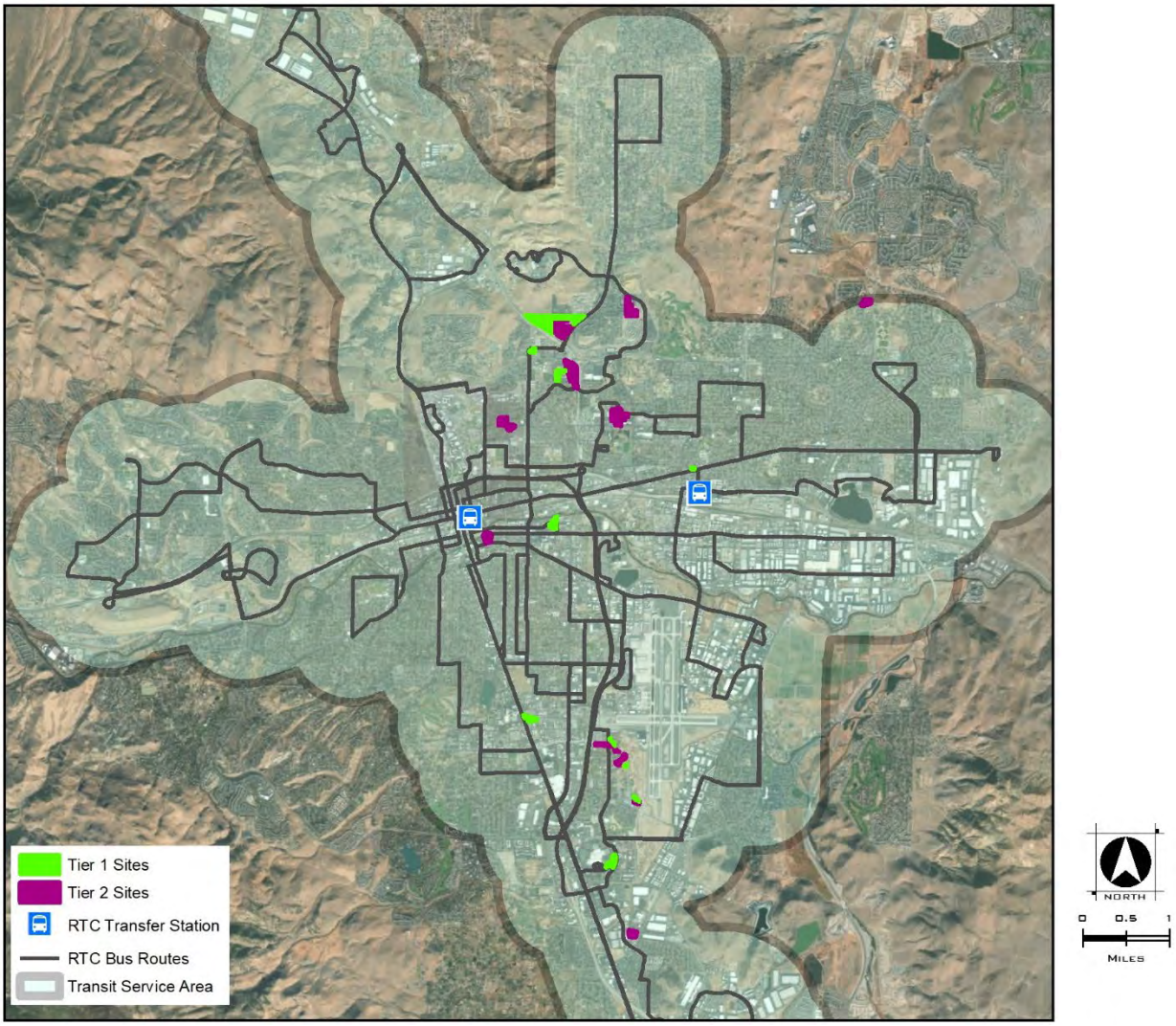


Figure 3: Tier 1 and Tier 2 Site Exhibit

Following the TAC meeting, Leland Consulting Group provided additional screening input on the Tier 1 sites and a site evaluation of the sites to determine catalytic potential, or the potential for public investment on a site to spur additional, similar development in the vicinity. Table 3 and 4 summarize this evaluation.

Table 3 - Site Evaluation, provided by Leland Consulting[23]

Site	Catalytic Potential	Access to Services	Walkscore & Bikescore
1. Meadowood	• Significant potential for further infill on the mall's surface parking lots as well as adjacent vacant lots • Rating: HIGH	• Many services and amenities within walking distance of the site, including groceries • Very close to Jamaica Park, Pine Middle School, and Smithridge Elementary • Many amenities/ services require crossing McCarran and/or So. Virginia St. • Rating: HIGH	• Walkscore: 68 • Bikescore: 75 • Rating: HIGH
2. So. Virginia St. near Peppermill	• Significant amount of underutilized properties in the vicinity, on east side of Virginia. • Site is irregularly shaped, complicating efficient reuse. • Rating: MEDIUM	• Significant retail nearby, although nearest grocery store is just over a half-mile away. • Potential for additional services when Park Lane project is complete. • Rating: HIGH	• Walkscore: 73 • Bikescore: 64 • Rating: HIGH
3. Kuenzli St.	• Several vacant parcels and parking lots in the vicinity that could be redeveloped over time. • Proximity to river is an asset. • Proximity to waste transfer station across the river is a deterrent. • Rating: MEDIUM	• Mostly an industrial area with few services besides healthcare. • Rating: LOW	• Walkscore: 62 • Bikescore: 80 • Rating: MEDIUM
4. 15th & Prater	• Very limited; almost all properties in the vicinity are fully developed. • Rating: LOW	• Near downtown Sparks and its amenities. • Very near Sparks High School • Some smaller groceries nearby, but no full-service supermarkets within a mile. • Rating: MEDIUM	• Near downtown Sparks and its amenities. • Very near Sparks High School • Some smaller groceries nearby, but no full-service supermarkets within a mile. • Rating: MEDIUM

Site	Catalytic Potential	Access to Services	Walkscore & Bikescore
5. Clear Acre / Tripp	• Large site with several vacant and underutilized sites in proximity. • Rating: MEDIUM	• Few services in proximity. • Near Hug High School • Nearest supermarket, Winco, is on other side of freeway, requiring circuitous routing to get there. • Rating: LOW	• Walkscore: 51 • Bikescore: 51 • Rating: LOW
6. Sutro / Selmi	• Few, if any, other opportunity sites in immediate proximity. • Rating: LOW	• Close to Hug High School • Small shopping center due east, but no groceries • Rating: LOW	• Walkscore: 46 • Bikescore: 45 • Rating: LOW
7. Clear Acre / RTC site	• Significant vacant land all around, although slopes and access might limit potential. • Rating: MEDIUM	• No services in immediate vicinity. • Requires difficult crossings of both US 295 and McCarran to access any services. • Rating: LOW	• Walkscore: 52 • Bikescore: 43 • Rating: LOW

Following this meeting, affordable housing stakeholders requested further analysis of three RTC owned properties along Airway Drive (refer to Figure 4 – RTC Owned Parcels along Airway Drive on following page). Leland Consulting Group provided a Site Evaluation Addendum (Refer to Table 4) analyzing the additional sites. Initial stakeholder input indicated that these parcels are too small and irregularly shaped for traditional affordable housing development. However, more recent interest has been expressed in the potential for micro housing on these sites. The Airway Drive and Neil Road parcels owned by RTC are smaller, oddly shaped, and some have limited access. While these parcels may not be well suited for traditional affordable housing developments, they could potentially be used for micro housing. This housing type is typically 200-400 square feet in size.

Table 4 - Site Evaluation Addendum, provided by Leland Consulting[24]

Site	Catalytic Potential	Access to Services	Walkscore & Bikescore
8. Airway Dr. and Neil Rd.	• Few developable parcels in the vicinity. • Greater redevelopment potential would require partnership with or acquisition of adjacent parcels, possibly as a rehab project • Rating: LOW	• Close to Miguel Ribera Park and Neil Road Recreation Center • Less than one mile to several schools • Small mini mart across the street. More substantial services nearby but requires difficult pedestrian crossing under 395. • Rating: MEDIUM	• Walkscore: 49 • Bikescore: 66 • Rating: LOW
9. Cathy Ave. / Rewana Way	• Significant amount of underutilized properties in the vicinity • Larger redevelopment potential possible with partnership or acquisition of adjacent parcels. • Rating: MEDIUM	• Close to Miguel Ribera Park and Neil Road Recreation Center • Less than one mile to several schools • Few retail services within one mile. • Rating: MEDIUM	• Close to Miguel Ribera Park and Neil Road Recreation Center • Less than one mile to several schools • Few retail services within one mile. • Rating: MEDIUM
10. Donald St.	Few vacant parcels nearby, mostly fully developed. • Very close to runway. • Rating: LOW	• Mostly an industrial area with few services • Close to small strip center with limited services, more substantial retail approximately one mile away. • Close to several schools • Rating: MEDIUM	• Walkscore: 48 • Bikescore: 65 • Rating: LOW

Figure 4: RTC Owned Parcels along Airway Drive

TAC Meeting #3

Following a final review of the Tier 1 sites on July 7, 2019 with the TAC and stakeholders, RTC staff presented the Tier 1 sites to the Regional Transportation Commission Board on July 19, 2019. While all of the Tier 1 sites meet minimum TOD criteria such as proximity to transit service and are vacant or underutilized, the site evaluation memo prepared by Leland provided additional criteria to help understand the quality and benefits of each site to differentiate the sites and identify those with greater potential to provide public benefits. Based on the information presented by Staff in coordination with the Leland memo, three sites were selected for preliminary site design.

1. Clear Acre Lane and Scottsdale Drive

2. South Virginia Street, close to the Peppermill Resort

3. Neil Road and Meadowood Mall Circle

Wood Rodgers prepared preliminary site plans for each site that identified building area and design constraints, which were presented at an Affordable Housing Open House hosted by RTC Staff.

Additional Public Outreach

- HOME Consortium – RTC presented information about the study and sought input from this regional committee that addresses affordable housing needs at their meetings on March 12 and September 10, 2019.
- Mayor's Forum on Affordable Housing – Held on September 4, 2019, RTC presented information and preliminary concepts about the RTC Affordable Housing Study in an open-house format.
- Public Workshop – Held on September 12, 2019 at the McKinley Arts and Culture Center, RTC presented the draft Affordable Housing Study to the general public for comment.
- Builders Infrastructure & Planning Meeting – Held on September 19, 2019, RTC presented the draft findings of the affordable housing study for comment to the Builders industry association.
- Presentations to RTC Board of Commissioners – RTC staff presented findings from the study and sought input from the RTC Board on July 19, 2019 and January 17, 2020.
- RTC Citizens Multimodal Advisory Committee (CMAC) and Technical Advisory Committee (TAC) – The study was presented to the standing RTC advisory committees for input on July 10, 2019.

Site Analyses & Illustrative Concepts

Following the public meetings, Leland Consulting prepared a market analysis for the three sites (refer to Appendix D.) The market analysis document assesses market and economic conditions of each site and provides potential development programs to guide site design. Economic trends including employment, housing preference, housing demand, income growth and elements of the Reno Market Area including vacancies and rent were also considered. Based on these factors, Wood Rodgers refined the preliminary site plans to reflect the suggested product types and sizes for each site. A copy of the complete market analysis report is included in Appendix D and is summarized for each site in the following section.

Clear Acre Lane Site

This study presents initial concepts for discussion. Any further refinement or action relating to these concepts will involve an extensive community engagement process. No timeline for further studies has been identified.

Location

This site is located within the City of Reno between Clear Acre Lane and US 395 and consists of approximately 32.24 acres of land owned by the RTC. The nearest intersection is Scottsdale Road and Clear Acre Lane. The area is surrounded by a mixture of undeveloped land within the Dandini Research Park as well as multi-family and single-family residences to the north. To the west and south is highway 395 and to the east are single family residences. This site is not in a Qualified Census Tract or within an Opportunity Zone.

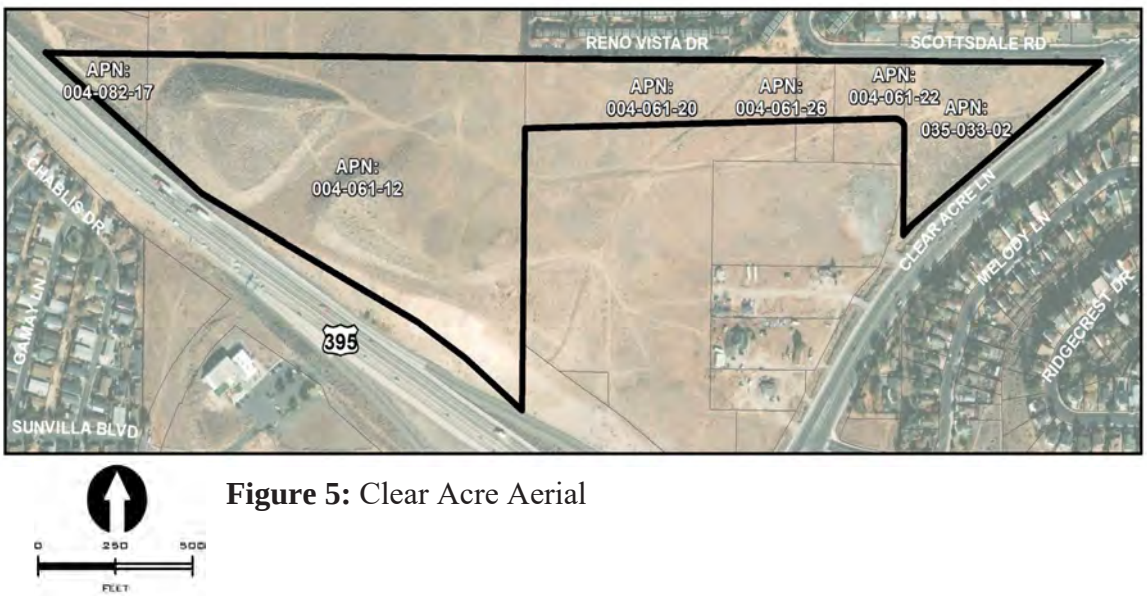


Figure 5: Clear Acre Aerial

Master Plan / Land Use

The site has master plan land use designations of Public/Quasi-Public (PQP) and Single-Family Neighborhood (SF). The zoning on these parcels include Mixed Use – Dandini Regional Center and Single Family Residential, 15,000 sq. ft lots (SF-15).

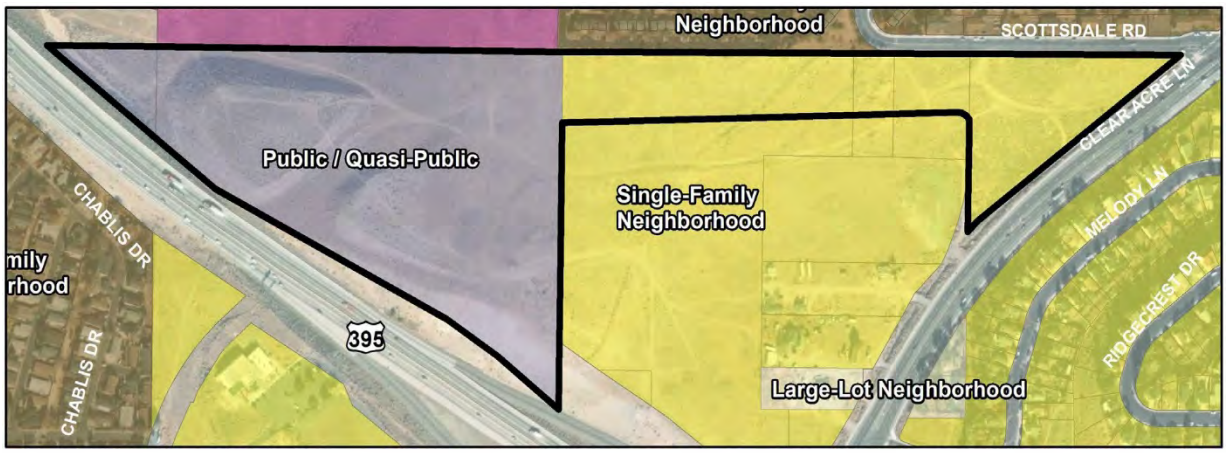


Figure 6: Clear Acre Site Master Plan Designations

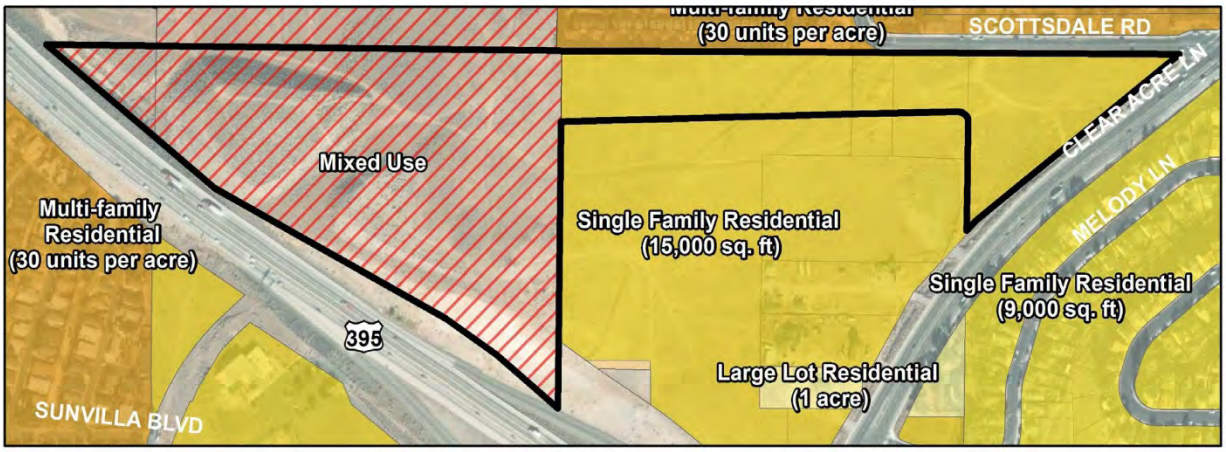
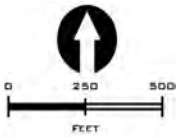


Figure 7: Clear Acre Site Zoning Designations



Site Characteristics

The site is presently undeveloped and does not have a history of past uses apart from several dirt roads/trails that are located on the site, but are not a part of a formal road/trail system. Topographic constraints exist on site and have reduced the combined total developable area of the parcels from ± 32.24 acres to ± 22.26 acres.

Access

This site will be accessed via Clear Acre Lane and Scottsdale Road. A sidewalk and bicycle lane are adjacent to the site on Clear Acre Lane. The closest transit station connects to Route 5 on Clear Acre and Scottsdale Road. According to the Leland Consulting Site Evaluation memo, this area has a Walkscore of 52 and a Bikescore of 43, meaning some errands can be accomplished on foot, but there is minimal bicycle infrastructure.

Utilities

The site is adjacent to existing development with infrastructure that future development could connect to. It is anticipated this project will be served by municipal water and sewer services located in Scottsdale Drive and/or Clear Acre Lane. A proposed water tank is included within the project area, pending further discussions with the Truckee Meadows Water Authority. The tanks are not necessary to serve this specific project, but are an anticipated improvement for this area as a whole. Refer to Figure 9 for a utility plan.

Site Plan

Strong population growth, market trends and surrounding land use types indicate that a mixture of townhomes and garden apartments are feasible. Few commercial amenities exist in the area, creating opportunity for a retail component on this site as well. The majority of housing within a one-mile radius includes single-family residences, with several multifamily residences. However, no new multifamily developments have been constructed since 2009. The market rents for this area average $1.30 per square foot or $1,145 per unit. Refer to Figure 8 for a conceptual site plan.

The market analysis for this site (Refer to Appendix D) recommended a mixture of residential and non-residential uses with a transit component. The site plan (refer to plan on next page) depicts the following:

- Multifamily residences (±12 acres, 240 to 360 units)
- Townhomes (±8 acres, 80 to 128 units)
- Retail (±1-acre, 10,000-15,000 sq. ft)
- Park and ride facility (±1 acres)
- Park/open space (±1 to 2 acres)

Entitlements

The entitlement process for this site is dependent on future plans for the property. This site is publicly owned by the RTC so no coordination to purchase property from private individuals is anticipated. On the Mixed Use / Dandini Regional Center parcels, the uses recommended by the market analysis are permitted by right, without an additional entitlement process, provided all development standards are followed. This includes the residential uses and the park and ride facility.

However, the SF-15 parcels will require a master plan amendment and a zoning map amendment to allow for nonresidential uses in the site plan. To arrive at the contemplated site plan, the master plan and zoning designations will need to change to match the higher density residential and nonresidential contemplated uses. For the master plan designation, it is suggested the area be altered to a mixed use land use such as Suburban Mixed-Use (SMU) to allow for a rezoning of the parcel to match the adjacent Mixed Use / Dandini Regional Center parcels to the west to maintain consistent development patterns throughout the project and allow for the contemplated uses in the site plan.

Residential adjacency requirements will apply to this site due to the proximity to single family residences to the north, west, south, and southeast. Additional screening, setbacks and other details will likely need to be included within the final site development to meet the requirements of City of Reno municipal code.

*For illustrative & discussion purposes
Draft concept subject to change

Figure 8: Clear Acre Site Plan

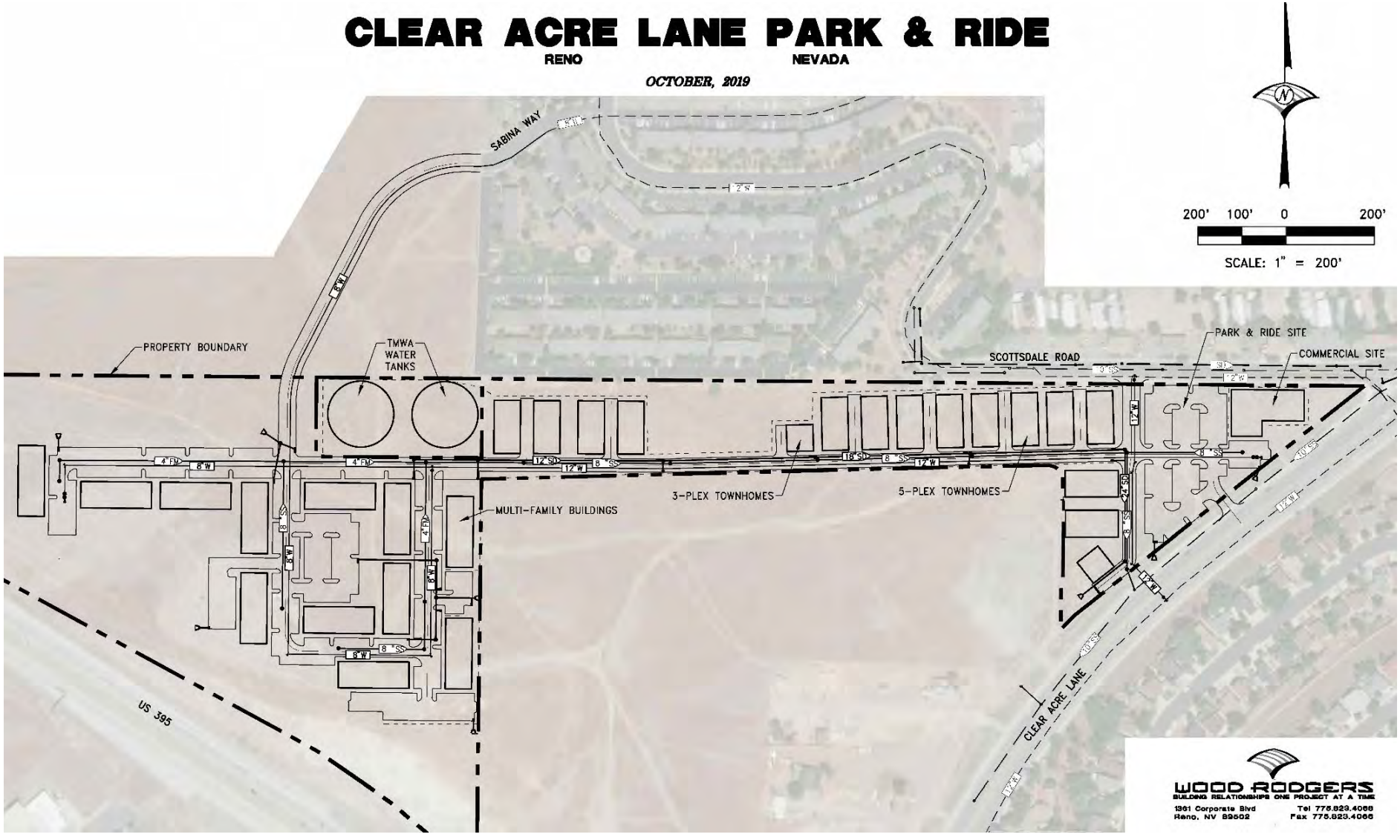
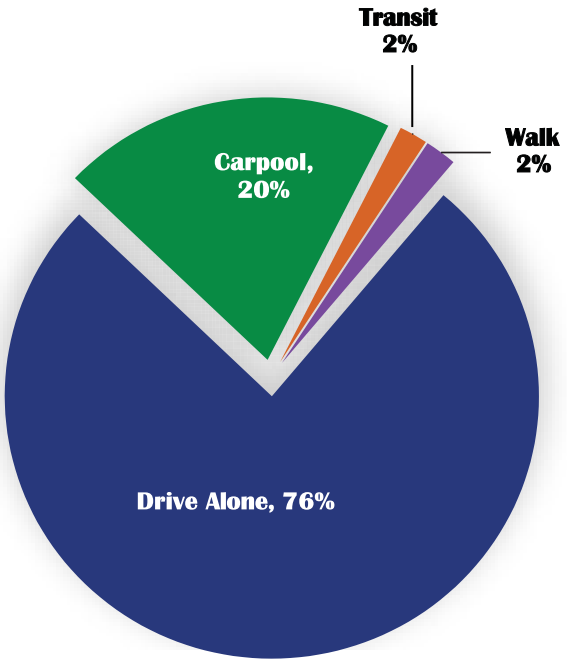


Figure 9: Clear Acre Site Utility Layout

Demographics[25]

This area is within Washoe County Census Tract 17.02, bounded by Reno Vista Drive, Scottsdale Road, and Golfview Road to the to the north, US 395 to the west, El Rancho Drive to the East, and Oddie Boulevard to the south. This area contains a greater proportion of renters (60%) to homeowners (40%). Ninety percent of households in this census tract have a personal vehicle available while 10% do not. The majority of the population either drives or carpools to work and 4% use alternative means of transportation.

Census Tract 17.02	
Occupied Housing Units:	2,214
Renters:	1,330
Owners:	884
Average Household Size:	2.69
Mobility:	
No vehicle available	10%
1+ vehicle available	90%



Services

The closest grocery store, WinCo, is located ± 1.1 miles from the project site, an approximately 7-minute drive, an 8-minute bike ride, a 21-minute bus ride or a 22-minute walk for future residents. Additional retail can be accessed by car, transit or bicycle in Sun Valley, including a Scolari's located approximately 2 miles away, a 5-minute drive, 12-minute bike ride, or 9-minute bus ride. Providing additional retail space in this proposed project may encourage a closer proximity to grocery and other services in this area for not only this development but adjacent residences in this area. One additional transit route, Route 15, is available within a ¾ mile radius of the site.

This site is within the Reno city limits and future development could be served by City of Reno fire and police services. The closest medical services are both regional hospitals, Renown and Saint Mary's located approximately 3 miles away. Recreational and park facilities for this site include Melody Lane Park, located less than one-mile way, a 2-minute drive or 15-minute walk from the site. Wildcreek Golf Course, a public golf facility, is located approximately 1.5 miles from the site, a 5-minute drive or 20-minute walk from the site. Refer to the Services Map on the following page for additional details.

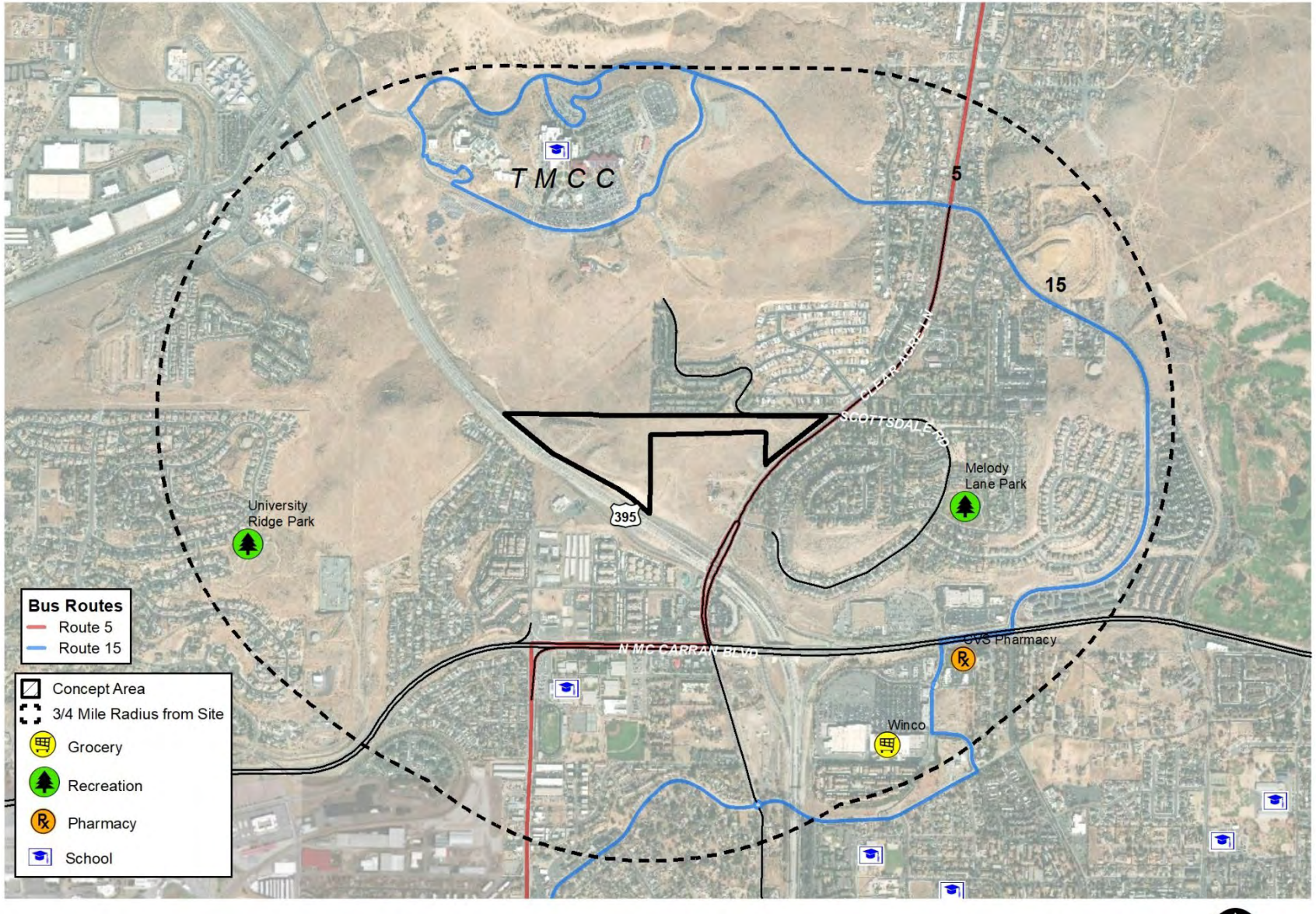


Figure 10: Clear Acre Site Services Map

Site Analyses & Illustrative Concepts

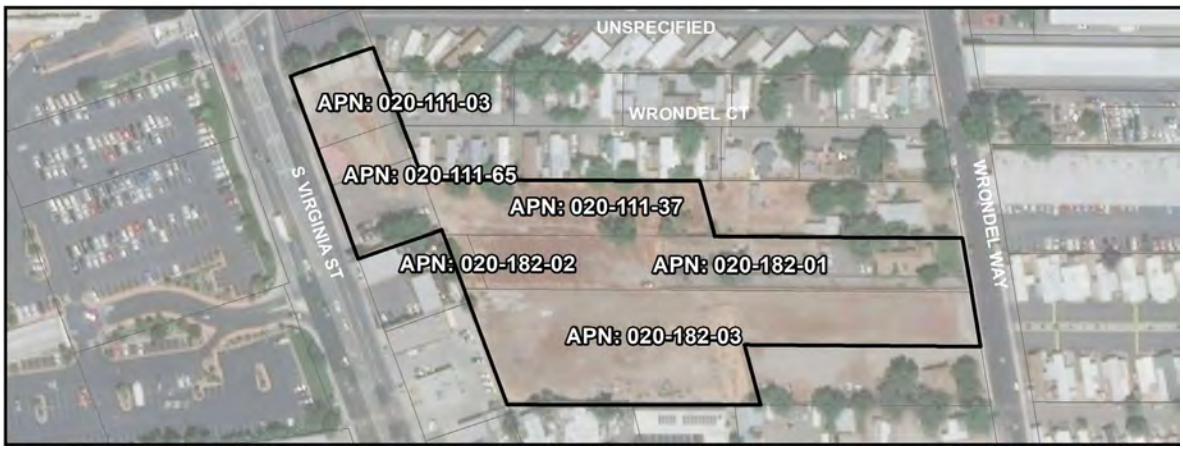
South Virginia Street Site

This study presents initial concepts for discussion. Any further refinement or action relating to these concepts will involve an extensive community engagement process. No timeline for further studies has been identified.

Location

The site has a total undeveloped area of ± 3.78 acres and consists of 5 parcels of privately owned property within the City of Reno. The RTC does not own these properties and fulfilling the goals of this site plan will require purchase of all parcels. The main interest in this site is the proximity to an existing RAPID route, with high ridership and a small shelter that warrants construction of an expanded transit station. Additionally, the zoning of these parcels encourages high density, walkable development, especially along rapid transit routes.

The surrounding area includes a mixture of uses, ranging from single family and multi-family residences, commercial and retail establishments, as well as hotel/casinos. Uses in the immediate proximity include the Peppermill Resort across the street, a variety of commercial businesses to the west and south, a manufactured home park to the north, and single-family residences to the east and southeast.



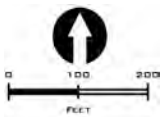


Figure 11: South Virginia Street Site Aerial

Master Plan / Land Use

The master plan land use designation for this site is Urban Mixed-Use and the zoning is South Virginia Street Transit Corridor (MU/SVTC). This zoning encourages high density, walkable development, particularly along rapid transit routes. This site is also in a Qualified Census Tract within an Opportunity Zone and eligible for certain tax incentives for low income development.

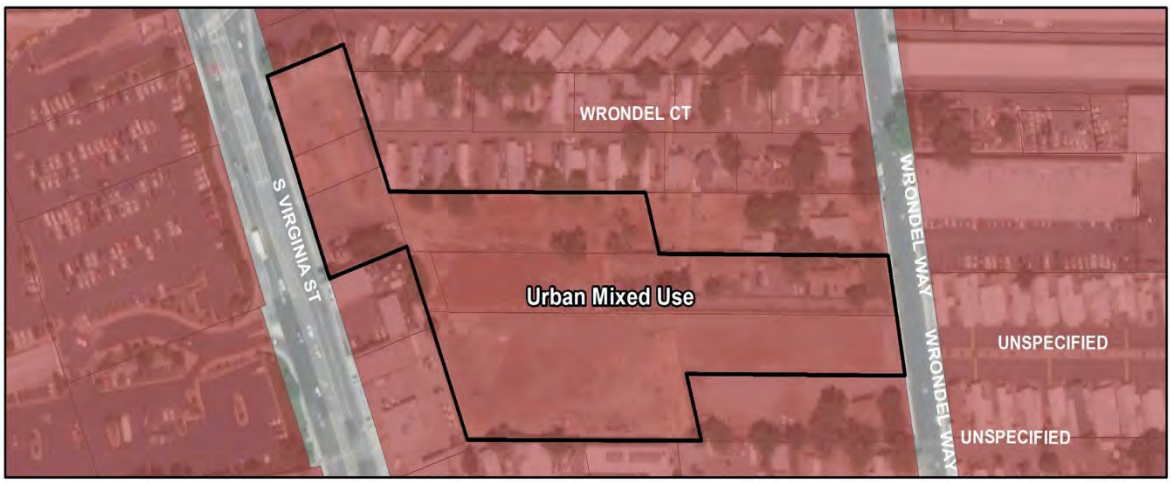


Figure 12: South Virginia Street Site Master Plan Designations

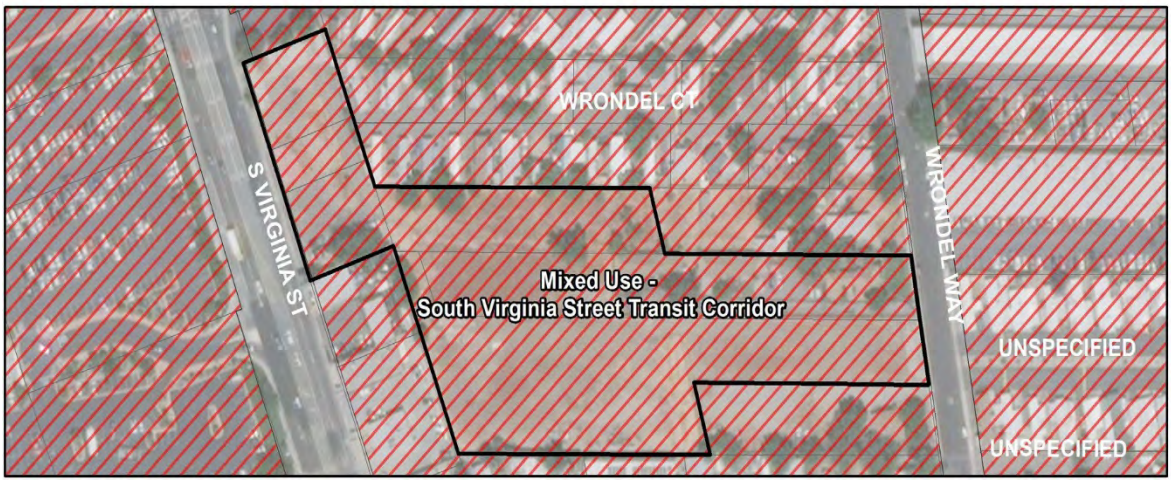
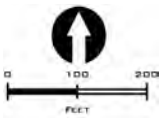


Figure 13: South Virginia Street Site Zoning Designations



Site Characteristics

This site is generally flat and vacant. There is planned transit investment at this site, including construction of RAPID station and sidewalk improvements.

Access

This site will be accessed via Wrondel Way to avoid conflict with the existing traffic flow and transit stop. A sidewalk and bicycle lane are adjacent to the site on South Virginia Street. The closest transit station is located in front of the site, connecting to the RAPID and Route 1. According to the Leland Consulting Site Evaluation memo, this site has a Walkscore of 73, indicating most errands can be accomplished on foot. However, the Bikescore is 63, meaning there is some bicycle infrastructure but it is not convenient for most trips.

Utilities

The site is adjacent to existing development with infrastructure that future development could connect to. It is anticipated this project will be served by municipal water and sewer services located in South Virginia Street and/or Wrondel Way. Refer to Figure 15 for a utility plan.

Site Plan[24]

Strong population growth is projected in the area with the forthcoming Park Lane development. The presence of the Park Lane development may demonstrate support for higher rents, as new construction typically outpaces market average. The market rents for this area presently average $1.35 per square foot or $1,025 per unit. The market analysis for this site (Refer to Appendix D) recommended a mixture of residential and non-residential uses with a transit component. The conceptual site plan (refer to Figure 14) depicts the following:

- Podium style multifamily building – ±56,000 square feet
- Retail building – ±12,000 square feet
- Retail (±1 acre, 10,000-15,000 sq. ft)

Pedestrian access is contemplated to extend internally through the site, with access points to the buildings along sidewalks on South Virginia Street and Wrondel Way.

Entitlements

The zoning allows for mixed use and multi-family developments by right, without an additional process. However, the RTC or private partner interested in implementing this site plan will need to purchase several private parcels to complete the site plan.

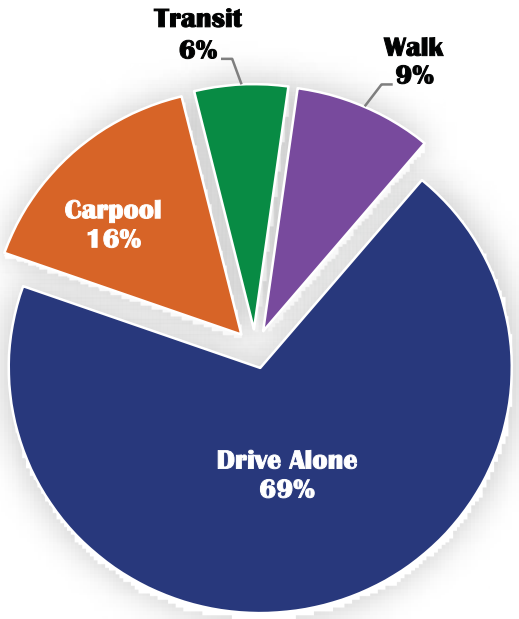
Figure 14: South Virginia Site Layout

Figure 15: South Virginia Site Utility Layout

Demographics[26]

This area is within Washoe County Census Tract 9 bounded by East Plumb Lane to the north, South Virginia Street to the west, Yori Avenue to the east, and East Moana Lane to the south. This area contains a far greater proportion of renters (87%) to homeowners (13%). Ninety-five percent of households in this census tract have a personal vehicle available while 5% do not. The majority of the population either drives or carpools to work; however, 15% use alternative means of transportation.

Census Tract 9	
Occupied Housing Units:	1,761
Renters:	1,525
Owners:	236
Average Household Size:	2.3-2.65
Mobility:	
No vehicle available	5%
1+ vehicle available	95%



Services

Three grocery stores, three parks, a library and two pharmacies are within a ¾ mile range of the site. The closest grocery store, an Asian food market, is located 1/10 of a mile away, a 2-minute walk and less than 1-minute drive from the site. The closest medical services are both regional hospitals, Renown and Saint Mary's, located approximately 3 miles away. The closest recreational opportunities include Virginia Lake, approximately ¼ mile from the site, a 2-minute drive and 11-minute walk. This site is located within city limits and is anticipated to be served by City of Reno police and fire services. Close proximity to the RAPID station and an additional standard bus route, Route 1, make transit easily accessible in this area. Five additional transit routes are within a ¾ mile radius of the site including Routes 6, 9, 12, 13 and 19. Refer to the Services Map on the following page for additional details.

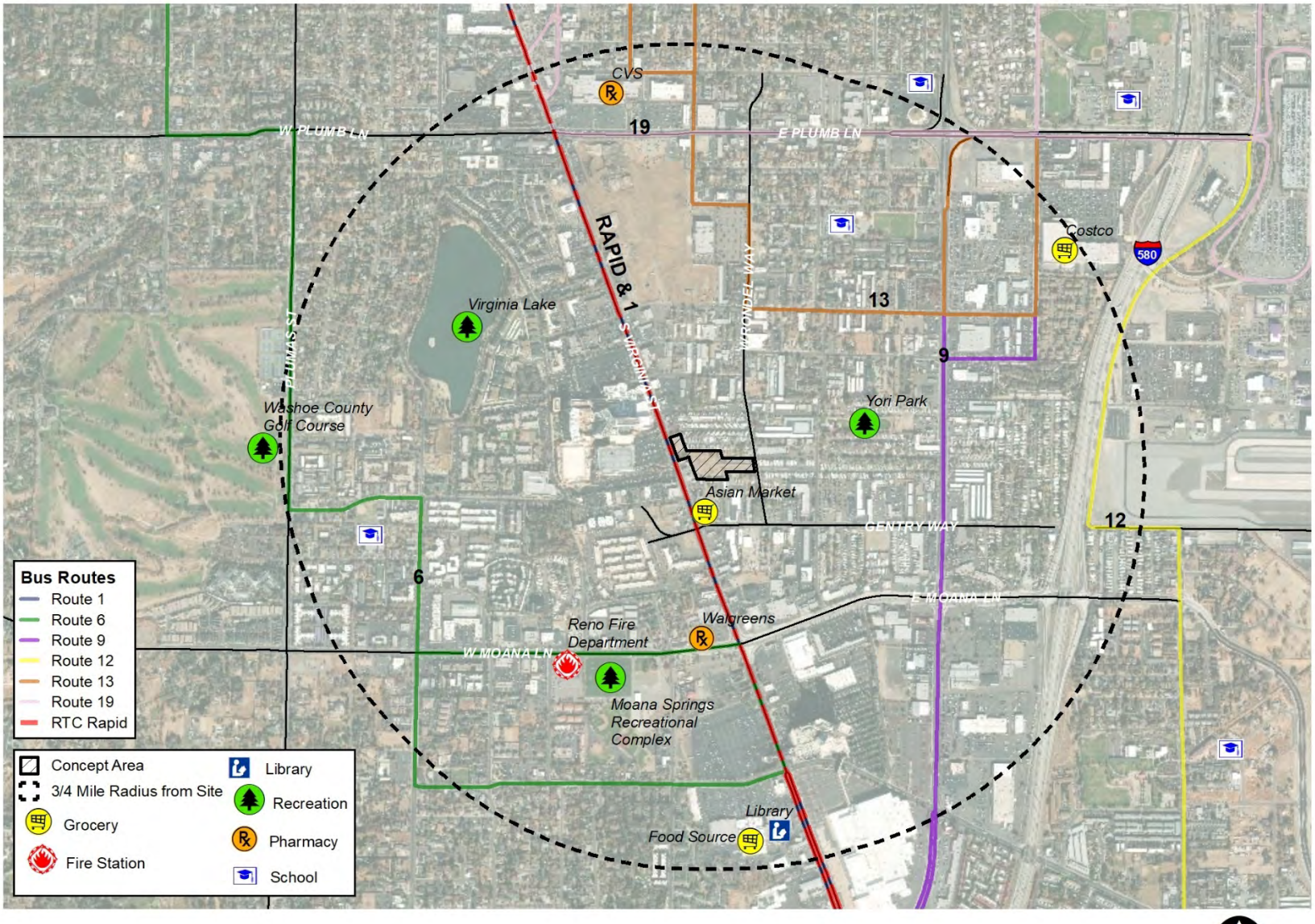


Figure 16: South Virginia Street Site Services Map

Site Analyses & Illustrative Concepts

Neil Road Site

This study presents initial concepts for discussion. Any further refinement or action relating to these concepts will involve an extensive community engagement process. No timeline for further studies has been identified.

Location

This ±5.37 acre site consists of two full parcels (±4.3 acres) and a ±1.07 portion of the Meadowood Mall parcel located at the intersection Neil Lane and Meadowood Mall Circle, adjacent to Meadowood Mall, within the City of Reno. The two southmost parcels are owned by Meadowood Mall and the northmost parcel is owned by Sears. The zoning of these parcels encourages high density, walkable development, especially along rapid transit routes. The surrounding area includes a mixture of uses, notably several multi-family residential complexes to the east and south, and Meadowood Mall, a large retail establishment and associated parking area to the north.

Figure 17: Neil Road Site Aerial

Master Plan / Land Use

The site has a land use designation of Suburban Mixed Use and a zoning of Mixed Use in the Convention Regional Center Overlay district. Two parcels (APNs 025-372-32 and 025-372-29) are located within the Meadowood Mall Specific Plan District. This site is also in a Qualified Census Tract within an Opportunity Zone and is eligible for certain tax incentives for low income development.

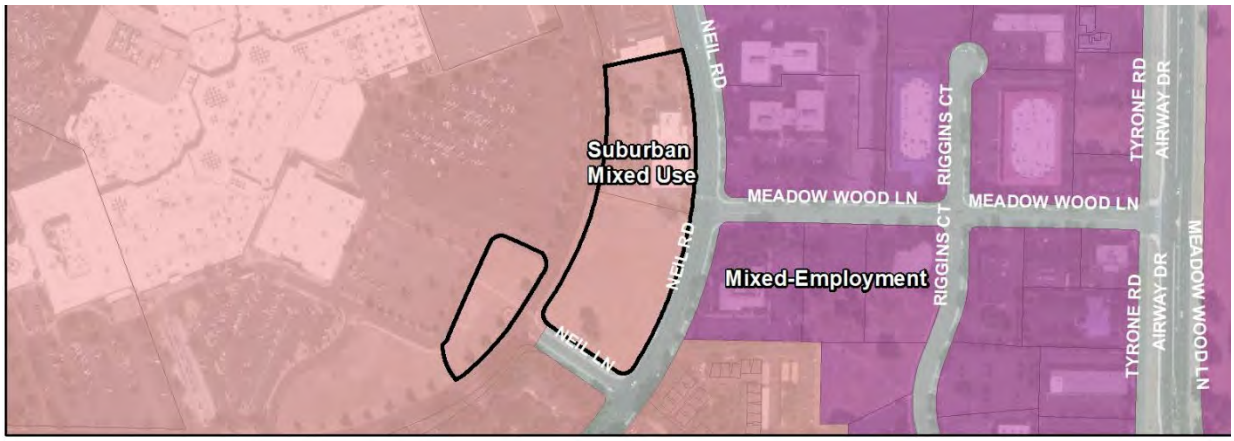


Figure 18: Neil Road Site Master Plan Designations

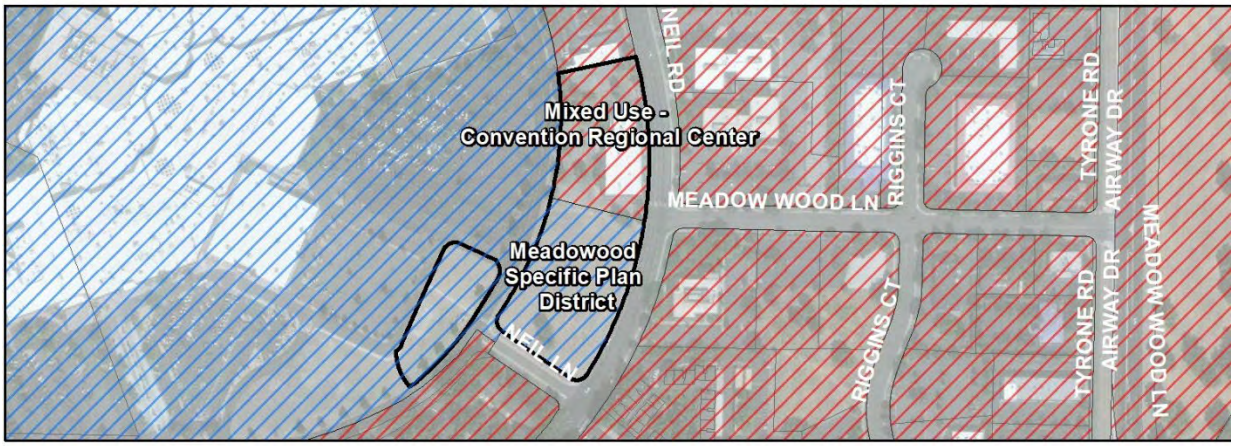


Figure 19: Neil Road Site Zoning Designations

Site Characteristics

This site is generally flat and vacant with the exception of one parcel that contains the now vacant Sears Tire Center building on site. With future development, it is anticipated that the current structures on the parcel would be demolished and repurposed to include the new project area. A sidewalk bisects the westmost parcel to provide pedestrian access to the mall and outlying area. There is potential for transit investment at this site, including construction of a new transfer station.

Access

This site will be accessed via Meadowood Mall Circle and bus access will be from Neil Road or Meadowood Mall Circle. A sidewalk is located along Neil Lane and Neil Road. A bicycle lane is along Neil Road. The site is in close proximity to many transit options, including the RAPID and Regional Connector as well as Routes 1, 9, 12, 54, 56, 57. According to the Leland Consulting Site Evaluation memo, this area has a Walkscore of 68, indicating some errands can be accomplished on foot, as well as a Bikescore of 75, meaning biking is convenient for most trips.

Utilities

The site is adjacent to existing development with infrastructure to which future development could connect. It is anticipated this project will be served by municipal water and sewer services located in Neil Road. Refer to Figure 21 for a utility plan.

Site Plan[26]

The parcels for this site plan are presently underutilized and within an area well suited for a higher density, transit-oriented development. Refer to Figure 20 for a conceptual site layout. The last building completed in this area was built in 1988 and no new construction is currently occurring near this site. Rents within a one-mile radius of the site are relatively high, with an average of $1.52 per square foot or $1,188 per unit. It is contemplated that the new multifamily building would be constructed to architecturally connect to the proposed bus transfer facility. The market analysis for this site (Refer to Appendix D) recommended a mixture of residential and non-residential uses with a transit component. The conceptual site plan (refer to plan on next pages) depicts the following:

- Bus transfer facility (±2.3 acres)
- Park and ride facility (±1.07 acres)
- Multi-family residences (±69,000 square feet)
- Ground floor retail (±29,000 square feet)

Entitlements

The RTC does not own this property. APN 025-372-31 is owned separately from the remaining parcels. The other parcels (025-372-29 and 025-372-32) are owned by Meadowood Mall and are included within the Meadowood Mall Specific Plan District which includes a handbook with design standards (Refer to Appendix E). Per the handbook, development of the bus transfer and park and ride facilities require a Site Plan Review through the City of Reno. The northmost parcel, APN 025-372-31, can contain the proposed mixed use building shown on the site plan without an additional entitlement process, provided all City of Reno development standards are followed. It is contemplated, with the development of these parcels, that the transit center currently located at the entrance of Meadowood Mall would be relocated to this site.

Figure 20: Neil Road Site Layout

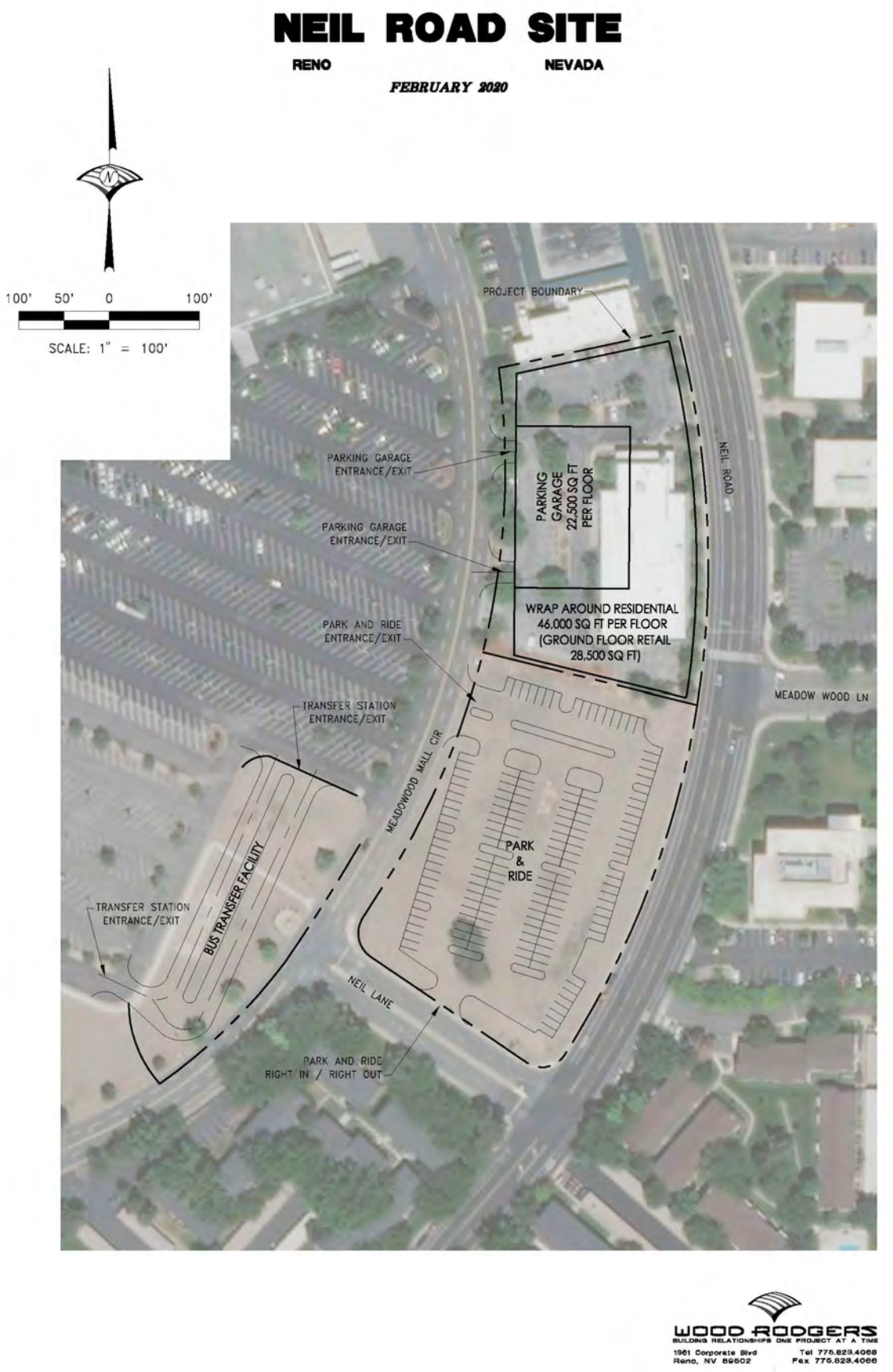
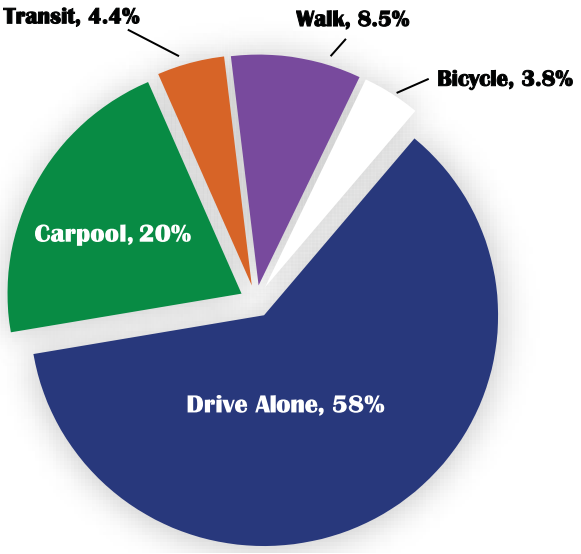


Figure 21: Neil Road Utility Plan

Demographics[27]

This area is within Washoe County Census Tract 22.04 bounded by Peckham Lane to the north, Interstate 580 to the Northwest, South Virginia Street to the west, and Longley Lane to the south. This area contains a far greater proportion of homeowners (68%) to renters (32%). Ninety-five percent of households in this census tract have a personal vehicle available while 5% do not. The majority of the population either drives or carpools to work and 18% use alternative means of transportation.

Census Tract 22.04	
Occupied Housing Units:	1,989
Renters:	628
Owners:	1,361
Average Household Size:	2.65
Mobility:	
No vehicle available	5%
1+ vehicle available	95%



Services

This site is currently served by the Virginia RAPID transit line extending from RTC 4th Street Station in Downtown Reno to the Meadowood Mall Transfer Station along South Virginia Street. Several other bus routes also use this transfer station, including Route 1, 12, 54, 56 and the Regional Connector to Carson City. Sidewalks and bicycle lanes are located adjacent to the property along Neil Road and an existing sidewalk cuts through the center of the parcel closest to Meadowood Mall.

This site is located less than one mile from several grocery stores, including Trader Joe's and Whole Foods, an approximately 13-minute walk, 5-minute drive and 10-minute bus ride. Other shopping services can be found at the Meadowood Mall. The proximity to a RAPID transit transfer station will also provide easy access to transit for future residents. The closest medical services include Concentra Urgent Care located approximately 1 mile away, and Renown South Meadows Medical Center located approximately 3 miles away.

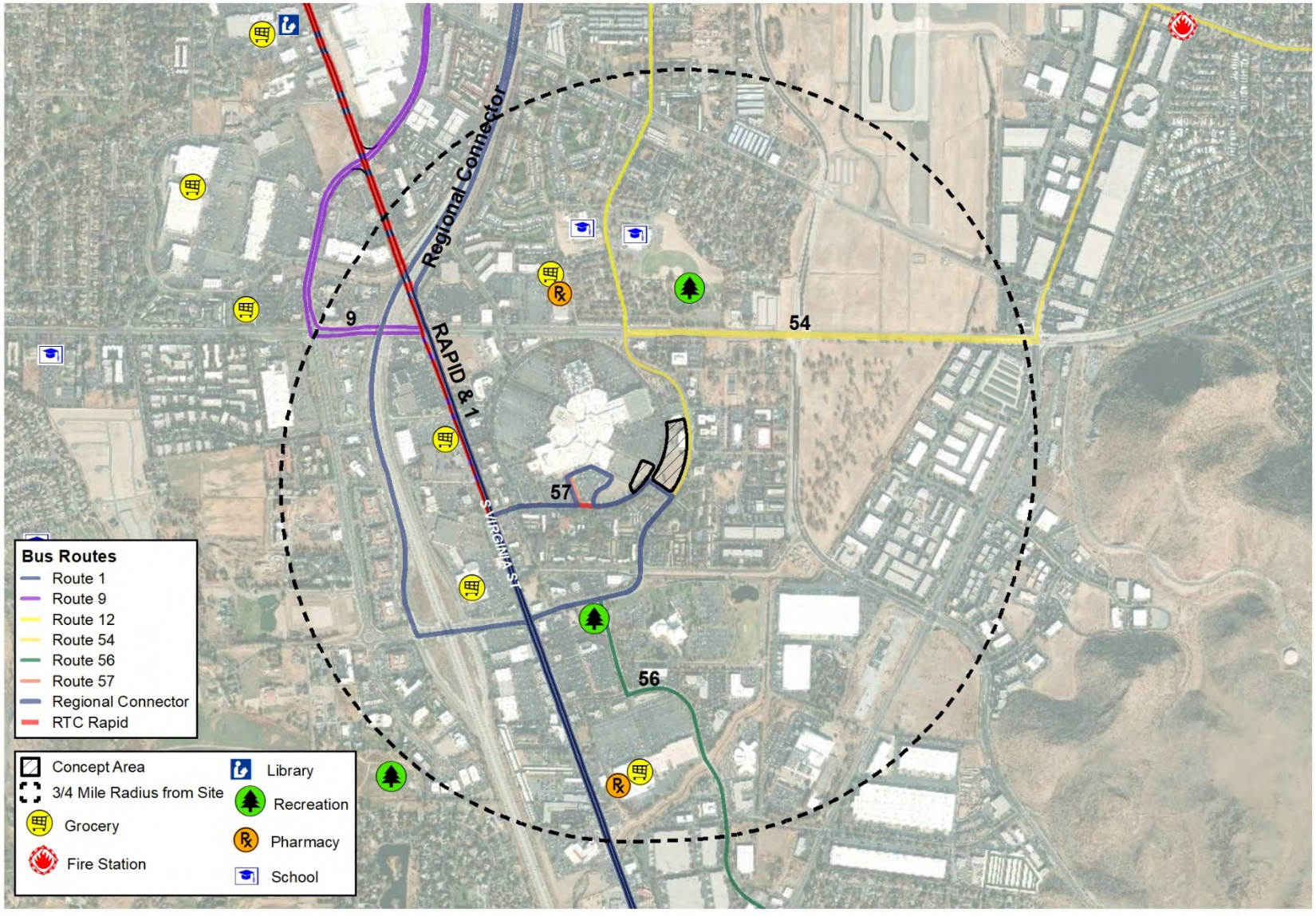


Figure 22: Neil Road Site Services Map

Cost Estimates and Implementation Strategies

The Federal Transit Administration (FTA) provides financial assistance programs for eligible capital projects. Eligible capital projects involve development of new transit systems or help improve, maintain and operate existing systems. "Joint development" in this context refers to, "a public transportation project that integrally relates to, and often co-locates with commercial, residential, mixed-use or other non-transit development." FTA-assisted joint development is any joint development project that uses FTA funding or property acquired with FTA funding.

A "joint development" has a smaller scope to a TOD and the recipient of FTA funding is an active partner, contributing either property or funds for use in the joint development project. Joint developments involve a public/private partnership, requiring public entities to make investments to publicly owned property like transit centers, streets or accessible pedestrian amenities in order for private investment to develop or redevelop these properties to their greatest potential.

With FTA assistance, the RTC has potential to acquire properties and partner with private or public interests to develop the property. Joint development is an eligible expense under all FTA capital funding programs, if it meets certain criteria.

Eligible projects for joint development must:

1. Enhance economic development
2. Enhance public transportation
3. Partner to provide a fair share of revenue
4. Tenants must pay a fair share of the operating and maintenance cost

Source: FTA Circular 7050.1A, 2016

A wide range of joint development activities are eligible for FTA funding and reimbursements, primarily funding construction activities and improvements as well as other professional services like design, engineering and environmental analysis. No specific grant program is available for joint development ventures, but close consultation with the FTA and the participating transit agency is recommended to ensure a streamlined process.

Additional funding strategies for this affordable housing project could include local, state or national grants, subsidies or tax credits. Other affordable housing projects in Nevada have successfully used the Low Income Housing Tax Credit to attract investors to develop affordable housing projects. Subsidies from HUD and other state or local jurisdictions may be available to subsidize rental prices for tenants.

Financial Analysis

Cost estimates were provided by Leland Consulting in January 2020. Leland Consulting modeled the financial feasibility of the proposed projects and site plans for each site. Overall, each site plan was determined to be feasible if certain criteria were met. Below is a summary of the financial analysis and cost estimates. The full analysis is available in Appendix D.

Methodology

The financial analysis determined feasibility using the "residual land value" of each model which represents the price that a developer could afford to pay for the land after other hard and soft costs in today's market. Table 5 briefly defines each input for the financial analysis. Additional details can be located in the full financial analysis in Appendix D.

Table 5 – Inputs of Financial Analysis, provided by Leland Consulting

Term	Definition
Program	- Site size - Square feet of retail/restaurant, office, or other commercial uses - Number of housing units - Parking: Number and type of spaces - Building height, floors, and other design attributes
Timing	- Construction start - Certificate of occupancy - Lease-up period
Costs	- Land or building purchase - Site preparation (e.g demolition, grading) - Hard costs (e.g. construction and other development costs) - Soft costs (e.g. architecture and engineering, project management, permits and fees, insurance, loan interest, contingency)
Operating Revenue & Expenses	- Rent revenue from retail, office, residential, parking - Vacancy - Operating expenses for management, utilities, taxes, insurance, maintenance, etc. - Net operating income (NOI: revenue less expenses)
Return on Investment	- Comparison of net operating income to total project cost - Project capitalization rate* of 5.5%

* "Capitalization rates" or "cap rates" are the ratio between the net operating income produced by a real estate investment and the original capital cost or current market value

Based on market analysis, a range of housing types were considered for each site. These housing types are included in each of the Site Analyses & Illustrative Concepts section for each site. Eight development alternatives were developed for each site. Additional details on how each of these inputs were calculated is included in Appendix D.

Eight alternatives were analyzed. The alternatives varied based on:

Table 6 – Variables of Alternatives, provided by Leland Consulting

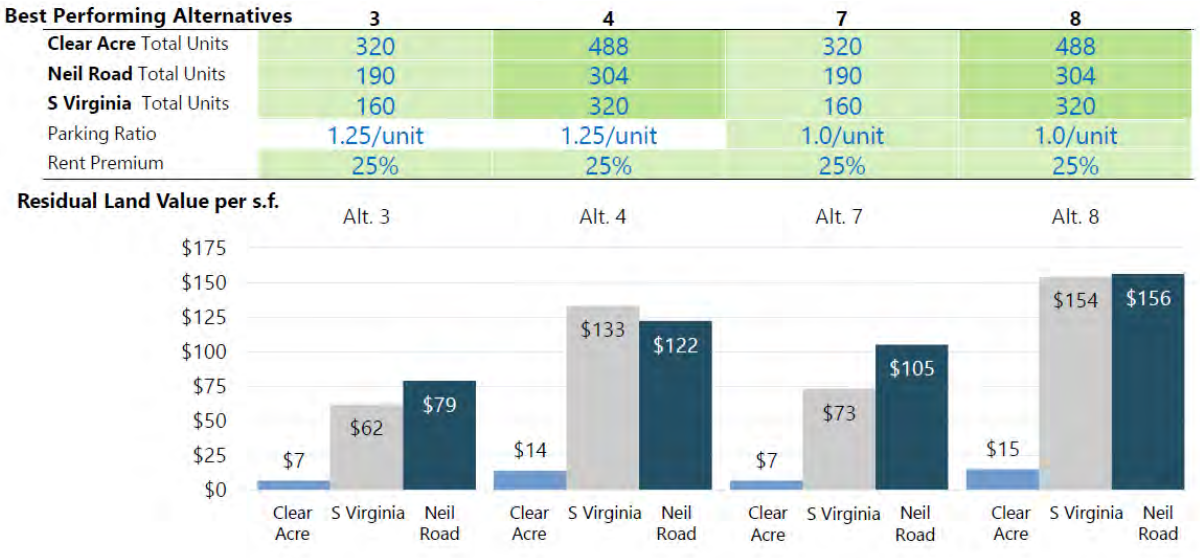
Variable	Description
Program	High and low range of total housing units assumed for each site
Parking	Low (1.0 spaces per unit) versus high parking ratios (1.25 spaces per unit)
Rent premium	Newly-constructed housing units will likely outperform the local market average, as tenants are likely to pay more for new and modern units.

This rent premium was added with the understanding that newly constructed housing units will likely outperform the local market average in their location. Simply, a newer, modern building in an area with slightly older multi-family housing stock may be more appealing to new tenants in the area.

Findings

The key takeaway from the report is that increased density, rent premiums and reduced parking ratios improved development feasibility. Rent premiums had the greatest impact on development feasibility while reducing parking ratios had the greatest effect on development programs with structured parking (South Virginia Street and Neil Road sites). Figure 1 provides the total number of proposed units for each alternative, the inputs, and the final residual land value.

Figure 23 – Best Performing Alternatives and Residual Land Value of Each Site



This market analysis was completed to test the general feasibility of each site plan in today's market conditions. Additional subsidies and grants may be necessary to further reduce hard and soft costs associated with construction as well as reduce rents to a level that meets affordable housing requirements for the FTA and any other public or nonprofit entities providing funding.

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REGIONAL TRANSPORTATION COMMISSION
Metropolitan Planning • Public Transportation & Operations • Engineering & Construction
Metropolitan Planning Organization of Washoe County, Nevada

April 17, 2020 **AGENDA ITEM 3.7**

TO: Regional Transportation Commission

FROM: Stephanie Haddock, CGFM
Director of Finance/CFO

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: RTC Procurement Activity Report

RECOMMENDATION

Acknowledge receipt of the monthly Procurement Activity Report.

PROJECTS CURRENTLY ADVERTISED

Invitations for Bids (IFB)

Project	Due Date
PWP-WA-2020-253 2020 Preventive Maintenance	April 20, 2020
PWP-WA-2020-113 Lakeside Drive Rehabilitation	May 6, 2020
PWP-WA-2020-012 Park Lane RAPID Stations	May 8, 2020

Request for Proposals (RFP)

There were no RFPs.

REPORT ON BID AWARDS

Per NRS 332, NRS 338 and RTC's Management Policy P-13 "Purchasing," the Executive Director has authority to negotiate and execute a contract with the lowest responsive and responsible bidder on an Invitation for Bid (IFB) without Commission approval.

Project	Contractor	Award Date	Contract Amount
PWP-WA-2020-186 – East Prater Way Rehab Project	Spanish Springs Construction, Inc.	March 26, 2020	$4,835,444

CHANGE ORDERS AND AMENDMENTS WITHIN EXECUTIVE DIRECTOR'S AUTHORITY

Project	Contractor	Approval Date	Change Order Number	Change Order Amount	Revised Total Contract Amount
Reno Consolidated 19-01 Project	CA Group	April 10, 2020	2	$44,512	$562,875

April 17, 2020 **AGENDA ITEM 3.8**

TO: Regional Transportation Commission

FROM: Stephanie Haddock, CGFM
Director of Finance/CFO

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Report Regarding Indexed Fuel Taxes

RECOMMENDATION

Acknowledge receipt of the report regarding indexed fuel taxes in Washoe County as required by NRS 373.065.

SUMMARY

NRS 373.065 requires that before each statutorily required annual inflationary adjustment is made to the fuel tax rates in Washoe County, the Regional Transportation Commission (RTC) review, at a public meeting, the amount of the upcoming adjustment, the history of past adjustments and what has been done with the revenue collected. This agenda item presents to the RTC Board the required data for its review. The PPI index adjustment beginning July 1, 2020 is 2.10%.

FISCAL IMPACT

There is no fiscal impact to the FY 2020 Budget associated with Board action. The additional revenues that will be generated in FY 2021 by the indexed RTC fuel taxes will be programmed in the FY 2021 budget.

PREVIOUS ACTIONS BY BOARD

The Board acknowledged receipt of previous PPI index adjustments as follows:

Fiscal Year	PPI Rate
2020	1.30%
2019	1.97%
2018	2.15%
2017	3.43%
2016	5.25%
2015	6.02%
2014	6.22%
2013	5.81%
2012	4.98%
2011	5.18%
2010*	6.20%

*Effective January 2010

Prior to that, there were CPI index adjustments in 2004, 2005, 2006, 2007, 2008, and 2009. It should be noted that due to the timing requirement to implement the increases, preliminary index rates are used for the last two months of the calendar year. All indexes from the Bureau of Labor Statistics are subject to revision up to four months after publication. The indexes will be trued up in the calculation of the next year's 10 year average calculations.

ADDITIONAL BACKGROUND

In November 2008, the voters in Washoe County passed ballot question RTC-5 which proposed a measure to ensure a portion of the funding necessary to implement the 2035 Regional Transportation Plan (RTP). This was to be done by adjusting or "indexing" fuel taxes annually to recapture the purchasing power being lost by these revenues due to inflation in the cost of street and highway construction. The RTC-5 funding measure changed the existing indexing basis from the Consumer Price Index (CPI) to the Producer Price Index (PPI). It also recaptured the lost purchasing power on the federal and state fuel taxes being paid in Washoe County by indexing the federal and state taxes on gas, alternative fuels, and diesel. The Nevada State Legislature approved enabling legislation for RTC-5 with the passage of SB 201, and the Washoe County Commission subsequently enacted the implementing ordinance in August 2009. While the enabling legislation, codified in NRS 373.067, specifies that the annual inflationary adjustments will occur automatically, subsection 2b requires the Regional Transportation Commission:

> (1) To review, at a public meeting conducted after the provision of public notice and before the effective date of each annual increase imposed by the ordinance:
>
> I. The amount of that increase and the accuracy of its calculation;
> II. The amounts of any annual increases imposed by the ordinance in previous years and the revenue collected pursuant to those increases;
> III. Any improvements to the regional system of transportation resulting from revenue collected pursuant to any annual increases imposed by the ordinance in previous years; and
> IV. Any other information relevant to the effect of the annual increases on the public; and;
>
> (2) To submit to the board any information the commission receives suggesting that the annual increase should be adjusted.

To conform with the July 1 to June 30 fiscal year and budgetary requirements of the State, as well as the amount of administrative lead time required by the Department of Motor Vehicles to make adjustments in the fuel tax rates, reports are submitted to the RTC Board for the rate increases in April to be effective July 1. Collections of the PPI indexed fuel taxes began on January 1, 2010, and the local governments and the RTC received the first proceeds in March 2010.

The amount of RTC PPI indexed funds collected through FY 2019 were:

PPI Revenues

Fiscal Year	RTC[2]	Local Governments
2019	$ 67,780,011	$ 7,824,459
2018	62,519,649	7,300,669
2017	56,953,775	6,629,077
2016	50,409,644	5,827,176
2015	41,564,035	4,850,891
2014	32,534,203	3,804,079
2013	24,740,803	2,888,994
2012	18,075,929	2,092,874
2011	12,288,597	1,419,438
2010[1]	3,241,425	374,925

(1) Effective January 2010
(2) RTC amounts reported in the FY13 Indexed Fuel Report to the Board of Commissioners included CPI indexed amounts in the reported revenues. This report excludes CPI indexed revenues which were no longer collected after implementation of the PPI index in January 2010.

The estimate for PPI revenues for FY 2019 is $72,505,117.

Inflationary Adjustment Effective July 1, 2020

On July 1, 2020, an inflationary adjustment of 2.10% will be made to the motor vehicle fuel tax rates in Washoe County, increasing rates on a cents per gallon basis as follows:

Fuel Type	RTC	Local Governments	Total
Gasoline/ Gasohol	1.5987	0.2513	1.8499
Diesel	1.7582	-	1.7582
LPG	1.3587	-	1.3587
CNG	1.3250	-	1.3250
A55[1]	0.6406	-	0.6406

(1) Emulsion of water based hydrocarbon

Attachment A identifies the rolling ten-year average PPI rates from the U.S. Bureau of Labor Statistics associated with the fuel taxes for local governments (NRS 365) and the RTC fuel tax (NRS 373).

It should be noted that in July of 2010, the Bureau of Labor Statistics modified the publication structure for Material and Supply inputs to the Construction Industry. As a result, the PPI index for Highway and Street Construction (BHWY code) was discontinued and replaced with the PPI index for Other Nonresidential Construction (WPUIP2312301 code). The RTC Board of Commissioners approved a change to the new index in March 2011.

Adjustments from Previous Years

PPI Indexing. On January 1, 2010, in order to transition to the PPI index, the CPI indexed amount was frozen at the rate in effect as of July 1, 2008 (FY 2009), and the new indexing provisions calculated on the PPI rate were implemented on the local, state and federal tax rates for gasoline, and state and federal tax rates for diesel and other special fuels. The annual incremental changes in Motor Vehicle Fuel Tax due to PPI increases in Washoe County follow:

Annual Increases in Cents per Gallon

		Gasoline/Gasohol			Diesel	LPG	CNG	A55[1]
Fiscal Year	10 Yr. Avg. PPI	RTC	Local Govt's.	Washoe County Total	RTC Only			
2021	2.10%	1.5987	0.2513	1.8499	1.7582	1.3587	1.3250	0.6406
2020	1.30%	0.9769	0.1535	1.1305	1.0744	0.8303	0.8097	0.3915
2019	1.97%	1.4518	0.2281	1.6800	1.5968	1.2339	1.2033	0.5818
2018	2.15%	1.5511	0.2438	1.7949	1.7060	1.3183	1.2856	0.6215
2017	3.43%	2.3925	0.3760	2.7686	2.6314	2.0334	1.9830	0.9587
2016	5.25%	3.4794	0.5468	4.0262	3.8267	2.9571	2.8838	1.3942
2015	6.05%	3.7808	0.5942	4.3750	4.1582	3.2134	3.1336	1.5150
2014	6.22%	3.6595	0.5751	4.2346	4.0247	3.1102	3.0330	1.4663
2013	5.81%	3.2305	0.5077	3.7382	3.5530	2.7457	2.6775	1.2945
2012	4.98%	2.6377	0.4146	3.0522	2.9010	2.2418	2.1862	1.0569
Total		22.1834	3.4864	25.6697	24.3977	18.8539	18.3860	8.8889

(1) Emulsion of water based hyrdocarbon

Improvements to the Regional Road System (RRS)

The total estimated amount of revenue from indexed fuel taxes distributed to the RTC including CPI since inception is $405.2 million through December 2019. This entire amount has been programmed along with other fuel tax revenues for project implementation and as the pledged revenue for debt service for four revenue bond sales totaling $435 million that were implemented to fund road projects. Indexing serves as the main instrument for repayment of the debt service. As of August 2016, all the proceeds from the revenue bond sales have been expended and the RTC is back to primarily funding road projects with indexed fuel tax revenues. A complete list of bond funded projects can be found in attachment B and FY 2019 fuel tax funded projects are listed in attachment C.

Information Received from the Public Regarding the July 1, 2020 Adjustment

No comments have been received at this point in time.

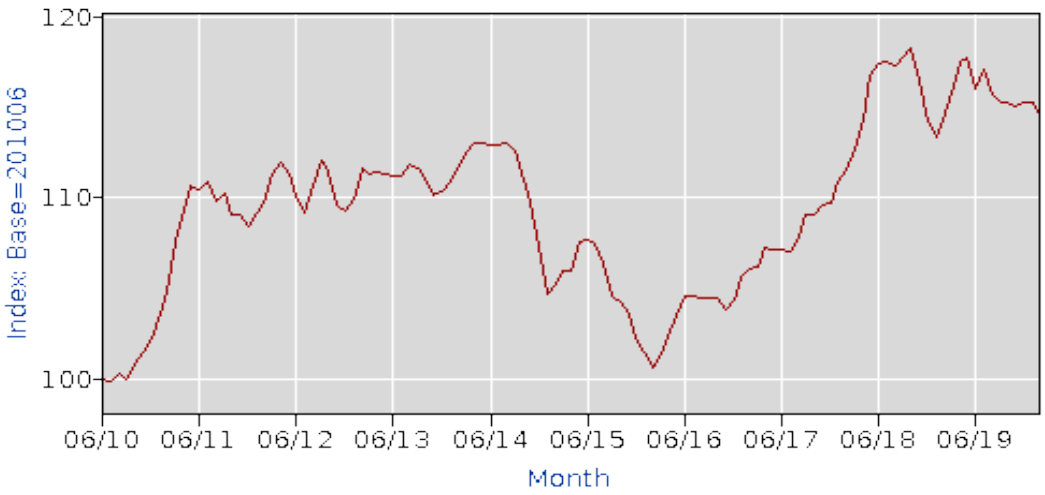
Attachments

PRODUCER PRICE INDEX
AVERAGE ANNUAL CHANGE
ROLLING 10 YEARS
Source: Bureau of Labor Statistics, BONS Index

10-Year Range	2010-2019
	5.8%
	8.7%
	1.7%
	0.5%
	0.5%
	-5.6%
	-2.1%
	4.1%
	7.1%
	0.2%
Rolling Avg	**2.10%**

Producers Price Index-Commodities

Series Id: WPUIP2312301 - Other Nonresidential Construction, goods



Attachment A

RTC 5 BOND PROJECTS
EXPENDITURES LIFE-TO-DATE BY BOND ISSUE

Bond Funded Projects As of December 31,2016

Project Number		Project Termini		Total
Multi	Pre Bond Project expenditures 1/26/09 - 6/26/09		$	676,250.00
212025	Bravo	Mt. Limbo / Ramsey		868,552.43
242011	Bridge St. / Caughlin Pkwy	Bridge - RRX/3rd; Caughlin - Longknife/McCarran		1,082,999.02
212035	Coliseum / Yori	Peckham / Gentry		760,551.79
222013	E. Glendale	McCarran / RR Xng		1,226,316.58
222020	E. Lincoln	Stanford / Howard		927,254.61
212021	Echo Avenue	Mt. Bismark / Mt. Limbo		982,740.74
222008	El Rancho	McCarran / Sullivan		1,341,018.76
212029	Evans / Highland	Jodi / Enterprise		1,059,969.42
542023	FY11 Bike/Ped Improvements	All jurisdictions		168,526.98
532010	Geiger Grade Realignment			930,831.03
542021	I-580 Northbound Widening			20,000,000.00
222016	International Place / Icehouse Rd.	Glendale / Cul de Sac		454,427.71
244001	Intersection Corrective Maintenance	All		1,465,919.94
244002	Intersection Corrective Maintenance 2	All jurisdictions		1,247,536.73
244003	Intersection Corrective Maintenance 3	All jurisdictions		908,782.27
222017	Larkin / Madison	Greg / Greg		709,203.39
212024	Las Brisas	McCarran / Brittania		810,415.97
512009	Lemmon Drive	Memorial / US395		247,890.39
222009	Lillard	Brierly / Prater		1,177,260.90
222021	Linda / Southern	Coney Island / Glendale / Greg / Freeport		1,201,904.97
212023	Longley	Houston / Rock		1,068,477.12
222015	Loop / Saloman	Vista / End of Pavement		629,758.51
212036	Mae Anne	Sharlands / Ave. de Landa		1,578,105.21
212015	Mae Anne	Ave. de Landa / Ambassador		641,500.14
212005	Mae Anne Ave. Rehab.	Ave. de Landa / McCarran		34,040.09
212047	Mayberrry	Truckee River / Canyon		2,346,436.27
212034	Mayberry	McCarran / California		2,628,315.23
540102	McCarran Sidewalk	Prater / Lincoln		149,880.50
212009	Military Road	Lemmon / Echo		2,780,321.83
212010	Mill Street	Rock / McCarran		1,853,832.71
532005	Moana Lane Widening	S. Virginia / Neil Road		35,600,521.94
212017	Moya Blvd	Redrock / Echo		2,143,451.90
212026	Mt. Rose	Arlington / Plumas		472,072.02
212011	N. Virginia	4th / 5th / Maple / 8th		2,222,151.95
212038	Neil / Gentry / Terminal	Moana / Plumb		28,733.80
212048	Neil / Gentry / Terminal			367,661.85
221001	Nichols	Victorian / Howard		927,641.90
212012	Parr Boulevard	N. Virginia / US 395		2,469,679.82
212030	Parr Circle / Catron Drive	Parr / Parr		1,266,489.18
212044	Peckham	S. Virginia / Kietzke		774,380.46
212013	Pembroke	McCarran / Boynton Bridge		1,716,870.84
532008	Plumb / Harvard	Dual left turn lane		168,196.21
212045	Plumb Lane	Ferris / McCarran		6,675,556.78
532012	Plumb/Terminal ITS	Plumb / Harvard; Plumb/Terminal; Terminal / Mill		289,717.07
540082	Pyramid / McCarran	Intersection		20,570.64
540082	Pyramid / US395 Connector			69,319.56
212022	Ralston / Fifth	2nd / Keystone		1,854,752.80
343010	Regional Road Maint. Patching 10	All jurisdictions		1,213.00
343011	Regional Road Maint. Slurry Seal 10	All jurisdictions		284,974.49
343014	Reg'l Road Maint. Crack Seal 11	All jurisdictions		124,043.11
343017	Reg'l Road Maint. Crack Seal 12	All jurisdictions		559,199.20
343012	Reg'l Road Maint. Patching 11	All		779,063.19
343016	Reg'l Road Maint. Patching 12	All jurisdictions		610,639.56
343013	Reg'l Road Maint. Slurry Seal 11	All		5,261,559.60
343015	Reg'l Road Maint. Slurry Seal 12	All jurisdictions		3,265,362.24
212006	Reno Consolidated 0901	Holcomb / Vassar		1,486,366.81
212016	Reno Consolidated 0902	Matley / Automotive / Louise		1,920,048.49
212018	Reno Consolidated 1001	Crummer/Green Acres/Huffaker		785,000.04
212028	Reno Consolidated 1002	Patriot / Bluestone / Offenhauser / Portman		1,866,519.46
212031	Reno Consolidated 1003	Lakeside / Manzanita		3,168,984.84
212039	Reno Consolidated 1004	Ampere / Reactor / Edison / Brookside / Energy Way		4,370,039.33
212040	Reno Consolidated 1005	Mira Loma / Barron / Louie		863,131.10
212032	Reno Consolidated 1101	1st / State / Washington		1,779,397.81
212033	Reno Consolidated 1102	Brinkby / Lymberry / Grove / Linden		2,850,741.31
212041	Reno Consolidated 1103	Gould / Lewis / Prosperity / Sunshine / Kuenzli		1,707,326.79

Attachment B

RTC 5 BOND PROJECTS
EXPENDITURES LIFE-TO-DATE BY BOND ISSUE

Bond Funded Projects As of December 31,2016

Project Number		Project Termini	Total
542019	Reno/Sparks Bike Ped Plan	All jurisdictions	53,697.61
212042	Ridgeview	Plumas / Lakeside	358,493.10
510072	Robb Drive	I80 / Sharlands	117,182.91
222019	Rock Blvd	Glendale / Hymer	841,146.52
532011	SE Connector Phase I	Greg St/Clean Water Way	88,184,041.73
532013	SE Connector Phase II	Clean Water Way/South Meadows	120,524,435.00
530042	SE Connector Plan Alignment		202,034.91
542013	SE McCarran Study	Longley / Greg	96,307.07
542017	SE McCarran Widening Const.	Longley / Greg	39,109,202.14
212027	Security Circle	N. Virginia / N. Virginia	835,226.70
212037	Silver Lake	Stead / Sky Vista	764,518.22
212043	Socrates	McCarran / Sienna	1,914,449.46
222010	Sparks Consolidated 0902	Deming Way / Bergin / Franklin	1,152,135.55
220082	Sparks Consolidated 0903	Freeport / Steneri	2,231,867.08
222011	Sparks Consolidated 1001	Crane / Frazer / Hymer / Pacific / Pittman / Shaber / 15th-21st	5,008,735.59
222022	Sparks Consolidated 1101	Marietta / Snider	1,720,509.21
222025	Sparks Consolidated 1201	Greenbrae/ Merchant	1,724,834.89
222018	Spice Island / United Circle	Greg / Franklin - Spice Island / Spice Island	2,395,074.04
212019	Summit Ridge / Sky Mountain	W. McCarran / 4th	1,545,321.76
232002	Tanburg	7th / Mineral	219,915.75
212020	Taylor Street	Virginia / Kietzke	33,557.58
542025	TE Spot Intersection Project 11/12	All jurisdictions	1,309,401.64
542020	TE Spot Intersection Project 9/10	All jurisdictions	1,354,736.10
5328	US395 / Meadowood Interchange		7,652,863.09
532009	Veterans Parkway / Geiger Grade	Roundabout	5,375,728.77
222012	Victorian Phase II	Pyramid / McCarran	3,351,267.23
522008	Vista / Baring	NB Left turn lane	461,632.80
522007	Vista Boulevard	Los Altos / Wingfield Springs	8,603,385.79
212014	W. 7th Street	Madera Ct. / McCarran	809,705.94
212046	W. Huffaker	Del Monte / Spring Leaf	909,659.64
222014	York	18th / 4th	1,642,597.78
	TOTAL		$ 441,214,065.93

Regional Transportation Commission
Reno, Sparks and Washoe County, Nevada

SCHEDULE OF CONSTRUCTION PROJECT EXPENDITURES
GENERAL FUND
(Regional Streets and Highways Fund)

Year ended June 30, 2019

	Right-of-way Acquisition	Engineering and Inspection	Construction	Total
All Jurisdictions				
2017 Preventive Maintenance	$ -	$ 23,225	$ 732,819	$ 756,044
2018 Preventive Maintenance	-	382,205	5,377,928	5,760,133
2019 Preventive Maintenance	-	363,616	1,096,267	1,459,883
Bus Stop 19-01	-	80,363	-	80,363
Green Bicycle/Stamps	-	-	171,905	171,905
Traffic Management 1/2A/2B	-	198,009	631,941	829,950
	-	1,047,418	8,010,860	9,058,278
City of Reno				
4th and Prater corridor improvement - Evans/Galetti	23,121	364,618	2,945,769	3,333,508
Arlington Bridges	-	89,971	-	89,971
Bicycle and Pedestrian Improvement(2018) - Keystone/California	30,020	25,231	808,467	863,718
Bicycle and Pedestrian Improvement(2018) - Mill/I580/McCarran	-	152,327	-	152,327
Oddie/Wells Corridor Multi-Modal	-	342,730	-	342,730
Reno Consolidated 19-01 - Sutro/1st/Lake/State St.	-	291,379	-	291,379
Reno Consolidated 19-02 - North Hills/ Hunter Lake/Sky Vista Dr.	-	201,324	-	201,324
Reno Consolidated 19-03 - Sierra Highlands/Colberet	-	151,048	-	151,048
Reno Sparks Indian Colony Riverside Pathway	-	113,314	-	113,314
Southeast Connector phase 2 - Clean Water/S. Meadows	(1,015,312) [1]	1,209,369	2,609,532	2,803,589
Sun Valley Corridor Multi-Modal	-	657,444	-	657,444
Virginia St/ Midtown/ UNR	1,894,883	2,674,957	13,576,174	18,146,014
	932,712	6,273,712	19,939,942	27,146,366
City of Sparks				
4th/Prater corridor improvement - Galetti/Pyramid	23,120	364,619	2,945,770	3,333,509
Clean Water Way - McCarran/Treatment Plant	-	99,423	1,520,287	1,619,710
Oddie/Wells Corridor Multi-Modal	-	342,730	-	342,730
Sparks Consolidated 19-01 - 15th St.	-	211,477	-	211,477
	23,120	1,018,249	4,466,057	5,507,426
Washoe County				
Southeast Connector phase 2 - Clean Water/S. Meadows	(253,828) [1]	302,342	652,383	700,897
	(253,828)	302,342	652,383	700,897
NV Department of Transportation				
Pyramid/McCarran intersection improvements	-	36,645	61,954	98,599
Pyramid Hwy./US 395 connector	-	51,148	-	51,148
	-	87,793	61,954	149,747
Total All Projects	$ 702,004 [1]	$ 8,729,514	$ 33,131,196	$ 42,562,714

[1] Note: the negative balance was due to the water right paid and reclassified to fixed assets in FY 2019.

April 17, 2020 **AGENDA ITEM 3.9**

TO: Regional Transportation Commission

FROM: Stephanie Haddock, CGFM
Director of Finance/CFO

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: FY 2021 Tentative Budget

RECOMMENDATION

Acknowledge receipt the Fiscal Year 2021 RTC Tentative Budget.

SUMMARY

The Fiscal Year (FY) 2021 Regional Transportation Commission (RTC) Tentative Budget was developed in consideration of pending economic and financial impacts of COVID-19 in Washoe County. The most substantial financial impacts from COVID-19 will affect RTC's current FY 2020. RTC's Final FY 2021 budget will be presented for approval at the May 22, 2020, meeting and will incorporate any changes to financial projections based on updated economic information.

FISCAL IMPACT

The FY 2021 Tentative Budget amount, not including depreciation, is $237,232,908.

PREVIOUS BOARD ACTIONS

May 20, 2019 Approval of the Fiscal Year 2020 RTC Final Budget.

ADDITIONAL BACKGROUND

The FY 2021 Tentative Budget will continue RTC's multi-year road program and transportation services in the community.

The FY 2021 Tentative Budget consists of three major programs: the Street and Highway Program, the Public Transportation Program, and the Metropolitan Planning Organization (MPO)/Transportation Planning Program. The Street and Highway Program consists of pavement preservation and mobility projects, capacity improvement projects and RRIF cash and offset

agreement projects. The Public Transportation Program consists of RTC RIDE, RTC ACCESS, RTC INTERCITY, RTC FlexRide, TART, and Van Pools. The MPO/Transportation Planning Program consists of federally mandated planning activities and other essential planning activities required to guide and support the Public Transportation program and Street and Highway Programs.

Street and Highway Program:

As of January 2020, fuel tax revenue increased 4.1% or $2.1 million based on indexed fuel tax and a 1.6% increase in gallons sold over the prior year. FY 2020 estimated fuel tax revenue has been reduced by 1.9% or $1.8 million based on a projected 30% reduction gallons sold for March through May 2020 due to increased COVID-19 telecommuting. FY 2020 total fuel tax revenue increase is estimated at 4% or $3.4 million. FY 2021 budgeted fuel tax revenues are a 6% increase or $5.5 million over FY 2020 estimate due to the continued implementation of indexing. FY 2021 PPI index 2.1% adjustment results in a 1.85 cent increase Washoe County fuel tax rates. FY 2021 gallons sold are projected to increase 1.3% over FY 2020. FY 2021 RRIF cash revenues are budgeted at $5 million as new development construction continues through COVID-19. However, RRIF cash revenues remain lower than historical levels due to the current availability impact fee waivers.

Road construction projects are a substantial component of the RTC budget. Pavement preservation, mobility, and capacity projects are budgeted at $112 million for FY 2021. In FY 2020, RTC completed a current refunding of its Series 2010B and 2010C fuel tax bonds resulting in $1.9 million in annual debt service savings for FY 2021. The total Street and Highway Program expenditures for FY 2021 including debt service are $150 million.

Public Transportation Program:

As of January 2020, sales tax revenue increased 9.2% or $1.7 million over prior year. Due to COVID-19, FY 2020 estimated sales tax revenue has been reduced 3.5% or $1 million. FY 2020 total sales tax revenue is estimated at 2% or $700,000. FY 2021 budgeted sales tax revenue has been lowered from a 4% increase to a 3% increase in anticipation of a minor recession as the local economy rebounds from COVID-19. FY 2020 ridership for RTC RIDE and RTC ACCESS have decreased approximately 50% and 65% respectively resulting in significant reductions in passenger fare revenues. FY 2020 RTC RIDE fare revenues have been reduced 32% or $1.6 million and RTC ACCESS fare revenues have been reduced 18% or $78,000. FY 2021 RTC RIDE and RTC ACCESS fare revenues are budgeted to increase 21% or 810,000 over FY 2020 due to the implementation of Virginia Street to UNR extension BRT service, May 2020 service changes, and additional microtransit demonstration services. FY 2020 estimates and FY 2021 budget include allocated portions of the total $20 million RTC will receive from the CARES federal stimulus package. This stimulus funding will supplement RTC's lost Sales tax and passenger fare revenues, as well as, fund additional expenditures related to COVID-19.

FY 2021 RTC RIDE operating costs at $37 million are increasing 1.9% over FY 2020 due to increased contractor costs. RTC ACCESS operating costs at $12.5 million are increasing 5% over FY 2020 primarily due FlexRide (microtransit) services, which are also operated by the RTC ACCESS turnkey contractor. FY 2020 estimates and FY 2021 budget include anticipated increases in operating costs due to COVID-19.

Transit capital projects are critical to the success of the Public Transportation Program, but have a financial impact on local funds required to match the federal funding. Capital projects funded by federal grants include: 29 replacement RIDE buses, 2 Virginia Street BRT electric buses, charging stations, BRT stations, bus shelters and pad improvements, support vehicles, computer hardware and software, and facilities upgrades. The total public transportation capital expenditures for the FY 2021 are $33 million.

Total program expenses for the Public Transportation Program are $83 million for FY 2021.

Metropolitan Planning Organization (MPO) Program:

Total program expenses for the MPO Program are $3.9 million for FY 2021. The program includes the following studies: Regional Transportation Plan (RTP) update, Mobility Study, Fleet Electrification Study, On Board Transit Study and Eagle Canyon Study.

Attachments

REGIONAL TRANSPORTATION COMMISSION
ALL FUNDS
THREE YEAR COMPARISON OF REVENUES BY SOURCE
TENTATIVE BUDGET
FOR FISCAL YEAR ENDING JUNE 30, 2021

	FISCAL YEAR 2019 ACTUAL	FISCAL YEAR 2020 BUDGET	FISCAL YEAR 2020 ESTIMATED	FISCAL YEAR 2021 BUDGET
REVENUES & SOURCES:				
Motor Vehicle Fuel Tax	$ 86,738,311	$ 91,878,987	$ 90,118,691	$ 95,637,296
Public Transportation Sales Tax	31,924,717	33,620,896	32,563,211	33,540,108
Regional Road Impact Fee (RRIF)	4,830,616	5,000,000	6,000,000	5,000,000
RRIF Offset Agreements	-	11,000,000	100,000	15,600,120
Passenger Fares	5,483,761	5,875,855	3,795,486	4,605,135
Advertising	261,659	250,000	200,000	250,000
Lease Income	356,704	399,972	400,035	400,793
Investment Income	3,811,223	1,838,000	1,809,000	1,850,000
Federal Reimbursements	24,074,796	65,081,207	48,884,345	56,018,697
N.D.O.T.	3,162,964	2,516,237	2,178,500	2,625,000
Asset Proceeds	37,600	25,000	5,000	25,000
Misc Reimb/Operating Assist.	8,813,881	4,104,200	1,902,289	1,824,300
TOTAL REVENUES	169,496,232	221,590,354	187,956,557	217,376,449
Beginning Cash & Fund Balance	116,909,734	141,779,866	141,529,336	119,223,597
TOTAL SOURCES AVAILABLE	$ 286,405,966	$ 363,370,221	$ 329,485,893	$ 336,600,046

REGIONAL TRANSPORTATION COMMISSION
ALL FUNDS
THREE YEAR COMPARISON OF EXPENDITURES BY FUNCTION
TENTATIVE BUDGET
FOR FISCAL YEAR ENDING JUNE 30, 2021

	FISCAL YEAR 2019 ACTUAL	FISCAL YEAR 2020 BUDGET	FISCAL YEAR 2020 ESTIMATED	FISCAL YEAR 2021 BUDGET
EXPENDITURES & USES:				
Preservation & Mobility Projects	$ 45,957,456	$ 75,944,383	$ 85,730,718	$ 76,065,704
Capacity Improvements Projects	7,211,175	25,466,049	21,442,894	35,689,986
RRIF Offset Agreements	-	11,000,000	100,000	15,600,120
Other Finan. Uses - Debt Service	21,792,625	24,608,602	24,913,830	23,007,727
RTC RIDE - Operating	32,037,960	36,808,670	36,782,983	37,441,196
RTC RIDE - Capital	15,002,237	30,718,839	23,118,401	32,377,023
Paratransit - Operating	8,659,317	10,546,193	11,910,955	12,497,476
Paratransit - Capital	281,179	2,880,000	2,945,494	689,000
MPO - Operating	2,653,323	4,683,913	3,060,436	3,864,676
MPO - Capital	32,875	-	-	-
TOTAL EXPENDITURES	133,628,147	222,656,649	210,005,711	237,232,908
ENDING CASH BALANCE:				
Restricted/Committed/Assigned	152,777,819	140,713,572	119,480,182	99,367,138
TOTAL ENDING CASH/FUND BALANCE	152,777,819	140,713,572	119,480,182	99,367,138
TOTAL USES	$ 286,405,966	$ 363,370,221	$ 329,485,893	$ 336,600,046

Note: Depreciation is not included in the total expenditure column.
Total expenditures including depreciation of $9,000,000
are: $246,232,908

REGIONAL TRANSPORTATION COMMISSION
FY 2021 CAPITAL & GRANT BUDGET
FOR FISCAL YEAR ENDING JUNE 30, 2021

PROJECT DESCRIPTION	FEDERAL AMOUNT	LOCAL MATCH	TOTAL BUDGET AMOUNT
RTC RIDE - REPLACEMENT BUSES (29)	$ 22,990,000	$ 1,210,000	$ 24,200,000
RTC RIDE - VIRGINIA STREET BUSES (2)	$ 1,145,500	$ 928,601	$ 2,074,101
ELECTRIC BUS CHARGERS AND INSTALLATION	$ 175,000	$ 175,000	$ 350,000
TERMINAL WAY IMPROVEMENTS	$ 2,580,000	$ 645,000	$ 3,225,000
VILLANOVA UPGRADES (REPLACEMENTS)	$ 460,000	$ 115,000	$ 575,000
SUTRO GENERATOR & FACILITIES UPGRADE	$ 344,000	$ 86,000	$ 430,000
TRANSIT CENTER IMPROVEMENTS	$ 40,000	$ 10,000	$ 50,000
PARKLANE TRANSIT STATION	$ 440,000	$ 110,000	$ 550,000
PEPPERMILL TRANSIT STATION	$ 160,000	$ 40,000	$ 200,000
BUS SHELTERS, ADA IMPROVEMENTS, STOP AMENITIES	$ 348,186	$ 87,046	$ 435,232
COMPUTER HARDWARE & SOFTWARE	$ 161,352	$ 40,338	$ 201,690
CNG COMPRESSOR	$ 152,000	$ 38,000	$ 190,000
SHOP EQUIPMENT	$ 56,000	$ 14,000	$ 70,000
SUSTAINABILITY PROJECTS	$ 120,000	$ 30,000	$ 150,000
NON-REVENUE SUPPORT VEHICLES (2)	$ 184,000	$ 46,000	$ 230,000
RTC RIDE INFOTRANSIT & SECURITY MONITORING EQUIPMENT	$ 108,000	$ 27,000	$ 135,000
TOTAL	**$ 29,464,038**	**$ 3,601,985**	**$ 33,066,023**

REGIONAL TRANSPORTATION COMMISSION
STREET AND HIGHWAY PROGRAM
TENTATIVE BUDGET
FOR FISCAL YEAR ENDING JUNE 30, 2021

	FISCAL YEAR 2019 ACTUAL	FISCAL YEAR 2020 BUDGET	FISCAL YEAR 2020 ESTIMATED	FISCAL YEAR 2021 BUDGET
REVENUES & SOURCES:				
Motor Vehicle Fuel Tax	$ 86,738,311	$ 91,878,987	$ 90,118,691	$ 95,637,296
Sales Tax	5,225,266	2,801,741	2,713,601	2,795,009
Regional Impact Fee - Cash	4,830,616	5,000,000	6,000,000	5,000,000
Regional Impact Fee - CCFEA	-	11,000,000	100,000	15,600,120
Federal Funding	5,338,867	18,726,905	16,103,128	10,913,079
Project Reimbursements	7,627,507	4,005,000	1,500,000	1,725,100
Investment Income	3,200,940	1,610,000	1,550,000	1,510,000
Miscellaneous Reimbursements	987,698	51,000	51,000	51,000
Other Financing Sources - Bond Proceeds	-	-	269,589	-
TOTAL REVENUES	**113,949,205**	**135,073,633**	**118,406,009**	**133,231,604**
Operating Transfers In	27,586,598	25,108,552	25,108,602	23,507,727
Payment to refunded bond escrow agent	(19,632,000)	-	(11,219,329)	-
TOTAL OPERATING TRANSFERS	**121,903,803**	**160,182,185**	**132,295,282**	**156,739,331**
Beginning Cash/Fund Balance	114,777,825	120,595,190	132,914,620	106,467,273
TOTAL SOURCES	**$ 236,681,628**	**$ 280,777,375**	**$ 265,209,902**	**$ 263,206,604**
EXPENDITURES & USES:				
Preservation & Mobility Projects/Other	$ 44,415,307	$ 75,944,383	$ 85,730,718	$ 76,065,704
Capacity Projects/Other	7,211,175	25,466,049	21,442,894	35,689,986
RRIF Offset Agreements	-	11,000,000	100,000	15,600,120
Debt Service	21,792,625	24,608,602	24,913,830	23,007,727
Capital expenses	1,542,149	-	-	-
TOTAL EXPENDITURES	**74,961,256**	**137,019,034**	**132,187,442**	**150,363,536**
Operating Transfers Out	28,776,598	26,298,552	26,298,602	25,632,727
TOTAL EXPENDITURES AND OPER. TRANSFERS OUT	**103,737,854**	**163,317,586**	**158,486,044**	**175,996,263**
ENDING CASH/FUND BALANCE:				
Restricted for Capacity Projects	76,027,685	26,867,264	17,770,790	15,929,036
Restricted for Preservation & Mobility Projects	25,097,746	58,137,255	68,309,281	50,337,519
Restricted for Debt Service	31,818,343	32,455,270	20,643,786	20,943,786
TOTAL ENDING CASH/FUND BALANCE	**132,943,774**	**117,459,789**	**106,723,858**	**87,210,340**
TOTAL USES	**$ 236,681,628**	**$ 280,777,375**	**$ 265,209,902**	**$ 263,206,604**

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REGIONAL TRANSPORTATION COMMISSION
PUBLIC TRANSIT & PARATRANSIT
TENTATIVE BUDGET
FOR FISCAL YEAR ENDING JUNE 30, 2021

	FISCAL YEAR 2019 ACTUAL	FISCAL YEAR 2020 BUDGET	FISCAL YEAR 2020 ESTIMATED	FISCAL YEAR 2021 BUDGET
REVENUES & SOURCES:				
Public Transportation Sales Tax	$ 26,699,451	$ 30,819,155	$ 29,849,610	$ 30,745,099
Passenger Revenues	5,483,761	5,875,855	3,795,486	4,605,135
Investment Income	594,805	220,000	254,000	330,000
Advertising	261,659	250,000	200,000	250,000
FTA - 5339 (Discretionary)	1,160,429	1,583,850	100,000	2,400,000
FTA - 5307 & CMAQ	8,898,255	25,305,940	15,758,468	34,882,978
FTA - 5309 (Discretionary)	-	10,520,500	10,679,944	1,320,500
FTA - 5310	302,191	515,776	382,221	369,817
FTA - Preventive Maint/ADA Paratransit Svc	7,399,298	5,200,000	4,826,700	4,897,323
NDOT - ETR/TA Grants/Medicaid	3,162,964	2,516,237	2,178,500	2,625,000
INTERCITY (CAMPO)	47,713	42,000	60,000	42,000
Miscellaneous Reimbursements	150,963	5,200	21,200	5,200
Asset Proceeds	37,600	25,000	5,000	25,000
Lease Income	356,704	399,972	400,035	400,793
TOTAL REVENUES	**54,555,793**	**83,279,486**	**68,511,164**	**82,898,845**
Beginning Cash/Fund Balance	20,586,557	20,986,391	18,951,657	12,494,989
TOTAL SOURCES	**$ 75,142,350**	**$ 104,265,877**	**$ 87,462,821**	**$ 95,393,833**
EXPENDITURES & USES:				
OPERATING EXPENDITURES				
Public Transit - RTC RIDE	$ 32,037,960	$ 36,808,670	$ 36,782,983	$ 37,441,196
Paratransit - RTC ACCESS	8,659,317	10,546,193	11,910,955	12,497,476
TOTAL OPERATING EXPENDITURES	**40,697,277**	**47,354,863**	**48,693,938**	**49,938,673**
NON-OPERATING EXPENDITURES				
Capital Outlay - Public Transit - RTC RIDE	15,002,237	30,718,839	23,118,401	32,377,023
Capital Outlay - Paratransit - RTC ACCESS	281,179	2,880,000	2,945,494	689,000
TOTAL NON-OPER. EXPENDITURES	**15,283,416**	**33,598,839**	**26,063,895**	**33,066,023**
TOTAL EXPENDITURES	**55,980,693**	**80,953,702**	**74,757,832**	**83,004,696**
Operating Transfers Out	210,000	210,000	210,000	375,000
TOTAL EXPENDITURES AND OPER. TRANSFERS OUT	**56,190,693**	**81,163,702**	**74,967,832**	**83,379,696**
ENDING CASH/FUND BALANCE:				
Restricted for Federal Grant Match	2,500,000	3,500,000	3,500,000	4,000,000
Restricted for Self Insurance	250,000	250,000	250,000	250,000
Restricted for Transit Operations	16,201,657	19,352,175	8,744,989	7,764,137
TOTAL ENDING CASH/FUND BALANCE	**18,951,657**	**23,102,175**	**12,494,989**	**12,014,137**
TOTAL USES	**$ 75,142,350**	**$ 104,265,877**	**$ 87,462,821**	**$ 95,393,833**

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REGIONAL TRANSPORTATION COMMISSION

MPO

TENTATIVE BUDGET

FOR FISCAL YEAR ENDING JUNE 30, 2021

	FISCAL YEAR 2019 ACTUAL	FISCAL YEAR 2020 BUDGET	FISCAL YEAR 2020 ESTIMATED	FISCAL YEAR 2021 BUDGET
REVENUES & SOURCES:				
Investment Income	$ 15,478	$ 8,000	$ 5,000	$ 10,000
FHWA - Planning	975,756	3,228,236	1,033,884	1,235,000
Miscellaneous	-	1,000	500	1,000
Asset Proceeds	-	-	-	-
TOTAL REVENUES	**991,234**	**3,237,236**	**1,039,384**	**1,246,000**
Operating Transfers In - Sales Tax	210,000	210,000	210,000	375,000
Operating Transfers In - Fuel Tax	1,190,000	1,190,000	1,190,000	2,125,000
TOTAL REVENUES & OPERATING TRANSFERS	**2,391,234**	**4,637,236**	**2,439,384**	**3,746,000**
Beginning Cash/Fund Balance	1,177,352	198,285	882,388	261,336
TOTAL SOURCES	**$ 3,568,586**	**$ 4,835,521**	**$ 3,321,772**	**$ 4,007,336**
EXPENDITURES & USES:				
OPERATING EXPENDITURES				
Transportation Services - MPO	$ 2,653,323	$ 4,683,913	$ 3,060,436	$ 3,864,676
TOTAL OPERATING EXPENDITURES	**2,653,323**	**4,683,913**	**3,060,436**	**3,864,676**
NON-OPERATING EXPENDITURES				
Capital Outlay - MPO	32,875	-	-	-
TOTAL NON-OPER. EXPENDITURES	**32,875**	**-**	**-**	**-**
TOTAL EXPENDITURES	**2,686,198**	**4,683,913**	**3,060,436**	**3,864,676**
ENDING CASH/FUND BALANCE:				
Restricted for Federal Grant Match	882,388	151,608.25	261,336	142,660
TOTAL ENDING CASH/FUND BALANCE	**882,388**	**151,608**	**261,336**	**142,660**
TOTAL USES	**$ 3,568,586**	**$ 4,835,521**	**$ 3,321,772**	**$ 4,007,336**

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REGIONAL TRANSPORTATION COMMISSION

- **TENTATIVE BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2021**
- **REPORTED BY FUND TOTALS BY LINE ITEMS**

*Items Include Agency Wide Funds

ACCT. #	DESCRIPTION	*R.R.I.F. PROGRAM	BOND RESERVE	*FUEL TAX PROGRAM	*PUBLIC TRANSIT	*PARA TRANSIT	* MPO	*TOTAL
	LABOR							
501-0-01	LABOR	$183,081	$0	$3,505,224	$1,341,511	$362,899	$664,325	$6,057,040
501-0-03	OVERTIME	0	0	5,197	17,523	3,850	0	26,571
502-0-02	BONUSES/TOP OF SCALE DIFFERENTIAL	0	0	240,309	0	0	0	240,309
502-0-09	SICK LEAVE	0	0	400,223	2,539	0	0	402,762
502-0-10	HOLIDAY	0	0	292,601	3,580	0	0	296,181
502-0-11	VACATION	0	0	647,164	5,533	0	0	652,697
502-0-12	OTHER PAID ABSENCES	0	0	35,331	325	0	0	35,656
502-0-25	CAR ALLOWANCE	0	0	78,000	0	0	0	78,000
502-0-26	CELL PHONE ALLOWANCE	0	0	36,480	0	0	0	36,480
	LABOR ALLOCATIONS IN/(OUT)	185,673	0	(2,491,277)	1,436,404	290,834	578,368	0
	TOTAL LABOR	**368,754**	**0**	**2,749,252**	**2,807,415**	**657,583**	**1,242,693**	**7,825,697**
	FRINGE							
502-0-04	FICA/MEDICARE	0	0	112,700	1,239	0	0	113,939
502-0-05	PENSION	0	0	2,028,484	124,753	0	0	2,153,237
502-0-01	OPEB CONTRIBUTIONS - HEALTHCARE	0	0	449,000	280,000	0	0	729,000
502-0-17	HEALTH & VISION INSURANCE	0	0	986,987	15,515	0	0	1,002,502
502-0-18	DENTAL INSURANCE	0	0	57,503	737	0	0	58,240
502-0-19	LIFE INSURANCE	0	0	16,423	103	0	0	16,526
502-0-16	DISABILITY INSURANCE	0	0	70,090	856	0	0	70,946
502-0-06	UNEMPLOYMENT INSURANCE	0	0	20,780	250	0	0	21,030
502-0-08	WORKERS COMPENSATION	0	0	49,696	619	0	0	50,315
502-0-14	OTHER FRINGE BENEFITS	0	0	35,750	3,800	5,250	5,250	50,050
	FRINGE ALLOCATION IN/(OUT)	183,992	0	(2,468,730)	1,423,404	288,202	573,133	0
	TOTAL FRINGE	**183,992**	**0**	**1,358,683**	**1,851,276**	**293,452**	**578,383**	**4,265,786**
	SERVICES							
503-0-02	ADV DEVLP/PRODUCTION	0	0	0	88,220	0	375,000	463,220
503-0-03	PROFESSIONAL & TECHNICAL	125,000	50	4,789,000	347,500	96,000	14,050	5,371,600
503-0-04	TEMPORARY HELP	0	0	29,000	8,000	0	0	37,000
503-0-05	CONTRACT MAINT/REPAIRS	1,295	0	582,726	1,268,502	116,728	45,860	2,015,111
503-0-06	CUSTODIAL	0	0	0	473,600	11,200	0	484,800
503-0-07	SECURITY	0	0	0	828,260	3,500	0	831,760
503-0-08	PRINTING	0	0	6,825	100,349	9,500	26,400	143,074
503-0-09	CONSULTING SERVICES	0	0	413,000	20,000	0	670,000	1,103,000
503-0-10	PROPERTY EXPENSE	0	0	510,000	0	0	0	510,000
503-0-99	OTHER SERVICES	0	0	124,350	493,200	47,000	27,500	692,050
	SERVICES ALLOCATION IN/(OUT)	81,279	0	(1,090,562)	628,789	127,313	253,182	0
	TOTAL SERVICES	**207,574**	**50**	**5,364,339**	**4,256,419**	**411,241**	**1,411,992**	**11,651,615**

REGIONAL TRANSPORTATION COMMISSION

- **TENTATIVE BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2021**
- **REPORTED BY FUND TOTALS BY LINE ITEMS**

*Items Include Agency Wide Funds

ACCT. #	DESCRIPTION	*R.R.I.F. PROGRAM	BOND RESERVE	*FUEL TAX PROGRAM	*PUBLIC TRANSIT	*PARA TRANSIT	* MPO	*TOTAL
	MATERIALS & SUPPLIES							
504-0-01	FUEL & LUBE	0	0	4,000	1,548,527	356,563	0	1,909,090
504-0-04	REVENUE VEHICLE PARTS	0	0	0	10,000	0	0	10,000
504-0-06	SUPPORT VEHICLE PARTS	0	0	5,000	0	0	0	5,000
504-0-07	BENCH SHELTER/SIGN SUPPLY	0	0	0	150,000	0	0	150,000
504-0-08	CNG PARTS & SUPPLIES	0	0	0	0	50,000	0	50,000
504-0-10	OFFICE SUPPLIES	0	0	16,000	12,000	0	7,000	35,000
504-0-99	OTHER MATERIALS & SUPPLIES	0	0	206,050	182,000	65,100	59,460	512,610
	OTHER M & S ALLOC IN/(OUT)	9,990	0	(134,048)	77,288	15,649	31,120	0
	TOTAL MATERIALS & SUPPLIES	**9,990**	**0**	**97,002**	**1,979,816**	**487,311**	**97,580**	**2,671,700**
	UTILITIES							
505-0-02	ELECTRICITY & NATURAL GAS	0	0	5,000	360,715	22,000	0	387,715
505-0-04	WATER & SEWER	0	0	0	45,500	7,500	0	53,000
505-0-05	GARBAGE COLLECTION	0	0	0	65,000	1,200	0	66,200
505-0-10	TELEPHONE	0	0	62,396	0	1,000	0	63,396
	UTILITIES ALLOCATIONS IN/(OUT)	3,244	0	(43,528)	25,097	5,082	10,105	0
	TOTAL UTILITIES	**3,244**	**0**	**23,868**	**496,312**	**36,782**	**10,105**	**570,311**
	INSURANCE COSTS							
506-0-01	PHYSICAL DAMAGE	0	0	1,752	13,883	3,492	873	20,000
506-0-03	PUBLIC LIAB/PROPERTY DAMAGE	0	0	25,403	201,297	50,640	12,660	290,000
506-0-06	PL & PD SETTLEMENTS	0	0	6,570	52,060	13,097	3,274	75,000
506-0-08	OTHER INSURANCE COSTS	0	0	4,599	36,442	9,168	2,292	52,500
	TOTAL INSURANCE	**0**	**0**	**38,323**	**303,681**	**76,397**	**19,099**	**437,500**
	MISCELLANEOUS EXPENSES							
507-0-04	TAXES & LICENSES	0	0	0	25,350	0	0	25,350
509-0-01	DUES & SUBSCRIPTIONS	0	0	109,919	8,435	185	13,443	131,982
509-0-08	MISCELLANEOUS ADVERTISING	0	0	26,050	49,200	1,500	252,500	329,250
509-0-09	INTERNAL MARKETING	0	0	3,000	0	0	0	3,000
509-0-20	TRAINING & MEETINGS	0	0	209,550	95,400	24,500	68,500	397,950
509-0-25	POSTAGE & EXPRESS MAIL	0	0	14,342	4,500	2,000	5,000	25,842
509-0-99	OTHER MISC EXPENSES	100	0	170,375	108,910	1,900	30,000	311,285
512-0-06	LEASES & RENTALS	0	0	330,346	26,700	0	49,828	406,874
	MISC EXP ALLOCATIONS IN/(OUT)	27,465	0	(368,509)	212,472	43,020	85,552	0
	TOTAL MISCELLANEOUS EXPENSES	**27,565**	**0**	**495,073**	**530,967**	**73,105**	**504,823**	**1,631,533**

REGIONAL TRANSPORTATION COMMISSION

- **TENTATIVE BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2021**
- **REPORTED BY FUND TOTALS BY LINE ITEMS**

*Items Include Agency Wide Funds

ACCT. #	DESCRIPTION	*R.R.I.F. PROGRAM	BOND RESERVE	*FUEL TAX PROGRAM	*PUBLIC TRANSIT	*PARA TRANSIT	* MPO	*TOTAL
	PURCHASED TRANSP'N SERVICES							
520-0-00	RIDE	0	0	0	23,868,311	0	0	23,868,311
520-0-01	ACCESS	0	0	0	0	7,426,103	0	7,426,103
520-0-15	MICRO TRANSIT FLEX SERVICE	0	0	0	0	2,229,886	0	2,229,886
520-0-03	GERLACH	0	0	0	0	12,000	0	12,000
520-0-04	PYRAMID	0	0	0	0	20,000	0	20,000
520-0-05	INCLINE	0	0	0	0	17,000	0	17,000
520-0-08	WASHOE SR RIDE PURCH TRANS SVC	0	0	0	0	385,000	0	385,000
520-0-10	TART	0	0	0	300,000	1,000	0	301,000
520-0-14	VANPOOL SERVICES	0	0	0	1,047,000	0	0	1,047,000
	TOTAL PURCHASED TRANSPORTATION	**0**	**0**	**0**	**25,215,311**	**10,090,989**	**0**	**35,306,300**
510-0-XX	**TOTAL PASS THRU GRANT**	**0**	**0**	**0**	**0**	**370,617**	**0**	**370,617**
	OPERATING BUDGET BEFORE DEPRECIATION:	**801,119**	**50**	**10,126,541**	**37,441,196**	**12,497,476**	**3,864,676**	**64,731,058**
530-0-XX	PRINCIPAL & INTEREST	0	22,952,726	0	0	0	0	22,952,726
540-0-XX	FISCAL AGENT CHARGES	0	55,000	0	0	0	0	55,000
	TOTAL DEBT SERVICES	**0**	**23,007,726**	**0**	**0**	**0**	**0**	**23,007,726**
513-0-02	DEPRECIATION	**0**	**0**	**0**	**9,000,000**	**0**	**0**	**9,000,000**
513-0-01	AMORTIZATION	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	TOTAL OPERATING BUDGET	**801,119**	**23,007,776**	**10,126,541**	**46,441,196**	**12,497,476**	**3,864,676**	**96,738,784**
	CAPITAL PROJECTS							
	GOVERNMENT FUND CAPITAL							
600-0-31	COMPUTER HARDWARE	0	0	0	0	0	0	0
600-0-32	COMPUTER SOFTWARE	0	0	0	0	48,000	0	48,000
600-0-35	OFFICE FURNITURE & EQUIP.	0	0	0	0	0	0	0
600-0-36	OTHER FIXTURES & EQUIP.	0	0	0	0	490,000	0	490,000
600-0-38	SHOP EQUIPMENT	0	0	0	0	21,000	0	21,000
600-0-91	LEASEHOLD IMPROVEMENTS	0	0	0	0	130,000	0	130,000
	TOTAL GOVMT. FUND CAPITAL	**0**	**0**	**0**	**0**	**689,000**	**0**	**689,000**
	STREET & HIGHWAY PROJECTS							
	PRESERVATION & MOBILITY PROJECTS	0	0	65,939,163	0	0	0	65,939,163
	CAPACITY IMPROVEMENT PROJECTS	6,490,051	0	28,398,816	0	0	0	34,888,867
	CAPITAL CONTRIBUTION PROJECTS	15,600,120	0	0	0	0	0	15,600,120
	TOTAL STREET & HIGHWAY	**22,090,171**	**0**	**94,337,979**	**0**	**0**	**0**	**116,428,150**
	CAPTIAL BUDGET BEFORE							

REGIONAL TRANSPORTATION COMMISSION

- **TENTATIVE BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2021**
- **REPORTED BY FUND TOTALS BY LINE ITEMS**

*Items Include Agency Wide Funds

ACCT. #	DESCRIPTION	*R.R.I.F. PROGRAM	BOND RESERVE	*FUEL TAX PROGRAM	*PUBLIC TRANSIT	*PARA TRANSIT	* MPO	*TOTAL
	ENTERPRISE FUND CAPITAL	**22,090,171**	**0**	**94,337,979**	**0**	**689,000**	**0**	**117,117,150**
	ENTERPRISE FUND CAPITAL							
111-1-10	Coaches	0	0	0	26,274,101	0	0	26,274,101
111-1-12	Support Vehicles	0	0	0	230,000	0	0	230,000
111-1-16	Communications Equipment	0	0	0	124,690	0	0	124,690
111-1-18	Surveillance/Security Equipment	0	0	0	125,000	0	0	125,000
111-1-21	Passenger Shelters & Bus Stop Improvements	0	0	0	1,135,232	0	0	1,135,232
111-1-31	Computer Hardware	0	0	0	58,000	0	0	58,000
111-1-32	Computer Software	0	0	0	31,000	0	0	31,000
111-1-36	Other Fixtures & Equipment	0	0	0	590,000	0	0	590,000
111-1-38	Shop Equipment	0	0	0	384,000	0	0	384,000
111-1-81	Building Improvements - Villanova	0	0	0	225,000	0	0	225,000
111-1-82	Building Improvements - Terminal	0	0	0	3,200,000	0	0	3,200,000
	TOTAL ENTERPRISE FUND CAPITAL	**0**	**0**	**0**	**32,377,023**	**0**	**0**	**32,377,023**
	TOTAL CAPITAL BUDGET	**22,090,171**	**0**	**94,337,979**	**32,377,023**	**689,000**	**0**	**149,494,173**
	TOTAL FY 2020 BUDGET	**$22,891,290**	**$23,007,776**	**$104,464,520**	**$78,818,219**	**$13,186,476**	**$3,864,676**	**$246,232,957**

REGIONAL TRANSPORTATION COMMISSION

- TENTATIVE BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2021
- REPORTED BY DEPARTMENT TOTALS BY LINE ITEMS

ACCT. #	DESCRIPTION	EXECUTIVE	ADMIN. SERVICES	FINANCE	ENGINEERING	PUBLIC TRANSPTN	TRANSPTN PLANNING	TOTAL
	LABOR							
501-0-01	Labor	$493,763	$599,242	$1,005,320	$1,442,412	$1,578,756	$937,547	$6,057,041
501-0-03	Overtime	0	3,701	1,200	174	21,496	0	26,571
502-0-02	Bonuses	12,600	17,062	33,697	42,486	56,608	77,856	240,309
502-0-09	Sick Leave	12,367	31,793	67,550	172,613	93,645	24,794	402,762
502-0-10	Holiday	23,960	27,775	49,022	70,994	79,295	45,135	296,181
502-0-11	Vacation	46,026	66,572	108,490	187,494	163,629	80,486	652,697
502-0-12	Personal Leave	10,433	2,380	4,457	6,454	7,829	4,103	35,656
502-0-25	Car Allowance	10,800	9,600	14,400	14,400	14,400	14,400	78,000
502-0-26	Cell Phone Allowance	2,940	6,600	3,000	9,300	10,740	3,900	36,480
	TOTAL LABOR	**612,889**	**764,725**	**1,287,136**	**1,946,327**	**2,026,398**	**1,188,221**	**7,825,697**
	FRINGE							
502-0-04	FICA/Medicare	9,410	11,542	18,841	26,696	29,166	18,284	113,939
502-0-05	Retirement Plan	165,650	197,567	438,917	490,828	548,225	312,050	2,153,237
502-0-01	OPEB contribution - Healthcare	0	0	729,000	0	0	0	729,000
502-0-17	Health & Vision Insurance	54,688	85,711	146,413	205,549	359,133	151,008	1,002,502
502-0-18	Dental Insurance	2,948	5,160	9,584	12,533	19,168	8,847	58,240
502-0-19	Life Insurance	412	1,920	1,937	2,348	8,075	1,834	16,526
502-0-16	Disability Insurance	5,725	6,578	11,726	16,967	19,164	10,786	70,946
502-0-07	Unemployment Insurance	1,089	1,839	4,141	4,345	6,526	3,090	21,030
502-0-08	Workers Compensation	2,727	4,585	8,300	10,787	16,235	7,681	50,315
502-0-14	Other Fringe Benefits	1,200	2,400	7,200	10,100	20,300	8,850	50,051
	TOTAL FRINGE	**243,849**	**317,302**	**1,376,059**	**780,153**	**1,025,992**	**522,430**	**4,265,786**
	SERVICES							
503-0-02	Adv Devlp/Production	0	0	0	0	88,220	375,000	463,220
503-0-03	Professional & Technical	3,183,500	101,500	293,550	1,720,000	72,500	550	5,371,600
503-0-04	Temporary Help	0	5,000	20,000	0	12,000	0	37,000
503-0-05	Contract Maint/Repairs	0	900,031	46,500	15,000	1,048,580	5,000	2,015,111
503-0-06	Custodial	0	0	0	0	484,800	0	484,800
503-0-07	Security	0	813,260	0	0	18,500	0	831,760
503-0-08	Printing	75	0	51,250	5,500	59,849	26,400	143,074
503-0-09	Consulting Services	30,000	108,000	0	275,000	20,000	670,000	1,103,000
503-0-10	ROW Property Maintenance Costs	0	0	0	10,000	0	0	10,000
503-0-99	Other Services	30,900	40,300	33,250	528,000	532,100	27,500	1,192,050
	TOTAL SERVICES	**3,244,475**	**1,968,091**	**444,550**	**2,553,500**	**2,336,549**	**1,104,450**	**11,651,615**

REGIONAL TRANSPORTATION COMMISSION

- TENTATIVE BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2021
- REPORTED BY DEPARTMENT TOTALS BY LINE ITEMS

ACCT. #	DESCRIPTION	EXECUTIVE	ADMIN. SERVICES	FINANCE	ENGINEERING	PUBLIC TRANSPTN	TRANSPTN PLANNING	TOTAL
	MATERIALS & SUPPLIES							
504-0-01	Fuel & Lube	0	0	0	0	1,909,090	0	1,909,090
504-0-06	Support Vehicle Parts	0	0	0	0	5,000	0	5,000
504-0-07	Bench, Shelters & Signs	0	0	0	0	150,000	0	150,000
504-0-10	Office Supplies	1,000	0	6,500	8,500	12,000	7,000	35,000
504-0-99	Other Materials & Supplies	3,100	169,200	5,750	15,000	260,100	59,460	512,610
	TOTAL MATERIALS & SUPPLIES	**4,100**	**169,200**	**12,250**	**23,500**	**2,396,190**	**66,460**	**2,671,700**
	UTILITIES							
505-0-02	Electricity/Natural Gas	0	0	0	0	387,715	0	387,715
505-0-04	Water & Sewer	0	0	0	0	53,000	0	53,000
505-0-05	Garbage Collection	0	0	0	0	66,200	0	66,200
505-0-10	Telephone	0	53,396	10,000	0	0	0	63,396
	TOTAL UTILITIES	**0**	**53,396**	**10,000**	**0**	**506,915**	**0**	**570,311**
	INSURANCE							
506-0-01	Physical Damage	0	0	20,000	0	0	0	20,000
506-0-03	Public Liab/Property Damage	0	0	290,000	0	0	0	290,000
506-0-06	PL & PD Settlements	0	0	75,000	0	0	0	75,000
506-0-08	Other Insurance Costs	0	0	52,500	0	0	0	52,500
	TOTAL INSURANCE	**0**	**0**	**437,500**	**0**	**0**	**0**	**437,500**
	MISCELLANEOUS EXPENSE							
507-0-04	Taxes & Licenses	0	0	22,500	0	2,850	0	25,350
509-0-01	Dues & Subscriptions	84,391	4,678	4,850	16,000	8,620	13,443	131,982
509-0-08	Misc. Advertising	50	4,000	2,000	20,000	50,700	252,500	329,250
509-0-09	Internal marketing	0	3,000	0	0	0	0	3,000
509-0-20	Training & Meetings	64,550	45,000	25,000	80,000	117,900	65,500	397,950
509-0-25	Postage & Express Mail	8,092	0	250	6,000	6,500	5,000	25,842
509-0-99	Other Misc. Expense	101,400	6,500	46,975	60,600	65,810	30,000	311,285
512-1-06	Leases & Rentals	3,120	78,740	6,250	7,440	307,324	4,000	406,874
510-0-XX	Pass-Thru Grant Expense	0	0	0	0	370,617	0	370,617
	Misc. Expense Alloc IN (OUT)	0	0	0	0	0	0	0
	TOTAL MISCELLANEOUS EXPENSES	**261,603**	**141,918**	**107,825**	**190,040**	**930,321**	**370,443**	**2,002,150**

REGIONAL TRANSPORTATION COMMISSION

- TENTATIVE BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2021
- REPORTED BY DEPARTMENT TOTALS BY LINE ITEMS

ACCT. #	DESCRIPTION	EXECUTIVE	ADMIN. SERVICES	FINANCE	ENGINEERING	PUBLIC TRANSPTN	TRANSPTN PLANNING	TOTAL
	PURCHASED TRANSP'N SERVICE							
520-0-00	RIDE	0	0	0	0	23,868,311	0	23,868,311
520-0-01	ACCESS	0	0	0	0	7,426,103	0	7,426,103
520-0-03	Gerlach	0	0	0	0	12,000	0	12,000
520-0-04	Pyramid	0	0	0	0	20,000	0	20,000
520-0-05	Incline	0	0	0	0	17,000	0	17,000
520-0-09	TART - ADA	0	0	0	0	1,000	0	1,000
520-0-08	Washoe Senior Ride	0	0	0	0	385,000	0	385,000
520-0-10	TART	0	0	0	0	300,000	0	300,000
520-0-14	Vanpool Service	0	0	0	0	1,047,000	0	1,047,000
520-0-15	Micro-transit	0	0	0	0	2,229,886	0	2,229,886
	PURCHASED TRANSPORTATION SVC	**0**	**0**	**0**	**0**	**35,306,300**	**0**	**35,306,300**
	OPERATING BUDGET BEFORE DEPRECIATION:	**4,366,916**	**3,414,632**	**3,675,320**	**5,493,520**	**44,528,665**	**3,252,004**	**64,731,058**
530-0-XX	Principal & Interest	0	0	22,952,726	0	0	0	22,952,726
540-0-XX	Fiscal Agent Charges	0	0	55,000	0	0	0	55,000
	TOTAL DEBT SERVICE	**0**	**0**	**23,007,726**	**0**	**0**	**0**	**23,007,726**
	DEPRECIATON & AMORTIZATION	**0**	**0**	**0**	**0**	**9,000,000**	**0**	**9,000,000**
	TOTAL OPERATING BUDGET	**4,366,916**	**3,414,632**	**26,683,047**	**5,493,520**	**53,528,665**	**3,252,004**	**96,738,784**
600-0-80	Facility	0	0	0	0	130,000	0	130,000
600-0-32	Computer Software	0	48,000	0	0	0	0	48,000
600-0-36	Other Fixtures & Equip.	0	0	0	0	490,000	0	490,000
600-0-38	Shop Equipment	0	0	0	0	21,000	0	21,000
	TOTAL NON-TRANSIT FIXED ASSETS	**0**	**48,000**	**0**	**0**	**641,000**	**0**	**689,000**
	STREET & HIGHWAY PROJECTS							
	Preservation & Mobility Projects	0	0	0	65,939,163	0	0	65,939,163
	Capacity Improvement Projects	0	0	0	34,888,867	0	0	34,888,867
	Capital Contribution Projects	0	0	0	15,600,120	0	0	15,600,120
	TOTAL STREET & HIGHWAY	**0**	**0**	**0**	**116,428,150**	**0**	**0**	**116,428,150**
	CAPITAL BUDGET BEFORE ENTERPRISE FUND CAPITAL	**0**	**48,000**	**0**	**116,428,150**	**641,000**	**0**	**117,117,150**

REGIONAL TRANSPORTATION COMMISSION

- TENTATIVE BUDGET FOR FISCAL YEAR ENDING JUNE 30, 2021
- REPORTED BY DEPARTMENT TOTALS BY LINE ITEMS

ACCT. #	DESCRIPTION	EXECUTIVE	ADMIN. SERVICES	FINANCE	ENGINEERING	PUBLIC TRANSPTN	TRANSPTN PLANNING	TOTAL
	ENTERPRISE FUND CAPITAL							
111-1-10	Coaches	0	0	0	0	26,274,101	0	26,274,101
111-1-12	Support Vehicles	0	0	0	0	230,000	0	230,000
111-1-16	Communications Equipment	0	0	0	0	124,690	0	124,690
111-1-18	Surveillance/Security Equipment	0	50,000	0	0	75,000	0	125,000
111-1-21	Passenger Shelters & Bus Stop Improvements	0	0	0	0	1,135,232	0	1,135,232
111-1-31	Computer Hardware	0	58,000	0	0	0	0	58,000
111-1-32	Computer Software	0	31,000	0	0	0	0	31,000
111-1-36	Other Fixtures & Equipment	0	0	0	0	590,000	0	590,000
111-1-81	Building Improvements - Villanova	0	0	0	0	225,000	0	225,000
111-1-82	Building Improvements - Terminal	0	0	0	0	3,200,000	0	3,200,000
	TOTAL ENT. FUND CAPITAL	**0**	**139,000**	**0**	**0**	**32,238,023**	**0**	**32,377,023**
	TOTAL CAPITAL BUDGET	**0**	**187,000**	**0**	**116,428,150**	**32,879,023**	**0**	**149,494,173**
	TOTAL FY 2020 BUDGET	**$4,366,916**	**$3,601,632**	**$26,683,047**	**$121,921,670**	**$86,407,688**	**$3,252,004**	**$246,232,957**

April 17, 2020 **AGENDA ITEM 3.10**

TO: Regional Transportation Commission

FROM: Tina H. T. Wu, AICP
Senior Transit Planner

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Solar Bus Shelter Lights Installation

RECOMMENDATION

Approve a contract with Western Electric Group, LLC., in an amount not to exceed $56,381.79 for the installation of solar bus shelter lights at a hundred and four (104) locations throughout the system; authorize the RTC Executive Director to execute the agreement.

SUMMARY

RTC purchased solar bus stop lights and solar bus shelter lights in 2019 utilizing Transportation Alternative (TA) set-aside funds. The solar bus shelter lights are self-contained, provide cost savings by eliminating the need to trench standard electric wires for installation, and does not generate any electricity costs over the life of the system. The shelter lights will provide illumination after sunset for passengers waiting for their buses' arrival; and allows drivers to see passengers waiting at stops. Installation of the solar bus shelter lights will begin immediately. RTC plans to install the solar bus stop lights in FY 2021.

RTC obtained solar shelter light installation quotes from Titan Electric and Western Electric Group, LLC. Staff is recommending award to Western Electric because they provided the lowest quote. Estimated time for this project is eight (8) months.

FISCAL IMPACT

Funds for this project have been included in the FY 2020 RTC Board approved budget.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

Attachment

AGREEMENT FOR GOODS AND SERVICES

-SHELTER SOLAR LIGHT INSTALLATION -

This agreement ("Agreement") is dated and effective as of April 17, 2020, by and between the Regional Transportation Commission of Washoe County, Nevada ("RTC") and Western Electric Group, LLC ("Contractor").

1. Term. The term of this agreement shall commence on the effective date above and shall end when all work is substantially complete, or March 31, 2021 at the latest.

2. Scope of Work. Contractor shall provide the goods and services described in the quote attached in **Exhibit A**.

3. Time for Performance. Contract shall complete the project within eight (8) months of issuance of a notice to proceed from RTC. Contractor shall complete the work pursuant to a schedule to be agreed to by Contractor and RTC, provided that Contractor shall complete a minimum of 50% of the installations within four (4) months, and 100% of the installations within eight (8) months) .

4. Compensation. RTC shall pay Contractor for each completed installation at the not-to-exceed price per installation (based on shelter type) in **Exhibit A**, in a total amount not to exceed $56,381.79. The price per installation includes all labor, material and other costs.

5. Proceeding with Work. Contractor shall not proceed with work until both parties have executed this Agreement and RTC has issued a notice to proceed and a purchase order. If Contractor proceeds with work before those conditions have been satisfied, Contractor shall forfeit any and all right to reimbursement and payment for work performed during that period. In the event Contractor violates this section, Contractor waives any and all claims and damages against RTC, its employees, agents, and affiliates, including but not limited to monetary damages, and any other remedy available at law or in equity arising under the terms of this Agreement

6. Prevailing Wage. Contractor shall comply with the Davis-Bacon Act, 40 U.S.C. § 3141-3144 and 3146-3148, as supplemented by U.S. Department of Labor regulations at 29 CFR Part 5, "Labor Standards Provisions Applicable top Contracts Governing Federally Financed and Assisted Construction." In accordance with the statute, Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, Contractor agrees to pay wages bi-weekly.

Contractor and any subcontractors (at ALL tiers) are required to submit certified payroll reports and labor compliance documentation using the RTC's electronic certified payroll system Contractor and each subcontractor will be given a Log On identification and password to access the system. The required documentation shall be transmitted to wagecomplyrtc@trifoxllc.com. The name and contact information of the Payroll Officer who prepared the required documentation shall be displayed clearly on reports. It shall be Contractor's responsibility to comply with, and ensure compliance by all subcontractors with these provisions.

7. Invoices/Payment. Contractor shall submit invoices to accountspayable@rtcwashoe.com. RTC's payment terms are 30 days after the receipt of the invoice. Simple interest will be paid at the rate of half a percent (0.5%) per month on all invoices approved by RTC that are not paid within thirty (30) days of receipt of the invoice.

8. Legal/Regulatory Compliance. Contractor shall comply with all applicable federal, state and local government laws, regulations and ordinances. Upon request of RTC, Contractor shall furnish RTC certificates of compliance with all such laws, orders and regulations.

9. Insurance. Contractor shall obtain all types and amounts of insurance set forth in **Exhibit B**, and shall comply with all of its terms. Contractor shall not commence any work or permit any employee/agent to commence any work until satisfactory proof has been submitted to RTC that all insurance requirements have been met.

10. Indemnification. Contractor's obligations are set forth in **Exhibit B**. Said obligation would also extend to any liability of RTC resulting from any action to clear any lien and/or to recover for damage to RTC property.

11. Termination.

a. Mutual Assent. This Agreement may be terminated by mutual written agreement of the parties.

b. Convenience. RTC may terminate this Agreement in whole or in part for convenience upon written notice to Contractor.

c. Default. Either party may terminate this Agreement for default by providing written notice of termination, provided that the non-defaulting party must first provide written notice of default and give the defaulting party and opportunity to cure the default within a reasonable period of time.

12. Rights, Remedies and Disputes

a. RTC shall have the following rights in the event that RTC deems the Contractor guilty of a breach of any term under the Agreement:

i. The right to take over and complete the work or any part thereof as agency for and at the expense of the Contractor, either directly or through other contractors;

ii. The right to cancel this Agreement as to any or all of the work yet to be performed;

iii. The right to specific performance, an injunction or any other appropriate equitable remedy; and

iv. The right to money damages.

b. Inasmuch as the Contractor can be adequately compensated by money damages for any breach of this Agreement, which may be committed by RTC, the Contractor expressly agrees that no default, act or omission of RTC shall constitute a material breach of this Contract, entitling Contractor to cancel or rescind the Agreement (unless RTC directs Contractor to do so) or to suspend or abandon performance.

c. Disputes arising in the performance of this Agreement that are not resolved by agreement of the parties shall be decided in writing by the authorized representative of RTC's Executive Director. This decision shall be final and conclusive unless

within 10 days from the date of receipt of its copy, Contractor mails or otherwise furnishes a written appeal to RTC's Executive Director. In connection with any such appeal, Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of RTC's Executive Director shall be binding upon the Contractor and the Contractor shall abide be the decision.

d. Unless otherwise directed by RTC, Contractor shall continue performance under this Agreement while matters in dispute are being resolved.

13. Ownership of Work. Plans, reports, studies, tracings, maps, software, electronic files, licenses, programs, equipment manuals, and databases and other documents or instruments of service prepared or obtained by Contractor in the course of performing work under this Agreement, shall be delivered to and become the property of RTC. Software already developed and purchased by Contractor prior to the execution of the Project that will be used in the Project and services rendered under this Agreement, is excluded from this requirement. Contractor and its sub-contractors shall convey and transfer all copyrightable interests, trademarks, licenses, and other intellectual property rights in such materials to RTC upon completion of all services under this Agreement and upon payment in full of all compensation due to Contractor in accordance with the terms of this Agreement. Basic survey notes, sketches, charts, computations and similar data prepared or obtained by Contractor under this Agreement shall, upon request, also be provided to RTC.

14. Records. Contractor will permit RTC access to any books, documents, papers and records of Contractor pertaining to this Agreement, and shall maintain such records for a period of not less than three years.

15. Exhibits. The exhibits to this Agreement, and any additional terms and conditions specified therein, are a material part hereof and are incorporated by reference as though fully set forth herein.

16. Exclusive Agreement. This Agreement constitutes the entire agreement of the parties and supersedes any prior verbal or written statements or agreements between the parties.

17. Amendment. No alteration, amendment or modification of this Agreement shall be effective unless it is in writing and signed by both parties.

18. No Assignment. Contractor shall not assign, sublease, or transfer this Agreement or any interest therein, directly or indirectly by operation of law, without the prior written consent of RTC. Any attempt to do so without the prior written consent of RTC shall be null and void, and any assignee, subleasee, or transferee shall acquire no right or interest by reason thereof.

19. Governing Law. This Agreement shall be construed in accordance with and governed by the laws of the State of Nevada.

20. Venue. Any lawsuit brought to enforce this Agreement shall be brought in the Second Judicial District Court of the State of Nevada, County of Washoe appropriate court in the State of Nevada.

21. Attorneys' Fees. In the event of a dispute between the parties result in a proceeding in any Court of Nevada having jurisdiction, the prevailing party shall be entitled to an award of costs and a reasonable attorneys' fees

22. Certification Required by Nevada Senate Bill 27 (2017). Contractor expressly certifies and agrees, as a material part of this Agreement, that it is not currently engaged in a boycott of Israel. Contractor further agrees, as a material part of this Agreement, it will not engage in a boycott of Israel for the duration of this Agreement. If, at any time during the formation or duration of this Agreement, Contractor is engaged or engages in a boycott of Israel, it will constitute a material breach of this Agreement.

23. Federal Clauses. This Agreement is funded, in whole or in part, with federal funds. As a condition for receiving payment under this Agreement, Contractor agrees to comply with any and all applicable federal clauses attached as **Exhibit C**, and those clauses are incorporated herein by reference.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement the day and year first above written.

APPROVED AS TO LEGALITY AND FORM

BY: _____
Adam Spear, RTC Director of Legal Services

REGIONAL TRANSPORTATION COMMISSION
OF WASHOE COUNTY

BY: _____
Bill Thomas, AICP, Executive Director

WESTERN ELECTRIC GROUP, LLC

BY: _____
Cecil Arnold, General Manager

Exhibit A

Price and Scope

Shelter Type for Installation	*Quantity*	*Price Per Install*	*Total Price*
Brasco Standard	86	$ 439.21	$ 37,772.14
Brasco Advertizing	7	$ 781.13	$ 5,467.94
Ace Shelter	5	$ 440.36	$ 2,201.80
Rappid Enhanced	6	$ 1,823.32	$ 10,939.91
Total Not-to-Exceed Price			**$ 56,381.79**

Estimate

Western Electric Group, LLC

P.O. Box 60837
Reno, Nevada 89506
775-284-0371
0058613

Date	Estimate #
2/18/2020	2020027
Customer	**Job**
Tina Wu	Solar Shelter Light DB

Customer Information

Tina Wu
Regional Transportation Commission
1105 Terminal Way
Suite 200
Reno, NV 89502

Description	Qty	Rate	Amount
Regional Transportation Commission. 1105 Terminal Way, Suite 200. Reno, NV 89502. 12/20/2019. This estimate covers the expense to install one solar powered light into each of the noted types of bus stop shelters. Each install shall start at the warehouse where the light kits are kept and will include an average drive time to each of the locations. According to figures 4 and 5 on page 8 of the manual, it appears that all mounting hardware and brackets are included with each kit. We shall have some hardware available during this install but we will supply ample silicone to seal each penetration made. The Brasco, Brasco Brown, Brasco Green and Brasco Half shelters have one ceiling support strut located in the middle of the shelter and one strut at each end. Per instruction we shall install install the fixtures off to one side to catch two struts. Silicone shall be utilized at the bolt tops to prevent water penetration. The solor panels will aid in the shedding of water to eliminate water intrusion as well. A Total of 86 of these structures were counted Brasco Advertizing shelters have billboards at one end of the shelter. This billboard is currently fed using roof mounted solar panels. The existing solar panels leave very little room for the necessary solar panels for the new lights. One option is to eliminate some or all of the solar panels however another option is to utilize two of the existing panels for the new light and leave two to power the billboard. Two other options are to parrallel off of two of the existing panels and to add bracketry to fit the new panels on the small amount of space available. Time will be alotted to find the best option and all seven of these shelters will be done the same way. ACE type of shelter is constructed with a void between the ceiling of the structure and the roof. If the distance between is greater than the amount of wire supplied with the solar cells, the additional cost of more wire shall be addressed at that time however it appears that there will be plenty of wire. Tolar MFG shelters already have panels and lights on them and will not be addressed in this estimate.			

Western Electric Group, LLC

P.O. Box 60837
Reno, Nevada 89506
775-284-0371
0058613

Estimate

Date	Estimate #
2/18/2020	2020027
Customer	**Job**
Tina Wu	Solar Shelter Light DB

Description	Qty	Rate	Amount
_____			
Brasco Standard. (Blue) This shall include the Brasco Green and Brasco Half. Mobilize, park and set up			
86 Ea			
Unpackage and layout solar panels and bracketry. Assemble at ground level before installing on roof			
86 Ea			
Install solar panels on roof. Includes drilling and installing a bushing for the wire passage			
86 Ea			
Silicone for each bolt penetration. Clear			
86 Ea			
Install and connect light			
86 Ea			
Test system, clean-up and demobilize			
86 Ea			
Brasco Shelters material, labor, equipment			
Material, per job	1	396.62	396.62
Labor, per job	1	36,634.17	36,634.17
Equipment, per job	1	741.35	741.35
*Brasco Shelters subtotal			37,772.14
_____			
Brasco Advertizing. Mobilize, park and set up			
7 Ea			
Examine the headroom of the existing solar system to determine of some of the power may be split off to power the new light			
1 Ea			
EMT conduit installed in exposed areas. 3/4 in.			
0.7 CLF			
Steel compression EMT connectors, raintight. 3/4 in.			
14 Ea			
12 gauge steel channel. 1-5/8 in. x 1-5/8 in. plated			
0.7 CLF			
Cold galvanizing compound. 20oz can			
1 Ea			
Channel nuts. 3/8-16 13/16 in. strut			
42 Ea			
Channel nuts. 1/4-20 13/16 in. strut			
4 Ea			
Unpackage and layout solar panels and bracketry. Assemble at ground level before installing on roof			
7 Ea			

Western Electric Group, LLC

P.O. Box 60837
Reno, Nevada 89506
775-284-0371
0058613

Estimate

Date	Estimate #
2/18/2020	2020027
Customer	**Job**
Tina Wu	Solar Shelter Light DB

Description	Qty	Rate	Amount
Install solar panels on roof. Includes drilling and installing a bushing for the wire passage			
7 Ea			
Silicone for each bolt penetration. Clear			
7 Ea			
Install and connect light			
7 Ea			
Test system, clean-up and demobilize			
7 Ea			
Brasco Advertizing Shelters material, labor, equipment			
Material, per job	1	631.30	631.30
Labor, per job	1	4,776.30	4,776.30
Equipment, per job	1	60.34	60.34
*Brasco Advertizing Shelters subtotal			5,467.94
_____			
Ace Shelter. Mobilize, park and set up			
5 Ea			
Unpackage and layout solar panels and bracketry. Assemble at ground level before installing on roof			
5 Ea			
Install solar panels on roof. Includes drilling and installing a bushing for the roof and ceiling to accomodate the wire passage			
5 Ea			
Silicone for each bolt penetration. Clear			
5 Ea			
Install and connect light			
5 Ea			
Test system, clean-up and demobilize			
5 Ea			
ACE Shelter material, labor, equipment			
Material, per job	1	28.81	28.81
Labor, per job	1	2,129.89	2,129.89
Equipment, per job	1	43.10	43.10
*ACE Shelter subtotal			2,201.80
_____			
Rappid Enhanced. Mobilize, park and set up			
6 Ea			
Unpackage and layout solar panels and bracketry. Assemble at ground level before installing on roof			
6 Ea			

Western Electric Group, LLC

P.O. Box 60837
Reno, Nevada 89506
775-284-0371
0058613

Estimate

Date	Estimate #
2/18/2020	2020027
Customer	**Job**
Tina Wu	Solar Shelter Light DB

Description	Qty	Rate	Amount
Install Unistrut to add for additional support to handle the new panels. 12 gauge steel channel. 1-5/8 in. x 1-5/8 in. plated			
1.8 CLF			
Cold galvanizing compound. 20oz can			
2 Ea			
Channel nuts. 3/8-16 13/16 in. strut			
72 Ea			
Channel nuts. 1/4-20 13/16 in. strut			
24 Ea			
EMT conduit installed in exposed areas. 3/4 in.			
1.8 CLF			
Hardware for the solar panel. 3/8 and 1/4 in.			
6 Lot			
Type LB, LL or LR aluminum conduit bodies with covers. 3/4 in.			
12 Ea			
Steel compression EMT connectors, raintight. 3/4 in.			
36 Ea			
Drill and tap hole for light hangers. 3/8 in.-16 four on each fixture per instructions			
24 Ea			
Plated threaded rod. 3/8-16 x 10'			
0.4 CLF			
Includes drilling and installing a bushing for the roof and ceiling to accomodate the wire passage			
6 Ea			
Silicone for each bolt penetration. Clear			
6 Ea			
Install and connect light			
6 Ea			
Test system, clean-up and demobilize			
6 Ea			
Rappid Enhanced material, labor, equipment			
Material, per job	1	2,045.90	2,045.90
Labor, per job	1	8,842.29	8,842.29
Equipment, per job	1	51.72	51.72
*Rappid Enhanced subtotal			10,939.91
_____			
*Tolar Mfg subtotal			
_____			
*Project Subtotal			56,381.79

Western Electric Group, LLC

P.O. Box 60837
Reno, Nevada 89506
775-284-0371
0058613

Estimate

Date	Estimate #
2/18/2020	2020027
Customer	**Job**
Tina Wu	Solar Shelter Light DB

Description	Qty	Rate	Amount
*Project Total			56,381.79
		Total	56,381.79

Exhibit B

INDEMNIFICATION AND INSURANCE REQUIREMENTS FOR MAINTENANCE, OPERATIONS & SERVICE AGREEMENTS

2019-11-11 Version

1. INTRODUCTION

IT IS HIGHLY RECOMMENDED THAT BIDDERS CONFER WITH THEIR INSURANCE CARRIERS OR BROKERS TO DETERMINE THE AVAILABILITY OF THESE INSURANCE CERTIFICATES AND ENDORSEMENTS IN ADVANCE OF BID OR PROPOSAL SUBMISSION. IF THERE ARE ANY QUESTIONS REGARDING THESE INSURANCE REQUIREMENTS, IT IS RECOMMENDED THAT THE AGENT/BROKER CONTACT RTC'S FINANCE DIRECTOR DIRECTLY AT (775) 335-1845.

2. INDEMNIFICATION

CONTRACTOR agrees to defend save and hold harmless and fully indemnify RTC, Washoe County, City of Reno, and City of Sparks, including their elected officials, officers, employees, and agents (hereafter, "Indemnitees") from and against any and all claims, proceedings, actions, liability and damages, including reasonable attorneys' fees and defense costs incurred in any action or proceeding (collectively "Damages") arising out of:

A. Any breach of duty, neglect, or negligent error, misstatement, misleading statement or omission committed in the conduct of CONTRACTOR'S profession by CONTRACTOR, its employees, agents, officers, directors, Subs (as that term is defined below) , or anyone else for which CONTRACTOR may be legally responsible; and

B. The negligent acts of CONTRACTOR, its employees, agents, officers, directors, subs, or anyone else for which CONTRACTOR is legally responsible; and

C. The infringement of any patent or copyright resulting from the use by the Indemnitees of any equipment, part, component, or other deliverable (including software) supplied by CONTRACTOR under or as a result of this Agreement, but excluding any infringement resulting from the modification or alteration by the Indemnitees of any equipment, part, component, or other deliverable (including software) except as consented to by CONTRACTOR.

The Damages shall include, but are not limited to, those resulting from personal injury to any person, including bodily injury, sickness, disease or death and injury to real property or personal property, tangible or intangible, and the loss of use of any of that property, whether or not it is physically injured.

If the Indemnitees are involved in defending actions, CONTRACTOR shall reimburse the Indemnitees for the time spent by such personnel at the rate the Indemnitees pay for such services.

If an Indemnitee is found to be liable in the proceeding, then CONTRACTOR'S obligation here under shall be limited to the proportional share of the liability attributed to CONTRACTOR.

In determining whether a claim is subject to indemnification, the incident underlying the claim shall determine the nature of the claim.

In the event of a violation or an infringement under paragraph 2.C above and the use is enjoined, CONTRACTOR, at its sole expense, shall either (1) secure for the Indemnitees the right to continue using the materials by suspension of any injunction or by procuring a license or licenses for the Indemnitees; or (2) modify the materials so that they become non-infringing. This covenant shall survive the termination of this Agreement.

3. GENERAL REQUIREMENTS

Prior to the start of any work on a RTC project, CONTRACTOR shall purchase and maintain insurance of the types and limits as described herein insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONTRACTOR, its Subs, or their employees, agents, or representatives. The cost of all such insurance shall be borne by CONTRACTOR.

4. VERIFICATION OF COVERAGE

CONTRACTOR shall furnish RTC with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements set forth herein, on forms acceptable to RTC. All deductibles and self-insured retentions requiring RTC approval shall be shown on the certificate. All certificates and endorsements are to be addressed to RTC's Finance Director and be received and approved by RTC before work commences. RTC reserves the right to require complete, certified copies of all required insurance policies, including all Subs' policies, at any time. Copies of applicable policy forms or endorsements confirming required additional insured, waiver of subrogation and notice of cancellation provisions are required to be provided with any certificate(s) evidencing the required coverage.

5. NOTICE OF CANCELLATION

Contractor or its insurers shall provide at least thirty (30) days' prior written notice to RTC prior to the cancellation or non-renewal of any insurance required under this Agreement. An exception may be included to provide at least ten (10) days' written notice if cancellation is due to non-payment of premium. CONTRACTOR shall be responsible to provide prior written notice to RTC as soon as practicable upon receipt of any notice of cancellation, non-renewal, reduction in required limits or other material change in the insurance required under this Agreement.

6. SUBCONTRACTORS & SUBCONSULTANTS

CONTRACTOR shall include all subcontractors and subconsultants (referred to collectively as "Subs") as insureds under its liability policies OR it shall require its Subs to maintain separate

liability coverages and limits of the same types specified herein. If any Subs maintain separate liability coverages and limits, each shall include the RTC, Washoe County, City of Reno and City of Sparks as additional insureds under its commercial general liability policy subject to the same requirements stated herein without requiring a written contract or agreement between each of the additional insureds and any sub-consultant or sub-contractor. Any separate coverage limits of liability maintained by Subs shall be at least be $1,000,000 per occurrence $1,000,000 for any applicable coverage aggregates for or the amount customarily carried by the Sub, whichever is GREATER. If any Subs provide their own insurance with limits less than required of the Contractor, Contractor shall include Subs in their coverage up to the full limits required of the Contractor. When requested by RTC, CONTRACTOR shall furnish copies of certificates of insurance evidencing coverage for each Sub. CONTRACTOR shall require its Subs provide appropriate certificates and endorsements from their own insurance carriers naming CONTRACTOR and the Indemnitees (see paragraph 2 above) as additional insureds.

7. DEDUCTIBLES AND SELF-INSURED RETENTIONS

Any deductibles or self-insured retentions that exceed $25,000 per occurrence or claim must be declared to and approved by RTC's Finance Director prior to signing this Contract. RTC is entitled to request and receive additional documentation, financial or otherwise, prior to giving its approval of the deductibles and self-insured retentions. Any changes to the deductibles or self-insured retentions made during the term of this Contract or during the term of any policy must be approved by RTC's Finance Director prior to the change taking effect. Contractor is responsible for any losses within deductibles or self-insured retentions.

8. ACCEPTABILITY OF INSURERS

Insurance is to be placed with insurers with a Best's rating of no less than A-VII and acceptable to RTC. RTC may accept coverage with carriers having lower Best's ratings upon review of financial information concerning CONTRACTOR and insurance carrier. RTC reserves the right to require that CONTRACTOR'S insurer be a licensed and admitted insurer in the State of Nevada or meet any applicable state and federal laws and regulations for non-admitted insurance placements.

9. MISCELLANEOUS CONDITIONS

A. Failure to furnish the required certificate(s) or failure to maintain the required insurance may result in termination of this Agreement at RTC's option.

B. If CONTRACTOR fails to furnish the required certificate or fails to maintain the required insurance as set forth herein, RTC shall have the right, but not the obligation, to purchase said insurance at CONTRACTOR's expense.

C. Any waiver of CONTRACTOR's obligation to furnish such certificate or maintain such insurance must be in writing and signed by an authorized representative of RTC. Failure of RTC to demand such certificate or other evidence of full compliance with these insurance requirements or failure of RTC to identify a deficiency from evidence that is provided shall not be construed as a waiver of CONTRACTOR's obligation to maintain

such insurance, or as a waiver as to the enforcement of any of these provisions at a later date.

D. By requiring insurance herein, RTC does not represent that coverage and limits will necessarily be adequate to protect CONTRACTOR, and such coverage and limits shall not be deemed as a limitation on CONTRACTOR's liability under the indemnities granted to RTC in this contract.

E. If CONTRACTOR'S liability policies do not contain the standard ISO separation of insureds condition, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

10. COMMERCIAL GENERAL LIABILITY

CONTRACTOR shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less than $1,000,000 each occurrence. If such CGL insurance contains a general aggregate limit, it shall be increased to equal twice the required occurrence limit or revised to apply separately to this project or location.

CGL insurance shall be written on ISO occurrence form CG 00 01 04 13 (or a substitute form providing equivalent coverage) and shall cover liability arising from premises, operations, products-completed operations, personal and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract).

There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability arising from pollution, explosion, collapse, underground property damage, or damage to the named insured's work. In addition, coverage for Explosion, Collapse and Underground exposures (as applicable to the project) must be reflected in the insurance certificates.

RTC and any other Indemnitees listed in section 2. INDEMNIFICATION of this Agreement shall be included as an insured under the CGL, using ISO additional insured endorsement CG 20 10 07/04 or a substitute providing equivalent coverage, and under the commercial umbrella, if any.

This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to RTC or any other Indemnitees under this Agreement

The status of RTC as an additional insured under a CGL obtained in compliance with this agreement shall not restrict coverage under such CGL with respect to the escape of release of pollutants at or from a site owned or occupied by or rented or loaned to RTC.

CONTRACTOR waives all rights against RTC and any other Indemnitees listed in section 2. INDEMNIFICATION of this Agreement for recovery of damages to the extent these damages are covered by the commercial general liability or commercial umbrella liability insurance maintained pursuant to this agreement. CONTRACTOR's insurer shall endorse CGL policy to waive subrogation against RTC with respect to any loss paid under the policy.

Continuing Completed Operations Liability Insurance. CONTRACTOR shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella liability insurance, both applicable to liability arising out of CONTRACTOR's completed operations, with a limit of not less than $1,000,000 each occurrence for at least 5 years following substantial completion of the work.

a. Continuing CGL insurance shall be written on ISO occurrence form CG 00 01 04 13 (or a substitute form providing equivalent coverage) and shall, at minimum, cover liability arising from products-completed operations and liability assumed under an insured contract

b. Continuing CGL insurance shall have a products-completed operations aggregate of at least two times the each occurrence limit.

c. Continuing commercial umbrella coverage, if any, shall include liability coverage for damage to the insured's completed work equivalent to that provided under ISO form CG 00 01.

11. COMMERCIAL AUTOMOBILE LIABILITY

CONTRACTOR shall maintain automobile liability and, if necessary, commercial umbrella liability insurance with a limit of not less than $1,000,000 each accident. Such insurance shall cover liability arising out of any auto (including owned, hired, and non-owned autos).

Coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 25, or a substitute form providing equivalent liability coverage for all owned, leased, hired (rented) and non-owned vehicles (as applicable). RTC may agree to accept auto liability for non-owned and hired (rented) vehicles under the CGL if CONTRACTOR does not own or operate any owned or leased vehicles.

CONTRACTOR waives all rights against RTC, its officers, employees and volunteers for recovery of damages to the extent these damages are covered by the automobile liability or commercial umbrella liability insurance obtained by CONTRACTOR pursuant to this Agreement.

In lieu of a separate Business Auto Liability Policy, RTC may agree to accept Auto Liability covered in the General Liability Policy, if CONTRACTOR does not have any owned or leased automobiles and non-owned and hired auto liability coverage is included.

If project involves the transport of hazardous wastes or other materials that could be considered pollutants, CONTRACTOR shall maintain pollution liability coverage equivalent to that provided under the ISO pollution liability-broadened coverage for covered autos endorsement (CA 99 48) shall be provided, and, if applicable, the Motor Carrier Act endorsement (MCS 90) shall be attached.

Waiver of Subrogation. CONTRACTOR waives all rights against RTC and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the

business auto liability or commercial umbrella liability insurance obtained by Contractor pursuant to this agreement.

12. INDUSTRIAL (WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY) INSURANCE

It is understood and agreed that there shall be no Industrial (Worker's Compensation and Employer's Liability) Insurance coverage provided for CONTRACTOR or any Sub by RTC. CONTRACTOR, and any Subs, shall procure, pay for and maintain required coverages.

CONTRACTOR shall maintain workers' compensation and employer's liability insurance meeting the statutory requirements of the State of Nevada, including but not limited to NRS 616B.627 and NRS 617.210. The employer's liability limits shall not be less than $1,000,000 each accident for bodily injury by accident or $1,000,000 each employee for bodily injury by disease.

Should CONTRACTOR be self-funded for Industrial Insurance, CONTRACTOR shall so notify RTC in writing prior to the signing of a Contract. RTC reserves the right to accept or reject a self-funded CONTRACTOR and to approve the amount of any self-insured retentions. CONTRACTOR agrees that RTC is entitled to obtain additional documentation, financial or otherwise, for review prior to entering into a Contract with the self-funded CONTRACTOR.

Upon completion of the project, CONTRACTOR shall, if requested by RTC, provide RTC with a Final Certificate for itself and each Sub showing that CONTRACTOR and each Sub had maintained Industrial Insurance by paying all premiums due throughout the entire course of the project.

If CONTRACTOR or Sub is a sole proprietor, coverage for the sole proprietor must be purchased and evidence of coverage must appear on the Certificate of Insurance and Final Certificate.

CONTRACTOR waives all rights against RTC, its elected officials, officers, employees and agents. for recovery of damages to the extent these damages are covered by the workers compensation and employer's liability or commercial umbrella liability insurance obtained by Tenant pursuant to this agreement. CONTRACTOR shall obtain an endorsement equivalent to WC 00 03 13 to affect this waiver.

Exhibit C

FTA REQUIRED CLAUSES

CLAUSE 5 - ENERGY CONSERVATION [42 U.S.C. 6321 et seq.; 49 C.F.R. part 622, subpart C]

The Contractor agrees to comply with the mandatory standards and policies relating to energy efficiency that are contained in the State Energy Conservation Plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6321, et seq.).

CLAUSE 6 - CLEAN WATER REQUIREMENTS [33 U.S.C. §§ 1251-1387; 2 C.F.R. part 200, Appendix II (G)]

A. The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1251, et seq. The Contractor agrees to report each violation to the RTC and understands and acknowledges that the RTC will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

B. The Contractor also agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FTA.

CLAUSE 7 - LOBBYING RESTRICTIONS [31 U.S.C. § 1352; 2 C.F.R. § 200.450; 2 C.F.R. part 200 appendix II (J); 49 C.F.R. part 20]

Contractors who apply or bid for an award of $100,000 or more shall file the certification required by 49 C.F.R. Part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. § 1352. Such disclosures are forwarded from tier to tier up to the RTC.

CLAUSE 8 - ACCESS TO RECORDS AND REPORTS [49 U.S.C. § 5325(g); 2 C.F.R. § 200.333; 49 C.F.R. part 633]

The following access to records requirements apply to the Agreement:

A. The Contractor agrees to provide the RTC, the FTA Administrator, the DOT Office of Inspector General, Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to the Agreement for the purposes of making audits, examinations, excerpts, and transcriptions, and as may be necessary for the RTC to meet

its obligations under 2 CFR Part 200. This access includes timely and reasonable access to personnel for interviews and discussions related to the records. This right of access is not limited to the required retention period set forth in subsection C below, but continues as long as the records are retained.

B. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

C. The Contractor agrees to maintain all books, records, accounts, and reports required under the Agreement for a period of not less than three years, except in the event of litigation or settlement of claims arising from the performance of the Agreement, in which case the Contractor agrees to maintain such materials until the RTC, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims, or exceptions related thereto. The retention period commences after the RTC makes final payment and all other pending contract matters are closed.

D. The Contractor shall include this clause in all subcontracts and shall require all subcontractors to include the clause in their subcontracts, regardless of tier.

CLAUSE 9 - FEDERAL CHANGES

The Contractor shall at all times comply with all applicable FTA regulations, policies, procedures, and directives, including without limitation those listed directly or by reference in the Master Agreement between the RTC and the FTA, as they may be amended or promulgated from time to time during the term of the Agreement. The Contractor's failure to so comply shall constitute a material breach of the Agreement.

CLAUSE 10 - CLEAN AIR ACT [42 U.S.C. §§ 7401 – 7671q; 2 C.F.R. part 200, Appendix II (G)]

A. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401, et seq. The Contractor agrees to report each violation to the RTC and understands and agrees that the RTC will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

B. The Contractor also agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FTA.

CLAUSE 11 - RECYCLED PRODUCTS [42 U.S.C. § 6962; 40 C.F.R. part 247; 2 C.F.R. part § 200.322]

The Contractor agrees to provide a preference for those products and services that conserve natural resources, protect the environment, and are energy efficient by complying with and facilitating compliance with the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. § 6962), and the regulatory provisions of 40 C.F.R. Part 247.

CLAUSE 12 - NO GOVERNMENT OBLIGATION TO THIRD PARTIES

A. The RTC and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Agreement, absent the express written consent by the Federal Government, the Federal Government is not a party to the Agreement and shall not be subject to any obligations or liabilities to the RTC, the Contractor, or any other party (whether or not a part to that Agreement) pertaining to any matter resulting from the underlying Agreement.

B. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

CLAUSE 13 - PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS [49 U.S.C. § 5323(l) (1); 31 U.S.C. §§ 3801-3812; 18 U.S.C. § 1001; 49 C.F.R. part 31]

A. The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801, et seq., and U.S. DOT regulations, "Program Fraud Civil Remedies", 49 C.F.R. Part 31, apply to its actions pertaining to the Agreement. Upon execution of the Agreement, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the Agreement or the FTA assisted project for which the work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

B. The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l)(1) on the Contractor, to the extent the Federal Government deems appropriate.

C. The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

CLAUSE 14 - GOVERNMENT-WIDE DEBARMENT AND SUSPENSION [2 C.F.R. part 180; 2 C.F.R part 1200; 2 C.F.R. § 200.213; 2 C.F.R. part 200 Appendix II (I); Executive Order 12549; Executive Order 12689]

A. Contractor shall comply and facilitate compliance with U.S. Department of Transportation regulations, "Nonprocurement Suspension and Debarment," 2 CFR Part 1200, which

adopts and supplements the U.S. Office of Management and Budget "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 CFR Part 180. These provisions apply to each contract at any tier of $25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by a Federal Transit Administration official irrespective of the contract amount. As such, Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

1. Debarred from participation in any federally assisted award;
2. Suspended from participation in any federally assisted award;
3. Proposed for debarment from participation in any federally assisted award;
4. Declared ineligible to participate in any federally assisted award;
5. Voluntarily excluded from participation in any federally assisted award; or
6. Disqualified from participation in any federally assisted award.

B. Contractor certifies that it and/or its principals, affiliates, and subcontractors are not currently debarred or suspended. Contractor shall promptly inform the RTC of any change in the suspension or debarment status of Contractor or its principals, affiliates, and subcontractors during the term of the Agreement. Further, Contractor shall include a provision requiring compliance with the requirements of 2 CFR Part 180, Subpart C, as supplemented by 2 CFR Part 1200 in its lower-tier covered transactions.

C. The certification in this clause is a material representation of fact relied upon by RTC. If it is later determined by the RTC that Contractor knowingly rendered an erroneous certification, in addition to remedies available to the RTC, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

D. Contractor agrees to comply with the requirements of 2 CFR Part 180, Subpart C, as supplemented by 2 CFR Part 1200, throughout the term of the Agreement.

CLAUSE 15 - PRIVACY ACT

A. The Contractor agrees to comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of 1974, 5 U.S.C. § 552a. Among other things, the Contractor agrees to obtain the express consent of the Federal Government before the Contractor or its employees operate a system of records on behalf of the Federal Government. The Contractor understands that the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying Agreement.

B. The Contractor also agrees to include these requirements in each subcontract to administer any system of records on behalf of the Federal Government financed in whole or in part with Federal assistance provided by FTA.

CLAUSE 16 - CIVIL RIGHTS LAWS AND REGULATIONS

The Contractor agrees to comply with all applicable civil rights laws and regulations in accordance with applicable federal directives. The Contractor agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties. These include, but are not limited to, the following:

A. Nondiscrimination in Federal Public Transportation Programs

Contractor shall prohibit discrimination on the basis of race, color, religion, national origin, sex (including gender identity), disability, or age. Contractor shall prohibit the (i) exclusion from participation in employment or a business opportunity for reasons identified in 49 U.S.C. § 5332; (ii) denial of program benefits in employment or a business opportunity identified in 49 U.S.C. § 5332; or (iii) discrimination identified in 49 U.S.C. § 5332, including discrimination in employment or a business opportunity. Contractor shall follow the most recent edition of Federal Transit Administration Circular 4702.1, "Title VI Requirements and Guidelines for Federal Transit Administration Recipients," to the extent consistent with applicable Federal laws, regulations, requirements, and guidance, and other applicable Federal guidance that may be issued.

B. Nondiscrimination—Title VI of the Civil Rights Act

1. Contractor shall prohibit discrimination on the basis of race, color, or national origin.

2. Contractor shall comply with (i) Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000d et seq.; (ii) U.S. Department of Transportation regulations, "Nondiscrimination in Federally-Assisted Programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964," 49 CFR Part 21; and (iii) Federal transit law, specifically 49 U.S.C. § 5332.

3. Contractor shall follow (i) the most recent edition of Federal Transit Administration Circular 4702.1, "Title VI Requirements and Guidelines for Federal Transit Administration Recipients," to the extent consistent with applicable Federal laws, regulations, requirements, and guidance; (ii) U.S. Department of Justice "Guidelines for the enforcement of Title VI, Civil Rights Act of 1964," 28 CFR 50.3; and (iii) all other applicable Federal guidance that may be issued.

C. Equal Employment Opportunity

1. Federal Requirements and Guidance. Contractor shall prohibit discrimination on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin, and (i) comply with Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e et seq.; (ii) facilitate compliance with Executive Order No.

11246, "Equal Employment Opportunity" September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it in part and is applicable to Federal assistance programs; (iii) comply with Federal transit law, specifically 49 U.S.C. § 5332; (iv) comply with Federal Transit Administration Circular 4704.1 "Equal Employment Opportunity (EEO) Requirements and Guidelines for Federal Transit Administration Recipients;" and (v) follow other Federal guidance pertaining to equal employment opportunity laws, regulations, and requirements, and prohibitions against discrimination on the basis of disability.

2. Specifics. Contractor shall ensure that applicants for employment are employed and employees are treated during employment without discrimination on the basis of their race, color, religion, national origin, disability, age, sexual orientation, gender identity, or status as a parent, as provided in Executive Order No. 11246 and by any later executive order that amends or supersedes it, and as specified by U.S. Department of Labor regulations. Contractor shall take affirmative action that includes but is not limited to (i) recruitment advertising, recruitment, and employment; (ii) rates of pay and other forms of compensation; (iii) selection for training, including apprenticeship, and upgrading; and (iv) transfers, demotions, layoffs, and terminations. Contractor recognizes that Title VII of the Civil Rights Act of 1964, as amended, exempts Indian Tribes under the definition of "Employer."

3. Equal Employment Opportunity Requirements for Construction Activities. Contractor shall comply, when undertaking "construction" as recognized by the U.S. Department of Labor, with (i) U.S. Department of Labor regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 CFR Chapter 60; and (ii) Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later executive order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note.

D. Nondiscrimination on the Basis of Sex

Title IX of the Education Amendments of 1972, as amended, 20 U.S.C. § 1681 et seq. and implementing Federal regulations, "Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance," 49 CFR Part 25 prohibit discrimination on the basis of sex.

E. Nondiscrimination on the Basis of Age

In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. §§ 621-634; Federal transit law at 49 U.S.C. § 5332; the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 et seq.; 49 CFR Part 90, and 29 CFR Part 1625, Contractor agrees to refrain from discrimination for reason of age. In addition, Contractor agrees to comply with applicable Federal implementing regulations.

F. Nondiscrimination on the Basis of Disability

In accordance with Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794; the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 et seq.; the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq.; and Federal transit law at 49 U.S.C. § 5332, Contractor agrees that it will not discriminate against individuals on the basis of disability. Contractor further agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630, pertaining to employment of persons with disabilities. In addition, Contractor agrees to comply with applicable Federal implementing regulations.

G. Drug or Alcohol Abuse - Confidentiality and Other Civil Rights Protections

To the extent applicable, Contractor agrees to comply with the confidentiality and civil rights protections of the Drug Abuse Office and Treatment Act of 1972, as amended, 21 U.S.C. § 1101, et seq., the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitation Act of 1970, as amended, 42 U.S.C. § 4541, et seq., and the Public Health Service Act, as amended, 42 U.S.C. §§ 290dd-290dd-2.

H. Access to Services for Persons with Limited English Proficiency

Contractor agrees to promote accessibility of public transportation services to persons with limited understanding of English by following Executive Order No. 13166, "Improving Access to Services for Persons with Limited English Proficiency," 42 U.S.C. § 2000d-1 note, and U.S. DOT Notice, "DOT Policy Guidance Concerning Recipients' Responsibilities to Limited English Proficiency (LEP) Persons," 70 Fed. Reg. 74087, Dec. 14, 2005.

CLAUSE 19 - DISADVANTAGED BUSINESS ENTERPRISES (DBE) [49 C.F.R. part 26]

A. The RTC has established a DBE Program pursuant to 49 C.F.R. Part 26. The requirements and procedures of RTC's DBE Program are hereby incorporated by reference into this Agreement. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Agreement. Failure by the Contractor to carry out RTC's DBE Program procedures and requirements or applicable requirements of 49 C.F.R. Part 26 shall be considered a material breach of this Agreement and may be grounds for termination of this Agreement, or other such remedy as RTC deems appropriate, which may include, but is not limited to withholding monthly payments, assessing sanctions, liquidated damages, and/or disqualifying the Contractor from future bidding as non-responsible. The Contractor shall ensure that compliance with RTC's DBE Program and the requirements of 49 C.F.R. Part 26 be included in any and all subcontracts entered into which arise out of or are related to this Agreement.

B. For purposes of this Agreement, the RTC will accept only DBEs that are:

1. Certified at the time of bid opening or proposal evaluation, by the RTC or the Unified Certification Program; or

2. An out-of-state firm who has been certified by either a local government, state government or Federal government entity authorized to certify DBE status or an agency whose DBE certification process has received Federal Transit Administration approval; or

3. Certified by another agency approved by the RTC.

C. The Contractor must take necessary and reasonable steps to ensure that DBEs have a fair opportunity to participate in this Agreement. If the Contractor qualifies as a certified DBE in accordance with the requirements of 49 C.F.R. Part 26, Subpart D, or is joint venturing with a DBE certified in accordance with the cited regulations, a copy of the DBE certification(s) issued by a Unified Certification Program (UCP) in accordance with the cited regulations, and a description of the dollar value of the proposed work that it intends to perform with its own forces, together with a statement of the percentage interest in the Contract held by a joint venture DBE must be submitted. The Contractor must provide (1) written documentation of the Contractor's commitment to use identified DBEs; and (2) written confirmation from the DBE that it is participating in the Agreement.

D. Contractor shall not terminate DBE subcontractors listed in the DBE Participation Schedule without RTC's prior written consent. The RTC will provide its written consent only if Contractor has good cause to terminate the DBE firm. Before transmitting a request to terminate, Contractor shall give notice in writing to the DBE subcontractor of its intent to terminate and the reason for the request. Contractor shall give the DBE five days to respond to the notice and advise of the reasons why it objects to the proposed termination. When a DBE subcontractor is terminated or fails to complete its work on the Agreement for any reason, Contractor shall make good-faith efforts to find another DBE subcontractor to substitute for the original DBE and immediately notify The RTC in writing of its efforts to replace the original DBE. These good-faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the Agreement as the DBE that was terminated, to the extent needed to meet the contract goal established for this procurement.

E. The Contractor is require to pay its subcontractors performing work related to this Agreement for satisfactory performance of that work no later than 30 days after the Contractor's receipt of payment for that work from the RTC. In addition, if the Contractor holds retainage from its subcontractors, it shall return any retainage to those subcontractors within 30 days after the subcontractor's work related to the Agreement is satisfactory completed.

CLAUSE 20 - INCORPORATION OF FTA TERMS

The preceding provisions include, in part, certain standard terms and conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions

required by DOT, as set forth in FTA Circular 4220.1F, and FTA's Master Agreement, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any RTC requests which would cause the RTC to be in violation of the FTA terms and conditions.

CLAUSE 21 - SUBSTANCE ABUSE REQUIREMENTS [49 U.S.C. § 5331; 49 C.F.R. part 655; 49 C.F.R. part 40]

The Contractor agrees to establish and implement a drug and alcohol testing program that complies with 49 C.F.R. Part 655, produce any documentation necessary to establish its compliance with Part 655, and permit any authorized representative of the United States Department of Transportation or its operating administrations, the State of Nevada, or the RTC, to inspect the facilities and records associated with the implementation of the drug and alcohol testing program as required under 49 C.F.R. Part 655 and review the testing process. The Contractor agrees further to certify annually its compliance with Part 655 and to submit the Management Information System (MIS) reports to the RTC. To certify compliance the Contractor shall use the "Substance Abuse Certifications" in the "Annual List of Certifications and Assurances for Federal Transit Administration Grants and Cooperative Agreements," which is published annually in the Federal Register.

CLAUSE 23 - SAFETY

The Contractor agrees to comply and facilitate compliance with all applicable provisions of 49 U.S.C. § 5329 and any implementing regulations that FTA may issue.

CLAUSE 25 - VETERANS PREFERENCE

A. As provided in 49 U.S.C. § 5325(k), to the extent practicable, Contractor and its subcontractors shall give a hiring preference to veterans, as defined in 5 U.S.C. § 2108, who have the skills and abilities required to perform construction work required under the Agreement.

B. As provided in 49 U.S.C. § 5325(k), to the extent practicable, Contractor and its subcontractors shall not require any lower-tier subcontractor to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, and individual with a disability, or a former employee.

CLAUSE 26 - PREVAILING WAGE AND ANTI-KICKBACK COMPLIANCE

A. Contractor shall comply with the Davis-Bacon Act, 40 U.S.C. § 3141-3144 and 3146-3148, as supplemented by U.S. Department of Labor regulations at 29 CFR Part 5, "Labor Standards Provisions Applicable top Contracts Governing Federally Financed and Assisted Construction." In accordance with the statute, Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination

made by the Secretary of Labor. In addition, Contractor agrees to pay wages not less than once a week.

B. Contractor shall comply with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by U.S. Department of Labor regulations at 29 CFR Part 3, "Contractors and Subcontractor on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States." Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

CLAUSE 28 - CONTRACT WORK HOURS AND SAFETY STANDARDS ACT—NON-CONSTRUCTION

A. Contractor shall comply with all Federal laws, regulations, and requirements providing wage and hour protections for non-construction employees, in accordance with 40 U.S.C. § 3702, Contract Work Hours and Safety Standards Act, and other relevant parts of that Act, 40 U.S.C. § 3701 et seq., and U.S. Department of Labor regulations, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)," 29 CFR Part 5.

B. Contractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three (3) years from the completion of the Agreement for all laborers and mechanics, including guards and watchmen, working on the Agreement. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid.

C. Such records maintained under this section shall be made available by Contractor for inspection, copying, or transcription by authorized representatives of the Federal Transit Administration and the U.S. Department of Labor, and Contractor will permit such representatives to interview employees during working hours on the job.

D. Contractor shall require the inclusion of the language of this section in subcontracts of all tiers.

CLAUSE 29 - WHISTLEBLOWER PROTECTIONS

Contractor certifies that it is in compliance with Federal whistleblower protections at 10 U.S.C. § 2409, 41 U.S.C. § 4712 and 10 U.S.C. § 2324, 41 U.S.C. § 4304, and 41 U.S.C. § 4310.

CLAUSE 31 - FLY AMERICA [49 U.S.C. § 40118; 41 C.F.R. part 301-10; 48 C.F.R. part 47.4]

A. As used in this section, "international air transportation" means transportation by air between a place in the United States and a place outside the United States or between two places both of which are outside the United States. "United States" means the 50 States, the District of Columbia, and outlying areas. "U.S.-flag air carrier" means an air carrier holding a certificate under 49 U.S.C. Chapter 411.

B. When Federal funds are used to fund travel, Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 40118) (Fly America Act) requires contractors, recipients, and others use U.S.-flag air carriers for U.S. Government-financed international air transportation of personnel (and their personal effects) or property, to the extent that service by those carriers is available. It requires the Comptroller General of the United States, in the absence of satisfactory proof of the necessity for foreign-flag air transportation, to disallow expenditures from funds, appropriated or otherwise established for the account of the United States, for international air transportation secured aboard a foreign-flag air carrier if a U.S.-flag air carrier is available to provide such services.

C. If available, Contractor, in performing work under this Agreement, shall use U.S.-flag carriers for international air transportation of personnel (and their personal effects) or property. In the event that Contractor selects a carrier other than a U.S.-flag air carrier for international air transportation, Contractor shall include a statement on vouchers involving such transportation as follows:

> **Statement of Unavailability of U.S.-Flag Air Carriers**
>
> International air transportation of persons (and their personal effects) or property by U.S.-flag air carrier was not available or it was necessary to use foreign-flag air carrier service for the following reasons. See FAR 47.403. [State reasons].

D. Contractor shall include these requirements in each subcontract or purchase under this Agreement that may involve international air transportation.

CLAUSE 35 - SAFE OPERATION OF MOTOR VEHICLES [23 U.S.C. part 402; Executive Order No. 13043; Executive Order No. 13513; U.S. DOT Order No. 3902.10]

A. Seat Belt Use. Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company-rented vehicles, or personally operated vehicles. The terms “company-owned” and “company-leased” refer to vehicles owned or leased either by Contractor or the RTC.

B. Distracted Driving. Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contactor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under this Agreement.

C. Contractor shall require the inclusion of these requirements in subcontracts of all tiers.

CLAUSE 37 - OTHER ENVIRONMENTAL PROTECTIONS

A. Contractor shall comply with all applicable environmental and resource-use laws, regulations, and requirements and shall follow applicable guidance, now in effect or that

may become effective in the future, including state and local laws, ordinances, regulations, and requirements, and follow applicable guidance.

B. Applicable requirements include but are not limited to (i) the National Environmental Policy Act of 1969, as amended, 42 U.S.C. §§ 4321 et seq., and related regulations, Executive Orders, and guidance; (ii); Federal Transit Administration guidance on environmental reviews; (iii) Executive Orders and circulars related to environmental justice; (iv) Wild and Scenic Rivers Act of 1968; (v) Coastal Zone Management Act of 1972; (vi) the Endangered Species Act of 1973; (vii) Magnuson Stevens Fishery Conservation and Management Act; (viii) Comprehensive Environmental Response, Compensation, and Liability Act; (ix) Executive Order No. 11990 relating to "Protection of Wetlands;" (x) Executive Order Nos. 11988 and 13690 relating to "Floodplain Management;" (xi) 49 U.S.C. § 303, 23 CFR Part 774, and 49 CFR Part 622; (xii) historic preservation requirements; and (xiii) policies promoting the preservation of places and objects of religious importance to Native Americans.

CLAUSE 38 - LABOR REQUIREMENT

Contractor shall comply with the Fair Labor Standards Act ("FLSA"), 29 U.S.C. § 201 et seq. to the extent the FLSA applies to employees performing work with Federal assistance involving commerce, and as the Federal Government otherwise determines applicable.

April 17, 2020 **AGENDA ITEM 3.11**

TO: Regional Transportation Commission

FROM: David Carr, Facilities and Fleet Manager

Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Purchase of Ford F-550 flatbed truck with crane for Bus Shelter installation/removal and bus stop maintenance

RECOMMENDATION

Approve the purchase of a Ford F-550 utility flatbed truck with a crane, utilizing the State of Nevada vehicle procurement contract number PUR0000113 in the amount of $94,909; authorize the RTC Executive Director to execute the agreement.

SUMMARY

In FY 2020, RTC has budgeted the purchase of a Ford F-550 utility flatbed truck with crane for bus shelter installation/removal and bus stop maintenance. The purpose of this vehicle is to install new bus shelters as well as lift and remove/relocate existing bus shelters. This vehicle will also provide support for all major bus stop maintenance including removal of damaged bus shelters and any major maintenance work.

FISCAL IMPACT

Funding for this agreement is included in the FY 2021 capital budget, and is grant funded.

PREVIOUS BOARD ACTIONS

There has been no previous Board action on this item.

April 17, 2020 **AGENDA ITEM 3.12**

TO: Regional Transportation Commission

FROM: Jennifer Meyers
Contract Administrator

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Professional Services Agreement (PSA) for the Coordinated Human Services Transportation Plan Update

RECOMMENDATION

Approve a Professional Services Agreement (PSA) with LSC Transportation Consultants, Inc. to provide consultant services for the update of the Coordinated Human Services Transportation Plan (CTP) in an amount not to exceed $70,140; authorize the RTC Executive Director to execute the agreement.

SUMMARY

The Coordinated Human Services Transportation Plan (CTP) is a locally developed plan that identifies the transportation needs of individuals with disabilities, seniors, and people with low incomes; provides strategies for meeting those local needs; and prioritizes transportation services and projects for funding and implementation. The current plan was approved by the Board in February, 2015. Staff sought a qualified consultant to prepare the update which will align with future updates of the Regional Transportation Plan (RTP), and be incorporated therein.

This Agreement (see Attachment A) with LSC Transportation Consultants, Inc. is for professional consulting services for the update of the CTP in an amount not to exceed $70,140.00.

RTC sought quotes from six consulting firms with only one firm, LSC Transportation Consultants, Inc. submitting a proposal. Negotiation of LSC's scope, schedule and budget indicated the amount for consultant services is within the appropriated budget.

FISCAL IMPACT

Funding for this agreement is included in the FY 2020 Board approved budget.

PREVIOUS ACTIONS BY BOARD

There has been no previous Board action or direction on this matter.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this report.

Attachment

AGREEMENT
FOR
PROFESSIONAL SERVICES

This agreement (this "Agreement") is dated and effective as of May 1, 2020, by and between the Regional Transportation Commission of Washoe County ("RTC") and LSC Transportation Consultants, Inc. ("CONSULTANT").

WITNESSETH:

WHEREAS, RTC issued a Request for Proposals for interested persons and firms to produce an updated Coordinated Human Services Public Transportation Plan for Washoe County, Nevada; and

WHEREAS, CONSULTANT submitted a proposal (the "Proposal") and was selected to perform the work.

NOW, THEREFORE, RTC and CONSULTANT, in consideration of the mutual covenants and other consideration set forth herein, do hereby agree as follows:

ARTICLE 1 – TERM AND ENGAGEMENT

1.1. The term of this Agreement shall be from the date first written above through December 31, 2020, unless terminated at an earlier date, or extended to a later date, pursuant to the provisions herein.

1.2. CONSULTANT will perform the work using the project team identified in the PROPOSAL. Any changes to the project team must be approved by RTC's Project Manager.

1.3. CONSULTANT will promptly, diligently and faithfully execute the work to completion in accordance with applicable professional standards subject to any delays due to strikes, acts of God, act of any government, civil disturbances, or any other cause beyond the reasonable control of CONSULTANT.

1.4. CONSULTANT shall not proceed with work until both parties have executed this Agreement and a purchase order has been issued to CONSULTANT. If CONSULTANT violates that prohibition, CONSULTANT forfeits any and all right to reimbursement and payment for that work and waives any and all claims against RTC, its employees, agents, and affiliates, including but not limited to monetary damages, and any other remedy available at law or in equity arising under the terms of this Agreement. Furthermore, prior to execution and issuance of a purchase order, CONSULTANT shall not rely on the terms of this Agreement in any way, including but not limited to any written or oral representations, assurances or warranties made by RTC or any of its agents, employees or affiliates, or on any dates of performance, deadlines, indemnities, or any term contained in this Agreement or otherwise.

ARTICLE 2 - SERVICES OF CONSULTANT

2.1. SCOPE OF SERVICES

The scope of services consist of the tasks set forth in Exhibit A.

2.2. SCHEDULE OF SERVICES

Tasks and subtasks shall be completed in accordance with the schedule in Exhibit A. Any change(s) to the schedule must be approved by RTC's Project Manager.

2.3. CONTINGENCY

Contingency line items identified in the scope of services are for miscellaneous increases within the scope of work. Prior to the use of any contingency amounts, CONSULTANT shall provide a letter to RTC's Project Manager detailing the need, scope, and not-to-exceed budget for the proposed work. Work to be paid for out of contingency shall proceed only with the RTC Project Manager's written approval.

2.4. OPTIONS

RTC shall have the right to exercise its option(s) for all or any part of the optional tasks or subtasks identified in Exhibit A. CONSULTANT will prepare and submit a detailed scope of services reflecting the specific optional services requested, a schedule for such services, and a cost proposal. RTC will review and approve the scope of services and RTC and CONSULTANT will discuss and agree upon compensation and a schedule. CONSULTANT shall undertake no work on any optional task without written notice to proceed with the performance of said task. RTC, at its sole option and discretion, may select another individual or firm to perform the optional tasks or subtasks identified in Exhibit A.

2.5. ADDITIONAL SERVICES

CONSULTANT will provide additional services when agreed to in writing by RTC and CONSULTANT.

2.6. ERRORS AND OMISSIONS

CONSULTANT shall, without additional compensation, correct or revise any deficiencies, errors, or omissions caused by CONSULTANT in its analysis, reports, and services. CONSULTANT also agrees that if any error or omission is found, CONSULTANT will expeditiously make the necessary correction, at no expense to RTC. If an error or omission was directly caused by RTC, and not by CONSULTANT and RTC requires that such error or omission be corrected, CONSULTANT may be compensated for such additional work.

ARTICLE 3 - COMPENSATION

3.1. CONSULTANT shall be paid for hours worked at the hourly rates and rates for testing in Exhibit B. RTC shall not be responsible for any other costs or expenses except as provided in Exhibit B.

3.2. The maximum amount payable to CONSULTANT to complete each task is equal to the not-to-exceed amounts identified in Exhibit B. CONSULTANT can request in writing that RTC's Project Manager reallocate not-to-exceed amounts between tasks. A request to reallocate not-to-exceed amounts must be accompanied with a revised fee schedule, and must be approved in writing by RTC's Project Manager prior to performance of the work. In no case shall CONSULTANT be compensated in excess of the following not-to exceed amount: $70,104.

3.3. For any work authorized under Section 2.4, "Additional Services," RTC and CONSULTANT will negotiate not-to-exceed amounts based on the standard hourly rates and rates for testing in Exhibit B. Any work authorized under Section 2.4, "Additional Services," when performed by persons who are not employees or individuals employed by affiliates of CONSULTANT, will be billed at a mutually agreed upon rate for such services, but not more than 105% of the amounts billed to CONSULTANT for such services.

3.4. CONSULTANT shall receive compensation for preparing for and/or appearing in any litigation at the request of RTC, except: (1) if such litigation costs are incurred by CONSULTANT in defending its work or services or those of any of its sub-consultants; or (2) as may be required by CONSULTANT's indemnification obligations. Compensation for litigation services requested by RTC shall be paid at a mutually agreed upon rate and/or at a reasonable rate for such services.

ARTICLE 4 - INVOICING

4.1. CONSULTANT shall submit monthly invoices in the format specified by RTC. Invoices must be submitted to accountspayable@rtcwashoe.com. RTC's payment terms are 30 days after the receipt of the invoice. Simple interest will be paid at the rate of half a percent (0.5%) per month on all invoices approved by RTC that are not paid within thirty (30) days of receipt of the invoice.

4.2. RTC shall notify CONSULTANT of any disagreement with any submitted invoice for consulting services within thirty (30) days of receipt of an invoice. Any amounts not in dispute shall be promptly paid by RTC.

4.3. CONSULTANT shall maintain complete records supporting every request for payment that may become due. Upon request, CONSULTANT shall produce all or a portion of its records and RTC shall have the right to inspect and copy such records.

ARTICLE 5 - ACCESS TO INFORMATION AND PROPERTY

RTC will provide access to and make all provisions for CONSULTANT to enter upon RTC facilities and public lands, as required for CONSULTANT to perform its work under this Agreement.

ARTICLE 6 - OWNERSHIP OF WORK

6.1. Plans, reports, studies, tracings, maps, software, electronic files, licenses, programs, equipment manuals, and databases and other documents or instruments of service prepared or obtained by CONSULTANT in the course of performing work under this Agreement, shall be delivered to and become the property of RTC. Software already developed and purchased by CONSULTANT prior to the Agreement is excluded from this requirement. CONSULTANT and its sub-consultants shall convey and transfer all copyrightable interests, trademarks, licenses, and other intellectual property rights in such materials to RTC upon completion of all services under this Agreement and upon payment in full of all compensation due to CONSULTANT in accordance with the terms of this Agreement. Basic survey notes, sketches, charts, computations and similar data prepared or obtained by CONSULTANT under this Agreement shall, upon request, also be provided to RTC.

6.2. CONSULTANT represents that it has secured all necessary licenses, consents, or approvals to use the components of any intellectual property, including computer software, used in providing services under this Agreement, that it has full legal title to and the right to reproduce such materials, and that it has the right to convey such title and other necessary rights and interests to RTC.

6.3. CONSULTANT shall bear all costs arising from the use of patented, copyrighted, trade secret, or trademarked materials, equipment, devices, or processes used on or incorporated in the services and materials produced under this Agreement.

6.4. CONSULTANT agrees that all reports, communications, electronic files, databases, documents, and information that it obtains or prepares in connection with performing this Agreement shall be treated as confidential material and shall not be released or published without the prior written consent of RTC; provided, however, that CONSULTANT may refer to this scope of work in connection with its promotional literature in a professional and commercially reasonable manner. The provisions of this subsection shall not apply to information in whatever form that comes into the public domain. The provisions of this paragraph also shall not restrict CONSULTANT from giving notices required by law or complying with an order to provide information or data when such order is issued by a court, administrative agency, or other entity with proper jurisdiction, or if it is reasonably necessary for CONSULTANT to defend itself from any suit or claim.

ARTICLE 7 - TERMINATION

7.1. CONTRACT TERMINATION FOR DEFAULT

If CONSULTANT fails to perform services in the manner called for in this Agreement or if CONSULTANT fails to comply with any other provisions of this Agreement, RTC may terminate this Agreement for default. Termination shall be effected by serving a notice of termination on CONSULTANT setting forth the manner in which CONSULTANT is in default. CONSULTANT will only be paid the contract price for services delivered and accepted, or services performed in accordance with the manner of performance set forth in this Agreement.

If it is later determined by RTC that CONSULTANT had an excusable reason for not performing, such as a fire, flood, or events which are not the fault of or are beyond the control of CONSULTANT, RTC, after setting up a new performance schedule, may allow CONSULTANT to continue work, or treat the termination as a termination for convenience.

7.2. CONTRACT TERMINATION FOR CONVENIENCE

RTC may terminate this Agreement, in whole or in part, at any time by written notice to CONSULTANT when it is in RTC's best interest. CONSULTANT shall be paid its costs, including contract closeout costs, and profit on work performed up to the time of termination. CONSULTANT shall promptly submit its termination claim to RTC to be paid CONSULTANT. If CONSULTANT has any property in its possession belonging to RTC, CONSULTANT will account for the same, and dispose of it in the manner RTC directs.

ARTICLE 8 - INSURANCE

8.1. CONSULTANT shall not commence any work or permit any employee/agent to commence any work until satisfactory proof has been submitted to RTC that all insurance requirements have been met.

8.2. In conjunction with the performance of the services/work required by the terms of this Agreement, CONSULTANT shall obtain all types and amounts of insurance set forth in Exhibit C, and shall comply with all provisions set forth therein.

ARTICLE 9 - HOLD HARMLESS

9.1. CONSULTANT's obligation under this provision is as set forth in Exhibit C. Said obligation would also extend to any liability of RTC resulting from any action to clear any lien and/or to recover for damage to RTC property.

ARTICLE 10 - EQUAL EMPLOYMENT OPPORTUNITY

10.1. During the performance of this Agreement, CONSULTANT agrees not to discriminate against any employee or applicant for employment because of race, color, religion, sex, age, disability, or national origin. CONSULTANT will take affirmative action to ensure that applicants are employed, and that employees are treated fairly during employment, without regard to their race, color, religion, sex, age, disability, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. CONSULTANT agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by RTC setting forth the provisions of this nondiscrimination clause.

10.2. CONSULTANT will, in all solicitations or advertisements for employees placed by or on behalf of CONSULTANT, state that well qualified applicants will receive consideration of employment without regard to race, color, religion, sex, age, disability, or national origin.

10.3. CONSULTANT will cause the foregoing provisions to be inserted in all sub-agreements for any work covered by this Agreement so that such provisions will be binding upon each sub-consultant.

ARTICLE 11 - RESOLUTION OF CLAIMS AND DISPUTES

11.1. NEGOTIATED RESOLUTION

In the event that any dispute or claim arises under this Agreement, the parties shall timely cooperate and negotiate in good faith to resolve any such dispute or claim. Such cooperation shall include providing the other party with all information in order to properly evaluate the dispute or claim and making available the necessary personnel to discuss and make decisions relative to the dispute or claim.

11.2. MEDIATION

If the parties have been unable to reach an informal negotiated resolution to the dispute or claim within thirty (30) days following submission in writing of the dispute or claim to the other party, or such longer period of time as the parties may agree to in writing, either party may then request, in writing, that the dispute or claim be submitted to mediation (the "Mediation Notice"). After the other party's receipt or deemed receipt of the Mediation Notice, the parties shall endeavor to agree upon a mutually acceptable mediator, but if the parties have been unable to agree upon a mediator within ten (10) days following receipt of the Mediation Notice, then each party shall select a mediator and those two selected mediators shall select the mediator. A mediator selected by the parties' designated mediators shall meet the qualification set forth in as provided in Rule 4 of Part C., "Nevada Mediation Rules" of the "Rules Governing Alternative Dispute Resolutions adopted by the Nevada Supreme Court." Unless otherwise agreed to by the parties, in writing, the

mediator shall have complete discretion over the conduct of the mediation proceeding. Unless otherwise agreed to by the parties, in writing, the mediation proceeding must take place within thirty (30) days following appointment of the mediator. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in Washoe County, Nevada, unless otherwise agreed to by the parties, in writing. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

11.3. LITIGATION

In the event that the parties are unable to settle and/or resolve the dispute or claim as provided above, then either party may proceed with litigation in the Second Judicial District Court of the State of Nevada, County of Washoe.

11.4. CONTINUING CONTRACT PERFORMANCE

During the pendency of any dispute or claim the parties shall proceed diligently with performance of this Agreement and such dispute or claim shall not constitute an excuse or defense for a party's nonperformance or delay.

ARTICLE 12 – PROJECT MANAGERS

12.1. RTC's Project Manager is Jennifer Meyers or such other person as is later designated in writing by RTC. RTC's Project Manager has authority to act as RTC's representative with respect to the performance of this Agreement.

12.2. CONSULTANT' Project Manager is Albert T. Stoddard III, Ph.D., P.E. or such other person as is later designated in writing by CONSULTANT. CONSULTANT's Project Manager has authority to act as CONSULTANT's representative with respect to the performance of this Agreement.

ARTICLE 13 - NOTICE

13.1. Notices required under this Agreement shall be given as follows:

RTC:
Bill Thomas, AICP
Executive Director
Jennifer Meyers
RTC Project Manager
Regional Transportation Commission
1105 Terminal Way
Reno, Nevada 89502
(775) 332-9513

CONSULTANT: Albert T. Stoddard III, Ph.D., P.E.
Project Manager/Senior Advisor
LSC Transportation Consultants, Inc.
2504 East Pikes Peak Avenue, Suite 304
Colorado Springs, CO 80909
(719) 633-2868

ARTICLE 14 - DELAYS IN PERFORMANCE

14.1. TIME IS OF THE ESSENCE

It is understood and agreed that all times stated and referred to herein are of the essence. The period for performance may be extended by RTC's Executive Director pursuant to the process specified herein. No extension of time shall be valid unless reduced to writing and signed by RTC's Executive Director.

14.2. UNAVOIDABLE DELAYS

If the timely completion of the services under this Agreement should be unavoidably delayed, RTC may extend the time for completion of this Agreement for not less than the number of days CONSULTANT was excusably delayed. A delay is unavoidable only if the delay is not reasonably expected to occur in connection with or during CONSULTANT's performance, is not caused directly or substantially by acts, omissions, negligence or mistakes of CONSULTANT, is substantial and in fact causes CONSULTANT to miss specified completion dates, and cannot adequately be guarded against by contractual or legal means.

14.3. NOTIFICATION OF DELAYS

CONSULTANT shall notify RTC as soon as CONSULTANT has knowledge that an event has occurred or otherwise becomes aware that CONSULTANT will be delayed in the completion of the work. Within ten (10) working days thereafter, CONSULTANT shall provide such notice to RTC, in writing, furnishing as much detail on the delay as possible and requesting an extension of time.

14.4. REQUEST FOR EXTENSION

Any request by CONSULTANT for an extension of time to complete the work under this Agreement shall be made in writing to RTC. CONSULTANT shall supply to RTC documentation to substantiate and justify the additional time needed to complete the work and shall provide a revised schedule. RTC shall provide CONSULTANT with notice of its decision within a reasonable time after receipt of a request.

ARTICLE 15 - GENERAL PROVISIONS

15.1. SUCCESSORS AND ASSIGNS

RTC and CONSULTANT bind themselves and their successors and assigns to the other party and to the successors and assigns of such party, with respect to the performance of all covenants of this Agreement. Except as set forth herein, neither RTC nor CONSULTANT shall assign or transfer interest in this Agreement without the written consent of the other. Nothing herein shall be construed as creating a personal liability on the part of any officer or agent or any public body which may be a party hereto, nor shall it be construed as giving any rights or benefits hereunder to anyone other than RTC and CONSULTANT.

15.2. NON TRANSFERABILITY

This Agreement is for CONSULTANT's professional services, and CONSULTANT's rights and obligations hereunder may not be assigned without the prior written consent of RTC.

15.3. SEVERABILITY

If any part, term, article, or provision of this Agreement is, by a court of competent jurisdiction, held to be illegal, void, or unenforceable, or to be in conflict with any law of the State of Nevada, the validity of the remaining provisions or portions of this Agreement are not affected, and the rights and obligations of the parties shall be construed and enforced as if this Agreement did not contain the particular part, term, or provision held invalid.

15.4. RELATIONSHIP OF PARTIES

CONSULTANT is an independent contractor to RTC under this Agreement. Accordingly, CONSULTANT is not entitled to participate in any retirement, deferred compensation, health insurance plans or other benefits RTC provides to its employees. CONSULTANT shall be free to contract to provide similar services for others while it is under contract to RTC, so long as said services and advocacy are not in direct conflict, as determined by RTC, with services being provided by CONSULTANT to RTC.

15.5. WAIVER/BREACH

Any waiver or breach of a provision in this Agreement shall not be deemed a waiver of any other provision in this Agreement and no waiver is valid unless in writing and executed by the waiving party. An extension of the time for performance of any obligation or act shall not be deemed an extension of time for the performance of any other obligation or act. This Agreement inures to the benefit of and is binding upon the parties to this Agreement and their respective heirs, successors and assigns.

15.6. REGULATORY COMPLIANCE

A. CONSULTANT shall comply with all applicable federal, state and local government laws, regulations and ordinances. CONSULTANT shall be responsible for obtaining all necessary permits and licenses for performance of services under this Agreement. Upon request of RTC, CONSULTANT shall furnish RTC certificates of compliance with all such laws, orders and regulations.

B. CONSULTANT represents and warrants that none of the services to be rendered pursuant to this Agreement constitute the performance of public work, as that term is defined by Section 338.010(17) of the Nevada Revised Statutes. To the extent CONSULTANT does engage in such public work, CONSULTANT shall be responsible for paying the prevailing wage as required by Chapter 338 of the Nevada Revised Statutes.

15.7. EXCLUSIVE AGREEMENT

There are no verbal agreements, representations or understandings affecting this Agreement, and all negotiations, representations and undertakings are set forth herein with the understanding that this Agreement constitutes the entire understanding by and between the parties.

15.8. AMENDMENTS

No alteration, amendment or modification of this Agreement shall be effective unless it is in writing and signed by both parties.

15.9. CONTINUING OBLIGATION

CONSULTANT agrees that if, because of death or any other occurrence it becomes impossible for any principal or employee of CONSULTANT to render the services required under this Agreement, neither CONSULTANT nor the surviving principals shall be relieved of any obligation to render complete performance. However, in such event, RTC may terminate this Agreement if it considers the death or incapacity of such principal or employee to be a loss of such magnitude as to affect CONSULTANT's ability to satisfactorily complete the performance of this Agreement.

15.10. APPLICABLE LAW AND VENUE

The provisions of this Agreement shall be governed and construed in accordance with the laws of the State of Nevada. The exclusive venue and court for all lawsuits concerning this Agreement shall be the Second Judicial District Court of the State of Nevada, County of Washoe, and the parties hereto submit to the jurisdiction of that District Court.

15.11. ATTORNEYS' FEES

In the event of a dispute between the parties result in a proceeding in any Court of Nevada having jurisdiction, the prevailing party shall be entitled to an award of costs and a reasonable attorneys' fees.

15.12. CERTIFICATION REQUIRED BY NEVADA SENATE BILL 27 (2017)

CONSULTANT expressly certifies and agrees, as a material part of this Agreement, that it is not currently engaged in a boycott of Israel. CONSULTANT further agrees, as a material part of this Agreement, it will not engage in a boycott of Israel for the duration of this Agreement. If, at any time during the formation or duration of this Agreement, CONSULTANT is engaged or engages in a boycott of Israel, it will constitute a material breach of this Agreement.

ARTICLE 16 - FEDERAL FORMS AND CLAUSES

16.1. CONSULTANT has completed and signed the following: (1) Affidavit of Non-Collusion; (2) Certification Regarding Debarment, Suspension, Other Ineligibility and Voluntary Exclusion; (3) Certification Required by 31 U.S.C. § 1352, Restrictions on Lobbying Using Federal Appropriated Funds, and "Instructions for Completion of SF-LLL, Disclosure of Lobbying Activities". CONSULTANT affirms that such certifications remain valid and shall immediately notify RTC if circumstances change that affect the validity of these certifications.

16.2. This Agreement is funded in whole or in part with money administered by the Nevada Department of Transportation on behalf of the Federal Highway Administration. As a condition for receiving payment under this Agreement, CONSULTANT agrees to comply with the federally required clauses set forth in Exhibit D, E and F.

/ / /

/ / /

/ / /

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement the day and year first above written.

APPROVED AS TO LEGALITY AND FORM

By: _____
Adam Spear
RTC Director of Legal Services

REGIONAL TRANSPORTATION COMMISSION
OF WASHOE COUNTY

By: _____
Bill Thomas, AICP, Executive Director

LSC TRANSPORTATION CONSULTANTS, INC.

By: _____
Albert T. Stoddard III, Ph.D., P.E., Senior Advisor

Exhibit A

Scope of Services

ATTACHMENT A
SCOPE OF SERVICES/RESPONSIBILITIES

Develop an updated Coordinated Human Services Public Transportation Plan and make recommendations for changes in "operating business processes."

Task 0 ***Project Administration and Coordination***

- Consultant added task to ensure plan is completed on time, within budget, and with full satisfaction of the RTC. Consultant Project Manager will communicate regularly with RTC staff to provide updates, discuss any issues, and coordinate upcoming activities.
- **Responsible Party:** Consultant/RTC staff

Task	Deliverable
0.0	*Regular/consistent verbal and/or written communications.*

Task 1 ***Project Team Meetings***

- Monthly project team meetings via video conference with consultant to ensure good communication on upcoming tasks and to make sure the project remains on time and within budget.
- **Responsible Party:** Consultant/RTC staff

Task	Deliverable
1.1	*Meeting Notes/Minutes*

Task 2 ***Update Stakeholder List***

- Stakeholder involvement is an important element to this project and required by Federal regulations. Utilizing a survey instrument, update the current list of project stakeholders specific for Washoe County including social and human service agencies, transit providers, hospital administrators, Veteran representatives, Transportation Network Companies and other community organizations and members of the public that represent the target populations. Other stakeholders could include private and other transportation providers, including state and regional mobility managers. Use the most recent coordinated plan as a starting point for updating the list. Consult with RTC staff to further refine the list.
- After concurring with RTC, if necessary meet with NV DHHS' State Medicaid Transportation Broker(s) and/or each of the five (5) current 5310 project subrecipients.
- **Responsible Party:** Consultant

Task	Deliverable
2.1	*List of Stakeholders*

Task 3 *Existing Conditions Analysis*

Task 3.1 Review Existing Planning Documents

- Review relevant plans, studies and other publications, including, at a minimum, the following:
    - 2015 Coordinated Human Services Public Transportation Plan – https://www.rtcwashoe.com/wp-content/uploads/2017/04/Coordinated-Transportation-Plan.pdf
    - 2018-2022 Short Range Transit Plan - https://rtcwashoe.wpengine.com/wp-content/uploads/2017/06/SRTP17-FINAL1-EMD.pdf
    - Public Participation Plan - https://www.rtcwashoe.com/mpo-projects/public-participation-plan/
    - 2040 Regional Transportation Plan – https://www.rtcwashoe.com/mpo-projects/rtp/
- Information on the Nevada Department of Health & Human Services website at http://dhhs.nv.gov/
- Other documents deemed relevant to the development of the study.
- **Responsible Party:** Consultant

Task 3.2 Develop Inventory of Available Services

- Review the inventory from the most recent coordinated plan and update through Stakeholder input utilizing a survey and other reliable sources. Distribute the survey to stakeholder agencies who either provide transportation and/or serve clients needing transportation. The survey will solicit detailed information regarding the type and capacity of transportation services provided, interest and/or need in coordination, and level of clientele needing assistance and their challenges with transportation.
- Conduct interviews only if surveys were not completed.
- Services in the inventory will include RTC's publicly operated fixed-route and demand response services, transportation services provided or sponsored by social and human service agencies and other community organizations, as well as private transportation services. The inventory will be comprehensive and serve as the building block for identifying coordination strategies and transportation gaps.
- **Responsible Party:** Consultant /RTC staff

Task 3.3 Geographic Service Area

- Document geographic service area and schedules of all transportation services; as well as capacity and/or number of vehicles for each service. Examine current coordination efforts and document accordingly.
- **Responsible Party:** Consultant

Task	Deliverable
3.1	*Summary of Relevant Research and Planning Documents*
3.2	*Existing Services Report utilizing survey instrument*
3.3	*Geographic Services Report*

Task 4 *Analysis of Transportation Disadvantaged Populations and Demographic Profile*

Task 4.1 Demographic Profile

- Develop a demographic profile of Washoe County using data from sources such as the RTC, US Census Bureau, State of Nevada, and local data from each jurisdiction, where applicable. The demographic profile will focus on the three target populations: persons with disabilities, older adults, and low-income individuals. Incorporate other economic and social characteristics such as income, employment, and vehicle access to develop a clear picture of transportation needs throughout the county. RTC will develop maps relevant to this data for inclusion in the report.
- **Responsible Party:** Consultant

Task	Deliverable
4.1	*Demographic Profile Report*

Task 5 *Public Outreach*

Task 5.1 Project Initiation Workshops

- Schedule, coordinate, publicize and facilitate public meetings in collaboration with RTC's outreach for development of the 2050 RTP. Present background information about the project, and solicit oral and written input about the needs and service gaps of the target populations. At least two meetings should be scheduled, throughout the county at locations where accessible transportation services can be made available. The public and identified Stakeholders will be invited via public notices and other avenues. If deemed necessary, Spanish translators will be present at the workshops, and provided by RTC.
- **Responsible Party:** Consultant /RTC staff

Task 5.2 Draft Plan Review Public Workshops

- Schedule, coordinate, publicize and facilitate in collaboration with RTC's outreach development of its 2050 RTP at least two public workshops, to present a summary of the draft plan and receive comments and recommendations about the identified strategies and implementation plan. The workshops should be located where accessible transportation services can be made available. The public and project Stakeholders will be invited via public notices and other avenues. If deemed necessary, Spanish translators will be present at the workshops, and provided by RTC.
- **Responsible Party:** Consultant /RTC staff

Task	Deliverable
5.1	*Project Initiation PowerPoint Presentation, Workshop Summaries, and Photos*
5.3	*Draft Plan Review PowerPoint Presentation, Workshop Summaries, and Photos*

Task 6 *Identify Strategies and Implementation Plan*

Task 6.1: Key Findings and Assessment of Transportation Needs

- Quantify current and projected transportation needs in the service area and identify gaps in existing services. Review inefficiencies and duplication in the current transportation system. These findings will serve as the basis for the development of strategies and implementation priorities.
- Assess existing conditions, including the current reality of coordinated transportation in Washoe County, providing a comparison of current reality versus assumptions in 2015.
- Analyze demographic, economic, and technological trends that will affect transportation system demands during two upcoming decades.
- **Responsible Party:** Consultant

Task 6.2: Identify Strategies

- Identify strategies, activities and/or projects to address the identified gaps in service, identification of coordination actions to eliminate or reduce duplication in services, new technologies to enhance transportation services, and strategies for more efficient utilization of resources into the plan. Examine coordination opportunities, integrated services, new technologies, and/or alternative service delivery options or models.
- Develop methodology for prioritizing implementation strategies. The strategies identified will be prioritized based on evaluation criteria such as resources, time, and feasibility for implementing specific strategies and/or activities identified.
- Suggest strategies to improve and enhance transportation coordination in Washoe County, including, but not limited to, the following areas:
    - The ongoing role of the RTC
    - Most effective use of FTA funds available to the RTC; including assessing how Federal transportation legislation known as Fixing America's Surface Transportation Act (FAST Act) as well as potential legislation resulting from a new Transportation Bill might affect coordination activities in Washoe County
    - Approaches to engage other regional departments
    - Strategies to engage non-profit transportation providers in the absence of state mandates
    - Strategies to expand participation by for-profit transportation providers
    - Strategies to expand base service levels in underserved areas of the region
    - Review overall funding of coordinated transportation services
    - Review RTC's FTA Section 5310 Formula Fund program and make recommendations as to the most appropriate use of the funds to support coordination of community transportation in Washoe County

- Review RTC's FTA Section 5310 Formula Fund program methodology and solicitation process, and make recommendations for change based on overall project results/findings
- Information on RTC's 5310 Formula Funded program is available online https://www.rtcwashoe.com/public-transportation/accessibility

- **Responsible Party:** Consultant

Task 6.3: Implementation Plan

- Develop a detailed implementation plan of the preferred strategies categorized as high, medium, and low priority. Identify estimated costs and timeframe for implementation, potential funding sources, and other information necessary for program implementation.
- **Responsible Party:** Consultant

Task	Deliverable
6.1	*Needs Assessment Report*
6.2	*Strategies and Evaluation Report*
6.3	*Implementation Plan*

Task 7 *Final Documentation*

Task 7.1: Prepare Draft Report

- Compile all deliverables to develop a draft of the Coordinated Human Services Public Transportation Plan for Washoe County, Nevada. The draft plan will be reviewed by the project team, stakeholders, and other parties identified by the RTC.
- Present a mid-project report to the project team on or before August 31, 2020.
- **Responsible Party:** Consultant

Task 7.2: Prepare Final Report

- Incorporate feedback/comments and revise the draft plan into three administrative drafts. The administrative drafts will be reviewed by the project team, and the plans will then be revised and finalized by the consultant to go before the RTC's Technical Advisory Committee (TAC) and Citizens Multimodal Advisory Committee for review.
- **Responsible Party:** Consultant

Task 7.3: Final Report

- Final Report: provide five (5) bound copies, a digital copy in PDF format, and an editable digital copy in Microsoft Word or another editable digital format approved by the RTC no later than October 31, 2020.
- Consultant's Project Manager or designee will be available for the presentation of the final coordinated plan to the Regional Transportation Board of Commissioners at a regularly scheduled meeting in either November or December, 2020.
- Provide copies of all background information used for and developed during the project.

- **Responsible Party:** Consultant/RTC staff

Task	Deliverable
7.1	*Draft Plan – on or before August 31, 2020*
7.2	*Administrative Draft and Final Plan – on or before October 31, 2020*
7.3	*PowerPoint Presentation of Final Plan – on or before October 31, 2020. RTC staff will present to Commission*

Note: RTC will have responsibilities during the project to assist the consultant which will include:

1. Coordinating administrative tasks with the consultant and the RTC regarding meetings, agendas and related tasks.
2. Entering into an agreement with the selected consultant
3. Managing and administering project activities with the consultant, as necessary.
4. Reviewing draft documents and providing recommendations.

Figure 1: Proposed Project Schedule

Tasks	May	June	July	August	September	October
Task 0 - Project Administration and Coordination	❖					
Task 1.1 - Project Tream Meetings	□*	□*	□*	□	□	□*
Task 2.1 - Update Stakeholder List						
Task 3.1 – Review Existing Planning Documents						
Task 3.2 – Develop an Inventory of Available Services						
Task 3.3 – Geographic Service Area						
Task 4.1 - Analysis of Transportation Disadvantaged Populations and Demographic Profile		●				
Task 5.1 – Project Initiation Workshops						
Task 5.2 – Interview, Focus Groups, and Surveys						
Task 5.3 – Draft Plan Review Public Workshops						
Task 6.1 – Key Findings and Assessment of Transportation Need						
Task 6.2 – Identify Strategies						
Task 6.3 – Implementation Plan			●			
Task 7.1 – Prepare Draft Report				⊙		
Task 7.2 – Prepare Final Report						◆
Task 7.3 – Present Final Plans to Commission						■

Legend

- ❖ Notice to Proceed
- □ Project Management Team Meeting (* indicates phone/web conference)
- Public Outreach Event
- ● Interim Report Submittal
- ⊙ Draft Report Submittal
- ◆ Final Report Submittal
- ■ Presentation to the Regional Transportation Commission

Exhibit B

Compensation

Table 3: Cost Proposal									
	LSC				RLS		LSC		
Task	Project Manager Stoddard	Transportation Planner McPhilimy	Senior Planner McKinney	Transportation Planner Marmesh	Senior Associate Brown	Associate Frank Hoppe	GIS & Technical Support	Clerical Support	Total
Task 0 - Project Administration and Coordination	12							4	16
Task 1 - Project Tream Meetings	12				8			8	28
Task 2 - Develop Stakeholder List				2				2	4
Task 3 - Existing Conditions Analysis	2	4	20	40			4	8	78
Task 4 - Analysis of Transportation Disadvantaged Populations and Demographic Profile	2	16					4	4	26
Task 5 - Public Outreach	16	16	32	32	40	24	8	8	176
Task 6 - Identify Strategies and Implementation Plan	32	40			40	40	16	4	172
Task 7 - Final Documentation	16	16					8	16	56
Total Hours	92	92	52	74	88	64	40	54	556
Rate with Overhead	$195	$90	$145	$90	$117	$93	$70	$70	
Cost	$17,940	$8,280	$7,540	$6,660	$10,301	$5,939	$2,800	$3,780	
								Labor Subtotal:	**$63,240**

Direct Reimbursable Costs:	
Item	*Cost*
Travel (airfare, ground transport, per diem)	$6,714
Printing/Mailing	$150
Direct Reimbursable Costs Subtotal:	**$6,864**
Total Cost :	**$70,104**

LSC Transportation Consultants, Inc.
2504 East Pikes Peak Avenue, Suite 304
Colorado Springs, CO 80909

Exhibit C

INDEMNIFICATION AND INSURANCE REQUIREMENTS FOR PROFESSIONAL SERVICE AGREEMENTS

2019-11-11 Version

1. INTRODUCTION

IT IS HIGHLY RECOMMENDED THAT CONSULTANTS CONFER WITH THEIR INSURANCE CARRIERS OR BROKERS TO DETERMINE THE AVAILABILITY OF THESE INSURANCE CERTIFICATES AND ENDORSEMENTS IN ADVANCE OF PROPOSAL SUBMISSION. IF THERE ARE ANY QUESTIONS REGARDING THESE INSURANCE REQUIREMENTS, IT IS RECOMMENDED THAT THE AGENT/BROKER CONTACT RTC'S FINANCE DIRECTOR AT (775) 348-0400.

2. INDEMNIFICATION

CONSULTANT agrees to defend, save and hold harmless and fully indemnify RTC, Washoe County, City of Reno, and City of Sparks, including their elected officials, officers, employees, and agents (hereafter, "Indemnitees") from and against any and all claims, proceedings, actions, liability and damages, including attorneys' fees and defense costs incurred in any action or proceeding (collectively "Damages") arising out of:

A. Any breach of duty, neglect, error, misstatement, misleading statement or omission committed in the conduct of CONSULTANT'S profession, work or services rendered by (i) CONSULTANT, its employees, agents, officers, or directors, (ii) subconsultants (hereafter, "Subs"), or (iii) anyone else for which CONSULTANT may be legally responsible; and

B. The negligent acts of CONSULTANT, its employees, agents, officers, directors, Subs, or anyone else for which CONSULTANT is legally responsible; and

C. The infringement of any patent or copyright resulting from the use by the Indemnitees of any equipment, part, component or other deliverable (including software) supplied by CONSULTANT under or as a result of this Agreement, but excluding any infringement resulting from the modification or alteration by the Indemnitees of any equipment, part, component, or other deliverable (including software) except as consented to by CONSULTANT.

The Damages shall include, but are not limited to, those resulting from personal injury to any person, including bodily injury, sickness, disease or death and injury to real property or personal property, tangible or intangible, and the loss of use of any of that property, whether or not it is physically injured.

If the Indemnitees are involved in defending actions, CONSULTANT shall reimburse the Indemnitees for the time spent by such personnel at the rate the Indemnitees pay for such services.

If an Indemnitee is found to be liable in the proceeding, then CONSULTANT'S obligation hereunder shall be limited to the proportional share of the liability attributed to CONSULTANT. In determining whether a claim is subject to indemnification, the incident underlying the claim shall determine the nature of the claim.

In the event of a violation or an infringement under paragraph 2.C above and the use is enjoined, CONSULTANT, at its sole expense, shall either (1) secure for the Indemnitees the right to continue using the materials by suspension of any injunction or by procuring a license or licenses for the Indemnitees; or (2) modify the materials so that they become non-infringing. This covenant shall survive the termination of this Agreement.

3. GENERAL REQUIREMENTS

Prior to the start of any work on a RTC project, CONSULTANT shall purchase and maintain insurance of the types and limits as described herein insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONSULTANT, its Subs, or their employees, agents, or representatives. The cost of all such insurance shall be borne by CONSULTANT.

4. VERIFICATION OF COVERAGE

CONSULTANT shall furnish RTC with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements set forth herein, on forms acceptable to RTC. All deductibles and self-insured retentions requiring RTC approval shall be shown on the certificate. All certificates and endorsements are to be addressed to RTC's Finance Director and be received and approved by RTC before work commences. The CONSULTANT agrees that RTC has the right to inspect CONSULTANT'S and the Sub's insurance policies, or certified copies of the policies, at any reasonable time. Copies of applicable policy forms or endorsements confirming required additional insured, waiver of subrogation and notice of cancellation provisions are required to be provided with any certificate(s) evidencing the required coverage.

5. NOTICE OF CANCELLATION

CONSULTANT or its insurers shall provide at least thirty (30) days' prior written notice to RTC prior to the cancellation or non-renewal of any insurance required under this Agreement. An exception may be included to provide at least ten (10) days' written notice if cancellation is due to non-payment of premium. CONSULTANT shall be responsible to provide prior written notice to RTC as soon as practicable upon receipt of any notice of cancellation, non-renewal, reduction in required limits or other material change in the insurance required under this Agreement.

6. SUBCONSULTANTS & SUBCONTRACTORS

CONSULTANT shall include all Subcontractors and Subconsultants (referred to collectively as "Subs") as insureds under its liability policies OR shall cause Subs employed by CONSULTANT to purchase and maintain separate liability coverages and limits of the types specified herein. If

any Subs maintain separate liability coverages and limits, each shall include the RTC, Washoe County, City of Reno and City of Sparks as additional insureds under its commercial general liability policy, subject to the same requirements stated herein, without requiring a written contract or agreement between each of the additional insureds and any sub-consultant or sub-contractor. Any separate coverage limits of liability maintained by Subs shall be at least **$1,000,000** per occurrence and at least **$2,000,000** for any applicable coverage aggregates or the amount customarily carried by the Sub, whichever is GREATER. If any Subs provide their own insurance with limits less than required of the Contractor, Contractor shall include Subs in their coverage up to the full limits required of the Contractor. When requested by RTC, CONSULTANT shall furnish copies of certificates of insurance evidencing coverage for each Sub. The CONSULTANT need not require its non-design subcontractors to carry Professional Errors and Omissions Liability insurance.

7. DEDUCTIBLES AND SELF-INSURED RETENTIONS

Any deductibles or self-insured retentions that exceed $5,000 per occurrence or claim must be declared to and approved by RTC's Finance Director prior to signing this Agreement. RTC is entitled to request and receive additional documentation, financial or otherwise, prior to giving its approval of the deductibles and self-insured retentions. Any changes to the deductibles or self-insured retentions made during the term of this Agreement or during the term of any policy must be approved by the RTC's Finance Director prior to the change taking effect.

8. ACCEPTABILITY OF INSURERS

Required insurance is to be placed with insurers with a Best's rating of no less than A-VII and acceptable to RTC. RTC may accept coverage with carriers having lower Best's ratings upon review of financial information concerning CONSULTANT and the insurance carrier. RTC reserves the right to require that CONSULTANT'S insurer(s) be licensed and admitted in the State of Nevada or meet any applicable state and federal laws and regulations for non-admitted insurance placements.

9. OTHER CONDITIONS

A. Failure to furnish the required certificate(s) or failure to maintain the required insurance may result in termination of this Agreement at RTC's option.

B. If CONSULTANT fails to furnish the required certificate or fails to maintain the required insurance as set forth herein, RTC shall have the right, but not the obligation, to purchase said insurance at CONSULTANT's expense.

C. Any waiver of CONSULTANT's obligation to furnish such certificate or maintain such insurance must be in writing and signed by an authorized representative of RTC. Failure of RTC to demand such certificate or other evidence of full compliance with these insurance requirements or failure of RTC to identify a deficiency from evidence that is provided shall not be construed as a waiver of CONSULTANT's obligation to maintain

such insurance, or as a waiver as to the enforcement of any of these provisions at a later date.

D. By requiring insurance herein, RTC does not represent that coverage and limits will necessarily be adequate to protect CONSULTANT, and such coverage and limits shall not be deemed as a limitation on CONSULTANT's liability under the indemnities granted to RTC in this contract.

E. If CONSULTANT'S liability policies do not contain the standard ISO separation of insureds condition, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

10. COMMERCIAL GENERAL LIABILITY

CONSULTANT shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less than **$2,000,000** each occurrence. If such CGL insurance contains a general aggregate limit, it shall be increased to equal twice the required occurrence limit or revised to apply separately to this project.

CGL insurance shall be written on ISO occurrence form CG 00 01 04 13 (or a substitute form providing equivalent coverage) and shall cover liability arising from premises, operations, products-completed operations, personal and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract).

RTC and any other Indemnitees listed in Section 2. INDEMNIFICATION of this Agreement shall be included as an insured under the CGL, using ISO additional insured endorsement CG 20 10 07/04 or CG 20 33 07/04 or a substitute providing equivalent coverage, and under the commercial umbrella, if any.

This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to RTC or any other Indemnitees under this Agreement.

CONSULTANT waives all rights against RTC and any other Indemnitees listed in Section 2. INDEMNIFICATION of this Agreement for recovery of damages to the extent these damages are covered by the commercial general liability or commercial umbrella liability insurance maintained pursuant to this agreement. CONSULTANT's insurer shall endorse CGL policy to waive subrogation against RTC with respect to any loss paid under the policy.

11. COMMERCIAL AUTOMOBILE LIABILITY

CONSULTANT shall maintain automobile liability and, if necessary, commercial umbrella liability insurance with a limit of not less than **$1,000,000** each accident. Such insurance shall cover liability arising out of any auto (including owned, hired, and non-owned autos).

Coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 25, or a substitute form providing equivalent liability coverage for all owned, leased, hired (rented) and non-owned vehicles (as applicable). RTC may agree to accept auto liability for non-owned and hired (rented) vehicles under the CGL if CONSULTANT does not own or operate any owned or leased vehicles. CONSULTANT waives all rights against RTC, its officers, employees and volunteers for recovery of damages to the extent these damages are covered by the automobile liability or commercial umbrella liability insurance obtained by CONSULTANT pursuant to this Agreement.

12. INDUSTRIAL (WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY) INSURANCE

It is understood and agreed that there shall be no Industrial (Worker's Compensation and Employer's Liability) Insurance coverage provided for CONSULTANT or any Subs by RTC. The CONSULTANT, and any Subs, shall procure, pay for and maintain the required coverages.

CONSULTANT shall maintain workers' compensation and employer's liability insurance meeting the statutory requirements of the State of Nevada, including but not limited to NRS 616B.627 and NRS 617.210. The employer's liability limits shall not be less than **$1,000,000** each accident for bodily injury by accident or **$1,000,000** each employee for bodily injury by disease.

CONSULTANT shall provide a Final Certificate for itself and each Sub evidencing that CONSULTANT and each Sub maintained workers' compensation and employer's liability insurance throughout the entire course of the project.

If CONSULTANT, or any Sub is a sole proprietor, coverage for the sole proprietor must be purchased and evidence of coverage must appear on the Certificate of Insurance and Final Certificate.

CONSULTANT waives all rights against RTC, its elected officials, officers, employees and agents for recovery of damages to the extent these damages are covered by the workers compensation and employer's liability or commercial umbrella liability insurance obtained by Tenant pursuant to this agreement. CONSULTANT shall obtain an endorsement equivalent to WC 00 03 13 to affect this waiver.

13. PROFESSIONAL ERRORS AND OMISSIONS LIABILITY

CONSULTANT shall maintain professional liability insurance applying to liability for a professional, error, act, or omission arising out of the scope of CONSULTANT'S services provided under this Agreement with a limit of not less than **$1,000,000** each claim and annual aggregate. CONSULTANT shall maintain professional liability insurance during the term of this Agreement and, if coverage is provided on a "claims made" or "claims made and reported" basis, shall maintain coverage or purchase an extended reporting period for a period of at least three (3) years following the termination of this Agreement.

Exhibit D

Federally Required Clauses

1. PROMPT PAYMENT PROVISION

CONSULTANT must pay all subconsultants for satisfactory performance of their contracts no later than thirty (30) days from the receipt of payment made to CONSULTANT by RTC. Prompt return of retainage payments from CONSULTANT to the subconsultants will be made within fifteen (15) days after each subconsultant's work is satisfactorily completed. Any delay or postponement of payment among the parties may take place only for good cause and with RTC's prior written approval. If CONSULTANT determines the work of the subconsultant to be unsatisfactory, it must notify RTC's project manager immediately in writing and state the reasons. The failure by CONSULTANT to comply with this requirement will be construed to be a breach of the Contract and may be subject to sanctions as specified in the Contract or any other options listed in 49 C.F.R. 26.29.

2. NONDISCRIMINATION

During the performance of this Contract, CONSULTANT, for itself, its assignees, and successors in interest, agrees as follows:

A. Compliance with Regulations. CONSULTANT shall comply with the regulations relative to nondiscrimination in DOT-assisted programs, 49 C.F.R. Part 21, as they may be amended from time to time (referred to in this section as the "Regulations"), which are herein incorporated by reference and made a part of this Contract.

B. Nondiscrimination. CONSULTANT shall not discriminate on the grounds of age, race, color, sex, or national origin in the selection and retention of subconsultants, including procurement of materials and leases of equipment. CONSULTANT shall not participate, either directly or indirectly, in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.

C. Solicitations for Subcontracts, including Procurement of Materials and Equipment. In all solicitations, whether by competitive proposing or negotiation made by CONSULTANT for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subconsultant or supplier must be notified by CONSULTANT of CONSULTANT's obligations under this Contract and the Regulations relative to nondiscrimination on the grounds of age, race, color, sex, or national origin.

D. Information and Reports. CONSULTANT must provide all information and reports required by the Regulations or directives issued pursuant thereto, and must permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by RTC to be pertinent to ascertain compliance with such Regulations, orders, and instructions.

Where any information is required, or the information is in the exclusive possession of another who fails or refuses to furnish this information, CONSULTANT must so certify to RTC, and must set forth what efforts it has made to obtain the information.

E. Sanctions for Noncompliance. In the event of CONSULTANT's noncompliance with the nondiscrimination provisions of this Contract, RTC shall impose such contract sanctions as it may determine to be appropriate, including, but not limited to: (1) withholding of payments to CONSULTANT under the Contract until CONSULTANT complies, and/or (2) cancellation, termination, or suspension of the Contract, in whole or in part.

CONSULTANT shall include the provisions of this clause in every subcontract. CONSULTANT must take such action with respect to any subcontract or procurement as RTC may direct as a means of enforcing those provisions, including sanctions for noncompliance. However, if CONSULTANT becomes involved in or is threatened with litigation with a subconsultant as a result of such direction, CONSULTANT may request RTC to enter into the litigation to protect the interests of RTC.

3. AFFIRMATIVE ACTION IN EMPLOYMENT

CONSULTANT shall comply with the provisions of Section 503 of the Rehabilitation Act of 1973 (the "Rehabilitation Act").

A. CONSULTANT will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. CONSULTANT agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

B. CONSULTANT agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor pursuant to the Rehabilitation Act.

C. In the event of CONSULTANT's noncompliance with the requirements of this clause, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor pursuant to the Rehabilitation Act.

D. CONSULTANT agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the director, provided by or through the contracting officer. Such notices shall state CONSULTANT's obligation under the law to take affirmative action to employ and advance in employment qualified handicapped employees and applicants for employment, and the rights of applicants and employees.

E. CONSULTANT shall include the provisions of this clause in every subcontract or

purchase order of $2,500 or more unless exempted by rules, regulations, or orders of the Secretary of Transportation issued pursuant to Section 503 of the Rehabilitation Act, so that such provisions will be binding upon each subconsultant or vendor. CONSULTANT will take such action with respect to any subcontract or purchase order as the director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance (41 C.F.R. 60-741.4.4).

4. INTEREST OF MEMBERS OF, OR DELEGATES TO, CONGRESS

In accordance with 18 U.S.C. 431, no member of, or delegate to, the Congress of the United States shall be admitted to any share or part of this Contract or to any benefit arising therefrom.

5. INTEREST OF PUBLIC OFFICIALS

No member, officer, or employee of any public body, during his tenure, or for one (1) year thereafter, shall have any interest, direct or indirect, in this Contract or the benefits thereof.

6. CIVIL RIGHTS

The following requirements apply to the underlying Contract:

A. Nondiscrimination. In accordance with Title Vl of the Civil Rights Act, as amended, 42 U.S.C. 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. 12132, and Federal transit law at 49 U.S.C. 5332, CONSULTANT agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age or disability.

B. Equal Employment Opportunity. The following equal employment opportunity requirements apply to the underlying contract:

(1) Race, Color, Creed, National Origin, Sex. In accordance with Title Vll of the Civil Rights Act, as amended, 42 U.S.C. 2000e, and Federal transit laws at 49 U.S.C. 5332, CONSULTANT agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor", 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, Equal Employment Opportunity", as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity", 42 U.S.C. 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. CONSULTANT agrees to take affirmative action to ensure that applicants are employed, and that employees are treated equally during employment, without regard to their race, color, creed,

national origin, sex, or age. Such action must include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

(2) Age. In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. 623 and Federal transit law at 49 U.S.C. 5332, CONSULTANT agrees to refrain from discrimination against present and prospective employees for reason of age.

(3) Disabilities. In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. 12112, CONSULTANT agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act", 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities.

C. CONSULTANT also agrees to include these requirements in each subcontract.

7. INELIGIBLE CONSULTANTS

In the event CONSULTANT is on the Comptroller General's List of Ineligible Consultants for Federally financed or assisted projects, this contract may be canceled, terminated, or suspended by RTC.

8. NOTICE OF FEDERAL REQUIREMENTS

New Federal laws, regulations, policies, and administrative practices may be established after the date of this Contract, which may apply to this Contract. If Federal requirements change, the changed requirements will apply to the Contract or the performance of work under the Contract as required. All standards or limits set forth in this Contract to be observed in the performance of the work are minimum requirements.

9. THIRD-PARTY RIGHTS

Notwithstanding anything herein to the contrary, the services provided under this Agreement shall not give rise to, nor shall be deemed to or construed so as to confer any rights on any other party, as a third-party beneficiary or otherwise.

10. RECORDS RETENTION; AUDIT AND INSPECTION OF RECORDS

A. CONSULTANT shall permit the authorized representatives of RTC, FHWA, the U.S. Department of Transportation's Inspector General, NDOT, and the Comptroller General of the United States, or any of their duly authorized representatives to inspect and audit all data and records of CONSULTANT relating to its performance under the contract until

the expiration of three (3) years after final payment under this Contract.

B. CONSULTANT further agrees to include in all subcontracts hereunder a provision to the effect that the subconsultant agrees that RTC, FHWA, the U.S. Department of Transportation's Inspector General, NDOT, and the Comptroller General of the United States, or any of their duly authorized representatives shall, until the expiration of three (3) years after final payment under the subcontract, have access to and the right to examine any books, documents, papers, and records of the subconsultant directly pertinent to this contract. The term "subcontract" as used in this clause excludes (1) purchase orders not exceeding $10,000 and (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

C. The periods of access and examination described above, for records which relate to (1) appeals under the dispute clause of this Contract, (2) litigation or the settlement of claims arising out of the performance of this Contract, or (3) costs and expenses of this Contract to which an exception has been taken by the U.S. Comptroller General or any of his duly authorized representatives, shall continue until such appeals, litigation, claims or exceptions have been disposed of.

11. NO FEDERAL GOVERNMENT OBLIGATION TO THIRD PARTIES

A. RTC and CONSULTANT acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to RTC, Consultant, or any other party (whether or not a party to that Contract) pertaining to any matter resulting from the underlying Contract.

B. CONSULTANT agrees to include the above clause in each subcontract. It is further agreed that the clause shall not be modified, except to identify the subconsultant who will be subject to its provisions.

12. DEBARMENT, SUSPENSION, OTHER INELIGIBILITY AND VOLUNTARY EXCLUSION

A. This Contract is a covered transaction for purposes of 2 C.F.R. Part 1200 and 2 C.F.R. Part 180. As such, CONSULTANT is required to verify that none of CONSULTANT, its principals, as defined at 2 C.F.R. 180.995, or affiliates, as defined at 2 C.F.R. 180.905, are excluded or disqualified as defined at 2 C.F.R. 180.940 and 180.945.

B. CONSULTANT is required to comply with 2 C.F.R. 180, Subpart C, and must include the requirement to comply with 2 C.F.R. 180, Subpart C, in all contracts for lower-tier transactions over $25,000 and in all solicitations for lower tier contracts.

C. CONSULTANT agrees that it shall not knowingly enter into any lower-tier covered

transaction with a person or firm who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this contract.

13. REPORTING REQUIREMENTS

CONSULTANT shall provide all information and reports required by the Regulations, or directives issued pursuant shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its facilities as may be determined by RTC or the Federal Highway Administration (FHWA) to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a Consultant is in the exclusive possession of another who fails or refuses to furnish this information, CONSULTANT shall so certify to RTC, or the FHWA as appropriate, and shall set forth what efforts it has made to obtain the information.

Exhibit E

During the performance of this contract, Consultant, for itself, its assignees, and successors in interest, agrees as follows:

1. **Compliance with Regulations:** The Consultant (hereinafter includes subconsultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The Consultant, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subconsultants, including procurements of materials and leases of equipment. The Consultant will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 C.F.R. Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the Consultant for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subconsultant or supplier will be notified by the Consultant of the Consultant's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The Consultant will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a Consultant is in the exclusive possession of another who fails or refuses to furnish the information, the Consultant will so certify to the Recipient or the FHWA, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a Consultant's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:

    a. withholding payments to the Consultant under the contract until the Consultant complies; and/or

    b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The Consultant will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of

equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The Consultant will take action with respect to any subcontract or procurement as the Recipient or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Consultant becomes involved in, or is threatened with litigation by a subconsultant, or supplier because of such direction, the Consultant may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the Consultant may request the United States to enter into the litigation to protect the interests of the United States.

Exhibit F

During the performance of this contract, CONSULTANT, for itself, its assignees, and successors in interest, agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq*., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 C.F.R. Part 21.

- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);

- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq*.), (prohibits discrimination on the basis of sex);

- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq*.), as amended, (prohibits discrimination on the basis of disability), and 49 C.F.R. Part 27;

- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq*.), (prohibits discrimination on the basis of age);

- Airport and Airway Improvement Act of 1982, (49 U.S.C. § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);

- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and Consultants, whether such programs or activities are Federally funded or not);

- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations at 49 C.F.R. Parts 37 and 38;

- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against

minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. § 1681 et seq).

April 17, 2020 **AGENDA ITEM 3.13**

TO: Regional Transportation Commission

FROM: Dan Doenges, PTP, RSP
Planning Manager/Interim Director of Planning

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: 2050 Regional Transportation Plan (RTP) Transportation Update

RECOMMENDATION

Acknowledge receipt of report on the status of the 2050 RTP.

SUMMARY

The RTC is underway on the development of the 2050 Regional Transportation Plan. The purpose of the plan is to identify the long-term guiding principles and goals for the regional transportation system and to identify the projects, programs, and services that will be implemented through 2050. This plan will be based on a robust community engagement process and conducted in collaboration with partner agencies. The plan will address the safety, mobility, connectivity, and traffic operations issues that are resulting from strong population and employment growth in the region. Federal regulations require that the long range planning document be updated every four years. The current RTP approval extends through May 2021.

FISCAL IMPACT

2050 RTP development is included in the Unified Planning Work Program.

PREVIOUS ACTIONS BY BOARD

December 20, 2019	Board received report on the 2050 RTP visioning exercise
November 15, 2019	Board received report regarding the 2050 RTP public and agency outreach process and schedule
August 17, 2018	Amendment No. 1 to the 2040 RTP approved
May 21, 2017	2040 RTP approved

ADDITIONAL BACKGROUND

The RTP is the RTC's long-range transportation plan as required under Title 23, Part 450 of the Code of Federal Regulations (CFR). It contains major transportation projects and programs for Washoe County for all modes of travel. It functions as the major tool for implementing long-range transportation planning. The RTP captures the community's vision of the transportation system and identifies the projects, programs and services necessary to achieve that vision that will be implemented by RTC, member entities, and Nevada Department of Transportation (NDOT).

The RTC is continuing to review, evaluate, and update existing conditions data that is relevant to the 2050 RTP. Some of these metrics include the travel time index on the National Highway System (NHS), Level of Service (LOS) on Regional Roads, Average Annual Daily Traffic (AADT) on Regional Roads, Vehicle Miles Traveled (VMT) on all roadways in the region, Pavement Condition Index (PCI) of Regional Roads, and analysis of safety data (crash frequency, rate, and severity). In addition, the RTC is responsible for the development of national performance measures and identification of targets, which are reported to the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) through NDOT. The RTC also compiles performance measures with identified targets on a regional level, which is reported directly to the Board through the Annual Report. These measures are used to inform the transportation improvement prioritization process in addition to public input received.

To date, there has been several outreach events to gather input on the vision for the 2050 RTP. Staff presented to the Washoe County Commission on February 11, Reno City Council on February 12, and Sparks City Council on March 9. In addition, a workshop with businesses in the Sparks industrial area was held on February 26 at Baldini's, and the first public meeting for the RTP was held the following day at the Discovery Museum. The second agency working group meeting was held via conference call on March 19.

In addition to the public meetings, a visioning survey was launched on February 25 and will remain open until May 1. As of this staff report, there have been approximately 300 responses and the following is a summary of the preliminary data.

- In terms of priorities, Transportation Safety has been ranked the most number of times, followed closely by Bicycle Infrastructure. However, those priorities are reversed when it comes to the average rank (meaning Bicycle Infrastructure has been ranked higher).
- Considering tradeoffs, respondents are significantly favoring basic connected sidewalks over those with amenities, investment in the core transit system slightly over expansion, complete streets with lower speeds over roadway capacity, off-street bike facilities significantly more than less expensive on-street facilities, and investment in pavement preservation over new roadways.
- The majority (75%) of respondents indicated that their primary mode of transportation is driving alone in a personal vehicle, and close to half of respondents indicate that they live in downtown Reno or Southwest.

Staff is concurrently refining revenue estimates and assumptions to ensure a fiscally constrained plan to conform with federal requirements. Additionally, staff is reviewing project cost estimates to ensure an accurate portrayal of proposed improvements to be carried forward to the 2050 RTP.

ADVISORY COMMITTEE(S) RECOMMENDATION

The Technical and Citizens Multimodal Advisory Committees acknowledged receipt of a report on the 2050 RTP at their February 5, 2020 meetings.

April 17, 2020 **AGENDA ITEM 3.14**

TO: Regional Transportation Commission

FROM: Daniel Doenges, PTP, RSP
Planning Manager/Interim Director of Planning

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: 2019 Bicycle, Pedestrian and Wheelchair Data Collection Program Annual Report

RECOMMENDATION

Acknowledge receipt of the 2019 Bicycle & Pedestrian Data Collection Annual Report.

SUMMARY

The Objective of the Regional Bicycle & Pedestrian Data Collection Program is to document the number of people walking, using wheelchairs or mobility scooters, or riding bicycles regional roads. The program has been in effect since September 2013 and documents the proportion of trips that are made using alternative modes and changes in alternative mode use over time. This data is used in the ongoing analysis of the performance measures identified in the 2040 Regional Transportation Plan (RTP). This report is a summary of data collected between May 2019 and September 2019.

The 2019 Bicycle, Pedestrian, and Wheelchair Data Collection Program Annual Report is attached.

FISCAL IMPACT

Funding for this item is included in the approved FY 2019 budget and there is no additional costs in connection with this agenda item.

PREVIOUS ACTIONS BY BOARD

May 20, 2019	Approved the FY 2020-2021 UPWP
January 18, 2019	Board Approved the 2018 Bicycle, Pedestrian, and Wheelchair Data Collection Annual Report
March 16, 2018	Board Approved Professional Services Agreement with Traffic Works, LLC

Monthly updates on this project have been included in the Planning Activity Report.

ADDITIONAL BACKGROUND

Items of interest in the annual report include:

- Total hours of data collection – 480
- Total counted bicycles – 2,435
- Total counted pedestrians – 13,919
- Total counted wheelchairs – 134
- Highest bicycle volume observed – Arlington Avenue and Wingfield Park - 249
- Highest pedestrian volume observed – 4th Street at Evans Avenue (near the RTC 4th STREET STATION) -3,315

Key findings include:

- The September 2019 count was the seventh September cycle and completed the sixth full year of data collection. From the six comparable September cycles, September 2019 had the second lowest recorded pedestrian and bicycle volume (2014 was the lowest).
    - 7,205 pedestrians
    - 1,327 bicyclists
- September 2019 recorded the highest number of wheelchair users of all September counts to date.
    - 79 wheelchair
- 2019 Mode Share of travel on 4th Street/Prater Way reached 62.8% at Evans Avenue, 23.6% at Sutro Street, and 29.2% at 15th Street.
- 2019 Mode Share of travel at the 40 count program locations
    - Pedestrian volumes represented nearly 1 in every 26 trips (3.89%).
    - Bicycling volumes were approximately 1 in 107 trips (0.94%).
    - Wheelchair user activity was 0.05% of all regional trips.
    - Transit ridership accounted for 8.05% of all travel.
- The 2019 data reveled that there is a value of sidewalks and bicycle facilities to active transportation:
    - The mode share on roads with bicycle facilities was identified as 1.19% compared to 0.052% where there were no bicycle facilities
    - The mode share on roadways with pedestrian facilities, walking, on average, accounted for 4.07% compared to 0.34% for roadways lacking pedestrian facilities

ADVISORY COMMITTEE(S) RECOMMENDATION

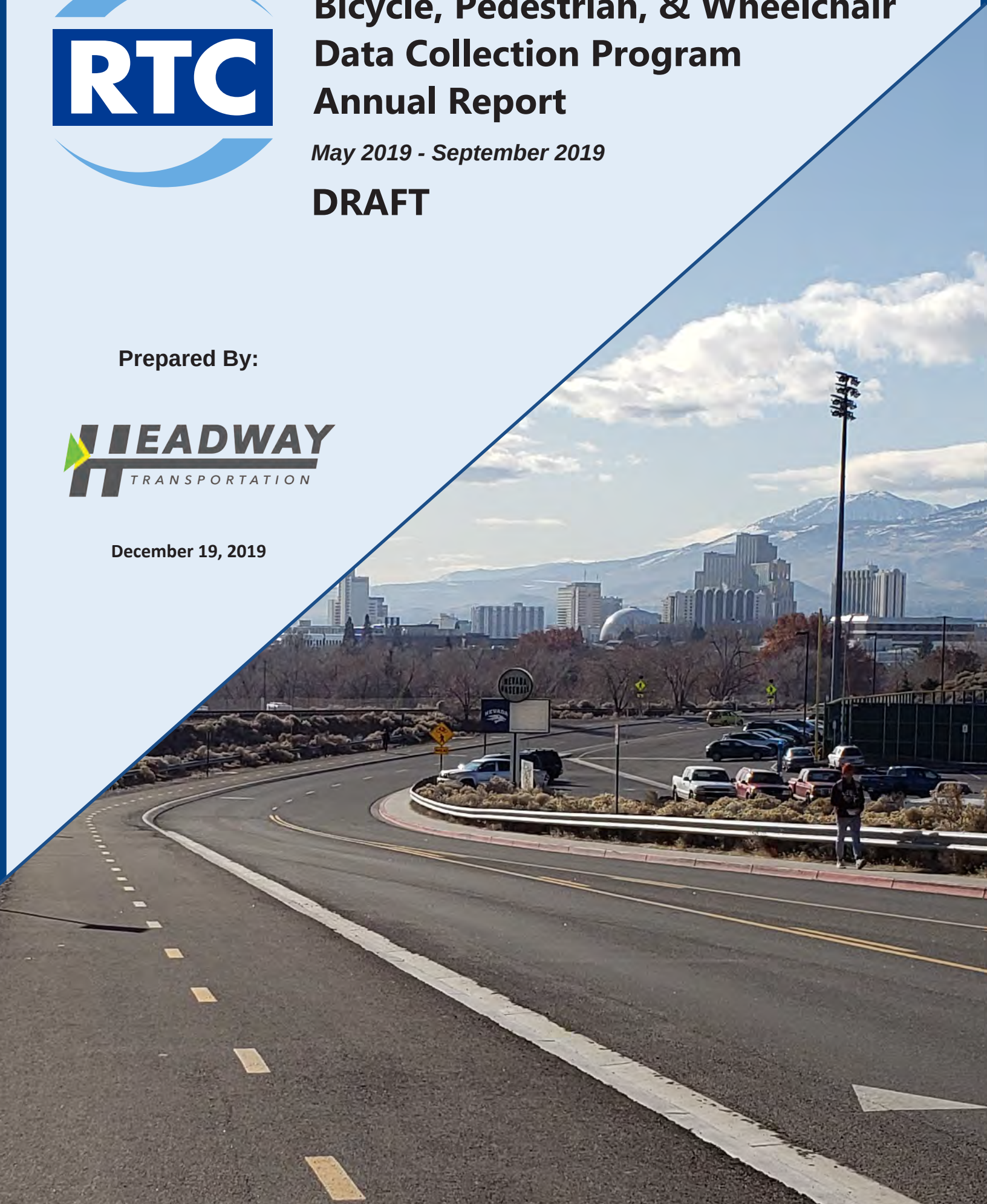
There are no advisory committee recommendations pertaining to this agenda item.

Attachment

Bicycle, Pedestrian, & Wheelchair Data Collection Program Annual Report

May 2019 - September 2019

DRAFT



Prepared By:

HEADWAY TRANSPORTATION

December 19, 2019

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Executive Summary

Introduction

This 2019 Annual Report for the RTC Bicycle, Pedestrian, and Wheelchair Data Collection Program ("Program") provides a detailed review of bicycling, walking and wheelchair use at key locations throughout Reno, Sparks, and Washoe County. This ongoing collection of active transportation data supplements data for motorized traffic and transit ridership data to develop a more complete picture of overall travel behavior in our communities. The data collection methodology, collection times, and analysis factors follow the National Bicycle and Pedestrian Documentation Project (NBPDP).

Purpose

The primary purpose of the Program is to document trends in the number of people walking, using wheelchairs or mobility scooters, or riding bicycles on regional roads, including the year-to-year growth in activity, as well as the share of each active transportation mode at the comparison locations. The collected data assists transportation planners in evaluating performance measures and the return on active transportation and "complete streets" infrastructure investment, and helps identify and prioritize active transportation connectivity and safety improvements.

2019 Count Data Overview

The following is a summary of total annual data collected in the 2019 data collection cycle (May 2019 and September 2019):

480
Total hours of data collection

34.4
Pedestrians, Bicyclists, and Wheelchair Users per count hour (average)

2,435 - Total Counted Bicyclists

13,919 - Total Counted Pedestrians

134 - Total Counted Wheelchairs

249
Total bicyclists observed on Arlington Avenue at Wingfield Park, the highest total bicycle volume of the 40 Program locations

15.8%
Percent Wrong-Way Riding

295
Ped/Bike Collisions in Washoe County (2019)

3,315
Total pedestrians observed on 4th Street at Evans Avenue, the highest pedestrian volume observed of the 40 Program locations in 2019

Key Findings

September 2019 – Fewer Pedestrians and Bicyclists

The September 2019 count was the seventh September cycle and completed the sixth full year of data collection. 7,205 pedestrians, 1,317 bicyclists, and 79 wheelchair users were observed at the 39 comparison count locations in September 2019. From the six comparable September cycles, September 2019 had the second lowest recorded pedestrian and bicycle volume (2014 was the lowest). September 2019 recorded the highest number of wheelchair users of all September counts to date. In terms of overall volume, September 2019 had a total of 8,601 bicycle, pedestrians, and wheelchair users which was the lowest overall volume since September 2014. Relative to September 2018, there was a decrease of 3,232 pedestrians, 313 bicyclists and an increase of 5 wheelchair users at the 39 comparison locations. It is important to note that special events greatly inflated the September 2018 counts.

Total Pedestrian Activity Trending Upwards

With a total of 11 comparable data collection cycles completed, it can be stated that total active transportation user activity has been generally increasing, region-wide, since September 2014. Pedestrians significantly outnumber bicyclists and wheelchair users, and even more so in and around the region's "downtown" areas. The data shows that over the past 11 count cycles bicycle activity has slightly decreased. The steady increase in pedestrian volume from year-to-year is largely driving the increase in overall active transportation.

Complete Streets Attract Bicyclists and Pedestrians

In the 2019 count cycle, locations on "complete streets" were found to have a higher pedestrian, bicyclist and transit mode share in comparison to the regional average for all 40 count locations. Pedestrian mode share at locations containing pedestrian facilities was 12 times greater than locations without pedestrian facilities. In addition, the bicycling mode share at locations containing bicycle facilities was 2 times greater than locations without bicycle facilities.

RTP Performance Measures

The alternative mode performance goals established in the 2040 Regional Transportation Plan (RTP), are the following:

1. Reach 15% alternative mode share within the Transit Service Area (most of the 40 count locations fall within the transit service area) by 2040. The 2019 alternative mode share was 12.9%.
2. Reach 40% alternative mode share at locations along the Virginia Street and 4th Street/Prater Way transit oriented development (TOD) corridors. The 2019 alternative mode share was 22.4% on Virginia Street and 38.5% on 4th Street/Prater Way.

Introduction

This Report presents the results of manual (video) counts conducted from May 2019 to September 2019, at 40 locations throughout Reno and Sparks. These counts represent the sixth full year of data collection in a continuing effort by the RTC to better understand pedestrian, bicyclist, and wheelchair user activity and trends throughout the region.

Objective

The primary objective of the Program is to document trends in the number of people walking, using wheelchairs or mobility scooters, or riding bicycles on regional roads, including the year-to-year growth or decline in activity, as well as the share of overall transportation, for all active transportation modes at the comparison locations. The collected data will assist transportation planners with evaluating performance measures and the return on active transportation and "complete streets" infrastructure investment, and help identify and prioritize active transportation connectivity and safety improvements. The locations consist of regional roadways with and without pedestrian and bicycle facilities. Conducting a regular count program with consistent pedestrian, bicycle, and wheelchair data is important for many reasons, including:

- Baseline Data – Establishing and continuing a consistent count program following nationally standardized guidelines over multiple years allows for accurate trend analysis on regional roadways.
- Performance Metrics – The 2040 Regional Transportation Plan (RTP) includes performance measures for increasing the share of trips made by alternative modes. Availability of data is essential in determining achievement of the performance measures outlined in the RTP.
- Facility Usage/Improvement Planning – Many factors contribute to pedestrian and bicycle usage, however, counts help assess the benefits of bicycle and pedestrian capital improvement projects. The collected data can also increase awareness about the need for future roadway corridor improvements and complete streets programs and help prioritize improvements.
- Safety – A better understanding of pedestrian and bicycle collision rates can be gained with accurate volumes.

Having a regular data collection program that provides consistent walking and bicycling data, region-wide, can highlight important activity trends and infrastructure needs.

Methodology

Data Collection Methodology

Data was collected at each of the 40 locations for two hours during one weekday morning (10:00AM to Noon), one weekday afternoon (5:00PM to 7:00PM), and one weekend mid-day period (Saturday, Noon to 2:00PM) for a total of six hours of observation time. Weekday refers to either a Tuesday, Wednesday or Thursday. Additionally, 12-hour weekday and Saturday counts (7:00AM to 7:00PM) were collected at the 4th Street at Evans Avenue and Prater Way at 15th Street locations in May, July, and September. The count times are consistent with the protocol set by the National Bicycle and Pedestrian Documentation Project (NBPDP).

All locations were recorded using portable video recording units and the video was broken down for the desired time frames detailed above. At each location, contextual information, such as date, time, and presence of bike and pedestrian facilities were documented and the number of cyclists, pedestrians and wheelchair users were recorded. These counts were tabulated in a data reporting spreadsheet and supplied to the RTC for inclusion in the interactive count data GIS based webpage.

Manual Count Extrapolation Methodology

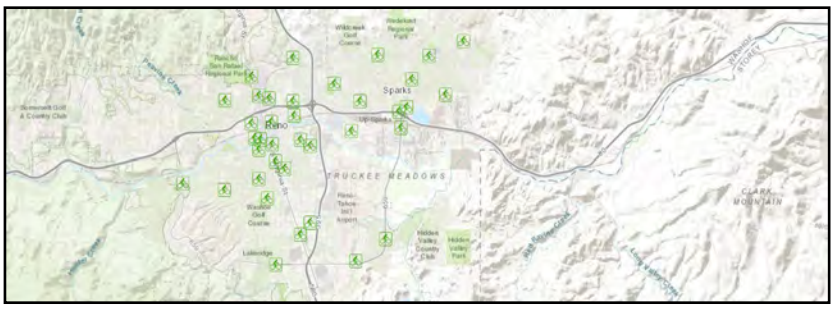
Estimations of daily, weekly, and annual values in this report are extrapolations based upon the manual counts collected and on temporal (climate) adjustment factors suggested by the NBPDP. The NBPDP extrapolation methodology is based on patterns of use by climate region. These patterns effect how much weight any given count will have depending on the hour, day, and month the count was collected. For more information regarding this methodology refer to the **NBPDP Count Adjustment Factors Document** in the Appendix.

Why Count Bicyclists and Pedestrians?

- ***Track Regional Bicycle and Pedestrian Usage***
- ***Measure Performance of New Facilities***
- ***Inform Bicycle and Pedestrian Infrastructure Decisions***
- ***Support Funding, Grants, and Recognition Efforts***

Collection Times

Weekday:
10 AM to Noon
5 PM to 7 PM
Saturday:
12 PM to 2 PM



Data Collection Locations

Throughout the Program's history, multiple locations have been added and/or removed for observation. Since the first full year of data collection, three locations (#12, #15 and #37) have been removed and five new locations (#39 - #43) have been added for a total of 40 current count locations (shown in **Figure 1**). The location ID numbers were not reassigned so these locations can be revisited with future data collection efforts if desired. The count location comparison in this report compares only the 39 comparison count locations (September 2014 – Present).

Data collection locations were selected based on meeting the following criteria:

- Recently constructed projects
- Planned alternative mode improvement projects
- Stakeholder recommendations
- Presence of transit routes
- Existing bicycle facilities
- Mix of land uses
- Historical count location

40 Count Locations throughout Reno, Sparks, and Washoe County

Photo 1. Prater Way at 15th Street (location #2) with newly constructed RTC RAPID Stations.

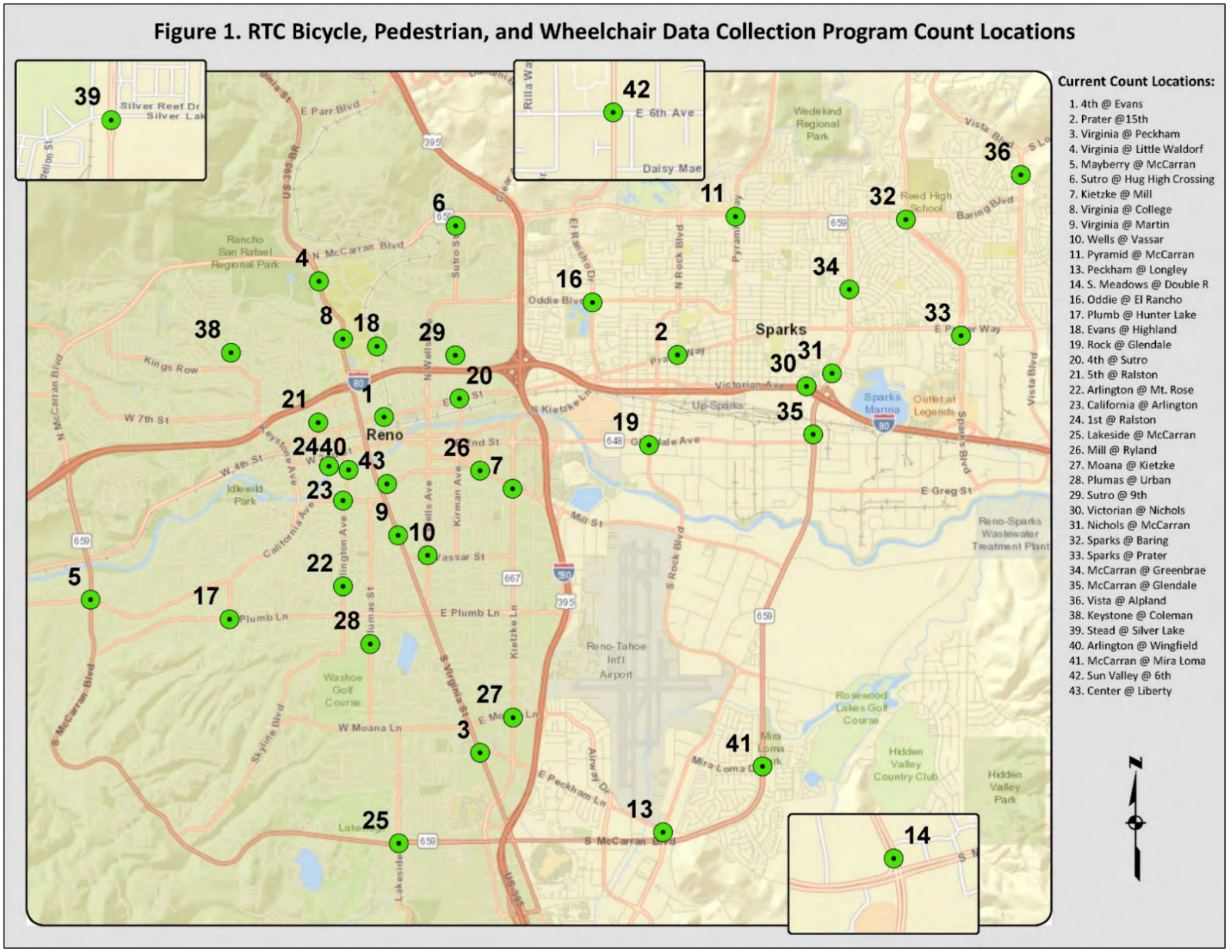


Figure 1. 2019 Count Program Locations

Count Data

Alternative Modes Volume Totals

The following section documents the total 2019 annual volumes of each alternative mode for each data collection location. In all, the total of 480 hours of observed activity included 2,435 bicyclists, 13,919 pedestrians, and 134 wheelchair users. **Table 1** shows the overall count summary for the 2019 annual count period.

Table 1. 2019 Count Summary by Location

		May 2019					September 2019					2019 Total				
ID	Location	Bike	Ped	WC	Total	Rank	Bike	Ped	WC	Total	Rank	Bike	Ped	WC	Total	Rank
1	4th @ Evans	113	1718	24	1855	1	124	1597	21	1742	1	237	3315	45	3597	1
2	Prater @ 15	16	107	1	124	14	17	54	0	71	21	33	161	1	195	17
3	Virginia @ Peckham	29	347	1	377	5	31	572	4	607	4	60	919	5	984	4
4	Virginia @ Little Waldorf	9	268	0	277	6	12	348	0	360	6	21	616	0	637	6
5	Mayberry @ McCarran	49	16	0	65	24	79	16	0	95	18	128	32	0	160	21
6	Sutro @ Hug High Crossing	4	35	0	39	35	2	33	0	35	31	6	68	0	74	33
7	Kietzke @ Mill	15	85	0	100	15	44	44	2	90	19	59	129	2	190	19
8	N Virginia @ College	22	815	1	838	3	45	1453	8	1506	2	67	2268	9	2344	2
9	Virginia @ Martin	46	363	1	410	4	30	270	2	302	8	76	633	3	712	5
10	Wells @ Vassar	18	103	4	125	13	29	199	8	236	10	47	302	12	361	13
11	Pyramid @ McCarran	8	28	0	36	36	6	25	0	31	32	14	53	0	67	36
13	Peckham @ Longley	6	14	0	20	39	11	4	0	15	40	17	18	0	35	39
14	South Meadows @ Double R	11	38	0	49	29	14	31	0	45	29	25	69	0	94	28
16	Oddie @ El Rancho	6	41	0	47	31	6	12	0	18	38	12	53	0	65	37
17	Plumb @ Hunter Lake	28	18	0	46	33	32	14	0	46	28	60	32	0	92	30
18	Evans @ Highland	26	72	0	98	16	25	295	3	323	7	51	367	3	421	10
19	Rock @ Glendale	23	64	0	87	21	21	90	1	112	16	44	154	1	199	16
20	4th @ Sutro	55	145	2	202	10	73	157	1	231	11	128	302	3	433	9
21	5th @ Ralston	38	196	2	236	8	34	186	3	223	12	72	382	5	459	8
22	Arlington @ Mount Rose	26	28	0	54	26	29	19	0	48	27	55	47	0	102	27
23	California @ Arlington	21	73	0	94	18	39	40	0	79	20	60	113	0	173	20
24	1st @ Ralston	60	181	7	248	7	115	256	10	381	5	175	437	17	629	7
25	Lakeside @ McCarran	17	17	0	34	37	6	23	0	29	34	23	40	0	63	38
26	Mill @ Ryland	23	69	3	95	17	33	141	2	176	14	56	210	5	271	15
27	Moana @ Kietzke	11	67	3	81	22	11	10	1	22	35	22	77	4	103	26
28	Plumas @ Urban	39	9	0	48	30	44	20	1	65	22	83	29	1	113	23
29	Sutro @ 9th	64	166	2	232	9	40	123	1	164	15	104	289	3	396	12
30	Victorian @ Nichols	31	62	0	93	19	43	57	1	101	17	74	119	1	194	18
31	Nichols @ McCarran	40	122	0	162	12	43	132	2	177	13	83	254	2	339	14
32	Sparks @ Baring	13	39	0	52	27	4	15	0	19	37	17	54	0	71	35
33	Sparks @ Prater	16	52	1	69	23	6	16	0	22	35	22	68	1	91	31
34	McCarran @ Greenbrae	24	19	0	43	34	19	31	1	51	25	43	50	1	94	28
35	McCarran @ Glendale	11	50	0	61	25	29	19	1	49	26	40	69	1	110	24
36	Vista @ Alpland	16	31	0	47	31	13	17	0	30	33	29	48	0	77	32
38	Keystone @ Coleman	2	14	0	16	40	6	10	1	17	39	8	24	1	33	40
39	Stead @ Silver Lake	8	43	0	51	28	7	50	0	57	24	15	93	0	108	25
40	Arlington @ Wingfield Park	109	730	0	839	2	140	780	1	921	3	249	1510	1	1760	3
41	SE McCarran @ Mira Loma	26	66	0	92	20	42	18	0	60	23	68	84	0	152	22
42	Sun Valley @ 7th	9	20	0	29	38	13	28	4	45	29	22	48	4	74	33
43	Center @ Liberty	6	167	3	176	11	24	216	0	240	9	30	383	3	416	11
	Sub-Total (39):	**1,088**	**6,331**	**52**	**7,471**		**1,317**	**7,205**	**79**	**8,601**		**2,405**	**13,536**	**131**	**16,072**	
	Total By Mode (40):	**1,094**	**6,498**	**55**	**7,647**		**1,341**	**7,421**	**79**	**8,841**		**2,435**	**13,919**	**134**	**16,488**	

Top 5 Bicycle Locations
Top 5 Pedestrian Locations
Top 5 Wheelchair Locations
Top 5 Overall Volume Locations

Bicyclist Count Data

A total of 2,435 bicyclists were counted over the two data collection periods. Usage fluctuated by location throughout the year. The locations with the five highest bicycle activity in each individual cycle and across the 2019 annual cycle are shown to the right. Three locations stood out as the most heavily trafficked locations by bicyclists. A significantly higher number of bicyclists were observed at these three locations compared to all other locations, as shown in **Figure 2**.

- 4th St. @ Evans
- Arlington Ave. @ Wingfield Park
- 1st Street @ Ralston Street

The May 2019 count cycle recorded a total of 1,094 bicyclist at the 40 count locations. At the 39 comparison locations, there were 1,088 bicyclists observed, ranking as the lowest bicyclist total (May or September) in the Programs history. The September 2019 count cycle recorded a slightly larger number of bicyclists (1,341) in the 2019 yearly cycle. Like the May 2019 bicycle count, September 2019 bicycle count was also low compared to recent count cycles. September 2019 recorded the second lowest overall September bicycle volume (September 2014 was the lowest). The multi-year trends of bicycle activity from September 2014 through September 2019 are discussed in further detail in the Overall Findings section.

Locations with Highest Bicycle Activity

May 2019
1. 4th St. @ Evans Ave.
2. Arlington Ave. @ Wingfield Park
3. Sutro St. @ 9th St.
4. W. 1st St. @ Ralston St.
5. 4th Street @ Sutro Street

September 2019
1. Arlington Ave. @ Wingfield Park
2. 4th St. @ Evans Ave.
3. W. 1st St. @ Ralston St.
4. Mayberry Dr. @ McCarran Blvd.
5. 4th Street @ Sutro Street

2019 Annual Cycle
1. Arlington Ave. @ Wingfield Park
2. 4th St. @ Evans Ave.
3. W. 1st St. @ Ralston St.
4. 4th Street @ Sutro Street
5. Mayberry Dr. @ McCarran Blvd.

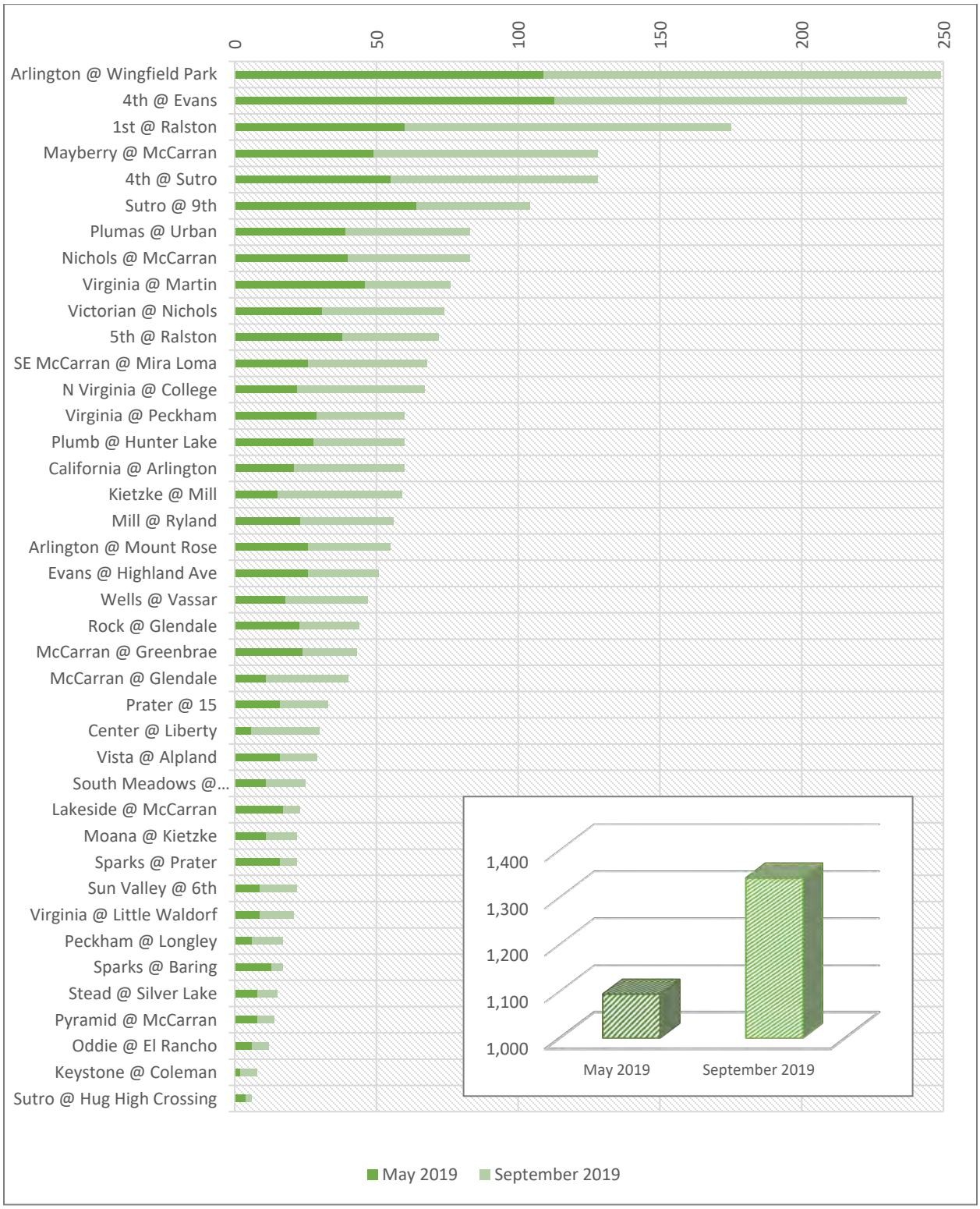


Figure 2. 2019 Total Bicyclist Volumes by Location

Pedestrian Count Data

During the 2019 annual count cycle, 13,919 pedestrians were observed across all 40 locations. There were 13,536 pedestrians at the 39 comparison locations. In general, pedestrian counts were lower in 2019 compared to recent yearly count cycles. In previous yearly cycles, pedestrian volumes did not fluctuate as much as bicyclist volumes even though there were some seasonal variations. However, pedestrian volumes have fluctuated greatly between the 2018 and 2019 yearly count cycles. It is also becoming clearer that the September volumes are influenced by the UNR schedule and the May volumes are influenced by special events at the Arlington Avenue at Wingfield Park location as volumes fluctuate greatly at these two locations depending on the season/time of year. Special events in particular can unduly impact multi-year trends. The 4th Street at Evans Avenue location continues to experience high pedestrian volumes during each count cycle regardless of weather, special events, and/or other factors.

Locations with Highest Pedestrian Activity

May 2019
1. 4th St. @ Evans Ave
2. Virginia St. @ College St.
3. Arlington Ave. @ Wingfield Park
4. Virginia St. @ Martin St.
5. Virginia St. @ Peckham Ln.

September 2019
1. 4th St. @ Evans Ave.
2. Virginia St. @ College St.
3. Arlington Ave. @ Wingfield Park
4. Virginia St. @ Peckham Ln.
5. Virginia St. @ Little Waldorf

2019 Annual Cycle
1. 4th St. @ Evans Ave.
2. Virginia St. @ College St.
3. Arlington Ave. @ Wingfield Park
4. Virginia St. @ Peckham Ln.
5. Virginia St. @ Martin St.

Figure 3 shows the observed pedestrian volumes for the 2019 annual period. The multi-year trends of pedestrian activity from September 2014 through September 2019 are discussed in further detail in the Overall Findings section.

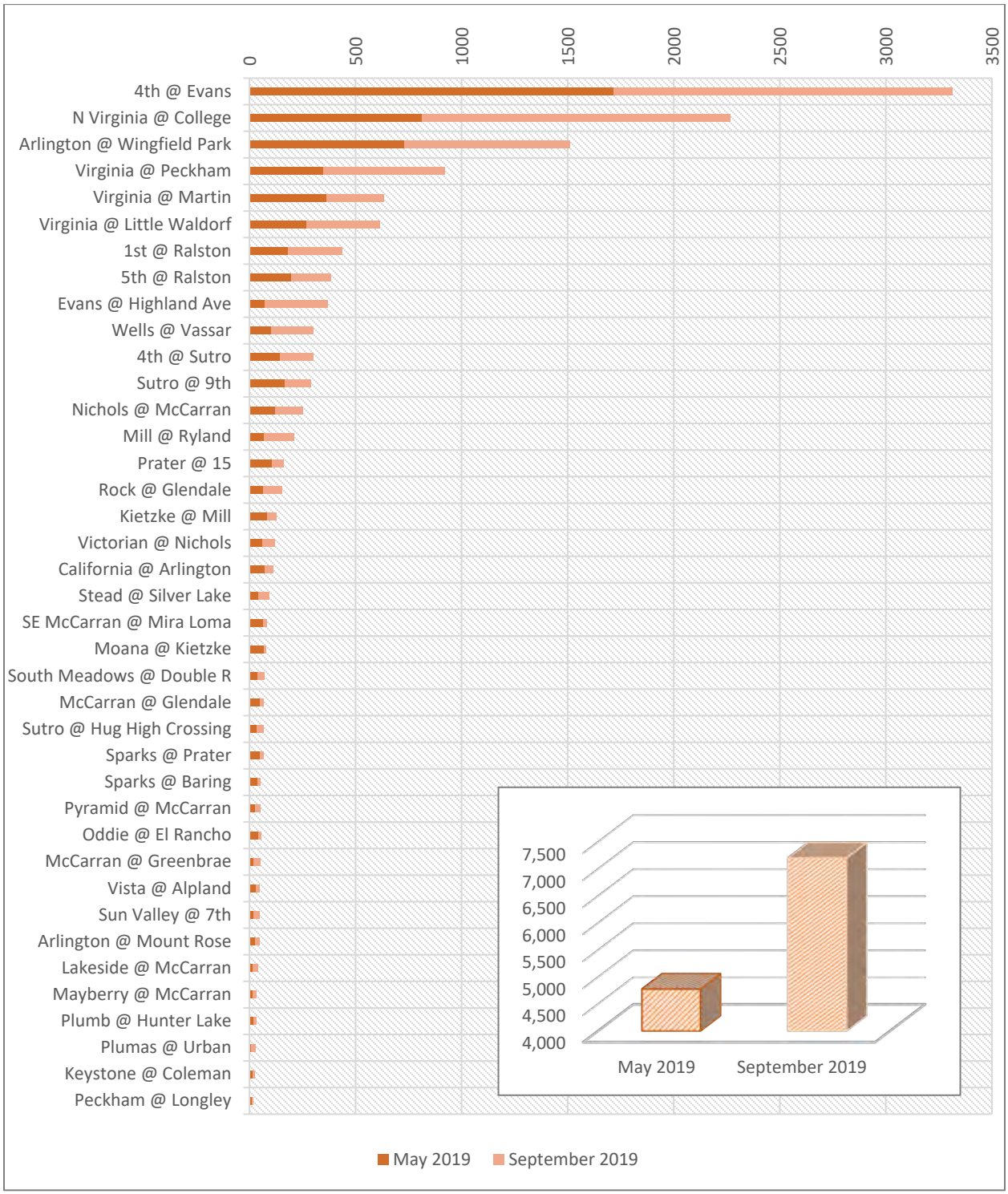


Figure 3. 2019 Total Pedestrian Volumes by Location

Wheelchair Count Data

The 2019 annual count found 134 wheelchair users at the 40 count locations and 131 wheelchair users at the 39 comparison count locations. The 2019 count period increased slightly (+2) in total wheelchair users compared to the 2018 annual period. Total wheelchair activity has increased slightly since the Program Inception. Overall, wheelchair volumes have generally remained constant for the past three yearly cycles.

The busiest location for wheelchair activity in the 2019 count cycle was 4th Street at Evans Avenue, continuing the trend for this location experiencing the highest level of wheelchair user activity in every count cycle to date. The presence of the RTC 4th Street Transit Station, and the fact that many individuals who utilize wheelchairs and mobility scooters are transit-dependent, makes this location consistently rank as the busiest location for wheelchair user activity, as illustrated in **Figure 4**. This location has also experienced a general increase in wheelchair user activity since the Programs' inception.

Locations with Highest Wheelchair Activity

May 2019
1. 4th St. @ Evans Ave.
2. Mill St. @ Ryland Ave.
3. Arlington Ave. @ Wingfield Park
4. Three Locations Tied for 4th

September 2019
1. 4th St. @ Evans Ave.
2. Arlington Ave. @ Wingfield Park
3. 5th St. @ Ralston St.
4. Mill St. @ Ryland Ave.
5. Wells Ave. @ Vassar St.

2019 Annual Cycle
1. 4th St. @ Evans Ave.
2. Arlington Ave. @ Wingfield Park
3. 5th St. @ Ralston St.
4. Mill St. @ Ryland Ave.
5. Two Locations Tied for 5th

Photo 2. Wheelchair Route on Sutro Street

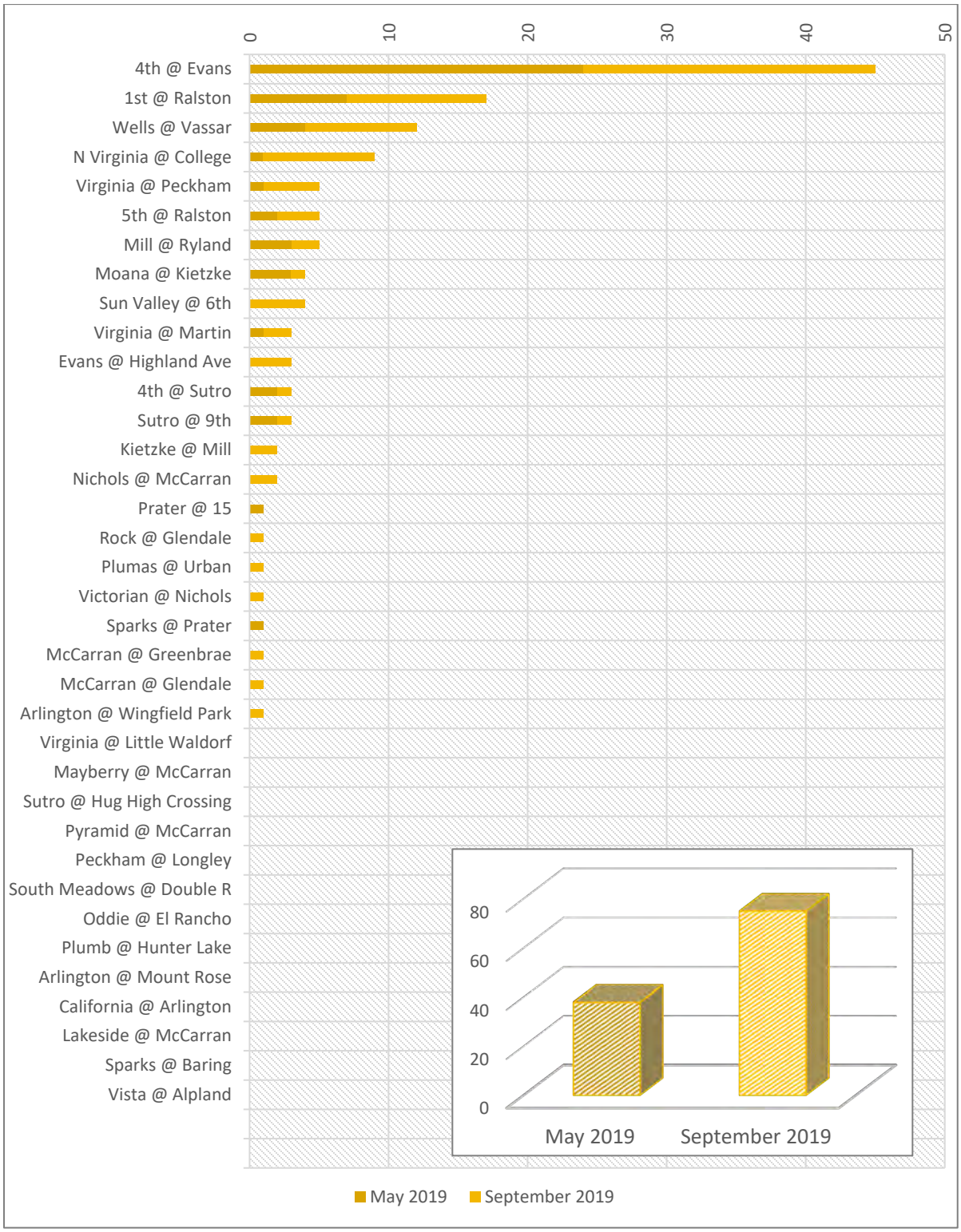


Figure 4. 2019 Total Wheelchair Volumes by Location

Contextual Data

Pedestrian & Bicycle Crash Data

To give the bicycle and pedestrian data a relevant safety context, collision data for accidents involving non-motorized users in Washoe County was obtained from the Nevada Department of Transportation (NDOT) Office of Traffic Safety. NDOT periodically revises crash data history therefore the data can fluctuate depending on when the crash data was obtained. It is important to track these types of collisions to better understand the frequency, type, and location of incidents. Collision data helps to measure existing safety improvements and identify ongoing or emerging safety issues that can be addressed through roadway and facility design guidelines, new development guidelines, and the strategic development of new infrastructure for alternative modes that provide more separation from motorized vehicle traffic.

Figure 5 shows the number of crashes by severity involving non-motorized users for the most recent 5 years.

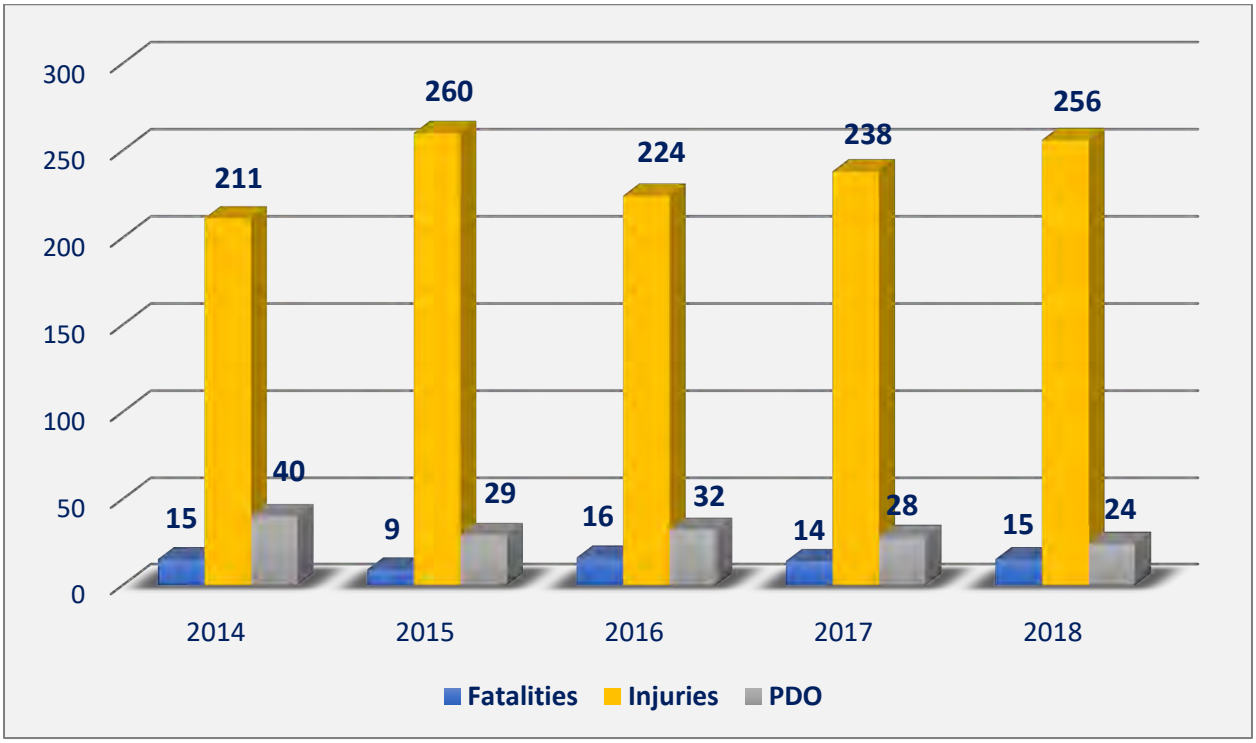


Figure 5. 2014-2018 Historical Washoe County Crashes by Severity

Over the past five years there has been an average of 282 total crashes per year in Washoe County involving non-motorized users. The latest yearly data shows a total of 295 crashes involving non-motorized users of the roadway; 15 of those crashes resulted in fatalities, 256 crashes caused injuries, and 24 caused property damage only ("PDO").

Figure 6 further illustrates the relative proportion of the severity of all non-motorized user-involved collisions captured by NDOT in the past data periods. The overwhelming majority of crashes involving non-motorized users have resulted in an injury (83.5%). The next most common result has been property damage and no injury (11.4%). Fatalities have occurred in 69 of the total 1061 incidents (5.1%). **Figure 7** illustrates all crashes by crash type, a non-collision crash is an accident that involves a single vehicle with a pedestrian or bicycle.

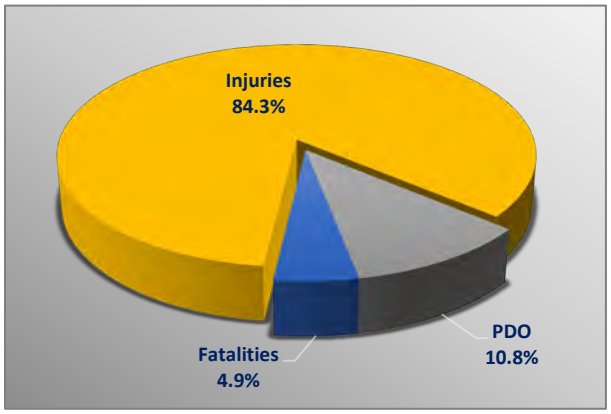


Figure 6. 2014-2018 Total Washoe County Crashes by Severity

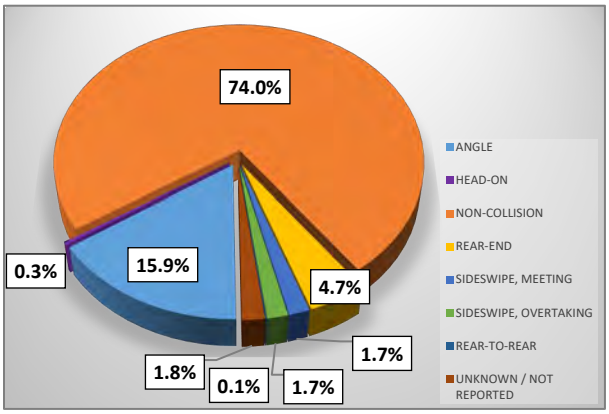


Figure 7. 2014-2018 Washoe County Crashes by Type

Figure 8 shows the relative proportions of non-motorized user-involved crashes in Washoe County by time of day. The highest volume of total crashes occurred during the PM peak hour for motorized vehicles, between 5 PM and 6 PM. The majority of fatalities occurred in darkness or low light, between 5 PM and 11 PM.

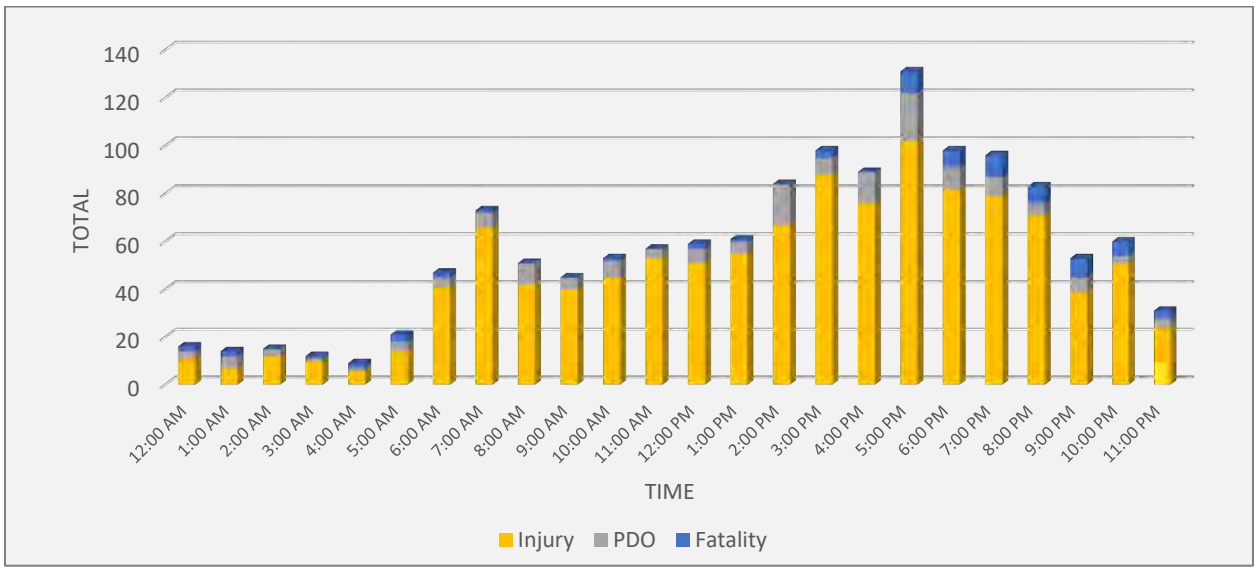


Figure 8. 2014-2018 Washoe County Crashes by Time of Day

Volumes by Location

Figure 9 maps the recorded 2019 bicycle, pedestrian, and wheelchair user volumes at all Program count locations. The scale of the pie charts is proportionate to the total volumes of bicycles, pedestrians, and wheelchairs users observed at each location over the annual count cycle.

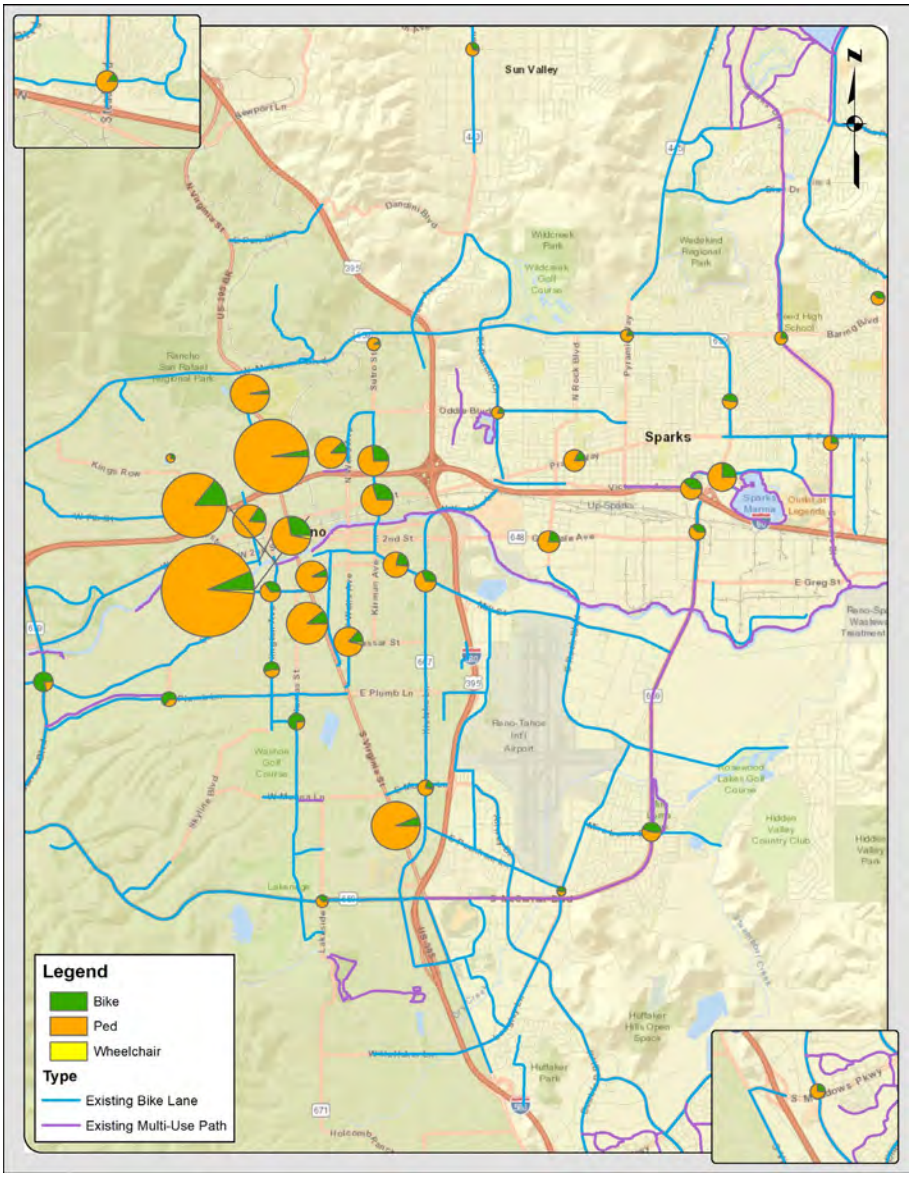


Figure 9. 2019 Relative Volumes Map

To better understand the areas within the Reno-Sparks region where walking and cycling are most common, **Figure 10** shows the ten highest locations and the ten lowest volume locations for the 2019 count cycle.

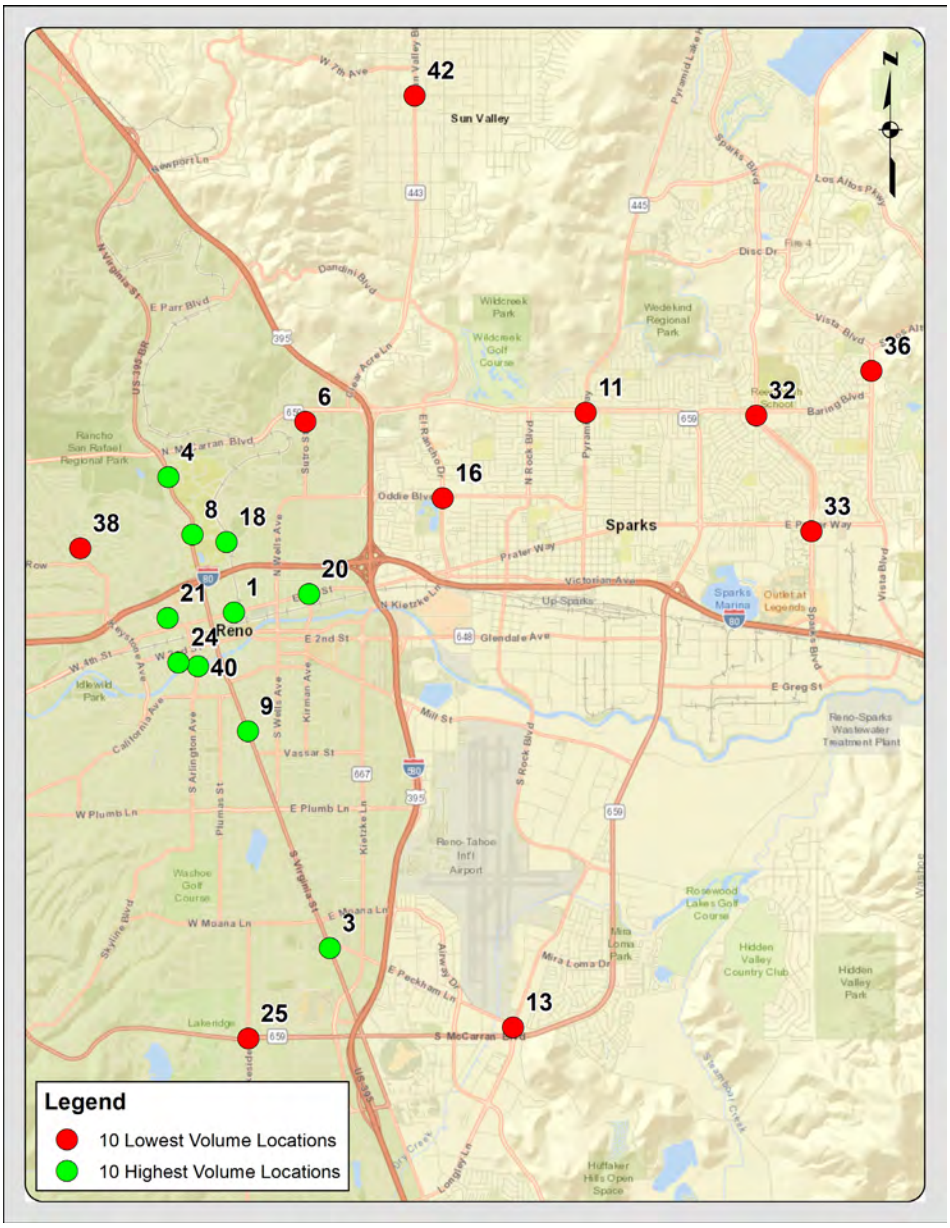


Figure 10. 10 Highest & Lowest Volume Locations (2019)

The ten lowest-volume locations are all located in areas lacking nearby significant activity generators or strong active transportation infrastructure. As was the case in previous annual data collection cycles, the 10 highest-use locations are located within the urban core of Reno, except for the Virginia Street at Peckham location. These locations are generally well served by transit, sidewalks, and bicycling infrastructure. Locations such as Virginia Street at Peckham Lane and Sutro Street at 9th Avenue experience high levels of activity due to the presence of high quality transit service. Virginia Street at College Avenue and Evans Ave at Highland Ave volumes are affected by their proximity to UNR, a significant activity generator for pedestrians and bicyclists.

Wrong-Way Riding

Wrong-way riding is a major safety concern because incidents involving wrong-way riding are typically severe and often fatal for bicyclists when an automobile is involved. **Figure 11** shows the total volume of bicycles by location and the number of wrong way riders during the 2019 count cycle.

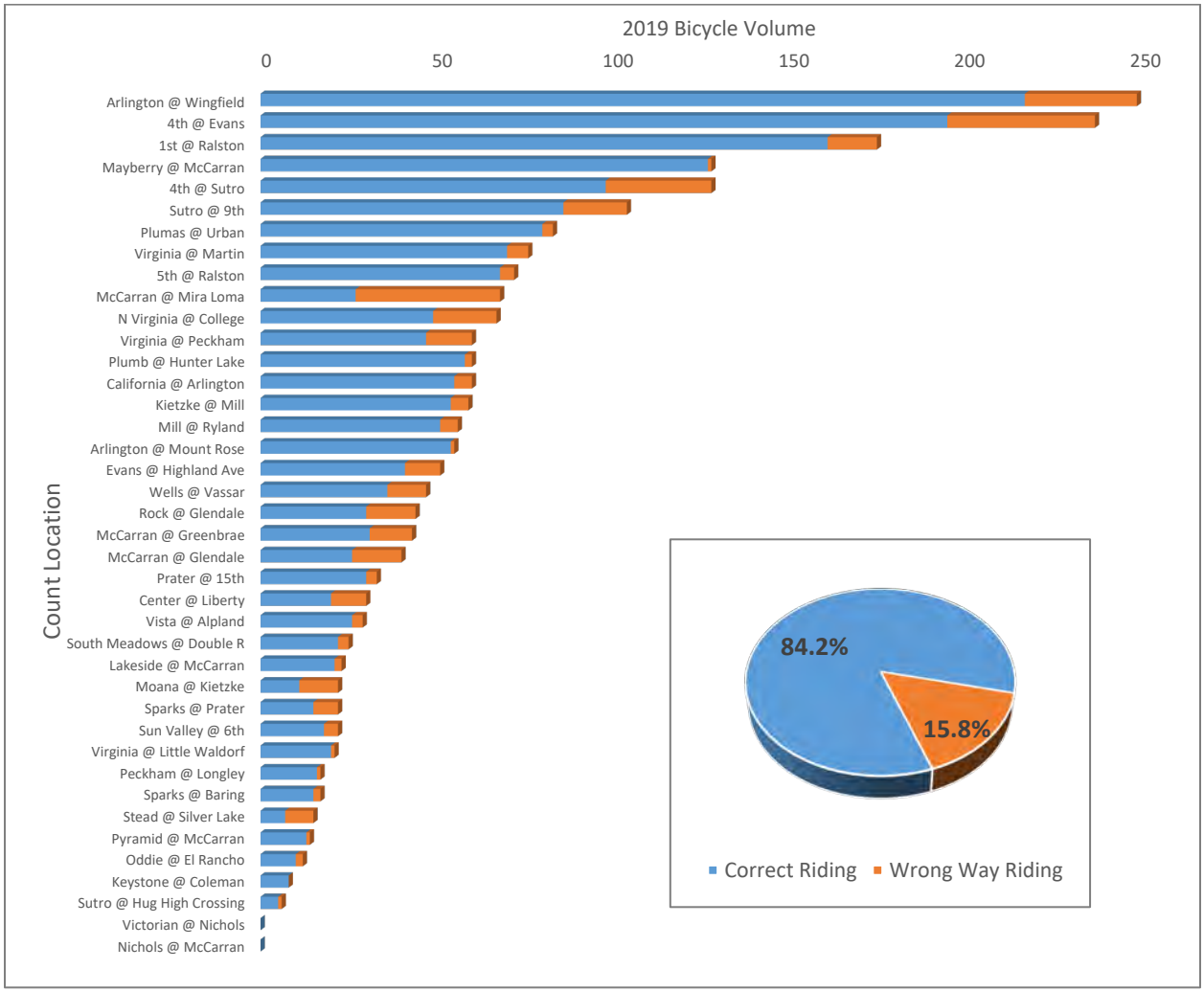


Figure 11. 2019 Wrong Way Riding

The location with the highest percentage of wrong way riders was McCarran Boulevard at Mira Loma Drive (60.3%). However, this location has wide sidewalks where many bicyclists were observed riding on the sidewalk. Stead Boulevard at Silver Lake Road also had a high percentage of wrong-way riders (53.3%) but this location had very low bicycle volumes overall. On average, locations with bicycle facilities had a wrong-way riding percentage of 16.3% and facilities without bicycle facilities had a wrong-way riding percentage of 14.6%. The 2019 data shows that there are other factors that lead to wrong-way riding than just the presence of bicycle facilities.

Regional Mode Share

2019 Mode Share

Mode share refers to the percentage of a type, or "mode" of transportation traveling on a given roadway or through a location, or within a defined area. This section provides information about the overall regional mode share based on alternative modes data from all 40 Program locations, as well as the mode share of active transportation at the individual count locations.

Mode shares at each location were calculated by comparing the Average Annual Daily Traffic (AADT), the Annual Daily Ridership Average (AADR), and the estimated average annual daily bicycle, pedestrian, and wheelchair traffic extrapolated from the collected counts. AADT at each roadway segment was retrieved from the Traffic Records Information Access (TRINA) database published by the Nevada Department of Transportation (NDOT). Annual Daily Ridership Average (AADR) was obtained from the most recent RTC ridership data based on individual roadway segments.

Figure 12 shows the average calculated modal split for all locations using the most recent AADT and AADR data for May and September 2019.

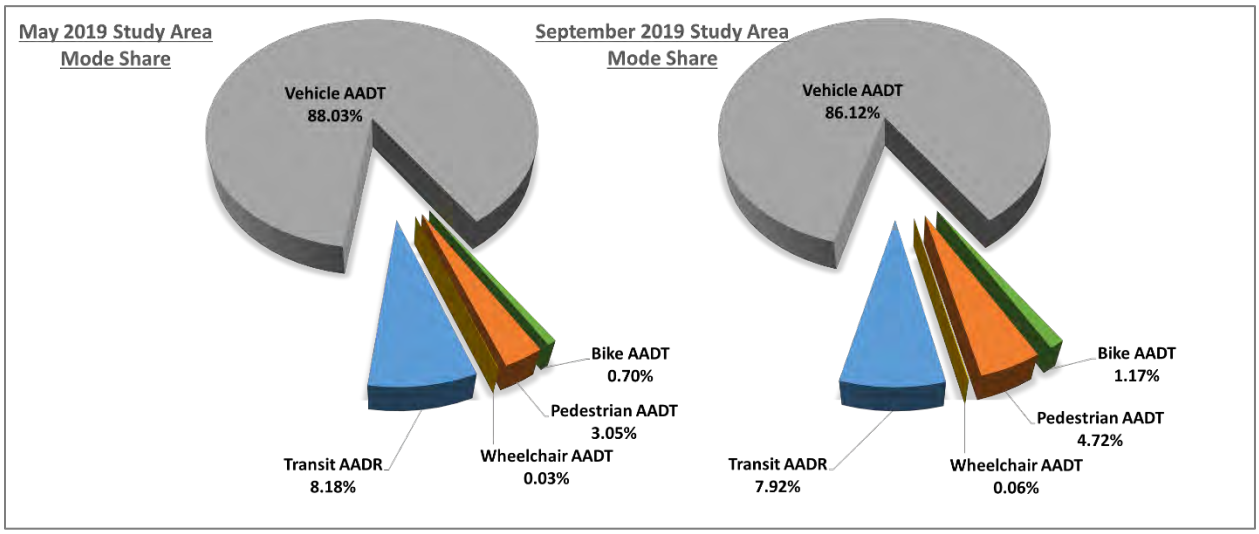


Figure 12. 2019 Transportation Regional Mode Share

Overall in the 2019 count cycle, pedestrian volumes represented nearly 1 in every 26 trips (3.89%), bicycling volumes were approximately 1 in 107 trips (0.94%), and wheelchair user activity was 0.05% of all regional trips. Transit ridership accounted for 8.05% percent of all travel at the 40 count program locations.

Table 2 shows the 2019 alternative mode shares by facility type at the 40 count locations.

Table 2. 2019 Alternative Mode Shares by Facility Type

Bicycle Facility Mode Share		
No Bike Lane	*With Bike Lane*	*With Transit*
0.52%	1.19%	0.80%
Pedestrian Facility Mode Share		
Without Sidewalk	*With Sidewalk*	*With Transit*
0.34%	4.07%	4.23%

In the 2019 count cycle, the mode share on roads with bicycle facilities was identified as 1.19%. The mode share on roads with no bicycle facilities was identified as 0.52%. For roadways with pedestrian facilities, walking, on average, accounted for 4.07% compared to 0.34% for roadways lacking pedestrian facilities. This is a significant difference and clearly demonstrates the value of sidewalks and bicycle facilities to active transportation. Not surprisingly, roadways with public transportation have a slightly higher pedestrian mode share (4.23%). The bicycling mode share for roadways with public transportation (0.80%) is slightly less than the regional bicyclist mode share (0.94%).

From the U.S. Census and American Community Survey data in **Table 3**, mode share proportions have been generally consistent since 2014. Based on the ACS estimates, public transit has seen a slight decrease in mode split the last two years. It is important to note that the information shown only accounts for trips related to commuting to work from home and does not account for any personal trips, recreational trips, or other non-commute based trips.

Table 3. 2014-2018 Journey to Work Mode Split

JOURNEY-TO-WORK MODE SPLIT FOR WASHOE COUNTY					
Mode (Home Based Work Trips)	**2014**	**2015**	**2016**	**2017**	**2018**
Drive Alone	78.9%	76.2%	77.9%	78.0%	77.3%
Carpool	10.7%	13.8%	10.2%	11.2%	12.4%
Public Transit	1.9%	1.4%	2.3%	1.7%	1.7%
Bicycling	0.4%	0.7%	0.6%	0.8%	0.5%
Walking	2.8%	2.7%	3.1%	2.3%	2.5%
Other Means	1.2%	1.2%	1.2%	1.3%	1.3%
Work at Home	4.3%	4.0%	4.7%	4.7%	4.4%

Source: 2014 - 2018 American Community Survey (ACS) 1-year estimates

Table 4 contains a complete breakdown of the modal split by location in the 2019 count cycle.

Table 4. 2019 Mode Share by Count Location

ID	Location	Existing Facilities			Mode Split (in percent)				
		Bike	Ped	Transit	Bikes	Pedestrians	Wheelchair	Transit	Vehicle
1	4th @ Evans				1.18%	**15.88%**	**0.22%**	**45.56%**	37.16%
2	Prater @ 15				0.49%	2.19%	0.01%	**26.48%**	70.82%
3	Virginia @ Peckham				0.36%	5.52%	0.03%	18.52%	75.58%
4	Virginia @ Little Waldorf				0.21%	6.40%	0.00%	10.23%	83.16%
5	Mayberry @ McCarran				**1.94%**	0.47%	0.00%	0.00%	97.60%
6	Sutro @ Hug High Crossing				0.10%	1.16%	0.00%	11.66%	87.08%
7	Kietzke @ Mill				0.50%	0.96%	0.02%	7.77%	90.75%
8	N Virginia @ College				0.49%	**16.44%**	0.07%	8.93%	74.07%
9	Virginia @ Martin				0.54%	4.66%	0.03%	17.27%	77.51%
10	Wells @ Vassar				0.47%	3.14%	**0.13%**	0.90%	95.37%
11	Pyramid @ McCarran				0.08%	0.30%	0.00%	0.00%	**99.63%**
13	Peckham @ Longley				0.24%	0.23%	0.00%	2.64%	96.88%
14	South Meadows @ Double R				0.23%	0.58%	0.00%	1.77%	97.42%
16	Oddie @ El Rancho				0.11%	0.44%	0.00%	0.00%	**99.45%**
17	Plumb @ Hunter Lake				1.39%	0.67%	0.00%	0.00%	97.95%
18	Evans @ Highland Ave				1.22%	9.39%	0.08%	7.53%	81.78%
19	Rock @ Glendale				0.50%	1.81%	0.01%	7.37%	90.31%
20	4th @ Sutro				1.30%	2.98%	0.03%	**19.25%**	76.44%
21	5th @ Ralston				1.38%	7.64%	**0.10%**	9.55%	81.33%
22	Arlington @ Mount Rose				1.14%	0.93%	0.00%	4.32%	93.61%
23	California @ Arlington				0.85%	1.46%	0.00%	3.07%	94.62%
24	1st @ Ralston				**8.21%**	**20.29%**	**0.72%**	0.00%	70.78%
25	Lakeside @ McCarran				0.37%	0.71%	0.00%	0.00%	98.92%
26	Mill @ Ryland				0.43%	1.74%	0.04%	7.89%	89.91%
27	Moana @ Kietzke				0.09%	0.28%	0.01%	2.51%	97.11%
28	Plumas @ Urban				0.77%	0.27%	0.01%	1.80%	97.14%
29	Sutro @ 9th				1.18%	3.31%	0.04%	**29.72%**	65.76%
30	Victorian @ Nichols				**1.67%**	2.69%	0.02%	6.25%	89.37%
31	Nichols @ McCarran				**4.58%**	**13.82%**	**0.15%**	11.17%	70.29%
32	Sparks @ Baring				0.10%	0.32%	0.00%	0.21%	**99.36%**
33	Sparks @ Prater				0.11%	0.34%	0.00%	1.32%	98.22%
34	McCarran @ Greenbrae				0.29%	0.34%	0.01%	0.00%	**99.36%**
35	McCarran @ Glendale				0.23%	0.34%	0.01%	1.34%	98.08%
36	Vista @ Alpland				0.18%	0.30%	0.00%	0.00%	**99.52%**
38	Keystone @ Coleman				0.33%	0.93%	0.05%	0.00%	98.69%
39	Stead @ Silver Lake				0.10%	0.67%	0.00%	5.14%	94.09%
40	Arlington @ Wingfield				**2.86%**	**17.21%**	0.01%	2.38%	77.53%
41	SE McCarran @ Mira Loma				0.52%	0.55%	0.00%	0.87%	98.06%
42	Sun Valley @ 6th				0.22%	0.46%	0.05%	2.37%	96.89%
43	Center @ Liberty				0.62%	7.69%	0.05%	**46.21%**	45.43%

Top 5 ranked locations are highlighted	
	- Locations with facilities on both sides of the road.
	- Locations with facilities on only one side of the road.

Complete Streets

The importance of safe dedicated facilities for pedestrians, bicyclists, and wheelchair users has been consistently demonstrated through the Programs history. A complete streets approach to roadway improvement or construction projects looks to manage the allocation of space in the "public realm", sometimes in partnership with adjacent land owners, to comfortably integrate all modes of transportation and other activities, and ideally with a special sensitivity to safety and land use context. At Program locations where, typical complete street elements (i.e., sidewalks, widened sidewalks, bike lanes, multi-use paths, cycle tracks) have been provided, the associated alternative mode volumes are higher than locations without these facilities. The Prater Way at 15th Street and 4th Street at Evans Avenue locations have recently been improved to provide complete street features.

This analysis compares the overall mode share split of those locations meeting the definition of complete streets to the mode share split of the study average. **Table 5** shows the 2019 mode share at the complete street locations (top three in each category is highlighted).

Table 5. 2019 Complete Street Mode Share

ID	Location	Mode Split (in percent)				
		Bikes	Pedestrians	Wheelchair	Transit	Vehicle
1	4th @ Evans	1.18%	15.88%	0.22%	45.56%	37.16%
2	Prater @ 15	0.49%	2.19%	0.01%	26.48%	70.82%
5	Mayberry @ McCarran	1.94%	0.47%	0.00%	0.00%	97.60%
6	Sutro @ Hug High Crossing	0.10%	1.16%	0.00%	11.66%	87.08%
10	Wells @ Vassar	0.47%	3.14%	0.13%	0.90%	95.37%
20	4th @ Sutro	1.30%	2.98%	0.03%	19.25%	76.44%
22	Arlington @ Mount Rose	1.14%	0.93%	0.00%	4.32%	93.61%
23	California @ Arlington	0.85%	1.46%	0.00%	3.07%	94.62%
24	1st @ Ralston	8.21%	20.29%	0.72%	0.00%	70.78%
28	Plumas @ Urban	0.77%	0.27%	0.01%	1.80%	97.14%
29	Sutro @ 9th	1.18%	3.31%	0.04%	29.72%	65.76%
30	Victorian @ Nichols	1.67%	2.69%	0.02%	6.25%	89.37%
31	Nichols @ McCarran	4.58%	13.82%	0.15%	11.17%	70.29%
40	Arlington @ Wingfield Park	2.86%	17.21%	0.01%	2.38%	77.53%
41	SE McCarran @ Mira Loma	0.52%	0.55%	0.00%	0.87%	98.06%
Complete Streets Average		**1.82%**	**5.76%**	**0.09%**	**10.90%**	**81.44%**
Study Average		**0.94%**	**3.89%**	**0.05%**	**8.05%**	**87.08%**

As shown in **Table 5**, the mode share for bicycles and pedestrians are higher on roadways with complete street facilities than across all study roadways. Overall transit ridership was also higher at the complete street locations compared to the study average. The effects of complete streets implementation should continue to be monitored to better understand how complete street design features and bicycle facility types are influencing alternative mode activity throughout the region.

Performance Measures Monitoring

With the Program data, performance measures can be created and monitored to assess progress towards goals outlined in the 2040 Regional Transportation Plan (RTP) as well as those highlighted in the Bicycle and Pedestrian Master Plan. A stated goal in the 2040 RTP is a 15% alternative mode share within the transit service area by 2040. In 2019, the average total non-motorized user mode share at the 40 Program locations within the RTP Transit Service Area was 12.9%, including transit.

A total of four count locations on the Virginia Street corridor and three count locations on the 4th Street/Prater Way corridor help to measure performance against these criteria. Both corridors are served heavily by transit and the seven count locations are located near major trip generators. A target of 40% alternative mode share for both the Virginia Street and 4th Street/Prater Way TOD corridors was set in the 2040 RTP. **Table 6** shows the 2019 mode share for the count locations on both corridors.

Photo 3. Sutro Street BRT Station

Table 6. 2019 Virginia Street & 4th Street/Prater Way TOD Corridor Mode Share

Location	Bikes	Pedestrians	Wheelchair	Transit	Vehicle
Virginia @ Little Waldorf	0.21%	6.40%	0.00%	10.23%	83.16%
Virginia @ College	0.49%	16.44%	0.07%	8.93%	74.07%
Virginia @ Martin	0.54%	4.66%	0.03%	17.27%	77.51%
Virginia @ Peckham	0.36%	5.52%	0.03%	18.52%	75.58%

Alternative Modes Average: 22.4%

Location	Bikes	Pedestrians	Wheelchair	Transit	Vehicle
4th @ Evans	1.18%	15.88%	0.22%	45.56%	37.16%
4th @ Sutro	1.30%	2.98%	0.03%	19.25%	76.44%
Prater @ 15	0.49%	2.19%	0.01%	26.48%	70.82%

Alternative Modes Average: 38.5%

The average alternative mode share, including transit, was 22.4% and 38.5% for the Virginia Street and 4th/Prater TOD corridors, respectively. It is important to note that the Virginia Street at College Drive and 4th Street at Evans Avenue locations greatly influence each corridor's average mode share.

Analysis and Trends

Alternative Mode Activity vs. Gas Prices

The price of gas can act as an incentive or as a deterrent to utilizing alternative modes of transportation. As gas prices rise, it is assumed that alternative mode usage increases. While much nationwide research has gone into this effect, it is important to continue to monitor how the changes in gas prices effect alternative mode use in the Region. **Figure 13** shows a loose correlation of gas prices to total active transportation volumes in each count cycle. Gas prices have largely remained relatively consistent and well below $4.00/gal in the past two years which may reduce the affects gas prices have on active transportation.

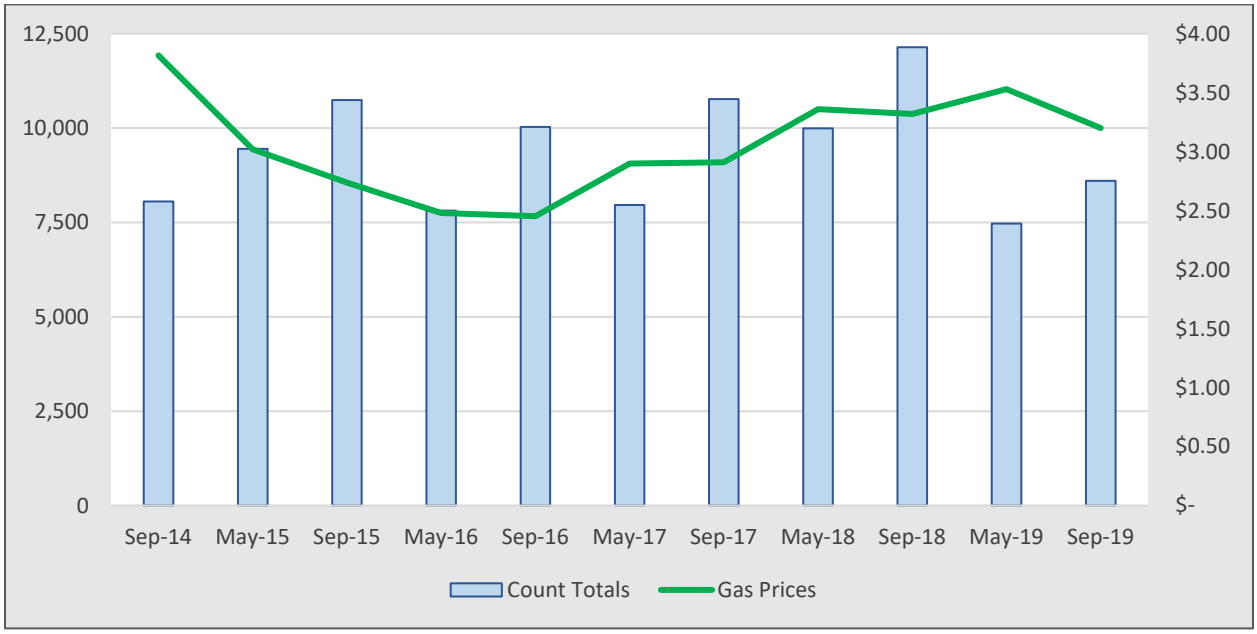


Figure 13. September 2014 – September 2019 Gas Prices vs. Total Volumes

Figure 14 and **Figure 15** also show little correlation between gas prices and volumes for each individual mode (bicycling and walking). Active transportation volumes versus gas prices will continue to be monitored to verify if multi-year correlations do in fact exist.

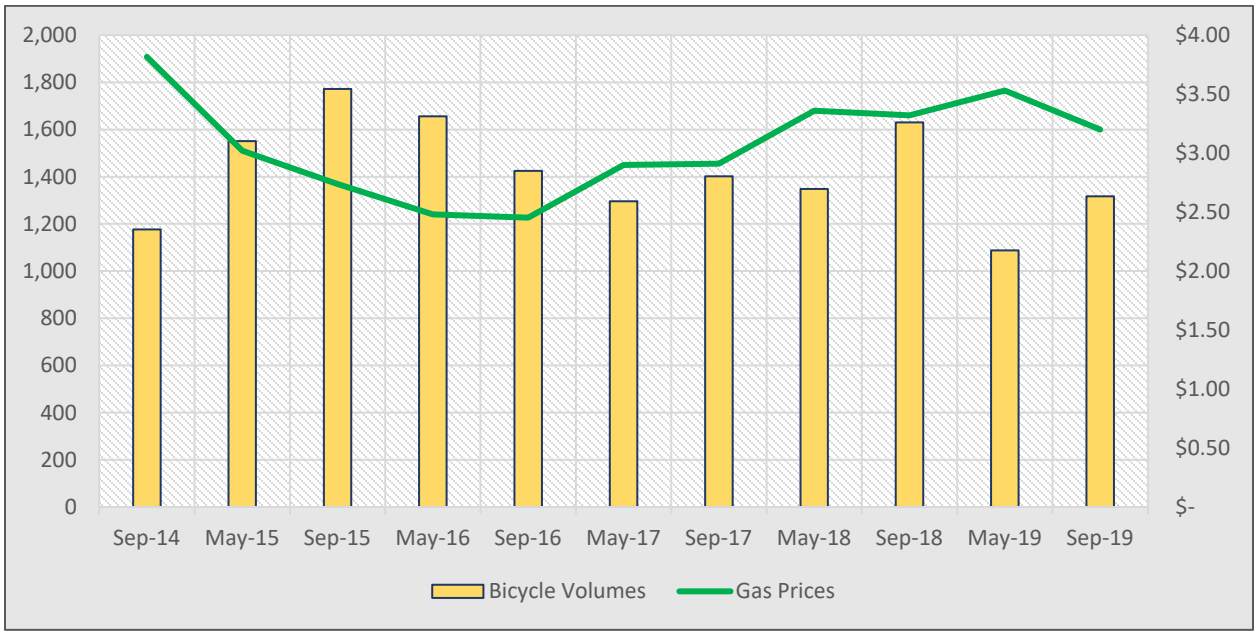


Figure 14. Gas Prices vs. Total Bicycle Volumes

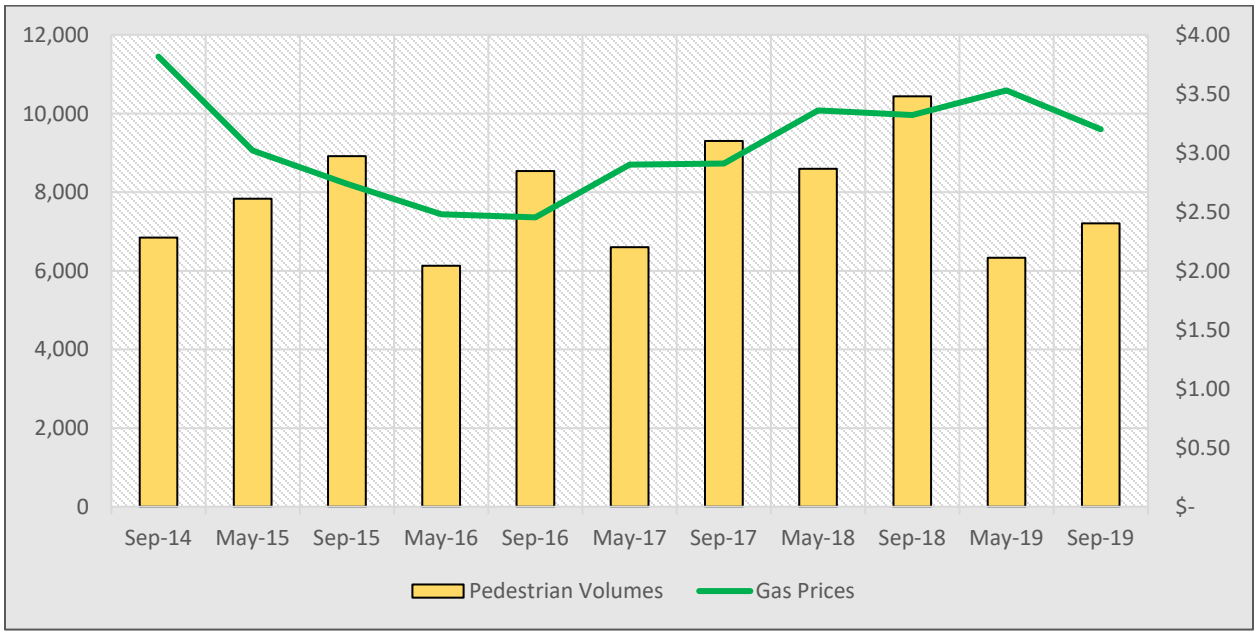


Figure 15. Gas Prices vs. Total Pedestrian Volumes

Time of Day Trends

Twelve-hour counts were conducted at 2 locations (4th Street at Evans Avenue and Prater Way at 15th Street) to continue the Program's efforts to capture time of day trends, including peak periods on weekdays and weekends. 12-hour counts were collected in May, July, and September. **Figure 16** and **Figure 17** shows average weekday and Saturday 12-hour data graphed by volume against time for the two locations during the May, July, and September count periods.

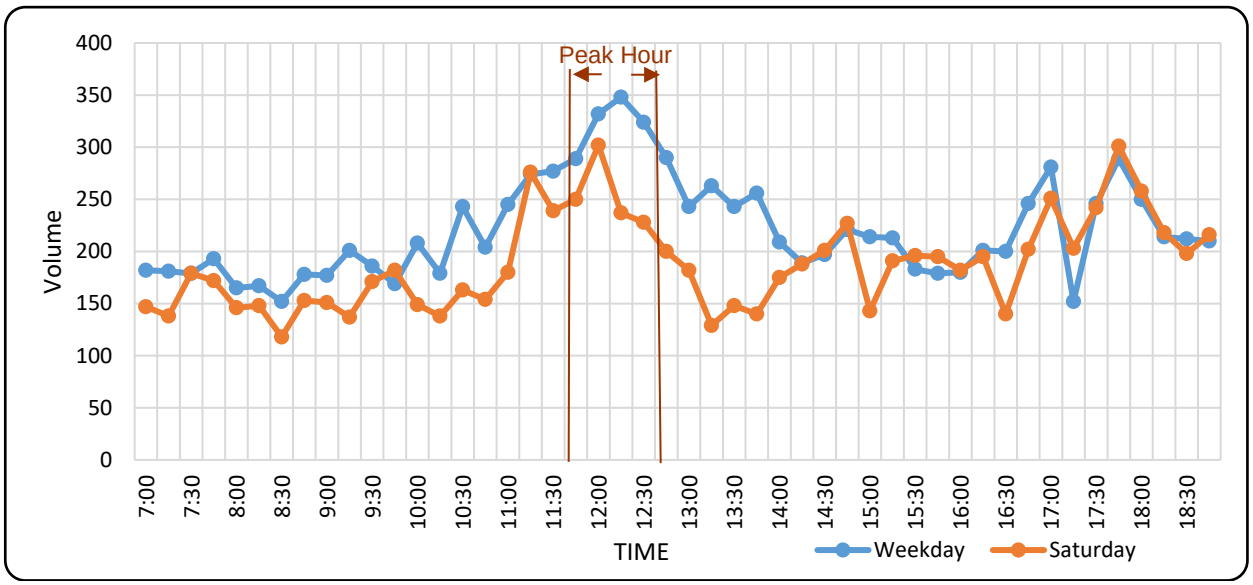


Figure 16. 4th Street at Evans Avenue 24-Hour Volume by Time

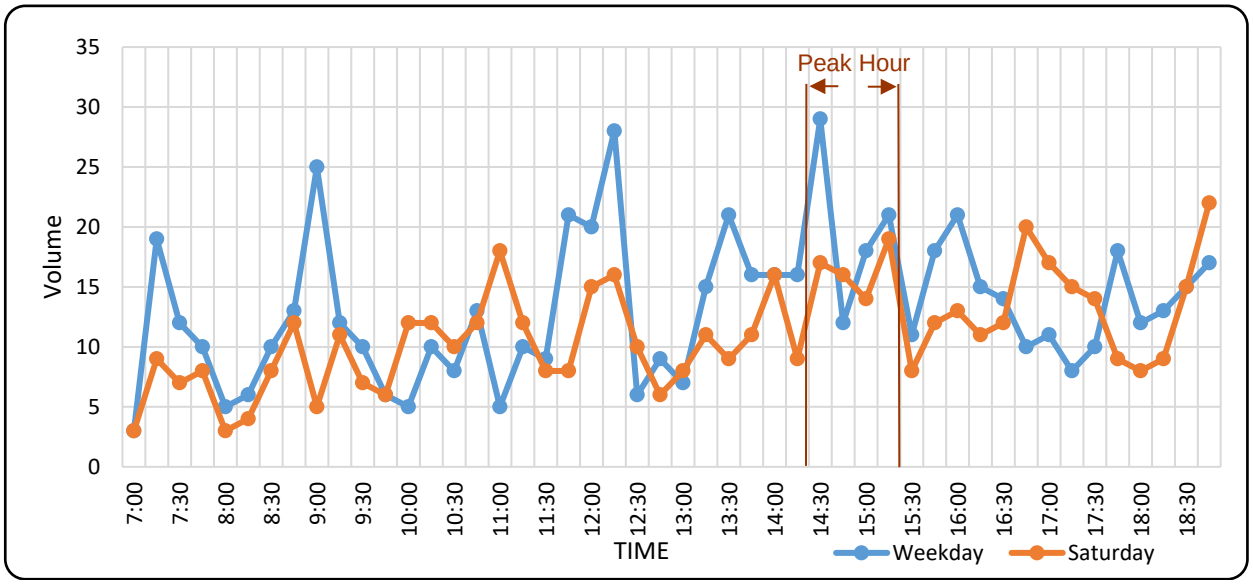


Figure 17. Prater Way at 15th Street 24-Hour Volume by Time

As shown in **Figure 16**, the 4th Street at Evans Avenue location generally has a consistent pattern whether it be a weekday or Saturday. The peak period at the 4th Street at Evans Avenue location was between 11:45 am and 12:45 pm with another peak between 5-6 PM. As shown in **Figure 17**, the Prater Way at 15th Street location is largely influenced by Sparks High School (0.15 miles away). The peak period was between 2:30 pm and 3:30 pm with the dismissal of Sparks High School. Thus, the peak hour is largely influenced by the weekday peak volume.

Multi-Year Trends

Six complete annual cycles of bicycle, pedestrian and wheelchair user data have been conducted in the Reno-Sparks region since the Programs' inception. In this section, the multi-year trends of each alternative mode are analyzed based on the associated total volumes at the 39 comparison count locations collected for each mode in every count cycle between September 2014 and September 2019. In any given count cycle, special events, inclement weather, and other factors can have a significant effect on observed volumes. A central reason for the existence of this consistent data collection effort is to help planners and the public see the general multi-year trends in alternative mode usage, and thereby more easily identify any abnormalities in seasonal activity at each location or region-wide. For this reason, a trend line is included in each of the graphs below containing historical total alternative mode volumes.

Bicyclist Activity

Figure 18 shows that, since September 2014, bicycling activity at the 39 comparison locations has shown a trend towards slightly decreasing volumes in each year-to-year count cycle. The graph also shows recent consistency in the relative magnitude of bicycle activity over the last five years. No one count cycle has shown constant higher volumes over another. The May 2019 count cycle recorded the lowest number of bicyclists.

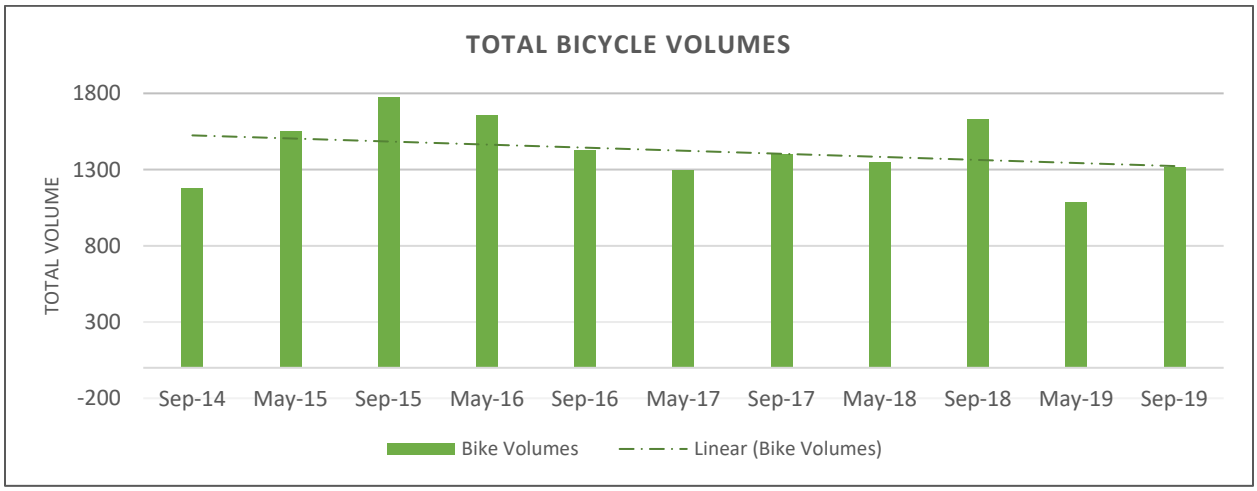


Figure 18. Multi-Year Total Bicycle Volumes

Pedestrian Activity

Figure 19 indicates that overall pedestrian activity at the 39 comparison count locations has been on the rise since 2014. The September count cycles represent the four highest-volume counts of pedestrians over the 11 comparison count cycles. The September 2018 count cycle recorded the highest number of pedestrians.

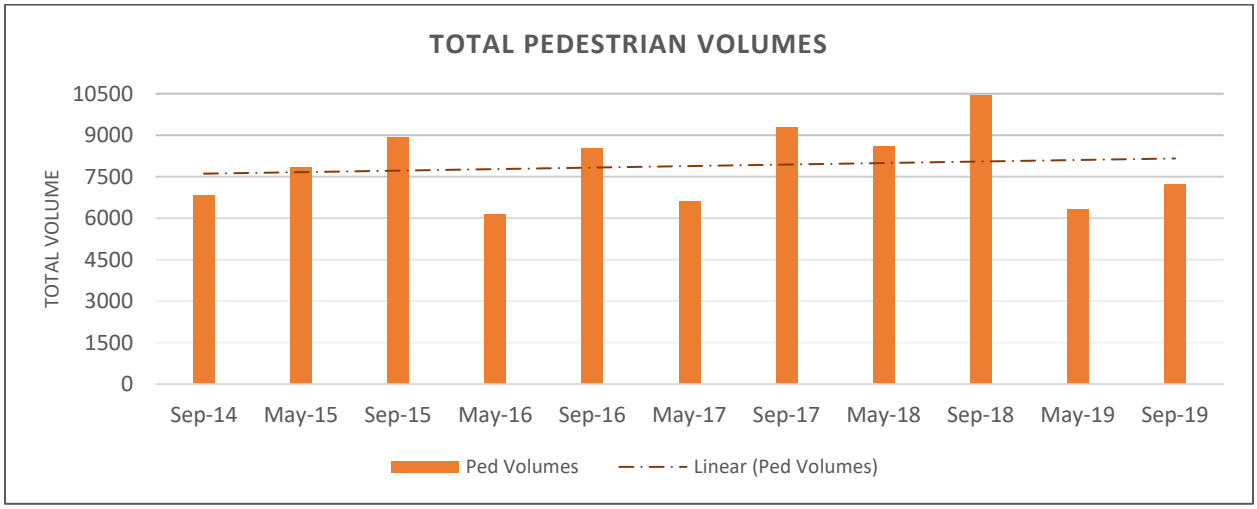


Figure 19. Multi-Year Total Pedestrian Volumes

Wheelchair Activity

Figure 20 indicates that overall wheelchair user activity at the 39 comparison count locations has been on the rise since 2014. Total wheelchair user volumes have been highly inconsistent over the Programs' history.

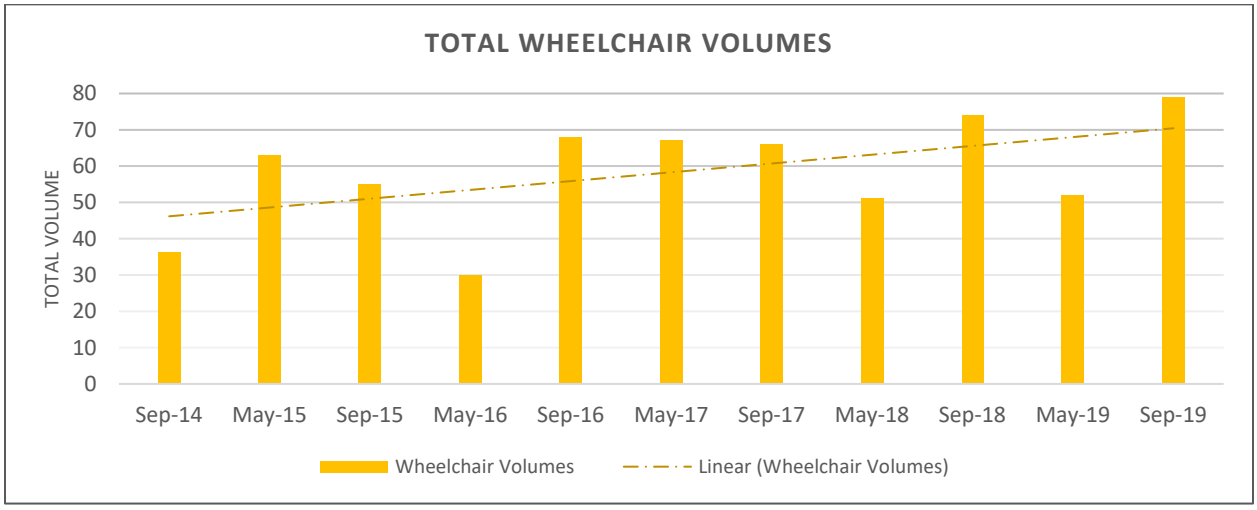


Figure 20. Multi-Year Total Wheelchair Volumes

Conclusions

The sixth full year of data collection for the Bicycle, Pedestrian and Wheelchair Data Collection Program, have helped to identify multi-year trends and factors contributing to the use of alternative modes of transportation in the Reno-Sparks area. A total of 11 data collection cycles are now complete at the 39 "comparison" count locations.

Alternative Mode Activity Data Trends

- Pedestrian volumes have continued to steadily increase since September 2014, including the relative volume of high-use spikes in the areas surrounding the region's many special events.
- Bicyclist volumes collected through this Program have just decreased slightly year-to-year since September 2014.
- Wheelchair user volumes have been largely inconsistent from year-to-year. However, wheelchair volumes have increased since September 2014.
- Pedestrians significantly outnumber bicyclists, daily and region-wide, and even more so in and around the downtown area.
- Gas prices have recently shown little correlation to active transportation volumes. Gas prices have largely remained at or below $4 per gallon in the Reno/Sparks region for the past few years, which decreases the effect gas prices have on mode choice.
- The volume of collisions involving non-motorized users increased slightly in the most recent data (2018).
- As highlighted in the Truckee Meadows Vision Zero Action Plan, PM low-light hours and evening hours are the most dangerous times of day for alternative modes.
- Count locations on streets with sidewalks showed a significant increase in pedestrian mode share compared to streets without sidewalks. Additionally, pedestrian mode share had a greater increase at locations in which transit service was provided.

Considerations for Future Efforts

The following suggestions to improve future data collection and analysis include modifications or additions to what and how data is being collected and analyzed for the Bicycle, Pedestrian, and Wheelchair Data Collection Program. The list represents ideas brought forth by the Program consultant. It is assumed that their implementation depends on their relative suitability and feasibility as determined by RTC staff and Program stakeholders.

- Install automated bicycle and pedestrian counters throughout the region to bolster the Program. Installing automated counters with multiple detection technologies that monitor all types of activity and for longer periods would likely provide more complete and accurate measures of alternative mode use, year-round. This type of data would also allow for the creation of more tailored daily use extrapolations by using Reno specific hourly, daily, and monthly factors.

- "Complete Street" project locations could be monitored through focused data collection efforts (ex. longer data collection periods and consistent time of year) before and after construction to measure the effectiveness of new infrastructure and roadway treatments that are intended to improve the use of alternative transportation. The Prater Way at 15th Street and/or the 4th Street at Evans Avenue locations could be selected for further analysis for before and after complete street construction.
- Obtain and map crash location data from NDOT and other sources, if available, to identify and characterize high-crash locations.
- Collect and analyze relevant wrong-way bicycle riding data, and other behavioral data, with the aim of informing education, enforcement, and infrastructure investments.
- Compare manual bicycle counts and data to Lime Bike data (Bicycle Rideshare Program) if possible.
- Work with community partners to conduct a region wide survey regarding bicycling and walking factors (ex. level of traffic stress) which influence walking/bicycling habits in order to focus future efforts on the most effective facility designs and locations.
- Future in-depth analysis to filter out weekday vs weekend data and special event fluctuations.

Appendix

NATIONAL BICYCLE & PEDESTRIAN DOCUMENTATION PROJECT
Count Adjustment Factors March 2009

While more year-long automatic count data is needed from different parts of the county, especially for pedestrians and on-street bicyclists, enough data now exists to allow us to adjust counts done almost any period on multi-use paths and pedestrian districts to an annual figure.

All percentages in the following tables represent the percentage of the total period (day, week, or month).

How to Use This Data

The factors in the following tables are designed to extrapolate daily, monthly, and annual users based on counts done during any period of a day, month, or year. The factors currently are designed to be used by (a) multi-use pathways (PATH) and (b) higher density pedestrian and entertainment areas (PED).

How Many Counts Can it Be Based On?

Given the variability of bicycle and pedestrian activity, we strongly encourage that all estimates be based on the average of at least two (2) and preferably three (3) counts during the same time period and week, especially for lower volume areas. For example, counts could be done from 2-4pm on consecutive weekdays (Tuesday – Thursday) during the same week, or, in consecutive weeks. Weekday counts should always be done Tuesday through Thursday, and never on a holiday. Weekend counts can be done on either day.

Bicyclists versus Pedestrians

The factors used in these formulas are for combined bicyclist and pedestrian volumes. Once you have calculated your total daily, monthly, or annual volume, you can simply multiple the total by the percent breakdown between bikes and pedestrians based on your original count information.

Start with the Hour Count

Once you have collected your count information and developed an average weekday and weekend count volume for bicyclists and/or pedestrians, pick any one (1) hour period from either of those days.

Adjustment Factor

Your next step is to multiply those counts by 1.05. Sample #1

Average 1 hour weekday count: 236 bikes/peds x 1.05 = 248
Average 1 hour weekend day count: 540 bikes/peds x 1.05 = 567

This adjustment factor is done to reflect the bicyclists/pedestrians who use the facility between 11pm and 6am, or, about 5% of the average daily total. The count formulas are all based on total counts between 6am and 10pm, since many available counts only cover those periods. If you are certain your facility gets virtually no use between those hours, you can forgo this step.

Calculate Daily Weekday and Weekend Daily Total

Identify the weekday and weekend hour your counts are from in Table 1 below. Be sure to use the PATH column for all multi-use paths, and the PED column for all higher density pedestrian areas with some entertainment uses such as restaurants. Be sure to select the correct time of year (April- September, or, October-March) as well.

Sample #2: done in June on a multiuse path (weekday = 4-5pm, weekend day = 12-1pm): Adjusted weekday hourly count = 248/.07 = 3,542 daily users
Adjusted weekend day hourly count = 567/.1= 5,670 daily users Calculating Average Weekly Volumes
We need to adjust these figures based on the day of the week. See table 2 below. Find the day of the week your counts were done, and factor them by that percent. If you did multiple counts on different days of the week, then take the average of those factors.

Sample #3: counts were done on a Tuesday and a Saturday. Adjusted weekday count = 3,542/.13 = 27,246 average weekly users Adjusted weekend count = 5,670/.18 = 31,500
Add these two figures together, and divide by 2: 27,246+31,500=58,746/2 = 29,373 people The average weekly volumes for that month are 29,373 people.

Convert to Monthly Volumes

To convert from average weekly volumes to an average monthly volume, multiply the average weekly volume by the average number of weeks in a month (4.33 weeks).

Sample #4: 29,373 x 4.33 = 127,282 people.
This is the average monthly volume for the month the counts were conducted. Convert to Annual Totals
To convert from the average monthly volume for the month the counts were taken into an annual total, divide the average monthly figure by the factor from Table 3 for the month the counts were conducted. Use the general climate zones described. Some climate zone types are not included.

Sample #5: counts were done in June in a moderate climate zone. Average monthly volumes = 127,282/.08 = 1,591,037 people.
Based on these sample figures, it is estimated that almost 1.6 million people use the pathway annually.

Average Monthly and Daily Figures

To identify the average monthly and daily figures, simply divide the annual figure by 12 (for month) or by 365 (for daily figures).

Monthly average = 1,591,037/12 = 132,586 people Daily Average = 1,591,037/365 = 4,359 people

Table 1: Hourly adjustment factors for multi-use paths and pedestrian entertainment areas by season.

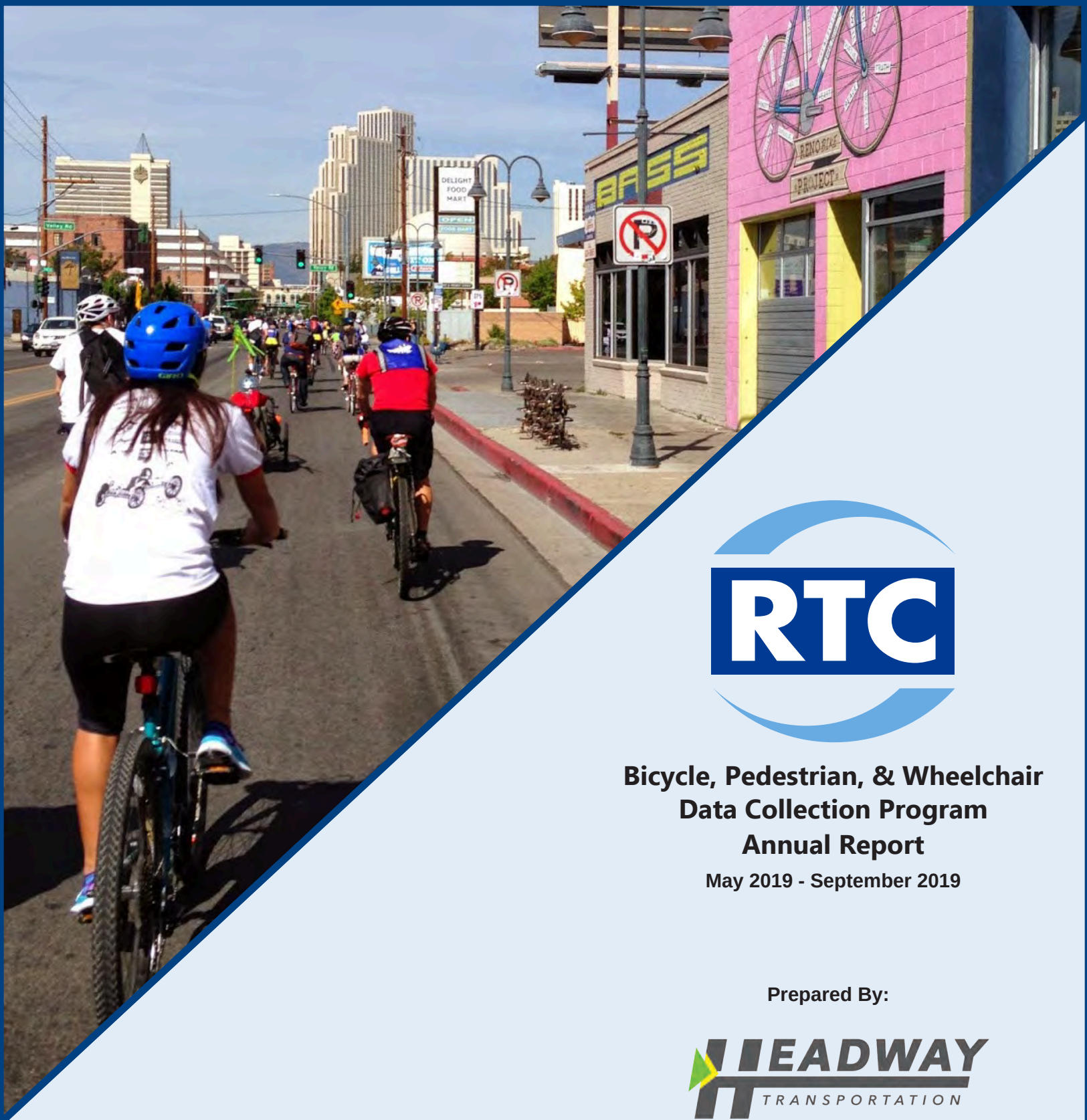
	April - September 6am - 9pm					October - March 6am - 9pm			
	---- PATH------		-----PED-----			---- PATH------		-----PED-----	
	wkdy	wkend	wkdy	wkend		wkdy	wkend	wkdy	wkend
0600	2%	1%	1%	1%	0600	2%	0%	1%	0%
0700	4%	3%	2%	1%	0700	4%	2%	2%	1%
0800	7%	6%	4%	3%	0800	6%	6%	3%	2%
0900	9%	9%	5%	3%	0900	7%	10%	5%	4%
1000	9%	9%	6%	5%	1000	9%	10%	6%	5%
1100	9%	11%	7%	6%	1100	9%	11%	8%	8%
1200	8%	10%	9%	7%	1200	9%	11%	9%	10%
1300	7%	9%	9%	7%	1300	9%	10%	10%	13%
1400	7%	8%	8%	9%	1400	9%	10%	9%	11%
1500	7%	8%	8%	9%	1500	8%	10%	8%	8%
1600	7%	7%	7%	9%	1600	8%	8%	7%	7%
1700	7%	6%	7%	8%	1700	7%	5%	6%	6%
1800	7%	5%	7%	8%	1800	6%	3%	7%	6%
1900	5%	4%	7%	8%	1900	4%	2%	7%	6%
2000	4%	3%	7%	8%	2000	2%	1%	6%	6%
2100	2%	2%	6%	8%	2100	2%	1%	5%	5%

Table 2: Daily adjustment factors. Note: Holidays use weekend rates.

MON	14%
TUES	13%
WED	12%
THURS	12%
FRI	14%
SAT	18%
SUN	18%

Table 3: Monthly Adjustment Factors by Climate Area

	Climate Region		
Month	Long Winter Short summer	Moderate Climate	Very hot summer Mild winter
JAN	3%	7%	10%
FEB	3%	7%	12%
MAR	7%	8%	10%
APR	11%	8%	9%
MAY	11%	8%	8%
JUN	12%	8%	8%
JUL	13%	12%	7%
AUG	14%	16%	7%
SEP	11%	8%	6%
OCT	6%	6%	7%
NOV	6%	6%	8%
DEC	3%	6%	8%



Bicycle, Pedestrian, & Wheelchair Data Collection Program Annual Report

May 2019 - September 2019

Prepared By:

HEADWAY TRANSPORTATION

The Reno Sparks region is a pleasant, thriving, healthy, and sustainable community that strives to meet the needs of all its citizens in an environmentally sensitive manner. Walking and bicycling as a means of transportation or for recreation and fitness requires safe and accessible infrastructure.
- Reno/Sparks Bicycle & Pedestrian Master Plan (2017)

April 17, 2020 **AGENDA ITEM 3.15**

TO: Regional Transportation Commission

FROM: Dale R. Keller, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Professional Services Agreement (PSA) for the Sparks Boulevard Widening Project

RECOMMENDATION

Approve a Professional Services Agreement (PSA) with Atkins North America, Inc. ("ATKINS") as the selected firm to provide Engineering Professional Services for the Sparks Boulevard Widening Project in an amount not to exceed $8,474,331; authorize the RTC Executive Director to execute the agreement.

SUMMARY

ATKINS was selected as the highest ranked firm out of three (3) firms that submitted responsive proposals for the Sparks Boulevard Widening Project Request for Proposals (RFP) advertised on December 6, 2019. This Agreement (see Attachment A) provides environmental services, preliminary engineering and final design to increase safety, add roadway capacity, and improve bicycle and pedestrian facilities by widening Sparks Boulevard to six (6) lanes between Greg Street and Baring Boulevard.

This scope encompasses permitting activities as well as ongoing environmental coordination and documentation efforts necessary to compete the National Environmental Policy Act (NEPA) process. Final design is inclusive of all roadway, bicyclist, and pedestrian improvements, impacts to the North Truckee Drain, and structural design including bridge widening, retaining wall, and sound walls.

The anticipated project schedule includes twenty-one (21) months for the environmental study, alternatives analysis, and preliminary design and twenty-three (23) months for final design. It is anticipated that the Project will be constructed in two construction packages to meet funding availability.

Negotiation with ATKINS is now complete and the scope, schedule and budget are included in the Professional Services Agreement.

FISCAL IMPACT

Funding for this service is included in the current FY 2020/2021 Budgets.

PREVIOUS ACTIONS BY BOARD

October 24, 2019	Approved the Procurement for the Selection of Engineering Professional Services for Design the Spark Boulevard Project

ADDITIONAL BACKGROUND

Sparks Boulevard is a major north-south corridor located in Sparks, Nevada that serves the Truckee Meadows area by connecting Pyramid Highway in Spanish Springs to Interstate 80 and to the newly constructed Veterans Parkway at Greg Street. The approximately three (3) mile long segment of Sparks Boulevard between Greg Street and Baring Boulevard is currently a four-lane divided roadway throughout, except between the I-80 ramps and E. Lincoln Way.

In 2015, the RTC conducted a Sparks Boulevard Multi-Modal Corridor Study to identify deficiencies and potential solutions to roadway capacity and safety issues, environmental considerations, project land use, and future right-of-way needs and constraints.

The primary purpose and need of the project is to provide capacity improvements to allow for improved traffic operations and policy level of service throughout the corridor based on existing and projected traffic volumes. The project also seeks to perpetuate and provide multimodal improvements, address vehicle safety issues through improved geometry and other means, and to improve overall corridor crosswalk safety and crosswalk application.

The Regional Transportation Plan (RTP) currently defines the Sparks Boulevard Project as a capacity project that falls within the first five years of the 2040 RTP. The project is identified in the Capacity Improvement Plan (CIP) and the Transportation Improvement Plan (TIP). The RTC Board approved the FY 2020 Project of Projects that included Sparks Boulevard.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this report.

Attachment

AGREEMENT
FOR
PROFESSIONAL SERVICES

This agreement (this "Agreement") is dated and effective as of April 17, 2020, by and between the Regional Transportation Commission of Washoe County ("RTC") and Atkins North America, Inc. ("CONSULTANT").

WITNESSETH:

WHEREAS, RTC issued a Request for Proposals for interested persons and firms to perform certain engineering and design services in connection with widening Sparks Boulevard to six (6) lanes between Greg Street and Baring Boulevard (the "Project"); and

WHEREAS, CONSULTANT submitted a proposal (the "Proposal") and was selected to perform the work; and

NOW, THEREFORE, RTC and CONSULTANT, in consideration of the mutual covenants and other consideration set forth herein, do hereby agree as follows:

ARTICLE 1 – TERM AND ENGAGEMENT

1.1. The term of this Agreement shall be from the date first written above through January 1, 2024, unless terminated at an earlier date, or extended to a later date, pursuant to the provisions herein.

1.2. CONSULTANT will perform the work using the project team identified in Exhibit B. Any changes to the project team must be approved by RTC's Project Manager.

1.3. CONSULTANT will promptly, diligently and faithfully execute the work to completion in accordance with applicable professional standards subject to any delays due to strikes, acts of God, act of any government, civil disturbances, or any other cause beyond the reasonable control of CONSULTANT.

1.4. CONSULTANT shall not proceed with work until both parties have executed this Agreement and a purchase order has been issued to CONSULTANT. If CONSULTANT violates that prohibition, CONSULTANT forfeits any and all right to reimbursement and payment for that work and waives any and all claims against RTC, its employees, agents, and affiliates, including but not limited to monetary damages, and any other remedy available at law or in equity arising under the terms of this Agreement. Furthermore, prior to execution and issuance of a purchase order, CONSULTANT shall not rely on the terms of this Agreement in any way, including but not limited to any written or oral representations, assurances or warranties made by RTC or any of its agents, employees or affiliates, or on any dates of performance, deadlines, indemnities, or any term contained in this Agreement or otherwise.

ARTICLE 2 - SERVICES OF CONSULTANT

2.1. SCOPE OF SERVICES

The scope of services consist of the tasks set forth in Exhibit A.

2.2. SCHEDULE OF SERVICES

Tasks and subtasks shall be completed in accordance with the schedule in Exhibit A. Any change(s) to the schedule must be approved by RTC's Project Manager.

2.3. CONTINGENCY

Contingency line items identified in the scope of services are for miscellaneous increases within the scope of work. Prior to the use of any contingency amounts, CONSULTANT shall provide a letter to RTC's Project Manager detailing the need, scope, and not-to-exceed budget for the proposed work. Work to be paid for out of continency shall proceed only with the RTC Project Manager's written approval.

2.4. OPTIONS

RTC shall have the right to exercise its option(s) for all or any part of the optional tasks or subtasks identified in Exhibit A. CONSULTANT will prepare and submit a detailed scope of services reflecting the specific optional services requested, a schedule for such services, and a cost proposal. RTC will review and approve the scope of services and RTC and CONSULTANT will discuss and agree upon compensation and a schedule. CONSULTANT shall undertake no work on any optional task without written notice to proceed with the performance of said task. RTC, at its sole option and discretion, may select another individual or firm to perform the optional tasks or subtasks identified in Exhibit A.

2.5. ADDITIONAL SERVICES

CONSULTANT will provide additional services when agreed to in writing by RTC and CONSULTANT.

2.6. PERFORMANCE REQUIREMENTS

Any and all design and engineering work furnished by CONSULTANT shall be performed by or under the supervision of persons licensed to practice architecture, engineering, or surveying (as applicable) in the State of Nevada, by personnel who are careful, skilled, experienced and competent in their respective trades or professions, who are professionally qualified to perform the work, and who shall assume professional responsibility for the accuracy and completeness of documents prepared or checked by them, in accordance with appropriate prevailing professional standards. Notwithstanding the provision of any drawings, technical specifications, or other data by RTC, CONSULTANT shall have the

responsibility of supplying all items and details required for the deliverables required hereunder.

Any sampling and materials testing shall be performed by an approved testing laboratory accredited by AASHTO or other ASTM recognized accrediting organization in the applicable test methods. If any geotechnical or materials testing is performed by a sub-consultant, that laboratory shall maintain the required certification. Proof of certification shall be provided to RTC with this Agreement. If certification expires or is removed during the term of this Agreement, CONSULTANT shall notify RTC immediately, and propose a remedy. If an acceptable remedy cannot be agreed upon by both parties, RTC may terminate this Agreement for default.

CONSULTANT shall provide only Nevada Alliance for Quality Transportation Construction (NAQTC) qualified personnel to perform field and laboratory sampling and testing during the term of this Agreement. All test reports shall be signed by a licensed NAQTC tester and notated with his/her license number.

2.7. ERRORS AND OMISSIONS

CONSULTANT shall, without additional compensation, correct or revise any deficiencies, errors, or omissions caused by CONSULTANT in its analysis, reports, and services. CONSULTANT also agrees that if any error or omission is found, CONSULTANT will expeditiously make the necessary correction, at no expense to RTC. If an error or omission was directly caused by RTC, and not by CONSULTANT and RTC requires that such error or omission be corrected, CONSULTANT may be compensated for such additional work.

ARTICLE 3 - COMPENSATION

3.1. CONSULTANT shall be paid for hours worked at the hourly rates and rates for testing in Exhibit B. RTC shall not be responsible for any other costs or expenses except as provided in Exhibit B.

3.2. The maximum amount payable to CONSULTANT to complete each task is equal to the not-to-exceed amounts identified in Exhibit B. CONSULTANT can request in writing that RTC's Project Manager reallocate not-to-exceed amounts between tasks. A request to reallocate not-to-exceed amounts must be accompanied with a revised fee schedule, and must be approved in writing by RTC's Project Manager prior to performance of the work. In no case shall CONSULTANT be compensated in excess of the following not-to exceed amounts:

Total Services (Tasks 1 to 9, 11, 12, 14)	$7,478,475
Design Contingency (Task 14)	$250,000
Optional Services – Miscellaneous (Task 15)	$745,856
Optional Services – Design During Construction (Tasks 10, 13)	TBD
Total Not-to-Exceed Amount	$8,474,331

3.3. For any work authorized under Section 2.4, "Additional Services," RTC and CONSULTANT will negotiate not-to-exceed amounts based on the standard hourly rates and rates for testing in Exhibit B. Any work authorized under Section 2.4, "Additional Services," when performed by persons who are not employees or individuals employed by affiliates of CONSULTANT, will be billed at a mutually agreed upon rate for such services, but not more than 105% of the amounts billed to CONSULTANT for such services.

3.4. CONSULTANT shall receive compensation for preparing for and/or appearing in any litigation at the request of RTC, except: (1) if such litigation costs are incurred by CONSULTANT in defending its work or services or those of any of its sub-consultants; or (2) as may be required by CONSULTANT's indemnification obligations. Compensation for litigation services requested by RTC shall be paid at a mutually agreed upon rate and/or at a reasonable rate for such services.

ARTICLE 4 - INVOICING

4.1. CONSULTANT shall submit monthly invoices in the format specified by RTC. Invoices must be submitted to accountspayable@rtcwashoe.com. RTC's payment terms are 30 days after the receipt of the invoice. Simple interest will be paid at the rate of half a percent (0.5%) per month on all invoices approved by RTC that are not paid within thirty (30) days of receipt of the invoice.

4.2. RTC shall notify CONSULTANT of any disagreement with any submitted invoice for consulting services within thirty (30) days of receipt of an invoice. Any amounts not in dispute shall be promptly paid by RTC.

4.3. CONSULTANT shall maintain complete records supporting every request for payment that may become due. Upon request, CONSULTANT shall produce all or a portion of its records and RTC shall have the right to inspect and copy such records.

ARTICLE 5 - ACCESS TO INFORMATION AND PROPERTY

5.1. Upon request and without cost to CONSULTANT, RTC will provide all pertinent information that is reasonably available to RTC including surveys, reports and any other data relative to design and construction.

5.2. RTC will provide access to and make all provisions for CONSULTANT to enter upon RTC facilities and public lands, as required for CONSULTANT to perform its work under this Agreement.

ARTICLE 6 - OWNERSHIP OF WORK

6.1. Plans, reports, studies, tracings, maps, software, electronic files, licenses, programs, equipment manuals, and databases and other documents or instruments of service prepared or obtained by CONSULTANT in the course of performing work under this Agreement, shall be delivered to and become the property of RTC. Software already developed and purchased by CONSULTANT prior to the Agreement is excluded from this requirement. CONSULTANT and its sub-consultants shall convey and transfer all copyrightable interests, trademarks, licenses, and other intellectual property rights in such materials to RTC upon completion of all services under this Agreement and upon payment in full of all compensation due to CONSULTANT in accordance with the terms of this Agreement. Basic survey notes, sketches, charts, computations and similar data prepared or obtained by CONSULTANT under this Agreement shall, upon request, also be provided to RTC.

6.2. CONSULTANT represents that it has secured all necessary licenses, consents, or approvals to use the components of any intellectual property, including computer software, used in providing services under this Agreement, that it has full legal title to and the right to reproduce such materials, and that it has the right to convey such title and other necessary rights and interests to RTC.

6.3. CONSULTANT shall bear all costs arising from the use of patented, copyrighted, trade secret, or trademarked materials, equipment, devices, or processes used on or incorporated in the services and materials produced under this Agreement.

6.4. CONSULTANT agrees that all reports, communications, electronic files, databases, documents, and information that it obtains or prepares in connection with performing this Agreement shall be treated as confidential material and shall not be released or published without the prior written consent of RTC; provided, however, that CONSULTANT may refer to this scope of work in connection with its promotional literature in a professional and commercially reasonable manner. The provisions of this subsection shall not apply to information in whatever form that comes into the public domain. The provisions of this paragraph also shall not restrict CONSULTANT from giving notices required by law or complying with an order to provide information or data when such order is issued by a court, administrative agency, or other entity with proper jurisdiction, or if it is reasonably necessary for CONSULTANT to defend itself from any suit or claim.

ARTICLE 7 - TERMINATION

7.1. CONTRACT TERMINATION FOR DEFAULT

If CONSULTANT fails to perform services in the manner called for in this Agreement or if CONSULTANT fails to comply with any other provisions of this Agreement, RTC may terminate this Agreement for default. Termination shall be effected by serving a notice of termination on CONSULTANT setting forth the manner in which CONSULTANT is in default. CONSULTANT will only be paid the contract price for services delivered and

accepted, or services performed in accordance with the manner of performance set forth in this Agreement.

If it is later determined by RTC that CONSULTANT had an excusable reason for not performing, such as a fire, flood, or events which are not the fault of or are beyond the control of CONSULTANT, RTC, after setting up a new performance schedule, may allow CONSULTANT to continue work, or treat the termination as a termination for convenience.

7.2. CONTRACT TERMINATION FOR CONVENIENCE

RTC may terminate this Agreement, in whole or in part, at any time by written notice to CONSULTANT when it is in RTC's best interest. CONSULTANT shall be paid its costs, including contract closeout costs, and profit on work performed up to the time of termination. CONSULTANT shall promptly submit its termination claim to RTC to be paid CONSULTANT. If CONSULTANT has any property in its possession belonging to RTC, CONSULTANT will account for the same, and dispose of it in the manner RTC directs.

ARTICLE 8 - INSURANCE

8.1. CONSULTANT shall not commence any work or permit any employee/agent to commence any work until satisfactory proof has been submitted to RTC that all insurance requirements have been met.

8.2. In conjunction with the performance of the services/work required by the terms of this Agreement, CONSULTANT shall obtain all types and amounts of insurance set forth in Exhibit C, and shall comply with all provisions set forth therein.

ARTICLE 9 - HOLD HARMLESS

9.1. CONSULTANT's obligation under this provision is as set forth in Exhibit C. Said obligation would also extend to any liability of RTC resulting from any action to clear any lien and/or to recover for damage to RTC property.

ARTICLE 10 - EQUAL EMPLOYMENT OPPORTUNITY

10.1. During the performance of this Agreement, CONSULTANT agrees not to discriminate against any employee or applicant for employment because of race, color, religion, sex, age, disability, or national origin. CONSULTANT will take affirmative action to ensure that applicants are employed, and that employees are treated fairly during employment, without regard to their race, color, religion, sex, age, disability, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. CONSULTANT agrees to post in conspicuous places, available to employees and

applicants for employment, notices to be provided by RTC setting forth the provisions of this nondiscrimination clause.

10.2. CONSULTANT will, in all solicitations or advertisements for employees placed by or on behalf of CONSULTANT, state that well qualified applicants will receive consideration of employment without regard to race, color, religion, sex, age, disability, or national origin.

10.3. CONSULTANT will cause the foregoing provisions to be inserted in all sub-agreements for any work covered by this Agreement so that such provisions will be binding upon each sub-consultant.

ARTICLE 11 - RESOLUTION OF CLAIMS AND DISPUTES

11.1. NEGOTIATED RESOLUTION

In the event that any dispute or claim arises under this Agreement, the parties shall timely cooperate and negotiate in good faith to resolve any such dispute or claim. Such cooperation shall include providing the other party with all information in order to properly evaluate the dispute or claim and making available the necessary personnel to discuss and make decisions relative to the dispute or claim.

11.2. MEDIATION

If the parties have been unable to reach an informal negotiated resolution to the dispute or claim within thirty (30) days following submission in writing of the dispute or claim to the other party, or such longer period of time as the parties may agree to in writing, either party may then request, in writing, that the dispute or claim be submitted to mediation (the "Mediation Notice"). After the other party's receipt or deemed receipt of the Mediation Notice, the parties shall endeavor to agree upon a mutually acceptable mediator, but if the parties have been unable to agree upon a mediator within ten (10) days following receipt of the Mediation Notice, then each party shall select a mediator and those two selected mediators shall select the mediator. A mediator selected by the parties' designated mediators shall meet the qualification set forth in as provided in Rule 4 of Part C., "Nevada Mediation Rules" of the "Rules Governing Alternative Dispute Resolutions adopted by the Nevada Supreme Court." Unless otherwise agreed to by the parties, in writing, the mediator shall have complete discretion over the conduct of the mediation proceeding. Unless otherwise agreed to by the parties, in writing, the mediation proceeding must take place within thirty (30) days following appointment of the mediator. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in Washoe County, Nevada, unless otherwise agreed to by the parties, in writing. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

11.3. LITIGATION

In the event that the parties are unable to settle and/or resolve the dispute or claim as provided above, then either party may proceed with litigation in the Second Judicial District Court of the State of Nevada, County of Washoe.

11.4. CONTINUING CONTRACT PERFORMANCE

During the pendency of any dispute or claim the parties shall proceed diligently with performance of this Agreement and such dispute or claim shall not constitute an excuse or defense for a party's nonperformance or delay.

ARTICLE 12 – PROJECT MANAGERS

12.1. RTC's Project Manager is Dale Keller or such other person as is later designated in writing by RTC. RTC's Project Manager has authority to act as RTC's representative with respect to the performance of this Agreement.

12.2. CONSULTANT' Project Manager is David Dodson or such other person as is later designated in writing by CONSULTANT. CONSULTANT's Project Manager has authority to act as CONSULTANT's representative with respect to the performance of this Agreement.

ARTICLE 13 - NOTICE

13.1. Notices required under this Agreement shall be given as follows:

RTC:
Bill Thomas
Executive Director
Dale Keller, P.E.
RTC Project Manager
Regional Transportation Commission
1105 Terminal Way
Reno, Nevada 89502
(775)335-1827

CONSULTANT:
David Dodson, P.E.
Project Director
Atkins North America, Inc.
10509 Professional Circle, Suite 102
Reno, NV 89521
(775) 789-9820

ARTICLE 14 - DELAYS IN PERFORMANCE

14.1. TIME IS OF THE ESSENCE

It is understood and agreed that all times stated and referred to herein are of the essence. The period for performance may be extended by RTC's Executive Director pursuant to the process specified herein. No extension of time shall be valid unless reduced to writing and signed by RTC's Executive Director.

14.2. UNAVOIDABLE DELAYS

If the timely completion of the services under this Agreement should be unavoidably delayed, RTC may extend the time for completion of this Agreement for not less than the number of days CONSULTANT was excusably delayed. A delay is unavoidable only if the delay is not reasonably expected to occur in connection with or during CONSULTANT's performance, is not caused directly or substantially by acts, omissions, negligence or mistakes of CONSULTANT, is substantial and in fact causes CONSULTANT to miss specified completion dates, and cannot adequately be guarded against by contractual or legal means.

14.3. NOTIFICATION OF DELAYS

CONSULTANT shall notify RTC as soon as CONSULTANT has knowledge that an event has occurred or otherwise becomes aware that CONSULTANT will be delayed in the completion of the work. Within ten (10) working days thereafter, CONSULTANT shall provide such notice to RTC, in writing, furnishing as much detail on the delay as possible and requesting an extension of time.

14.4. REQUEST FOR EXTENSION

Any request by CONSULTANT for an extension of time to complete the work under this Agreement shall be made in writing to RTC. CONSULTANT shall supply to RTC documentation to substantiate and justify the additional time needed to complete the work and shall provide a revised schedule. RTC shall provide CONSULTANT with notice of its decision within a reasonable time after receipt of a request.

ARTICLE 15 - GENERAL PROVISIONS

15.1. SUCCESSORS AND ASSIGNS

RTC and CONSULTANT bind themselves and their successors and assigns to the other party and to the successors and assigns of such party, with respect to the performance of all covenants of this Agreement. Except as set forth herein, neither RTC nor CONSULTANT shall assign or transfer interest in this Agreement without the written consent of the other. Nothing herein shall be construed as creating a personal liability on the part of any officer or agent or any public body which may be a party hereto, nor shall

it be construed as giving any rights or benefits hereunder to anyone other than RTC and CONSULTANT.

15.2. NON TRANSFERABILITY

This Agreement is for CONSULTANT's professional services, and CONSULTANT's rights and obligations hereunder may not be assigned without the prior written consent of RTC.

15.3. SEVERABILITY

If any part, term, article, or provision of this Agreement is, by a court of competent jurisdiction, held to be illegal, void, or unenforceable, or to be in conflict with any law of the State of Nevada, the validity of the remaining provisions or portions of this Agreement are not affected, and the rights and obligations of the parties shall be construed and enforced as if this Agreement did not contain the particular part, term, or provision held invalid.

15.4. RELATIONSHIP OF PARTIES

CONSULTANT is an independent contractor to RTC under this Agreement. Accordingly, CONSULTANT is not entitled to participate in any retirement, deferred compensation, health insurance plans or other benefits RTC provides to its employees. CONSULTANT shall be free to contract to provide similar services for others while it is under contract to RTC, so long as said services and advocacy are not in direct conflict, as determined by RTC, with services being provided by CONSULTANT to RTC.

15.5. WAIVER/BREACH

Any waiver or breach of a provision in this Agreement shall not be deemed a waiver of any other provision in this Agreement and no waiver is valid unless in writing and executed by the waiving party. An extension of the time for performance of any obligation or act shall not be deemed an extension of time for the performance of any other obligation or act. This Agreement inures to the benefit of and is binding upon the parties to this Agreement and their respective heirs, successors and assigns.

15.6. REGULATORY COMPLIANCE

A. CONSULTANT shall comply with all applicable federal, state and local government laws, regulations and ordinances. CONSULTANT shall be responsible for obtaining all necessary permits and licenses for performance of services under this Agreement. Upon request of RTC, CONSULTANT shall furnish RTC certificates of compliance with all such laws, orders and regulations.

B. CONSULTANT represents and warrants that none of the services to be rendered pursuant to this Agreement constitute the performance of public work, as that term is defined by Section 338.010(17) of the Nevada Revised Statutes. To the extent

CONSULTANT does engage in such public work, CONSULTANT shall be responsible for paying the prevailing wage as required by Chapter 338 of the Nevada Revised Statutes.

15.7. EXCLUSIVE AGREEMENT

There are no verbal agreements, representations or understandings affecting this Agreement, and all negotiations, representations and undertakings are set forth herein with the understanding that this Agreement constitutes the entire understanding by and between the parties.

15.8. AMENDMENTS

No alteration, amendment or modification of this Agreement shall be effective unless it is in writing and signed by both parties.

15.9. CONTINUING OBLIGATION

CONSULTANT agrees that if, because of death or any other occurrence it becomes impossible for any principal or employee of CONSULTANT to render the services required under this Agreement, neither CONSULTANT nor the surviving principals shall be relieved of any obligation to render complete performance. However, in such event, RTC may terminate this Agreement if it considers the death or incapacity of such principal or employee to be a loss of such magnitude as to affect CONSULTANT's ability to satisfactorily complete the performance of this Agreement.

15.10. APPLICABLE LAW AND VENUE

The provisions of this Agreement shall be governed and construed in accordance with the laws of the State of Nevada. The exclusive venue and court for all lawsuits concerning this Agreement shall be the Second Judicial District Court of the State of Nevada, County of Washoe, and the parties hereto submit to the jurisdiction of that District Court.

15.11. ATTORNEYS' FEES

In the event of a dispute between the parties result in a proceeding in any Court of Nevada having jurisdiction, the prevailing party shall be entitled to an award of costs and a reasonable attorneys' fees.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement the day and year first above written.

APPROVED AS TO LEGALITY AND FORM

By: _____
Adam Spear
RTC Director of Legal Services

REGIONAL TRANSPORTATION COMMISSION
OF WASHOE COUNTY

By: _____
Bill Thomas, AICP, Executive Director

ATKINS NORTH AMERICA, INC.

By: _____
Harshal Desai, PE, Vice President

Exhibit A

Scope of Services

EXHIBIT A-1

SCOPE OF SERVICES

INTRODUCTION

CONSULTANT will provide environmental services, preliminary engineering, and final design services for the RTC20-10 Sparks Boulevard Capacity Project.

The project limits include Sparks Boulevard from and including the Greg Street intersection to and including the Baring Boulevard intersection.

Anticipated improvements include reconstructing and widening the existing four-lane roadway (one lane in each direction) to include six lanes (three lanes in each direction) with a raised median; dedicated left turn lanes; dedicated right turn lanes where necessary; new curb, gutter and sidewalk along both sides of the roadway; bicycle lanes; pedestrian ramps; traffic signal infrastructure; utility adjustments; grading; and drainage improvements. Existing raised median; transit pullouts; curb, gutter and sidewalk; and multi-use path reconfiguration, removal, and/or replacement will be necessary.

The intersections along Spark Boulevard including East Lincoln Way, East Prater Way, O'Callaghan Drive, and Springland Drive will be reconfigured and reconstructed to accommodate the widened roadway section.

Multiple existing residential and commercial development access locations including but not limited to Big Fish Drive, McCabe Park Street, Tyco Way, Express Street, and Howard Drive will also be reconfigured and reconstructed to accommodate the widened roadway section and multimodal improvements.

Sparks Boulevard extends through Nevada Department of Transportation (NDOT) right-of-way and control-of-access within the I-80 corridor. Interchange improvements will be included to accommodate the widened roadway and multimodal improvements.

Sparks Boulevard traverses through a wide variety of geographical features, human and natural resources, water conveyances including the North Truckee River Drain, and other existing infrastructure. Construction of these improvements will require detailed coordination with numerous local agencies, public utility entities, and other resource agencies. Several potential actions are foreseeable that would require state and federal agency review and possibly a nexus for the National Environmental Policy Act (NEPA) processes. It is assumed that an Environmental Assessment and all supporting documentation will submission will be necessary for environmental clearance.

The anticipated project schedule includes twenty-one (21) months for the environmental study, alternatives analysis, and preliminary design and twenty-three (23) months of final design. It is anticipated that Sparks Boulevard will be constructed in two construction packages following

completion of final design. Phase 1 is anticipated to include improvements north of the westbound I-80 on and off ramps, extending to Baring Boulevard. Phase 2 is anticipated to include improvements from Greg Street extending to the westbound I-80 on and off ramps.

The scope of services will generally consist of the following tasks:

1. PROJECT MANAGEMENT

1.1. Team and Project Management

CONSULTANT will provide project management services for the duration of the Sparks Boulevard Capacity Project including closeout activities; assumed to be thirty-nine (39) months total, April 2020 through June 2023. Once the project proceeds to construction, project management and public involvement services will be performed under the Services During Construction task.

Project management includes project setup and administration, including preparation and execution of Subconsultant agreements; monthly budget monitoring and invoicing; monthly preparation and reporting of project progress (including work completed and documentation of any changes, actual and anticipated, in scope, schedule, and budget); risk management; preparation and monthly project schedule updates; management of Subconsultants, oversight of quality assurance on deliverables; file management; project closeout; and general project administration.

CONSULTANT Project Manager will serve as the Regional Transportation Commission (RTC)'s single point of contact and will have primary responsibility for coordinating the efforts of the project team and subconsultants.

1.2. Project Coordination and Meetings

The CONSULTANT Project Manager will be responsible for the ongoing project coordination of CONSULTANT activities for the duration of the work. The CONSULTANT Project Manager shall also maintain communication, as appropriate, with local, state, federal, and private stakeholders as required for the progress of the scope of work detailed in this document. All significant communications shall be documented and reported to the RTC Project Manager. CONSULTANT Project Manager will keep the RTC Project Manager informed of progress with weekly informal briefings via email or phone call. The CONSULTANT Project Manager will coordinate with team leads to discuss the progress of the project and identify issues and action items to be addressed.

CONSULTANT Design Manager will directly oversee the design disciplines, manage the production of Preliminary and Final Design, and coordinate milestone submittals, reviews, and incorporation of review comments.

CONSULTANT Project Manager, Design Manager, Environmental Manager, Public Information Manager and key design support and subconsultant staff will participate in project kickoff, project management, internal team, and miscellaneous coordination meetings.

1.2.1. Project Kickoff Meetings

CONSULTANT will hold a kickoff meeting with the RTC, the City of Sparks, NDOT and other agency staff as appropriate, to confirm the project objectives, approach, milestones, stakeholder and outreach approach, and potential project challenges. Up to eight (8) CONSULTANT staff will attend the meeting. CONSULTANT will prepare a meeting agenda, take and distribute meeting minutes, and track concerns about the project from the attendees.

CONSULTANT will hold an internal kickoff meeting with CONSULTANT staff, and subconsultants to internally align the team with the goals of the RTC and the goals of the project.

1.2.2. Project Management Team Meetings

CONSULTANT will facilitate monthly meetings with the RTC Project Manager to discuss the design progress; upcoming milestones; scope, schedule, and budget; risk status; key technical issues by discipline; and make informed decisions. This meeting will be facilitated by the CONSULTANT Project Manager and an agenda and meeting summary will be provided. A total of thirty-nine (39) meetings are anticipated, to be attended on average by five (5) CONSULTANT staff.

1.2.3. Internal Design Team Coordination Meetings

Starting with the Preliminary Design effort, CONSULTANT will hold biweekly design coordination meetings with CONSULTANT design staff and subconsultants as appropriate to ensure cross-discipline coordination with design and schedule. A total of seventy-two (72) meetings are anticipated, to be attended on average by eight (8) CONSULTANT staff.

1.2.4. Miscellaneous Coordination Meetings

CONSULTANT will prepare for and attend miscellaneous coordination meetings with RTC, City of Sparks, and NDOT staff as requested by and at the RTC's discretion. A total of sixty (60) meetings are anticipated over the duration of the project, to be attended on average by three (3) CONSULTANT staff.

Deliverables - Meeting Invitation, Materials, Exhibits and Summaries

1.3. Project Management Plan (PMP)

CONSULTANT will prepare a Project Management Plan (PMP) that will include: Project Instructions, Risk Management Plan, Communications Protocols; Project Directory, Scope, Schedule, and Budget, File and Information Sharing and Storage Protocols, and the Safety Plan. The PMP will be distributed to the CONSULTANT team, including Subconsultants, and will be updated as needed throughout the project duration.

Deliverables – Draft and Final PMP

1.4. Quality Management Plan (QMP)

CONSULTANT will prepare a Quality Management Plan (QMP) specific to the Sparks Boulevard Capacity Project. A Quality Manager will be assigned and will be responsible for the development and implementation of the plan. The QMP will apply to both prime and Subconsultant team members. An independent quality review will be performed on each design deliverable including the Preliminary and Final Design milestone packages.

Deliverables – Draft and Final QMP

1.5. Design and NEPA Schedule

CONSULTANT will prepare and maintain a project schedule and distribute updates on a monthly basis. The schedule will be reviewed with the RTC at monthly Project Management Team (PMT) meetings, with a focus on the upcoming 4-week look ahead, critical path activities, and schedule threats.

1.6. Constructability Reviews and Construction Schedules

CONSULTANT will provide an independent constructability review of the 50 Percent Design plans, an independent review of the 50 Percent Design cost estimate, and provide a draft construction schedule. Constructability reviews and updates to the draft construction schedule will be provided on the Final Design Submittals.

1.7. Cost Risk Assessment (CRA)

Upon completion of the 50 Percent Design submittal, a Cost Risk Assessment (CRA) workshop will be conducted. The CONSULTANT will perform probabilistic risk analysis via Monte Carlo simulation models to establish a probable range for both project cost and schedule based on anticipated risks, uncertainties and escalation. Escalation rates will be as provided by NDOT's Escalation Rates Forecast Technical Memorandum dated November 1, 2016.

Cost and schedule risks will be evaluated for the project as a whole.

CONSULTANT will provide Subject Matter Experts (SME's) in roadway, bridge, geotechnical, drainage, and traffic to participate in the workshop; provide senior professionals to conduct the workshop including independent review of the cost estimate and assessment of project risk; collect and analyze the data obtained from the workshop; and prepare the final report.

The CONSULTANT will coordinate the CRA workshop with the RTC Project Manager who will assist in the identification of representatives from key stakeholder groups and provide additional SME's as appropriate. Prior to the start of the CRA, CONSULTANT develop an initial list of risk items to consider and as part of the CRA workshop, when developing the risk register. With input from the SME's, the risk register will identify potential project risks, cost or schedule impacts of the risks, and the likelihood of the risk occurring and response strategies to help mitigate risk.

Upon completion of the workshop the CONSULTANT will prepare a draft CRA report that will be circulated to participants for review and comment. The CONSULTANT will document comments and responses in a spreadsheet and use these comments to finalize the CRA report. The final CRA report, including the risk register, will be provided electronically to the RTC Project Manager.

Deliverables – Meeting Invitation, Materials, Exhibits, Summaries, Draft and Final CRA Report

2. PUBLIC AND AGENCY INVOLVEMENT

2.1. Public Outreach and Involvement Plan

CONSULTANT will develop a Public Outreach and Involvement Plan that outlines specific objectives, organization and roles of stakeholders, and definition and schedule of target activities to accomplish the objectives of the Project.

CONSULTANT will meet with the RTC Project Manager and Communications Team to review the overall strategy for public involvement. Following this meeting, CONSULTANT will draft a plan that supports the RTC's objectives and addresses the needs of the community. The plan will ultimately provide the RTC with record of all outreach and involvement efforts executed as part of the project.

Deliverables - Public Outreach and Involvement Plan

2.2. Outreach Methods

2.2.1. Project Branding and Logo

CONSULTANT will develop three (3) project branding guides that will include color and style palettes and a logo concept for each, for the RTC to choose from or to provide direction on how to modify the concepts to develop one (1) final project branding color theme, style and logo. Project branding will provide a consistent look on all public outreach materials and resources.

Deliverables - Project Logo and Branding Guide

2.2.2. Website/Social Media Outreach

CONSULTANT will establish and secure a domain name and maintain a project-specific website. The website will be updated monthly and as needed as project activities require. The website will be used for the project's lifespan and will include a project description; frequently asked questions (FAQ); all project collateral material; schedule with updates to emphasize current activities; design and aesthetic treatment concepts; advance notice of stakeholder meetings, exhibits, and handout materials from public meetings; advance notice of construction activities and traffic control; project map and drawings; project photos; e-mail sign-up

(subscription) and comment page; contact page; and updated maps and design drawings/renderings. The website will include links to the RTC Home Page and any project videos and media mentions. Website content will be approved by the RTC Project Manager and Communications Team prior to being available to the public.

CONSULTANT will provide the RTC's Communications Team with project information and announcements to be posted by the RTC on their social media channels.

CONSTULTANT will not be responsible for providing project information or meeting announcements to the media. It is assumed the RTC Communications Team will be the media's point of contact and will provide these services.

Deliverables - Project Website with Secure Domain Name

2.2.3. Stakeholder Database

CONSULTANT will develop and maintain a strategic and comprehensive stakeholder list. CONSTULTANT will obtain an updated list of property owners within 500 feet of the project corridor from the County's Assessor's Office. CONSULTANT will obtain lists of homeowner's associations/neighborhood associations within the project area. The stakeholder database will include project team members, elected officials, businesses, agencies, residents, and community organizations. The database will be a single master database and will be updated as needed.

CONSULTANT will add contacts obtained from meetings and the website subscription to the stakeholder database.

Deliverables - Stakeholder Database

2.2.4. Collateral Material

CONSULTANT will develop project information materials (in English) for distribution to the general public and for use at public and stakeholder meetings. This material will include a project Fact Sheet (history, benefits, impacts, milestones, and schedule) and a FAQ sheet. Collateral material will discuss environmental and design project information. All materials will be made available both electronically via the project website and hard copy. One draft version of each product will be provided to RTC Project Manager and Communications Team for review. CONSTULTANT will provide copies of collaterals as requested and as needed for meetings and/or briefings. Translation of collateral materials into Spanish will be provided by the RTC.

Deliverables - Project Fact Sheet and FAQ Sheet

2.3. NEPA Outreach Requirements

2.3.1. Public and Resource Agency Scoping Meetings

CONSULTANT will secure appropriate venues, prepare applicable materials and exhibits, and

assist with facilitation for two (2) scoping meetings. One meeting will be held with local and state agencies and the other will be held with the public in the form of a public information meeting. The primary objective of the scoping meetings is to describe the project, environmental assessment (EA) process and schedule, and to take comments on environmental issue areas.

CONSULTANT will create and distribute the invitation to the agency scoping meeting with direction from the RTC Project Manager.

2.3.2. Public Hearing

CONSULTANT will secure appropriate venues, prepare applicable materials and exhibits, assist with facilitation, and document one (1) public hearing in the form of a public information meeting. The purpose of the public hearing will be to discuss and take comments on the draft EA and preferred alternative.

CONSULTANT will prepare scoping and hearing summary reports identifying the commenters and the environmental issues raised.

It is assumed the RTC will design and place print ads, prepare mailers and press releases, and secure a court reporter and Spanish translator for the public scoping meeting and public hearing. The costs associated with these are not included as part of the CONSULTANT'S fee. Translation of public meeting materials into Spanish will be provided by the RTC.

Deliverables - Meeting Invitation, Materials, Exhibits and Summaries

2.4. Additional Public Information Meetings

CONSULTANT will identify and secure appropriate venues, prepare applicable materials and exhibits, assist with facilitation, and document up to two (2) additional public information meetings. These meetings will be held following the completion of 50 Percent Design to take comments on final design and review construction packages; and prior to Phase 1 construction to discuss the construction schedule and strategy. A public information meeting prior to the start of Phase 2 construction is not scoped.

It is assumed the RTC will design and place print ads, prepare mailers and press releases, and secure a court reporter and Spanish translator. The costs associated with these are not included as part of the CONSULTANT'S fee. Translation of public meeting materials into Spanish will be provided by the RTC.

Public Information Meetings will be livestreamed on Facebook by the RTC Public Information Officer.

Deliverables - Meeting Materials, Exhibits and Summaries

2.5. Technical Advisory Committee (TAC) Meetings

A technical advisory committee (TAC) will be established to provide alternative

recommendations, assist with consensus on the preferred alternative to advance to 30 Percent Design, and to guide design decisions during Preliminary Design. The TAC will consist of the RTC, City of Sparks, and NDOT and others as identified at RTC's discretion. The TAC will participate in the Alternative Development workshop discussed in Task 5.7. TAC meetings will be held quarterly starting with Task 5 Preliminary Studies through completion of Task 6 Preliminary Design. It is assumed six (6) meetings will be held and attended, on average, by five (5) CONSULTANT staff.

CONSULTANT will prepare for and attend miscellaneous TAC coordination meetings as requested by and at the RTC's discretion. A total of three (3) meetings are anticipated, to be attended on average by five (5) CONSULTANT staff.

CONSULTANT will prepare meeting agendas, compose meeting notes, maintain action item log and distribute meeting notes via email.

Deliverables - Meeting Materials, Exhibits and Summaries

2.6. Individual Stakeholder Meetings

CONSULTANT will be available and assist in hosting individual meetings with and presentations to project stakeholders, as requested and as needed. Stakeholder meetings can include discussions on project limits, scope, tentative schedule, driveway access, and property/business concerns. It is anticipated the CONSULTANT will hold up to twenty (20) stakeholder meetings with property and land owners, businesses, and neighborhood associations. Up to three (3) CONSULTANT staff will be available for each stakeholder meeting. CONSULTANT will provide meeting summaries as directed by the RTC.

Deliverables - Meeting Materials, Exhibits and Summaries

2.7. Regional Transportation Commission Board Meetings

CONSULTANT will provide a PowerPoint Presentation to the RTC Project Manager for monthly project updates to the RTC Board of Commissioners.

CONSULTANT Project Manager will attend the RTC Board Meetings quarterly to support the RTC Project Manager during Sparks Boulevard presentations and assist in responding to questions from the RTC Board Members. A total of ten (10) meetings are anticipated.

Deliverables - Presentation Assistance and Attendance at 39 Meetings

2.8. Sparks City Council Board Meetings

CONSULTANT will provide materials and assist in the development of a PowerPoint presentation for the RTC Project Manager for project briefings to Sparks City Council as required. Two meetings per year, for a total of six (6) meetings are anticipated to be attended by the RTC Project Manager.

Deliverables - Presentation Assistance and Attendance at 12 Meetings

2.9. Groundbreaking Event

A groundbreaking event will be held at the start of Phase 1 construction to bring media and public attention to the start of construction and provide detailed project information. CONSULTANT will assist the RTC with event development and implementation as requested. No groundbreaking event is scoped for Phase 2 construction.

3. ENVIRONMENTAL AND PERMITTING

This task encompasses permitting activities as well as ongoing environmental coordination and documentation efforts necessary to complete the NEPA process. To complete the NEPA process on schedule, CONSULTANT will use the following procedures:

- Draft and distribute intent to study letter to public
- Coordinate regularly and communicate clearly with the RTC, NDOT, FHWA, and any cooperating agencies
- Work closely with regulatory agencies to understand the expectations of key reviewers from agencies such as the State Historic Preservation Office, US Army Corp of Engineers, and others
- Use subject matter experts who have appropriate credentials for the task, experience in the study area, and thorough knowledge about NEPA and associated regulations as applied to highway transportation projects
- Understanding the importance of thorough documentation that will minimize agency and public comments, support the administrative record, and reduce the risk for legal challenges using periodic peer reviews and legal sufficiency reviews for quality assurance and to validate the documentation is complete and compliant throughout the process
- Use of a style guide and document template, and employing over-the-shoulder reviews of studies and EA chapters as the overall document is developed to facilitate the approval process, incorporating FHWA's Improving Quality Environmental Documentation principals in the EA document format and content
- Using a technical editor, GIS analysts, and graphic artists to support the documentation

3.1. NEPA Coordination

CONSULTANT will manage the environmental and permitting tasks which require significant coordination of subconsultants, agencies, stakeholders, and the engineering team. Specific focus of this task will include the coordination for the environmental permitting and mitigation elements with the engineering design and to ensure regulatory elements are appropriately reflected in the final project design.

3.1.1. NDOT/FHWA/Resource Agency Update Meetings

CONSULTANT will participate in meetings with RTC management, NDOT, FHWA, and any relevant resource agencies at key milestones to discuss project issues and status. Approximately six (6) meetings (with approximately two (2) in-person and approximately four (4) teleconferences) will occur through the NEPA process. These meetings are in addition to the regularly scheduled meetings with the RTC.

3.2. NEPA Data Collection, Field Investigation and Resource Analysis

This task consists of development of the study area and review of environmental resources that must be analyzed for the NEPA process, coordinated with respective stakeholders and resource agencies, documented, and, in some cases, mitigated. The following table summarizes the environmental factors assumed for analysis and the level of documentation. Two (2) alternatives, including one build and one no action/no build, will be analyzed. The anticipated resources that occur in the project area and have the potential to be affected will be analyzed using best available data appropriate to the scope of the resource in context with the project.

NEPA Analysis Task Item	EA Documentation	Field Analysis/Tech Reports	Agency/Stakeholder Coordination
Air Quality	x	x	x
Traffic	x	x	
Biological Resources and Threatened/ Endangered/Sensitive Species	x	x	x
Noise Analysis	x	x	
Wetlands/Waters of the US	x	x	x
Energy Resources and Geology	x		
Floodplains and Water Resources/Quality	x	x	x
Hazardous Materials	x	x	
Land Use	x		
Cultural Resources/Section 106	x	x	x
Parks and Recreation Resources	x		
Social and Economic Conditions, including Environmental Justice	x		

NEPA Analysis Task Item	EA Documentation	Field Analysis/Tech Reports	Agency/Stakeholder Coordination
Section 4(f) and 6(f) Analysis	x	x	x
Visual Resources	x	x	
Cumulative and Indirect Effects Analysis	x		
Acquisitions and Relocations	x	x	

Data will be collected for the resources and specialty areas listed in the above table. Information will be gathered through field surveys, personal interviews, library and archival research, on-site modeling and sampling, and by contacting resource agencies and data repositories. The areas of social, economic, and environmental interests will be studied to identify issues of concern within the study area.

Stand-alone technical reports will be prepared for those study areas identified in the second column of the table above. The reports will document the findings of the required analyses and surveys, the effects of the proposed action to resources, and measures to avoid and/or minimize project effects. Two iterations, one draft and one final, of all technical reports will be prepared.

The data collected and analysis will include the following:

3.2.1. Air Quality

Document existing energy resources in the study area and assess the project's effect on air quality during construction and operation in the future. Assumes that no air quality modeling will be required. Coordinate with RTC to ensure the project is in conformity with the TIP and LRTP.

3.2.2. Traffic

Summarize the results of the traffic analysis performed for the project (see Task 5.3), disclosing the benefits and impacts of the proposed improvements in the study area.

3.2.3. Biological Resources and Threatened & Endangered/Sensitive Species

Collect and analyze wildlife resource data and document existing vegetation in the project area. Obtain updated information from U.S. Fish and Wildlife Service (USFWS), Nevada Department of Wildlife (NDOW), BLM biological resource specialists, and Nevada Natural Heritage Program regarding threatened, endangered, sensitive, or rare species of plant or animal species in the project area. A reconnaissance survey of the project area will be conducted to determine if any remnant habitats are present, and to evaluate the potential for

impacts to migratory birds and bats. No species-specific protocol surveys will be conducted. Formal consultation with USFWS for potential adverse effects to ESA-listed species is not anticipated.

3.2.4. Traffic Noise

Gather data and location information to prepare noise models to analyze existing, future No-Build and future project noise conditions. Prepare a noise technical report to evaluate impacts to surrounding land uses and analyze reasonable and feasible noise mitigation for any impacts. CONSULTANT will conduct a noise study for the project area based on the procedures presented in the *RTC Traffic Noise Mitigation Policy* guidelines in effect May 2013.

3.2.5. Wetlands and Waters of the US

Existing conditions and project impacts will be analyzed. If necessary, CONSULTANT will describe the type of permitting that may be required (i.e., nationwide or individual) and any related mitigation measures. Permit documentation will be prepared, permit application(s) will be filed, and mitigation commitments will be made as a separate part of this scope of work (see Task 3.5).

3.2.6. Energy Resources and Geology

Document existing energy resources in the study area and assess the project's energy use during construction and operation. Report on any geologic resources that could affect the project.

3.2.7. Floodplains and Water Resources

Identify surface waters or FEMA-regulated floodplains in the study area. Utilize the project drainage/hydrology report to determine potential water quality, storm water, and permitting (USACOE) issues for affected waters of the US (North Truckee Drain).

3.2.8. Hazardous Materials

Perform Initial Site Assessment for the study area and identify potential sites of contamination and likelihood of encountering contaminated materials during construction.

3.2.9. Land Use

Collect existing, planned, and future land use and zoning information from the City of Sparks and Washoe County. Collect information on pending development and related land use changes, in coordination with local planners. Describe generalized existing and future land use.

3.2.10. Cultural Resources

Archaeological and historical resources in the project area will be identified through field surveys, archival research, and coordination with the Nevada State Historic Preservation

Officer (SHPO). Cultural resources reports will be prepared for review and concurrence by the RTC, NDOT, FHWA, and SHPO. This scope includes:

- The Area of Potential Effects (APE) will include the limits of anticipated direct and indirect effects within roadways and parcels between Greg Street and Baring Boulevard. The indirect APE will include the viewshed area adjacent to Sparks Boulevard right-of-way, as appropriate.
- The APE will be submitted to the RTC, NDOT, FHWA and the RTC will determine the APE and transmit it to the SHPO for review and comment.
- Historic resources (buildings and structures 45 years of age or older) will be recorded, described, and mapped utilizing the Nevada SHPO historic resource information form (HRIF).
- Cultural resources identified during the surveys will be evaluated for eligibility utilizing established National Register of Historic Places criteria/standards. Archaeological survey will be limited to undeveloped parcels with exposed ground surface. Recommendations regarding eligibility will be made with FHWA making the final determination of eligibility.
- The NDOT and/or FHWA will conduct the Native American consultation, with the CONSULTANT in a technical support role (co-authoring Native American consultation letters).
- Preparation of an agreement document (MOA) or provision of mitigation services is not included. If preparation of a MOA is necessary, CONSULTANT will request approval to proceed as part of Task 15, Design Contingency.

3.2.11. Parks and Recreation

Identify any recreational uses in the study area, analyze impacts, and identify any mitigation measures**.**

3.2.12. Section 4(f)

It is assumed the historic and recreation resources will be affected by the project and, therefore, a Section 4(f) de minimis evaluation will be completed for affected properties. Preparation of an agreement document (MOA) and provision of mitigation services, if required, will be addressed.

3.2.13. Social and Economic Conditions, including Environmental Justice

Data will be obtained from the US Census Bureau and American Community Survey. This will be supplemented with the most up to date information from other local sources.

3.2.14. Visual Conditions

Prepare one 3D model simulation of proposed project improvements overlain onto high resolution photos for inclusion in the NEPA document. Each 3D model simulation will be evaluated for visual impacts relative to the existing condition, following the FHWA guideline for assessing potential impacts according to the views from and to the proposed project.

3.2.15. Cumulative and Indirect Impacts

Data on resources as well as information on past, present, reasonably foreseeable future projects will be collected and assessed relative to the proposed project. Growth in population and employment will be assessed using census and other available demographic information.

3.2.16. Acquisitions and Relocations

Calculate the number of full and partial property acquisitions and the number of businesses and residents that need to be relocated.

3.2.17. Define Area of Impact

Development of the area of impact using the potential construction limits determined within the 30 Percent Design.

3.3. NEPA Class of Action Confirmation

CONSULTANT will prepare a technical memorandum for RTC, City of Sparks, NDOT, and FHWA review confirming the need for an EA or documenting the reasons why a Categorical Exclusion (CE) would be acceptable once the limits of project impact and review of potential resource impacts by the preferred alternative are determined. CONSULTANT Project Manager and Environmental Manager will prepare for and attend one (1) coordination and class of action presentation meeting with resource agencies as discussed in Task 3.1.1.

3.4. Environmental Assessment (EA) Preparation

This task encompasses the preparation of the EA document. CONSULTANT will author, edit, and revise the document per direction from the RTC, NDOT, FHWA, and resource agencies. The following iterations of the EA document are included:

1. Administrative Draft – RTC review
2. Preliminary EA – NDOT and FHWA review
3. Approved EA – Public review

CONSULTANT will prepare a quality, concise, and user-friendly EA document, consistent with FHWA's Improving Quality Environmental Documentation Initiative. CONSULTANT will respond to and incorporate substantive public and agency comments received during scoping. Preparation of the EA will include the following tasks.

CONSULTANT will prepare electronic copies of the EA for the draft reviews and fifteen (15) copies for the published EA. .pdf electronic files will be provided to the RTC to post to their website.

3.4.1. NEPA Scoping

Prepare Intent to Study letter, and up to three (3) agency-specific cooperating agency letters to resource agencies; project limits and study area will be established by the RTC, NDOT, and FHWA guidelines**.**

3.4.2. Prepare Purpose and Need

The purpose and need will utilize existing demographic, traffic, and economic data to support the need for improved operations, safety, capacity, and local access. Logical termini and independent utility will also be documented. CONSULTATANT assumes the purpose and need will be defined using the Purpose and Priorities section within the Sparks Boulevard Multi-Modal Corridor Study.

3.4.3. Prepare the Description of Alternatives

Prepare the Description of Alternatives, including evaluation criteria and screening process used, other alternatives considered but not advanced, and selection and description of the Preferred Alternative.

3.4.4. Document Resources Not Affected

Prepare rationale/justification for not including in the EA specific resources/environmental factors that will not be affected. This rationale will be included in the EA and information prepared for NDOT/FHWA concurrence prior to preparation of the EA.

3.4.5. Document Resources Affected

Compile environmental information collected in Task 3.2 in the Affected Environment section of the EA.

3.4.6. Document Environmental Consequences

Analyze impacts and prepare write-ups for the Environmental Consequences section of the EA. Impacts will be avoided, minimized or mitigated. This scope assumes the Preferred Alternative and a No-Action Alternative will be fully analyzed.

3.4.7. Response to Comments

Responses to public review comments will be prepared for up to fifty (50) substantive comments on the EA. These comments may come from fewer than fifty (50) comment submittals as some comment letters may include multiple substantive comments.

3.5. Decision Document (Finding of No Significant Impact (FONSI))

This task encompasses the preparation of the FHWA decision document and the request for FONSI. The CONSULTANT will author, edit, and revise the document per direction from the RTC, NDOT, and FHWA. The following iterations of the decision document are included:

1. Administrative Draft – the RTC review
2. Revised Administrative Draft –the NDOT and FHWA review
3. Final

CONSULTANT will prepare electronic copies of the FONSI for the draft reviews and five (5) copies for the published FONSI. .pdf electronic files will be provided to the RTC for publication on their website.

CONSULTANT will develop a schedule to receive a FONSI within nineteen (20) months from the date of the Intent-to-Study letter. The schedule will include milestones for all major tasks and deliverables, including agency review and revision times.

Deliverables for NEPA compliance is as follows:

- Intent-to-Study Letter
- NEPA Class of Action Technical Memorandum
- PowerPoint Presentation and Updates for Public Information Meetings
- Public Notices for Public Information Meetings
- Responses to Comments from Public Information Meetings
- NEPA Technical Reports (draft and final)
- NEPA Environmental Assessment (drafts and final)
- Public Hearing Notice, Presentation Materials and Handouts
- Responses to Comments on the Circulated EA
- NEPA Decision Document (FONSI) (draft and final)
- Schedule and Updates (as needed)

3.6. US Army Corps of Engineers (USACE) Permitting and Coordination

This task encompasses preparation of information and coordination needed to a permit from the USACE to disturb wetlands and Waters of the US. It is assumed that the project will proceed under an Individual Permit for the Project, representing the worst-case scenario. CONSULATNT will coordinate with the Nevada Department of Environmental Protection (NDEP) under the USACE's oversight as appropriate regarding disturbance of Waters of the State. This scope of work does not include the development of a detailed compensatory mitigation plan, nor work to complete a Section 408 clearance.

3.6.1. Pre-Permit Meeting the USACE and NDEP

CONSULTANT will initiate a pre-permitting meeting with the USACE Sacramento District and RTC to identify the appropriate Section 404 permitting for the project with consideration for the most rapid and cost-effective permitting strategy.

Deliverables - USACE and NDEP Pre-permitting materials and meeting minutes

3.6.2. Wetland Delineation Reports

CONSULTANT will perform field surveys to identify and qualify wetlands and waters of the US in the study area that could be affected by the project and prepare reports, plans, and graphics for submittal to the USACE and NDEP.

Deliverables - Wetland Delineation Report

3.6.3. Individual Permit Application

The CONSULTANT will prepare documentation in support of the IP application and use that information to reduce the effort needed to develop the IP. The completed ENG Form 4345 will be drafted as needed to meet the requirements of the IP including the following content:

- Project description
- Project purpose and need
- Reason, type, and amount of discharge associated with the resource impact
- Description of avoidance and minimization of impacts including a discussion of alternatives considered or LEDPA Analysis Memorandum documenting analysis under Section 404(b)(1) requirements
- Contact info for all adjacent landowners for the USACE to complete a public interest review
- Summary of other Federal, State, and Local agency coordination including studies performed and/or clearances obtained
- Supporting figures and impact drawings

CONSULTANT will serve as the permitting agent during the 404 process and will be available for up to four (4) conference calls and one in-person meeting with stakeholders and regulatory agencies as needed.

CONSULTANT will complete a draft permit application for review by the USACE. One (1) round of comments from the RTC and City of Sparks will be addressed for completion of a final version to be submitted to the USACE. Once received by the USACE, Atkins will respond to reasonable requests for clarification and/or additional information as needed.

Deliverables - Draft and final Individual Permit Applications

3.7. UPRR Permitting

CONSULTANT shall prepare a right-of-entry permit in an effort to obtain an agreement with the UPRR to support geotechnical explorations within UPRR right-of-way.

The team anticipates needing several borings near the footings and toe of slope for the existing UPRR bridge to facilitate decisions associated with bridge widening and/or replacement and construction of retaining walls. It is assumed that the borings will be performed outside UPPR and federally regulated safety zones and therefore not require a flagger during field work. Crossing of the tracks by personnel and/or equipment is not included in this scope of work.

It is assumed that CONSULTANT and geotechnical SUBCONSULTANT will incur additional

expenses associated with the right-of-entry permit that will be included as project costs and billed to the client. These costs include but are not limited to: permit fee, contractor's endorsements, additional general liability insurance, and railroad protective liability insurance (RPLI). UPRR rush fees are not included in this scope of work.

The UPRR permit process will be initiated using the online application system (Utility Contracts System). It is anticipated that the permit process will take nine (9) months to complete; however, the permit process timeline is dependent on the UPRR and ability to review submitted information.

3.8. NDOT Encroachment Permit

CONSULTANT will prepare and process an encroachment permit package through the Nevada Department of Transportation for geotechnical exploration for the portions of the project within NDOT right-of-way. CONSULTANT will participate in a pre-permit meeting before submitting the permit application. Any revisions required by NDOT will be made on the plans before finalizing the permit. The RTC and the local agency will be the co-applicants on the permit and will provide all applicant fees, signatures and submittal documentation needed by the CONSULTANT to process the permit.

4. INVESTIGATION OF EXISTING CONDITIONS

4.1. Condition Survey

CONSULTANT will visually evaluate and document the condition of the existing roadway and project site conditions during a one (1) day site visit. A total of eight (8) CONSULTANT staff are anticipated to attend.

CONSULTANT will evaluate curb and gutter, sidewalk, and driveway approaches based upon RTC criteria. The CONSULTANT shall also evaluate existing pedestrian ramps for compliance with current ADA standards and consider multi-modal improvements.

CONSULTANT will perform up to ten (10) field visits throughout Tasks 5 through Task 8 and Task 11, Preliminary Studies, Preliminary Design, and Final Design to determine and/or confirm design decisions. A total of two (2) CONSULTANT staff are anticipated to attend per visit.

4.2. Geotechnical Investigation

The Sparks Boulevard corridor project is located in two different geologic formations consisting of alluvium deposits in the northern portion and floodplain deposits overlying Tahoe Outwash deposits in the southern portion of the project boundaries.

Zone 1 Geotechnical Profile - Due to the complex geomorphic environment, the soils profile consists of granular soils that are interbedded with fine grained soils. It is anticipated that the roadway corridor has been built-up with various thicknesses of fill soils. Granular native soil classifications primarily consist of silty sands, clayey sands, silty, clayey sand, and poorly

graded sand with silt. Fine-grained soil classifications primarily consist of lean clay with sand or sandy silt.

Zone 2 Geotechnical Profile - This zone has four anticipated predominant soil strata:

- Uppermost soil stratum consists of fill soils up to 10 feet thick
- Directly below the fill soils are fine-grained floodplain deposits with soil classifications of either lean clay with sand or sandy silt and thicknesses of >20 feet toward the south end of the Zone 2 alignment, becoming thinner toward the north end with estimated thicknesses ranging from 10 to 15 feet
- A sporadic poorly graded sand horizon with thicknesses of 5 to 10 feet may be encountered below the fine-grained floodplain deposits
- The lowermost soil horizon consists of glacial outwash deposits that are typically coarse-grained sediments with predominant soil classifications of either poorly graded sand with silt and gravel or poorly graded gravel with sand

Floodplain deposits will likely be the most challenging geologic unit for project design. Floodplain deposits are predominantly fine-grained and are compressible when subjected to the anticipated structural loading associated with this project. However, underlying Tahoe Outwash Deposits are coarse grained granular deposits with much higher support strengths and will provide support for the drilled shaft foundations. The sporadic poorly graded sand horizon typically has a loose to medium dense relative density and may be susceptible to soil liquefaction during a seismic event.

CONSULTANT will perform geotechnical investigations and associated laboratory testing to develop geotechnical design recommendations. In order to accommodate the roadway widening, the following roadway improvements are assumed beginning at Greg Street:

- Greg Street to approximately 250 feet south of the Kleppe Lane Overpass - It is assumed that the roadway widening can be accomplished by steepening the existing roadway side slopes to 2H:1V and retaining structures will not be required.
- 250 feet south of Kleppe Lane Overpass to Kleppe Lane - It is assumed that retaining structures, likely MSE Walls with estimated heights of 10 to 15 feet, will be required on both sides of the roadway.
- Kleppe Lane Overpass - The overpass will be widened on both sides of the roadway. It is assumed that a clear span bridge structure will be constructed supported on drilled shafts at both abutments.
- Kleppe Lane Overpass to the south abutment of the UPRR Overpass - It is assumed retaining structures, likely MSE Walls with estimated heights of 10 to 15 feet, will be required on both sides of the roadway.
- UPRR Overpass - The overpass will be widened on both sides of the roadway. It is assumed that a clear span bridge structure will be constructed supported on drilled shafts at both abutments.
- I-80 Overpass - The overpass will be widened on the west side. It is assumed that a two-span bridge structure will be constructed supported on drilled shafts at both abutments and a center bent structure foundation.

- Immediately north of the I-80 Overpass to Big Fish Drive - Sparks Boulevard will be widened on the west side of the roadway between the I-80 overpass abutment to the I-80 westbound on-ramp. In this section of roadway widening would be facilitated by either constructing an embankment fill or a combination of MSE wall and embankment fill. The section of roadway between the I-80 westbound on-ramp and Big Fish Drive has an existing right-hand turn lane. It is assumed that this right-hand turn lane will be converted to a travel lane and widening will not be required.
- Big Fish Drive to East Lincoln Way - This section of roadway has three travel lanes in the southbound lane and two thru lanes with a right-hand turn lane in the northbound direction. It is assumed that a new right-hand turn lane will be constructed, which may require the box culvert beneath East Lincoln Way to be extended downstream.
- East Lincoln Drive to East Prater Way - Except for the south end of the southbound lanes, both the southbound and northbound lanes will require widening to 3 lanes in each travel direction. The box culvert crossing East Prater Way, near the intersection with Sparks Boulevard, may require to be extended in both an upstream and downstream direction.
- East Prater Way to Springland Drive - Both the southbound and northbound lanes will require widening to 3 lanes in each travel direction. The box culvert, located in the northbound lanes, will require to be extended in both an upstream and downstream direction.
- Springland Drive to Baring Boulevard - Both the southbound and northbound lanes will require widening to 3 lanes in each travel direction. The box culvert that discharges into the North Truckee Drain will require to be extended downstream for an estimated distance of 250 feet. Flood walls or a topless RCBC may be required south of the extended box culvert for a distance of about 1,000 feet. The existing bridge at Springland Drive may be modified by widening.
- Other Project Improvements - Other shorter (<4 feet) retaining walls may be required at sporadic locations.

The preliminary investigation will cover the entire roadway alignment. The final investigation includes the entire alignment except for the I-80 corridor. The I-80 corridor boundaries extends from the railroad tracks on the southside to the I-80 overpass north abutment.

Except for the I-80 north abutment area, field exploration for the I-80 corridor area is not included. This includes the existing center bent, on and off ramps, and south abutment. It is assumed that after the preliminary investigation has been completed, this area will be reevaluated including input from NDOT on further improvements. CONSULTANT will provide a revised proposal for this area after the new improvements have been determined; however, CONSULTANT assumes exploration at the I-80 southern abutment and center bent during the Phase 2 final investigation phase.

Research of existing geotechnical studies and as built plans will be completed during the preliminary investigation phase. However, CONSULTANT assumes that no existing information is available. If existing information is available, CONSULTANT will reevaluate this field investigation scope and budget and coordinate accordingly with the RTC Project Manager.

All field work within the Sparks Boulevard roadway area will occur during night time hours on weekdays, and daytime hours on weekends.

4.2.1. Research

CONSULTANT will research existing geotechnical studies, reports, and as built plans during the preliminary investigation. Research will also include review of published geologic maps and fault hazard reports to establish the presence of any documented geologic hazards near the project location. CONSULTANT assumes that no existing and/or limited information is available. If existing information is available, CONSULTANT will reevaluate our field investigation scope and budget and coordinate accordingly with the RTC Project Manager.

4.2.2. Field Exploration

All explorations, completed by exploratory borings, will follow AASHTO guidelines, RTC Flexible Pavement Design Manual, 2007, and NDOT standards, where applicable.

It is anticipated that exploration will include:

- Preliminary Design – ninety-five (96) exploratory borings to depths of 5 to 100 feet below the existing grade surface for a total of 2,485 lineal feet
- Phase 1 Final Design – twenty (20) exploratory borings to depths of 5 to 50 feet below the existing grade surface for a total of 610 lineal feet
- Phase 2 Final Design – six (6) exploratory borings to depths of 20 to 100 feet below the existing grade surface for a total of 420 lineal feet

Borings will be advanced with auger, mud rotary drilling, ODEX, or sonic methodologies. Either ODEX or Sonic methodologies will be used to drill through the coarse-grained glacial outwash deposits.

Soils will be sampled with a 2-inch OD split-spoon sampler driven by a standard 140-pound drive hammer with a 30-inch stroke. The number of blows to drive the sampler one-foot into undisturbed soil (Standard Penetration Test) is an indication of the density and shear strength of the material. Larger diameter in-place samples will be taken to determine in-place densities. Shelby tube samples will be taken in fine-grained soil layers for further laboratory testing. If cohesive soils are stiff to hard, Shelby tube sampling may not be possible and driven tube samples may be required. Pocket penetrometer testing and density testing will be completed to further define the undrained shear strength and dry density and moisture content of near surface underlying weak, compressible soils.

CONSULTANT will log material encountered during the field exploration. The ground water surface depth will be measured, where encountered. Representative samples will be returned to CONSULTANT laboratory for testing.

Borings will be backfilled with cement grout per City of Sparks requirements and field exploration locations will be referenced to existing improvements.

CONSULTANT will obtain an encroachment permit from the City of Sparks for field exploration activities. A third-party traffic control service will be hired for onsite traffic control and preparation of traffic control plans. Underground Service Alert (USA) will be contacted to clear all utilities in the location of the proposed boreholes. If significant utility conflicts exist based on USA markings and borehole locations cannot be adjusted, CONSULTANT will notify the RTC, and with the RTC Project Manager's concurrence, request approval to pothole a sufficient number of locations to obtain more detailed information, as part of Task 15, Design Contingency. If pothole information is not needed or concurrence by the RTC Project Manager is not obtained, CONSULTANT will take every precaution to lower the risk of damaging underground structures; however, if insufficient or incorrect data results in damage to underground structures, the cost for repair will be the responsibility of the RTC.

4.2.3. Geophysical Measurements

CONSULTANT will complete five (5) geophysical arrays using Refraction Microtremor (ReMi) methodologies. The DAQlink III 24-bit acquisition system (Seismic Source/Optim) utilizing a multichannel geophone cable with twelve geophones, placed at an approximate spacing of 25 feet, were used to obtain surface wave data. Vertical geophones with resonant frequencies of 10 Hz measure surface wave energy from broad band ambient site noise across the geophone array (i.e. ReMi setup location) for multiple 30-second iterations.

4.2.4. Laboratory Testing

Laboratory testing will be completed on representative soil samples to determine soil classifications, strength and compressibility properties, and corrosion. Several different tests are anticipated including index properties, moisture content, in-place dry density, consolidation, triaxial testing, direct shear testing, proctor, and R-value. A brief description of these tests is included below:

- Representative samples of each significant soil type will be tested in our laboratory for index properties, such as moisture content, grain size distribution and plasticity.
- Consolidation testing will be conducted on fine-grained soils to evaluate settlement potential. Several different material properties are derived from this test including preconsolidation pressure, coefficient of consolidation, compression index, and recompression index. The preconsolidation pressure is an important soil property, as it provides a measure of the past maximum pressure that the soil has experienced. Typically, if the design load on the soil is less than the preconsolidation pressure, then the overall settlement potential is significantly reduced.
- Undrained unconsolidated (UU) and consolidated undrained (CU) triaxial testing will be performed to assess undrained shear strengths of cohesive soils. Test results are used to determine the material strength of cohesive soil layers below embankment fills or structures for stability analysis. Cyclic triaxial tests may be required to determine residual shear strengths for seismic stability analysis.
- Direct shear testing will be completed on in situ or remolded native soils to assess shear strengths for slope stability, soil lateral pressure analysis, and allowable bearing pressures. Moisture-density curve relationships (Proctor) will be completed to determine remolded dry density and moisture contents for direct shear testing.

- Moisture-density curve relationship tests will also be completed on representative subgrade soils. Optimum moisture content determined by these tests will be compared to in-place subgrade soil moisture contents and provides a basis to determine if unstable subgrade soils will be encountered.
- Resistance value tests (R-value testing) will also be completed; R-value testing measures the strength of subgrade soils and its expansion potential. The test results are used to determine the subgrade soil resilient modulus, which is used in structural section design.
- Corrosion testing on representative native soils will also be performed to determine corrosion potential to steel and concrete. Soils will be tested for resistivity, soluble sulfates, and pH.

4.2.5. Analysis

All analyses will be in accordance with AASHTO LRFD Standards (2018) and current NDOT standards, as applicable.

4.2.5.1. Bridge Abutment Foundation Analysis

Foundations may include shallow spread-type footings or deep foundations such as driven piles or drilled shafts. Axial compression, tension, and lateral capacities for deep foundations will be provided. Total and differential settlements will also be provided. Recommended selection of deep foundation systems will be based on key factors such as constructability, accessibility, and costs.

SHAFT v6.0 computer software will be used to determine axial capacity and settlement behavior of drilled shafts. Axial capacity can be determined for multiple shaft diameters and tip elevations.

Lateral loading can be evaluated with computer software such as LPILE. This software will evaluate pile head deflections for different pile lengths. Also, bending moments and shear force with depth can be evaluated.

4.2.5.2. Retaining Walls

It is assumed that the majority of the retaining walls will consist of MSE walls. As in past projects, the internal stability of the MSE walls including required strap lengths will be determined and designed by other consultants. CONSULTANT will assist the consultants, as needed, and provide anticipated design lateral loads including surcharge, static, and seismic. CONSULTANT will complete global stability analysis and anticipated total and differential settlements.

Cantilever retaining walls will also be designed. CONSULTANT will provide anticipated design lateral loads including surcharge, static, and seismic. Also, foundation design recommendations including allowable bearing pressures, passive pressures, soil friction values, and settlement (total and differential) will be provided.

4.2.5.3. Box Culverts

Several extensions of existing box culverts are planned within the North Truckee Drain. The primary design elements for the box culverts and associated wing walls is bearing capacities and settlement potential. Construction issues will include a high groundwater table, soft soils at the bottom of the North Truckee Drain, and stabilization construction options.

4.2.5.4. Embankments

Embankments may overlie weak, compressible soils and our analysis will evaluate both bearing or rotational failure (slope stability) and settlement. Settlement durations including time increments to achieve settlement milestones will be given, so embankment construction planning or staged construction, if required, can be completed. Recommendations to reinforce embankment fills, if required, including the use of geogrids, or other methods to reduce potential bearing failure and excessive horizontal deformations will be presented. Construction recommendations to stabilize subgrade soils will also be given.

Instrumentation of embankment settlement during construction may be required. Recommended instrumentation to measure both vertical and horizontal displacements during construction will be provided.

4.2.5.5. Analytical Software

Slide 6.0 or ReSSA 3.0 (Adama Engineering Inc.) will be used to perform slope stability analyses on embankment fill slopes and global stability for MSE walls. These programs perform a two-dimensional limit equilibrium analysis to compute the factor of safety (FOS) for a layered slope using the simplified Bishop method. This method satisfies vertical force equilibrium for each slice and overall moment equilibrium about the center of the circular trial forces. Slope stability analyses will be performed for both static and pseudostatic conditions.

SETTLE 3.0 or FoSSA 2.0 (Adama Engineering Inc.) will be used to determine potential settlements (elastic and consolidation) of the underlying soil profile due to embankment, foundation loading, or loading from MSE walls. These programs are an interactive program for computing the stresses and settlement resulting from embankment and foundation loading. These programs have many other capabilities including the determination of increases in undrained shear strength due to consolidation of fine-grained soils; determining time rate settlements of fine-grained soils including staged construction; and designing prefabricated vertical drains (PVD's) to acceleration settlement consolidation of fine-grained soils.

4.2.5.6. Retaining Walls

To determine the location of mapped earthquake faulting trending through or near the project site, a review of the following published information was completed:

- USGS Website: *Earthquake Hazards Program Quaternary Faults in Google Earth*
- The USGS Interactive Fault Map

Our review indicates that no mapped faults traverse through the roadway alignment. However, regional faulting will also be evaluated and fault properties including magnitude and lengths will determine seismic parameters used for soil liquefaction analysis.

Peak ground acceleration, site classifications, spectral responses, and site coefficients will be determined based on our geophysical studies (ReMi shear wave analysis), AASHTO references, and NDOT standards. Design ground accelerations will be determined for retaining wall lateral load analysis. Peak ground accelerations will be used to determine pseudo-static forces for slope stability analysis.

Soil liquefaction and lateral spread potential will also be evaluated. Mitigation construction options will be presented, as applicable. Design recommendations will be provided, if needed, but is not included in this cost proposal.

4.2.5.7. Structural Section Design

Structural section design recommendations will be based on AASHTO methodology and the current RTC Flexible Pavement Design Manual, 2007. Both rigid and flexible pavement structural sections are anticipated for this project. Design recommendations will also follow City of Sparks structural section recommendations based on the roadway classification.

Provided traffic volumes, over a 20-year design period, will be utilized to determine growth factors and ESAL counts. The average ESAL factors for the roadway functional classification will be based on the latest NDOT's Annual Traffic Report. RTC bus traffic impact to the ESAL counts will also be considered and will be based on current and projected future bus frequencies.

Two different structural sections will be determined: Full-depth structural sections for widened and reconstructed roadway sections and AC overlay thicknesses for rehabilitated roadway sections.

AC overlay recommendations will be based on ESAL counts, existing structural section thicknesses, and estimated remaining structural section life (based on the structural strength of the existing structural section). Falling weight deflectometer (FWD) testing is a field method that is used to determine the strength of the existing structural section. This method requires specialized equipment and trained personnel, which is not readily available in our area. It is recommended that this investigation ultimately be completed to provide accurate structural section strength parameters for design. An FWD study is not included in our budget. The need for an FWD study will be determined after our preliminary AC overlay alternatives have been reviewed.

The goal of this phase of the investigation is to provide preliminary AC overlay options to extend the remaining life of the existing structural section. Several AC overlay thicknesses with milling depths will be included as an alternative. To provide an approximate AC overlay thickness for this preliminary study, AASHTO has empirical methods to assess the existing pavement structural strength by evaluating the existing pavement condition. The pavement condition is evaluated through the pavement condition index (PCI), which grades the pavement

in a numerical index from 0 to 100. The PCI for this roadway will be obtained for our evaluation. In addition, we will also complete a pavement condition assessment study.

4.2.6. Geotechnical Investigation Report

Upon completion of field, laboratory, and office studies, a geotechnical investigation report will be completed for the project. Separate reports will be generated for preliminary and final investigations (if necessary) for submittal to the RTC and the City of Sparks including the following:

- Introduction, Site and Geologic conditions, and Laboratory Testing:
- Seismicity
- Geotechnical Design Parameters
- Structural Section
- Construction Recommendations

A final report will be issued addressing the comments; only one round of review and comments is scoped. After addressing any comments, a final Preliminary Design Geotechnical Investigation Report will be completed.

Deliverables – Draft and Final Preliminary Design Geotechnical Investigation Reports

4.3. Topographic Survey

Topographic mapping and boundary will be determined to meet design needs.

CONSULTANT will conduct field surveys and provide photogrammetric mapping and office support to produce topographic design surveys within the project area. The survey information will be provided for the full right-of-way width and/or limits of proposed construction. The existing ground topography shall extend 500 feet to 1,000 feet past the intersections with Greg Street and Baring Boulevard as well as the I-80 corridor, and provide additional coverage as needed at major intersections as necessary.

All key existing features of the project site will include, but will not be limited to: centerline elevations; existing stripping; edge of pavement; curb, gutter, and sidewalks; ADA ramps; multi-use paths; retaining walls; ditch features; hinge points; location, invert and rim elevations of all sewer and storm drain manholes and cross-manholes; culverts; location, invert and rim elevations for all water and gas valves, boxes and vaults; location, invert and rim elevations of storm drain inlets and catch basins; utility poles and anchors; fences; signs; existing survey monuments; location of underground utility carsonite markers (if any); and any other key existing features. Field survey will include up to one-hundred (100) right-of-way centerline monuments, boundary corners, section corners, and applicable public land survey monuments within the project limits.

CONSULTANT will perform an aerial planimetric survey. CONSULTANT will provide aerial imagery and topography for 200 feet beyond centerline on each side of the roadway from and including 500 feet to 1,000 feet beyond the I-80 corridor, Greg Street and Baring Boulevard

intersections, and provide additional coverage as needed at major intersections as necessary.

CONSULTANT will perform minor supplemental field survey as necessary as design progresses.

The horizontal datum shall be Nevada State Plane Coordinate System, West Zone NAD83/94 (HARN), based on GPS surveys. The vertical datum shall be NAVD 88 based on digital bar-code leveling circuits to published City or County, benchmarks.

Deliverables – Color aerial imagery ortho photos compatible with both MicroStation and AutoCAD; MicroStation V8i .dgn file with topographic linework, InRoads existing ground .dtm including 3D breaklines; label callouts for rim and pipe inverts of storm drains, sewer systems, and other utilities; 1-foot existing ground contour intervals at a scale of 1" = 20' for 200 feet beyond the existing centerline and 500 feet to 1,000 feet beyond each of the project limit interchange and intersection returns.

4.4. North Truckee Drain Supplemental Survey

This scope assumes that the existing condition hydraulic model and terrain for hydraulic modeling will be developed during the Physical Map Revision (PMR) that the Truckee River Flood Management (TRFMA) is currently developing. CONSULTANT will obtain a copy of the terrain from TRFMA's consultant and will review the terrain detail. If needed, CONSULTANT will gather additional supplemental survey to support hydraulic modeling.

4.5. Right-of-Way Mapping

CONSULTANT will research ownerships and Assessor's Parcel Numbers (APNs) within the project limits, as well as obtain copies of any recorded maps that identify road rights-of-way and boundary lines.

CONSULTANT will prepare right-of-way based on field survey of centerline monuments, section corners, and record maps. Field surveys to adequately locate existing boundary lines is included in Task 4.3.

The right-of-way will be shown on the project plans and used as the basis for Right-of-Way Engineering services included in Task 6.6. Owners names an assessor's parcel numbers will be shown on the base mapping.

Deliverables – Record Right-of-Way in Electronic CADD Format

4.6. Subsurface Utilities

Utilities within the project area will be located and assessed for possible conflict with the proposed project.

CONSULTANT will investigate and locate subsurface utilities within the roadway R/W, and areas reasonably effected, in accordance with the American Society of Civil Engineers

Standard guideline for the Collection and Depiction of Existing Subsurface Utility Data, Quality Level C. Additionally, CONSULTANT will coordinate with Utility Owners to remove lids of surface features and document depth of utility device, or invert of pipe, within such surface features.

Based on field investigation, CONSULTANT will provide the RTC a list of utility companies whose utilities are likely to be within the project limits or reasonably affected by the project and prepare the initial notification for placement on RTC letterhead and for RTC signature. CONSULTANT will distribute to the utility agencies on the list and coordinate with the utility agencies for upcoming work, facility relocation and new installation, and to insure utilities likely affected by the project are drawn on the plan and profile, evaluate potential conflicts through field investigation, investigate conflict resolution strategies.

Monthly utility coordination meetings will not be held with the RTC and affected utility companies.

CONSULTANT will coordinate any utility relocations necessary to accommodate the project with the utility companies. The design and technical specifications required to relocate impacted facilities will be provided by others. CONSULTANT will include the approved utility design(s) and unique technical provision requirements for each utility in the contract documents if provided by the affected utility agency in a timely manner that meets the CONSULTANT design schedule. CONSULTANT will assist the RTC in preparation of applications necessary for submission to utility companies for facility relocations, as required.

No upgrading or expanding of facilities shall be included.

CONSULTANT will distribute design review submittals to utility agencies for review and comment and provide the RTC a list of utility agencies provided design review submittals and Utility Agency review comments.

Deliverables - Depiction of Subsurface Utilities on Design Plans, Subsurface Utility Inventory

4.6.1. Kinder Morgan Coordination

CONSULTANT shall coordinate with Kinder-Morgan to locate the high-pressure gas line within the I-80 corridor. This line is located just south of the I-80 eastbound offramp and just north of the UPRR tracks and crosses under the Greg Street embankment.

It is anticipated that Kinder-Morgan will need to be notified prior to the geotechnical SUBCONSULTANT performing borings/corings in the area. No activity is planned within 25 feet of the pipeline; however, if needed a Kinder-Morgan representative will need to be onsite. No blasting or other extreme conditions are planned for the explorations that will affect the gas line. Additional insurance may be required for the project and will be considered a project cost if needed.

4.7. Utility Potholing

Should insufficient information be available from existing records to determine if conflicts between the proposed work and existing utilities will occur, CONSULTANT shall request approval from the RTC to pothole a sufficient number of locations to make such a determination. CONSULTANT will hire a potholing subconsultant to investigate and locate specific subsurface utilities within the roadway R/W, and areas reasonably effected by the project that are deemed to have potential conflicts with construction. This is estimated up to a total of eighty-two (82) potholes will be conducted to locate facilities within the project limits.

5. PRELIMINARY STUDIES

5.1. Data Collection

CONSULTANT will obtain as-built data (hard copy, .pdf, and electronic CADD files) for the Sparks Boulevard project limits from the RTC, the City of Sparks, and NDOT if available.

5.2. Design Criteria

CONSULTANT will develop design criteria for the project and will establish guidance based on:

- Standard Specifications for Public Works Construction, (Orange Book), Revision 8 of the 2012 Edition
- AASHTO Policy for Geometric Design of Highways and Streets (Green Book), 2018
- Manual on Uniform Traffic Control Device, 2010
- AASHTO Roadside Design Guide, 2011
- Guide for the Planning, Design, and Operation of Pedestrian Facilities, AASHTO, 2004
- City of Sparks Public Works Design Manual, (In progress 2020)
- City of Sparks Construction Standard Details, (In progress 2020)
- Truckee Meadows Regional Drainage Manual, 4/30/2009 version
- NDOT Road Design Guide, 2019
- NDOT Stand Plans for Road and Bridge Construction, 2017
- TRB Access Management Manual, Second Edition

Structural design needed beyond what is included in the Orange Book shall follow the NDOT Structures Manual, 2008 and subsequent revisions.

CONSULTANT will prepare draft-design criteria with a summarized listing of the governing standards and references, for review by the RTC, City of Sparks, and NDOT for review and approval. CONSULTANT will review existing geometry for consistency with the agreed upon standards.

Should the RTC, City of Sparks or NDOT direct the use of future releases of these references that would significantly alter the scope of work or increase the level of effort required to complete the work, incorporating these changes will be negotiated as additional services before

additional work is initiated.

Deliverables – Draft and Final Design Criteria Memorandums

5.3. Traffic Volume Verification

5.3.1. Data Collection

The RTC will provide existing (2020) AM and PM peak hour turning movement counts at the study intersections, to update/verify the volumes identified in the Sparks Boulevard Multimodal Corridor Study. Intersections along Sparks Boulevard for traffic counts include:

- Greg Street
- I-80 Eastbound Ramp Termini
- I-80 Westbound Ramp Termini
- Lincoln Way
- Prater Way
- O'Callaghan Drive/Springland Drive
- Baring Boulevard

5.3.2. Forecast Verification, Update and Intersection Analysis

CONSULTANT will compare volumes provided by the RTC in Task 5.3.1 with the traffic volumes identified in the Sparks Boulevard Corridor Study. CONSULTANT will develop a straight-line forecast for each signalized intersection from the existing count to the 2035 design volumes identified in the Sparks Boulevard Study and compare 2020 existing counts to the 2020 straight-line forecast. Any significant differences shall be discussed with the RTC and forecasts will be adjusted as agreed upon.

Traffic data is needed to estimate the past 18-kip equivalent single axle load (ESAL) applications that have contributed to the current condition of the pavement, as well as the future 18-kip ESAL applications that will be required for reconstruction design. It is assumed that all the information on average daily traffic (current and future), truck percentages and truck factors will be available from RTC and/or City of Sparks traffic records. Additionally, CONSULTANT will provide 2040 forecasted traffic volumes for Sparks Boulevard utilizing existing counts and RTC provided 2020 and 2040 traffic forecast output from the RTC Regional Traffic Model to determine traffic operations and turn lane storage lengths utilizing SYNCHRO for the 2040 design year AM and PM traffic.

CONSULTANT shall review RTC RIDE bus route schedules, calculate and include ESAL's in the pavement design to ensure proposed structural sections will accommodate a 20-year pavement design life.

5.4. Access Management

According to the RTCs 2040 Regional Transportation Plan, Sparks Boulevard is classified as a "Medium Access Control Arterial." Access Management will be evaluated with the proposed

design utilizing the RTCs Access Standards as outlined in the 2040 Regional Transportation Plan. the City of Sparks Public Works Design Manual, and the TRB Access Management Manual.

5.5. Safety Assessment

CONSULTANT will review the latest 3 years of crash data provided by NDOT. CONSULTANT will identify existing hot spots and/or trends for special consideration. Characterization of the crash types and trends will be used to identify potential countermeasures that could be incorporated in the project design. Site specific crash analysis and diagramming is not included as a high-level, predictive type evaluation is intended.

5.6. Multimodal Connectivity Assessment

CONSULTANT shall review the corridor to identify multi-modal connectivity through corridors include pedestrian, bicycle, and transit modes. CONSULTANT shall identify the entire absence or gaps within these modes for consideration by the RTC for potential improvements.

5.7. Alternative Development

CONSULTANT will evaluate and further develop the recommended improvements identified in the Sparks Boulevard Multimodal Corridor Study as appropriate. Considerations will include LOS, the existing right-of-way width, number of lanes entering and exiting the intersections, turning movements and storage lengths, other access locations in proximity, typical lane widths, bicycle lanes, sidewalks, pedestrian ramps, bus and other large traffic turning movements and the physical constraints of the project area.

CONSULTANT will work with the RTC, City of Sparks and NDOT to identify up to two (2) potential concepts at four (4) key locations focusing on the I-80 interchange, Springland Drive/O'Callaghan Drive, Baring Boulevard, and the multi-modal connectivity throughout the corridor. These will be refined to one project concept for detailed investigation. This refinement will be evaluated against the purpose and need for the project and organized into a matrix that will approximate the benefit and prioritize each concept. The results of the analysis and selection of a preferred alternative will be documented in a technical memorandum. Activities to be performed are anticipated to include:

- Plan, organize, and hold a 6-hour meeting with the CONSULTANT team, the RTC, City of Sparks, and NDOT. A total of eight (8) CONSULTANT staff are anticipated to attend. The goal of the meeting is to identify possible alignments, discuss pros and cons of each, and refine the number of concepts down to one for detailed study. The meeting is anticipated to be held at the RTC.
- Prepare meeting agenda, handouts, exhibits, and data to be used during the meeting
- Develop the identified concept to a 15 Percent level of completion
    - Conceptual plans will be developed in a roll plot format
    - Conceptual roadway, drainage, utility, structural, traffic, and right-of-way requirements will be determined

- Conceptual construction cost estimates will be developed
- Prepare a technical memorandum documenting the concept development process

Deliverables – Alternatives Development and Preferred Alternative Technical Memorandum

6. PRELIMINARY DESIGN

6.1. Drainage Analysis

CONSULTANT will prepare a drainage analysis to determine the impacts associated with the changes to or addition of travel lanes, curb and gutter, sidewalk, and any raised medians within the Project limits. Existing drainage conditions will be reviewed using site visits and the 2011 City of Sparks Stormwater Basin Master Plan (SBMP). The drainage analysis will generally consist of an onsite analysis, local offsite analysis, and analysis of the North Truckee Drain.

The April 30, 2009 version of the Truckee Meadows Regional Drainage Manual (TMRDM) will be used to guide the onsite analysis and drainage design. Sparks Boulevard will be considered an Arterial for calculation of the on-site minor and major storm events in the TMRDM as well as dry width criteria. The Rational Formula will be used to calculate on-site runoff for the 5-year and 100-year, minor and major storm events respectively. HEC-22 methodology will be used to evaluate drainage inlet interception, bypass, flow depth, and flow spread. A majority of the local drainage systems drain to the North Truckee Drain and therefore, their capacities are limited by the tailwater conditions in the drain. CONSULTANT is assuming storm drain connection designs will be based on low tailwater conditions in the drain. Any areas of design exception will be summarized and discussed within the drainage report.

An analysis of local offsite drainage will be performed to address drainage conditions at the Project limits and at the edge of right-of-way. The SBMP will be reviewed and used to identify areas of concern. The analysis will include identifying drainage improvements that may be needed to mitigate any impacts that may occur due to the roadway or other Project improvements. Additionally, recommendations may be made to include capital improvement project (CIP) improvements identified in the SBMP that would improve offsite drainage deficiencies. These recommendations would likely be made based on the opportunity to include drainage improvements now with the widening of Sparks Boulevard.

Sparks Boulevard parallels and crosses the Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA) associated with the North Truckee Drain. The SFHA is designated mostly as a Zone A throughout the Project limits with a portion designated as Zone AE (associated with the Truckee River) south of the I-80 westbound onramp. Depending on the extent of disturbance of the project, a Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) submittals to FEMA may be necessary and are included with this scope of work as a separate task. CONSULTANT assumes the following with regards to the North Truckee Drain modeling:

- The existing condition hydraulic model will be a HEC-RAS model specifically for the North Truckee Drain (not including the Truckee River) and will be available in

May 2020 from TRFMA's PMR effort.

- The existing condition HEC-RAS model will not require any modification for use with this project.
- CONSULTANT will develop a post-project HEC-RAS model from the existing condition model that includes improvements associated with the project design. The post-project model will be needed regardless of the CLOMR/LOMR submittals to ensure no adverse impact from project improvements.
- Hydraulic models will be based on a 100-year event on the North Truckee Drain with a tailwater representative of a 50-year event on the Truckee River.
- Hydrology will be used as is from the existing condition model and will not require modification. Hydrology is expected to be based on USACE data that will be submitted by TRFMA's consultant.

6.1.1. Draft Technical Drainage Report

A Draft Technical Drainage Report will be prepared to summarize the results of the on-site and off-site analysis performed for the 50 Percent Design. The report will summarize the criteria and guidelines used in the analyses, the anticipated performance of the drainage facilities within the project design, conformance with criteria, and any noted design criteria exception areas. The draft report will discuss the modeling results of the North Truckee Drain; however, no work will be performed on the CLOMR or LOMR at this stage.

Deliverables – Draft Technical Drainage Report (50 Percent Design)

6.2. Structural Design

CONSULTANT will advance the design of bridge widenings, retaining walls, floodwalls, and culverts in conjunction with other disciplines and incorporating input from the RTC, the City of Sparks and NDOT.

CONSULTANT will provide preliminary structural design for the following:

- Four (4) bridge widenings, one side or symmetrical (including one UPRR bridge)
- Four (4) RCB culvert or floodwall extensions
- 3,000 feet of retaining wall

6.2.1. 30 Percent Design

For the 30 Percent Design, CONSULTANT will develop the front sheets in conjunction with roadway geometric refinements for the bridge widenings.

6.2.2. 50 Percent Design

CONSULTANT will develop retaining wall plans, bridge plans, floodwall plans (if needed), and culverts plans to a 50 Percent Design level of completion, incorporating comments received on the 30 Percent Design submittal. At 50 Percent Design, retaining walls, bridge widening, floodwalls and culverts plans will present enough information to define overall

dimensions and ties to other discipline improvements. Reinforcing steel details may or may not be shown at this stage.

6.3. Lighting and Electrical Design

Electrical design will include any required new street lighting, relocating, and/or removing the existing street lighting, irrigation control power, miscellaneous electrical connections (if any), electrical service points for lighting and signalized intersections, and coordination with NV Energy for any electrical utility relocations and any new service requirements. CONSULTANT will provide electrical load and voltage drop calculations.

Lighting design will not be completed for the 30 Percent Design. Lighting design for the 50 Percent Design will be conceptual only. No detailed analysis will be completed at the 50 Percent Design for lighting. Proposed street lighting will include intersection locations only.

6.4. ITS Design

ITS design will include infrastructure along Sparks Boulevard for connectivity to the City of Sparks and Washoe County ITS system. Within the project limits, the following components will be included:

- 4-inch and 3-inch conduit along one side of the road
- 72 strand fiber optic backbone
- P30 pull boxes (or double-stacked No. 7 pull boxes) every 1000 feet
- Type 200 vaults (or No. 9 pull boxes) and Close Circuit Television (CCTV) cameras for remote intersection monitoring at signalized intersections

ITS design will not be completed for the 30 Percent Design. ITS design for the 50 Percent Design will be conceptual only. No detailed analysis will be completed at the 50 Percent Design for ITS.

6.5. Landscape and Aesthetics

CONSULTANT will prepare alternative landscape and aesthetics concepts for the project. At the 30 Percent Design stage CONSULTANT will organize a landscape and aesthetics specific workshop to be held with the RTC, the City of Sparks, NDOT and other stakeholders as directed at the RTC's discretion to present and receive feedback on alternatives and select a preferred alternative. CONSULTANT Landscape Architect will attend the public information meeting held at 50 Percent Design to present and receive feedback on the preferred alternative. Generally, the process will include:

- Develop three (3) alternative concepts
- Present the process followed and the three concepts developed at a landscape and aesthetics specific workshop with the RTC, the City of Sparks, and NDOT to gather feedback
- Refine a preferred alternative, incorporating agency feedback

- Present the preferred alternative at one public information meeting

CONSULTANT will provide graphic displays and conceptual plans of the alternative concepts and preferred alternative. The alternative concepts will draw from existing themes and environment and expand on the RTC's and City of Sparks vision for the corridor. It is anticipated that the concepts may be similar in theme but vary in the application of treatments between hardscape and landscape, and between locations. A conceptual construction cost range for each alternative will be prepared. Costs will be targeted at 3 percent or less of construction cost.

Landscape and aesthetics design will not be completed for the 30 Percent Design. Landscape and design for the 50 Percent Design will be conceptual only. No detailed analysis will be completed at the 50 Percent Design for Landscape.

Deliverables - 3 Preliminary and 1 Final Landscape Concepts and Cost Estimates, Landscape Exhibits for 1 Agency Workshop and 1 Public Meeting

6.6. 30 Percent Design

Incorporating the results of the alternative development in Task 5.7 CONSULTANT will prepare a 30 Percent Design submittal for widening Sparks Boulevard to six (6) lanes. Roadway plans will be designed in accordance with design criteria developed in Task 5.2. CONSULTANT will prepare a list of the exceptions (if any) identifying station limits, standards, and potential mitigations.

Plan sheets will be drafted electronically at full size l " = 25' scale, on 22" x 34" size paper, and produced electronically in .pdf format, but printed at only half size 1" = 50' scale, on 11" x 17" sized paper.

The following is a listing of plan sheets (and amount of detail) anticipated in the project contract documents for the 30 Percent Design submittal:

Title Sheet (1)

Index of Sheets, General Notes, Legend, Abbreviations, Key Maps (3)

Typical Section Sheets (8)

- As-constructed and proposed improvement typical sections
- Minimum and maximum roadway widths
- Preliminary roadside designs (slopes, curbs, gutters, dikes, and traffic barriers)
- Proposed pedestrian and bicycle improvements
- Proposed bridge and retaining wall locations

Survey Control/Right-of-Way Sheets (35)

- Existing right-of way-limits

- Schedule of coordinates, basis of bearing, stationing and offsets, the control coordinates, and datum statement

Roadway Plan Sheets (35)

- Horizontal curve data, bearings, distances and station and offsets for angle points, tapers, and curves
- Preliminary locations for curbs, gutters, and sidewalk
- Preliminary road widths
- Preliminary cut and fill slope limits
- Vertical grade and curve data

Roadway Profile Sheets (20)

- Profile view stacked window layout
- Vertical grade and curve data

Multiuse Path Profile Sheets (10)

- Profile view stacked window layout
- Vertical grade and curve data

Bridge Sheets (8)

- Plan and Elevation
- Typical Section and General Notes
- Geometrics (foundation plan)

Approximately 120 Sheets Total.

Exclusions from the 30 Percent Design:

- Geometric Control and Grading Sheets will not be prepared
- Pavement section depths will not be prepared
- Removal limits, including existing roadway, signs, drainage, etc. will not be prepared
- Existing utilities and proposed utility adjustments/relocations will not be prepared
- Superelevation diagrams will not be prepared
- Drainage Plan and Profile Sheets will not be prepared
- Drainage Detail Sheets will not be prepared
- Signing and Striping Sheets will not be prepared
- Detail Sheets will not be prepared
- Utility specific generated design (water, gas, etc.), as necessary resulting from utility conflicts, will not be prepared
- Site reconstruction plans for adjacent properties will not be prepared
- Retaining Wall, Soundwall, Floodwall, and Culvert Sheets will not be prepared

- Lighting Sheets will not be prepared
- Signal, Traffic Signal Interconnect, and ITS Sheets will not be prepared
- Detailed analysis for electrical will not be completed
- Landscape and Aesthetic Sheets for new or remediation for project impacts will not be prepared
- Cross sections will not be prepared

6.7. 30 Percent Cost Estimate

CONSULTANT will prepare a detailed unit price engineer's estimate of probable construction cost in the same format as the bid proposal form to be included in the contract documents. Bid item numbers will correspond to the appropriate sections in the RTC's Orange Book. Technical Provisions will not be prepared for the 30 Percent Design.

6.8. 30 Percent Design Submittal

CONSULTANT will submit the 30 Percent Design as summarized:

RTC:

- 3 copies 11" x 17" 50 Percent Design plans, Design Exception Summary (if necessary)
- l copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 30 Percent Design plans; Engineer’s estimate
- 1 Electronic Distribution of Review and Comment Form

City of Sparks:

- 2 copies 11" x 17" 50 Percent Design plans, Design Exception Summary (if necessary)
- I copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 30 Percent Design plans; Engineer’s estimate Electronic Distribution of Review and Comment Form

Utility Agencies:

- 1 copy 11" x 17" 30 Percent Design plans
- 1 Electronic Distribution of Review and Comment Form

6.9. 30 Percent Design Review Comment Resolution

CONSULTANT will prepare for and attend one in-person meeting with RTC, City of Sparks, and NDOT staff to discuss the 30 Percent Design. CONSULTANT will consolidate and provide responses to the 30 Percent Design plan review comments with the 50 Percent Design deliverables.

6.10. 50 Percent Design

Incorporating agency comments from the 30 Percent Design review, CONSULTANT will advance the design and prepare 50 Percent Design plans, a corresponding 50 Percent Design preliminary engineer's estimate, and an outline of the 50 Percent Design technical specifications.

Plan sheets included in the 30 Percent Design submittal will be advanced to the 50 Percent level of detail.

Additional sheets and sheet detail to be included are:

Typical Section Sheets

- Removal limits
- Pavement section depths

Removals and Utility Sheets (70)

- Removal Limits, including existing roadway, signs, drainage, etc.
- Existing Utilities and Proposed Utility adjustments/relocations
- Existing ground contours at 1' interval

Roadway Profile Sheets

- Superelevation Diagrams (if necessary)

Multiuse Path Profile Sheets

- Superelevation Diagrams (if necessary)

Drainage Plan and Profile Sheets (35)

- Plan view over pipe profile view stacked window layout
- Locations of existing and proposed drainage facilities
- Locations of utilities shown in plan view
- Locations of utility crossings in pipe profile view
- Proposed ground contours at l' interval

Signing and Striping Sheets (35)

- Proposed signing and striping detailing sign type and location, lane arrangements including turn lanes, storage lengths, acceleration lanes, and deceleration lanes

Bridge Sheets (60)

- Plan and Elevation
- Typical Section and General Notes
- Geometrics (foundation plan)
- Removal Plan
- Abutment Foundations
- Abutments Plan, Elevation and Section
- Pier Foundations
- Piers Plan, Elevation and Section
- Framing Plan
- Girder Layout

Retaining Wall, Floodwall, Culvert Sheets (25)

- Plan and Elevation
- Typical Sections

Approximately 343 Sheets Total.

Exclusions from the 50 Percent Design:

- Geometric Control and Grading Sheets will not be prepared
- Drainage Detail Sheets will not be prepared
- Detail Sheets will not be prepared
- Utility specific generated design (water, gas, etc.), as necessary resulting from utility conflicts, will not be prepared
- Site reconstruction plans for adjacent properties will not be prepared
- Lighting Sheets will not be prepared
- Signal, Traffic Signal Interconnect, and ITS Sheets will not be prepared
- Detailed analysis for electrical will not be completed
- Landscape and Aesthetic Sheets for new or remediation for project impacts will not be prepared
- Cross sections will not be prepared

6.11. 50 Percent Cost Estimate and Technical Specification Outline

CONSULTANT will prepare a detailed unit price engineer's estimate of probable construction cost in the same format as the bid proposal form to be included in the contract documents. Bid item numbers will correspond to the appropriate sections in the RTC's Orange Book.

The RTC will provide CONSULTANT the most recent RTC Technical Specifications templates. Technical provisions will reference Revision 8 of the 2012 Edition of Standard Specifications for Public Works Construction (Orange Book) for standard construction items. Technical provisions will be prepared for changes to the standards or unique site conditions not adequately covered in the Orange Book.

CONSULTANT will prepare 50 Percent Design technical provisions which will include a detailed outline of the technical provisions for those items not identified as part of the Standard Specifications.

6.12. 50 Percent Design Submittal

CONSULTANT will submit the 50 Percent Design as summarized:

RTC:

- 3 copies 11" x 17" 50 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy of the Technical Specifications outline
- l copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 50 Percent Design plans; Engineer’s estimate; Technical Specifications outline; full version of Draft Hydraulic Report; full version of Draft Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

City of Sparks:

- 2 copies 11" x 17" 50 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy of the Technical Specifications outline
- I copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 50 Percent Design plans; Engineer’s estimate; Technical Specifications outline; full version of Draft Hydraulic Report; full version of Draft Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

Utility Agencies:

- 1 copy 11" x 17" 50 Percent Design plans
- 1 copy of the Technical Specifications outline
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

6.13. 50 Percent Design Review Comment Resolution

CONSULTANT will prepare for and attend one in-person meeting with RTC and City of Sparks staff to discuss the 50 Percent Design. CONSULTANT will consolidate and provide responses to the 50 Percent Design plan review comments with the 90 Percent Design deliverables.

7. PHASE 1 FINAL DESIGN

7.1. Drainage Analysis

CONSULTANT will advance the drainage analysis design in conjunction with other disciplines and incorporating input from the RTC, the City of Sparks and NDOT.

7.1.1. Final Technical Drainage Report

A Final Technical Drainage Report will be prepared and submitted with the 90 Percent Design. At this stage, it is assumed that all major drainage components will have been identified and detailed in the design plans. The final report will discuss the modeling results of the North Truckee Drain, onsite and offsite calculations and analyses. At this stage, with the concurrence of the City of Sparks, a CLOMR submittal will be initiated based on the 90 Percent Design.

If needed, a Drainage Report Addendum will be prepared for the 100 Percent Design/Final Design submittal of the design plans. It is anticipated that this submittal will only be necessary to clarify minor changes to the analyses or results and that no significant drainage improvements will be added or changed between the 90 Percent Design and 100 Percent Design submittals.

Deliverables –Final Technical Drainage Report (90 Percent Design), Drainage Report Addendum (100 Percent Design, if needed)

7.2. Structural Design

CONSULTANT will advance the design of bridge widenings, retaining walls, floodwalls, and culverts in conjunction with other disciplines and incorporating input from the RTC, the City of Sparks and NDOT.

CONSULTANT will provide Phase 1 final structural design for the following:

- One (1) bridge widening, one side or symmetrical, final design and load rating
- Four (4) RCB culvert extensions final design and load ratings
- Retaining wall final design
- Floodwall final design (if needed)

7.2.1. 90 Percent Design, 100 Percent Design, and Final Design

For the 90 Percent Design submittal, CONSULTANT will respond to and incorporate comments from the 50 Percent Design submittal and develop final retaining wall plans, bridge plans, floodwall plans, and culverts plans. Bill of material sheets will not be prepared for walls, bridges, and culverts. Rather, quantities will be summarized in tables incorporated into selected detail sheets.

For the 100 Percent Design submittal, CONSULTANT will respond to and incorporate RTC,

City of Sparks, and NDOT comments from the 90 Percent Design submittal, and advance the structure plans, quantities, and cost estimates in preparation for construction.

For the Final Design submittal, structure plans and technical provisions will be finalized for construction. CONSULTANT will prepare bridge load rating calculations and submit a Load Rating Report, Load Rating Summary, and supporting calculations for each bridge widening. The Load Rating Report and supporting calculations will be stamped and signed by the responsible engineer registered in the State of Nevada in accordance with requirements of NDOT.

7.3. Lighting and Electrical, ITS, Landscape and Aesthetics Design

CONSULTANT will advance these miscellaneous designs to 90 Percent Design, 100 Percent Design, and Final Design in conjunction with other disciplines and incorporating input from the RTC, the City of Sparks and NDOT.

7.4. 90 Percent Design

Incorporating agency comments from the 50 Percent Design review, CONSULTANT will advance the design and prepare 90 Percent Design plans, a corresponding 90 Percent preliminary engineer's estimate, and 90 Percent technical specifications.

The Draft Technical Drainage Report will be updated as the design progresses. Review comments received from the 50 Percent Design will be incorporated and a Final Technical Drainage Report will be prepared for the 90 Percent Design submittal.

Plan sheets included in the 50 Percent Design submittal will be advanced to the 90 Percent Design level of detail.

Sheets to be included are:

Title Sheet (1)

Index of Sheets, General Notes, Legend, Abbreviations, Key Maps (2)

Typical Section Sheets (5)

- As-constructed and proposed improvement typical sections
- Minimum and maximum roadway widths
- Preliminary roadside designs (slopes, curbs, gutters, dikes, and traffic barriers)
- Proposed pedestrian and bicycle improvements
- Proposed bridge and retaining wall locations
- Removal limits
- Pavement section depths

Survey Control/Right-of-Way Sheets (25)

- Existing right-of-way limits
- Schedule of coordinates, basis of bearing, stationing and offsets, the control coordinates, and datum statement

Removals and Utility Sheets (50)

- Removal Limits, including existing roadway, signs, drainage, etc.
- Existing Utilities and Proposed Utility adjustments/relocations
- Existing ground contours at 1' interval

Roadway Plan Sheets (25)

- Horizontal curve data, bearings, distances and station and offsets for angle points, tapers, and curves
- Preliminary locations for curbs, gutters, and sidewalk
- Preliminary road widths
- Preliminary cut and fill slope limits

Roadway Profile Sheets (13)

- Profile view stacked window layout
- Vertical grade and curve data
- Superelevation Diagrams (if necessary)

Multiuse Path Profile Sheets (7)

- Profile view stacked window layout
- Vertical grade and curve data
- Superelevation Diagrams (if necessary)

Drainage Plan and Profile Sheets (25)

- Plan view over pipe profile view stacked window layout
- Locations of existing and proposed drainage facilities
- Locations of utilities shown in plan view
- Locations of utility crossings in pipe profile view
- Proposed ground contours at l' interval

Signing and Striping Sheets (25)

- Proposed signing and striping detailing sign type and location, lane arrangements including turn lanes, storage lengths, acceleration lanes, and deceleration lanes

Bridge Sheets (30)

- Plan and Elevation

- Typical Section and General Notes
- Geometrics (foundation plan)
- Removal Plan
- Abutment Foundations
- Abutments Plan, Elevation and Section
- Abutments Details
- Pier Foundations
- Piers Plan, Elevation and Section
- Piers Details
- Framing Plan
- Girder Layout and Details
- Bearing Pad Details
- Intermediate Diaphragm Details
- Deck Slab Layout and Reinforcement Details
- Abutment Diaphragms Plan, Elevation and Section
- Pier Diaphragms Plan, Elevation and Section
- Camber and Concrete Classification
- Finished Grade Elevations
- Approach Slabs Layout and Reinforcement Details
- Expansion Joint Details
- Barrier Rail Layout and Reinforcement Details

Retaining Wall, Floodwall, Culvert Sheets (15)

- Plan and Elevation
- Typical Sections
- Reinforcement Details

Additional sheets not included in Preliminary Design are:

- Geometric Control and Grading Sheets (25) - Geometric control and grading plan information for median islands, ADA ramps, driveways, and any other feature needing geometry/grading defined for construction
- Signal and Traffic Signal Interconnect Sheets (16)
- ITS Sheets (30)
- Lighting and Electrical Sheets (16)
- Landscape and Aesthetic Sheets (50)
- Other Special Structural Features (5)
- Detail Sheets (25)

Approximately 370 Sheets Total.

Exclusions from the 90 Percent Design:

- Utility specific generated design (water, gas, etc.), as necessary resulting from utility conflicts, will not be prepared
- Site reconstruction plans for adjacent properties will not be prepared
- Cross sections will not be prepared

CONSULTANT will prepare for and attend one in-person meeting with RTC and City of Sparks staff to discuss the 90 Percent Design.

7.5. 90 Percent Cost Estimate and Technical Specifications

CONSULTANT will advance the detailed unit price engineer's estimate of probable construction cost to the 90% design level.

CONSULTANT will provide detailed technical specifications for the outline created at the 50% submittal, and any additional item as determined during the 90% design. Technical provisions will reference Revision 8 of the 2012 Edition of Standard Specifications for Public Works Construction (Orange Book) for standard construction items.

7.6. 90 Percent Design Submittal

CONSULTANT will submit the 90 Percent Design as summarized:

RTC:

- 3 copies 11" x 17" 90 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy 90 Percent Technical Specifications
- l copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 90 Percent Design plans; Engineer’s estimate; full version of Hydraulic Report; full version of Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

City of Sparks:

- 2 copies 11" x 17" 90 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy 90 Percent Technical Specifications
- I copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 90 Percent Design plans; Engineer’s estimate; full version of Hydraulic Report; full version of Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

Utility Agencies:

- 1 copy 11" x 17" 90 Percent Design plans
- 1 copy of the Technical Specifications
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

7.7. 90 Percent Design Review Comment Resolution

CONSULTANT will prepare for and attend one in-person meeting with RTC and City of Sparks staff to discuss the 90 Percent Design. CONSULTANT will consolidate and provide responses to the 90 Percent Design plan review comments with the 100 Percent Design deliverables.

7.8. 100 Percent Design

Incorporating agency comments from the 90 Percent Design review, CONSULTANT will advance the design and prepare 100 Percent Design plans, engineer's estimate, and technical specifications. CONSULTANT will submit 100 Percent Design plans, specifications and engineer's estimate to RTC, City of Sparks, and utility companies with facilities in the project limits to verify all comments have been responded to, reconciled, and incorporated into the plans.

7.9. 100 Percent Cost Estimate and Technical Specifications

CONSULTANT will advance the detailed unit price engineer's estimate of probable construction cost and detailed technical specifications to the 100% design level.

7.10. 100 Percent Design Submittal

CONSULTANT will submit the 100 Percent Design as summarized:

RTC:

- 3 copies 11" x 17" 100 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy 100 Percent Technical Specifications
- l copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 100 Percent Design plans; Engineer's estimate; full version of Hydraulic Report; full version of Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses

City of Sparks:

- 2 copies 11" x 17" 100 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy 90 Percent Technical Specifications

- 1 copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 100 Percent Design plans; Engineer's estimate; full version of Hydraulic Report; full version of Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses

Utility Agencies:

- 1 copy 11" x 17" 100 Percent Design plans
- 1 copy of the Technical Specifications
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses

For the 100 Percent Design submittal CONSULTANT will provide a full sized .pdf and a .pdf of the Technical Specifications to the RTC for posting on their e-bid system for advertisement.

CONSULTANT will submit a 11" x 17" hard copy of the 100 Percent Design plans and 1 hard copy of the Technical Specifications to the RTC and City of Sparks.

7.11. 100 Percent Design Review Comment Resolution

CONSULTANT will prepare for and attend one in-person meeting with RTC and City of Sparks staff to discuss the 100 Percent Design. CONSULTANT will consolidate and provide responses to the 90 Percent Design plan review comments with the 100 Percent Design deliverables.

7.12. Final Design

Once the agencies verify that all review comments have been addressed and no additional changes are required, CONSULTANT will sign and stamp the design plans and technical specifications for use as an advertised project.

8. CLOMR AND LOMR SUBMITTALS

Immediately following the Phase 1, 90 Percent Design review comment resolution, with the concurrence of the City of Sparks, a CLOMR submittal will be initiated for submittal to FEMA. It is anticipated that the submittal may include minor changes to the Final Technical Drainage Report and that FEMA's MT-2 forms will be completed. Submittal and review fees are included with this scope of work and considered a project cost. It is anticipated that FEMA will take between six (6) to twelve (12) months to review and approve the CLOMR submittal. CONSULTANT may be required to supply additional information or coordinate with FEMA during this time to facilitate acceptance of the submittal.

Currently effective hydrology and hydraulic models do not exist for the North Truckee Drain (per a FEMA data request). TRFMA currently is developing the existing condition model for the North Truckee Drain and is expected to submit it to FEMA in the summer of 2020. Our

scope of work assumes that TRFMA's existing condition model will be available for the team's use and will be obtained from TRFMA's consultant in May of 2020. This scope of work also assumes that this existing condition model will be able to be used as the effective model for FEMA. CONSULTANT will review the existing condition effective model to ensure that it can be used for this Project. It is assumed that TRFMA's existing condition effective model will be able to be used without adjustment/modification by CONSULTANT. Additionally, since the effective model for the North Truckee Drain is new, this scope of work assumes that a corrected effective model will not be needed for this Project.

The LOMR submittal can be initiated following the finalization of record drawings. At this time CONSULTANT will again submit the MT-2 forms to FEMA for their review. The MT-2 forms will be updated from the CLOMR submittal to incorporate the record drawing information. It is anticipated that replacement of the design information with the record drawing information will not change the results of the CLOMR/LOMR submittal. Submittal and review fees are included with this scope of work and considered a project cost. It is anticipated that FEMA may take up to six (6) months to approve the LOMR submittal. CONSULTANT may be required to supply additional information or coordinate with FEMA during this time to facilitate acceptance of the submittal.

9. PHASE 1 BIDDING SERVICES

CONSULTANT will be available during the bidding process to respond to Requests for Information (RFIs) and will attend the RTC hosted pre-bid meeting. All questions and responses will be documented and provided to the RTC, and prepare and provide any addenda, if required. All questions regarding legal aspects of the contract documents will be referred directly to the RTC. CONSULTANT will prepare and provide a summary of the pre-bid meeting, as directed by the RTC.

CONSULTANT will attend the bid opening, review the bids received for irregularities, and provide a recommendation for award. CONSULTANT will tabulate bid results into a MS Excel spreadsheet to verify the quantities and costs of the bid items.

After bid opening and award, CONSULTANT will prepare a conformed set of specifications for distribution to the project and construction teams. All RTC and Contractor signed pages and any addenda will be incorporated into a final set of project specifications. CONSULTANT will also prepare a conformed set of plans, if any changes are required resulting from RFIs during the bidding process.

Deliverables – Pre-Bid meeting minutes, bid review tabulation, conformed set of design plans and specifications.

10. PHASE 1 DESIGN SERVICES DURING CONSTRUCTION (OPTIONAL - NOT INCLUDED)

CONSULTANT will provide services during construction for Phase 1 of the project. Depending on the final scope of Phase 1, a specific scope of services and associated fee will be

developed prior to the start of construction. The fee associated with this task is not included and will be amended prior to construction.

11. PHASE 2 FINAL DESIGN

11.1. Drainage Analysis

CONSULTANT will advance the drainage analysis design in conjunction with other disciplines and incorporating input from the RTC, the City of Sparks and NDOT.

11.1.1. Final Technical Drainage Report

A Final Technical Drainage Report will be prepared and submitted with the 90 Percent Design. At this stage, it is assumed that all major drainage components will have been identified and detailed in the design plans. The final report will discuss the modeling results of the North Truckee Drain, onsite and offsite calculations and analyses. At this stage, with the concurrence of the City of Sparks, a CLOMR submittal will be initiated based on the 90 Percent Design.

If needed, a Drainage Report Addendum will be prepared for the 100 Percent Design/Final Design submittal of the design plans. It is anticipated that this submittal will only be necessary to clarify minor changes to the analyses or results and that no significant drainage improvements will be added or changed between the 90 Percent Design and 100 Percent Design submittals.

Deliverables –Final Technical Drainage Report (90 Percent Design), Drainage Report Addendum (100 Percent Design, if needed)

11.2. Structural Design

CONSULTANT will advance the design of bridge widenings, retaining walls, floodwalls, and culverts in conjunction with other disciplines and incorporating input from the RTC, the City of Sparks and NDOT.

CONSULTANT will provide Phase 2 structural design for the following:

- Three (3) bridge widenings, one side or symmetrical (including one UPRR bridge), final design and load rating
- Retaining wall final design

11.2.1. 90 Percent Design, 100 Percent Design, and Final Design

For the 90 Percent Design submittal, CONSULTANT will respond to and incorporate comments from the 50 Percent Design submittal and develop final retaining wall plans, bridge plans, floodwall plans, and culverts plans. Bill of material sheets will not be prepared for walls, bridges, and culverts. Rather, quantities will be summarized in tables incorporated into selected detail sheets.

For the 100 Percent Design submittal, CONSULTANT will respond to and incorporate RTC, City of Sparks, and NDOT comments from the 90 Percent Design submittal, and advance the structure plans, quantities, and cost estimates in preparation for construction.

For the Final Design submittal, structure plans and technical provisions will be finalized for construction. CONSULTANT will prepare bridge load rating calculations and submit a Load Rating Report, Load Rating Summary, and supporting calculations for each bridge widening. The Load Rating Report and supporting calculations will be stamped and signed by the responsible engineer registered in the State of Nevada in accordance with requirements of NDOT.

11.3. Lighting and Electrical, ITS, Landscape and Aesthetics Design

CONSULTANT will advance these miscellaneous designs to 90 Percent Design, 100 Percent Design, and Final Design in conjunction with other disciplines and incorporating input from the RTC, the City of Sparks and NDOT.

11.4. 90 Percent Design

Incorporating agency comments from the 50 Percent Design review, CONSULTANT will advance the design and prepare 90 Percent Design plans, a corresponding 90 Percent Design engineer's estimate, and 90 Percent Design technical specifications.

The Draft Technical Drainage Report will be updated as the design progresses. Review comments received from the 50 Percent Design will be incorporated and a Final Technical Drainage Report will be prepared for the 90 Percent Design submittal.

Plan sheets included in the 50 Percent Design submittal will be advanced to the 90 Percent level of detail.

Sheets to be included are:

Title Sheet (1)

Index of Sheets, General Notes, Legend, Abbreviations, Key Maps (2)

Typical Section Sheets (3)

- As-constructed and proposed improvement typical sections
- Minimum and maximum roadway widths
- Preliminary roadside designs (slopes, curbs, gutters, dikes, and traffic barriers)
- Proposed pedestrian and bicycle improvements
- Proposed bridge and retaining wall locations
- Removal limits
- Pavement section depths

Survey Control/Right of Way Sheets (10)

- Existing right-of-way limits
- Schedule of coordinates, basis of bearing, stationing and offsets, the control coordinates, and datum statement

Removals and Utility Sheets (20)

- Removal Limits, including existing roadway, signs, drainage, etc.
- Existing Utilities and Proposed Utility adjustments/relocations
- Existing ground contours at 1' interval

Roadway Plan Sheets (10)

- Horizontal curve data, bearings, distances and station and offsets for angle points, tapers, and curves
- Preliminary locations for curbs, gutters, and sidewalk
- Preliminary road widths
- Preliminary cut and fill slope limits

Roadway Profile Sheets (5)

- Profile view stacked window layout
- Vertical grade and curve data
- Superelevation Diagrams (if necessary)

Multiuse Path Profile Sheets (3)

- Profile view stacked window layout
- Vertical grade and curve data
- Superelevation Diagrams (if necessary)

Drainage Plan and Profile Sheets (10)

- Plan view over pipe profile view stacked window layout
- Locations of existing and proposed drainage facilities
- Locations of utilities shown in plan view
- Locations of utility crossings in pipe profile view
- Proposed ground contours at l' interval

Signing and Striping Sheets (10)

- Proposed signing and striping detailing sign type and location, lane arrangements including turn lanes, storage lengths, acceleration lanes, and deceleration lanes

Bridge Sheets (90)

- Plan and Elevation
- Typical Section and General Notes
- Geometrics (foundation plan)
- Removal Plan
- Abutment Foundations
- Abutments Plan, Elevation and Section
- Abutments Details
- Pier Foundations
- Piers Plan, Elevation and Section
- Piers Details
- Framing Plan
- Girder Layout and Details
- Bearing Pad Details
- Intermediate Diaphragm Details
- Deck Slab Layout and Reinforcement Details
- Abutment Diaphragms Plan, Elevation and Section
- Pier Diaphragms Plan, Elevation and Section
- Camber and Concrete Classification
- Finished Grade Elevations
- Approach Slabs Layout and Reinforcement Details
- Expansion Joint Details
- Barrier Rail Layout and Reinforcement Details

Retaining Wall Sheets (6)

- Plan and Elevation
- Typical Sections
- Reinforcement Details

Additional sheets not included in Preliminary Design are:

- Geometric Control and Grading Sheets (20) - Geometric control and grading plan information for median islands, ADA ramps, driveways, and any other feature needing geometry/grading defined for construction
- Signal and Traffic Signal Interconnect Sheets (10)
- ITS Sheets (8)
- Lighting and Electrical Sheets (8)
- Landscape and Aesthetic Sheets (12)
- Other Special Structural Features (2)
- Detail Sheets (20)

Approximately 250 Sheets Total.

Exclusions from the 90 Percent Design:

- Utility specific generated design (water, gas, etc.), as necessary resulting from utility conflicts, will not be prepared
- Site reconstruction plans for adjacent properties will not be prepared
- Cross sections will not be prepared

CONSULTANT will prepare for and attend one in-person meeting with RTC and City of Sparks staff to discuss the 90 Percent Design.

11.5. 90 Percent Cost Estimate and Technical Specifications

CONSULTANT will advance the detailed unit price engineer's estimate of probable construction cost to the 90% design level.

CONSULTANT will provide detailed technical specifications for the outline created at the 50% submittal, and any additional item as determined during the 90% design. Technical provisions will reference Revision 8 of the 2012 Edition of Standard Specifications for Public Works Construction (Orange Book) for standard construction items.

11.6. 90 Percent Design Submittal

CONSULTANT will submit the 90 Percent Design as summarized:

RTC:

- 3 copies 11" x 17" 90 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy 90 Percent Technical Specifications
- l copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 90 Percent Design plans; Engineer’s estimate; full version of Hydraulic Report; full version of Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

City of Sparks:

- 2 copies 11" x 17" 90 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy 90 Percent Technical Specifications
- I copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 90 Percent Design plans; Engineer’s estimate; full version of Hydraulic Report; full version of Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

Utility Agencies:

- 1 copy 11" x 17" 90 Percent Design plans
- 1 copy of the Technical Specifications
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses (if applicable)

11.7. 90 Percent Design Review Comment Resolution

CONSULTANT will prepare for and attend one in-person meeting with RTC and City of Sparks staff to discuss the 90 Percent Design. CONSULTANT will consolidate and provide responses to the 90 Percent Design plan review comments with the 100 Percent Design deliverables.

11.8. 100 Percent Design

Incorporating agency comments from the 90 Percent Design review, CONSULTANT will advance the design and prepare 100 Percent Design plans, engineer's estimate, and technical specifications. CONSULTANT will submit 100 Percent Design plans, specifications and engineer's estimate to RTC, City of Sparks, and utility companies with facilities in the project limits to verify all comments have been responded to, reconciled, and incorporated into the plans.

Additional changes to the drainage report are not anticipated after the 90 Percent Design submittal; however, if required, a drainage report addendum will be issued for the 100 Percent Design submittal.

11.9. 100 Percent Cost Estimate and Technical Specifications

CONSULTANT will advance the detailed unit price engineer's estimate of probable construction cost and detailed technical specifications to the 100% design level.

11.10. 100 Percent Design Submittal

CONSULTANT will submit the 100 Percent Design as summarized:

RTC:

- 3 copies 11" x 17" 100 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy 100 Percent Technical Specifications
- l copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 100 Percent Design plans; Engineer's estimate; full version of Hydraulic Report; full version of Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses

City of Sparks:

- 2 copies 11" x 17" 100 Percent Design plans, Design Exception Summary (if necessary)
- 1 copy 90 Percent Technical Specifications
- 1 copy Engineer's opinion of probable construction cost estimate
- 2 CDs with 22" x 34" .pdf of 100 Percent Design plans; Engineer's estimate; full version of Hydraulic Report; full version of Geotechnical Report
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses

Utility Agencies:

- 1 copy 11" x 17" 100 Percent Design plans
- 1 copy of the Technical Specifications
- 1 Electronic Distribution of Review and Comment Form and previous submittal responses

For the 100 Percent Design submittal CONSULTANT will provide a full sized .pdf and a .pdf of the Technical Specifications to the RTC for posting on their e-bid system for advertisement.

CONSULTANT will submit a 11" x 17" hard copy of the 100 Percent Design plans and 1 hard copy of the Technical Specifications to the RTC and City of Sparks.

11.11. 100 Percent Design Review Comment Resolution

CONSULTANT will prepare for and attend one in-person meeting with RTC and City of Sparks staff to discuss the 100 Percent Design. CONSULTANT will consolidate and provide responses to the 90 Percent Design plan review comments with the 100 Percent Design deliverables.

11.12. Final Design

Once the agencies verify that all review comments have been addressed and no additional changes are required, CONSULTANT will sign and stamp the design plans and technical specifications for use as an advertised project.

11.13. NDOT Encroachment Permit

CONSULTANT will prepare and process an encroachment permit package through the Nevada Department of Transportation for Phase 2 construction for the portions of the project within NDOT right-of-way. CONSULTANT will participate in a pre-permit meeting before submitting the permit application. Any revisions required by NDOT will be made on the plans before finalizing the permit. The RTC and the local agency will be the co-applicants on the permit and will provide all applicant fees, signatures and submittal documentation needed by the CONSULTANT to process the permit.

12. PHASE 2 BIDDING SERVICES

CONSULTANT will be available during the bidding process to respond to Requests for Information (RFIs) and will attend the RTC hosted pre-bid meeting. All questions and responses will be documented and provided to the RTC, and prepare and provide any addenda, if required. All questions regarding legal aspects of the contract documents will be referred directly to the RTC. CONSULTANT will prepare and provide a summary of the pre-bid meeting, as directed by the RTC.

CONSULTANT will attend the bid opening, review the bids received for irregularities, and provide a recommendation for award. CONSULTANT will tabulate bid results into a MS Excel spreadsheet to verify the quantities and costs of the bid items.

After bid opening and award, CONSULTANT will prepare a conformed set of specifications for distribution to the project and construction teams. All RTC and Contractor signed pages and any addenda will be incorporated into a final set of project specifications. CONSULTANT will also prepare a conformed set of plans, if any changes are required resulting from RFIs during the bidding process.

Deliverables – Pre-Bid meeting minutes, bid review tabulation, conformed set of design plans and specifications.

13. PHASE 2 DESIGN SERVICES DURING CONSTRUCTION (OPTIONAL - NOT INCLUDED)

CONSULTANT will provide services during construction for Phase 2 of the project. Depending on the final scope of Phase 2, a specific scope of services and associated fee will be developed prior to the start of construction. The fee associated with this task is not included and will be amended prior to construction.

14. DESIGN CONTINGENCY

This is a contingency for miscellaneous increases within the scope of this contract in performance of services under Task 1 through Task 8 and Task 11. If CONSULTANT determines that it is necessary to perform work outside of the scope covered in Task 1 through Task 8 and Task 11, CONSULTANT shall provide a letter detailing the need, scope, and not-to-exceed budget for any proposed work. Work under this task shall proceed only with the RTC Project Manager's written approval.

15. MISCELANEOUS SERVICES (OPTIONAL)

15.1. Photographic Renderings

CONSULTANT will prepare up to ten (10) photo renderings of the final design to show new intersection and roadway alignments. The locations for each rendering will be discussed with

the RTC Project Manager. One draft version of each rendering will be provided to the RTC for review and comment prior to each rendering being completed.

Deliverables - Up to 10 Photographic Renderings

15.2. Video Simulations

CONSULTANT will create up to three (3) 30-second to one-minute animated 3-dimentional (3D) video simulations of proposed intersection improvements to show new roadway alignments and traffic patterns at use during agency, stakeholder and public meetings, as well as, be available on the website.

CONSULTANT will utilize UAV drone to build the 3D environment, create animations of key locations highlighting proposed improvements among existing and future development as necessary.

CONSULTANT will submit each video for RTC approval before they become available to the public. Video productions will be copyrighted to CONSULTANT with rights given to the RTC.

Deliverables - Up to 3 Draft and Final Video Simulations

15.3. Phase 1 Final Geotechnical Evaluation

If necessary, CONSULTANT will perform Phase 1 Final Design geotechnical investigations and associated laboratory testing to develop geotechnical design recommendations.

All field work within the Sparks Boulevard roadway area will occur during night time hours on weekdays, and daytime hours on weekends.

All explorations, completed by exploratory borings, will follow AASHTO guidelines, RTC Flexible Pavement Design Manual, 2007, and NDOT standards, where applicable.

It is anticipated that exploration will include:

- Phase 1 Final Design – twenty (20) exploratory borings to depths of 5 to 50 feet below the existing grade surface for a total of 610 lineal feet

Upon completion of field, laboratory, and office studies, an updated geotechnical investigation report will be completed for the project.

- Introduction, Site and Geologic conditions, and Laboratory Testing:
- Seismicity
- Geotechnical Design Parameters
- Structural Section
- Construction Recommendations

A final report will be issued addressing the comments; only one round of review and comments is scoped. After addressing any comments, final Phase 1 Final Design Geotechnical Investigation Report will be completed.

Deliverables – Draft and Final Phase 1 Final Design Geotechnical Investigation Reports

15.4. Phase 2 Final Geotechnical Evaluation

If necessary, CONSULTANT will perform Phase 2 Final Design geotechnical investigations and associated laboratory testing to develop geotechnical design recommendations.

The preliminary investigation will cover the entire roadway alignment. The final investigation includes the entire alignment except for the I-80 corridor. The I-80 corridor boundaries extends from the railroad tracks on the southside to the I-80 overpass north abutment.

Except for the I-80 north abutment area, field exploration for the I-80 corridor area is not included. This includes the existing center bent, on and off ramps, and south abutment. It is assumed that after the preliminary investigation has been completed, this area will be reevaluated including input from NDOT on further improvements. CONSULTANT will provide a revised proposal for this area after the new improvements have been determined; however, CONSULTANT assumes exploration at the I-80 southern abutment and center bent during the Phase 2 final investigation phase.

All field work within the Sparks Boulevard roadway area will occur during night time hours on weekdays, and daytime hours on weekends.

All explorations, completed by exploratory borings, will follow AASHTO guidelines, RTC Flexible Pavement Design Manual, 2007, and NDOT standards, where applicable.

It is anticipated that exploration will include:

- Phase 2 Final Design – six (6) exploratory borings to depths of 20 to 100 feet below the existing grade surface for a total of 420 lineal feet

Upon completion of field, laboratory, and office studies, an updated geotechnical investigation report will be completed for the project.

- Introduction, Site and Geologic conditions, and Laboratory Testing:
- Seismicity
- Geotechnical Design Parameters
- Structural Section
- Construction Recommendations

A final report will be issued addressing the comments; only one round of review and comments is scoped. After addressing any comments, final Phase 2 Final Design Geotechnical Investigation Report will be completed.

Deliverables – Draft and Final Phase 2 Final Design Geotechnical Investigation Reports

15.5. Preliminary Sound Wall Design

If needed as determined in Task 3.2.4, CONSULTANT will develop sound wall plans to a 50 Percent Design level of completion. At 50 Percent Design, sound wall plans will present enough information to define overall dimensions and ties to other discipline improvements. Reinforcing steel details may or may not be shown at this stage. CONSULTANT assumes one (1) continuous section for the entirety of the sound wall layout.

15.6. Right-of-Way Engineering Services

It is estimated up to two-hundred (200) parcels will require permanent and/or temporary easements and/or potentially partial fee takes to construct the planned improvements.

Upon completion of the 50 Percent Design CONSULTANT will present the proposed right-of-way needs to the RTC for concurrence. CONSULTANT will perform boundary surveying including preparation of full Metes and Bounds descriptions of two-hundred (200) individual parcels. This will include property record research, drafting of property boundaries from record descriptions, calculation of search coordinates for field boundary survey, field boundary survey on each affected parcel, post processing and reduction of field data, boundary resolution based upon field findings, preparation of legal descriptions and exhibit maps of individual affected parcels. CONSULTANT will obtain Title Reports and updates as required and will invoice the RTC for these items as reimbursable expenses.

Right-of-Way Appraisal, Property Owner Negotiations, Escrow Coordination and Title Clearance is not included within this task.

Deliverables – Property Boundary for 200 parcels, Exhibit Maps, Legal Descriptions.

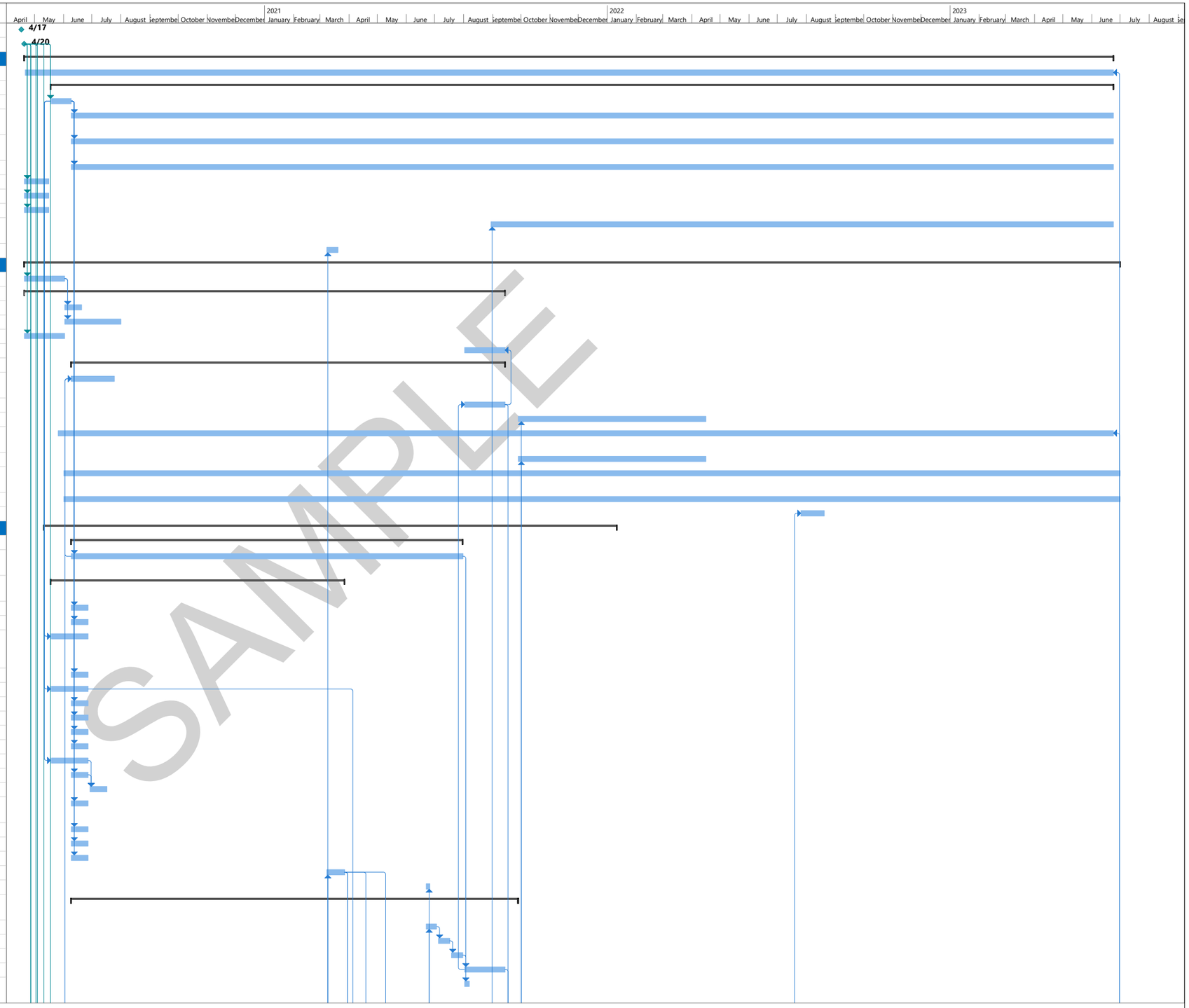
15.7. Sound Wall 90 Percent Design, 100 Percent Design, and Final Design

If needed as determined in Task 3.2.4, CONSULTANT will develop sound wall plans to a 90 Percent Design level of completion. For the 90 Percent Design submittal, CONSULTANT will respond to and incorporate comments from the 50 Percent Design submittal and develop final sound wall plans. Bill of material sheets will not be prepared for walls. Rather, quantities will be summarized in tables incorporated into selected detail sheets.

For the 100 Percent Design submittal, CONSULTANT will respond to and incorporate RTC, City of Sparks, and NDOT comments from the 90 Percent Design submittal, and advance the structure plans, quantities, and cost estimates in preparation for construction.

Exhibit A-2

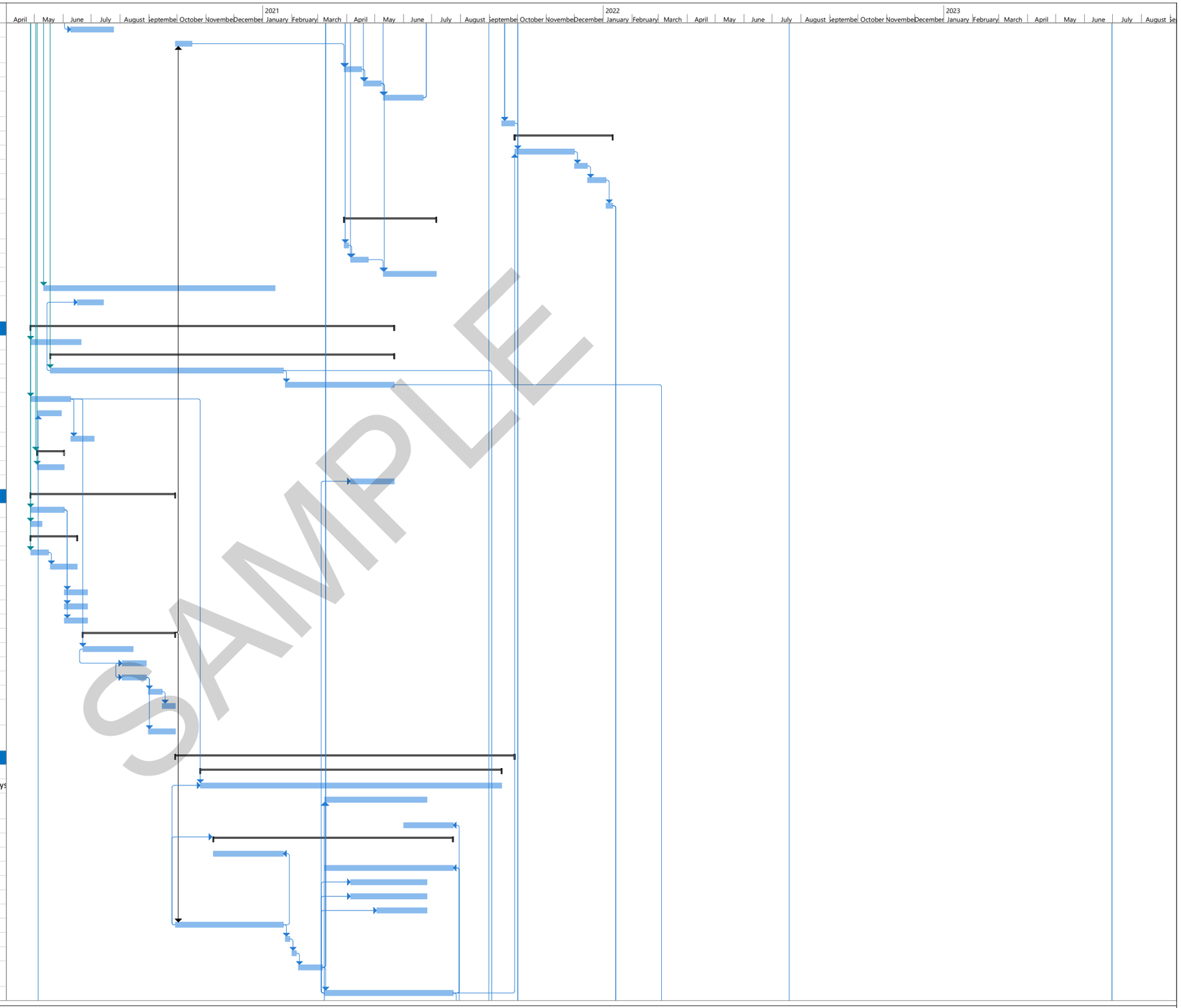
ID	Task Mode	WBS	Task Name	Duration	Start	Finish	Predecessors
1			RTC Board Approval	0 days	Fri 4/17/20	Fri 4/17/20	
2			Notice to Proceed (NTP)	0 days	Mon 4/20/20	Mon 4/20/20	
3		**1**	**Project Management**	**812 days**	**Mon 4/20/20**	**Fri 6/23/23**	
4		1.1	Team and Project Management	811 days	Tue 4/21/20	Fri 6/23/23	157FF
5		**1.2**	**Project Coordination and Meetings**	**792 days**	**Mon 5/18/20**	**Fri 6/23/23**	
6		1.2.1	Project Kickoff Meetings	15 days	Mon 5/18/20	Mon 6/8/20	2FS+20 days
7		1.2.2	Project Management Team Meetings	777 days	Tue 6/9/20	Fri 6/23/23	6
8		1.2.3	Internal Design Team Coordination Meetings	777 days	Tue 6/9/20	Fri 6/23/23	6
9		1.2.4	Misc. Coordination Meetings	777 days	Tue 6/9/20	Fri 6/23/23	6
10		1.3	Project Management Plan (PMP)	20 days	Mon 4/20/20	Fri 5/15/20	2
11		1.4	Quality Management Plan (QMP)	20 days	Mon 4/20/20	Fri 5/15/20	2
12		1.5	Design and NEPA Schedule	20 days	Mon 4/20/20	Fri 5/15/20	2
13		1.6	Constructability and Construction Schedules	465 days	Mon 8/30/21	Fri 6/23/23	120
14		1.7	Cost Risk Assessment (CRA)	10 days	Mon 3/8/21	Fri 3/19/21	117
15		**2**	**Public and Agency Involvement**	**817 days**	**Mon 4/20/20**	**Fri 6/30/23**	
16		2.1	Public Outreach and Involvement Plan	30 days	Mon 4/20/20	Mon 6/1/20	2
17		**2.2**	**Outreach Methods**	**357 days**	**Mon 4/20/20**	**Mon 9/13/21**	
18		2.2.1	Project Branding and Logo	14 days	Tue 6/2/20	Fri 6/19/20	16
19		2.2.2	Website/Social Media Outreach	44 days	Tue 6/2/20	Fri 7/31/20	16
20		2.2.3	Stakeholder Database	30 days	Mon 4/20/20	Mon 6/1/20	2
21		2.2.4	Collateral Material	30 days	Mon 8/2/21	Mon 9/13/21	24FF
22		**2.3**	**NEPA Outreach Requirements**	**322 days**	**Tue 6/9/20**	**Mon 9/13/21**	
23		2.3.1	Public and Resource Agency Scoping	34 days	Tue 6/9/20	Fri 7/24/20	33SS
24		2.3.2	Public Hearing (1 Day)	30 days	Mon 8/2/21	Mon 9/13/21	57SS
25		2.4	Additional Public Information Meetings	141 days	Tue 9/28/21	Fri 4/15/22	121
26		2.5	Technical Advisory Committee (TAC) Meetings	787 days	Tue 5/26/20	Fri 6/23/23	157FF
27		2.6	Individual Stakeholder Meetings	141 days	Tue 9/28/21	Fri 4/15/22	121
28		2.7	Regional Transportation Commission Board Meetings	788 days	Mon 6/1/20	Fri 6/30/23	
29		2.8	Sparks City Council Meetings	788 days	Mon 6/1/20	Fri 6/30/23	
30		2.9	Groundbreaking Event	19 days	Tue 7/26/22	Fri 8/19/22	142SS-44 days
31		**3**	**Environmental and Permitting**	**424 days**	**Mon 5/11/20**	**Mon 1/10/22**	
32		**3.1**	**NEPA Coordination**	**292 days**	**Tue 6/9/20**	**Fri 7/30/21**	
33		3.1.1	NDOT/FHWA/Resource Agency Update Meetings	292 days	Tue 6/9/20	Fri 7/30/21	6
34		**3.2**	**NEPA Data Collection, Field Investigation and Resource Analysis**	**218 days**	**Mon 5/18/20**	**Fri 3/26/21**	
35		3.2.1	Air Quality	14 days	Tue 6/9/20	Fri 6/26/20	6
36		3.2.2	Traffic	14 days	Tue 6/9/20	Fri 6/26/20	6
37		3.2.3	Biological Resources and Threatened & Endangered/Sensitive Species	29 days	Mon 5/18/20	Fri 6/26/20	6SS
38		3.2.4	Traffic Noise	14 days	Tue 6/9/20	Fri 6/26/20	6
39		3.2.5	Wetlands and Waters of the US	29 days	Mon 5/18/20	Fri 6/26/20	6SS
40		3.2.6	Energy Resources and Geology	14 days	Tue 6/9/20	Fri 6/26/20	6
41		3.2.7	Floodplains and Water Resources	14 days	Tue 6/9/20	Fri 6/26/20	6
42		3.2.8	Hazardous Materials	14 days	Tue 6/9/20	Fri 6/26/20	6
43		3.2.9	Land Use	14 days	Tue 6/9/20	Fri 6/26/20	6
44		3.2.10	Cultural Resources	29 days	Mon 5/18/20	Fri 6/26/20	6SS
45		3.2.11	Parks and Recreation	14 days	Tue 6/9/20	Fri 6/26/20	6
46		3.2.12	Secion 4(f)	14 days	Mon 6/29/20	Thu 7/16/20	44,45
47		3.2.13	Social and Economic Conditions, Including Environmental Justice	14 days	Tue 6/9/20	Fri 6/26/20	6
48		3.2.14	Visual Conditions	14 days	Tue 6/9/20	Fri 6/26/20	6
49		3.2.15	Cumulative and Indirect Impacts	14 days	Tue 6/9/20	Fri 6/26/20	6
50		3.2.16	Acquisitions and Relocations	14 days	Tue 6/9/20	Fri 6/26/20	6
51		3.2.17	Define Area of Impact	15 days	Mon 3/8/21	Fri 3/26/21	117
52		3.3	NEPA Class of Action Confirmation	4 days	Tue 6/22/21	Fri 6/25/21	63
53		**3.4**	**Environmental Assessment Preparation**	**332 days**	**Tue 6/9/20**	**Mon 9/27/21**	
54			EA Administrative Draft	9 days	Tue 6/22/21	Fri 7/2/21	63
55			EA Preliminary Draft	10 days	Mon 7/5/21	Fri 7/16/21	54
56			Final EA	10 days	Mon 7/19/21	Fri 7/30/21	55
57			30 Day Public Comment	30 days	Mon 8/2/21	Mon 9/13/21	56
58		3.4.1	NEPA Scoping (Document Comments)	5 days	Mon 8/2/21	Fri 8/6/21	33



Project: Sky Vista Schedule
Date: Tue 3/24/20

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Progress | Manual Progress

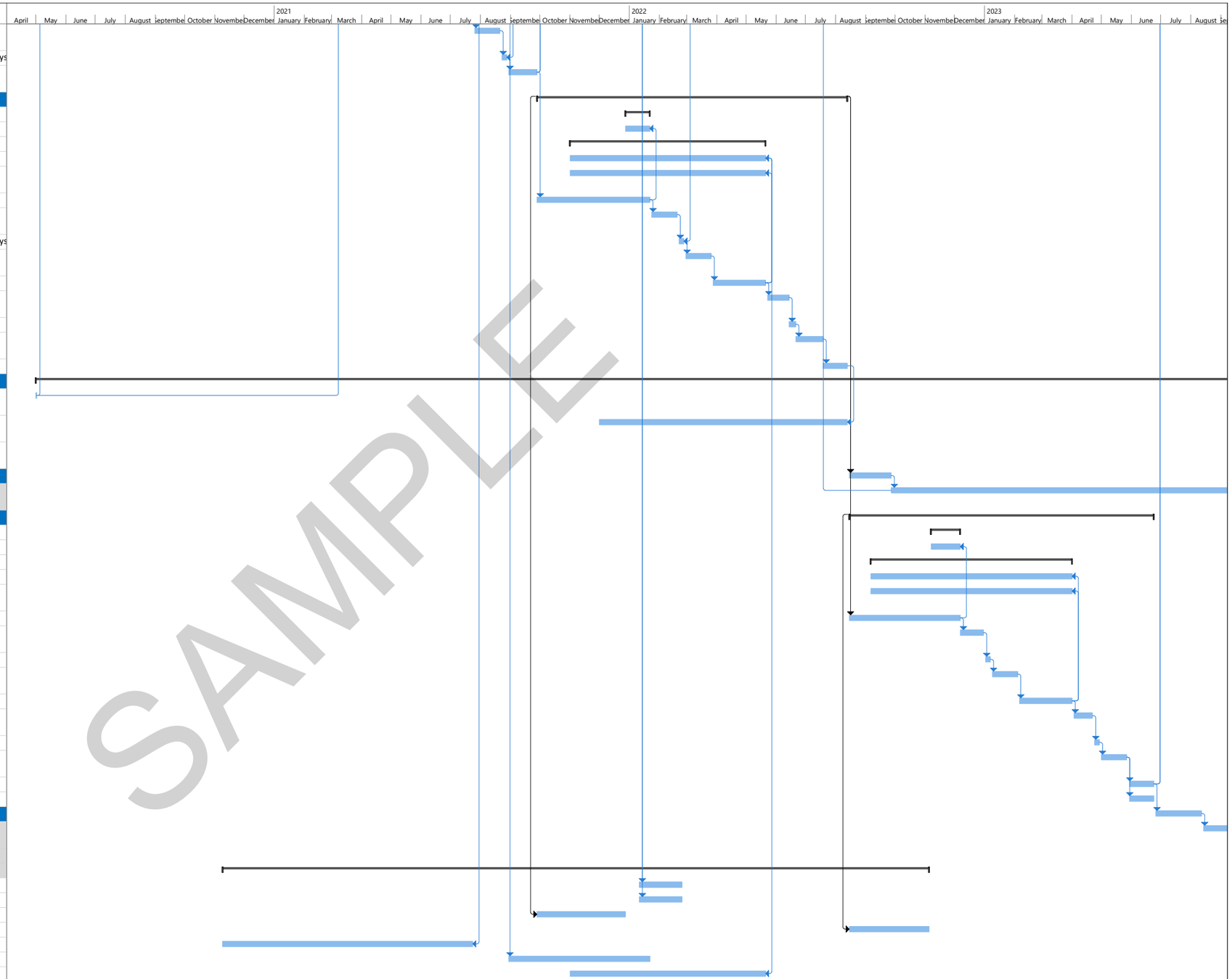
ID	Task Mode	WBS	Task Name	Duration	Start	Finish	Predecessors
59		3.4.2	Prepare Purpose and Need	34 days	Tue 6/9/20	Fri 7/24/20	23SS
60		3.4.3	Prepare the Description of Alternatives	14 days	Tue 9/29/20	Fri 10/16/20	96
61		3.4.4	Document Resources Not Affected	15 days	Mon 3/29/21	Fri 4/16/21	60,51
62		3.4.5	Document Resources Affected	15 days	Mon 4/19/21	Fri 5/7/21	61,51
63		3.4.6	Document Environmental Consequences	30 days	Mon 5/10/21	Mon 6/21/21	62,51
64		3.4.7	Response to Comments	10 days	Tue 9/14/21	Mon 9/27/21	24,57
65		**3.5**	**Decision Document (FONSI)**	**72 days**	**Tue 9/28/21**	**Mon 1/10/22**	
66			Draft FONSI	44 days	Tue 9/28/21	Tue 11/30/21	118,64
67			Review FONSI by RTC	10 days	Wed 12/1/21	Tue 12/14/21	66
68			Review FONSI by NDOT and Agencies	13 days	Wed 12/15/21	Mon 1/3/22	67
69			Publish FONSI	5 days	Tue 1/4/22	Mon 1/10/22	68
70		**3.6**	**U.S. Army Corps of Engineering Permitting and Coordination**	**70 days**	**Mon 3/29/21**	**Mon 7/5/21**	
71		3.6.1	Pre-Permit Meeting with the USACE	5 days	Mon 3/29/21	Fri 4/2/21	51
72		3.6.2	Wetland Delineation Report	15 days	Mon 4/5/21	Fri 4/23/21	71,39
73		3.6.3	Individual Permit Application	40 days	Mon 5/10/21	Mon 7/5/21	72,62
74		3.7	UPRR Permitting	171 days	Mon 5/11/20	Wed 1/13/21	2FS+15 days
75		3.8	NDOT Encroachment Permit for Geotech	20 days	Tue 6/16/20	Mon 7/13/20	79SS+20 days
76		**4**	**Investigation of Existing Conditions**	**273 days**	**Mon 4/27/20**	**Fri 5/21/21**	
77		4.1	Condition Survey	39 days	Mon 4/27/20	Fri 6/19/20	2FS+5 days
78		**4.2**	**Geotechnical Investigation**	**258 days**	**Mon 5/18/20**	**Fri 5/21/21**	
79			Draft Geotech Report	173 days	Mon 5/18/20	Fri 1/22/21	**2FS+20 days**
80			Final Geotech Report	85 days	Mon 1/25/21	Fri 5/21/21	79
81		4.3	Topographic Survey	30 days	Mon 4/27/20	Mon 6/8/20	2FS+5 days
82		4.4	North Truckee Drain Supplemental Survey	19 days	Mon 5/4/20	Fri 5/29/20	138
83		4.5	Right-of-Way Mapping	19 days	Tue 6/9/20	Fri 7/3/20	81
84		**4.6**	**Subsurface Utilities**	**20 days**	**Mon 5/4/20**	**Mon 6/1/20**	**2FS+7 days**
85		4.6.1	Kinder Morgan Coordination	20 days	Mon 5/4/20	Mon 6/1/20	2FS+10 days
86		4.7	Utility Potholing	35 days	Mon 4/5/21	Fri 5/21/21	118SS+20 days
87		**5**	**Preliminary Studies**	**109 days**	**Mon 4/27/20**	**Mon 9/28/20**	
88		5.1	Data Collection	25 days	Mon 4/27/20	Mon 6/1/20	2FS+5 days
89		5.2	Design Criteria	10 days	Mon 4/27/20	Fri 5/8/20	2FS+5 days
90		**5.3**	**Traffic Volume Verification**	**35 days**	**Mon 4/27/20**	**Mon 6/15/20**	
91		5.3.1	Data Collection	15 days	Mon 4/27/20	Fri 5/15/20	2FS+5 days
92		5.3.2	Forecast Verification, Update and Intersection Analysis	20 days	Mon 5/18/20	Mon 6/15/20	91
93		5.4	Access Management	19 days	Tue 6/2/20	Fri 6/26/20	88
94		5.5	Safety Assessment	19 days	Tue 6/2/20	Fri 6/26/20	88
95		5.6	Multimodal Connectivity Assessment	19 days	Tue 6/2/20	Fri 6/26/20	88
96		**5.7**	**Alternative Development**	**70 days**	**Mon 6/22/20**	**Mon 9/28/20**	
97			Develop Alternatives	40 days	Mon 6/22/20	Fri 8/14/20	81FS+9 days
98			Screen Alternatives	20 days	Mon 8/3/20	Fri 8/28/20	97SS+30 days
99			Corridor Study Workshop (6 hr)	20 days	Mon 8/3/20	Fri 8/28/20	98SS
100			Define the Preferred Alternative	10 days	Mon 8/31/20	Mon 9/14/20	99
101			Review Preferred Alternative with Agencies	10 days	Tue 9/15/20	Mon 9/28/20	100
102			Document Alternative Selection with Tech Memo	20 days	Mon 8/31/20	Mon 9/28/20	99
103		**6**	**Preliminary Design**	**253 days**	**Tue 9/29/20**	**Mon 9/27/21**	
104		**6.1**	**Drainage Analysis**	**224 days**	**Mon 10/26/20**	**Mon 9/13/21**	
105			Onsite and Offsite Analysis	224 days	Mon 10/26/20	Mon 9/13/21	81,114SS+19 days
106			North Truckee Drain Modeling (Initial)	79 days	Mon 3/8/21	Fri 6/25/21	138,117
107		6.1.1	Draft Technical Drainage Report	39 days	Tue 6/1/21	Fri 7/23/21	118FF
108		**6.2**	**Structural Design**	**179 days**	**Mon 11/9/20**	**Fri 7/23/21**	**114SS+20 days**
109		6.2.1	30% Design	50 days	Mon 11/9/20	Fri 1/22/21	114FF
110		6.2.2	50% Design	99 days	Mon 3/8/21	Fri 7/23/21	118FF
111		6.3	Lighting and Electrical Design	59 days	Mon 4/5/21	Fri 6/25/21	118SS+20 days
112		6.4	ITS Design	59 days	Mon 4/5/21	Fri 6/25/21	118SS+20 days
113		6.5	Landscape and Aesthetics	39 days	Mon 5/3/21	Fri 6/25/21	118SS+40 days
114		6.6	30% Design	79 days	Tue 9/29/20	Fri 1/22/21	96
115		6.7	30% Cost Estimate	5 days	Mon 1/25/21	Fri 1/29/21	114
116		6.8	30% Design Submittal	5 days	Mon 2/1/21	Fri 2/5/21	115
117		6.9	30% Design Review Comment Resolution	20 days	Mon 2/8/21	Fri 3/5/21	116
118		6.10	50% Design	99 days	Mon 3/8/21	Fri 7/23/21	117



Project: Sky Vista Schedule
Date: Tue 3/24/20

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Progress | Manual Progress

ID	Task Mode	WBS	Task Name	Duration	Start	Finish	Predecessors
119		6.11	Cost Estimate and Technical Specification Outline	20 days	Mon 7/26/21	Fri 8/20/21	118
120		6.12	50% Design Submittal	5 days	Mon 8/23/21	Fri 8/27/21	119,79FF+20 days
121		6.13	50% Design Review Comment Resolution	20 days	Mon 8/30/21	Mon 9/27/21	120
122		**7**	**Phase 1 Final Design**	**224 days**	**Tue 9/28/21**	**Fri 8/12/22**	
123		**7.1**	**Drainage Analysis**	**19 days**	**Tue 12/28/21**	**Fri 1/21/22**	
124		7.1.1	Final Technical Drainage Report	19 days	Tue 12/28/21	Fri 1/21/22	128FF
125		**7.2**	**Structural Design**	**142 days**	**Mon 11/1/21**	**Fri 5/20/22**	
126		7.2.1	90%, 100%, and Final Design	142 days	Mon 11/1/21	Fri 5/20/22	132FF
127		7.3	Lighting and Electrical, ITS, Landscape and Aesthetics Design	142 days	Mon 11/1/21	Fri 5/20/22	132FF
128		7.4	90% Design	81 days	Tue 9/28/21	Fri 1/21/22	121
129		7.5	Conctructability, Cost Estimate, and Technical Specification Review	20 days	Mon 1/24/22	Fri 2/18/22	128
130		7.6	90% Design Submittal	5 days	Mon 2/21/22	Fri 2/25/22	129,80FF+20 days
131		7.7	90% Design Review Comment Resolution	20 days	Mon 2/28/22	Fri 3/25/22	130
132		7.8	100% Design	40 days	Mon 3/28/22	Fri 5/20/22	131
133		7.9	100% Cost Estimate and Technical Specifications	15 days	Mon 5/23/22	Mon 6/13/22	132
134		7.10	100% Design Submittal	5 days	Tue 6/14/22	Mon 6/20/22	133
135		7.11	100% Design Review Comment Resolution	19 days	Tue 6/21/22	Mon 7/18/22	134
136		7.12	Final Design	19 days	Tue 7/19/22	Fri 8/12/22	135
137		**8**	**CLOMR & LOMR**	**1197 days**	**Fri 5/1/20**	**Fri 1/3/25**	
138			Ex Cond North Truckee Drain Model (TRFMA and HDR)	1 day	Fri 5/1/20	Fri 5/1/20	
139			CLOMR, MT-2 Forms, Report, FEMA Q&A Support	180 days	Wed 12/1/21	Fri 8/12/22	136FF
140			LOMR, As-built model, Report, FEMA Q&A	100 days	Mon 8/19/24	Fri 1/3/25	160
141		9	Phase 1 Bidding Services	30 days	Mon 8/15/22	Mon 9/26/22	122
142		10	Phase 1 Design Services During Construction (Optional - Not Included)	259 days	Tue 9/27/22	Fri 9/29/23	141
143		**11**	**Phase 2 Final Design**	**221 days**	**Mon 8/15/22**	**Fri 6/23/23**	
144		**11.1**	**Drainage Analysis**	**20 days**	**Mon 11/7/22**	**Tue 12/6/22**	
145		11.1.1	Final Technical Drainage Report	20 days	Mon 11/7/22	Tue 12/6/22	149FF
146		**11.2**	**Structural Design**	**147 days**	**Tue 9/6/22**	**Fri 3/31/23**	
147		11.2.1	90%, 100%, and Final Design	147 days	Tue 9/6/22	Fri 3/31/23	153FF
148		11.3	Lighting and Electrical, ITS, Landscape and Aesthetics Design	147 days	Tue 9/6/22	Fri 3/31/23	153FF
149		11.4	90% Design	79 days	Mon 8/15/22	Tue 12/6/22	122
150		11.5	90% Cost Estimate and Technical Specificatinos	18 days	Wed 12/7/22	Fri 12/30/22	149
151		11.6	90% Design Submittal	5 days	Mon 1/2/23	Fri 1/6/23	150
152		11.7	90% Design Review Comment Resolution	20 days	Mon 1/9/23	Fri 2/3/23	151
153		11.8	100% Design	40 days	Mon 2/6/23	Fri 3/31/23	152
154		11.9	100% Cost Estimate and Technical Specifications	15 days	Mon 4/3/23	Fri 4/21/23	153
155		11.10	100% Design Submittal	5 days	Mon 4/24/23	Fri 4/28/23	154
156		11.11	100% Design Review Comment Resolution	20 days	Mon 5/1/23	Fri 5/26/23	155
157		11.12	Final Design	19 days	Tue 5/30/23	Fri 6/23/23	156
158		11.13	NDOT Encroachment Permit	19 days	Tue 5/30/23	Fri 6/23/23	156
159		12	Phase 2 Bidding Services	34 days	Mon 6/26/23	Fri 8/11/23	157
160		13	Phase 2 Design Serices During Construction (Optional - Not Included)	260 days	Mon 8/14/23	Fri 8/16/24	159
161		14	Design Contingency				
162		**15**	**Miscelaneous Services (Optional)**	**507 days**	**Mon 11/9/20**	**Fri 11/4/22**	
163		15.1	Photographic Renderings	32 days	Tue 1/11/22	Wed 2/23/22	69
164		15.2	Video Simulations	32 days	Tue 1/11/22	Wed 2/23/22	69
165		15.3	Phase 1 Final Geotechnical Evaluation	62 days	Tue 9/28/21	Mon 12/27/21	122SS
166		15.4	Phase 2 Final Geotechnical Evaluation	59 days	Mon 8/15/22	Fri 11/4/22	143SS
167		15.5	Preliminary Sound Wall Design	179 days	Mon 11/9/20	Fri 7/23/21	110FF
168		15.6	Right-of-Way Engineering Services	101 days	Mon 8/30/21	Fri 1/21/22	120
169		15.7	Sound Wall 90% Design, 100% Design, and Final Design	142 days	Mon 11/1/21	Fri 5/20/22	126FF



Project: Sky Vista Schedule
Date: Tue 3/24/20

Task | Milestone | Project Summary | Inactive Milestone | Manual Task | Manual Summary Rollup | Start-only | External Tasks | Deadline | Manual Progress
Split | Summary | Inactive Task | Inactive Summary | Duration-only | Manual Summary | Finish-only | External Milestone | Progress

Exhibit B

Compensation

Exhibit B-2 Fee Summary - RTC20-10 Sparks Boulevard Capacity Project

			Summary												
Task No.	Item No.	Task	Atkins Hours	Atkins Labor	Atkins Expense	Atkins	CA Group Hours	CA Group Expense	CA Group	CME	PK Electrical	KCI	Aerotech	Total Hours	Total Subs	Total Price
1	**1**	**Project Management**	3868	$844,418	$1,000	$845,418	700	$0	$174,720	$0	$0	$0	$0	4568	$174,720	$1,020,137.60
	1.1	Team and Project Management	1443	$335,026	$1,000	$336,026	312	$0	$77,875	$0	$0	$0	$0	1755	$77,875	$413,900.80
	1.2	Project Coordination and Meetings	312	$77,875	$0	$77,875	0	$0	$0	$0	$0	$0	$0	312	$0	$77,875.20
	1.2.1	Project Kickoff Meetings	32	$5,886	$0	$5,886	8	$0	$1,997	$0	$0	$0	$0	40	$1,997	$7,883.20
	1.2.2	Project Management Team Meetings	548	$114,067	$0	$114,067	156	$0	$38,938	$0	$0	$0	$0	704	$38,938	$153,004.80
	1.2.3	Internal Design Team Coordination Meetings	592	$109,325	$0	$109,325	156	$0	$38,938	$0	$0	$0	$0	748	$38,938	$148,262.40
	1.2.4	Misc. Coordination Meetings	300	$67,392	$0	$67,392	60	$0	$14,976	$0	$0	$0	$0	360	$14,976	$82,368.00
	1.3	Project Management Plan (PMP)	48	$10,670	$0	$10,670	0	$0	$0	$0	$0	$0	$0	48	$0	$10,670.40
	1.4	Quality Management Plan (QMP)	36	$8,320	$0	$8,320	0	$0	$0	$0	$0	$0	$0	36	$0	$8,320.00
	1.5	Design and NEPA Schedule	145	$36,192	$0	$36,192	8	$0	$1,997	$0	$0	$0	$0	153	$1,997	$38,188.80
	1.6	Constructability and Construction Schedules	256	$43,680	$0	$43,680	0	$0	$0	$0	$0	$0	$0	256	$0	$43,680.00
	1.7	Cost Risk Assessment (CRA)	156	$35,984	$0	$35,984	0	$0	$0	$0	$0	$0	$0	156	$0	$35,984.00
2	**2**	**Public and Agency Involvement**	1436	$185,650	$1,550	$187,200	52	$0	$12,147	$0	$0	$0	$0	1488	$12,147	$199,347.60
	2.1	Public Outreach and Involvement Plan	72	$8,299	$100	$8,399	0	$0	$0	$0	$0	$0	$0	72	$0	$8,399.20
	2.2	Outreach Methods	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	2.2.1	Project Branding and Logo	58	$5,450	$0	$5,450	0	$0	$0	$0	$0	$0	$0	58	$0	$5,449.60
	2.2.2	Website/Social Media Outreach	200	$18,002	$0	$18,002	0	$0	$0	$0	$0	$0	$0	200	$0	$18,002.40
	2.2.3	Stakeholder Database	52	$4,597	$0	$4,597	0	$0	$0	$0	$0	$0	$0	52	$0	$4,596.80
	2.2.4	Collateral Material	72	$7,654	$0	$7,654	0	$0	$0	$0	$0	$0	$0	72	$0	$7,654.40
	2.3	NEPA Outreach Requirements	0	$0	$500	$500	0	$0	$0	$0	$0	$0	$0	0	$0	$500.00
	2.3.1	Public and Resource Agency Scoping	132	$16,474	$0	$16,474	8	$0	$1,789	$0	$0	$0	$0	140	$1,789	$18,262.40
	2.3.2	Public Hearing	132	$16,474	$0	$16,474	8	$0	$1,789	$0	$0	$0	$0	140	$1,789	$18,262.40
	2.4	Additional Public Information Meetings	192	$20,717	$250	$20,967	16	$0	$3,578	$0	$0	$0	$0	208	$3,578	$24,544.40
	2.5	Technical Advisory Committee (TAC) Meetings	242	$41,434	$250	$41,684	16	$0	$3,994	$0	$0	$0	$0	258	$3,994	$45,677.20
	2.6	Individual Stakeholder Meetings	200	$32,032	$250	$32,282	0	$0	$0	$0	$0	$0	$0	200	$0	$32,282.00
	2.7	Regional Transportation Commission Board Meetings	20	$4,992	$100	$5,092	0	$0	$0	$0	$0	$0	$0	20	$0	$5,092.00
	2.8	Sparks City Council Meetings	12	$2,995	$100	$3,095	0	$0	$0	$0	$0	$0	$0	12	$0	$3,095.20
	2.9	Groundbreaking Event	52	$6,531	$0	$6,531	4	$0	$998	$0	$0	$0	$0	56	$998	$7,529.60
3	**3**	**Environmental and Permitting**	5745	$908,414	$14,850	$923,264	8	$0	$1,997	$0	$0	$0	$0	5753	$1,997	$925,260.80
	3.1	NEPA Coordination	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	3.1.1	NDOT/FHWA/Resource Agency Update Meetings	144	$21,528	$0	$21,528	0	$0	$0	$0	$0	$0	$0	144	$0	$21,528.00
	3.2	NEPA Data Collection, Field Investigation and Resource Analysis	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	3.2.1	Air Quality	98	$15,631	$0	$15,631	0	$0	$0	$0	$0	$0	$0	98	$0	$15,631.20
	3.2.2	Traffic	80	$12,511	$0	$12,511	0	$0	$0	$0	$0	$0	$0	80	$0	$12,511.20
	3.2.3	Biological Resources and Threatened & Endangered/Sensitive Species	202	$28,818	$0	$28,818	0	$0	$0	$0	$0	$0	$0	202	$0	$28,818.40
	3.2.4	Traffic Noise	264	$40,394	$0	$40,394	0	$0	$0	$0	$0	$0	$0	264	$0	$40,393.60
	3.2.5	Wetlands and Waters of the US	200	$31,231	$0	$31,231	0	$0	$0	$0	$0	$0	$0	200	$0	$31,231.20
	3.2.6	Energy Resources and Geology	60	$9,454	$0	$9,454	0	$0	$0	$0	$0	$0	$0	60	$0	$9,453.60
	3.2.7	Floodplains and Water Resources	68	$13,634	$0	$13,634	0	$0	$0	$0	$0	$0	$0	68	$0	$13,634.40
	3.2.8	Hazardous Materials	84	$12,449	$0	$12,449	0	$0	$0	$0	$0	$0	$0	84	$0	$12,448.80
	3.2.9	Land Use	72	$11,388	$0	$11,388	0	$0	$0	$0	$0	$0	$0	72	$0	$11,388.00
	3.2.10	Cultural Resources	240	$34,954	$0	$34,954	0	$0	$0	$0	$0	$0	$0	240	$0	$34,954.40
	3.2.11	Parks and Recreation	64	$10,265	$0	$10,265	0	$0	$0	$0	$0	$0	$0	64	$0	$10,264.80
	3.2.12	Section 4(f)	88	$14,758	$0	$14,758	0	$0	$0	$0	$0	$0	$0	88	$0	$14,757.60

Exhibit B-2 Fee Summary - RTC20-10 Sparks Boulevard Capacity Project

			Summary													
Task No.	Item No.	Task	Atkins Hours	Atkins Labor	Atkins Expense	Atkins	CA Group Hours	CA Group Expense	CA Group	CME	PK Electrical	KCI	Aerotech	Total Hours	Total Subs	Total Price
	3.2.13	Social and Economic Conditions, Including Environmental Justice	76	$11,950	$0	$11,950	0	$0	$0	$0	$0	$0	$0	76	$0	$11,949.60
	3.2.14	Visual Conditions	106	$17,742	$0	$17,742	0	$0	$0	$0	$0	$0	$0	106	$0	$17,742.40
	3.2.15	Cumulative and Indirect Impacts	80	$12,698	$0	$12,698	0	$0	$0	$0	$0	$0	$0	80	$0	$12,698.40
	3.2.16	Acquisitions and Relocations	64	$10,265	$0	$10,265	0	$0	$0	$0	$0	$0	$0	64	$0	$10,264.80
	3.2.17	Define Area of Impact	144	$23,338	$0	$23,338	0	$0	$0	$0	$0	$0	$0	144	$0	$23,337.60
	3.3	NEPA Class of Action Confirmation	30	$5,283	$0	$5,283	0	$0	$0	$0	$0	$0	$0	30	$0	$5,283.20
	3.4	Environmental Assessment Preparation	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
		EA Administrative Draft	144	$22,610	$0	$22,610	0	$0	$0	$0	$0	$0	$0	144	$0	$22,609.60
		EA Preliminary Draft	156	$25,646	$0	$25,646	0	$0	$0	$0	$0	$0	$0	156	$0	$25,646.40
		Final EA	156	$25,646	$0	$25,646	0	$0	$0	$0	$0	$0	$0	156	$0	$25,646.40
	3.4.1	NEPA Scoping	22	$3,224	$0	$3,224	0	$0	$0	$0	$0	$0	$0	22	$0	$3,224.00
	3.4.2	Prepare Purpose and Need	108	$15,517	$0	$15,517	0	$0	$0	$0	$0	$0	$0	108	$0	$15,516.80
	3.4.3	Prepare the Description of Alternatives	566	$80,486	$0	$80,486	0	$0	$0	$0	$0	$0	$0	566	$0	$80,485.60
	3.4.4	Document Resources Not Affected	158	$23,473	$0	$23,473	0	$0	$0	$0	$0	$0	$0	158	$0	$23,472.80
	3.4.5	Document Resources Affected	477	$71,048	$0	$71,048	0	$0	$0	$0	$0	$0	$0	477	$0	$71,047.60
	3.4.6	Document Environmental Consequences	526	$79,238	$0	$79,238	0	$0	$0	$0	$0	$0	$0	526	$0	$79,237.60
	3.4.7	Response to Comments	270	$41,506	$0	$41,506	0	$0	$0	$0	$0	$0	$0	270	$0	$41,506.40
	3.5	Decision Document (FONSI)	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
		FONSI Administrative Draft	264	$48,506	$0	$48,506	0	$0	$0	$0	$0	$0	$0	264	$0	$48,505.60
		FONSI Preliminary Draft	184	$35,506	$0	$35,506	0	$0	$0	$0	$0	$0	$0	184	$0	$35,505.60
		Final FONSI	184	$35,506	$0	$35,506	0	$0	$0	$0	$0	$0	$0	184	$0	$35,505.60
	3.6	U.S. Army Corps of Engineering Permitting and Coordination	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	3.6.1	Pre-Permit Meeting with the USACE	68	$10,369	$0	$10,369	0	$0	$0	$0	$0	$0	$0	68	$0	$10,368.80
	3.6.2	Wetland Delineation Report	78	$12,563	$0	$12,563	0	$0	$0	$0	$0	$0	$0	78	$0	$12,563.20
	3.6.3	Individual Permit Application	114	$18,356	$0	$18,356	0	$0	$0	$0	$0	$0	$0	114	$0	$18,356.00
	3.7	UPRR Permitting	50	$10,483	$14,800	$25,283	0	$0	$0	$0	$0	$0	$0	50	$0	$25,283.20
	3.8	NDOT Encroachment Permit	56	$10,442	$50	$10,492	8	$0	$1,997	$0	$0	$0	$0	64	$1,997	$12,488.40
4	**4**	**Investigation of Existing Conditions**	1114	$173,420	$500	$173,920	36	$0	$6,958	$614,250	$0	$122,254	$24,300	1150	$767,762	$941,681.60
	4.1	Condition Survey	60	$12,262	$500	$12,762	36	$0	$6,958	$0	$0	$0	$0	96	$6,958	$19,719.20
	4.2	Geotechnical Investigation	8	$1,997	$0	$1,997	0	$0	$0	$614,250	$0	$0	$0	8	$614,250	$616,246.80
	4.3	Topographic Survey	328	$58,282	$0	$58,282	0	$0	$0	$0	$0	$0	$24,300	328	$24,300	$82,581.60
	4.4	North Truckee Drain Supplemental Survey	152	$22,630	$0	$22,630	0	$0	$0	$0	$0	$0	$0	152	$0	$22,630.40
	4.5	Right of Way Mapping	440	$57,824	$0	$57,824	0	$0	$0	$0	$0	$0	$0	440	$0	$57,824.00
	4.6	Subsurface Utilities	56	$7,821	$0	$7,821	0	$0	$0	$0	$0	$0	$0	56	$0	$7,820.80
	4.6.1	Kinder Morgan Coordination	22	$3,744	$0	$3,744	0	$0	$0	$0	$0	$0	$0	22	$0	$3,744.00
	4.7	Utility Potholing	48	$8,861	$0	$8,861	0	$0	$0	$0	$0	$122,254	$0	48	$122,254	$131,114.80
5	**5**	**Preliminary Studies**	932	$173,222	$500	$173,722	752	$0	$112,258	$0	$0	$0	$0	1684	$112,258	$285,980.00
	5.1	Data Collection	34	$5,283	$0	$5,283	0	$0	$0	$0	$0	$0	$0	34	$0	$5,283.20
	5.2	Design Criteria	64	$10,483	$0	$10,483	0	$0	$0	$0	$0	$0	$0	64	$0	$10,483.20
	5.3	Traffic Volume Verification	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	5.3.1	Data Collection	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	5.3.2	Forecast Verification, Update and Intersection Analysis	20	$4,160	$0	$4,160	204	$0	$29,078	$0	$0	$0	$0	224	$29,078	$33,238.40
	5.4	Access Management	16	$3,578	$0	$3,578	76	$0	$10,858	$0	$0	$0	$0	92	$10,858	$14,435.20
	5.5	Safety Assessment	16	$3,578	$0	$3,578	98	$0	$13,562	$0	$0	$0	$0	114	$13,562	$17,139.20
	5.6	Multimodal Connectivity Assessment	16	$3,578	$0	$3,578	30	$0	$3,806	$0	$0	$0	$0	46	$3,806	$7,384.00
	5.7	Alternative Development	0	$0	$500	$500	0	$0	$0	$0	$0	$0	$0	0	$0	$500.00
		Develop Alternatives	496	$88,192	$0	$88,192	304	$0	$45,594	$0	$0	$0	$0	800	$45,594	$133,785.60
		Screen Alternatives	152	$29,786	$0	$29,786	16	$0	$3,994	$0	$0	$0	$0	168	$3,994	$33,779.20
		Corridor Study Workshop (6 hr)	48	$10,858	$0	$10,858	16	$0	$3,578	$0	$0	$0	$0	64	$3,578	$14,435.20

Exhibit B-2 Fee Summary - RTC20-10 Sparks Boulevard Capacity Project

			Summary													
Task No.	Item No.	Task	Atkins Hours	Atkins Labor	Atkins Expense	Atkins	CA Group Hours	CA Group Expense	CA Group	CME	PK Electrical	KCI	Aerotech	Total Hours	Total Subs	Total Price
		Define the Preferred Alternative	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
		Document Alternative Selection with Tech Memo	70	$13,728	$0	$13,728	8	$0	$1,789	$0	$0	$0	$0	78	$1,789	$15,516.80
6	**6**	**Preliminary Design**	9232	$1,429,542	$200	$1,429,742	2232	$0	$320,362	$0	$22,500	$0	$0	11464	$342,862	$1,772,604.00
	6.1	Drainage Analysis	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
		Onsite and Offsite Analysis	454	$66,238	$0	$66,238	0	$0	$0	$0	$0	$0	$0	454	$0	$66,237.60
		North Truckee Drain Modeling (Initial)	408	$66,394	$0	$66,394	0	$0	$0	$0	$0	$0	$0	408	$0	$66,393.60
	6.1.1	Draft Technical Drainage Report	154	$23,712	$0	$23,712	0	$0	$0	$0	$0	$0	$0	154	$0	$23,712.00
	6.2	Structural Design	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	6.2.1	30% Design	400	$65,936	$0	$65,936	0	$0	$0	$0	$0	$0	$0	400	$0	$65,936.00
	6.2.2	50% Design	3740	$594,464	$0	$594,464	0	$0	$0	$0	$0	$0	$0	3740	$0	$594,464.00
	6.3	Lighting and Electrical Design	18	$2,787	$0	$2,787	0	$0	$0	$0	$22,500	$0	$0	18	$22,500	$25,287.20
	6.4	ITS Design	146	$21,164	$0	$21,164	0	$0	$0	$0	$0	$0	$0	146	$0	$21,164.00
	6.5	Landscape and Aesthetics	192	$22,880	$0	$22,880	0	$0	$0	$0	$0	$0	$0	192	$0	$22,880.00
	6.6	30% Design	1424	$213,990	$0	$213,990	840	$0	$118,664	$0	$0	$0	$0	2264	$118,664	$332,654.40
	6.7	30% Cost Estimate	40	$6,822	$0	$6,822	92	$0	$12,771	$0	$0	$0	$0	132	$12,771	$19,593.60
	6.8	30% Design Submittal	42	$7,114	$100	$7,214	24	$0	$3,994	$0	$0	$0	$0	66	$3,994	$11,207.20
	6.9	30% Design Review Comment Resolution	32	$5,075	$0	$5,075	36	$0	$5,949	$0	$0	$0	$0	68	$5,949	$11,024.00
	6.1	50% Design	1936	$289,203	$0	$289,203	1080	$0	$154,024	$0	$0	$0	$0	3016	$154,024	$443,227.20
	6.11	50% Cost Estimate and Technical Specification Outline	160	$29,286	$0	$29,286	96	$0	$14,227	$0	$0	$0	$0	256	$14,227	$43,513.60
	6.12	50% Design Submittal	42	$7,114	$100	$7,214	28	$0	$4,555	$0	$0	$0	$0	70	$4,555	$11,768.80
	6.13	50% Design Review Comment Resolution	44	$7,363	$0	$7,363	36	$0	$6,178	$0	$0	$0	$0	80	$6,178	$13,540.80
7	**7**	**Phase 1 Final Design**	7400	$1,074,975	$300	$1,075,275	0	$0	$0	$0	$45,000	$0	$0	7400	$45,000	$1,120,275.20
	7.1	Drainage Analysis	188	$26,707	$0	$26,707	0	$0	$0	$0	$0	$0	$0	188	$0	$26,707.20
	7.1.1	Final Technical Drainage Report	46	$7,613	$0	$7,613	0	$0	$0	$0	$0	$0	$0	46	$0	$7,612.80
	7.2	Structural Design	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	7.2.1	90%, 100%, and Final Design	1240	$191,984	$0	$191,984	0	$0	$0	$0	$0	$0	$0	1240	$0	$191,984.00
	7.3	Lighting and Electrical, ITS, Landscape and Aesthetics Design	1588	$202,218	$0	$202,218	0	$0	$0	$0	$45,000	$0	$0	1588	$45,000	$247,217.60
	7.4	90% Design	2568	$363,750	$100	$363,850	0	$0	$0	$0	$0	$0	$0	2568	$0	$363,850.40
	7.5	90% Cost Estimate and Technical Specifications	248	$49,171	$0	$49,171	0	$0	$0	$0	$0	$0	$0	248	$0	$49,171.20
	7.6	90% Design Submittal	42	$7,114	$0	$7,114	0	$0	$0	$0	$0	$0	$0	42	$0	$7,113.60
	7.7	90% Design Review Comment Resolution	44	$7,363	$0	$7,363	0	$0	$0	$0	$0	$0	$0	44	$0	$7,363.20
	7.8	100% Design	1096	$160,243	$100	$160,343	0	$0	$0	$0	$0	$0	$0	1096	$0	$160,343.20
	7.10	100% Cost Estimate and Technical Specifications	136	$26,250	$0	$26,250	0	$0	$0	$0	$0	$0	$0	136	$0	$26,249.60
	7.9	100% Design Submittal	42	$7,114	$0	$7,114	0	$0	$0	$0	$0	$0	$0	42	$0	$7,113.60
	7.11	100% Design Review Comment Resolution	46	$7,686	$0	$7,686	0	$0	$0	$0	$0	$0	$0	46	$0	$7,685.60
	7.12	Final Design	116	$17,763	$100	$17,863	0	$0	$0	$0	$0	$0	$0	116	$0	$17,863.20
8	**8**	**CLOMR & LOMR**	312	$55,411	$15,000	$70,411	0	$0	$0	$0	$0	$0	$0	312	$0	$70,411.20
		Ex Cond North Truckee Drain Model (TRFMA and HDR)	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
		CLOMR, MT-2 Forms, Report, FEMA Q&A Support	184	$32,448	$6,750	$39,198	0	$0	$0	$0	$0	$0	$0	184	$0	$39,198.00
		LOMR, As-built model, Report, FEMA Q&A	128	$22,963	$8,250	$31,213	0	$0	$0	$0	$0	$0	$0	128	$0	$31,213.20
9	**9**	**Phase 1 Bidding Services**	88	$16,973	$100	$17,073	0	$0	$0	$0	$0	$0	$0	88	$0	$17,072.80
		Phase 1 Bidding Services	88	$16,973	$100	$17,073	0	$0	$0	$0	$0	$0	$0	88	$0	$17,072.80
10	**10**	**Phase 1 Design Services During Construction (Optional)**	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
		Phase 1 Design Services During Construction (Optional)	TBD	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	TBD	$0	$0.00
11	**11**	**Phase 2 Final Design**	4444	$713,066	$350	$713,416	2754	$0	$372,715	$0	$22,500	$0	$0	7198	$395,215	$1,108,630.80

Exhibit B-2 Fee Summary - RTC20-10 Sparks Boulevard Capacity Project

			Summary													
Task No.	Item No.	Task	Atkins Hours	Atkins Labor	Atkins Expense	Atkins	CA Group Hours	CA Group Expense	CA Group	CME	PK Electrical	KCI	Aerotech	Total Hours	Total Subs	Total Price
	11.1	Drainage Analysis	188	$26,707	$0	$26,707	0	$0	$0	$0	$0	$0	$0	188	$0	$26,707.20
	11.1.1	Final Technical Drainage Report	46	$7,613	$0	$7,613	0	$0	$0	$0	$0	$0	$0	46	$0	$7,612.80
	11.2	Structural Design	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
	11.2.1	90%, 100%, and Final Design	2520	$411,632	$0	$411,632	0	$0	$0	$0	$0	$0	$0	2520	$0	$411,632.00
	11.3	Lighting and Electrical, ITS, Landscape and Aesthetics Design	508	$62,650	$0	$62,650	0	$0	$0	$0	$22,500	$0	$0	508	$22,500	$85,149.60
	11.4	90% Design	472	$73,632	$100	$73,732	1424	$0	$184,038	$0	$0	$0	$0	1896	$184,038	$257,770.40
	11.5	90% Cost Estimate and Technical Specifications	168	$34,819	$0	$34,819	192	$0	$31,325	$0	$0	$0	$0	360	$31,325	$66,144.00
	11.6	90% Design Submittal	26	$5,782	$0	$5,782	40	$0	$5,990	$0	$0	$0	$0	66	$5,990	$11,772.80
	11.7	90% Design Review Comment Resolution	24	$4,763	$0	$4,763	40	$0	$6,739	$0	$0	$0	$0	64	$6,739	$11,502.40
	11.8	100% Design	320	$50,086	$100	$50,186	720	$0	$94,931	$0	$0	$0	$0	1040	$94,931	$145,117.60
	11.10	100% Cost Estimate and Technical Specifications	76	$15,122	$0	$15,122	68	$0	$10,275	$0	$0	$0	$0	144	$10,275	$25,396.80
	11.9	100% Design Submittal	26	$5,782	$0	$5,782	40	$0	$5,990	$0	$0	$0	$0	66	$5,990	$11,772.80
	11.11	100% Design Review Comment Resolution	24	$4,763	$0	$4,763	42	$0	$6,157	$0	$0	$0	$0	66	$6,157	$10,920.00
	11.12	Final Design	44	$9,214	$100	$9,314	112	$0	$14,851	$0	$0	$0	$0	156	$14,851	$24,165.60
	11.13	NDOT Encroachment Permit	2	$499	$50	$549	76	$0	$12,418	$0	$0	$0	$0	78	$12,418	$12,966.80
12	**12**	**Phase 2 Bidding Services**	88	$16,973	$100	$17,073	0	$0	$0	$0	$0	$0	$0	88	$0	$17,072.80
		Phase 2 Bidding Services	88	$16,973	$100	$17,073	0	$0	$0	$0	$0	$0	$0	88	$0	$17,072.80
13	**13**	**Phase 2 Design Services During Construction (Optional)**	0	$0	$0	$0	0	$0	$0	$0	$0	$0	$0	0	$0	$0.00
		Phase 2 Design Services During Construction (Optional)	TBD	$0	$0	$0	TBD	$0	$0	$0	$0	$0	$0	TBD	$0	$0.00
14	**14**	**Design Contingency**	0	$200,000	$0	$200,000	0	$0	$50,000	$0	$0	$0	$0	0	$50,000	$250,000.00
		Design Contingency	0	$200,000	$0	$200,000	0	$0	$50,000	$0	$0	$0	$0	0	$50,000	$250,000.00
15	**15**	**Miscellaneous Services (Optional)**	2164	$283,691	$140,000	$423,691	0	$0	$0	$322,165	$0	$0	$0	2164	$322,165	$745,856.20
	15.1	Photographic Renderings	116	$18,096	$0	$18,096	0	$0	$0	$0	$0	$0	$0	116	$0	$18,096.00
	15.2	Video Simulations	376	$54,600	$0	$54,600	0	$0	$0	$0	$0	$0	$0	376	$0	$54,600.00
	15.3	Phase 1 Final Geotech Evaluation	8	$1,997	$0	$1,997	0	$0	$0	$160,160	$0	$0	$0	8	$160,160	$162,156.80
	15.4	Phase 2 Final Geotech Evaluation	8	$1,997	$0	$1,997	0	$0	$0	$162,005	$0	$0	$0	8	$162,005	$164,001.80
	15.5	Preliminary Sound Wall Design	120	$20,904	$0	$20,904	0	$0	$0	$0	$0	$0	$0	120	$0	$20,904.00
	15.6	Right of Way Engineering Services	1408	$166,317	$140,000	$306,317	0	$0	$0	$0	$0	$0	$0	1408	$0	$306,316.80
	15.7	Sound Wall 90%, 100%, and Final Design	128	$19,781	$0	$19,781	0	$0	$0	$0	$0	$0	$0	128	$0	$19,780.80
Totals			36,823	$6,075,756	$174,450	$6,250,206	6534	$0	$1,051,156	$936,415	$90,000	$122,254	$24,300	43357	$2,224,125	$8,474,331

Project Duration Escalation Factor 4.00%

	Price
Total Base	$7,728,474
Total Optional	$745,856
Total	$8,474,331

EXHIBIT B-1
SPARKS BOULEVARD 2020 HOURLY RATE FEE SCHEDULE

ATKINS
Member of the SNC-Lavalin Group

MANAGEMENT AND DESIGN PERSONNEL

Project Principal/CRA Expert	$260.00/hr.
Project Director	$240.00/hr.
Design Manager	$240.00/hr.
Quality Manager	$240.00/hr.
Senior Engineer IV	$190.00/hr.
Senior Engineer III	$190.00/hr.
Senior Engineer II	$180.00/hr.
Senior Engineer I	$155.00/hr.
Engineer III	$145.00/hr.
Engineer II	$135.00/hr.
Engineer I	$120.00/hr.
Structures Manager	$240.00/hr.
Senior Structures Engineer III	$190.00/hr.
Senior Structures Engineer II	$180.00/hr.
Senior Structures Engineer I	$155.00/hr.
Structures Engineer III	$145.00/hr.
Structures Engineer II	$135.00/hr.
Structures Engineer I	$120.00/hr.
Senior Landscape Architect Engineer III	$190.00/hr.
Senior Landscape Architect Engineer III	$135.00/hr.
Senior Landscape Architect Engineer II	$120.00/hr.
Landscape Architect Designer	$85.00/hr.
Public Information Specialist	$85.00/hr.
Clerical	$80.00/hr.
Intern	$65.00/hr.

ENVIORNMENTAL PERSONNEL

Environmental Manager	$240.00/hr.
Senior NEPA Specialist	$190.00/hr.
NEPA Specialist	$180.00/hr.
Senior GIS Analyst	$155.00/hr.
Senior Scientist/Biologist	$155.00/hr.
Scientist/Biologist	$120.00/hr.
Senior Historian	$155.00/hr.
Historian	$120.00/hr.
Senior Archaeologist	$155.00/hr.
Archaeologist	$120.00/hr.
Planner III	$145.00/hr.
Planner II	$135.00/hr.
Planner I	$120.00/hr.
Graphics	$135.00/hr.
Technical Editor	$100.00/hr.
Word Processing	$85.00/hr.

CONSTRUCTION MANAGEMENT PERSONNEL

Scheduler/Estimator	$200.00/hr.
Senior Inspector	$140.00/hr.
Office Engineer	$130.00/hr.
Office Administrator	$100.00/hr.

EXHIBIT B-1
SPARKS BOULEVARD 2020 HOURLY RATE FEE SCHEDULE

Inspector	$100.00/hr.

SURVEY PERSONNEL

Survey Group Manager	$190.00/hr.
Professional Land Surveyor	$150.00/hr.
Senior Party Chief	$110.00/hr.
Senior Survey Technician	$100.00/hr.
Survey Technician	$75.00/hr.
1 Person Survey Crew	$140.00/hr.*
2 Person Survey Crew	$190.00/hr.*
3 Person Survey Crew	$250.00/hr.*

** Survey crew rates include vehicle mileage and all standard survey equipment*

MISCELLANEOUS

CM and Inspector's Company Vehicle	NTE $70.00/work day
Inspector's Mobile Phone and Computer	100.00/month
Mileage	GSA rate

NOTES:
Overtime for CM field staff and time spent on projects in litigation, in depositions and/or providing expert testimony will be charged at the standard rate times 1.5. Personnel rates shown apply to project charges during calendar year 2020. On January 1st of each subsequent year, labor rates invoiced will be increased to reflect annual cost of labor increases not to exceed 3%.

Exhibit C

Indemnification and Insurance Requirements

INDEMNIFICATION AND INSURANCE REQUIREMENTS FOR PROFESSIONAL SERVICE AGREEMENTS
[NRS 338 DESIGN PROFESSIONAL]
2019-11-11 Version

1. INTRODUCTION

IT IS HIGHLY RECOMMENDED THAT CONSULTANTS CONFER WITH THEIR INSURANCE CARRIERS OR BROKERS TO DETERMINE THE AVAILABILITY OF THESE INSURANCE CERTIFICATES AND ENDORSEMENTS IN ADVANCE OF PROPOSAL SUBMISSION. IF THERE ARE ANY QUESTIONS REGARDING THESE INSURANCE REQUIREMENTS, IT IS RECOMMENDED THAT THE AGENT/BROKER CONTACT RTC'S FINANCE DIRECTOR AT (775) 348-0400.

2. INDEMNIFICATION

CONSULTANT agrees to save and hold harmless and fully indemnify RTC, Washoe County, City of Reno and City of Sparks including their elected officials, officers, employees, and agents (hereafter, "Indemnitees") from and against any and all claims, proceedings, actions, liability and damages, including reasonable attorneys' fees and defense costs incurred in any action or proceeding (collectively "Damages") arising out of the:

A. Negligence, errors, omissions, recklessness or intentional misconduct of CONSULTANT or CONSULTANT's agents, employees, officers, directors, subconsultants, or anyone else for whom CONSULTANT may be legally responsible, which are based upon or arising out of the professional services of CONSULTANT; and

B. Violation of law or any contractual provisions or any infringement related to trade names, licenses, franchises, patents or other means of protecting interests in products or inventions resulting from the use by the Indemnitees of any materials, devices, processes, equipment, or other deliverable (including software) supplied by CONSULTANT under or as a result of this Agreement, but excluding any violation or infringement resulting from the modification or alteration by the Indemnitees of any materials, devices, processes, equipment, or other deliverable (including software) not consented to by CONSULTANT.

CONSULTANT further agrees to defend, save and hold harmless and fully indemnify the Indemnitees from and against any and all Damages arising out the negligence, errors, omissions, recklessness or intentional misconduct of CONSULTANT or CONSULTANT's agents, employees, officers, directors, subconsultants, or anyone else for whom CONSULTANT may be legally responsible, which are not based upon or arising out of the professional services of CONSULTANT.

The Damages shall include, but are not limited to, those resulting from personal injury to any person, including bodily injury, sickness, disease or death and injury to real property or personal property, tangible or intangible, and the loss of use of any of that property, whether or not it is physically injured.

If the Indemnitees are involved in defending actions of CONSULTANT or anyone else for whom CONSULTANT is legally responsible, CONSULTANT shall reimburse the Indemnitees for the time spent by such personnel at the rate of the Indemnitees pay or compensation for such services.

If an Indemnitee is found to be liable in the proceeding, then CONSULTANT'S obligation hereunder shall be limited to the proportional share of the liability attributed to CONSULTANT.

In determining whether a claim is subject to indemnification, the incident underlying the claim shall determine the nature of the claim.

In the event of a violation or an infringement under paragraph 2.B above and the use is enjoined, CONSULTANT, at its sole expense, shall either (1) secure for the Indemnitees the right to continue using the materials by suspension of any injunction or by procuring a license or licenses for the Indemnitees; or (2) modify the materials so that they become non-infringing. This covenant shall survive the termination of the Professional Services Agreement.

The provisions of this Agreement are separate and severable and it is the intent of the Parties hereto that in the event any provision of this Agreement should be determined by any court of competent jurisdiction to be void, voidable or too restrictive for any reason whatsoever, the remaining provisions of this Agreement shall remain valid and binding upon said Parties. It is also understood and agreed that in the event any provision should be considered, by any court of competent jurisdiction, to be void because it imposes a greater obligation on CONSULTANT than is permitted by law, such court may reduce and reform such provisions to limitations which are deemed reasonable and enforceable by said court.

3. GENERAL REQUIREMENTS

Prior to the start of any work on a RTC project, CONSULTANT shall purchase and maintain insurance of the types and limits as described below insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONSULTANT, its subconsultants, or their employees, agents, or representatives. The cost of all such insurance shall be borne by CONSULTANT.

4. VERIFICATION OF COVERAGE

CONSULTANT shall furnish RTC with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements set forth herein, on forms acceptable to RTC. All deductibles and self-insured retentions requiring RTC approval shall be shown on the certificate. All certificates and endorsements are to be addressed to RTC's Finance Director and be received and approved by RTC before work commences. CONSULTANT agrees that RTC has the right to inspect CONSULTANT'S and the Sub's insurance policies, or certified copies of the policies, at any reasonable time. Copies of applicable policy forms or endorsements confirming required additional insured, waiver of subrogation and notice of cancellation provisions are required to be provided with any certificate(s) evidencing the required coverage.

5. NOTICE OF CANCELLATION

CONSULTANT or its insurers shall provide at least thirty (30) days' prior written notice to RTC prior to the cancellation or non-renewal of any insurance required under this Agreement. An exception may be included to provide at least ten (10) days' written notice if cancellation is due to non-payment of premium. CONSULTANT shall be responsible to provide prior written notice to RTC as soon as practicable upon receipt of any notice of cancellation, non-renewal, reduction in required limits or other material change in the insurance required under this Agreement.

6. SUBCONSULTANTS & SUBCONTRACTORS

CONSULTANT shall include all Subcontractors and Subconsultants (referred to collectively as "Subs") as insureds under its liability policies OR shall cause Subs employed by CONSULTANT to purchase and maintain separate liability coverages and limits of the types specified herein. If any Subs maintain separate liability coverages and limits, each shall include the RTC, Washoe County, City of Reno and City of Sparks as additional insureds under its commercial general liability policy, subject to the same requirements stated herein, without requiring a written contract or agreement between each of the additional insureds and any sub-consultant or sub-contractor. Any separate coverage limits of liability maintained by Subs shall be at least **$1,000,000** per occurrence and at least **$2,000,000** for any applicable coverage aggregates or the amount customarily carried by the Sub, whichever is GREATER. If any Subs provide their own insurance with limits less than required of the Contractor, Contractor shall include Subs in their coverage up to the full limits required of the Contractor. When requested by RTC, CONSULTANT shall furnish copies of certificates of insurance evidencing coverage for each subconsultant. CONSULTANT need not require its non-design subcontractors to carry Professional Errors and Omissions Liability insurance.

7. DEDUCTIBLES AND SELF-INSURED RETENTIONS

Any deductibles or self-insured retentions that exceed $5,000 per occurrence or claim must be declared to and approved by RTC's Finance Director prior to signing this Agreement. RTC is entitled to request and receive additional documentation, financial or otherwise, prior to giving its approval of the deductibles and self-insured retentions. Any changes to the deductibles or self-insured retentions made during the term of this Agreement or during the term of any policy must be approved by RTC's Finance Director prior to the change taking effect.

8. ACCEPTABILITY OF INSURERS

Required insurance is to be placed with insurers with a Best's rating of no less than A-VII and acceptable to RTC. RTC may accept coverage with carriers having lower Best's ratings upon review of financial information concerning CONSULTANT and the insurance carrier. RTC reserves the right to require that CONSULTANT'S insurer(s) be licensed and admitted in the State of Nevada or meet any applicable state and federal laws and regulations for non-admitted insurance placements.

9. OTHER CONDITIONS

A. Failure to furnish the required certificate(s) or failure to maintain the required insurance may result in termination of this Agreement at RTC's option.

B. If CONSULTANT fails to furnish the required certificate or fails to maintain the required insurance as set forth herein, RTC shall have the right, but not the obligation, to purchase said insurance at CONSULTANT's expense.

C. Any waiver of CONSULTANT's obligation to furnish such certificate or maintain such insurance must be in writing and signed by an authorized representative of RTC. Failure of RTC to demand such certificate or other evidence of full compliance with these insurance requirements or failure of RTC to identify a deficiency from evidence that is provided shall not be construed as a waiver of CONSULTANT's obligation to maintain such insurance, or as a waiver as to the enforcement of any of these provisions at a later date.

D. By requiring insurance herein, RTC does not represent that coverage and limits will necessarily be adequate to protect CONSULTANT, and such coverage and limits shall not be deemed as a limitation on CONSULTANT's liability under the indemnities granted to RTC in this contract.

E. If CONSULTANT'S liability policies do not contain the standard ISO separation of insureds condition, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

10. COMMERCIAL GENERAL LIABILITY

CONSULTANT shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less than **$2,000,000** each occurrence. If such CGL insurance contains a general aggregate limit, it shall be increased to equal twice the required occurrence limit or revised to apply separately to this project.

CGL insurance shall be written on ISO occurrence form CG 00 01 04 13 (or a substitute form providing equivalent coverage) and shall cover liability arising from premises, operations, products-completed operations, personal and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract).

RTC and any other Indemnitees listed in Section 2. INDEMNIFICATION of this Agreement shall be included as an insured under the CGL, using ISO additional insured endorsement CG 20 10 07/04 or CG 20 33 07/04 or a substitute providing equivalent coverage, and under the commercial umbrella, if any.

This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to RTC or any other Indemnitees under this Agreement.

CONSULTANT waives all rights against RTC and any other Indemnitees listed in section 2. INDEMNIFICATION of this Agreement for recovery of damages to the extent these damages are covered by the commercial general liability or commercial umbrella liability insurance maintained pursuant to this agreement. CONSULTANT's insurer shall endorse CGL policy to waive subrogation against RTC with respect to any loss paid under the policy.

11. COMMERCIAL AUTOMOBILE LIABILITY

CONSULTANT shall maintain automobile liability and, if necessary, commercial umbrella liability insurance with a limit of not less than **$1,000,000** each accident. Such insurance shall cover liability arising out of any auto (including owned, hired, and non-owned autos).

Coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 25, or a substitute form providing equivalent liability coverage for all owned, leased, hired (rented) and non-owned vehicles (as applicable). RTC may agree to accept auto liability for non-owned and hired (rented) vehicles under the CGL if CONSULTANT does not own or operate any owned or leased vehicles.

CONSULTANT waives all rights against RTC, its officers, employees and volunteers for recovery of damages to the extent these damages are covered by the automobile liability or commercial umbrella liability insurance obtained by CONSULTANT pursuant to this Agreement.

12. INDUSTRIAL (WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY) INSURANCE

It is understood and agreed that there shall be no Industrial (Worker's Compensation and Employer's Liability) Insurance coverage provided for CONSULTANT or any subconsultants by RTC. CONSULTANT, and any subconsultants, shall procure, pay for and maintain the required coverages.

CONSULTANT shall maintain workers' compensation and employer's liability insurance meeting the statutory requirements of the State of Nevada, including but not limited to NRS 616B.627 and NRS 617.210. The employer's liability limits shall not be less than **$1,000,000** each accident for bodily injury by accident or **$1,000,000** each employee for bodily injury by disease.

CONSULTANT shall provide a Final Certificate for itself and each subconsultant evidencing that CONSULTANT and each subconsultant maintained workers' compensation and employer's liability insurance throughout the entire course of the project.

If CONSULTANT, or any subconsultant is a sole proprietor, coverage for the sole proprietor must be purchased and evidence of coverage must appear on the Certificate of Insurance and Final Certificate.

CONSULTANT waives all rights against RTC, its elected officials, officers, employees and agents for recovery of damages to the extent these damages are covered by the workers compensation and employer's liability or commercial umbrella liability insurance obtained by Tenant pursuant to this

agreement. CONSULTANT shall obtain an endorsement equivalent to WC 00 03 13 to affect this waiver.

13. PROFESSIONAL ERRORS AND OMISSIONS LIABILITY

CONSULTANT shall maintain professional liability insurance applying to liability for a professional, error, act, or omission arising out of the scope of CONSULTANT'S services provided under this Agreement with a limit of not less than **$1,000,000** each claim and annual aggregate. CONSULTANT shall maintain professional liability insurance during the term of this Agreement and, if coverage is provided on a "claims made" or "claims made and reported" basis, shall maintain coverage or purchase an extended reporting period for a period of at least three (3) years following the termination of this Agreement.

April 17, 2020 **AGENDA ITEM 3.16**

TO: Regional Transportation Commission

FROM: Scott Gibson, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Professional Services Agreement (PSA) for the Sparks Consolidated 21-01: Packer Way and Wild Island Court Project

RECOMMENDATION

Approve a Professional Services Agreement (PSA) with Wood Rodgers Inc. to provide design and optional engineering during construction for the Sparks Consolidated 21-01: Packer Way and Wild Island Court Project in an amount not to exceed $328,325; authorize the RTC Executive Director to execute the agreement.

SUMMARY

The Sparks Consolidated 21-01 project consists of the scoping, design, and rehabilitation of Packer Way from Glendale Avenue to the Cul de Sac and Wild Island Court from Lincoln Way to the Cul de Sac in the City of Sparks. These relatively small roadways in the industrial area of Sparks were consolidated to simplify administration and provide economies of scale. The existing pavement surface of these roadways is showing significant distress. The scoping component of this project will determine the type and extent of treatments to make these roadways new again as well as determine any ADA and multimodal improvement that need to be included. Once the scoping is complete, detailed plans and specifications will be developed to prepare the project for competitive bid. This PSA also provides for construction management and materials testing services during construction.

FISCAL IMPACT

Funding for this service is included in the FY 2020/2021 Budgets.

PREVIOUS ACTIONS BY BOARD

March 20, 2020	Approved the FY 2021 Program of Projects
June 20, 2019	Approved the Qualified Consultant List for Engineering Design and Construction Management Services

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this report.

Attachment

AGREEMENT
FOR
PROFESSIONAL SERVICES

This agreement (this "Agreement") is dated and effective as of April 17, 2020, by and between the Regional Transportation Commission of Washoe County ("RTC") and Wood Rodgers, Inc. ("CONSULTANT").

WITNESSETH:

WHEREAS, RTC has selected Wood Rodgers, Inc. from the Streets and Highways Engineering and Construction Services shortlist to perform Engineering services in connection with the RTC's preparation of the Sparks Consolidated 21-01 Project.

NOW, THEREFORE, RTC and CONSULTANT, in consideration of the mutual covenants and other consideration set forth herein, do hereby agree as follows:

ARTICLE 1 – TERM AND ENGAGEMENT

1.1. The term of this Agreement shall be from the date first written above through December 31, 2021, unless terminated at an earlier date, or extended to a later date, pursuant to the provisions herein.

1.2. CONSULTANT will promptly, diligently and faithfully execute the work to completion in accordance with applicable professional standards subject to any delays due to strikes, acts of God, act of any government, civil disturbances, or any other cause beyond the reasonable control of CONSULTANT.

1.3. CONSULTANT shall not proceed with work until both parties have executed this Agreement and a purchase order has been issued to CONSULTANT. If CONSULTANT violates that prohibition, CONSULTANT forfeits any and all right to reimbursement and payment for that work and waives any and all claims against RTC, its employees, agents, and affiliates, including but not limited to monetary damages, and any other remedy available at law or in equity arising under the terms of this Agreement. Furthermore, prior to execution and issuance of a purchase order, CONSULTANT shall not rely on the terms of this Agreement in any way, including but not limited to any written or oral representations, assurances or warranties made by RTC or any of its agents, employees or affiliates, or on any dates of performance, deadlines, indemnities, or any term contained in this Agreement or otherwise.

ARTICLE 2 - SERVICES OF CONSULTANT

2.1. SCOPE OF SERVICES

The scope of services consist of the tasks set forth in Exhibit A.

2.2. SCHEDULE OF SERVICES

Tasks and subtasks shall be completed in accordance with the schedule in Exhibit A. Any change(s) to the schedule must be approved by RTC's Project Manager.

2.3. CONTINGENCY

Contingency line items identified in the scope of services are for miscellaneous increases within the scope of work. Prior to the use of any contingency amounts, CONSULTANT shall provide a letter to RTC's Project Manager detailing the need, scope, and not-to-exceed budget for the proposed work. Work to be paid for out of contingency shall proceed only with the RTC Project Manager's written approval.

2.4. OPTIONS

RTC shall have the right to exercise its option(s) for all or any part of the optional tasks or subtasks identified in Exhibit A. CONSULTANT will prepare and submit a detailed scope of services reflecting the specific optional services requested, a schedule for such services, and a cost proposal. RTC will review and approve the scope of services and RTC and CONSULTANT will discuss and agree upon compensation and a schedule. CONSULTANT shall undertake no work on any optional task without written notice to proceed with the performance of said task. RTC, at its sole option and discretion, may select another individual or firm to perform the optional tasks or subtasks identified in Exhibit A.

2.5. ADDITIONAL SERVICES

CONSULTANT will provide additional services when agreed to in writing by RTC and CONSULTANT.

2.6. PERFORMANCE REQUIREMENTS

Any and all design and engineering work furnished by CONSULTANT shall be performed by or under the supervision of persons licensed to practice architecture, engineering, or surveying (as applicable) in the State of Nevada, by personnel who are careful, skilled, experienced and competent in their respective trades or professions, who are professionally qualified to perform the work, and who shall assume professional responsibility for the accuracy and completeness of documents prepared or checked by them, in accordance with appropriate prevailing professional standards. Notwithstanding the provision of any

drawings, technical specifications, or other data by RTC, CONSULTANT shall have the responsibility of supplying all items and details required for the deliverables required hereunder.

Any sampling and materials testing shall be performed by an approved testing laboratory accredited by AASHTO or other ASTM recognized accrediting organization in the applicable test methods. If any geotechnical or materials testing is performed by a sub-consultant, that laboratory shall maintain the required certification. Proof of certification shall be provided to RTC with this Agreement. If certification expires or is removed during the term of this Agreement, CONSULTANT shall notify RTC immediately, and propose a remedy. If an acceptable remedy cannot be agreed upon by both parties, RTC may terminate this Agreement for default.

CONSULTANT shall provide only Nevada Alliance for Quality Transportation Construction (NAQTC) qualified personnel to perform field and laboratory sampling and testing during the term of this Agreement. All test reports shall be signed by a licensed NAQTC tester and notated with his/her license number.

2.7. ERRORS AND OMISSIONS

CONSULTANT shall, without additional compensation, correct or revise any deficiencies, errors, or omissions caused by CONSULTANT in its analysis, reports, and services. CONSULTANT also agrees that if any error or omission is found, CONSULTANT will expeditiously make the necessary correction, at no expense to RTC. If an error or omission was directly caused by RTC, and not by CONSULTANT and RTC requires that such error or omission be corrected, CONSULTANT may be compensated for such additional work.

ARTICLE 3 - COMPENSATION

3.1. CONSULTANT shall be paid for hours worked at the hourly rates and rates for testing in Exhibit B. RTC shall not be responsible for any other costs or expenses except as provided in Exhibit B.

3.2. The maximum amount payable to CONSULTANT to complete each task is equal to the not-to-exceed amounts identified in Exhibit B. CONSULTANT can request in writing that RTC's Project Manager reallocate not-to-exceed amounts between tasks. A request to reallocate not-to-exceed amounts must be accompanied with a revised fee schedule, and must be approved in writing by RTC's Project Manager prior to performance of the work. In no case shall CONSULTANT be compensated in excess of the following not-to exceed amounts:

Total Design Services (Tasks 1 to 6)	$148,155
Design Contingency (Task 7)	$10,000
Optional Construction Services (Tasks 8A to 8E)	$160,170
Construction Contingency (Task 9)	$10,000
Total Not-to-Exceed Amount	$328,325

3.3. For any work authorized under Section 2.5, "Additional Services," RTC and CONSULTANT will negotiate not-to-exceed amounts based on the standard hourly rates and rates for testing in Exhibit B. Any work authorized under Section 2.5, "Additional Services," when performed by persons who are not employees or individuals employed by affiliates of CONSULTANT, will be billed at a mutually agreed upon rate for such services, but not more than 105% of the amounts billed to CONSULTANT for such services.

3.4. CONSULTANT shall receive compensation for preparing for and/or appearing in any litigation at the request of RTC, except: (1) if such litigation costs are incurred by CONSULTANT in defending its work or services or those of any of its sub-consultants; or (2) as may be required by CONSULTANT's indemnification obligations. Compensation for litigation services requested by RTC shall be paid at a mutually agreed upon rate and/or at a reasonable rate for such services.

ARTICLE 4 - INVOICING

4.1. CONSULTANT shall submit monthly invoices in the format specified by RTC. Invoices must be submitted to accountspayable@rtcwashoe.com. RTC's payment terms are 30 days after the receipt of the invoice. Simple interest will be paid at the rate of half a percent (0.5%) per month on all invoices approved by RTC that are not paid within thirty (30) days of receipt of the invoice.

4.2. RTC shall notify CONSULTANT of any disagreement with any submitted invoice for consulting services within thirty (30) days of receipt of an invoice. Any amounts not in dispute shall be promptly paid by RTC.

4.3. CONSULTANT shall maintain complete records supporting every request for payment that may become due. Upon request, CONSULTANT shall produce all or a portion of its records and RTC shall have the right to inspect and copy such records.

ARTICLE 5 - ACCESS TO INFORMATION AND PROPERTY

5.1. Upon request and without cost to CONSULTANT, RTC will provide all pertinent information that is reasonably available to RTC including surveys, reports and any other data relative to design and construction.

5.2. RTC will provide access to and make all provisions for CONSULTANT to enter upon RTC facilities and public lands, as required for CONSULTANT to perform its work under this Agreement.

ARTICLE 6 - OWNERSHIP OF WORK

6.1. Plans, reports, studies, tracings, maps, software, electronic files, licenses, programs, equipment manuals, and databases and other documents or instruments of service prepared or obtained by CONSULTANT in the course of performing work under this Agreement, shall be delivered to and become the property of RTC. Software already developed and purchased by CONSULTANT prior to the Agreement is excluded from this requirement. CONSULTANT and its sub-consultants shall convey and transfer all copyrightable interests, trademarks, licenses, and other intellectual property rights in such materials to RTC upon completion of all services under this Agreement and upon payment in full of all compensation due to CONSULTANT in accordance with the terms of this Agreement. Basic survey notes, sketches, charts, computations and similar data prepared or obtained by CONSULTANT under this Agreement shall, upon request, also be provided to RTC.

6.2. CONSULTANT represents that it has secured all necessary licenses, consents, or approvals to use the components of any intellectual property, including computer software, used in providing services under this Agreement, that it has full legal title to and the right to reproduce such materials, and that it has the right to convey such title and other necessary rights and interests to RTC.

6.3. CONSULTANT shall bear all costs arising from the use of patented, copyrighted, trade secret, or trademarked materials, equipment, devices, or processes used on or incorporated in the services and materials produced under this Agreement.

6.4. CONSULTANT agrees that all reports, communications, electronic files, databases, documents, and information that it obtains or prepares in connection with performing this Agreement shall be treated as confidential material and shall not be released or published without the prior written consent of RTC; provided, however, that CONSULTANT may refer to this scope of work in connection with its promotional literature in a professional and commercially reasonable manner. The provisions of this subsection shall not apply to information in whatever form that comes into the public domain. The provisions of this paragraph also shall not restrict CONSULTANT from giving notices required by law or complying with an order to provide information or data when such order is issued by a court, administrative agency, or other entity with proper jurisdiction, or if it is reasonably necessary for CONSULTANT to defend itself from any suit or claim.

ARTICLE 7 - TERMINATION

7.1. CONTRACT TERMINATION FOR DEFAULT

If CONSULTANT fails to perform services in the manner called for in this Agreement or if CONSULTANT fails to comply with any other provisions of this Agreement, RTC may terminate this Agreement for default. Termination shall be effected by serving a notice of termination on CONSULTANT setting forth the manner in which CONSULTANT is in default. CONSULTANT will only be paid the contract price for services delivered and

accepted, or services performed in accordance with the manner of performance set forth in this Agreement.

If it is later determined by RTC that CONSULTANT had an excusable reason for not performing, such as a fire, flood, or events which are not the fault of or are beyond the control of CONSULTANT, RTC, after setting up a new performance schedule, may allow CONSULTANT to continue work, or treat the termination as a termination for convenience.

7.2. CONTRACT TERMINATION FOR CONVENIENCE

RTC may terminate this Agreement, in whole or in part, at any time by written notice to CONSULTANT when it is in RTC's best interest. CONSULTANT shall be paid its costs, including contract closeout costs, and profit on work performed up to the time of termination. CONSULTANT shall promptly submit its termination claim to RTC to be paid CONSULTANT. If CONSULTANT has any property in its possession belonging to RTC, CONSULTANT will account for the same, and dispose of it in the manner RTC directs.

ARTICLE 8 - INSURANCE

8.1. CONSULTANT shall not commence any work or permit any employee/agent to commence any work until satisfactory proof has been submitted to RTC that all insurance requirements have been met.

8.2. In conjunction with the performance of the services/work required by the terms of this Agreement, CONSULTANT shall obtain all types and amounts of insurance set forth in Exhibit C, and shall comply with all provisions set forth therein.

ARTICLE 9 - HOLD HARMLESS

9.1. CONSULTANT's obligation under this provision is as set forth in Exhibit C. Said obligation would also extend to any liability of RTC resulting from any action to clear any lien and/or to recover for damage to RTC property.

ARTICLE 10 - EQUAL EMPLOYMENT OPPORTUNITY

10.1. During the performance of this Agreement, CONSULTANT agrees not to discriminate against any employee or applicant for employment because of race, color, religion, sex, age, disability, or national origin. CONSULTANT will take affirmative action to ensure that applicants are employed, and that employees are treated fairly during employment, without regard to their race, color, religion, sex, age, disability, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. CONSULTANT agrees to post in conspicuous places, available to employees and

applicants for employment, notices to be provided by RTC setting forth the provisions of this nondiscrimination clause.

10.2. CONSULTANT will, in all solicitations or advertisements for employees placed by or on behalf of CONSULTANT, state that well qualified applicants will receive consideration of employment without regard to race, color, religion, sex, age, disability, or national origin.

10.3. CONSULTANT will cause the foregoing provisions to be inserted in all sub-agreements for any work covered by this Agreement so that such provisions will be binding upon each sub-consultant.

ARTICLE 11 - RESOLUTION OF CLAIMS AND DISPUTES

11.1. NEGOTIATED RESOLUTION

In the event that any dispute or claim arises under this Agreement, the parties shall timely cooperate and negotiate in good faith to resolve any such dispute or claim. Such cooperation shall include providing the other party with all information in order to properly evaluate the dispute or claim and making available the necessary personnel to discuss and make decisions relative to the dispute or claim.

11.2. MEDIATION

If the parties have been unable to reach an informal negotiated resolution to the dispute or claim within thirty (30) days following submission in writing of the dispute or claim to the other party, or such longer period of time as the parties may agree to in writing, either party may then request, in writing, that the dispute or claim be submitted to mediation (the "Mediation Notice"). After the other party's receipt or deemed receipt of the Mediation Notice, the parties shall endeavor to agree upon a mutually acceptable mediator, but if the parties have been unable to agree upon a mediator within ten (10) days following receipt of the Mediation Notice, then each party shall select a mediator and those two selected mediators shall select the mediator. A mediator selected by the parties' designated mediators shall meet the qualification set forth in as provided in Rule 4 of Part C., "Nevada Mediation Rules" of the "Rules Governing Alternative Dispute Resolutions adopted by the Nevada Supreme Court." Unless otherwise agreed to by the parties, in writing, the mediator shall have complete discretion over the conduct of the mediation proceeding. Unless otherwise agreed to by the parties, in writing, the mediation proceeding must take place within thirty (30) days following appointment of the mediator. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in Washoe County, Nevada, unless otherwise agreed to by the parties, in writing. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

11.3. LITIGATION

In the event that the parties are unable to settle and/or resolve the dispute or claim as provided above, then either party may proceed with litigation in the Second Judicial District Court of the State of Nevada, County of Washoe.

11.4. CONTINUING CONTRACT PERFORMANCE

During the pendency of any dispute or claim the parties shall proceed diligently with performance of this Agreement and such dispute or claim shall not constitute an excuse or defense for a party's nonperformance or delay.

ARTICLE 12 – PROJECT MANAGERS

12.1. RTC's Project Manager is Scott Gibson or such other person as is later designated in writing by RTC. RTC's Project Manager has authority to act as RTC's representative with respect to the performance of this Agreement.

12.2. CONSULTANT' Project Manager is Mark Casey or such other person as is later designated in writing by CONSULTANT. CONSULTANT's Project Manager has authority to act as CONSULTANT's representative with respect to the performance of this Agreement.

ARTICLE 13 - NOTICE

13.1. Notices required under this Agreement shall be given as follows:

RTC:
Brian Stewart, P.E.
Director of Engineering
Regional Transportation Commission
1105 Terminal Way
Reno, Nevada 89502

CONSULTANT:
Mark Casey
Vice President
Wood Rodgers, Inc.
1361 Corporate Boulevard
Reno, Nevada 89502
775-823-9443

ARTICLE 14 - DELAYS IN PERFORMANCE

14.1. TIME IS OF THE ESSENCE

It is understood and agreed that all times stated and referred to herein are of the essence. The period for performance may be extended by RTC's Executive Director pursuant to the process specified herein. No extension of time shall be valid unless reduced to writing and signed by RTC's Executive Director.

14.2. UNAVOIDABLE DELAYS

If the timely completion of the services under this Agreement should be unavoidably delayed, RTC may extend the time for completion of this Agreement for not less than the number of days CONSULTANT was excusably delayed. A delay is unavoidable only if the delay is not reasonably expected to occur in connection with or during CONSULTANT's performance, is not caused directly or substantially by acts, omissions, negligence or mistakes of CONSULTANT, is substantial and in fact causes CONSULTANT to miss specified completion dates, and cannot adequately be guarded against by contractual or legal means.

14.3. NOTIFICATION OF DELAYS

CONSULTANT shall notify RTC as soon as CONSULTANT has knowledge that an event has occurred or otherwise becomes aware that CONSULTANT will be delayed in the completion of the work. Within ten (10) working days thereafter, CONSULTANT shall provide such notice to RTC, in writing, furnishing as much detail on the delay as possible and requesting an extension of time.

14.4. REQUEST FOR EXTENSION

Any request by CONSULTANT for an extension of time to complete the work under this Agreement shall be made in writing to RTC. CONSULTANT shall supply to RTC documentation to substantiate and justify the additional time needed to complete the work and shall provide a revised schedule. RTC shall provide CONSULTANT with notice of its decision within a reasonable time after receipt of a request.

ARTICLE 15 - GENERAL PROVISIONS

15.1. SUCCESSORS AND ASSIGNS

RTC and CONSULTANT bind themselves and their successors and assigns to the other party and to the successors and assigns of such party, with respect to the performance of all covenants of this Agreement. Except as set forth herein, neither RTC nor CONSULTANT shall assign or transfer interest in this Agreement without the written consent of the other. Nothing herein shall be construed as creating a personal liability on

the part of any officer or agent or any public body which may be a party hereto, nor shall it be construed as giving any rights or benefits hereunder to anyone other than RTC and CONSULTANT.

15.2. NON TRANSFERABILITY

This Agreement is for CONSULTANT's professional services, and CONSULTANT's rights and obligations hereunder may not be assigned without the prior written consent of RTC.

15.3. SEVERABILITY

If any part, term, article, or provision of this Agreement is, by a court of competent jurisdiction, held to be illegal, void, or unenforceable, or to be in conflict with any law of the State of Nevada, the validity of the remaining provisions or portions of this Agreement are not affected, and the rights and obligations of the parties shall be construed and enforced as if this Agreement did not contain the particular part, term, or provision held invalid.

15.4. RELATIONSHIP OF PARTIES

CONSULTANT is an independent contractor to RTC under this Agreement. Accordingly, CONSULTANT is not entitled to participate in any retirement, deferred compensation, health insurance plans or other benefits RTC provides to its employees. CONSULTANT shall be free to contract to provide similar services for others while it is under contract to RTC, so long as said services and advocacy are not in direct conflict, as determined by RTC, with services being provided by CONSULTANT to RTC.

15.5. WAIVER/BREACH

Any waiver or breach of a provision in this Agreement shall not be deemed a waiver of any other provision in this Agreement and no waiver is valid unless in writing and executed by the waiving party. An extension of the time for performance of any obligation or act shall not be deemed an extension of time for the performance of any other obligation or act. This Agreement inures to the benefit of and is binding upon the parties to this Agreement and their respective heirs, successors and assigns.

15.6. REGULATORY COMPLIANCE

A. CONSULTANT shall comply with all applicable federal, state and local government laws, regulations and ordinances. CONSULTANT shall be responsible for obtaining all necessary permits and licenses for performance of services under this Agreement. Upon request of RTC, CONSULTANT shall furnish RTC certificates of compliance with all such laws, orders and regulations.

B. CONSULTANT represents and warrants that none of the services to be rendered pursuant to this Agreement constitute the performance of public work, as that term is defined by Section 338.010(17) of the Nevada Revised Statutes. To the extent CONSULTANT does engage in such public work, CONSULTANT shall be responsible for paying the prevailing wage as required by Chapter 338 of the Nevada Revised Statutes.

15.7. EXCLUSIVE AGREEMENT

There are no verbal agreements, representations or understandings affecting this Agreement, and all negotiations, representations and undertakings are set forth herein with the understanding that this Agreement constitutes the entire understanding by and between the parties.

15.8. AMENDMENTS

No alteration, amendment or modification of this Agreement shall be effective unless it is in writing and signed by both parties.

15.9. CONTINUING OBLIGATION

CONSULTANT agrees that if, because of death or any other occurrence it becomes impossible for any principal or employee of CONSULTANT to render the services required under this Agreement, neither CONSULTANT nor the surviving principals shall be relieved of any obligation to render complete performance. However, in such event, RTC may terminate this Agreement if it considers the death or incapacity of such principal or employee to be a loss of such magnitude as to affect CONSULTANT's ability to satisfactorily complete the performance of this Agreement.

15.10. APPLICABLE LAW AND VENUE

The provisions of this Agreement shall be governed and construed in accordance with the laws of the State of Nevada. The exclusive venue and court for all lawsuits concerning this Agreement shall be the Second Judicial District Court of the State of Nevada, County of Washoe, and the parties hereto submit to the jurisdiction of that District Court.

15.11. ATTORNEYS' FEES

In the event of a dispute between the parties result in a proceeding in any Court of Nevada having jurisdiction, the prevailing party shall be entitled to an award of costs and reasonable attorneys' fees.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement the day and year first above written.

APPROVED AS TO LEGALITY AND FORM

By: _____
Adam Spear
RTC Director of Legal Services

REGIONAL TRANSPORTATION COMMISSION
OF WASHOE COUNTY

By: _____
Bill Thomas, Executive Director

WOOD RODGERS, INC.

By: _____
Mark Casey, Vice President

Exhibit A

Scope of Services

SCOPE OF SERVICES
FOR THE
SPARKS CONSOLIDATED 20-01 PROJECT
(WILD ISLAND COURT AND PACKER WAY)

1. Project Management

Prepare monthly progress reports, invoices, and billing.

Coordination with RTC project manager and staff will be ongoing throughout project. Project management and coordination meetings or conference calls will be held with the RTC and other parties as appropriate semiweekly throughout the project.

Other interested parties will include the City of Sparks.

Deliverables – Invoicing and progress reports.

2. Public and Agency Involvement

Public Information Meeting

Public Information Meeting will be held once during preliminary design with the property owners adjacent to the project work zone to discuss project limits, scope, tentative schedule, traffic controls, driveway access, public notification requirements, and concerns of adjacent properties before the plans and specifications are finalized.

The CONSULTANT will provide materials to RTC staff for presentation to the RTC Board and Sparks City Councils as required.

Deliverables – Meeting materials, power point presentations which will include project status information and photos.

3. Investigation of Existing Conditions

1. Condition Survey.

   a. CONSULTANT will visually evaluate and document the condition of the existing pavement to include fatigue cracking, potholes, rutting, transverse cracking and raveling.

   b. CONSULTANT will evaluate curb and gutter, sidewalk, and driveway approach based upon RTC criteria. The CONSULTANT shall also evaluate existing pedestrian ramps for compliance with current PROWAG standards.

2. Traffic Data.

   a. Traffic data is needed to estimate the past 18-kip equivalent single axle load (ESAL) applications that have contributed to the current condition of the pavement, as well as the future 18-kip ESAL applications that will be required for rehabilitation/reconstruction design. It is assumed that all the information on average daily traffic (current and future), truck percentages and truck factors will be available from the Regional Transportation Commission, City of Sparks and/or the Nevada DOT traffic records. The CONSULTANT will also review accident data for possible safety problem areas, and provide recommendations.

   b. CONSULTANT will provide 24-hour traffic counts to verify current ADT, truck/bus classifications and percentages.

3. Topographic Survey.

   a. CONSULTANT will provide a topographic survey for the project site. An unmanned aerial system (UAS) will be utilized to collect aerial imagery. Ground control and photo identification points will be established and measured. One (1) Foot Contour intervals will be generated from the digital photographs. The horizontal control shall be based on published data provided by Washoe County and the North American Datum of 1983 (NAD83). The vertical control shall be based on published data provided by the City of Sparks and the North American Vertical Datum of 1988 (NAVD 88). Existing conditions and 2D planimetric features shall be located and will include but not be limited to fences, roads, curbs, driveways, paths, buildings, walls, etc. Drainage (sewer and storm water) features and structures, visible from the surface of the ground, shall be located and shown on the plan. Utility (water, gas, power and communications) features and structures, visible from the surface of the ground, shall be located and shown on the plan.

      CONSULTANT will supplement the aerial survey with a ground survey to provide greater detail in obscured areas, to identify any utility facilities located on the subject roadways and adjacent parcels, and to provide design level topo on hardscape tie areas. Project accuracy will conform to general accepted photogrammetric standards established by the ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014).

4. Right-of-Way Mapping and Engineering Services

   Right of Way Mapping is not anticipated with this scope of services. Washoe County GIS information for record right of way

will be shown on plans for reference only. No rectification of right of way is anticipated.

5. Geotechnical Investigation

CONSULTANT will prepare and submit a traffic control plan and encroachment permit application to the City of Sparks. Traffic control will be provided during all phases of exploration performed within and adjacent to the active roadways.

CONSULTANT will advance two (2) auger borings on Packer Way and two (2) auger borings on Wild Island Drive. Each exploration site will initially be cored. After coring, borings will be advanced with a CME-55 conventional drill rig equipped with hollow stem augers to at least 10-feet below the existing structural section. Each boring will be logged by geotechnical personnel for soil characteristics (particle size, plasticity, texture, soil color, moisture, consistency, and stratigraphy). Samples of the subgrade soils will be obtained for laboratory testing on soil moisture (ASTM D2216), gradation (ASTM D6913), plasticity (ASTM D4318), moisture-density relationship (ASTM D1557), and R-Value (ASTM D2844). Corrosion testing will also be performed to assess the site soils' effect on concrete and steel elements. Explorations will be backfilled immediately after advance with the readily available site soils and/or pea gravel. Rapid set high strength grout will be used to backfill the structural section.

Laboratory. CONSULTANT will perform laboratory tests on selected samples. Laboratory testing will consist of tests for:

- Gradation (4)
- Moisture Content (4)
- Atterberg Limit (4)
- Moisture-Density Relationship (4)
- R-Value (4)
- Chemical testing will be performed on approximately four subgrade samples for pH, resistivity, soluble sulfates and chlorides.

6. Develop Feasible Rehabilitation/Reconstruction Alternatives. CONSULTANT will identify feasible pavement rehabilitation and/or reconstruction alternatives for the project. Among the alternatives that will be considered are:

- AC overlay (only)
- Full-depth patching (plus AC overlay)
- Mill and fill (plus AC overlay)
- Roadbed modification (reconstruction)

- AC paving (reconstruction)
- PCC paving (reconstruction)

Upon completion of the geotechnical investigation, CONSULTANT will meet with RTC to present feasible rehabilitation alternatives. CONSULTANT will then apply the design procedures contained in the latest (1993) AASHTO Guide for Design of Pavement Structures to generate the design layer thickness associated with each pavement alternative.

7. Utility Investigation/Depiction

   a. Overhead Utilities: CONSULTANT will investigate and locate all overhead utilities within the roadway right of way and areas reasonably affected. Deliverable will include depiction of all overhead utilities within the roadway right-of-way on plans developed under Section 4, Preliminary Design.

   b. Subsurface Utilities: CONSULTANT will investigate and locate subsurface utilities within the roadway right-of-way, and areas reasonably effected, in accordance with the American Society of Civil Engineers Standard guideline for the Collection and Depiction of Existing Subsurface Utility Data, Quality Level C. Additionally, CONSULTANT will coordinate with Utility Owners to remove lids of surface features and document depth of utility device, or invert of pipe, within such surface features. Deliverables will include: Depiction of subsurface utilities on plan sheets developed under Section 2.1.B, Preliminary Design. An inventory of subsurface utility surface features by Owner, type, location, and depth of feature or pipe invert.

   c. Utility coordination: Based on field investigation, CONSULTANT will provide RTC a list of utility company whose utilities are likely to be within the project limits or reasonably affected by the project. RTC will issue the initial notification to the utility agencies on the list and CONSULTANT will coordinate with the utility agencies for upcoming work, facility relocation and new installation, and to insure utilities likely affected by the project are drawn on the plan and profile, evaluate potential conflicts through field investigation, investigate conflict resolution strategies. CONSULTANT will assist in relocation of utility with prior rights by facilitate meetings, review utility's design/cost for incorporation into a reimbursement agreement and/or incorporate the utility work into the RTC plans.

8. Utility Potholing (Optional)

CONSULTANT will hire a potholing contractor to investigate and locate specific subsurface utilities within the roadway R/W, and areas reasonably effected by the project that are deemed to have potential conflicts with construction. This is estimated at a single day of potholing for the project limits. Deliverables will include: Depiction of subsurface utilities on plan sheets developed under Section 4, Preliminary Design.

4. Preliminary Design

1. Plans and Specifications. Prepare preliminary Plans, an outline of Technical Specifications, and a preliminary cost estimate suitable for RTC and Local Government review. Construction plans shall cover an area sufficient for contractor's later use as a base for traffic control plans, e.g., coverage should include traffic control taper areas across intersections. Curb, gutter, and sidewalk that are deficient according to both RTC and local entity standards shall be identified.

2. Drainage Design. Drainage design will be limited to replacement of inlets within project limits. No further drainage updates or analysis is anticipated.

5. Final Design

1. Prepare Final Plans and Specifications

   a. Prepare Final Construction Plans, Contract Documents and Technical Specifications suitable for construction bid advertisement for the approved alignment in accordance with RTC standards and requirements. RTC will provide the boilerplate on disk in MS Word format. The RTC, Local Entity and Quality Control review comments will be incorporated into the final Plans and Specifications.

   The final construction plans will be on 22" x 34" size sheets and will show all elements of the project construction, including plan/profile view, right-of-way lines, cross-sections and construction/slope limits. The final plan set will include, as a minimum:

   - Cover Sheet
   - Legend, General Notes, and Abbreviations
   - Cross-section Sheets (at 1"=20' scale)
   - Plan/Profile Sheets (at 1"=20' scale)

- Signage and Striping Sheets (at 1"=20')
- Detail Sheets (scales as noted).

Depths of existing sanitary sewer and storm drain utilities will be checked and noted on the plans if there is any reason to expect conflict due to vertical clearances. All located, existing underground utilities will be shown on the Plan Sheets accompanied with the following "Note: Subsurface utilities are depicted by their Quality Levels in accordance American Society of Civil Engineers Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data (CI/ASCE 38-02). All utility information shown hereon is depicted to Quality Level "C", unless otherwise noted."

The Contract Documents and Technical Specifications will reference the latest edition of Standard Specifications for Public Works Construction (Orange Book) for standard construction items. Technical provisions will be prepared for approved deviations from the Orange Book and unique construction items not adequately covered in the Orange Book. The final plans and specifications will be signed and sealed by a Nevada Registered Professional Civil Engineer in responsible charge of preparation. Plans and specifications will be submitted to the RTC, Local Entity, utility agencies and other affected parties for review at the 50%, 90%, 100%, and final stages of completion per the following:

- 50% & 90% Plans – One 22"x34" set each to RTC and Local Entity, two 11"x17" sets to RTC, six 11"x17" sets to Local Entity, and one 11"x17" set each to utility agencies and other affected parties.
- 90% Specifications – One set each to RTC and Local Entity.
- 100% Plans – One 11"x17" each to RTC and Local Entity.
- 100% Specifications – One set each to RTC and Local Entity.
- Final Working Plan Set – One 22"x34" set to RTC, one 11"x17" set each to RTC and Local Entity.
- Final Working Specification Document – One set each to RTC and Local Entity, one copy in MS Word format of the Contract Documents and Technical Specifications to RTC.

b. Independent Checker. An independent checker will check, initial and date each plan sheet. A quality control review of the plans, contract documents and technical specifications will be performed which will focus on technical aspects of the plans and specifications and will ensure that all items of work are adequately covered.

c. Utility Agency Coordination. Distribute design review submittals (50% & 90%) to utility agencies for review and comment, and provide RTC a list of utility agencies provided design review submittals and Utility Agency review comments.

2. Final Engineer's Opinion of Probable Construction Costs and Time. Provide a final Engineer's opinion of probable construction costs for the project based on the final design and any alternatives or options. The cost opinion will be in the same format as the bid proposal form included in the contract documents. A quality control review of the cost opinion will be performed by the CONSULTANT. The CONSULTANT will also estimate the number of working or calendar days, as appropriate, for the construction of the projects.

6. Bidding Services

1. Plan Set and Specification Distribution: CONSULTANT will provide RTC with final plans and specifications, including addenda, in Portable Document Format (PDF), for use in the Ebid system.

2. Pre-bid Meeting: CONSULTANT will be available during the bidding process to answer technical questions and will hold the pre-bid meeting. All questions and responses will be documented and provided to RTC. CONSULTANT will prepare and provide PDF addenda, if required. All questions regarding legal aspects of the contract documents will be referred directly to RTC. CONSULTANT will prepare and provide a PDF summary of the pre-bid meeting, as directed by the RTC.

3. Bid Opening: CONSULTANT will attend the bid opening and review the bids received for irregularities and provide a recommendation for award. CONSULTANT will tabulate bid results into a MS Excel spreadsheet and check multiplication and addition of bid items.

Deliverables – Attendance at Pre-Bid meeting and Bid Opening, bid review.

7. Design Contingency

1. This is a design contingency for miscellaneous increases within the scope of this contract. CONSULTANT shall provide a letter detailing the need, scope, and not- to exceed budget for any proposed work. Work under this task shall proceed only with the RTC Project Manager's written approval.

8. A - E Construction Services (Optional) - The RTC and CONSULTANT shall review Optional Construction Services following the completion of final design to determine their appropriateness to the project.

8.A. Contract Administration (Optional)

1. Provide contract administration services as follows:

    - Attend the preconstruction conference
    - Perform construction coordination
    - Review and provide recommendations on contractor's traffic control plans
    - Review and stamp contractor's submittal for conformance to the contract documents, including plantmix bituminous pavement and Portland Cement concrete mix designs
    - Review and provide recommendations on test results
    - Review and provide recommendations on contractor's construction schedule and work progress
    - Review construction for acceptance and/or mitigation
    - Provide verification and approval of contractor's monthly pay request
    - Supervise the inspection, surveying and material testing activities
    - Provide recommendations to the RTC for any necessary construction changes due to field conditions
    - Assist in change order review and approval

8.B. Construction Surveying (Optional)

Provide construction staking as follows:

- One set of preliminary grading stakes at 50' stations denoting offsets and cut or fill to finish grade. This set of stakes will also delineate clearing and grubbing limits.
- One set of red tops at 50 feet centers for subgrade preparation.
- One set of final curb and gutter stakes at 50-foot stations and 25-foot stations at returns.
- One set of offset stakes for storm drains, head walls, traffic signals, and utility pull boxes and vaults.
- Roadway monuments, referenced in four directions.

8.C. Inspection (Optional)

1. Provide Inspector. Provide one full time inspector during all construction activities. 10-hour work days and a 40 working day contract period are anticipated. This inspector will:

    - Attend the preconstruction conference
    - Monitor the work performed by the Contractor and verify that the work is in accordance with the plans and specifications
    - Assist in problem resolution with the RTC, contractor personnel, utility agencies, the public and others

- Prepare daily inspection reports, submitted weekly to RTC and CC'd to the appropriate government jurisdiction(s).
- Provide quantity reports and assist in contractor's monthly progress payments
- Provide verification of the distribution of public relation notices required to be delivered by the contractor
- Assist in preparation of the Punch List
- Maintain a field blueline set of drawings to incorporate contractor record drawing mark-ups

8.D. Materials Testing (Optional)

1. Provide Material Testing for compliance with the specifications per the latest edition of the Standard Specifications for Public Works Construction (Orange Book) testing requirements. Materials to be tested will include plantmix bituminous pavement, aggregate base, native subgrade material, structural fill material and Portland Cement Concrete. Test reports, accompanied with CONSULTANT's recommendation regarding acceptance/mitigation of materials, shall be submitted promptly to the RTC and CC'd to appropriate governmental jurisdiction(s).

2. Provide AC Plant Inspection and Testing. Provide plantmix bituminous pavement plant inspection and laboratory aggregate testing. 50 hours for plant visits and sampling are anticipated. Laboratory tests will consist of sieve analysis, percent of wear, fractured faces and plasticity index.

3. Provide Asphalt Cement Testing. Sampling and testing of asphalt cement binder material shall be in accordance with Section 1.01A ASPHALT CEMENT of the RTC's Special Technical Specifications. For each paving day, the CONSULTANT's designated representative shall coordinate with and receive asphalt cement binder samples from the designated plant representative. The CONSULTANT's designated representative shall be present during all sampling operations. Each sample will be properly labeled and signed off by both representatives. A sample shall be taken during the production of each "lot" (500 ton) of plantmix bituminous pavement using container no larger than a quart in size. CONSULTANT to submit all asphalt cement binder samples to the Nevada Department of Transportation (NDOT), Material Laboratory, for testing. All samples should accompany with a NDOT form titled "Transmittal for Asphalt Samples" to be provided by the RTC.

4. Provide On-site Nuclear Gauge Testing & Sampling during the placement of aggregate base and fill materials, on-site thin-lift Nuclear Gauge testing & sampling for plantmix bituminous pavement placement, and on-site PCC testing & sampling. 150 hours of field testing are anticipated, and laboratory tests will include moisture density curves, Atterberg limits, and

sieve analysis. Test frequency shall comply with the latest edition of the Orange Book.

5. Provide Plantmix Bituminous Pavement Testing. Provide plantmix bituminous pavement tests per each "lot" (500 tons) placed. Laboratory test shall include extraction, aggregate gradation, specific gravity, flow & stability and Marshall unit weight. Reports will also include voids in total mix and voids filled.

6. Provide Plantmix Bituminous Pavement coring and Lab Testing. Lab test shall include core unit weight. Test reports will include percent compaction.

7. Provide Top Lift Longitudinal Joint Testing and Coring. Nuclear density testing will be performed on each side of all longitudinal joints at 200 foot intervals per every 1,000 foot segment. A core will be taken in every 1,000 foot segment near the point of one of the density tests on the side of the joint with the lowest mean joint density. The cores will be tested for specific gravity (air voids and compaction). The test report will include a Paving Plan and a Data/Calculation Sheet.

8.E. Record Information (Optional)

Record Drawings. Provide as-built record drawings for the completed project. Two sets of electronic drawings, in single file PDF format (22" x 34" at 300 dpi), on diskette will be provided to RTC for its files and distribution to the Local Entity. The PDF file shall include all plan sheets in one file with index/bookmark for easy access to different sheets or sections of the plan set.

The final record drawings must be identified, dated, and signed as the record drawings and must also contain the engineer's stamp and signature. The Consultant may either:

1. Provide the final revisions on the original engineer-stamped/signed reproducible drawings, which will then also be identified as the record drawings, or

2. Provide new engineer-stamped/signed reproducible drawings identified as the record drawings.

The Record Drawings shall include a scan of the original title sheet (including the appropriate signatures by RTC, local government, signed and stamped by the CONSULTANT) and identified as record drawings.

9. Construction Contingency (Optional)

This is a contingency for miscellaneous increases within the scope of this contract

in the performance of services under Task 8. If CONSULTANT determines that it is necessary to perform work to be paid out of contingency, CONSULTANT shall provide a letter detailing the need, scope, and not-to-exceed budget for any proposed work. Work under this task shall proceed only with the RTC Project Manager's prior written approval.

PRELIMINARY PROJECT SCHEDULE			
Sparks Consolidated, Packer Way and Wild Island Circle			
Milestone	**Begin**	**End**	**Duration**
RTC Board Approval	4/17/2020		
NTP	4/27/2020		
Preliminary Design	7/13/2020	9/11/2020	8 weeks
RTC/City Review	9/14/2020	10/16/2020	4 weeks
Final Design	10/19/2020	12/11/2020	7 weeks
RTC/City Review	12/14/2020	1/8/2020	4 weeks
Final Plans to RTC	1/11/2020	2/5/2020	3 weeks
Advertise	2/10/2021	3/10/2021	4 weeks
Pre-Bid Meeting	2/24/2021		
Bid Opening	3/10/2021		
Construction NTP	3/22/2021		
Construction Completion	3/29/2021	5/31/2021	9 weeks

Exhibit B

Compensation

Sparks Consolidated 21-01 (Packer Way & Wild Island Court)
Exhibit B
Cost of Services

Task #	Task	Item No.	Task Description	Staff																						Totals	
				Project Manager/Principal Engineer			Associate Engineer			Engineer I			Drafting			Survey Crew			Technician			Clerical			Other Direct	Subconsultant		
				Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Cost	Cost	# of Hours	Cost
1	Project Management	1	Project Management	$ 225.00	40	$ 9,000.00	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	10	$ 850.00	$ -	$ -	50	$ 9,850.00
			Sub-Totals		40	$ 9,000.00		0	$ -		0	$ -		0	$ -		0	$ -		0	$ -		10	$ 850.00	$ -	$ -	50	$ 9,850.00
2	Public Involvement	2	Public Information Meeting	$ 225.00	2	$ 450.00	$ 195.00	20	$ 3,900.00	$ 135.00		$ -	$ 135.00	20	$ 2,700.00	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	10	$ 850.00	$ -	$ -	52	$ 7,900.00
			Sub-Totals		2	$ 450.00		20	$ 3,900.00		0	$ -		20	$ 2,700.00		0	$ -		0	$ -		10	$ 850.00	$ -	$ -	52	$ 7,900.00
3	Existing Conditions	1	Condition Survey	$ 225.00	2	$ 450.00	$ 195.00	8	$ 1,560.00	$ 135.00	8	$ 1,080.00	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00		$ -	$ -	$ -	18	$ 3,090.00
		2	Traffic Data	$ 225.00	1	$ 225.00	$ 195.00	10	$ 1,950.00	$ 135.00	8	$ 1,080.00	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00		$ -	$ 1,500.00	$ -	19	$ 4,755.00
		3	Topographic Survey	$ 225.00	2	$ 450.00	$ 195.00	23	$ 4,875.00	$ 135.00		$ -	$ 135.00		$ -	$ 195.00	30	$ 5,850.00	$ 100.00		$ -	$ 85.00		$ -	$ -	$ -	57	$ 11,175.00
		4	Right of Way Mapping & Engineering	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00		$ -	$ -	$ -	0	$ -
		5	Geotechnical Investigation	$ 225.00	2	$ 450.00	$ 195.00	20	$ 3,900.00	$ 135.00	32	$ 4,320.00	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	8	$ 680.00	$ 2,200.00	$ 9,500.00	62	$ 22,050.00
		6	Pavement Design	$ 225.00	4	$ 900.00	$ 195.00	40	$ 7,800.00	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	4	$ 340.00	$ -	$ -	48	$ 9,940.00
		7	Utility Investigation	$ 225.00	2	$ 450.00	$ 195.00	10	$ 1,950.00	$ 135.00	40	$ 5,400.00	$ 135.00	60	$ 8,100.00	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	8	$ 680.00	$ -	$ -	120	$ 16,580.00
		8	Surveying (Optional)	$ 225.00	0	$ -	$ 195.00	0	$ -	$ 135.00	40	$ 5,400.00	$ 135.00	0	$ -	$ 195.00	30	$ 5,850.00	$ 100.00		$ -	$ 85.00		$ -	$ -	$ 6,000.00	70	$ 17,250.00
			Sub-Totals		14	$ 3,150.00		118	$ 22,425.00		88	$ 17,280.00		60	$ 8,100.00		40	$ 7,800.00		0	$ -		20	$ 1,700.00	$ 4,700.00	$ 15,500.00	347	$ 76,680.00
4	Preliminary Design	1	Roadway Design (50%)	$ 225.00	8	$ 1,800.00	$ 195.00	42	$ 8,190.00	$ 135.00	48	$ 6,480.00	$ 135.00	60	$ 8,100.00	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	8	$ 680.00	$ 500.00	$ -	166	$ 25,750.00
			Sub-Totals		8	$ 1,800.00		42	$ 8,190.00		244	$ 6,480.00		60	$ 8,100.00		0	$ -		0	$ -		48	$ 680.00	$ 500.00	$ -	166	$ 25,750.00
5	Final Design	1	Final Plans and Specifications	$ 225.00	8	$ 1,800.00	$ 195.00	48	$ 9,360.00	$ 135.00	48	$ 6,480.00	$ 135.00	60	$ 8,100.00	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	8	$ 680.00	$ 500.00	$ -	172	$ 26,920.00
		2	Final Engineer's Opinion of Probable Costs	$ 225.00	1	$ 225.00	$ 195.00	4	$ 780.00	$ 135.00	12	$ 1,620.00	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00		$ -	$ -	$ -	17	$ 2,625.00
			Sub-Totals		9	$ 2,025.00		52	$ 10,140.00		60	$ 8,100.00		60	$ 8,100.00		0	$ -		0	$ -		8	$ 680.00	$ 500.00	$ -	189	$ 29,545.00
6	Bidding Services	1	Plan Set and Specification Distribution	$ 225.00		$ -	$ 195.00	8	$ 1,560.00	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	8	$ 680.00	$ 500.00	$ -	16	$ 2,740.00
		2	Pre-Bid Meeting	$ 225.00	4	$ 900.00	$ 195.00	8	$ 1,560.00	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	2	$ 170.00	$ -	$ -	14	$ 2,630.00
		3	Bid Opening	$ 225.00		$ -	$ 195.00	4	$ 780.00	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00	2	$ 170.00	$ -	$ -	6	$ 950.00
			Sub-Totals		4	$ 900.00		20	$ 3,900.00		0	$ -		0	$ -		0	$ -		0	$ -		12	$ 1,020.00	$ 500.00	$ -	36	$ 6,320.00
7	Design Contingency (Optional)	1	Contingency																								$ 40,000.00
			Sub-Totals		0	$ -		0	$ -		0	$ -		0	$ -		0	$ -		0	$ -		0	$ -	$ 15,000.00	$ -	0	
8A-D	Construction Services (Optional)	8A	Provide Contract Administration	$ 225.00	24	$ 5,400.00	$ 195.00	128	$ 24,960.00	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00		$ -	$ 85.00		$ -	$ -	$ -	152	$ 30,360.00
		8B	Provide Construction Surveying	$ 225.00		$ -	$ 160.00	20	$ 3,200.00	$ 135.00		$ -	$ 135.00		$ -	$ 195.00	80	$ 15,600.00	$ 100.00		$ -	$ 85.00		$ -	$ -	$ -	100	$ 18,800.00
		8C	Provide Inspection	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 145.00	400	$ 58,000.00	$ 85.00		$ -	$ -	$ -	400	$ 58,000.00
		8D1	Materials Testing	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00	50	$ 5,000.00	$ 85.00	32	$ 2,720.00	$ 1,500.00	$ -	82	$ 9,220.00
		8D2	Provide AC Plant Inspection and Testing	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00	50	$ 5,000.00	$ 85.00		$ -	$ -	$ -	50	$ 5,000.00
		8D3	Asphalt Cement Testing	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00	50	$ 5,000.00	$ 85.00		$ -	$ -	$ -	50	$ 5,000.00
		8D4	On-Site Nuclear Gauge Testing	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00	150	$ 15,000.00	$ 85.00		$ -	$ -	$ -	150	$ 15,000.00
		8D5	Plumber Bituminous Pavement Testing	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00	25	$ 2,500.00	$ 85.00		$ -	$ 1,500.00	$ -	25	$ 4,000.00
		8D6	Bituminous Pavement Coring and Lab Testing	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00	25	$ 2,500.00	$ 85.00		$ -	$ 1,000.00	$ -	25	$ 3,500.00
		8D7	Top Lift Joint Program	$ 225.00		$ -	$ 195.00		$ -	$ 135.00		$ -	$ 135.00		$ -	$ 195.00		$ -	$ 100.00	50	$ 5,000.00	$ 85.00		$ -	$ -	$ -	50	$ 5,000.00
			Sub-Totals		24	$ 5,400.00		148	$ 28,160.00		0	$ -		0	$ -		80	$ 15,600.00		800	$ 95,000.00		32	$ 2,720.00	$ 4,000.00	$ -	1084	$ 253,880.00
8E	Record Information (Optional)	8E	Provide Record Drawings	$ 225.00		$ -	$ 185.00	2	$ 370.00	$ 135.00	16	$ 2,160.00	$ 135.00	24	$ 3,240.00	$ 195.00		$ -	$ 100.00		$ -	$ 85.00		$ -	$ 500.00	$ -	42	$ 6,270.00
			Sub-Totals		0	$ -		2	$ 370.00		16	$ 2,160.00		24	$ 3,240.00		0	$ -		0	$ -		0	$ -	$ 500.00	$ -	42	$ 6,270.00
9	Construction Contingency (Optional)	1	Construction Contingency																					$ 10,000.00			$ 40,000.00
GRAND TOTALS			Sub-Totals		80	**********		329	$ 73,205.00		416	$ 22,970.00		204	$ 27,540.00		120	$ 23,400.00		800	$ 95,000.00		130	$ 7,920.00	$ 10,700.00	$ 95,500.00	3314	$ 369,170.00
																										Total Design Services	$ 148,155.00
																										Total Construction Services	$ 160,170.00
																										Total Contingency	$ 40,000.00
																										Total Contract	$ 308,325.00

EXHIBIT B
Billing Schedule

WOOD RODGERS

Effective January 1, 2020

CLASSIFICATION	STANDARD RATE
Principal Engineer/Geologist/Surveyor/Planner/GIS/LA* II	$225
Principal Engineer/Geologist/Surveyor/Planner/GIS/LA* I	$215
Associate Engineer/Geologist/Surveyor/Planner/GIS/LA* III	$205
Associate Engineer/Geologist/Surveyor/Planner/GIS/LA* II	$195
Associate Engineer/Geologist/Surveyor/Planner/GIS/LA* I	$185
Engineer/Geologist/Surveyor/Planner/GIS/LA* III	$160
Engineer/Geologist/Surveyor/Planner/GIS/LA* II	$145
Engineer/Geologist/Surveyor/Planner/GIS/LA* I	$135
Assistant Engineer/Geologist/Surveyor/Planner/GIS/LA*	$115
CAD Technician III	$135
CAD Technician II	$125
CAD Technician I	$115
Project Coordinator	$105
Administrative Assistant	$85
Construction Project Manager	$145
Inspector IV	$125
Inspector III	$115
Inspector II	$105
Inspector I	$95
Field/Lab Technician III	$110
Field/Lab Technician II	$100
Field/Lab Technician I	$90
1 Person Survey Crew	$155
2 Person Survey Crew	$195
3 Person Survey Crew	$255
Consultants, Outside Services, Materials & Direct Charges	Cost Plus 10%
Overtime Work	Rate Plus 50%

*LA = Landscape Architect

Blueprints, reproductions, and outside graphic services will be charged at vendor invoice. Auto mileage will be charged at the IRS standard rate, currently 58 cents per mile.

Fee Schedule subject to change January 1, 2021.

Exhibit C

Indemnification and Insurance Requirements

INDEMNIFICATION AND INSURANCE REQUIREMENTS FOR PROFESSIONAL SERVICE AGREEMENTS
[NRS 338 DESIGN PROFESSIONAL]
2019-11-11 Version

1. INTRODUCTION

IT IS HIGHLY RECOMMENDED THAT CONSULTANTS CONFER WITH THEIR INSURANCE CARRIERS OR BROKERS TO DETERMINE THE AVAILABILITY OF THESE INSURANCE CERTIFICATES AND ENDORSEMENTS IN ADVANCE OF PROPOSAL SUBMISSION. IF THERE ARE ANY QUESTIONS REGARDING THESE INSURANCE REQUIREMENTS, IT IS RECOMMENDED THAT THE AGENT/BROKER CONTACT RTC'S FINANCE DIRECTOR AT (775) 348-0400.

2. INDEMNIFICATION

CONSULTANT agrees to save and hold harmless and fully indemnify RTC and City of Sparks including their elected officials, officers, employees, and agents (hereafter, "Indemnitees") from and against any and all claims, proceedings, actions, liability and damages, including reasonable attorneys' fees and defense costs incurred in any action or proceeding (collectively "Damages") arising out of the:

A. Negligence, errors, omissions, recklessness or intentional misconduct of CONSULTANT or CONSULTANT's agents, employees, officers, directors, subconsultants, or anyone else for whom CONSULTANT may be legally responsible, which are based upon or arising out of the professional services of CONSULTANT; and

B. Violation of law or any contractual provisions or any infringement related to trade names, licenses, franchises, patents or other means of protecting interests in products or inventions resulting from the use by the Indemnitees of any materials, devices, processes, equipment, or other deliverable (including software) supplied by CONSULTANT under or as a result of this Agreement, but excluding any violation or infringement resulting from the modification or alteration by the Indemnitees of any materials, devices, processes, equipment, or other deliverable (including software) not consented to by CONSULTANT.

CONSULTANT further agrees to defend, save and hold harmless and fully indemnify the Indemnitees from and against any and all Damages arising out the negligence, errors, omissions, recklessness or intentional misconduct of CONSULTANT or CONSULTANT's agents, employees, officers, directors, subconsultants, or anyone else for whom CONSULTANT may be legally responsible, which are not based upon or arising out of the professional services of CONSULTANT.

The Damages shall include, but are not limited to, those resulting from personal injury to any person, including bodily injury, sickness, disease or death and injury to real property or personal property, tangible or intangible, and the loss of use of any of that property, whether or not it is physically injured.

If the Indemnitees are involved in defending actions of CONSULTANT or anyone else for whom CONSULTANT is legally responsible, CONSULTANT shall reimburse the Indemnitees for the time spent by such personnel at the rate of the Indemnitees pay or compensation for such services.

If an Indemnitee is found to be liable in the proceeding, then CONSULTANT'S obligation hereunder shall be limited to the proportional share of the liability attributed to CONSULTANT.

In determining whether a claim is subject to indemnification, the incident underlying the claim shall determine the nature of the claim.

In the event of a violation or an infringement under paragraph 2.B above and the use is enjoined, CONSULTANT, at its sole expense, shall either (1) secure for the Indemnitees the right to continue using the materials by suspension of any injunction or by procuring a license or licenses for the Indemnitees; or (2) modify the materials so that they become non-infringing. This covenant shall survive the termination of the Professional Services Agreement.

The provisions of this Agreement are separate and severable and it is the intent of the Parties hereto that in the event any provision of this Agreement should be determined by any court of competent jurisdiction to be void, voidable or too restrictive for any reason whatsoever, the remaining provisions of this Agreement shall remain valid and binding upon said Parties. It is also understood and agreed that in the event any provision should be considered, by any court of competent jurisdiction, to be void because it imposes a greater obligation on CONSULTANT than is permitted by law, such court may reduce and reform such provisions to limitations which are deemed reasonable and enforceable by said court.

3. GENERAL REQUIREMENTS

Prior to the start of any work on a RTC project, CONSULTANT shall purchase and maintain insurance of the types and limits as described below insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONSULTANT, its subconsultants, or their employees, agents, or representatives. The cost of all such insurance shall be borne by CONSULTANT.

4. VERIFICATION OF COVERAGE

CONSULTANT shall furnish RTC with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements set forth herein, on forms acceptable to RTC. All deductibles and self-insured retentions requiring RTC approval shall be shown on the certificate. All certificates and endorsements are to be addressed to RTC's Finance Director and be received and approved by RTC before work commences. CONSULTANT agrees that RTC has the right to inspect CONSULTANT'S and the Sub's insurance policies, or certified copies of the policies, at any reasonable time. Copies of applicable policy forms or endorsements confirming required additional insured, waiver of subrogation and notice of cancellation provisions are required to be provided with any certificate(s) evidencing the required coverage.

5. NOTICE OF CANCELLATION

CONSULTANT or its insurers shall provide at least thirty (30) days' prior written notice to RTC prior to the cancellation or non-renewal of any insurance required under this Agreement. An exception may be included to provide at least ten (10) days' written notice if cancellation is due to non-payment of premium. CONSULTANT shall be responsible to provide prior written notice to RTC as soon as practicable upon receipt of any notice of cancellation, non-renewal, reduction in required limits or other material change in the insurance required under this Agreement.

6. SUBCONSULTANTS & SUBCONTRACTORS

CONSULTANT shall include all Subcontractors and Subconsultants (referred to collectively as "Subs") as insureds under its liability policies OR shall cause Subs employed by CONSULTANT to purchase and maintain separate liability coverages and limits of the types specified herein. If any Subs maintain separate liability coverages and limits, each shall include the RTC, Washoe County, City of Reno and City of Sparks as additional insureds under its commercial general liability policy, subject to the same requirements stated herein, without requiring a written contract or agreement between each of the additional insureds and any sub-consultant or sub-contractor. Any separate coverage limits of liability maintained by Subs shall be at least **$1,000,000** per occurrence and at least **$2,000,000** for any applicable coverage aggregates or the amount customarily carried by the Sub, whichever is GREATER. If any Subs provide their own insurance with limits less than required of the Contractor, Contractor shall include Subs in their coverage up to the full limits required of the Contractor. When requested by RTC, CONSULTANT shall furnish copies of certificates of insurance evidencing coverage for each subconsultant. CONSULTANT need not require its non-design subcontractors to carry Professional Errors and Omissions Liability insurance.

7. DEDUCTIBLES AND SELF-INSURED RETENTIONS

Any deductibles or self-insured retentions that exceed $5,000 per occurrence or claim must be declared to and approved by RTC's Finance Director prior to signing this Agreement. RTC is entitled to request and receive additional documentation, financial or otherwise, prior to giving its approval of the deductibles and self-insured retentions. Any changes to the deductibles or self-insured retentions made during the term of this Agreement or during the term of any policy must be approved by RTC's Finance Director prior to the change taking effect.

8. ACCEPTABILITY OF INSURERS

Required insurance is to be placed with insurers with a Best's rating of no less than A-VII and acceptable to RTC. RTC may accept coverage with carriers having lower Best's ratings upon review of financial information concerning CONSULTANT and the insurance carrier. RTC reserves the right to require that CONSULTANT'S insurer(s) be licensed and admitted in the State of Nevada or meet any applicable state and federal laws and regulations for non-admitted insurance placements.

9. OTHER CONDITIONS

A. Failure to furnish the required certificate(s) or failure to maintain the required insurance may result in termination of this Agreement at RTC's option.

B. If CONSULTANT fails to furnish the required certificate or fails to maintain the required insurance as set forth herein, RTC shall have the right, but not the obligation, to purchase said insurance at CONSULTANT's expense.

C. Any waiver of CONSULTANT's obligation to furnish such certificate or maintain such insurance must be in writing and signed by an authorized representative of RTC. Failure of RTC to demand such certificate or other evidence of full compliance with these insurance requirements or failure of RTC to identify a deficiency from evidence that is provided shall not be construed as a waiver of CONSULTANT's obligation to maintain such insurance, or as a waiver as to the enforcement of any of these provisions at a later date.

D. By requiring insurance herein, RTC does not represent that coverage and limits will necessarily be adequate to protect CONSULTANT, and such coverage and limits shall not be deemed as a limitation on CONSULTANT's liability under the indemnities granted to RTC in this contract.

E. If CONSULTANT'S liability policies do not contain the standard ISO separation of insureds condition, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

10. COMMERCIAL GENERAL LIABILITY

CONSULTANT shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less than **$2,000,000** each occurrence. If such CGL insurance contains a general aggregate limit, it shall be increased to equal twice the required occurrence limit or revised to apply separately to this project.

CGL insurance shall be written on ISO occurrence form CG 00 01 04 13 (or a substitute form providing equivalent coverage) and shall cover liability arising from premises, operations, products-completed operations, personal and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract).

RTC and any other Indemnitees listed in Section 2. INDEMNIFICATION of this Agreement shall be included as an insured under the CGL, using ISO additional insured endorsement CG 20 10 07/04 or CG 20 33 07/04 or a substitute providing equivalent coverage, and under the commercial umbrella, if any.

This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to RTC or any other Indemnitees under this Agreement.

CONSULTANT waives all rights against RTC and any other Indemnitees listed in section 2. INDEMNIFICATION of this Agreement for recovery of damages to the extent these damages are covered by the commercial general liability or commercial umbrella liability insurance maintained pursuant to this agreement. CONSULTANT's insurer shall endorse CGL policy to waive subrogation against RTC with respect to any loss paid under the policy.

11. COMMERCIAL AUTOMOBILE LIABILITY

CONSULTANT shall maintain automobile liability and, if necessary, commercial umbrella liability insurance with a limit of not less than **$1,000,000** each accident. Such insurance shall cover liability arising out of any auto (including owned, hired, and non-owned autos).

Coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 25, or a substitute form providing equivalent liability coverage for all owned, leased, hired (rented) and non-owned vehicles (as applicable). RTC may agree to accept auto liability for non-owned and hired (rented) vehicles under the CGL if CONSULTANT does not own or operate any owned or leased vehicles.

CONSULTANT waives all rights against RTC, its officers, employees and volunteers for recovery of damages to the extent these damages are covered by the automobile liability or commercial umbrella liability insurance obtained by CONSULTANT pursuant to this Agreement.

12. INDUSTRIAL (WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY) INSURANCE

It is understood and agreed that there shall be no Industrial (Worker's Compensation and Employer's Liability) Insurance coverage provided for CONSULTANT or any subconsultants by RTC. CONSULTANT, and any subconsultants, shall procure, pay for and maintain the required coverages.

CONSULTANT shall maintain workers' compensation and employer's liability insurance meeting the statutory requirements of the State of Nevada, including but not limited to NRS 616B.627 and NRS 617.210. The employer's liability limits shall not be less than **$1,000,000** each accident for bodily injury by accident or **$1,000,000** each employee for bodily injury by disease.

CONSULTANT shall provide a Final Certificate for itself and each subconsultant evidencing that CONSULTANT and each subconsultant maintained workers' compensation and employer's liability insurance throughout the entire course of the project.

If CONSULTANT, or any subconsultant is a sole proprietor, coverage for the sole proprietor must be purchased and evidence of coverage must appear on the Certificate of Insurance and Final Certificate.

CONSULTANT waives all rights against RTC, its elected officials, officers, employees and agents for recovery of damages to the extent these damages are covered by the workers compensation and employer's liability or commercial umbrella liability insurance obtained by Tenant pursuant to this

agreement. CONSULTANT shall obtain an endorsement equivalent to WC 00 03 13 to affect this waiver.

13. PROFESSIONAL ERRORS AND OMISSIONS LIABILITY

CONSULTANT shall maintain professional liability insurance applying to liability for a professional, error, act, or omission arising out of the scope of CONSULTANT'S services provided under this Agreement with a limit of not less than **$1,000,000** each claim and annual aggregate. CONSULTANT shall maintain professional liability insurance during the term of this Agreement and, if coverage is provided on a "claims made" or "claims made and reported" basis, shall maintain coverage or purchase an extended reporting period for a period of at least three (3) years following the termination of this Agreement.

April 17, 2020 **AGENDA ITEM 3.17**

TO: Regional Transportation Commission

FROM: R. Warren Call, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Amendment No. 4 to the Professional Services Agreement (PSA) between the RTC and Stantec Consulting for the Park Lane RAPID Station

RECOMMENDATION

Approve Amendment No. 4 to the existing Professional Services Agreement (PSA) between the RTC and Stantec Consulting for Engineering During Construction (EDC) services related to the Park Lane RAPID Station Project in an amount not to exceed $67,744 for a new total contract not to exceed amount of $116,750; authorize the RTC Executive Director to execute the agreement.

SUMMARY

This Amendment 4 (see Attachment A) with Stantec Consulting is for professional engineering during construction services (EDC) for the Park Lane RAPID Station Project in the amount of $67,744. The Project includes the construction of a RAPID Station on east side of Virginia Street south of Plumb Lane by the Reno Lands Park Lane Development.

Stantec Consulting was selected from the Civil Engineering Design and Construction Management Services List as a qualified firm to perform engineering, construction management and quality assurance. Negotiation of CA Group's scope, schedule and budget indicated the amount for EDC services is within the appropriated budget.

FISCAL IMPACT

Funding for this service is included in the current FY 2020 budget.

PREVIOUS ACTIONS BY BOARD

June 20, 2019	Approved the Qualified Consultant List for Engineering Design and Construction Management Services

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this report.

Attachment

AMENDMENT NO. 4
AGREEMENT
BETWEEN
REGIONAL TRANSPORTATION COMMISSION OF WASHOE COUNTY
AND
STANTEC CONSULTING SERVICES, INC.

The Regional Transportation Commission of Washoe County ("RTC") and Stantec Consulting Services, Inc. ("CONSULTANT"), entered into an agreement dated March 18, 2019, as previously amended by Amendment No. 1 dated December 31, 2019, Amendment No. 2 dated February 28, 2020, and Amendment No. 3 dated March 27, 2020 (the "Agreement"). This Amendment No. 4 is dated and effective as of April 17, 2020.

RECITALS

WHEREAS, the parties have determined that there is a need to amend the Agreement for RTC and CONSULTANT to add Construction Administration Services described in Exhibit A.

NOW, THEREFORE, in consideration of the mutual promises of the parties and other good and valuable consideration, the parties do agree as follows:

1. Exhibit A is replaced in its entirety with the version of Exhibit A attached hereto.

2. Section 3.2 will be replaced in its entirety with:

   The maximum amount payable to CONSULTANT to complete each task is equal to the not-to-exceed amounts identified in Exhibit B. CONSULTANT can request in writing that RTC's Project Manager reallocate not-to-exceed amounts between tasks. A request to reallocate not-to-exceed amounts must be accompanied with a revised fee schedule, and must be approved in writing by RTC's Project Manager prior to performance of the work. In no case shall CONSULTANT be compensated in excess of the following not-to exceed amounts:

Total Services (Tasks A to D)	$49,006.00
Total Construction Administration Services (Tasks E to H)	$67,744.00
Total Not to Exceed Amount	$116,750.00

3. Exhibit B is replaced in its entirety with the version of Exhibit B attached hereto.

4. All other provisions of the Agreement shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have made and executed this amendment.

APPROVED AS TO LEGALITY AND FORM:

_____
Adam Spear, RTC Director of Legal Services

REGIONAL TRANSPORTATION COMMISSION
OF WASHOE COUNTY

By:_____
Bill Thomas, AICP, Executive Director

STANTEC CONSULTING SERVICES, INC.

By:_____
Joseph Mactutis, P.E., Senior Project Manager

EXHIBIT A

SCOPE OF SERVICES
FOR THE
PARK LANE RAPID STATION PROJECT

A. Preliminary and General Items (Project Management):

1. Coordination with RTC project manager and staff will be ongoing throughout the project. Project management and coordination meetings or conference calls will be held with the RTC and other parties as appropriate. CONSULTANT will coordinate kick-off meeting and hold progress meetings during course of project.

2. Coordination with Utilities and appropriate agencies will be ongoing throughout the project. Coordination with property owners will also be done throughout this project to keep owners apprised of the project and access to their personal sites.

B. Preliminary Design (60%)

1. Topographic mapping for a proposed inbound RAPID Station at the former Park Lane Mall Site. Perform a topographic survey that covers an area of approximately 200 feet by 50 feet at the above referenced location. Mapping will extend from the 20 feet behind right of way to the center of South Virginia Street. All surface improvements in the project area will be depicted. Underground utilities will be shown based on above-ground evidence and research of agency drawings. Storm drain structure and sewer manhole invert elevations will be measured on lines that affect the project area. Spot elevations will be shown every 25 feet and at grade breaks and high and low points along the existing curb and every 50 feet along the crown of the road. Roadway striping will be located. Record right of way and property locations will be shown. Mapping will be compiled digitally at a scale of 1"=20' and provided to our civil engineering group for use as their design base map.

   Assumptions:
   - Traffic control is not required for this topographic survey.
   - Boundary determination, setting missing corners, compiling a Record of Survey, and the preparation of legal descriptions are not a part of this estimate.

2. Geotechnical Investigation

   Since field exploration was completed from the referenced investigation near the planned bus station and existing geotechnical information is available for the nearby planned Park Lane Development, field exploration is not included with this cost proposal.

Our geotechnical investigation program includes a literature review of existing geotechnical information and engineering analyses to allow formulation of geotechnical recommendations for design and construction of this project.

a. Literature Review

Our engineer will review published geologic maps and fault hazard reports to identify the presence of documented geologic hazards at the site. All existing geotechnical information near the project site will also be reviewed.

b. Report and Analysis

Upon completion of our office studies, a geotechnical investigation report will be completed for the project and will include the following (some information from previous studies):

➢ Description of the project site with the approximate locations of our field explorations, shown on a Site Plan;
➢ Descriptive logs of the explorations performed for this study;
➢ Discussion of laboratory test results and findings;
➢ General summary of the site soils and geology;
➢ Discussion of the seismic hazards including site seismicity, and parameters for design;
➢ Discussion of the general surface water and groundwater conditions;
➢ Recommendations for the following:
• Earthwork and site preparation including general site grading and remedial earthwork;
• Suitable foundation types, including typical shallow foundations, drilled shaft foundations, soil bearing values, anticipated settlements, minimum footing depth and widths,
• Lateral earth pressures for retaining wall and foundation design;
• Floor and concrete slab support options;
• Drainage considerations that may affect foundation and concrete slab-on-grade performance; and
• Resilient Modulus information and subgrade soil preparation recommendations for the design of the bus pad.

3. Subsurface Utilities: CONSULTANT will investigate and locate subsurface utilities within the roadway right-of-way, and areas reasonably effected, in accordance with the American Society of Civil Engineers Standard guideline for the Collection and Depiction of Existing Subsurface Utility Data, Quality Level C. Additionally, CONSULTANT will coordinate with Utility Owners

to remove lids of surface features and document depth of utility device, or invert of pipe, within such surface features. Deliverables will include: Depiction of subsurface utilities on plan sheets developed under Section B, Preliminary Design. An inventory of subsurface utility surface features by Owner, type, location, and depth of feature or pipe invert.

4. Utility coordination: Based on field investigation, CONSULTANT will provide RTC a list of utility company whose utilities are likely to be within the project limits or reasonably affected by the project and will prepare draft notification letters for RTC. RTC will issue the initial notification to the utility agencies on the list and CONSULTANT will coordinate with the utility agencies for upcoming work, facility relocation and new installation, and to insure utilities likely affected by the project are drawn on the plan and profile, evaluate potential conflicts through field investigation, investigate conflict resolution strategies.

5. Utility Pothole Exploration: Should insufficient information be available from existing records to determine whether or not conflicts between the proposed work and existing utilities will occur, the CONSULTANT will not pothole locations to make such a determination. This will be an added scope of work.

6. Plans and Specifications. Prepare preliminary Plans, and an outline of Technical Specifications suitable for RTC and Local Government review. Construction plans shall cover an area sufficient for contractor's later use as a base for traffic control plans, e.g., coverage should include traffic control taper areas across intersections.

    a. Communications: Included in electrical drawings. Cut sheets for RTC requested communications equipment will be provided by RTC.
    b. Electrical
        1. Produce electrical design drawings to an approximate 60% design level.
        2. It is assumed that electrical components and layout of the previous stations will be applicable to this station.
        3. Continue coordination process for electrical service applications with NV Energy and develop electrical service locations and single line diagrams.
        4. Define preliminary relocations of existing electrical elements in conflict with new bus stop site.
        5. Complete illumination calculations and select light fixtures.
        6. Produce drawings in AutoCAD version compatible with Civil design work.
        7. Attend Preliminary Design workshop meetings as required.
        8. Revise specifications to meet current code.
    c. Civil: prepare preliminary site plans for the station to include preliminary grading, site geometrics and PCC pavement design.

d. Architectural/Structural: The Architectural Conceptual Design is not assumed to be substantially different from the previous design. This work is deferred to final design.
e. Landscaping: Not included in this scope of work

C. Final Design

Final Design. The following scope of work are predicated on all improvements being constructed within existing right-of-way and/or existing easements.

1. Prepare Final Plans and Specifications

a. Prepare Final Construction Plans, Contract Documents and Technical Specifications suitable for construction bid advertisement for the approved alignment in accordance with RTC standards and requirements. RTC will provide the boilerplate on disk in MS Word format. The RTC, Local Entity and Quality Control review comments will be incorporated into the final Plans and Specifications.

The final construction plans will be on 22" x 34" size sheets and will show all elements of the project construction, including plan/profile view, right-of-way lines, cross-sections and construction/slope limits. The final plan set will include, as a minimum:

- Cover Sheet
- Notes, Legend abbreviations Sheet
- Site Plan/Control Sheet
- Grading Plan Sheets (at 1"=20' scale)
- PCC pavement plan and details (at 1”=20’ scale)
- Striping Plan Sheets (immediately adjacent to site) (at 1"=20')
- Architectural/Structural Plans: The approved previous station design will be updated to current codes and standards. The Final Design will include the drawings identified in the previous design and related construction details required for the construction of the project.
- Electrical Plans
  - Produce final electrical design drawings suitable for bid and submittal to Review Authority.
  - Design electrical circuitry to all electrical components.
  - Finalize coordination process for electrical service applications with NV Energy and complete electrical service locations and single line diagrams.
  - Finalize design relocating existing electrical elements in conflict with new bus stop sites.
  - Detail light fixture installations and design lighting controls.

    - Complete coordination with communication, security and revenue system consultants and indicate work to be included as part of Electrical Design.
    - Produce drawings in AutoCAD version compatible with Civil design work.
    - Attend Final Design workshop meetings as required.
    - Produce Final specifications in CSI format and in Microsoft Word.

- Detail Sheets (scales as noted).

Depths of existing sanitary sewer and storm drain utilities will be checked and noted on the plans if there is any reason to expect conflict due to vertical clearances. All located, existing underground utilities will be shown on the Plan Sheets accompanied with the following "Note: Subsurface utilities are depicted by their Quality Levels in accordance American Society of Civil Engineers Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data (CI/ASCE 38-02). All utility information shown hereon is depicted to Quality Level "C", unless otherwise noted."

The Contract Documents and Technical Specifications will reference the latest edition of Standard Specifications for Public Works Construction (Orange Book) for standard construction items. Technical provisions will be prepared for approved deviations from the Orange Book and unique construction items not adequately covered in the Orange Book. The final plans and specifications will be signed and sealed by a Nevada Registered Professional Civil Engineer and Architect in responsible charge of preparation. Plans and specifications will be submitted to the RTC, City of Reno, utility agencies and other affected parties for review at the 60%, 90%, 100%, and final stages of completion per the following:

- 60% & 90% Plans – One 11" x 17" set to RTC, two 11"x17" sets to City of Reno, one 11"x17" set each to utility agencies and other affected parties, and digital (PDF) sets to all parties.
- 90% Specifications – One set each to RTC and City of Reno, and digital (PDF) sets to all parties.
- 100% Plans – One 11"x17" each to RTC and City of Reno, and digital (PDF) sets to all parties.
- 100% Specifications – One set each to RTC and City of Reno, and digital (PDF) sets to all parties.
- Final Working Plan Set – One 22"x34" set to RTC, one 11"x17" set each to RTC and City of Reno, and digital (PDF) sets to all parties.

- Final Working Specification Document – One set each to RTC and City of Reno, one copy in MS Word format of the Contract Documents and Technical Specifications to RTC.

b. Independent Checker. An independent checker will check, initial and date each plan sheet. A quality control review of the plans, contract documents and technical specifications will be performed which will focus on technical aspects of the plans and specifications and will ensure that all items of work are adequately covered.

c. Utility Agency Coordination. Coordinate with all utility agencies for upcoming work, facility relocation and new installation. Consultant will prepare the applications necessary for RTC to submit to utility companies for facility relocation.

D. Bidding Services

1. Plan Set and Specification Distribution. CONSULTANT will provide the RTC with final plans and specifications, including addenda, in Portable Document Format (PDF), for use in the Procureware system.

2. Pre-bid Meeting. CONSULTANT will be available during the bidding process to answer technical questions and will hold the pre- bid meeting. All questions and responses will be documented and provided to RTC. CONSULTANT will prepare and provide PDF addenda, if required. All questions regarding legal aspects of the contract documents will be referred directly to RTC. CONSULTANT will prepare and provide a PDF summary of the pre-bid meeting, as directed by the RTC.

3. Bid Opening. CONSULTANT will attend the bid opening and review the bids received for irregularities and provide a recommendation for award. CONSULTANT will tabulate bid results into a MS Excel spreadsheet and check multiplication and addition of bid items.

E. Contract Administration

Provide contract administration services as follows:

- Attend the preconstruction conference
- Provide periodic construction observation and attendance at weekly meetings, 12 anticipated. Prepare agendas and minutes of meetings.
- Review and provide recommendations on contractor's traffic control plans
- Review contractor's submittal(s) for conformance to the intent of the contract documents, including structural shop drawings, architectural submittals, asphalt concrete and Portland Cement concrete mix designs
- Review and provide recommendations on test results
- Review and provide recommendations on contractor's construction schedule and work progress
- Review construction for acceptance and/or mitigation
- Provide verification and approval of contractor's monthly pay request
- Supervise Stantec's personnel that provide observation, surveying and material testing activities
- Provide recommendations to the RTC for any necessary construction changes due to field conditions
- Assist in change order review and approval
- Provide 15 sets of full size and ½ size drawings and specifications marked "Issued for Construction".

F. Construction Surveying

Provide construction staking as follows:

- Recover survey control.
- One (1) set of stakes delineating the saw-cut lines for pavement demolition. Estimated at 14 stakes.
- One (1) set of offset stakes to foundation grid lines A, 1, 5, and 10 with cut/fill to top of platform elevation. Estimated at 5 stakes.
- One (1) set of offset stakes to face of curb, sidewalk, platform and driveway angle points, points of curvature, and grade breaks with cut/fill to finished grade elevation. Estimated at 35 stakes.

Assumptions:

1. Traffic control to be provided by others.
2. Reference marks for new striping are not included in this proposal.
3. Stake out requests will be required in writing a minimum of 48 hours prior to the arrival of field crews.
4. Site will clear and ready for stakes at time of field crew(s) arrival.
5. Survey project manager will attend the pre-construction meeting only. Observation

G. Inspection and Testing

1. Provide Inspector. Provide one part-time inspector during all construction activities. A 4-hour work day and a sixty (60) working day contract period are anticipated. This inspector will:

    - Attend the preconstruction conference
    - Monitor the work performed by the Contractor and verify that the work is in accordance with the plans and specifications
    - Assist in problem resolution with the RTC, contractor personnel, utility agencies, the public and others
    - Prepare daily inspection reports, submitted weekly to RTC and CC'd to the appropriate government jurisdiction(s).
    - Provide quantity reports and assist in contractor's monthly progress payments
    - Provide verification of the distribution of public relation notices required to be delivered by the contractor
    - Assist in preparation of the Punch List
    - Maintain a field blueline set of drawings to incorporate contractor record drawing mark-ups

2. Provide Material Testing for compliance with the specifications per the Standard Specifications for Public Works Construction, 2012 Edition (Orange Book) testing requirements. Materials to be tested will include aggregate base, native subgrade material, structural fill material and Portland Cement Concrete. Test reports, accompanied with CONSULTANT's recommendation regarding acceptance/mitigation of materials, shall be submitted promptly to the RTC and CC'd to appropriate governmental jurisdiction(s).

3. Provide On-site Nuclear Gauge Testing and Sampling during the placement of aggregate base and fill materials, and on-site PCC testing and sampling. Sixty-six hours of field testing are anticipated, and laboratory tests will include moisture density curves, Atterberg limits, sieve analysis, and

concrete compression tests. Test frequency shall comply with the latest edition of the Orange Book.

4. Provide concrete pavement testing. Provide concrete pavement tests per the Special Technical Specifications including compressive strength, flexural strength, slump, air, unit weight and thickness measurement of Contractor provided cores.

5. Provide special inspection of structural steel welding and bolting. Thirty-six hours of field inspection are anticipated.

H. Record Drawing Information

Record Drawings. Provide record drawings for the completed project. Two sets of reproducible drawings on mylar, one set of blueline and two sets of AUTOCAD drawings will be provided to RTC for its files and distribution to the Local Entity.

The final record drawings must be identified, dated and signed as the record drawings and must also contain the engineer's stamp and signature. The Consultant may either:

1) provide the final revisions on the original engineer-stamped/signed reproducible drawings, which will then also be identified as the record drawings, or
2) provide new engineer-stamped/signed reproducible drawings identified as the record drawings.

The mylar and blueline Record Drawings shall include a copy of the original title sheet (including the appropriate signatures by RTC, local government, signed and stamped by the CONSULTANT) and identified as record drawings.

Exhibit B
Stantec Consulting Services Inc.

		RTC - Park Lane RAPID Station - Design Services													
TASKS		Staff Classification, Hours and Fees													
		17	15	14	12	10	9	8	7						
		Principal Engineer	Senior Engineer	Project Manager	Project Engineer\ Land Surveyor	Staff Engineer	Staff Engineer	Engineering Technican / Drafter	Engineering Technican / Drafter	Survey Crew	Manhour Summary	**Subtotal**	Expenses: Reproduction	**Total Sub-Task Cost**	**Total Task Cost**
		JW	JM	ES	CA	PT	MR	DL	DP						
	RATES	$ 224	$ 196	$ 185	$ 166	$ 147	$ 142	$ 137	$ 126	$ 180					
Task #	**DESCRIPTION**														
A	**Project Management**														**$ 5,698**
	Project Management and Coordination	8	8								16	$ 3,360	$ -	$ 3,360	
	Utility Coordination		6		7						13	$ 2,338	$ -	$ 2,338	
B	**Preliminary Design (60%)**														**$ 14,294**
	Topographic Mapping		2								2	$ 392	$ 1,900	$ 2,292	
	Geotechnical Investigation		2								2	$ 392	$ 3,030	$ 3,422	
	Plans - Civil		3				16				19	$ 2,860	$ -	$ 2,860	
	Plans - Elec		2								2	$ 392	$ 4,000	$ 4,392	
	Specs				8						8	$ 1,328	$ -	$ 1,328	
	OPC										0	$ -	$ -	$ -	
C	**Final Design (90% and100%)**														**$ 26,484**
	Plans - Civil	2	4		8		16				30	$ 4,832	$ -	$ 4,832	
	Plans - Arch		2		32		16				50	$ 7,976	$ -	$ 7,976	
	Plans - Elec		2								2	$ 392	$ 3,500	$ 3,892	
	Plans-Str		16				16				32	$ 5,408	$ -	$ 5,408	
	Specs				8						8	$ 1,328	$ -	$ 1,328	
	OPC										0	$ -	$ -	$ -	
	Building Permit		2		16						18	$ 3,048	$ -	$ 3,048	
D	**Bidding**														**$ 2,530**
	Pre-Bid Meeting		2		4						6	$ 1,056	$ -	$ 1,056	
	Bid Opening	2	1		5						8	$ 1,474	$ -	$ 1,474	
											0	$ -	$ -	$ -	
	Manhours	12	52	0	88	0	64	0	0	0	202				
		$ 2,688	**$ 10,192**	**$ -**	**$ 14,608**	**$ -**	**$ 9,088**	**$ -**	**$ -**	**$ -**		**$ 36,576**	**$ 12,430**	**$ 49,006**	**$ 49,006**

Exhibit B - Cont.
Stantec Consulting Services Inc.

		RTC - Park Lane RAPID Station - Optional Construction Services										
	TASKS	Staff Classification, Hours and Fees										
		15	14	12	10	9	7					
		Senior Engineer	Project Manager	Project Engineer\ Land Surveyor	Staff Engineer	Staff Engineer	Engineering Technican / Drafter	Survey Crew	Manhour Summary	**Subtotal**	Expenses: Reproduction	**Total Sub-Task Cost**	**Total Task Cost**
		JM	ES	CA	PT	MR	DP						
	RATES	$ 196	$ 185	$ 166	$ 147	$ 142	$ 126	$ 180					
Task #	**DESCRIPTION**												
E	**Construction Administration**												**$ 20,813**
	IFC plans								0	$ -	$ -	$ -	
	Pre-con	2		4					6	$ 1,056	$ 1	$ 1,057	
	Submittals			8			16		24	$ 3,344	$ -	$ 3,344	
	Weekly Meetings	8		24					32	$ 5,552	$ -	$ 5,552	
	RFIs-Str			16					16	$ 2,656		$ 2,656	
	RFIs-Elec	2							2	$ 392	$ 2,500	$ 2,892	
	RFIs-Arch			16					16	$ 2,656		$ 2,656	
	RFIs - Civil			16					16	$ 2,656	$ -	$ 2,656	
F	**Construction Staking**												**$ 4,324**
	Construction Staking	2						20	22	$ 3,992		$ 3,992	
	Pre-con			2					2	$ 332	$ -	$ 332	
G	**Inspection and Testing**												**$ 40,415**
	Inspection and Testing								0	$ -	$ 40,415	$ 40,415	
H	**Record Drawings**												**$ 2,192**
	Record Drawings	2		4		8			14	$ 2,192		$ 2,192	
	Manhours	16	0	90	0	8	16	20	150				
		$ 3,136	**$ -**	**$ 14,940**	**$ -**	**$ 1,136**	**$ 2,016**	**$ 3,600**		**$ 24,828**	**$ 42,916**	**$ 67,744**	**$ 67,744**

April 17, 2020 **AGENDA ITEM 3.18**

TO: Regional Transportation Commission

FROM: Jeff Wilbrecht, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Change Order No. 11 for the Virginia Street Bus RAPID Transit Extension Project (Plumb to Liberty & Maple to 15th)

RECOMMENDATION

Approve Change Order (CO) No. 11 in the amount of $33,383 for additional work associated with safety, traffic movements, and drainage requested by the RTC on the Virginia Street Bus RAPID Transit (BRT) Extension Project; authorize the RTC Executive Director to execute CO No. 11.

SUMMARY

Additional scope items requested be RTC for its contractor, Sierra Nevada Construction, include the following items:

- Changes to Holcomb Avenue Median at Virginia Street - $5,709
- Additional One Way Sign at Tahoe Street - $777
- Extension of PCCP Tie-in at Center Street - $7,575
- Incorporating Slotted Grates for Sidewalk Cross Drains - $13,900
- Incorporating Retroreflective Backing on Traffic Signal Heads - $5,421

These changes will result in no change to the performance period and ultimate completion schedule for this contract. The total cost is $33,383.

The changes are further detailed in Attachment A.

FISCAL IMPACT

CO No. 11 results in an increase of $33,383 to the Sierra Nevada Construction contract. The revised total Sierra Nevada Construction contract amount approved with this change order is $48,367,112.

PREVIOUS ACTIONS BY BOARD

February 21, 2020	Approved Change Order No. 07, 08, 09, and 10 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
December 20, 2019	Approved Change Order No. 05 and 06 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
November 15, 2019	Approved Change Order No. 01, 02, 03, and 04 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
October 24, 2019	Approved Interlocal Cooperative Agreement with the City of Reno for additional utility conduits on Virginia Street during construction of the South Virginia Street during Construction of the Virginia Street Bus RAPID Transit Extension Project
August 16, 2019	Approved Interlocal Cooperative Agreement with the City of Reno for Requested Enhancements to South Virginia Street during Construction of the Virginia Street Bus RAPID Transit Extension Project
May 20, 2019	Approved the Construction Agreement between RTC and SNC (CMAR) for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
May 20, 2019	Approved the Professional Services Agreement between RTC and Atkins North America (Atkins) for Construction Support Services on Phase 2 of the Virginia Street Bus RAPID Transit Extension Project.
March 15, 2019	Approved Interlocal Corporative Agreement between RTC and City of Reno to transfer funds to the City of Reno for the selection, procurement, and installation of benches and bike racks in Midtown.
July 20, 2018	Approved a Professional Services Agreement with Atkins for the Construction Management Services for the utility construction phase. Approved an Agreement with SNC for the construction of the early work utility construction phase. Authorized the finalization and execution of five utility relocation and reimbursement agreements into the agreement for early construction work.

June 15, 2018	Approved an Amendment to the CMAR Pre-Construction Agreement between the RTC and SNC for the Virginia Street Bus RAPID Extension Project
May 21, 2018	Approved a Request for Proposals (RFP) for Construction Services for the Virginia Street Bus RAPID Transit Extension Project.
June 17, 2016	Approved the Final Rankings of the Proposers and Selection of a Contractor for Construction Manager at Risk (CMAR) for Pre-Construction Services and authorized the Executive Director to execute a Pre-Construction Services Agreement with SNC for the Virginia Street RAPID Extension Project.
March 18, 2016	Approved the RFP for the CMAR method of project delivery for the Virginia Street Bus RAPID Transit Extension Project.
March 18, 2016	Approved Amendment No. 1 to the Professional Services Agreement with NCE for Final Design for the Virginia Street Bus RAPID Transit Extension Project.
October 16, 2015	Acknowledged receipt of an update on the Virginia Street Bus RAPID Transit Extension Project and approve the local preferred alternative.
August 21, 2015	Acknowledged receipt of an update and provided direction on the alternative selection for the Virginia Street Bus RAPID Transit Extension Project.
October 17, 2014	Approved the selection of NCE for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.
July 25, 2014	Approved the RFP for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

Attachment

ATTACHMENT A

REGIONAL TRANSPORTATION COMMISSION
Public Transportation · Streets and Highways · Planning

Project No. 211003
Change Order Requested By:
Jeff Wilbrecht

CONTRACT CHANGE ORDER (C.O.) NO. 11

Sheet 1 of 1
Date 3/24/20

To Sierra Nevada Construction (SNC), Contractor for the Virginia St. Bus Rapid Transit Extension, Ph. 2 Project. You are hereby directed to make the herein described changes from the plans and specifications or do the following described work not included in the plans and specifications on this contract.

RTC FINANCE APPROVAL, AVAILABILITY OF FUNDS
Finance Manager: _____ Date: _____

Unless noted otherwise, incorporated herein are description and costs associated with Changes in the Work directed by the RTC in accordance with the Agreement for Construction with Sierra Nevada Construction Inc. (SNC) for Phase 2 of the Virginia St. Bus RAPID Transit Extension Project approved by the RTC Board of Commissioners on May 20, 2019 and signed by the RTC Executive Director on June 3, 2019. The additional costs or cost reductions for the items of work below are per the attached Potential Change Order(s). The net change order amount includes all labor, equipment, and materials necessary to complete the work in accordance with the plans, specifications, and permits.

No contract days will be added to the contract duration as a result of this change.

11.001 Holcomb Avenue Median Island
This change is for modification to the median island at Holcomb Avenue. The net added cost of this item is $5,709.01.

11.002 One Way Sign Tahoe Street
This change is for installation of a one way sign across the exit at station "T2" 16+41 on Tahoe Street. The net added cost of this item is $777.53.

11.003 PCCP Tie-in at Center Street
This change is for extension of limits for the PCCP tie-in at Center Street. The net added cost of this item is $7,575.02.

11.004 Slotted Grates for Sidewalk Cross Drains
This change is for installation of slotted grates in sidewalk cross drains. The net added cost of this item is $13,900.00.

11.005 Retroreflective Backing on Traffic Signal Heads
This change is for installation of retroreflective backing on reused and new traffic signal heads. The net added cost of this item is $5,421.30.

Original Contract Amount: $47,222,952.28	Contract time prior to this C.O.: 121
Previously Approved C.O. Amounts: $1,110,776.60	Net increase resulting from this C.O.: 0
Net Increase from this C.O.: $33,382.86	New Contract Time with this C.O.: 121
Total Revised Contract Amount: $48,367,111.74	
Total Percent Change all C.O.'s: 2.42 %	

RTC CONTRACT COMPLIANCE OFFICER APPROVAL
Compliance Manager: _____ Date: _____

Contractor Acceptance:

Accepted Date: 3/24/20

By (Print Name):
Emma Crossman

Signature: Emma Crossman

NOTE: This Change Order is not effective until approved by Executive Director, RTC.

RTC Approval:
Recommended by (RTC Project Manager):
_____ Date: _____

Department Director:
_____ Date: _____

Chief Finance Officer:
_____ Date: _____

Executive Director:
_____ Date: _____

Created 5/4/19

ATKINS
Member of the SNC-Lavalin Group

Atkins North America, Inc.
10509 Professional Circle, Suite 102
Reno, NV 89521-4883

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Fax: +1.775.851.1687

www.atkinsglobal.com/northamerica

March 14, 2020

Mr. Jeff Wilbrecht
Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Subject: Virginia Street Bus Rapid Transit Extension; Phase 2
PCO 11.001 Holcomb Median Island

Dear Mr. Wilbrecht:

Please find enclosed cost proposal for changes to the median island on Holcomb Avenue.

Holcomb Median Island.....$5,709.01

SNC has not requested and will not receive any working days added to the contract duration for this change. If you have any questions, please call me at (775) 745-7026.

Sincerely,

George E. Jordy

George Jordy, P.E.
Sr. Resident Engineer

Enclosed: Copy of Sierra Nevada Construction's cost proposal for changes to the median island on Holcomb Avenue.

SIERRA NEVADA CONSTRUCTION, INC.

Mail PO Box 50760
Sparks, NV 89435-0760

Yard 2055 East Greg Street
Sparks, NV 89431

Phone 775.355.0420
Fax 775.355.0535

NV lic. 25565 CA lic. 593393

January 27, 2020

Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Project: Virginia St. RAPID Extension Phase 2
Subject: **Potential Change Order 031 – Holcomb Median Island**

Attn: Jeff Wilbrecht

Sierra Nevada Construction is pleased to provide pricing for changes to the median island at Holcomb Ave. Changes include the removal of 24 LF of new type 3 median curb and the replacement of 1 LF rounded section. SNC will patch the removed section with Type 3 PG64-22. Pricing also includes intersection guidelines at Plumb Lane from Southbound Virginia Street to Eastbound Plumb Lane.

Bid Item	Bid Item Description	Quantity	Unit	Unit Price	Extended Price
S6	Remove PCC	55	SF	$3.89	$213.95
S110	Place PCC Median Curb - Type 3	1	LF	$27.87	$27.87
S94	Permanent Mituminous Pavement Patch	55	SF	$30.03	$1,651.65
	Remove Stop Bar	12	LF	$30.00	$360.00
S137	Yellow curb Paint	40	LF	$4.44	$177.60
S144	Thermoplastic Left Turn Arrow	1	EA	$292.93	$292.93
S146	Thermoplastic Right Straight Arrow	1	EA	$838.38	$838.38
S140	24" Soloid White Thermoplastic	12	LF	$16.67	$200.04
S129	8" Solid White Paint	24	LF	$1.01	$24.24
	Plumb Intersection Guidelines	112	LF	$7.00	$784.00
	Traffic Control	1	LS	$800.00	$800.00
				Sub Total	$5,370.66
				CMAR FEE	$338.35
				Total	$5,709.01

If you have any questions, please feel free to contact me at (775) 432-8219.

Sincerely,

Emma Crossman

Emma Crossman
Project Manager
Sierra Nevada Construction, Inc.

ATKINS
Member of the SNC-Lavalin Group

Atkins North America, Inc.
10509 Professional Circle, Suite 102
Reno, NV 89521-4883

Telephone: +1.775.828.1622
Fax: +1.775.851.1687

www.atkinsglobal.com/northamerica

March 14, 2020

Mr. Jeff Wilbrecht
Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Subject: Virginia Street Bus Rapid Transit Extension; Phase 2
PCO 11.002 One Way Sign at Tahoe Street

Dear Mr. Wilbrecht:

Please find enclosed cost proposal for installation of a one way sign at Tahoe Street.

One Way Sign at Tahoe Street.....$777.53

SNC has not requested and will not receive any working days added to the contract duration for this change. If you have any questions, please call me at (775) 745-7026.

Sincerely,

George E. Jordy

George Jordy, P.E.
Sr. Resident Engineer

Enclosed: Copy of Sierra Nevada Construction's cost proposal for installation of a one way sign at Tahoe Street.

SNC

SIERRA NEVADA CONSTRUCTION, INC.

Mail PO Box 50760
Sparks, NV 89435-0760

Yard 2055 East Greg Street
Sparks, NV 89431

Phone 775.355.0420
Fax 775.355.0535

NV lic. 25565 CA lic. 593393

March 2, 2020

Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Project: Virginia St. RAPID Extension Phase 2
Subject: **Potential Change Order 035 – One Way Sign at Tahoe**

Attn: Jeff Wilbrecht

Sierra Nevada Construction is pleased to provide pricing for the furnish and installations of 1 EA one-way sign across from the exit at station T2 16+41.

Total Price $777.53

*Includes 6.3% CMAR fee- IC/Atkins

If you have any questions, please feel free to contact me at (775) 432-8219.

Sincerely,

Emma Crossman

Emma Crossman
Project Manager
Sierra Nevada Construction, Inc.

ATKINS
Member of the SNC-Lavalin Group

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Reno, NV 89521-4883

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Fax: +1.775.851.1687

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March 14, 2020

Mr. Jeff Wilbrecht
Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Subject: Virginia Street Bus Rapid Transit Extension; Phase 2
PCO 11.003 PCCP Tie-in at Center Street

Dear Mr. Wilbrecht:

Please find enclosed cost due to extension of limits for the PCCP tie-in at Center Street, located at station "SV" 46+75, 152'R.

Center Street PCCP Tie-in.....$7,575.02

SNC has not requested and will not receive any working days added to the contract duration for this change. If you have any questions, please call me at (775) 745-7026.

Sincerely,

George Jordy, P.E.
Sr. Resident Engineer

Enclosed: Copy of Sierra Nevada Construction's cost for the PCCP tie-in at Center Street.

SIERRA NEVADA CONSTRUCTION, INC.

Mail PO Box 50760
Sparks, NV 89435-0760

Yard 2055 East Greg Street
Sparks, NV 89431

Phone 775.355.0420
Fax 775.355.0535

NV lic 25565 CA lic 593393

February 26, 2020

Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Project: Virginia St. RAPID Extension Phase 2
Subject: **Potential Change Order 034 – Center Street PCCP Tie-in**

Attn: Jeff Wilbrecht

Per response to RFI 102 the limits of the Center Street tie-in were extended by 312 SF. Please see below for the additional costs associated with this work.

Bid Item	Bid Item Description	Quantity	Unit	Unit Price	Extended Price
S5	Remove PCC Pavement	312	SF	$4.57	$1,425.84
S98	Place 9.5" PCCP Pavement	312	SF	$18.27	$5,700.24
					$0.00
				Sub Total	$7,126.08
				CMAR FEE	$448.94
				Total	$7,575.02

If you have any questions, please feel free to contact me at (775) 432-8219.

Sincerely,

Emma Crossman
Project Manager
Sierra Nevada Construction, Inc.

ATKINS
Member of the SNC-Lavalin Group

Atkins North America, Inc.
10509 Professional Circle, Suite 102
Reno, NV 89521-4883

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March 14, 2020

Mr. Jeff Wilbrecht
Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Subject: Virginia Street Bus Rapid Transit Extension; Phase 2
PCO 11.004 Slotted Grates for Sidewalk Cross Drains

Dear Mr. Wilbrecht:

Please find enclosed cost proposal for installation of slotted grates on sidewalk cross drains.

Slotted Grates for Sidewalk Cross Drains.....$13,900.00

SNC has not requested and will not receive any working days added to the contract duration for this change. If you have any questions, please call me at (775) 745-7026.

Sincerely,

George Jordy, P.E.
Sr. Resident Engineer

Enclosed: Copy of Sierra Nevada Construction's cost proposal for installation of slotted grates on sidewalk cross drains.

SIERRA NEVADA CONSTRUCTION, INC.

Mail PO Box 50760
Sparks, NV 89435-0760

Yard 2055 East Greg Street
Sparks, NV 89431

Phone 775.355.0420
Fax 775.355.0535

NV lic 25565 CA lic 593393

March 11, 2020

Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Project: Virginia St. RAPID Extension Phase 2
Subject: **Potential Change Order 029 – Slotted Grates**

Attn: Jeff Wilbrecht

Sierra Nevada Construction is pleased to provide pricing to install slotted grates along the sidewalk cross drains at the locations identified in email provided by Atkins on 3/5/20. The pricing includes grinding the existing concrete for the grate to sit flush during installation, pricing also includes a 2'x2' drain rock inlet protection at the locations identified in the email.

Furnish and Install Grates: $1,500.00/EA * 9 EA = $ 13,500.00

Inlet Protection: $ 200.00/EA * 2 EA = $ 400.00

Total Cost: = $ 13,900.00

* Cost includes 6.3% CMAR fee- IC/Atkins

If you have any questions, please feel free to contact me at (775) 432-8219.

Sincerely,

Emma Crossman

Emma Crossman
Project Manager
Sierra Nevada Construction, Inc.

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Member of the SNC-Lavalin Group

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March 14, 2020

Mr. Jeff Wilbrecht
Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Subject: Virginia Street Bus Rapid Transit Extension; Phase 2
PCO 11.005 Signal Head Retroreflective Backing

Dear Mr. Wilbrecht:

Please find enclosed cost proposal for installation of retroreflective backing on traffic signal heads.

Signal Head Retroreflective Backing.....$5,421.30

SNC has not requested and will not receive any working days added to the contract duration for this change. If you have any questions, please call me at (775) 745-7026.

Sincerely,

George Jordy, P.E.
Sr. Resident Engineer

Enclosed: Copy of Sierra Nevada Construction's cost proposal for installation of retroreflective backing on traffic signal heads.

SNC

SIERRA NEVADA CONSTRUCTION, INC.

Mail PO Box 50760
Sparks, NV 89435-0760

Yard 2055 East Greg Street
Sparks, NV 89431

Phone 775.355.0420
Fax 775.355.0535

NV lic 25565 CA lic 593393

March 12, 2020

Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Project: Virginia St. RAPID Extension Phase 2
Subject: **Potential Change Order 021 – Retroreflective Backing**

Attn: Jeff Wilbrecht

Sierra Nevada Construction is pleased to provide pricing for retroreflective backing on all new traffic signal heads. The City of Reno requested that new signal heads have this installed. The pricing also includes costs to install reflective boarders on 18 existing signal heads.

Total Cost = $5,421.30

*Includes 6.3% CMAR fee

If you have any questions, please feel free to contact me at (775) 432-8219.

Sincerely,

Emma Crossman

Emma Crossman
Project Manager
Sierra Nevada Construction, Inc.

April 17, 2020 **AGENDA ITEM 3.19**

TO: Regional Transportation Commission

FROM: Jeff Wilbrecht, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Change Order No. 12 for the Virginia Street Bus RAPID Transit Extension Project (Plumb to Liberty & Maple to 15th)

RECOMMENDATION

Approve Change Order (CO) No. 12 in the amount of $49,785 for additional trees added to the project by the City of Reno on the Virginia Street Bus RAPID Transit (BRT) Extension Project (Project); authorize the RTC Executive Director to execute CO No. 12.

SUMMARY

This change order is a result of the request by the City of Reno to reincorporate approximately 24 trees into the Midtown Segment of the Project. During the design phase of the project, trees were planned for median areas throughout the corridor. Late in the design phase of the project the City of Reno Fire Department required the design to eliminate trees from medians. After execution of the Construction Manager at Risk's Guaranteed Maximum Price, the City of Reno requested to reincorporate trees into the project. This request required coordination and redesign of project plans to reincorporate the trees in areas that could accommodate them.

Additional trees are planned to be included in the Midtown segment of the project between Mt. Rose Street and Liberty Street. These changes will result in no change to the performance period and ultimate completion schedule for this contract. The total cost is $49,785.

The changes are further detailed in Attachment A.

FISCAL IMPACT

CO No. 12 results in an increase of $49,785 to the Sierra Nevada Construction contract. The revised total Sierra Nevada Construction contract amount approved with this change order is $48,416,897.

PREVIOUS ACTIONS BY BOARD

February 21, 2020	Approved Change Order No. 07, 08, 09, and 10 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
December 20, 2019	Approved Change Order No. 05 and 06 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
November 15, 2019	Approved Change Order No. 01, 02, 03, and 04 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
October 24, 2019	Approved Interlocal Cooperative Agreement with the City of Reno for additional utility conduits on Virginia Street during construction of the South Virginia Street during Construction of the Virginia Street Bus RAPID Transit Extension Project
August 16, 2019	Approved Interlocal Cooperative Agreement with the City of Reno for Requested Enhancements to South Virginia Street during Construction of the Virginia Street Bus RAPID Transit Extension Project
May 20, 2019	Approved the Construction Agreement between RTC and SNC (CMAR) for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
May 20, 2019	Approved the Professional Services Agreement between RTC and Atkins North America (Atkins) for Construction Support Services on Phase 2 of the Virginia Street Bus RAPID Transit Extension Project.
March 15, 2019	Approved Interlocal Corporative Agreement between RTC and City of Reno to transfer funds to the City of Reno for the selection, procurement, and installation of benches and bike racks in Midtown.
July 20, 2018	Approved a Professional Services Agreement with Atkins for the Construction Management Services for the utility construction phase. Approved an Agreement with SNC for the construction of the early work utility construction phase. Authorized the finalization and execution of five utility relocation and reimbursement agreements into the agreement for early construction work.

June 15, 2018	Approved an Amendment to the CMAR Pre-Construction Agreement between the RTC and SNC for the Virginia Street Bus RAPID Extension Project
May 21, 2018	Approved a Request for Proposals (RFP) for Construction Services for the Virginia Street Bus RAPID Transit Extension Project.
June 17, 2016	Approved the Final Rankings of the Proposers and Selection of a Contractor for Construction Manager at Risk (CMAR) for Pre-Construction Services and authorized the Executive Director to execute a Pre-Construction Services Agreement with SNC for the Virginia Street RAPID Extension Project.
March 18, 2016	Approved the RFP for the CMAR method of project delivery for the Virginia Street Bus RAPID Transit Extension Project.
March 18, 2016	Approved Amendment No. 1 to the Professional Services Agreement with NCE for Final Design for the Virginia Street Bus RAPID Transit Extension Project.
October 16, 2015	Acknowledged receipt of an update on the Virginia Street Bus RAPID Transit Extension Project and approve the local preferred alternative.
August 21, 2015	Acknowledged receipt of an update and provided direction on the alternative selection for the Virginia Street Bus RAPID Transit Extension Project.
October 17, 2014	Approved the selection of NCE for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.
July 25, 2014	Approved the RFP for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

Attachment

REGIONAL TRANSPORTATION COMMISSION
Public Transportation • Streets and Highways • Planning

ATTACHMENT A

Project No. 211003
Change Order Requested By:
Jeff Wilbrecht

CONTRACT CHANGE ORDER (C.O.) NO. 12

Sheet 1 of 1
Date 3/26/20

To Sierra Nevada Construction (SNC), Contractor for the Virginia St. Bus Rapid Transit Extension, Ph. 2 Project. You are hereby directed to make the herein described changes from the plans and specifications or do the following described work not included in the plans and specifications on this contract.

Unless noted otherwise, incorporated herein are description and costs associated with Changes in the Work directed by the RTC in accordance with the Agreement for Construction with Sierra Nevada Construction Inc. (SNC) for Phase 2 of the Virginia St. Bus RAPID Transit Extension Project approved by the RTC Board of Commissioners on May 20, 2019 and signed by the RTC Executive Director on June 3, 2019. The additional costs or cost reductions for the items of work below are per the attached Potential Change Order(s). The net change order amount includes all labor, equipment, and materials necessary to complete the work in accordance with the plans, specifications, and permits.

No contract days will be added to the contract duration as a result of this change.

12.001 Additional Trees
This change is for installation of 24 additional trees as requested by the City of Reno. The net added cost of this item is $49,784.97.

Original Contract Amount: $ 47,222,952.28	Contract time prior to this C.O.: 121
Previously Approved C.O. Amounts: $ 1,144,159.46	Net increase resulting from this C.O.: 0
Net Increase from this C.O.: $ 49,784.97	New Contract Time with this C.O.: 121
Total Revised Contract Amount: $ 48,416,896.71	
Total Percent Change all C.O.'s: 2.53 %	

Contractor Acceptance:

Accepted Date: _____

By (Print Name):

_____

Signature:

_____

NOTE: This Change Order is not effective until approved by Executive Director, RTC.

RTC Approval:
Recommended by (RTC Project Manager):

_____ Date: _____

Department Director:

_____ Date: _____

Chief Finance Officer:

_____ Date: _____

Executive Director:

_____ Date: _____

RTC FINANCE APPROVAL, AVAILABILITY OF FUNDS
Finance Manager: _____ Date: _____

RTC CONTRACT COMPLIANCE OFFICER APPROVAL
Compliance Manager: _____ Date: _____

ATKINS
Member of the SNC-Lavalin Group

Atkins North America, Inc.
10509 Professional Circle, Suite 102
Reno, NV 89521-4883

Telephone: +1.775.828.1622
Fax: +1.775.851.1687

www.atkinsglobal.com/northamerica

March 17, 2020

Mr. Jeff Wilbrecht
Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Subject: Virginia Street Bus Rapid Transit Extension; Phase 2
PCO 12.001 Additional Trees

Dear Mr. Wilbrecht:

Please find enclosed cost proposal for installation of 24 additional trees as requested by the City of Reno.

Additional Trees.....$49,784.97

SNC has not requested and will not receive any working days added to the contract duration for this change. If you have any questions, please call me at (775) 745-7026.

Sincerely,

George Jordy, P.E.
Sr. Resident Engineer

Enclosed: Copy of Sierra Nevada Construction's cost proposal for installation of 24 additional trees.

SNC

SIERRA NEVADA CONSTRUCTION, INC.

Mail PO Box 50760
Sparks, NV 89435-0760

Yard 2055 East Greg Street
Sparks, NV 89431

Phone 775.355.0420
Fax 775.355.0535

NV lic 25565 CA lic. 593393

January 28, 2020

Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Project: Virginia St. RAPID Extension Phase 2
Subject: **Potential Change Order 022 – Added Trees**

Attn: Jeff Wilbrecht

Sierra Nevada Construction is providing pricing for 24 additional trees incorporated with the Virginia Street Project. The price includes the additional electrical, landscape, import and export of soil, and credit for PCC sidewalk placement.

Bid Item Description	Quantity	Unit	Unit Price	Extended Price
Additional Electrical	1.000	LS	$ 7,880.00	$ 7,880.00
Additional Irrigation	24.000	EA	$ 819.00	$ 19,656.00
Additional Trees	24.000	EA	$ 1,117.85	$ 26,828.40
Place PCC Sidewalk	-600.000	SF	$ 12.55	$ (7,530.00)
				$ -
			Sub Total	**$ 46,834.40**
			CMAR FEE	**$ 2,950.57**
			Total	**$ 49,784.97**

If you have any questions, please feel free to contact me at (775) 432-8219.

Sincerely,

Emma Crossman
Project Manager
Sierra Nevada Construction, Inc.

April 17, 2020 **AGENDA ITEM 3.20**

TO: Regional Transportation Commission

FROM: Jeff Wilbrecht, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Change Order No. 13 for the Virginia Street Bus RAPID Transit Extension Project (Plumb to Liberty & Maple to 15th)

RECOMMENDATION

Approve Change Order (CO) No. 13 in the amount of $344,245 for landscape and irrigation changes to the Virginia Street Bus RAPID Transit (BRT) Extension Project (Project); authorize the RTC Executive Director to execute CO No. 13.

SUMMARY

This change order is a result of requests of the City of Reno after the execution of Construction Manager at Risk's Guaranteed Maximum Price for phase 2 of the Project.

This change includes a porous pave material at several tree wells. The porous pave material is a walkable surface that increases the walking pathway area within the sidewalk and allows infiltration of water into the tree well. This change order also includes significant changes to the design of the irrigation system to individual trees, providing irrigation control and isolation to each tree with additional valve controls and winterization systems.

These changes will result in no change to the performance period and ultimate completion schedule for this contract. The total cost is $344,245.

The changes are further detailed in Attachment A.

FISCAL IMPACT

CO No. 12 results in an increase of $344,245 to the Sierra Nevada Construction contract. The revised total Sierra Nevada Construction contract amount approved with this change order is $48,761,142.

PREVIOUS ACTIONS BY BOARD

February 21, 2020	Approved Change Order No. 07, 08, 09, and 10 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
December 20, 2019	Approved Change Order No. 05 and 06 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
November 15, 2019	Approved Change Order No. 01, 02, 03, and 04 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
October 24, 2019	Approved Interlocal Cooperative Agreement with the City of Reno for additional utility conduits on Virginia Street during construction of the South Virginia Street during Construction of the Virginia Street Bus RAPID Transit Extension Project
August 16, 2019	Approved Interlocal Cooperative Agreement with the City of Reno for Requested Enhancements to South Virginia Street during Construction of the Virginia Street Bus RAPID Transit Extension Project
May 20, 2019	Approved the Construction Agreement between RTC and SNC (CMAR) for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
May 20, 2019	Approved the Professional Services Agreement between RTC and Atkins North America (Atkins) for Construction Support Services on Phase 2 of the Virginia Street Bus RAPID Transit Extension Project.
March 15, 2019	Approved Interlocal Corporative Agreement between RTC and City of Reno to transfer funds to the City of Reno for the selection, procurement, and installation of benches and bike racks in Midtown.
July 20, 2018	Approved a Professional Services Agreement with Atkins for the Construction Management Services for the utility construction phase. Approved an Agreement with SNC for the construction of the early work utility construction phase. Authorized the finalization and execution of five utility relocation and reimbursement agreements into the agreement for early construction work.

June 15, 2018	Approved an Amendment to the CMAR Pre-Construction Agreement between the RTC and SNC for the Virginia Street Bus RAPID Extension Project
May 21, 2018	Approved a Request for Proposals (RFP) for Construction Services for the Virginia Street Bus RAPID Transit Extension Project.
June 17, 2016	Approved the Final Rankings of the Proposers and Selection of a Contractor for Construction Manager at Risk (CMAR) for Pre-Construction Services and authorized the Executive Director to execute a Pre-Construction Services Agreement with SNC for the Virginia Street RAPID Extension Project.
March 18, 2016	Approved the RFP for the CMAR method of project delivery for the Virginia Street Bus RAPID Transit Extension Project.
March 18, 2016	Approved Amendment No. 1 to the Professional Services Agreement with NCE for Final Design for the Virginia Street Bus RAPID Transit Extension Project.
October 16, 2015	Acknowledged receipt of an update on the Virginia Street Bus RAPID Transit Extension Project and approve the local preferred alternative.
August 21, 2015	Acknowledged receipt of an update and provided direction on the alternative selection for the Virginia Street Bus RAPID Transit Extension Project.
October 17, 2014	Approved the selection of NCE for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.
July 25, 2014	Approved the RFP for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

Attachment

REGIONAL TRANSPORTATION COMMISSION
Public Transportation • Streets and Highways • Planning

ATTACHMENT A

Project No. 211003

CONTRACT CHANGE ORDER (C.O.) NO. 12

Change Order Requested By:
Jeff Wilbrecht

Sheet 1 of 1
Date 3/26/20

To Sierra Nevada Construction (SNC), Contractor for the Virginia St. Bus Rapid Transit Extension, Ph. 2 Project. You are hereby directed to make the herein described changes from the plans and specifications or do the following described work not included in the plans and specifications on this contract.

Unless noted otherwise, incorporated herein are description and costs associated with Changes in the Work directed by the RTC in accordance with the Agreement for Construction with Sierra Nevada Construction Inc. (SNC) for Phase 2 of the Virginia St. Bus RAPID Transit Extension Project approved by the RTC Board of Commissioners on May 20, 2019 and signed by the RTC Executive Director on June 3, 2019. The additional costs or cost reductions for the items of work below are per the attached Potential Change Order(s). The net change order amount includes all labor, equipment, and materials necessary to complete the work in accordance with the plans, specifications, and permits.

No contract days will be added to the contract duration as a result of this change.

12.001 Additional Trees
This change is for installation of 24 additional trees as requested by the City of Reno. The net added cost of this item is $49,784.97.

Original Contract Amount: $ 47,222,952.28	Contract time prior to this C.O.: 121
Previously Approved C.O. Amounts: $ 1,144,159.46	Net increase resulting from this C.O.: 0
Net Increase from this C.O.: $ 49,784.97	New Contract Time with this C.O.: 121
Total Revised Contract Amount: $ 48,416,896.71	
Total Percent Change all C.O.'s: 2.53 %	

Contractor Acceptance:

Accepted Date: _____

By (Print Name):

_____

Signature:

_____

NOTE: This Change Order is not effective until approved by Executive Director, RTC.

RTC Approval:
Recommended by (RTC Project Manager):

_____ Date: _____

Department Director:

_____ Date: _____

Chief Finance Officer:

_____ Date: _____

Executive Director:

_____ Date: _____

RTC FINANCE APPROVAL, AVAILABILITY OF FUNDS
Finance Manager: _____ Date: _____

RTC CONTRACT COMPLIANCE OFFICER APPROVAL
Compliance Manager: _____ Date: _____

ATKINS
Member of the SNC-Lavalin Group

Atkins North America, Inc.
10509 Professional Circle, Suite 102
Reno, NV 89521-4883

Telephone: +1.775.828.1622
Fax: +1.775.851.1687

www.atkinsglobal.com/northamerica

March 17, 2020

Mr. Jeff Wilbrecht
Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Subject: Virginia Street Bus Rapid Transit Extension; Phase 2
PCO 13.001 Landscape Changes

Dear Mr. Wilbrecht:

Please find enclosed cost proposal for modification of the irrigation system and installation of porous pave at tree planters as requested by the City of Reno.

Landscape Changes.....$344,245.11

SNC has not requested and will not receive any working days added to the contract duration for this change. If you have any questions, please call me at (775) 745-7026.

Sincerely,

George Jordy, P.E.
Sr. Resident Engineer

Enclosed: Copy of Sierra Nevada Construction's cost proposal for landscape changes.

SIERRA NEVADA CONSTRUCTION, INC.

Mail PO Box 50760
Sparks, NV 89435-0760

Yard 2055 East Greg Street
Sparks, NV 89431

Phone 775.355.0420
Fax 775.355.0535

NV lic. 25565 CA lic. 593393

January 30, 2020

Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Project: Virginia St. RAPID Extension Phase 2
Subject: **Potential Change Order 003.2 – Irrigation Changes and Porous Pave GMP to IFC**

Attn: Jeff Wilbrecht

Sierra Nevada Construction is breaking out the changes originally sent in July to further clarify changes that have been made from GMP to IFC Plans. These changes are only the irrigation and Porous Pave identified from GMP drawings dated 2.04.19 to IFC drawings dated 5.31.19. The Platypus Rootball Anchoring Systems have been removed from this change order and will not be installed on this project. Moana Nursery will be installing tree stakes. All tree locations will receive tree stakes, at locations with porous pave Moana will place a 3" diameter PVC sleeve for the tree stake to go into. Moana Nursery will not be responsible for filling the pipe sleeve upon COR removal of the tree stakes in the future. The remaining changes are broken out below:

1. Deduct shredded bark mulch from plans sent from Nichols. Please see attached backup.
2. Add 3,204 SF of Tan/Brown Porous Pave (Please note, per request this is the more UV protectant material and therefore more expensive than the standard Porous Pave).
3. Deduct misc. irrigation material (1 access grate, two standard end caps) no longer required because replaced with a valve box and ball valves.
4. Add misc. irrigation material required to control each tree separately in the system (please see backup provided for exact material included).
5. Add 3,100 LF of 3" perforated pipe through root barrier system to house XF series drip line throughout tree cells. Pricing for material and install.
6. Add 3,100 LF of XF series dripline and all incidental fittings, connections, and parts necessary for installing dripline into perforated pipe throughout tree cells. (Please see backup provided for exact material included). Pricing for material and install.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1.	Deduct shredded bark mulch				($8,065.00)
2.	Porous Pave (Aliphatic Binder)	3204	SF		$110,685.00
3.	Deduct misc. irrigation material	212	EA	$64.00	($13,568.00)

4.	Additional irrigation material	212	EA	$819.00	$173,628.00
5.	3” Perforated Pipe	3100	LF	$4.25	$13,175.00
6.	XF Series dripline through tree cells	3100	LF	$15.48	$47,988.00
				SUB TOTAL	$323,843.00
				CMAR FEE 6.3%	$20,402.11
				TOTAL	**$344,245.11**

If you have any questions, please feel free to contact me at (775) 432-8219.

Sincerely,

Emma Crossman
Project Manager
Sierra Nevada Construction, Inc.

April 17, 2020 **AGENDA ITEM 3.21**

TO: Regional Transportation Commission

FROM: Jeff Wilbrecht, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Change Order No. 14 for the Virginia Street Bus RAPID Transit Extension Project (Plumb to Liberty & Maple to 15th)

RECOMMENDATION

Approve Change Order (CO) No. 14 to include landscape soil as an eligible item in the Virginia Street Bus RAPID Transit (BRT) Extension Project's (Project) risk register; authorize the RTC Executive Director to execute CO No. 14.

SUMMARY

This change order is a no cost change to the Sierra Nevada Construction contract. The purpose of this change is to amend the risk register (already included in the Construction Manager at Risk contract) to include uncertainty of the suitability of native soils used for planting soil as an eligible risk item. This is a result of added risk to the project that has occurred due to the change in the specifications that was requested by the City of Reno between the time of negotiating the guaranteed maximum price and beginning construction of the project. This change provides a mechanism within the existing Construction Manager at Risk contract to appropriately manage this specific project risk.

This is a no cost change to the construction contract price. This change does not alter the performance period for this contract.

The changes are further detailed in Attachment A.

FISCAL IMPACT

CO No. 14 is a no cost change to the Sierra Nevada Construction contract.

PREVIOUS ACTIONS BY BOARD

February 21, 2020	Approved Change Order No. 07, 08, 09, and 10 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
December 20, 2019	Approved Change Order No. 05 and 06 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
November 15, 2019	Approved Change Order No. 01, 02, 03, and 04 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
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July 20, 2018	Approved a Professional Services Agreement with Atkins for the Construction Management Services for the utility construction phase. Approved an Agreement with SNC for the construction of the early work utility construction phase. Authorized the finalization and execution of five utility relocation and reimbursement agreements into the agreement for early construction work.

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May 21, 2018	Approved a Request for Proposals (RFP) for Construction Services for the Virginia Street Bus RAPID Transit Extension Project.
June 17, 2016	Approved the Final Rankings of the Proposers and Selection of a Contractor for Construction Manager at Risk (CMAR) for Pre-Construction Services and authorized the Executive Director to execute a Pre-Construction Services Agreement with SNC for the Virginia Street RAPID Extension Project.
March 18, 2016	Approved the RFP for the CMAR method of project delivery for the Virginia Street Bus RAPID Transit Extension Project.
March 18, 2016	Approved Amendment No. 1 to the Professional Services Agreement with NCE for Final Design for the Virginia Street Bus RAPID Transit Extension Project.
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August 21, 2015	Acknowledged receipt of an update and provided direction on the alternative selection for the Virginia Street Bus RAPID Transit Extension Project.
October 17, 2014	Approved the selection of NCE for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.
July 25, 2014	Approved the RFP for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

Attachment

REGIONAL TRANSPORTATION COMMISSION
Public Transportation • Streets and Highways • Planning

ATTACHMENT A

Project No. 211003

CONTRACT CHANGE ORDER (C.O.) NO. 12

Change Order Requested By:
Jeff Wilbrecht

Sheet 1 of 1
Date 3/26/20

To Sierra Nevada Construction (SNC), Contractor for the Virginia St. Bus Rapid Transit Extension, Ph. 2 Project. You are hereby directed to make the herein described changes from the plans and specifications or do the following described work not included in the plans and specifications on this contract.

Unless noted otherwise, incorporated herein are description and costs associated with Changes in the Work directed by the RTC in accordance with the Agreement for Construction with Sierra Nevada Construction Inc. (SNC) for Phase 2 of the Virginia St. Bus RAPID Transit Extension Project approved by the RTC Board of Commissioners on May 20, 2019 and signed by the RTC Executive Director on June 3, 2019. The additional costs or cost reductions for the items of work below are per the attached Potential Change Order(s). The net change order amount includes all labor, equipment, and materials necessary to complete the work in accordance with the plans, specifications, and permits.

No contract days will be added to the contract duration as a result of this change.

12.001 Additional Trees
This change is for installation of 24 additional trees as requested by the City of Reno. The net added cost of this item is $49,784.97.

Original Contract Amount: $ 47,222,952.28	Contract time prior to this C.O.: 121
Previously Approved C.O. Amounts: $ 1,144,159.46	Net increase resulting from this C.O.: 0
Net Increase from this C.O.: $ 49,784.97	New Contract Time with this C.O.: 121
Total Revised Contract Amount: $ 48,416,896.71	
Total Percent Change all C.O.'s: 2.53 %	

Contractor Acceptance:

Accepted Date: _____

By (Print Name):

_____

Signature:

_____

NOTE: This Change Order is not effective until approved by Executive Director, RTC.

RTC Approval:
Recommended by (RTC Project Manager):

_____ Date: _____

Department Director:

_____ Date: _____

Chief Finance Officer:

_____ Date: _____

Executive Director:

_____ Date: _____

RTC FINANCE APPROVAL, AVAILABILITY OF FUNDS
Finance Manager: _____ Date: _____

RTC CONTRACT COMPLIANCE OFFICER APPROVAL
Compliance Manager: _____ Date: _____

ATKINS
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10509 Professional Circle, Suite 102
Reno, NV 89521-4883

Telephone: +1.775.828.1622
Fax: +1.775.851.1687

www.atkinsglobal.com/northamerica

April 3, 2020

Mr. Jeff Wilbrecht
Regional Transportation Commission
1105 Terminal Way
Reno, NV 89502

Subject: Virginia Street Bus Rapid Transit Extension; Phase 2
PCO 14.001 GMP to IFC Landscape

Dear Mr. Wilbrecht:

This change is to revise contract Exhibit E, Risk Register item No. 11 (unsuitable soil/high ground water) for GMP to IFC changes in landscaping specifications. Risk Register item No. 11 shall include the following:

- Description- Shall include "Unsuitable native material available for reuse as planting soil."
- Resolution (Description)- Shall include "Submit proposed blending of material to meet planting soil specification quality characteristics of plan detail 5/S.L21 for acceptance."
- Trigger- Shall include "Encounter insufficient volume of suitable soil for use as material for planting soil in any planting beds."

SNC has not requested and will not receive any working days added to the contract duration for this change. If you have any questions, please call me at (775) 745-7026.

Sincerely,

George Jordy, P.E.
Sr. Resident Engineer

April 17, 2020 **AGENDA ITEM 3.22**

TO: Regional Transportation Commission

FROM: Jeff Wilbrecht, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Amendment No. 4 to the Professional Services Agreement (PSA) between the RTC and Nichols Consulting Engineers (NCE) for the Virginia Street Bus RAPID Transit Extension Project

RECOMMENDATION

Approve Amendment No. 4 in the amount of $311,727 to the existing Professional Services Agreement (PSA) between the RTC and Nichols Consulting Engineers (NCE) for support during construction services for the Virginia Street RAPID Extension project; authorize the RTC Executive Director to execute the amendment.

SUMMARY

NCE has been providing supporting during construction services throughout Phase 1 (Utility Phase) and Phase 2 (Reconstruction Phase) of the Virginia Street Bus RAPID Transit Extension Project. This amendment is to extend the duration of support services to the end of construction and into revenue service of the RAPID extension. The scope of work considered in the last amendment (No. 3) was budgeted prior to finalizing the Sierra Nevada Construction contract for Phase 2 work. As such, the duration of Phase 2 construction that was budgeted was shorter than what was included in the SNC construction agreement.

NCE has also been tasked with additional design efforts following the completion of Phase 2 plans which has exhausted contingency budgets. This included the incorporation of additional trees in Midtown, reincorporating glass panels to Midtown transit stations, constructing additional driveways throughout the UNR area, and other requested changes.

Lastly, the demolition and abatement scope required an additional plan set and will require construction management and oversight of the hazardous material abatement. This amendment accounts of those additional tasks.

This amendment adds $311,727 to the current amended amount of $7,661,553 for a new total not to exceed amount of $7,973,280. The amendment, scope of services, and fee schedule associated with this amendment are included as Attachment A.

FISCAL IMPACT

Funding for this service is included in the current FY 2020 Budget.

PREVIOUS ACTIONS BY BOARD

September 21, 2018	Approved Amendment No. 3 to the PSA for the Virginia Street BRT Project.
April 20, 2017	Approved Amendment No. 2 to the PSA for the Virginia Street BRT Project.
March 18, 2016	Approved Amendment No. 1 to the PSA for the Virginia Street BRT Project.
October 17, 2014	Approved a Professional Services Agreement with Nichols Consulting Engineers (NCE) for the Virginia Street BRT Project.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this report.

Attachment

AMENDMENT NO. 4
AGREEMENT
BETWEEN
REGIONAL TRANSPORTATION COMMISSION OF WASHOE COUNTY
AND
NICHOLS CONSULTING ENGINEERS, CHTD

The Regional Transportation Commission of Washoe County ("RTC") and Nichols Consulting Engineers, CHTD ("CONSULTANT") entered into an agreement on December 12, 2014 (the "Agreement"). The Agreement was previously amended by Amendment #1 dated March 18, 2016, Amendment #2 dated May 8, 2017, and Amendment #3 dated September 21, 2018. This Amendment # 4 is dated and effective as of April 20, 2020.

RECITALS

WHEREAS, RTC issued a request for proposals and CONSULTANT was selected to provide various engineering, design and construction management services in connection with the Virginia Street Bus RAPID Transit Extension Project (the "Project");

WHEREAS, the scope of work in the original Agreement was for services in connection with the environmental document and preliminary design of the Project; and

WHEREAS, the scope of work in Amendment #1 was for additional services in connection with the environmental document and preliminary design of the Project; and

WHEREAS, the scope of work in Amendment #2 was for services in connection with final design of the Project; and

WHEREAS, the scope of work in Amendment #3 was for services in connection with final design of Phase 2 of the Project along with construction engineering support services in connection with Phase 1 and Phase 2 of the Project as understood at the time of execution of Amendment #3, prior to executing the Guaranteed Maximum Price for Phase 2 of the Project; and

WHEREAS the scope of work in this Amendment #4 is for additional services in connection with 1) final design of second bid package for demolition and abatement scope of the Project that was completed after acquisition of parcels by RTC, 2) additional design of elements of the project requested by RTC after completion of Phase 2 final plans, 3) additional duration of construction engineering support services for Phase 2 of the Project that match the construction schedule included in Construction Manager at Risk contract for Phase 2 of the Project, 4) engineering during construction support services for hazardous material and demolition scope of Project.

WHEREAS, the RTC Board of Commissioners approved this Amendment #4 on April 17, 2020.

WHEREAS, a summary of the history of the Agreement and amendments can be found in Exhibit A.

NOW, THEREFORE, in consideration of the mutual promises of the parties and other good and valuable consideration, the parties do agree as follows:

1. The scope of services are amended to include the additional services described in Exhibit A attached hereto.

2. CONSULTANT shall be paid for hours worked at the hourly rates and rates for testing in Exhibit A. RTC shall not be responsible for any other costs or expenses except as provided in Exhibit A.

3. The maximum amount payable to CONSULTANT to complete each task in Exhibit A is equal to the not-to-exceed amounts identified therein. CONSULTANT can request in writing that RTC's Project Manager reallocate not-to-exceed amounts between tasks. A request to reallocate not-to-exceed amounts must be accompanied with a revised fee schedule, and must be approved in writing by RTC's Project Manager prior to performance of the work. In no case shall CONSULTANT be compensated in excess of the following not-to exceed amounts:

   Total Services (Tasks 3.0, 16.0, 19.0, and 20.0) $311,727.05

4. The new total not-to-exceed amount of the Agreement, as amended, shall be $7,973,280.87.

5. All other provisions of the Agreement, as previously amended, shall remain in full force and effect.

6. The Agreement shall terminate on December 31, 2021.

/ / /

/ / /

/ / /

IN WITNESS WHEREOF, the parties hereto have made and executed this amendment.

APPROVED AS TO LEGALITY AND FORM:

_____
Adam Spear, RTC Director of Legal Services

REGIONAL TRANSPORTATION COMMISSION
OF WASHOE COUNTY

By_____
Bill Thomas, AICP, Executive Director

NICHOLS CONSULTING ENGINEERS, CHTD

By_____
Angie Hueftle, P.E., Principal

EXHIBIT A1

CONTRACT AMENDMENT No. 4

SCOPE OF SERVICES
FOR THE
BUILDING DEMOLITION PROJECT OF THE
VIRGINIA STREET BUS RAPID TRANSIT EXTENSION PROJECT

Scope of Services

The Virginia Street Bus RAPID Transit Extension Project Phase 2 is currently under construction. Phase 2 includes construction of the South Virginia Street multimodal improvements and RAPID extension to North Virginia Street improvements. The Virginia Street Bus RAPID Transit Extension Project Building Demolition Project is scheduled to begin construction in March 2020 and includes the abatement and demolition of five (5) buildings along North Virginia Street between 8th and 9th Streets.

This scope of work generally consists of the preparation of plans, specifications, and estimates, bidding services, and construction management services of the Building Demolition Project, additional design after the Issued for Construction documents were finalized, and engineering construction support services for the remainder of Phase 2 construction.

1.0 Project Management

No Project Management work is part of this contract amendment.

2.0 Federal Transit Administration (FTA) Small Starts Grant Application

No FTA Small Starts Grant Application work is part of this contract amendment.

3.0 Environmental Analysis and Document

CONSULTANT prepared specifications, estimates, and performed bidding services for the Virginia Street Bus RAPID Transit Extension Project Abatement Project. The RTC did not receive a responsive bid and the abatement project was cancelled. The abatement scope of work was incorporated into the building demolition scope of work and CONSULTANT prepared plans, specifications, and estimates and performed bidding services for the Virginia Street Bus RAPID Transit Project Building Demolition Project.

4.0 Public Participation

No public participation is part of this contract amendment.

5.0 Right of Way Survey

No right of way survey is part of this contract amendment.

6.0 Topographic Survey
No topographic survey is part of this contract amendment.

7.0 Geotechnical Investigation
No geotechnical investigation is part of this contract amendment.

8.0 Utility Investigation
No utility investigation is part of this contract amendment.

9.0 Final Drainage Analysis
No final drainage design is part of this contract amendment.

10.0 Traffic Analysis and Design
No traffic analysis and design is part of this contract amendment.

11.0 Preliminary Design
No preliminary design is part of this contract amendment.

12.0 Construction Manager at Risk (CMAR) Support
No CMAR support is part of this contract amendment.

13.0 Environmental Assessment (EA) Analysis and Section 4(f) Evaluation
No environmental assessment and section 4(f) analysis is part of this contract amendment.

14.0 Contingency (Optional Task)
No contingency is part of this contract amendment.

15.0 Right of Way Engineering Services
No right of way engineering services is part of this contract amendment.

16.0 Final Design

16.1 Phase 2 Additional Design
CONSULTANT performed design work associated with the "enhancement" scope of work identified in the approved Interlocal Cooperative Agreement between the City of Reno and RTC for additional items added to the Project including electrical infrastructure installation for future tree lighting, poles for special events banners, and concrete stamps. CONSULTANT performed design work associated with transit station revisions, revisions to plans for the partial acquisition at Mary Street instead of a full acquisition, and City of Reno requested changes for additional ADA compliant driveways along North Virginia and South Virginia changes including additional trees, irrigation system design revisions, planter materials revised from EPDM to bark, different tree species, modifications to ADA routing of sidewalk at 733 Tahoe Street, and additional sidewalk and driveway along Tahoe Street.

17.0 Permitting

No permitting is part of this contract amendment.

18.0 Phase 1 Construction Support Services

No Phase 1 construction support services is part of this contract amendment.

19.0 Phase 2 Construction Support Services

19.1 Contract Administration

In July 2018, Phase 2 Construction Support Services was estimated based on the SNC and ICE construction schedule at the time, which was a construction duration of 45 weeks. The final construction schedule, included in the June 2019 agreement between SNC and RTC for construction services for the Project, includes a construction duration of 80 weeks. CONSULTANT will provide engineering design related contract administration services for the duration of the Project, estimated to conclude in December 2020, as follows:

- Review and stamp contractor material submittals for conformance to the contract documents
- Respond to contractor requests for information
- Attend weekly on-site progress meetings

20.0 Building Demolition Construction Management Services

20.1 Contract Administration

CONSULTANT will provide contract administration services as follows:

1. Prepare conformed plans and specifications
2. Attend the preconstruction conference
3. Perform construction coordination
4. Review and provide recommendations on contractor's traffic control plans
5. Review and stamp contractor's submittal for conformance to the contract documents
6. Review and provide recommendations on test results
7. Review and provide recommendations on contractor's construction schedule and work progress
8. Review construction for acceptance and/or mitigation
9. Provide verification and approval of contractor's monthly pay request
10. Supervise the inspection and material testing activities
11. Provide recommendations to the RTC for any necessary construction changes due to field conditions
12. Assist in change order review and approval
13. Facilitate weekly construction meetings
14. Prepare letter of substantial completion

20.2 Inspection

CONSULTANT will provide one inspector during all construction activities. During the 65 working day contract, the inspector will inspect 2-hours per day during the abatement activities (35 working days) and 4-hours per day during the demolition activities (30 working days). This inspector will:

1. Attend the preconstruction conference
2. Monitor the work performed by the Contractor and verify that the work is in accordance with the plans and specifications
3. Assist in problem resolution with the RTC, contractor personnel, utility agencies, the public and others
4. Prepare daily inspection reports, submitted weekly to RTC and CC'd to the appropriate government jurisdiction(s).
5. Provide quantity reports and assist in contractor's monthly progress payments
6. Provide verification of the distribution of public relation notices required to be delivered by the contractor
7. Assist in preparation of the Punch List
8. Maintain a field blueline set of drawings to incorporate contractor record drawing mark-ups

20.3 Monitoring and Testing

Abatement Monitoring and Clearance Testing

CONSULTANT will conduct daily monitoring and subsequent clearance inspection and testing of abatement containments, per Nevada Asbestos Regulation Requirements and EPA NESHAP protocols. The monitor will:

1. Review and approve the abatement plan for each unit in the project.
2. Review and approve other submittals, per Specs.
3. Perform a containment setup inspection prior to abatement.
4. Inspect progress and conduct final inspection for completeness.
5. Conduct air quality clearance for each asbestos containment.
6. Conduct visual and surface clearance, if needed for lead abatement.
7. Conduct visual inspection of mercury work.
8. Conduct exterior air quality monitoring at the JRK Exterior ACM abatement site.
9. Provide progress reporting at meetings and in written format.
10. Review final Abatement closeout submittal from Contractor.
11. Prepare Closeout Report.

Demolition Monitoring

CONSULTANT will conduct air sampling at perimeter of demolition site and site observation to confirm the demolition is not emitting elevated particulates or hazardous materials to the surrounding vicinity in Downtown Reno, per EPA protocols.

Material Testing

CONSULTANT will provide Material Testing for compliance with the specifications per the latest edition of the Standard Specifications for Public Works Construction (Orange Book) testing requirements. Materials to be tested will include subgrade, backfill material, and coarse aggregate. Test reports, accompanied with CONSULTANT's recommendation regarding acceptance/mitigation of materials, shall be submitted promptly to the RTC and CC'd to appropriate governmental jurisdiction(s).

20.4 As-Built Information

CONSULTANT will provide as-built record drawings for the completed project. One set of electronic drawings, in single file PDF format (22" x 34" at 300 dpi), on diskette will be provided to RTC for its files.

The PDF file shall include all plan sheets in one file with index/bookmark for easy access to different sheets or sections of the plan set.

The final record drawings must be identified, dated, and signed as the record drawings and must also contain the engineer's stamp and signature. The Consultant may either:

1. Provide the final revisions on the original engineer-stamped/signed reproducible drawings, which will then also be identified as the record drawings, or
2. Provide new engineer-stamped/signed reproducible drawings identified as the record drawings.

The Record Drawings shall include a scan of the original title sheet (including the appropriate signatures by RTC, signed and stamped by the CONSULTANT) and identified as record drawings.

Exhibit A2
Schedule of Services
Virginia Street Bus RAPID Transit Extension

			Principal			Senior Engineer/Geologist/Planner			Senior Designer			Project Engineer/Planner			Staff Engineer			Senior Construction Manager			Construction Inspection			Engineer Intern/Field Scientist			Clerical			Expenses			Subconsultants			Totals	
			Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Hourly Rate	# of Hours	Cost	Non Labor	Markup	Cost	Labor	Markup	Cost	# of Hours	Cost
3.0	Environmental Analysis and Document	3.1Demolition & Abatement PS&E	180	140	$ 25,200.00	150	64	$ 9,600.00	125	45	$ 5,625.00	125	10	$ 1,250.00	115	53	$ 6,095.00	135		$ -	120		$ -	95		$ -	70	6	$ 420.00	400	20	$ 420.00		0	$ -	318	$ 48,610.00
		Sub-Totals		140	$ 25,200.00		64	$ 9,600.00		45	$ 5,625.00		10	$ 1,250.00		53	$ 6,095.00		0	$ -		0	$ -		0	$ -		6	$ 420.00			$ 420.00			$ -	318	$ 48,610.00
16.0	Additional Design	16.1 Final Design	250	20	$ 5,000.00	160		$ -	140	150	$ 21,000.00	155		$ -	135		$ -	135		$ -	120		$ -	95		$ -	80		$ -		0	$ -	14715	735.75	$ 15,450.75	170	$ 41,450.75
		Sub-Totals		20	$ 5,000.00		0	$ -		150	$ 21,000.00		0	$ -		0	$ -		0	$ -		0	$ -		0	$ -		0	$ -			$ -			$ 15,450.75	170	$ 41,450.75
19.0	Construction Services - Phase 2	19.1 Contract Administration Phase 2																															0	$ -		$ -
		Material Submittals	260	10	$ 2,600.00	180		$ -	145	80	$ 11,600.00	155		$ -	135		$ -	135		$ -	120		$ -	95		$ -	80		$ -			$ -	4000	200	$ 4,200.00	90	$ 18,400.00
		RFIs	260	50	$ 13,000.00	180		$ -	145	400	$ 58,000.00	155	140	$ 21,700.00	135	40	$ 5,400.00	135		$ -	120		$ -	95		$ -	80	16	$ 1,280.00			$ -	3000	150	$ 3,150.00	646	$ 102,530.00
		Progress Meetings	260		$ -	180		$ -	145	120	$ 17,400.00	155		$ -	135		$ -	135		$ -	120		$ -	95		$ -	80		$ -			$ -		0	$ -	120	$ 17,400.00
		Sub-Totals		60	$ 15,600.00		0	$ -		600	$ 87,000.00		140	$ 21,700.00		40	$ 5,400.00		0	$ -		0	$ -		0	$ -		16	$ 1,280.00			$ -			$ 7,350.00	856	$ 138,330.00
20.0	Building Demolition Construction Services	20.1 Contract Administration	260	8	$ 2,080.00	180		$ -	145	32	$ 4,640.00	155		$ -	135		$ -	135	50	$ 6,750.00	120		$ -	95		$ -	80	8	$ 640.00	1000	50	$ 1,050.00		0	$ -	98	$ 15,160.00
		20.2 Inspection	260		$ -	180		$ -	145		$ -	155		$ -	135		$ -	135		$ -	120	190	$ 22,800.00	95		$ -	80		$ -	5000		$ 5,000.00		0	$ -	190	$ 27,800.00
		20.3 Monitoring & Testing	260	2	$ 520.00	180		$ -	145		$ -	155		$ -	135		$ -	135	0	$ -	120	0	$ -	95		$ -	80		$ -			$ -	36,306.00	1815.3	$ 38,121.30	2	$ 38,641.30
		20.4 As-Builts	260	1	$ 260.00	180		$ -	145	2	$ 290.00	155		$ -	135	8	$ 1,080.00	135		$ -	120		$ -	95		$ -	80		$ -	100	5	$ 105.00		0	$ -	11	$ 1,735.00
		Sub-Totals		11	$ 2,860.00		0	$ -		34	$ 4,930.00		0	$ -		8	$ 1,080.00		50	$ 6,750.00		190	$ 22,800.00		0	$ -		8	$ 640.00			$ 6,155.00			$ 38,121.30	301	$ 83,336.30
Grand Totals				231	$ 48,660.00		64	$ 9,600.00		829	$ 118,555.00		150	$ 22,950.00		101	$ 12,575.00		50	$ 6,750.00		190	$ 22,800.00		0	$ -		30	$ 2,340.00			$ 6,575.00			$ 60,922.05		**$ 311,727.05**

Exhibit A3 - Contract Summary
Virginia Street Bus RAPID Transit Extension Project

Task	Description	Original Contract Amount	Contract Amendment 1	Contract Amendment 2	Cultural Monitoring Authorization	Contract Amendment 3	Total Contract Amount	Proposed Amendment Amount	Total Proposed Contract Amount
1.0	Project Management	$121,085.00	$121,950.00	$144,280.00		$46,650.00	$433,965.00		$433,965.00
2.0	FTA Small Starts Grant Application	$211,273.65	$218,313.00	$0.00	$409,001.65	$0.00	$409,001.65		$409,001.65
3.0	Environmental Analysis and Document	$177,619.25	$289,053.00	$5,250.00		$0.00	$471,922.25	$48,610.00	$520,532.25
4.0	Public Participation	$233,137.50	$104,261.50	$148,826.50		$39,557.50	$525,783.00		$525,783.00
5.0	Right of Way Survey	$67,296.20	$0.00	$127,080.00		$0.00	$194,376.20		$194,376.20
6.0	Topographic Survey	$143,818.40	$22,600.00	$24,940.00		$6,370.00	$197,728.40		$197,728.40
7.0	Geotechnical Investigation	$135,615.00	$7,930.00	$0.00		$16,715.00	$160,260.00		$160,260.00
8.0	Utility Investigation	$151,355.00	$33,850.00	$98,000.00		$38,365.00	$321,570.00		$321,570.00
9.0	Preliminary Drainage Analysis	$60,350.00	$22,350.00	$56,490.00		$17,825.00	$157,015.00		$157,015.00
10.0	Traffic Analysis and Design	$138,382.20	$182,731.90	$165,741.00		$0.00	$486,855.10		$486,855.10
11.0	Preliminary Design	$511,546.00	$852,437.25	$0.00		$0.00	$1,363,983.25		$1,363,983.25
12.0	CMAR Support	$0.00	$29,935.00	$80,712.00		$32,350.00	$142,997.00		$142,997.00
13.0	Environmental Assessment	$0.00	$228,274.05	$14,700.00		$0.00	$242,974.05		$242,974.05
14.0	Optional Contingency	$0.00	$188,541.17	$0.00		$50,000.00	$238,541.17		$238,541.17
15.0	Right of Way Engineering	$0.00	$0.00	$374,130.00		$0.00	$374,130.00		$374,130.00
16.0	Final Design	$0.00	$0.00	$1,359,843.25		$150,950.00	$1,510,793.25	$41,450.75	$1,552,244.00
17.0	Permitting	$0.00	$0.00	$12,975.00		$0.00	$12,975.00		$12,975.00
18.0	Construction Services Phase 1	$0.00	$0.00	$0.00	$20,585.00	$135,578.50	$156,163.50		$156,163.50
19.0	Phase 2 Construction Services	$0.00	$0.00	$0.00		$260,520.00	$260,520.00	$138,330.00	$398,850.00
20.0	Building Demolition Construction Services	$0.00	$0.00	$0.00		$0.00	$0.00	$83,336.30	$83,336.30
	Total Not to Exceed Amount:	$1,951,478.20	$2,302,226.87	$2,612,967.75		$794,881.00	$7,661,553.82	$311,727.05	**$7,973,280.87**

April 17, 2020 **AGENDA ITEM 3.23**

TO: Regional Transportation Commission

FROM: Brian Stewart
Director of Engineering

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Petition for Abandonment of Alleyway

RECOMMENDATION

Authorize the RTC Executive Director to sign a petition of abandonment, owner affidavit and other documents as may be necessary concerning the abandonment of an alleyway adjacent to Assessor Parcel Numbers (APNs) 007-183-11, 007-183-12, 007-183-13, 007-183-18 and 007-183-19, owned by the Regional Transportation Commission and located in the City of Reno.

SUMMARY

The Board of Regents of the Nevada System of Higher Education on behalf of the University of Nevada, Reno has submitted an application to the City of Reno for the abandonment of the alleyway located between 8th Street and 9th Street. The RTC owns APNs 007-183-11, 007-183-12, 007-183-13, 007-183-18 and 007-183-19 adjacent to this alleyway as depicted in Attachment A. To facilitate the petition of abandonment, the City of Reno is requesting all adjoining property owners to sign a petition of abandonment and owner affidavit.

FISCAL IMPACT

No budget impact will result from this Board action.

PREVIOUS ACTIONS BY BOARD

There has been no previous Board action or direction on this matter.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations regarding this report.

Attachment

ATTACHMENT A

EXHIBIT "A"

ALLEY ABANDONMENT

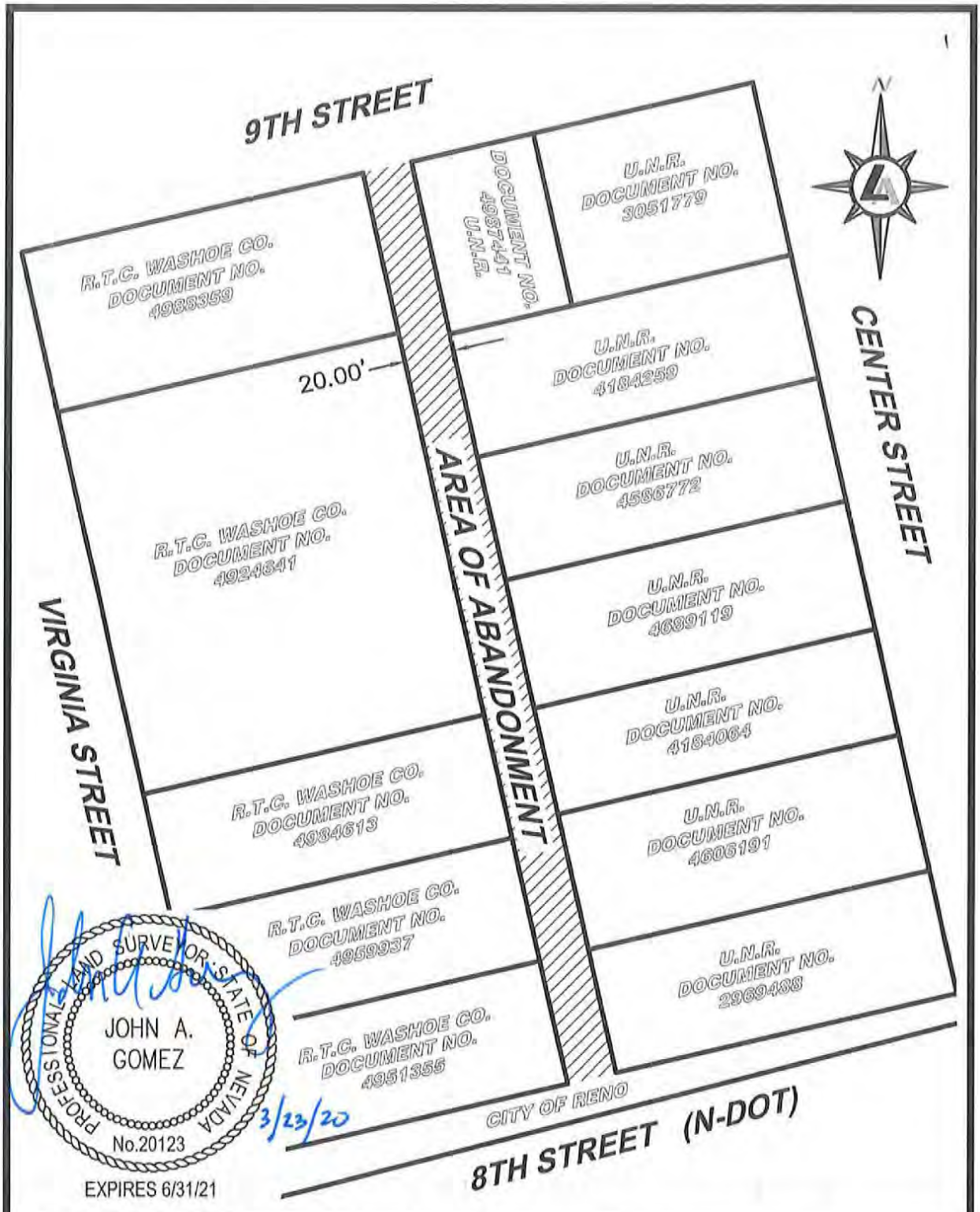
All that certain real property situate in the Southeast One-Quarter (SE 1/4) of Section 2, Township 19 North, Range 19 East, Mount Diablo Meridian, City of Reno, County of Washoe, State of Nevada, being a portion of Lot No. 2 as shown on Tract Map No. 24 recorded December 16, 1879 in The Official Records of Washoe County and commonly known as the existing alley way between Center Street and North Virginia Street, more particularly described as follows:

BEING a twenty (20) foot strip of land, bound on the North by the southerly right-of-way of 9th Street, and on the South by the northerly line of that certain parcel owned by the City of Reno as shown on Record of Survey No. 1472, recorded on March 19, 1981 as Document No. 729231 in The Official Records of Washoe County, Nevada. Also, bound on the East by those certain parcels of land conveyed by deed Document No's. 4987441, 44184259, 4586772, 4689119, 4184064, 4606191, and 2969488, recorded in The Official Records of Washoe County, all being owned by The University of Nevada Reno. Also, bound on the West by those certain parcels of land conveyed by deed Documents No's. 4951355, 4959937, 4984613, 4924641, and 4988359 recorded in the Official Records of Washoe County all being owned by Reno Transportation Commission Washoe County.

SEE EXHIBIT "A-1", Plat to Accompany Description, attached hereto and made a part hereof.

EXPIRES 6/31/21

Prepared by:
Lumos & Associates, Inc.
John A. Gomez, PLS 20123
9222 Prototype Drive
Reno, NV 89521



LUMOS & ASSOCIATES 9222 PROTOTYPE DRIVE RENO, NEVADA 89521 TEL (775) 827-6111	**EXHIBIT "A-1"** **ALLEY ABANDONMENT** **PORTION OF THE SOUTHEAST 1/4 SEC. 2, T19N, R19E, MDM** **RENO** **WASHOE** **NEVADA**	Date: MAR 2020 Scale: 1" = 60' Job No: 9897.001

April 17, 2020 **AGENDA ITEM 3.24**

TO: Regional Transportation Commission

FROM: Jeff Wilbrecht, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Virginia Street Bus RAPID Transit Extension Monthly Progress Update - Plumb to Liberty & Maple to 15th

RECOMMENDATION

Acknowledge receipt of the Virginia Street Bus RAPID Transit (BRT) Extension monthly progress report.

SUMMARY

South Virginia (Midtown) Roadway Reconstruction and BRT Project:
Construction is well underway and on schedule in the South Virginia-Midtown segment of the project. The project is approximately 55 percent complete through Midtown.

Major work items that have occurred following the last update include continuing removal and replacement of sidewalks along the west side of Virginia Street, north of Center Street; starting the construction of the west side of the roundabout at Center Street and Mary Street; and removing old roadway in preparation of paving Virginia Street between Mt. Rose Street/Holcomb Avenue and Center Street/Mary Street.

Following the Nevada Governor's mandate for non-essential businesses to close down during the COVID-19 pandemic, the Virginia Street project looked to accelerate construction activities and perform as much construction work as possible during the shutdown so that once businesses are able to re-open, construction would be more complete. The acceleration work included construction the entire roadway width between Mt. Rose Street/Holcomb Avenue and Center Street/Mary Street at the same time rather than doing one half at a time as originally planned.

The overall project is progressing well and is on schedule with some activates ahead of schedule.

North Virginia (UNR) Roadway Reconstruction and BRT Project

The scope of work associated with removing buildings has begun. Abatement of two of the five properties has been complete by the latter half of March with demotion is planned to commence in late March.

Roadway work within the North Virginia-UNR Segment of the project is starting up in April. Work will occur on the east side of North Virginia Street, starting with removal operations at the roundabout and working southward towards 9th Street.

Outreach Activities:
During the months of February and March, the outreach effort continued with the goal of encouraging the community to support Midtown by continuing to patronize the area.

Press releases were shared with stakeholders regarding major work activities associated with accelerated roadway work in the South Virginia-Midtown Segment of the project and working with the University of Nevada, Reno about upcoming work in the North Virginia-UNR Segment of the project.

Project information continues to be communicated weekly through the Project Stakeholder Update that is electronically distributed to subscribers.

Project Photos:


double edge

PREVIOUS ACTIONS BY BOARD

February 21, 2020	Approved Change Order No. 07, 08, 09, and 10 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
December 20, 2019	Approved Change Order No. 05 and 06 to the Sierra Nevada Construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
November 15, 2019	Approved Change Order No. 01, 02, 03, and 04 to the SNC construction contract for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
October 24, 2019	Approved Interlocal Cooperative Agreement with the City of Reno for additional utility conduits on Virginia Street during construction of the South Virginia Street during Construction of the Virginia Street Bus RAPID Transit Extension Project
August 16, 2019	Approved Interlocal Cooperative Agreement with the City of Reno for Requested Enhancements to South Virginia Street during Construction of the Virginia Street Bus RAPID Transit Extension Project

May 20, 2019	Approved the Construction Agreement between RTC and SNC (CMAR) for Phase 2 of the Virginia Street Bus RAPID Transit Extension Project
May 20, 2019	Approved the Professional Services Agreement between RTC and Atkins North America (Atkins) for Construction Support Services on Phase 2 of the Virginia Street Bus RAPID Transit Extension Project.
March 15, 2019	Approved Interlocal Corporative Agreement between RTC and City of Reno to transfer funds to the City of Reno for the selection, procurement, and installation of benches and bike racks in Midtown.
July 20, 2018	Approved a Professional Services Agreement with Atkins for the Construction Management Services for the utility construction phase. Approved an Agreement with SNC for the construction of the early work utility construction phase. Authorized the finalization and execution of five utility relocation and reimbursement agreements into the agreement for early construction work.
June 15, 2018	Approved an Amendment to the CMAR Pre-Construction Agreement between the RTC and SNC for the Virginia Street Bus RAPID Extension Project
May 21, 2018	Approved a Request for Proposals (RFP) for Construction Services for the Virginia Street Bus RAPID Transit Extension Project.
June 17, 2016	Approved the Final Rankings of the Proposers and Selection of a Contractor for Construction Manager at Risk (CMAR) for Pre-Construction Services and authorized the Executive Director to execute a Pre-Construction Services Agreement with SNC for the Virginia Street RAPID Extension Project.
March 18, 2016	Approved the RFP for the CMAR method of project delivery for the Virginia Street Bus RAPID Transit Extension Project.
March 18, 2016	Approved Amendment No. 1 to the Professional Services Agreement with NCE for Final Design for the Virginia Street Bus RAPID Transit Extension Project.
October 16, 2015	Acknowledged receipt of an update on the Virginia Street Bus RAPID Transit Extension Project and approve the local preferred alternative.

August 21, 2015	Acknowledged receipt of an update and provided direction on the alternative selection for the Virginia Street Bus RAPID Transit Extension Project.
October 17, 2014	Approved the selection of NCE for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.
July 25, 2014	Approved the RFP for Preliminary Engineering and Environmental services for the Virginia Street Bus RAPID Transit Extension Project.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

REGIONAL TRANSPORTATION COMMISSION
Metropolitan Planning • Public Transportation & Operations • Engineering & Construction
Metropolitan Planning Organization of Washoe County, Nevada

April 17, 2020 **AGENDA ITEM 3.25**

TO: Regional Transportation Commission

FROM: Dale Keller, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Lemmon Drive Monthly Progress Report

RECOMMENDATION

Acknowledge receipt of the Lemmon Drive monthly progress report.

SUMMARY

The project includes widening Lemmon Drive from US 395 to Military Road from four lanes to six lanes and widening Lemmon Drive from Fleetwood Drive to Chickadee Drive from two lanes to four lanes.

Preliminary design of Segment 1 (US 395 to Military Road) is underway. The RTC completed geotechnical investigation and laboratory testing to develop geotechnical design recommendations. Coordination continues with utility companies to identify conflicts and facilitate any utility relocations.

In March, the Project's Technical Advisory Committee (TAC) started the qualitative evaluation of alternatives at a conceptual level. Each alternative is screened based on the ability to meet the project's purpose, need, and goals. The range of alternatives will be narrowed down to three and presented to the public.

The RTC is working closely with Washoe County and the City of Reno as the Swan Lake recovery plan continues, and long-term mitigation alternatives are prepared and vetted. The RTC is streamlining the preliminary roadway design and collaborating with local agencies in the overall program to improve conditions around Swan Lake.

PREVIOUS ACTIONS BY BOARD

September 20, 2019	Approved the Professional Services Agreement (PSA) with Jacobs Engineering for the design of the Lemmon Drive Project
May 20, 2019	Approved the Procurement for the Selection of Engineering Professional Services for Design the Lemmon Drive Project
April 19, 2019	Received an update on the project

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

April 17, 2020 **AGENDA ITEM 3.26**

TO: Regional Transportation Commission

FROM: Dale Keller, P.E.
Engineer II

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: Interlocal Cooperative Agreement for Reimbursement Related to the Golden Valley Road Rehabilitation Project

RECOMMENDATION

Approve the Interlocal Cooperative Agreement (ICA) with the City of Reno reimbursing RTC for the construction of improvements to be included in the Golden Valley Rehabilitation Project scheduled for construction in 2020; authorize the RTC Executive Director to execute the agreement.

SUMMARY

Authorization for the Executive Director to execute the ICA (see Attachment A) will allow the RTC to include construction of specific sidewalk improvements as requested by the City of Reno. In addition, it will establish that the City of Reno will reimburse the RTC in accordance with the agreement for costs associated with these improvements. The estimated reimbursable amount for the improvements requested by the City of Reno on the Project is $52,000.

FISCAL IMPACT

The cost of this ICA is fully reimbursable to the RTC.

PREVIOUS ACTIONS BY BOARD

August 16, 2019	Approved Professional Services Agreement (PSA) with Lumos & Associates, Inc., to provide design and engineering during construction services for the Golden Valley Road Rehabilitation Project.
January 18, 2019	Approved the FY 2020 Program of Projects

ADDITIONAL BACKGROUND

The City of Reno has requested specific sidewalk improvements on the Golden Valley Road Rehabilitation Project. The project includes roadway reconstruction, sidewalk, curb and gutter replacement, and correction of localized drainage deficiencies on Golden Valley Road between Yorkshire Drive and North Virginia Street.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

Attachment

INTERLOCAL COOPERATIVE AGREEMENT

FOR REIMBURSEMENT

This Agreement is dated and effective as of _____, 2020, by and between the City of Reno, Nevada ("CITY") and the Regional Transportation Commission of Washoe County ("RTC").

W I T N E S S E T H:

WHEREAS, the parties to this Agreement are public agencies and authorized to enter into agreements in accordance with Chapter 277 of NRS; and

WHEREAS, pursuant to NRS 277.180, if it is reasonably foreseeable that a public agency will be required to expend more than $25,000 to carry out such an agreement, the agreement must set forth fully the purposes, powers, rights, objectives and responsibilities of the parties, be ratified by appropriate official action of the governing body of each party, and be in writing; and

WHEREAS, RTC delivers various rehabilitation / reconstruction projects within the City of Reno as part of its Annual Pavement Preservation Program; and

WHEREAS, as part of that program, RTC will reconstruct Golden Valley Road from Yorkshire Drive to North Virginia Street (the "PROJECT"); and

WHEREAS, CITY has formed a Special Assessment District for the cost of specific sidewalk repairs or improvements (hereinafter called "IMPROVEMENTS") that may be assessed to adjacent property owners in accordance with Nevada Revised Statute (NRS) 271, and are included within and/or adjacent to the PROJECT. The IMPROVEMENTS, as requested by CITY, are described in Exhibit A attached hereto and incorporated herein by reference; and

WHEREAS, RTC is willing to incorporate the IMPROVEMENTS into the PROJECTS and cause the improvements to be constructed; and

WHEREAS, CITY will reimburse RTC the cost of the IMPROVEMENTS as set forth below; and

WHEREAS, the estimated costs are shown in Exhibit A; and

NOW, THEREFORE, in consideration of the premises and of the mutual covenants herein contained, it is mutually agreed by and between the parties as follows:

RTC AGREES:

1. To provide drawings, details and specifications, and construction, including but not limited to, inspection, quality assurance testing, administration, and PROJECT management of the

IMPROVEMENTS. Drawings, details and specifications for the IMPROVEMENTS shall be subject to review and approval by CITY.

2. To prepare solicitation documents for the PROJECT that include the IMPROVEMENTS to be used in a competitive bidding process in accordance with Chapter 338 of Nevada Revised Statutes.

3. To provide CITY, upon determination of the apparent low bidder, the total bid cost of the IMPROVEMENTS.

4. To invoice CITY within 60 days of the completion of the PROJECT, whichever is earlier, for the actual costs of the IMPROVEMENTS not to exceed the maximum reimbursable costs as shown in Exhibit A that have been completed.

CITY AGREES:

1. To provide an initial determination of the IMPROVEMENTS for estimation of the costs of the IMPROVEMENTS.

2. Upon notification from the RTC, to request the utilities having franchise agreements that require relocation, to relocate their facilities prior to award of the project in accordance with the franchise agreement. For utilities that do not address the issue of relocation in the franchise agreement, to require relocation of the subject facilities prior to the award of the project if state law provides authority to do so.

3. To direct all questions or requests pertaining to the IMPROVEMENTS to the RTC Project Manager and designate a representative to assist the RTC Project Manager in the administration of all issues relating to the IMPROVEMENTS.

4. To reimburse the RTC for the actual costs of the IMPROVEMENTS not to exceed the maximum reimbursable costs as shown in Exhibit A.

5. To remit payment within forty-five (45) calendar days following receipt of an invoice from the RTC and, if not timely paid, to pay interest as provided in NRS 99.040.

IT IS MUTUALLY AGREED:

1. That each party will cooperate with the other party and their employees and agents in carrying out their respective responsibilities under this agreement.

2. That each party will assist the other party in communicating with the public regarding the provisions of this agreement.

3. That all communications/notices required pursuant to the Agreement shall be given

as hereinafter provided, unless written notice of a new designee is sent certified or registered mail, to the other party, as follows:

RTC: Brian Stewart, P.E.
Engineering Director
Regional Transportation Commission
1105 Terminal Way, Suite 108
Reno, Nevada 89502
(775) 335-1880

CITY: John Flansberg, P.E.
Public Works Director
City of Reno
P. O. Box 1900
Reno, Nevada 89505
(775) 334-2350

4. Subject to the limitations of Chapter 41, each party agrees to indemnify, defend and hold harmless the other party from and against any liability including, but not limited to, property damage and personal injury or death, proximately caused by the negligent acts or omissions of its officers, employees and agents arising out of the performance of this Agreement.

5. That the laws of the State of Nevada shall be applied in interpreting and construing this Agreement.

6. That the legality or invalidity of any provision or portion of this Agreement shall not affect the validity of the remainder of the Agreement.

7. That this Agreement constitutes the entire contract between the parties and shall not be modified unless in writing and signed by the parties.

8. That it is not intended, and this Agreement shall not be construed, to provide any person or entity not a party to this Agreement, with any benefits or cause of action or to obligate the parties to this Agreement to any entity or person not a party to this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their authorized officers the day and year first above written.

APPROVED AS TO LEGALITY AND FORM:

BY: _____
RTC Chief Counsel

REGIONAL TRANSPORTATION COMMISSION OF WASHOE COUNTY

BY: _____
Bill Thomas, AICP, Executive Director

CITY COUNCIL OF RENO, NEVADA

By: _____
Hillary L. Schieve, Mayor

ATTEST:

BY: _____
City Clerk

APPROVED AS TO FORM AND CONTENT:

BY: _____
Deputy City Attorney

EXHIBIT A

Description of IMPROVEMENTS:

1. The installation of Portland Cement Concrete (PCC) sidewalk or driveway apron and underlying type 2 aggregate base in accordance with the drawings and specifications as directed by the CITY.

Maximum reimbursable costs:

Golden Valley Road Rehab:

Construction	$52,000
TOTAL MAXIMUM REIMBURSABLE COST	**$52,000**

April 17, 2020 **AGENDA ITEM 4.1**

TO: Regional Transportation Commission

FROM: Amy Cummings, AICP, LEED AP
Interim Executive Director

Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: South Meadows Multimodal Transportation Study Final Report

RECOMMENDATION

Approve the South Meadows Multimodal Transportation Study.

SUMMARY

The South Meadows Multimodal Transportation Study started in December 2018. This study was developed to identify needs and potential transportation improvements for regional roads in the rapidly growing South Meadows area. The study focuses on analysis of traffic operations, safety, pedestrian and bicycle connectivity, and transit service needs. Public involvement has been an important component of the study. The first public meeting for the project was held on March 26, 2019, at Damonte Ranch High School to gather comments from residents in the study area. In addition, an online survey was launched to collect public input, and over 1,000 participants responded to the survey. The second public meeting was held on Tuesday, November 5, 2019, at Zeppelin restaurant, located at 1445 South Meadows Parkway in Reno. At the second public meeting, the RTC presented transportation improvement alternatives that addressed safety, traffic operations, and community concerns identified in the study area. RTC staff also met with residents including individuals from the Curti Ranch neighborhood to discuss their transportation concerns. The project team has developed a study report that documents analysis results and potential transportation improvements in the South Meadows area.

FISCAL IMPACT

The study is paid for by federal planning funds and is included in the Unified Planning Work Program (UPWP).

PREVIOUS ACTIONS BY BOARD

November 16, 2018	Approve Professional Services Agreement
June 15, 2018	Approved Request for Proposal
May 17, 2017	Approved for the FY 2018-2019 UPWP

ADDITIONAL BACKGROUND

Potential projects identified in the South Meadows Multimodal Transportation Study will be reviewed and prioritized during the development of the 2050 Regional Transportation Plan (RTP). In addition, the RTC will coordinate with City of Reno staff to implement traffic operations improvements through existing RTC programs.

ADVISORY COMMITTEE(S) RECOMMENDATION

There are no advisory committee recommendations pertaining to this agenda item.

Attachment

DRAFT South Meadows Multimodal Transportation Study

March 23, 2020

Prepared for:

RTC

Prepared by:

HEADWAY TRANSPORTATION

WOOD RODGERS

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The South Meadows Multimodal Transportation Study was conducted to create a safe and efficient multimodal transportation network specifically for the South Meadows area. Implementation of the recommendations will:

- Improve roadway safety for all users
- Plan regional roadway and intersection capacity improvements
- Expand pedestrian and bicycle connectivity
- Enhance public transportation connectivity and travel options

This study represents the first step in the process of funding and implementing regional transportation projects. The list of potential improvements created by this study will be forwarded to the upcoming Regional Transportation Plan (RTP) update process for prioritization and programming considering regional needs, priorities, and available funding. The list of seventy (70) potential improvements was developed based on detailed traffic analysis, an understanding of build-out level land use, and extensive community input. More than 1,000 community members participated in this study process and provided nearly 3,000 comments. Figures 2-2 through 2-7 present the citizen comments in a heat map format. Overall, the community recommended the following distribution of funding between travel modes:

- Vehicular Capacity – 35%
- Safety Improvements –25%
- Pedestrian Improvements – 13%
- Bicycle Improvements – 12%
- Transit – 10%
- Park & Ride Facilities – 5%

Chapter 8 is the heart of this report presents a comprehensive list of potential improvements specific to Bicycle, Pedestrian, Safety, Park & Ride, and Vehicular Capacity. These potential improvements should not be viewed as individual "projects", rather, many of the improvements can, and should, be combined to form "corridor projects" or "grouped projects" interweaving the needs of multiple travel modes and more efficiently utilizing available funding. The RTC would need to program approximately $216,650,000 (current 2019 dollars) for the South Meadows area in order to implement every potential improvement. The potential improvements will be advanced to the upcoming Regional Transportation Plan (RTP) for prioritization and programming considering all needs in the Truckee Meadows region.

The high cost of building transportation infrastructure, and the lack of right-of-way for new corridors, re-emphasizes the critical importance of maintaining existing and future roadway capacity on existing arterials. The South Meadows area is roughly 65% built out at this time and traffic volumes can therefore be expected to grow another 35% in the overall study area over next 20 to 30 years. The following actions are necessary and critical to maintaining a transportation network that will serve the existing and approved future developments and traffic levels:

- Maintain roadway hierarchy including the proactive management of Veterans Parkway as a High Access Control Arterial
- Maintain the existing number of travel lanes on study area roadways
- Strictly adhere to the Access Management Standards established in the RTP
- Maintain appropriate speed limits based on roadway classification
- Limit the installation of new traffic signals to locations identified in the traffic signal masterplan (Figure 9-1)
- Implement bicycle and pedestrian facilities consistent with roadway classification

ACKNOWLEDGEMENTS

The South Meadows Multimodal Transportation Study was funded and administered by the Regional Transportation Commission of Washoe County (RTC), for the benefit of current South Meadows residents, and every community member who will walk, cycle, ride a bus, or drive in the South Meadows over the next 20 years and beyond. Long-range planning for numerous regionally significant major arterial roadways and intersections is no easy task. The project team is therefore sincerely grateful to every citizen, stakeholder, technical advisor, and agency representative that gave of their personal time and knowledge, to guide the study process and identify a set of well-rounded multi-modal improvements that will serve our community well into the future. Thank you for helping shape the future of the South Meadows!

TECHNICAL ADVISORY COMMITTEE

Member	Agency	Member	Agency
Xuan Wang	RTC Project Manager	Alex Wolfson	NDOT
Amy Cummings	RTC Interim Executive Director	Dominique Lucier	NDOT
Dan Doenges	RTC Interim Director of Planning	Kevin Verre	NDOT
Brian Stewart	RTC Director of Engineering	Mike Fuess	NDOT
Mark Maloney	RTC Director of Public Transportation	Nick Johnson	NDOT
Andrew Jayankura	RTC	Richard Oujevolk (OJ)	NDOT
James Weston	RTC	Tara Smaltz	NDOT
Julie Masterpool	RTC	Jeremy Smith	TMRPA
Lauren Ball	RTC	Julee Olander	Washoe County
Leslie Benton	RTC	Kelly Mullin	Washoe County
Michael Moreno	RTC	Mitchell Fink	Washoe County
Scott Miklos	RTC	Adam Searcy	Washoe County School District
Tina Wu	RTC	Brett Rodela	Washoe County School District
Arlo Stockham	City of Reno	Mike Boster	Washoe County School District
Jon Simpson	City of Reno		
Kurt Dietrich	City of Reno		
Sienna Reid	City of Reno		

CONSULTING TEAM

Loren Chilson	Headway Transportation
Dylan Axtell	Headway Transportation
Rich Pettinari	Headway Transportation
Bryan Gant	Wood Rodgers
Devin Crowley	Wood Rodgers

CHAPTER 1 - INTRODUCTION

PURPOSE AND GOALS

The purpose of this multimodal study is to identify needs and long-term transportation improvements for regional roads and intersections in the South Meadows area. This study focuses on traffic operations analysis and capacity improvements, safety improvements, pedestrian and bicycle connectivity, and transit service needs. The goals of the study are the following:

- Improve roadway safety for all users
- Plan regional roadway and intersection capacity improvements
- Expand pedestrian and bicycle connectivity
- Enhance public transportation connectivity and travel options

VISION STATEMENT

The following vision statement was developed for this study through stakeholder and community input:

"Create a safe and efficient multimodal transportation system in the South Meadows."

THE TRANSPORTATION PLANNING PROCESS

It is important to outline the transportation planning process to understand the many steps involved before projects can be physically constructed. **Exhibit 1-1** shows the local transportation planning process. As shown, this study is the first step (Corridor/Area Studies) in the planning process and the potential improvements list outlined later in this report will be advanced to the upcoming Regional Transportation Plan (RTP) for prioritization and programming.

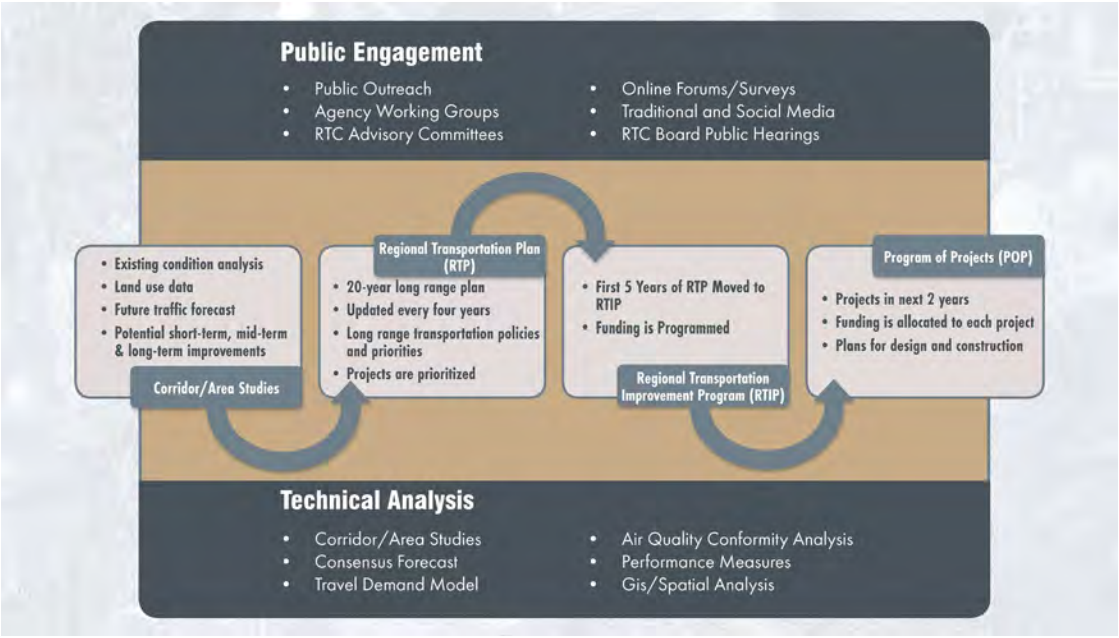


Exhibit 1-1. The Transportation Planning Process

CHAPTER 2 - PUBLIC OUTREACH

A critical part of any successful regional planning study is interweaving community and stakeholder input throughout the duration of the study. The project team sought to engage interested citizens and key stakeholders whenever possible and incorporate their feedback within the study process. The project team engaged key local agencies throughout the study process by meeting multiple times with the Technical Advisory Committee (TAC) established for this project. Three TAC meetings and two community-wide public meetings were conducted to guide the study and recommendations.

The TAC meetings included staff from the Washoe County Regional Transportation Commission (RTC), the Nevada Department of Transportation (NDOT), the City of Reno, Washoe County, Truckee Meadows Regional Planning Agency and the Washoe County School District.

The study process included a significant public outreach effort to identify key issues and concerns from the public's perspective which have directly shaped the list of potential improvements. Public involvement was sought primarily via two public meetings and an extensive online survey that resulted in nearly 3,000 specific comments.

TECHNICAL ADVISORY COMMITTEE

TAC Meeting #1

The first TAC meeting was held on January 31st, 2019. The purpose of the first meeting was to introduce the consulting team staff, lead agency staff, the TAC members, and the stakeholders. The project team presented the following items:

- Study goals
- Draft vision statement
- Future development in the study area
- Major safety concerns with wild horses
- Locations with potential safety issues
- Study approach
- Study timeline

TAC Meeting #2

The second TAC meeting was held on June 3rd, 2019. The primary purpose of the second meeting was to update the TAC on the public outreach to date and the progress of the study. The project team gave a presentation that reviewed the main concerns and themes from the first public meeting and the MetroQuest Survey. The presentation also included detailed information on a draft of potential pedestrian, bicycle, and transit improvements, and identified the study intersections and roadway segments for detailed analysis. Post presentation, the TAC commented on the main themes from the MetroQuest survey and provided feedback on the draft potential improvement list.

TAC Meeting #3

The third TAC meeting was held on October 28th, 2019. The purpose of the third meeting was to review the traffic analysis and all material to be presented at the second public meeting. The project team presented the methodology and results of the traffic analysis conducted at the 16 study intersections. The TAC provided feedback on the potential improvements list to be presented to the public.

PUBLIC MEETINGS

This section provides a summary of the activities undertaken to directly engage local residents and the general public. Community supported plans cannot be established without a free exchange of information and public input at all stages of the planning process. In order for the public input process to be effective, the project team organized proactive public meetings and provided complete information for public review and comment throughout the process.

The project team engaged the community through two open house format public meetings. These meetings enabled the public to interact with the project team, voice questions or concerns about the current or future state of roadways in the South Meadows area and submit comments. Questions and concerns were gathered through public comment cards, display boards, and maps that citizens could write comments on.

Public Meeting #1

The first public meeting was held on March 26th, 2019 at Damonte Ranch High School. Many attendees and families showed support and interest in the study with approximately 80 in attendance. The purpose of this meeting was to give residents an opportunity to talk with the project team and comment on some of the larger issues they experience on a daily basis. Attendees could indicate their concerns to the project team on comment cards, on display boards, and via an electronic MetroQuest survey. The comments from this meeting were collected and organized to help create the potential improvements list found later in this report. **Figure 2-1** shows an example board that was presented at the meeting.

Public Meeting #2

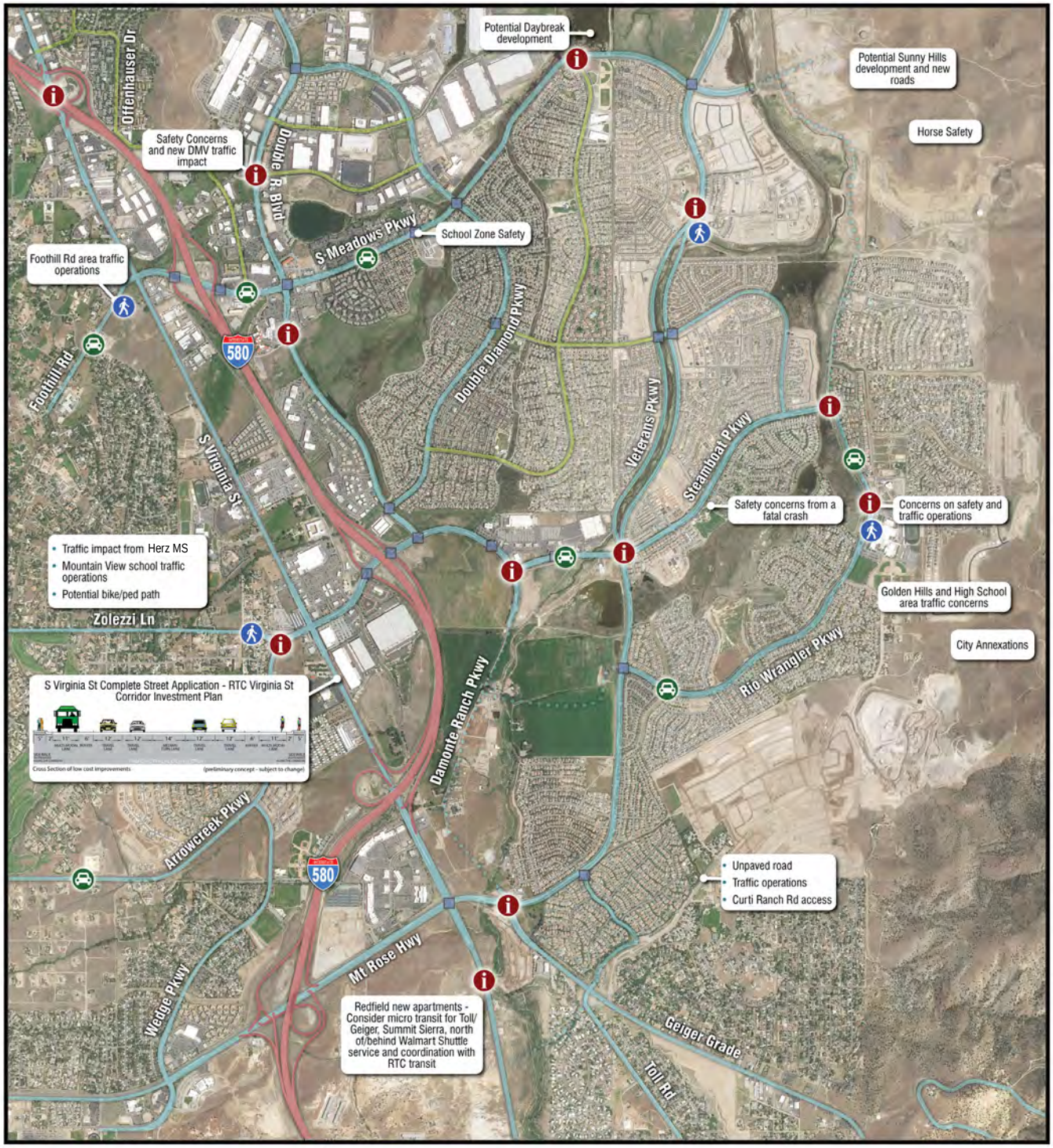
The second public meeting was held on November 5th, 2019 at the Zeppelin. The purpose of this meeting was to provide the results of the analysis and the potential improvements lists. In addition, the project team provided a summary and heat maps from the MetroQuest Survey. Nearly 30 display boards were used to present the improvement options. This was an opportunity for attendees to comment and provide feedback to the project team on the results and findings of the study. Approximately 50 people attended this meeting.

METROQUEST SURVEY

The MetroQuest Survey was an online survey that encouraged specific input to identify desired transportation improvements in the South Meadows area. The survey contained three basic components:

- Questions about how funding should be utilized for various travel modes
- Questions about the desire for transit and Park & Ride facilities
- An interactive map to log specific comments about facilities in the South Meadows study area.

Overall, 1,069 participants completed the online survey, 2,368 individual markers were placed on the map, and 1,831 comments were received, which demonstrates the outstanding public engagement in this study. Comments were also received via email throughout the study duration. Individual comments were grouped into themes and a summary of the survey and email comments received is provided in **Appendix A**.



Legend

- Freeways and Ramps
- Existing Regional Roads
- Planned Regional Roads
- Local Road (Non-Regional)
- Existing Traffic Signal
- Intersections of Interest
- Bicycle/Pedestrian Concerns
- Capacity Concerns

NORTH

Specific Concerns We Have Heard to Date
Tell Us Your Thoughts

SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 2-1. PUBLIC MEETING #1 EXAMPLE BOARD

RTC

The funding allocation component of the survey asked: "*For every $100 to spend on improving transportation in the South Meadows area, how would you allocate the $100 in each of the following categories?*" The various categories that money could be allocated to were Safety Improvement, Vehicle Movement, Bicycle Facilities, Pedestrian Facilities, Transit Service, and Park & Ride. **Exhibit 2-1** shows the survey results for the funding allocation question. As shown, vehicular movement (35%) and safety improvements (25%) were clearly the two categories that were allocated the most money. The pedestrian facilities, bicycle facilities, and transit facilities categories were relatively equal in budget allocation.

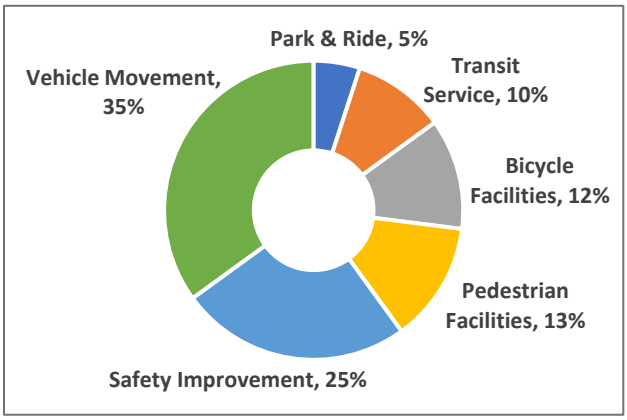


Exhibit 2-1. Funding Allocation

The transit component of the survey asked:

- If more RTC bus routes were offered in the South Meadows, would you use them?
- If Park & Ride lots were created in the South Meadows, would you use them?
- If more van/car pool services were available, would you use them?

Exhibit 2-2 shows the survey results for these three questions.

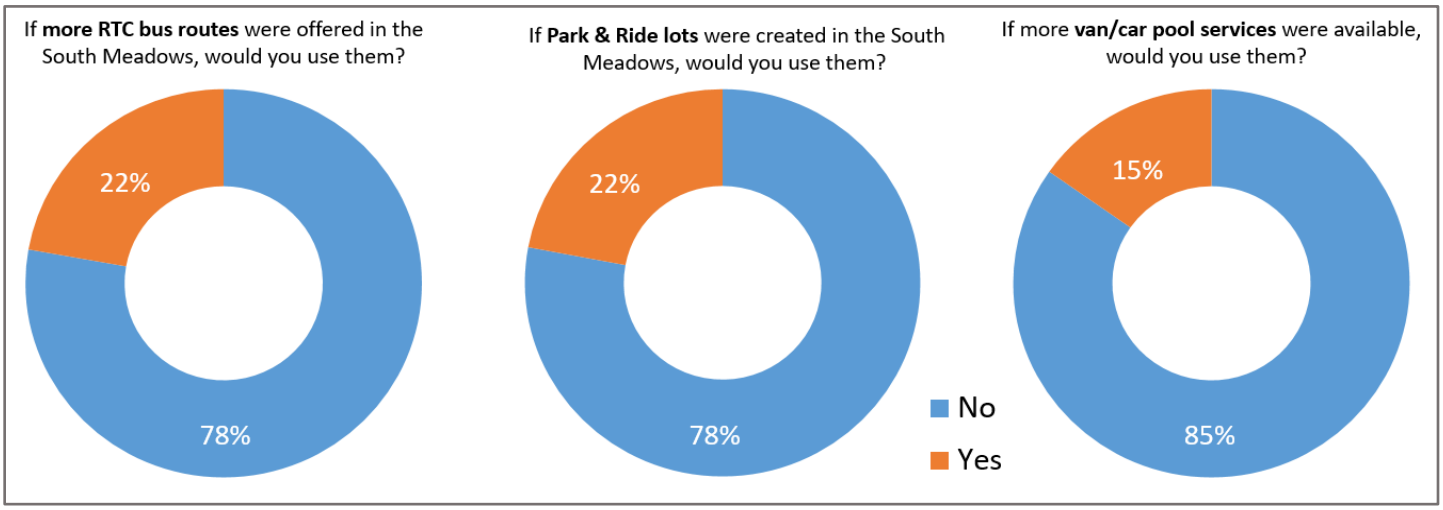


Exhibit 2-2. Survey Questions Results

As shown in **Exhibit 2-2**, 22% or less of the participants answered "Yes" to using more transit services. The desire for transit improvements might seem low, however, the existing RTC transit services available in the South Meadows area are very limited at this time. This indicates that there might be a potential for the RTC to increase transit or park and ride services in this area.

The last component, the interactive map, was the most comprehensive component. This tool enabled participants to drop markers into a map and state their specific comments and/or concerns. Participants could create entries regarding Intersection, Road Section, Bike Route, Pedestrian, Park & Ride, and Other categories. **Exhibit 2-3** shows an example of the Damonte Ranch area after polling ended. Within the entire map, participants entered 2,369 markers and 1,831 comments. The percentage of markers placed in each category were as follows:

- Intersection – 36%
- Road Segment – 19%
- Pedestrian – 17%
- Bike Route – 14%
- Other – 8%
- Park & Ride – 6%

Exhibit 2-3. Survey Map Example

Based on the location of the markers for each category, heat maps were created for the Bike Routes (**Figure 2-2**), Pedestrian (**Figure 2-3**), Safety (**Figure 2-4**), Park & Ride (**Figure 2-5**), Intersection (**Figure 2-6**), and Road Segments (**Figure 2-7**) categories. The safety heat map was created by filtering the comments with the search word "safe". Each heat map includes summary notes characterizing the comments for the highest marked areas. These maps were then used to help identify key areas of interest for further analysis.

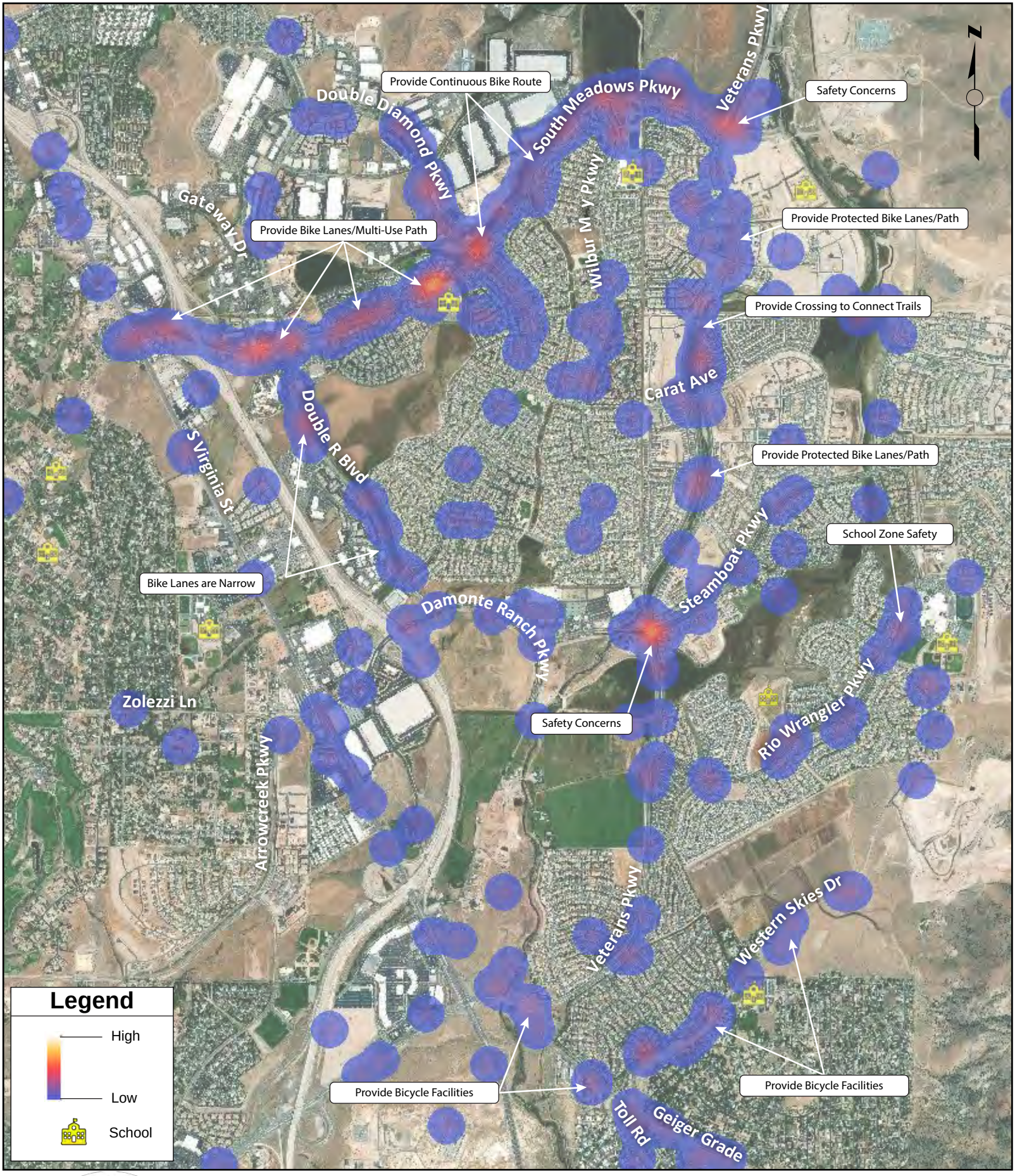


FIGURE 2-2. PUBLIC COMMENTS/CONCERNS - BIKE ROUTES

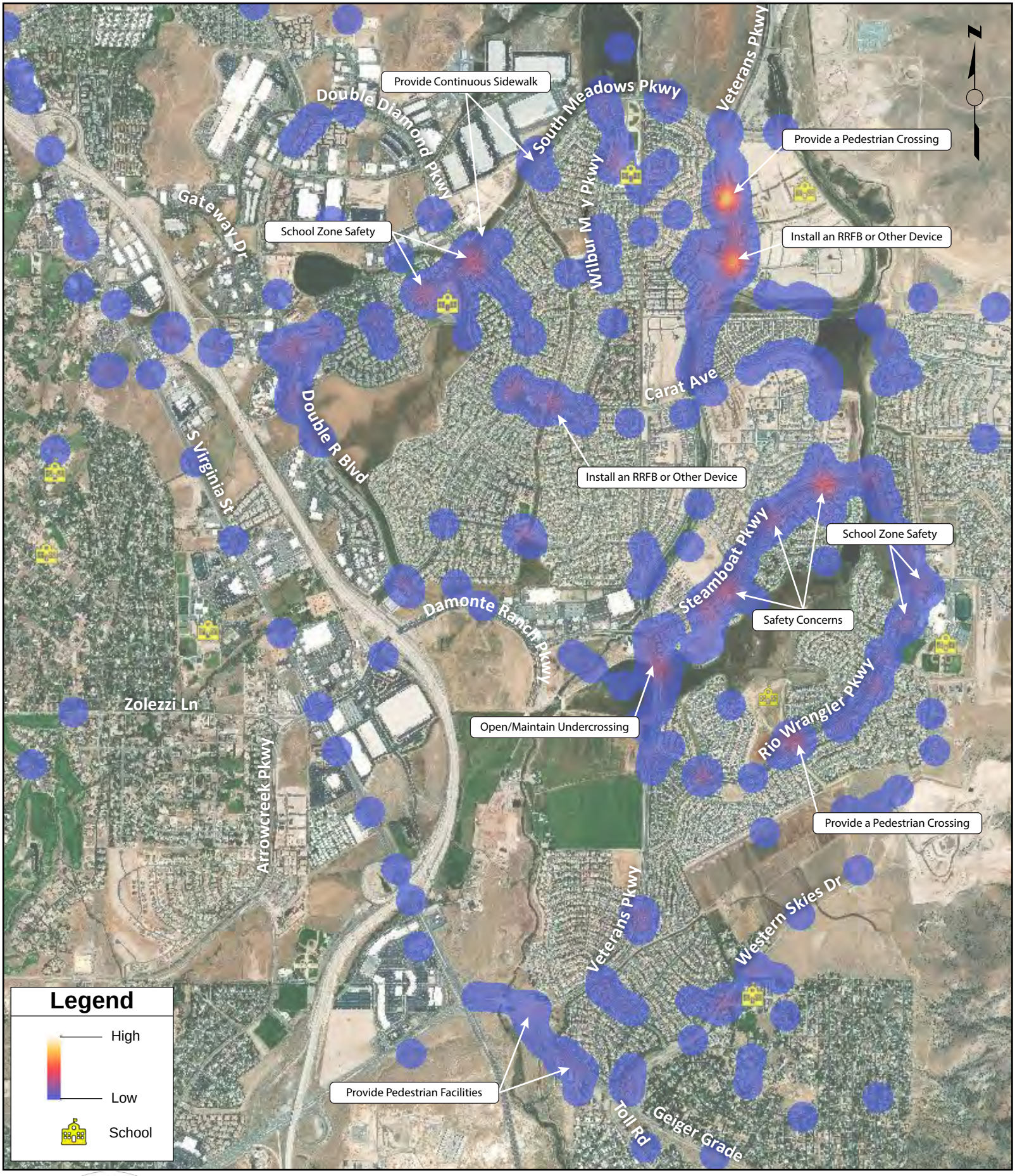


FIGURE 2-3. PUBLIC COMMENTS/CONCERNS - PE ESTRI N

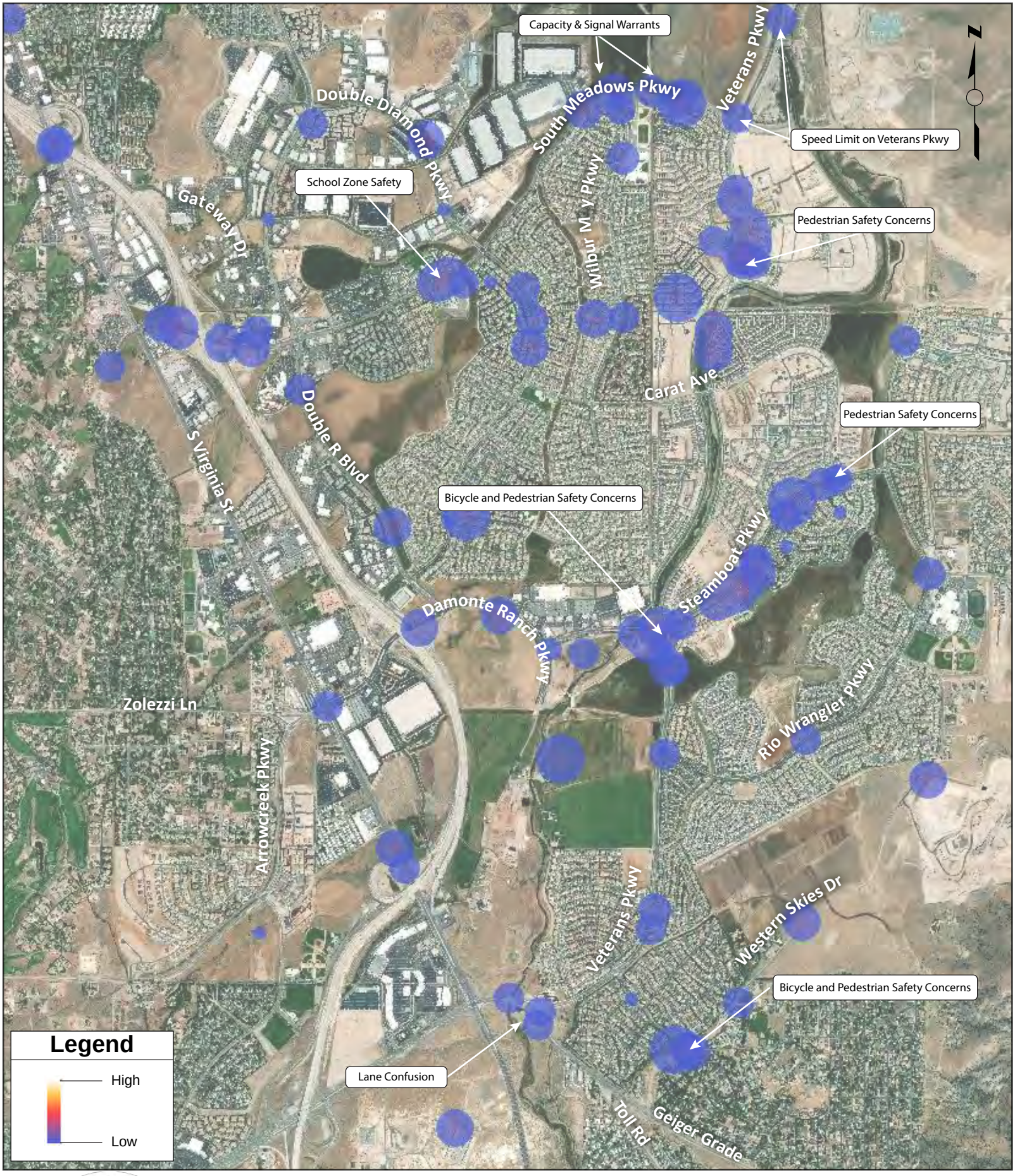


FIGURE 2-4. PUBLIC COMMENTS/CONCERNS - S FET

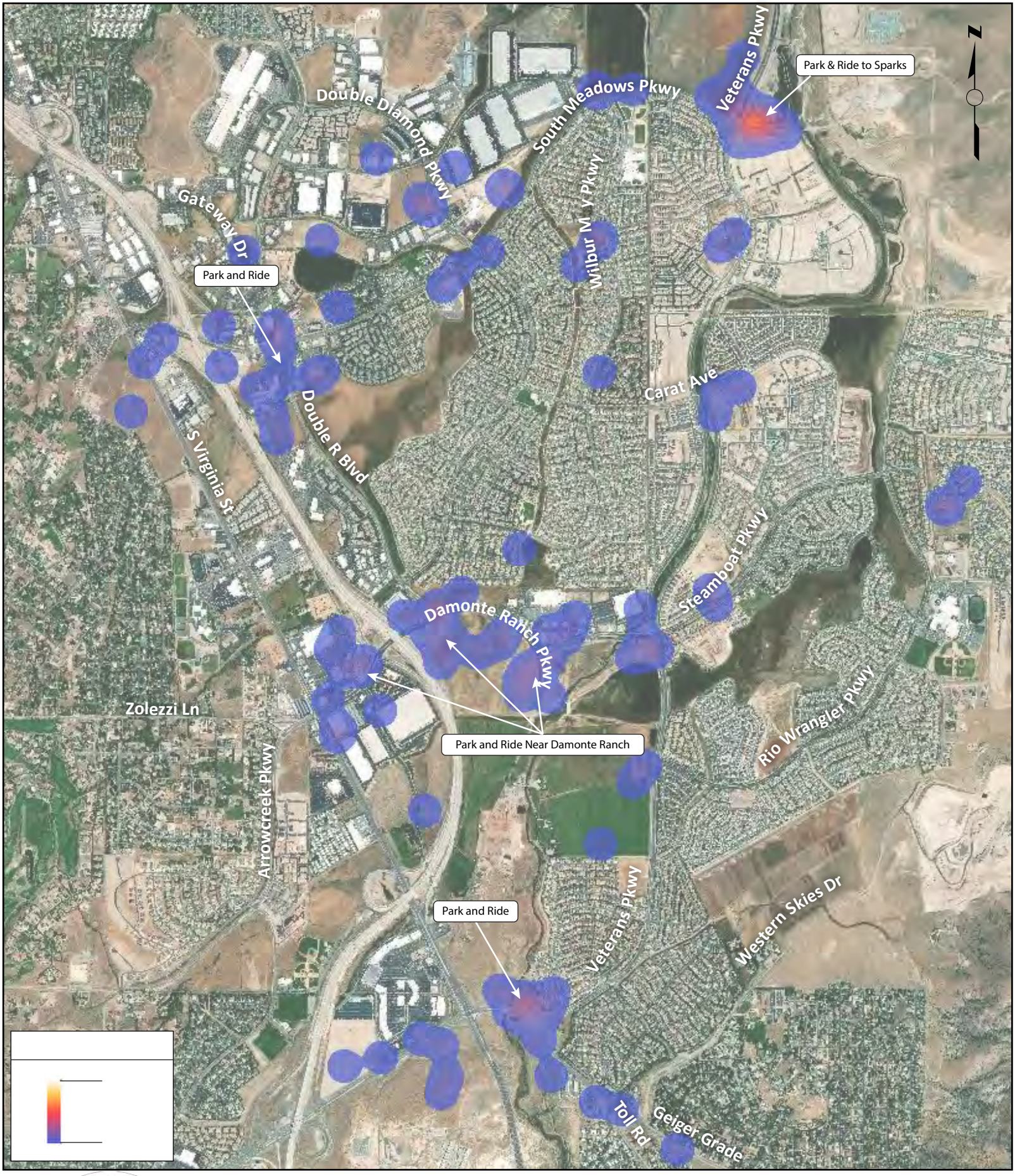


FIGURE 2-5. PUBLIC COMMENTS/CONCERNS - P R & RIDE

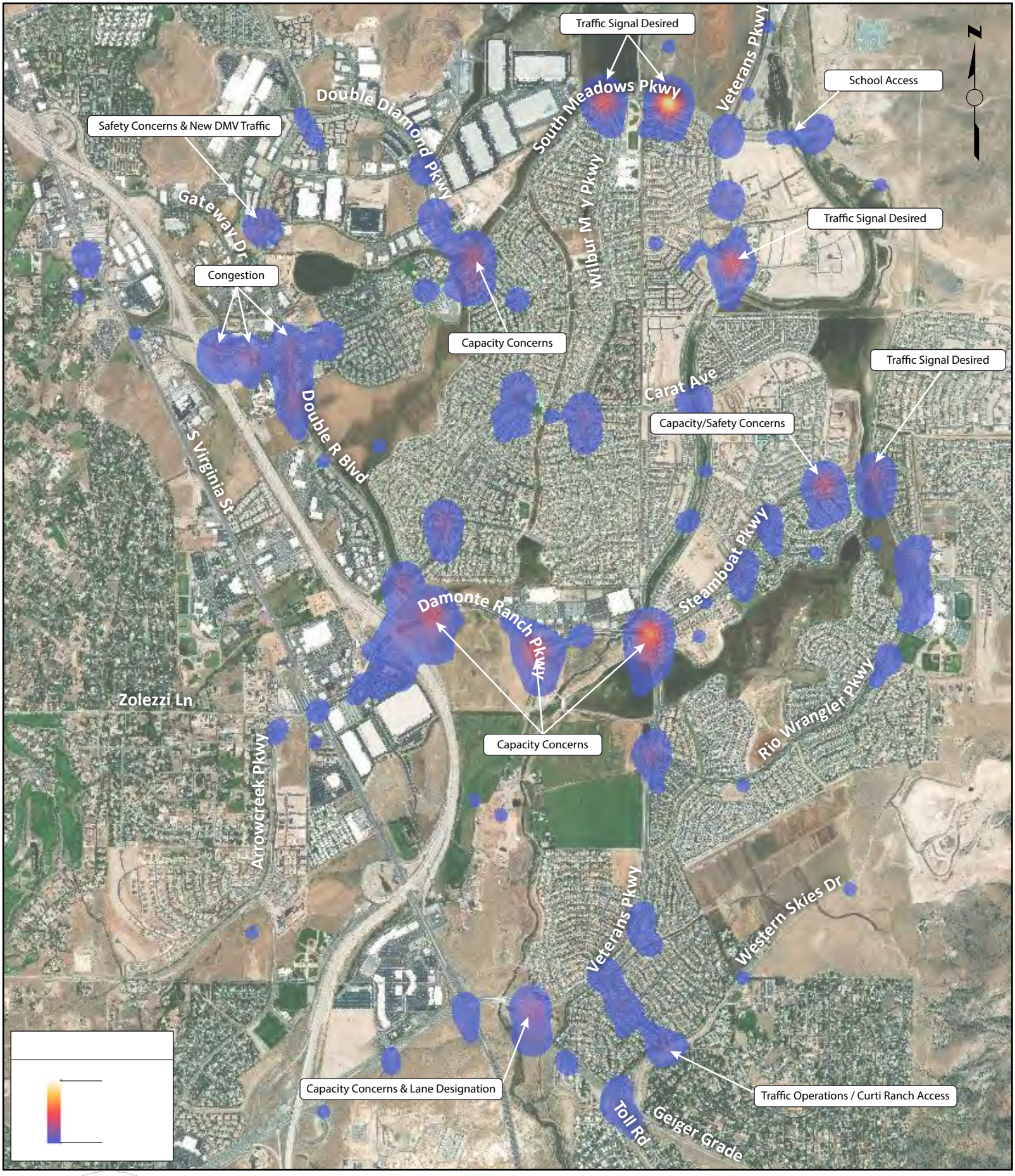


FIGURE 2-6. PUBLIC COMMENTS/CONCERNS - INTERSECTIONS

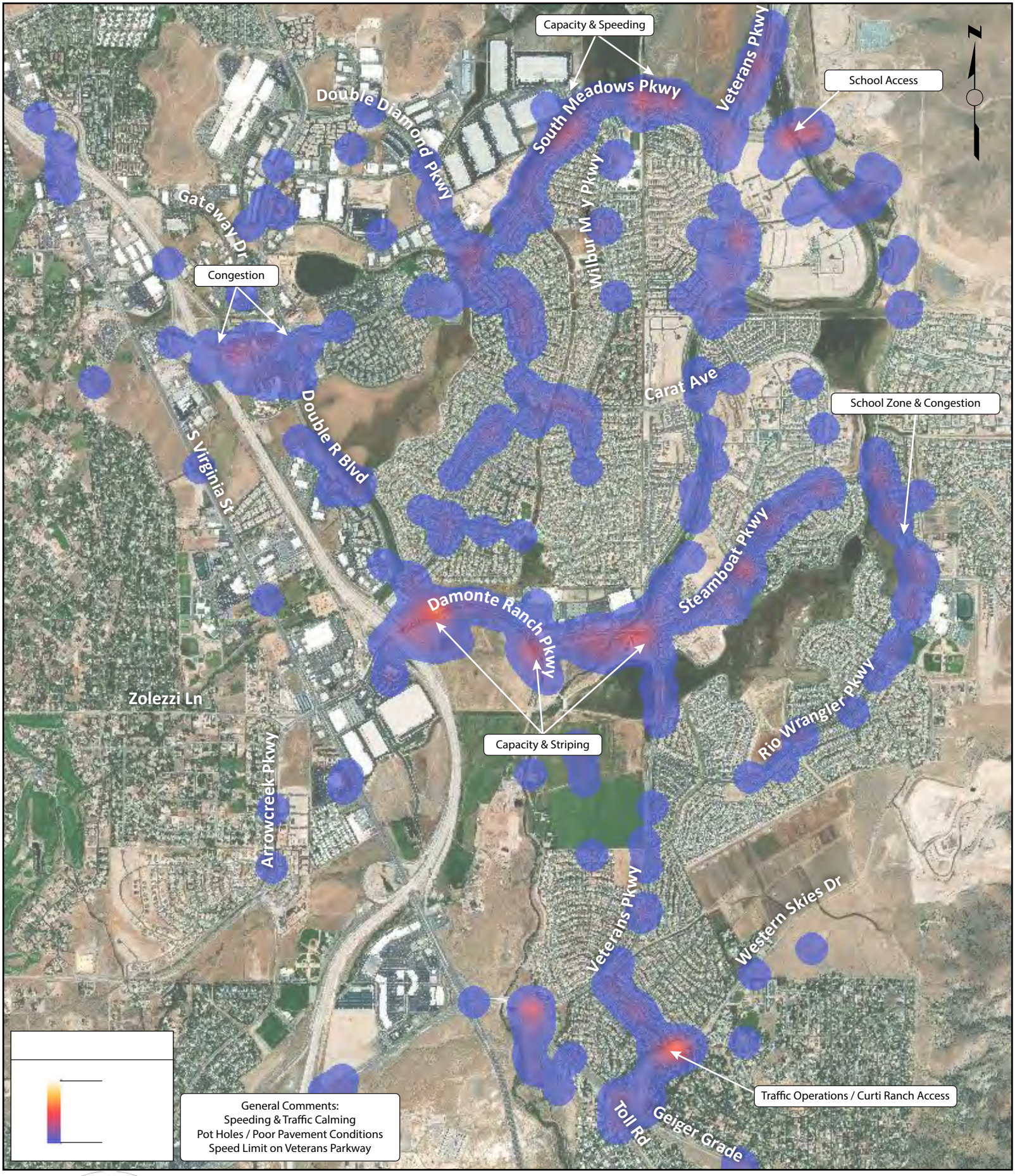


FIGURE 2-7. PUBLIC COMMENTS/CONCERNS - RO SEGMENTS

CHAPTER 3 - STUDY FOCUS AREAS

This chapter lists the intersections and roadway segments included within the South Meadows Multimodal Transportation Study. The study intersections and roadway segments were selected based on preliminary scoping with the RTC, input from the Technical Advisory Committee, public comments/concerns from the first South Meadows public meeting (March 26, 2019), and the survey/heat map results. **Figure 3-1** illustrates the overall study area and the major roadways and intersections considered in this study.

PRIMARY STUDY INTERSECTIONS – OPERATIONAL ANALYSIS

Level of service analysis was performed for the following 16 intersections:

- S. Virginia Street / I-580 Northbound Off-Ramp
- S. Virginia Street / Veterans Parkway (formally Geiger Grade)
- Veterans Parkway / Long Meadow Drive
- Veterans Parkway / Steamboat Parkway
- Veterans Parkway / Geiger Grade (Roundabout)
- S. Meadows Parkway / Echo Valley Parkway
- S. Meadows Parkway / Wilbur May Parkway
- S. Meadows Parkway / Double Diamond Parkway
- S. Meadows Parkway / Double R Boulevard
- S. Meadows Parkway / Gateway Drive
- Rio Wrangler Parkway / McCauley Ranch Boulevard
- Double R Boulevard / Sandhill Road
- Double R Boulevard / Double Diamond Parkway
- Double R Boulevard / Damonte Ranch Parkway
- Steamboat Parkway / Damonte Ranch Parkway
- Steamboat Parkway / Rio Wrangler Parkway

ADDITIONAL INTERSECTIONS REVIEWED

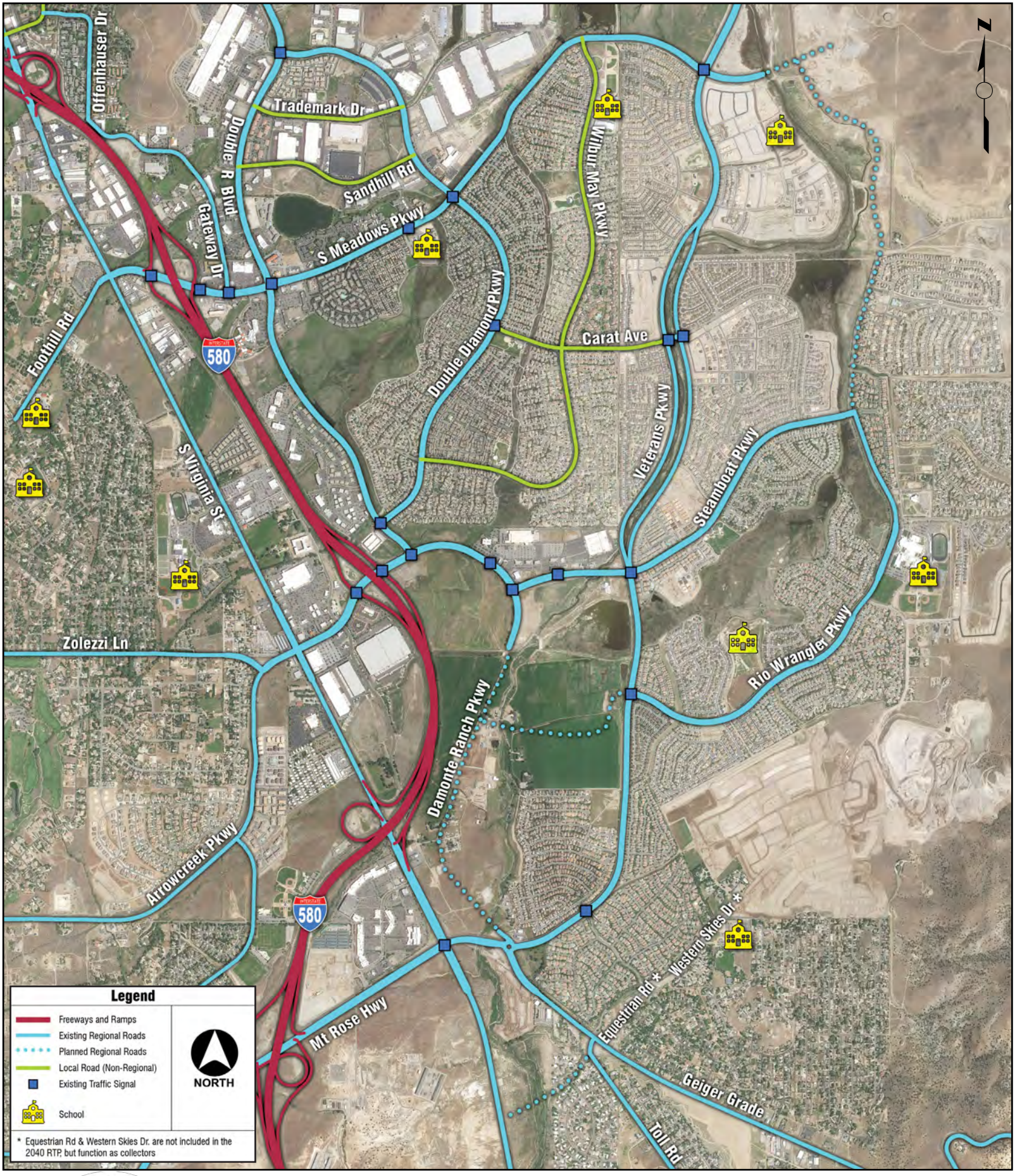
Field Review was performed at the following intersections:

- Damonte Ranch Interchange
- S. Virginia Street / Holcomb Ranch Lane
- S. Meadows Parkway / Mojave Sky Drive
- Veterans Parkway / Carat Avenue
- Arrowcreek Parkway / Zolezzi Lane
- Rio Wrangler Parkway / Spring Flower Drive / Summer Glen Drive
- Rio Wrangler Parkway / Yee Haw Way
- Steamboat Parkway / Brittany Meadows Drive
- Steamboat Parkway / Carat Avenue
- Steamboat Parkway / Hampton Park Drive

STUDY ROADWAYS – SEGMENT LEVEL OF SERVICE ANALYSIS

Level of Service analysis using daily traffic volumes, was performed for the following road segments:

- S. Virginia Street (Patriot Boulevard to I-580)
- S. Meadows Parkway (Entire Length)
- Veterans Parkway (Mira Loma Drive to Geiger Grade)
- Double R Boulevard (N. Double Diamond Parkway to Damonte Ranch Parkway)
- Steamboat Parkway (Entire Length)
- Rio Wrangler Parkway (Entire Length)
- Damonte Ranch Parkway (Entire Length)
- Double Diamond Parkway (Entire Length)
- Arrowcreek Parkway (Thomas Creek Road to S. Virginia Street)
- Western Skies & Equestrian Road (Ultimate Configuration)
- Foothill Boulevard (Broken Hill Road to S. Virginia Street)
- Geiger Grade (S. Virginia Street to Equestrian Road)



SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 3-1. STUDY AREA AND OVERVIEW

RTC

CHAPTER 4 - EXISTING AND PLANNED FACILITIES

This chapter summarizes the existing and previously planned facilities in the South Meadows Multimodal Transportation Study area.

EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Non-motorized travel, such as walking and cycling, are important elements of the overall transportation system and the provision, extent, and quality of non-motorized facilities affect mode choice. This section summarizes the existing pedestrian and bicycle facilities in the study area.

Pedestrian Facilities

Figure 4-1 shows the existing pedestrian facilities on regional roadways within the study area. As shown, most regional roadways in the South Meadows area currently have sidewalks. However, there are either incomplete or no pedestrian facilities on Foothill Road, Zolezzi Lane, Geiger Grade, Western Skies Drive, and sections of S. Virginia Street.

Bicycle Facilities

Figure 4-2 illustrates the existing bicycle facilities within the South Meadows area. In general, regional roadways currently have either a bike lane or multi-use path. However, some sections of South Meadows Parkway, S. Virginia Street, Foothill Road, and Geiger Grade do not have any bicycle facilities.

CRASH HISTORY

Crash data obtained from the Nevada Department of Transportation (NDOT) Crash Data Safety App for the most recent 3-year period available (2015 to 2017) was used to help identify crash concentrations and attempt to identify general trends. **Figure 4-3** shows a heat map of all the reported crashes in the study area. Most crashes in the study area are concentrated at the freeway interchanges or intersections with traffic signals. These key intersections process large volumes of vehicular traffic and crashes are more likely to occur at these high conflict areas. In total, there were 1,344 reported crashes within the general study area over the 3-year data period. Of the 1,344 crashes reported, 503 caused injuries and 6 resulted in fatalities.

PUBLIC TRANSIT

This section documents the existing public transportation infrastructure that serves the South Meadows area.

Fixed Route Transit

Figure 4-4 shows the existing transit routes within the study area. There are two fixed routes (Route 56 and the Regional Connector) that currently operate within the South Meadows area. Route 56 operates from Meadowood Mall to Damonte Ranch Parkway and the RTC Regional Connector route operates to/from Carson City via S. Virginia Street. Currently, the South Meadows region has limited transit routes with transit accessibility primarily in the north-west quadrant of the study area.

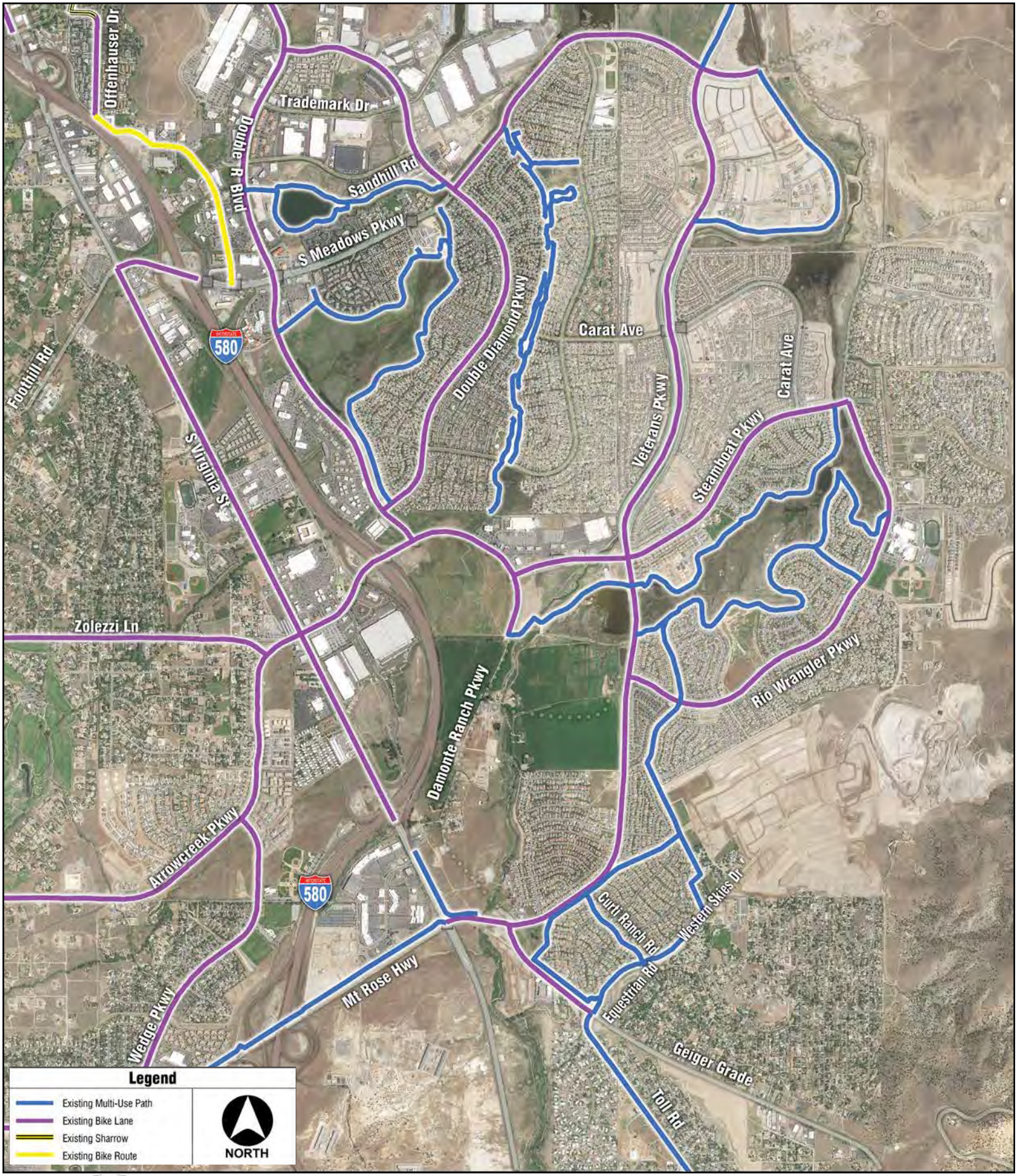
Transit Utilization

Annual Average Daily Ridership (AADR) was obtained from the most recent RTC ridership data (2019) based on individual roadway segments. RTC Ride Route 56 has an average weekday transit loading of 393.1 riders at the Gateway Drive/Prototype Drive stop and 237.6 riders at the two Renown Medical Center stops. The Regional Connecter Route has an average weekday transit loading of 76.8 riders at the Summit Mall stop.

SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 4-1. EXISTING PEDESTRIAN FACILITIES

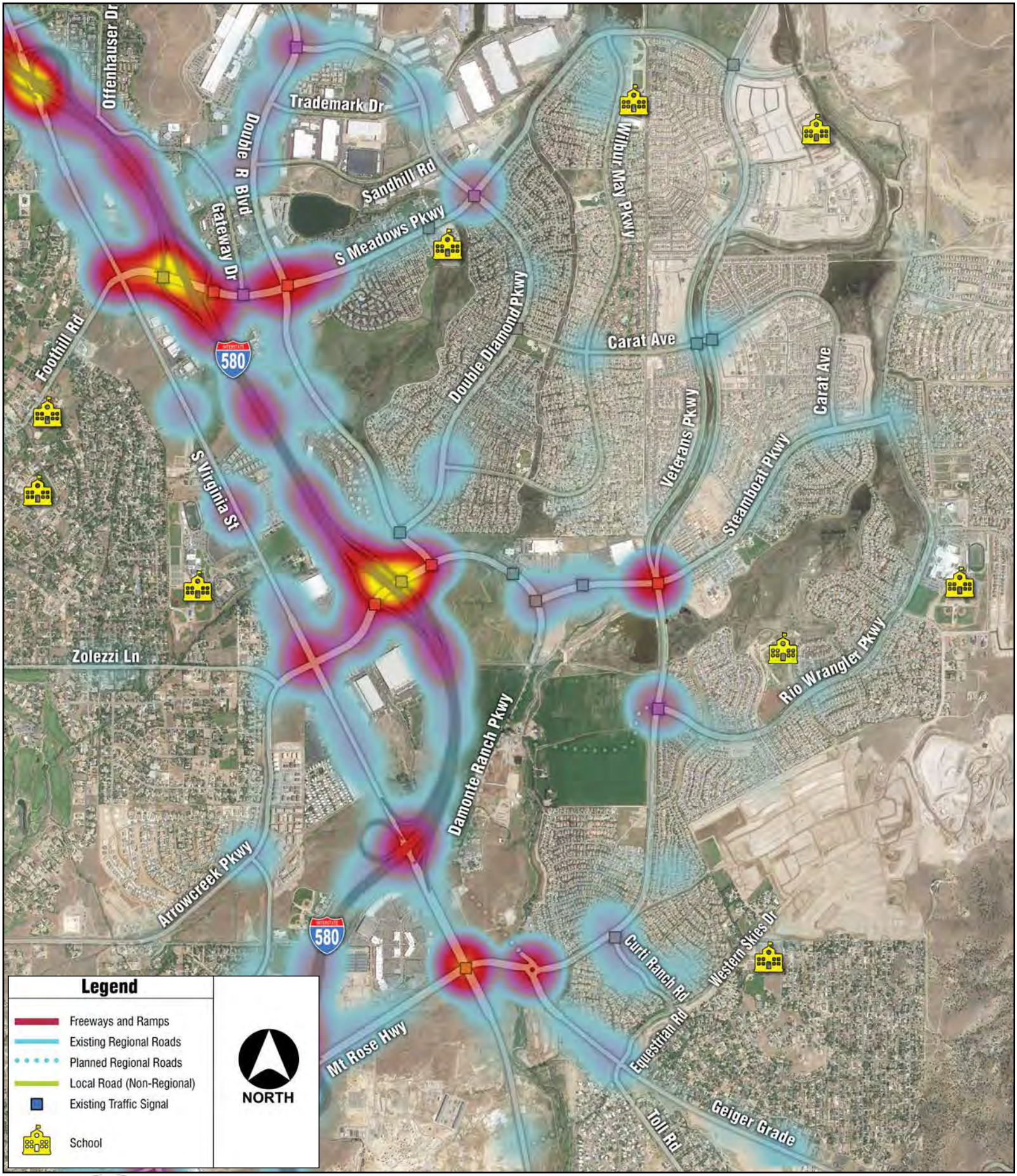
RTC



SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 4-2. EXISTING IC CLE FACILITIES

RTC



SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 4-3. CRASH HISTOR

RTC

FIGURE 4-4. EXISTING TRANSIT FACILITIES

Other Services

In addition to fixed-route service, RTC also provides ADA paratransit service, RTC ACCESS, and has a growing vanpool program, RTC VANPOOL, with over 200 van pools in operation. RTC ACCESS is the paratransit service that provides door-to-door, prescheduled, trips for individuals with access and functional needs who meet eligibility criteria. Trips are reserved from one to three days in advance and the service operates 24 hours a day, seven days a week. The trip origin and trip destination must be within a 3/4 mile corridor surrounding "regular" fixed-route RTC RIDE service. An existing park and ride lot currently exists at the Summit Mall at the Mt. Rose Highway / Herz Boulevard intersection (see **Figure 4-4**).

EXISTING MAJOR ROADWAYS

Table 4-1 summarizes key characteristics of the major roadways within the study area.

Table 4-1. Existing Major Roadway Characteristics

Street	Start	End	Lanes	Posted Speed	Functional Class	Policy Access	Policy LOS
S. Virginia St	Longley Ln	I-580	4	45	Arterial	MAC	E
	I-580	Mt. Rose Hwy	6	55	Arterial	MAC	E
South Meadows Pkwy	S. Virginia St	Lauren Ct	6	35	Arterial	MAC	E
	Lauren Ct	Rio Wrangler Pkwy	4	35	Arterial	MAC	D
Veterans Pkwy	Greg St	South Meadows Pkwy	6	45	Arterial	HAC	E
	South Meadows Pkwy	Geiger Grade	4	45	Arterial	HAC	D
Damonte Ranch Pkwy	S. Virginia St	Steamboat Pkwy	6	45	Arterial	MAC	E
Double R Blvd	Double Diamond Pkwy	South Meadows Pkwy	4	45	Arterial	MAC	D
	South Meadows Pkwy	Lauren Ct	4	35	Arterial	MAC	D
	Lauren Ct	Damonte Ranch Pkwy	4	45	Arterial	MAC	D
Steamboat Pkwy	Damonte Ranch Pkwy	Rio Wrangler Pkwy	4	35	Arterial	MAC	D
Rio Wrangler Pkwy	Veterans Pkwy	Summer Glenn Dr	4	45	Arterial	MAC	D
	Summer Glenn Dr	South Meadows Pkwy	2	45	Arterial	MAC	D
Double Diamond Pkwy	Double R Blvd (north)	Double R Blvd (south)	4	35	Arterial	MAC	D
Arrowcreek Pkwy	Thomas Creek Rd	Rubblestone Dr	2	35	Arterial	MAC	D
	Rubblestone Dr	S. Virginia St	4	35	Arterial	MAC	D
Foothill Blvd	Broken Hill Rd	S. Virginia St	2	25	Collector	LAC	D
Geiger Grade	S. Virginia St	Equestrian Rd	4	45	Arterial	MAC	E
	Equestrian Rd	Storey County Line	2	45	Arterial	MAC	D
Equestrian Rd	Geiger Grade	Western Skies Dr	2	30	Collector*	--	D
Western Skies Dr	Geiger Grade	Rio Wrangler Pkwy	2	30	Collector*	--	D

Notes: HAC = High Access Control, MAC = Moderate Access Control, LAC = Low Access Control, * Not identified in the 2040 RTP but functions as a collector
Policy LOS "D" for roadway facilities carrying less than 27,000 ADT and LOS "E" for roadway facilities carrying more than 27,000 ADT.

PLANNED IMPROVEMENTS

This section documents the previously planned improvements outlined in the RTC's 2040 Regional Transportation Plan (RTP) and 2017 Bicycle and Pedestrian Master Plan (BPMP).

2040 Regional Transportation Plan

The RTC's 2040 Regional Transportation Plan (RTP) is the region's 20-year long range transportation plan. The plan defines the long range priorities for the future transportation system including transit, multimodal, and roadway capacity improvements. The 2040 RTP includes the funding for and priority of projects within Washoe County. **Figure 4-5** shows the projects currently programed within the study area. As shown, there are multimodal improvements programmed on Huffaker Ln, Zolezzi Ln, S. Virginia Street, and South Meadows Parkway. Additionally, there are vehicular capacity enhancements programmed on Arrowcreek Parkway and Geiger Grade. Roadway extensions are anticipated on Damonte Ranch Parkway and Rio Wrangler Parkway. The extension of Rio Wrangler Parkway north to South Meadows Parkway is not included in the 2040 RTP but is planned with approved master-planned developments and should be shown in the next RTP.

Bicycle and Pedestrian Master Plan

The RTC's 2017 Bicycle and Pedestrian Master Plan (BPMP) is a guiding document that supports the prioritization of projects to support walking and bicycling within Washoe County. **Figure 4-6** shows the Bicycle Project Priorities within the South Meadows area. Currently, there are only two bicycle projects planned in the study area. Low priority improvements are listed on S. Virginia Street and South Meadows Parkway. **Figure 4-7** shows the Pedestrian Project Priorities within the South Meadows area. As shown, the highest priorities per the 2017 BPMP are walkability improvements on S. Virginia Street. Medium priority projects are included on Zolezzi Lane, Double R Boulevard, Double Diamond Parkway, and Gateway Drive.

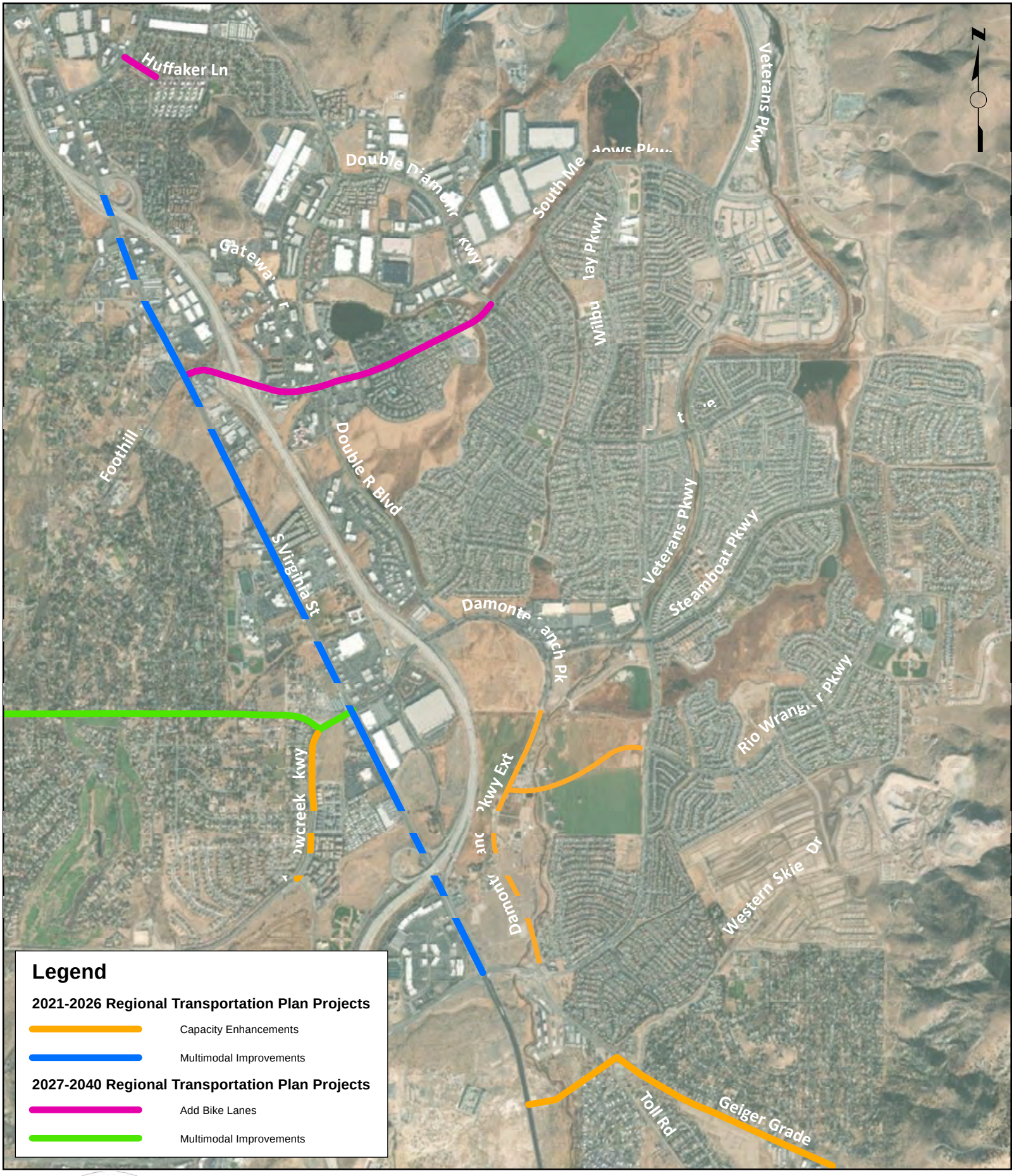


FIGURE 4-5. CURRENTLY PLANNED IMPRO EMENT PER 2040 REGIONAL TRAN PORTATION PLAN

FIGURE 4-6. BPMP BI LE PROJE T PRIORIT

FIGURE 4-7. BPMP PEDESTRIAN PROJE T PRIORIT

CHAPTER 5 - EXISTING CONDITIONS LEVEL OF SERVICE ANALYSIS

This chapter presents the findings of an existing conditions intersection level of service analysis and roadway segment analysis for the South Meadows area. This existing conditions analysis has been prepared to document existing traffic operations and to identify any poor level of service conditions. The selection methodology and full list of study intersections and roadway segments is provided in *Chapter 3 – Study Focus Areas*.

ANALYSIS METHODOLOGY

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of delay per vehicle at intersections to letter grades "A" through "F" with "A" representing optimum conditions and "F" representing breakdown or over capacity flows.

Level of Service Policy

The 2040 Regional Transportation Plan (RTP) establishes level of service criteria for regional roadway facilities in the City of Reno, City of Sparks, and Washoe County. The current level of service policy is:

- "All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better."
- "All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon – LOS E or better."
- "All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridors".

In general, the roadways within the study area currently carry less than 27,000 ADT except for select roadway segments immediately adjacent to I-580.

Intersections

The complete methodology for intersection level of service analysis is established in the Highway Capacity Manual (HCM) 2010, published by the Transportation Research Board (TRB). **Table 5-1** presents the delay thresholds for each level of service grade at signalized and unsignalized intersections.

Table 5-1: Level of Service Definition for Intersections

Level of Service	Brief Description	Average Delay (seconds per vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Free flow conditions.	0-10	0-10
B	Stable conditions with some affect from other vehicles.	>10-20	>10-15
C	Stable conditions with significant affect from other vehicles.	>20-35	>15-25
D	High density traffic conditions still with stable flow.	>35-55	>25-35
E	At or near capacity flows.	>55-80	>35-50
F	Over capacity conditions.	> 80	> 50

Source: Highway Capacity Manual (2010), Chapters 18 through 21

Level of service calculations were performed for the study intersections using the PTV Vistro software package with analysis and results reported in accordance with HCM 2010 methodology.

Roadway Segments

Roadway segments were analyzed using the Generalized Daily Service Volumes for Urban Street Facilities (Exhibit 16-14) of the Highway Capacity Manual 2010. Using this methodology, level of service is determined by comparing average daily traffic volumes to the LOS threshold values shown in **Table 5-2**. The level of service table is based on number of lanes and roadway speed and not based off class like past regional transportation plans.

Note that the values listed under Posted Speed = 45 mi/hr are most appropriate to the roadways in this study since the signal spacing assumptions (1,500 feet) and access spacing assumptions (10 access points per mile) better represent the arterial roadways in this study than the 30 mi/hr values with tighter spacing of signals and more access points.

Table 5-2. Level of Service Thresholds for Roadway Segments

Facility Type	Maximum Service Flow Rate (Daily for Given Service Level)				
# of Lanes	LOS A	LOS B	LOS C	LOS D	LOS E
Posted Speed = 30 mi/hr					
2	N/A	N/A	4,800	12,700	16,400
4	N/A	N/A	9,300	25,900	31,300
6	N/A	N/A	13,500	38,300	44,800
Posted Speed = 45 mi/hr					
2	N/A	N/A	8,500	15,400	16,400
4	N/A	N/A	17,700	30,700	31,300
6	N/A	N/A	26,300	44,500	44,800

General assumptions: K-Factor – 0.1, D-Factor – 0.6, Peak Hour Factor – 0.92, Base Saturation Flow Rate – 1,900 pc/h/ln

LEVEL OF SERVICE ANALYSIS

This section reports the findings of the existing conditions level of service analysis.

Existing Traffic Volumes

Turning movement counts were collected at the 16 primary study intersections (shown on **Figure 5-1**) on a typical mid-week day, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. This data was used to identify the highest morning and evening traffic conditions. Full turning movement data is provided in **Appendix B**. At each of the study intersections, the one-hour period with the highest traffic volumes (referred to as the peak hour) was determined from the morning and evening data. Existing daily traffic volume data (2018/2019) for all the study roadways within the South Meadows study area was obtained from the Nevada Department of Transportation (NDOT).

Intersections

Existing conditions intersection level of service analysis was performed for the study intersections using existing lane configurations and controls (shown on **Figure 5-2**), existing signal timings, and the existing AM and PM peak hour traffic volumes (shown on **Figure 5-3** and **Figure 5-4**). **Table 5-3** shows the AM and PM peak hour level of service results at the study intersections.

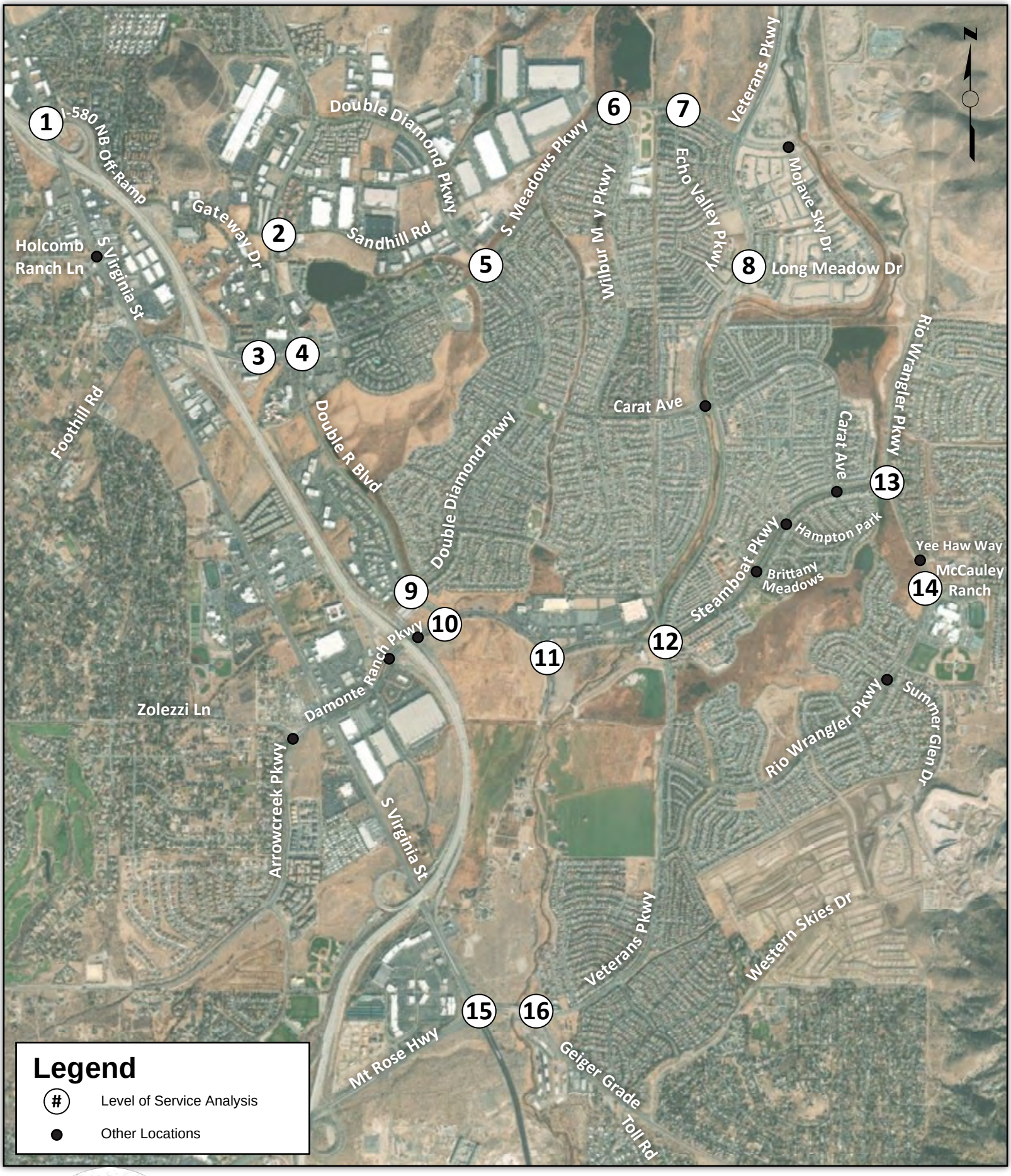
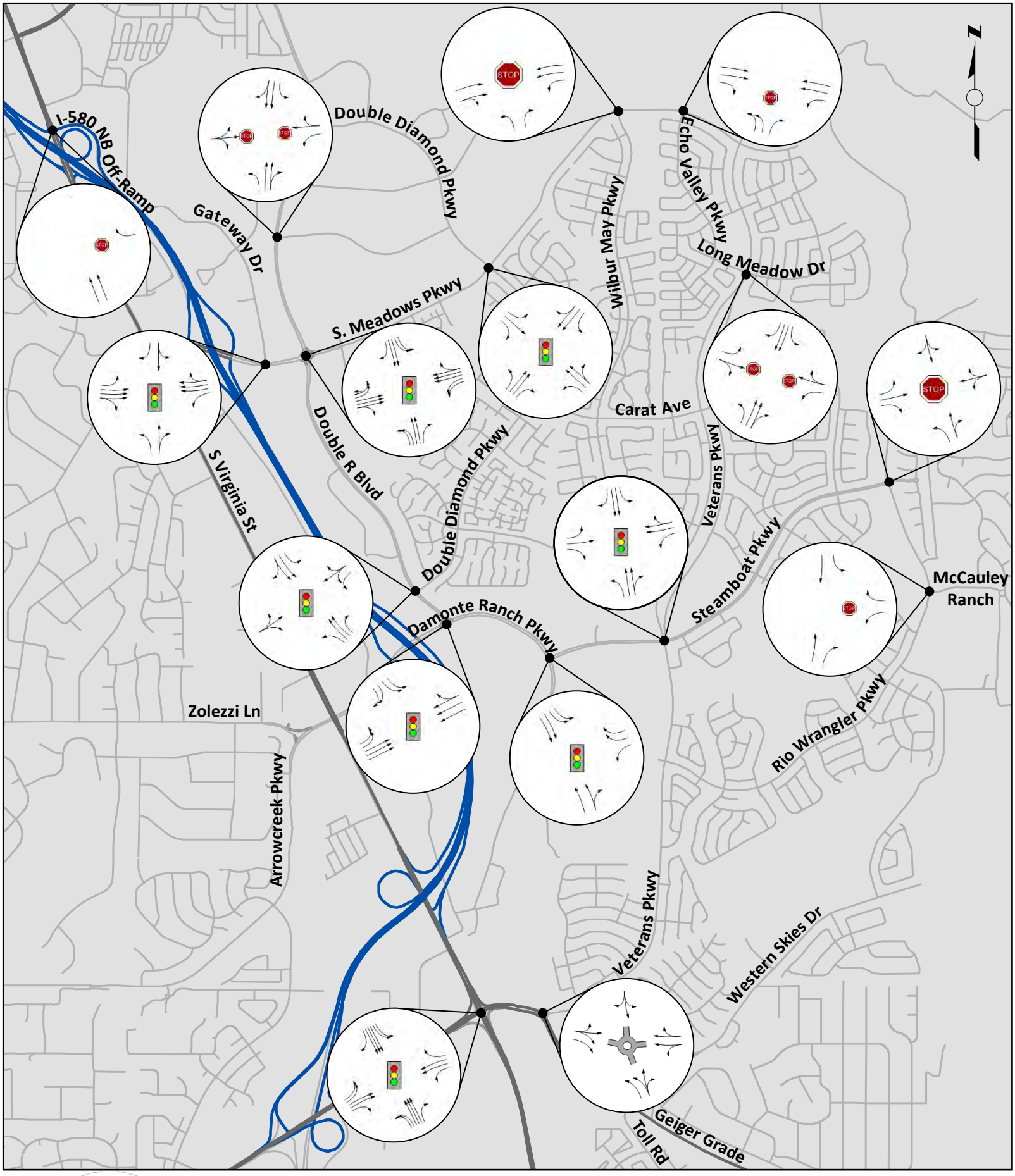


FIGURE 5-1. STUDY INTERSECTIONS



SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 5-2. EXISTING L NE CONFIGUR TIONS ND CONTROLS

RTC

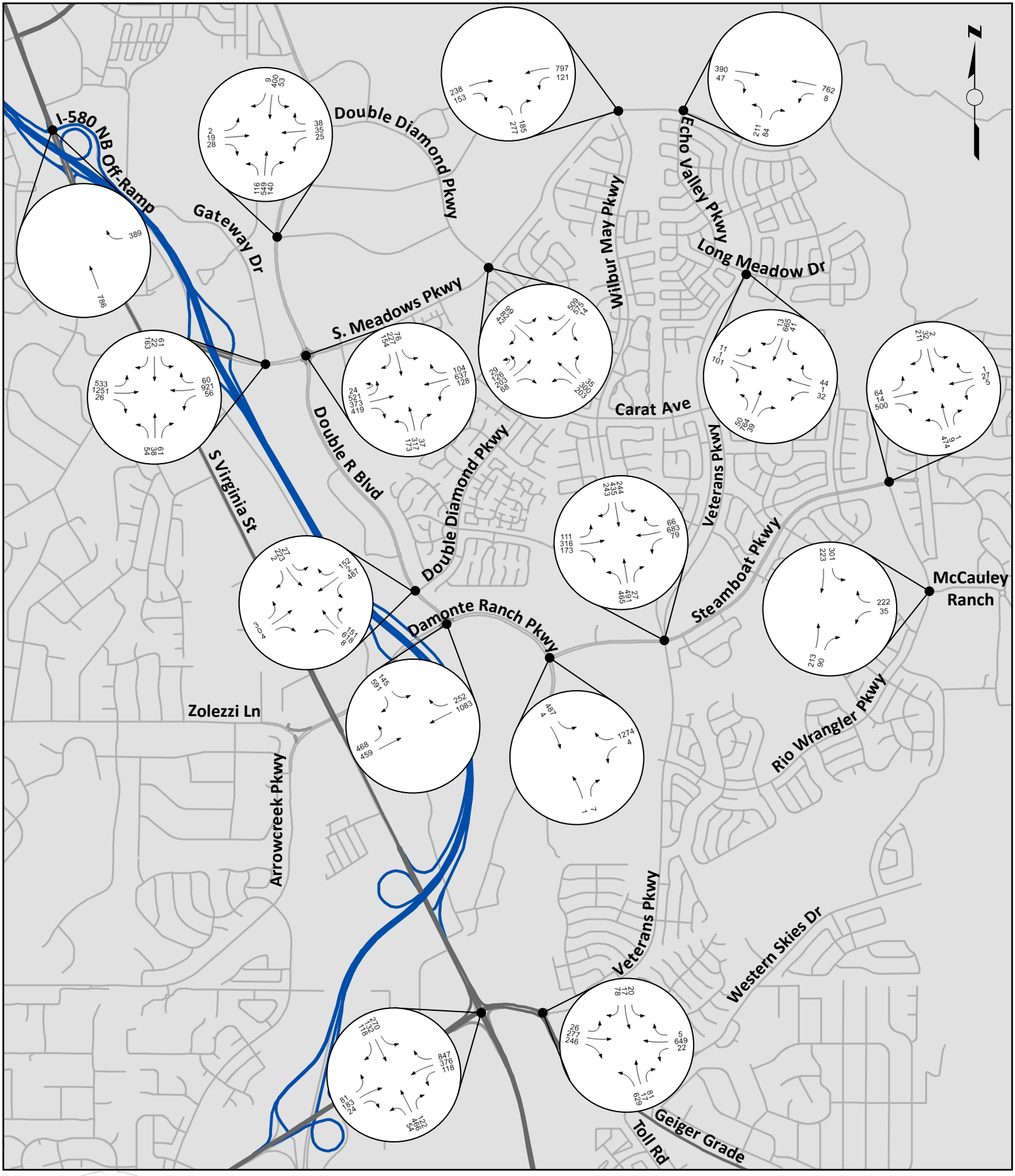


FIGURE 5-3. EXISTING AM PEAK HOUR TRAFFIC VOLUMES

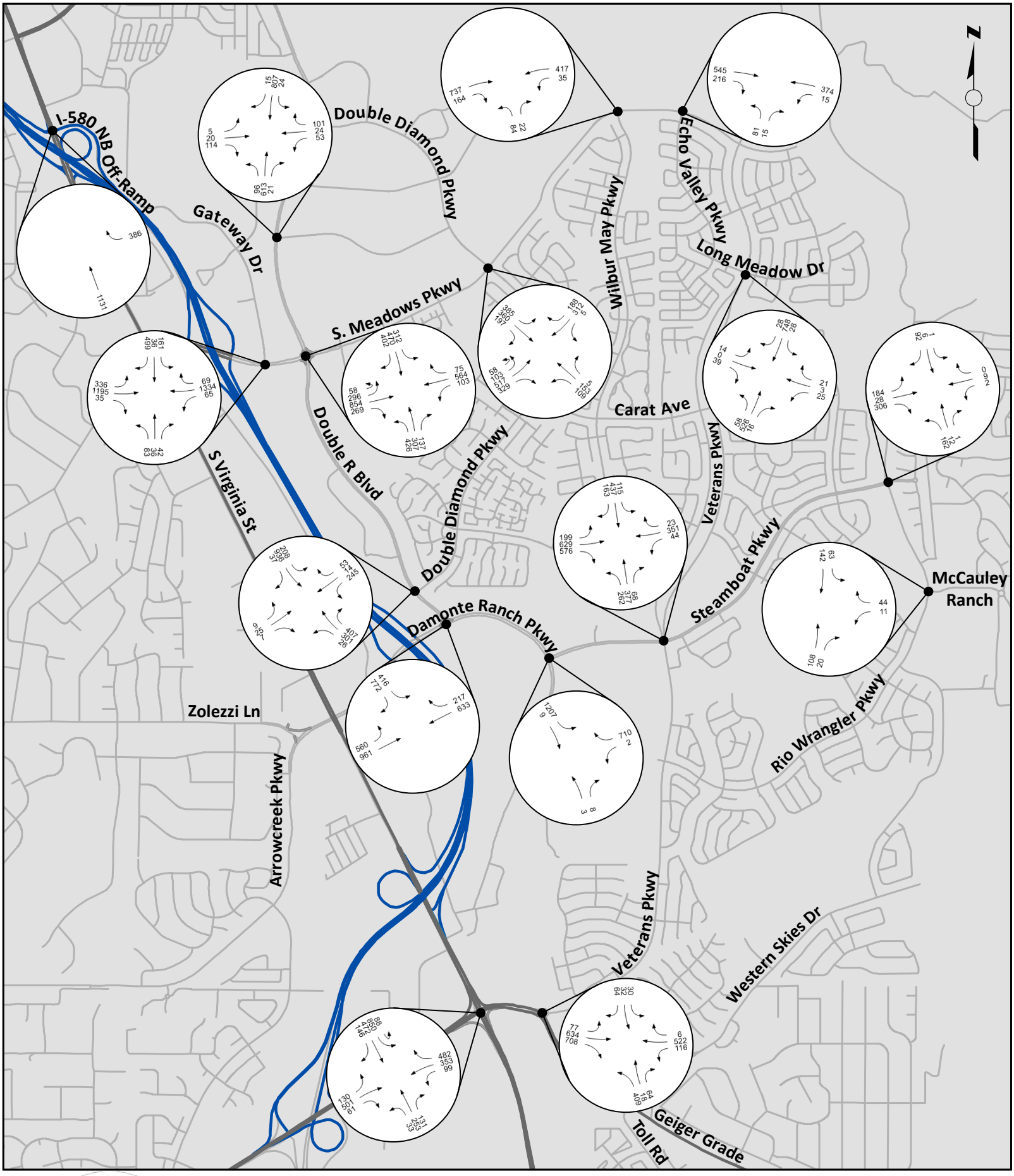


FIGURE 5-4. EXISTING PM PEAK HOUR TRAFFIC VOLUMES

SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

RTC

Table 5-3. Existing Conditions Level of Service Analysis

ID	Intersection	Intersection Control	Movement	Existing Conditions			
				AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	S. Virginia St / I-580 NB Off-Ramp	Side-Street STOP	Westbound Approach	D	30.3	E	49.3
2	Double R Blvd / Sandhill Rd	Side-Street STOP	Northbound Left	A	8.9	B	11.2
			Southbound Left	A	9.9	A	9.4
			Eastbound Approach	E	45.5	F	144.3
			Westbound Left	F	110.3	F	>300
			Westbound Through-Right	F	82.8	F	80.1
		Signal	Overall	B	11.9	B	13.9
3	S. Meadows Pkwy / Gateway Dr	Signal	Overall	C	30.7	D	39.8
4	S. Meadows Pkwy / Double R Blvd	Signal	Overall	D	39.6	D	46.3
5	S. Meadows Pkwy / Double Diamond Pkwy	Signal	Overall	C	23.9	C	22.6
6	S. Meadows Pkwy / Wilbur May Pkwy	All-Way STOP	Overall	F	87.8	D	26.8
7	S. Meadows Pkwy / Echo Valley Pkwy	Side-Street STOP	Northbound Left	C	24.4	C	20.7
			Northbound Right	B	10.1	B	10.3
			Westbound Left	A	8.2	A	8.8
8	Veterans Pkwy / Long Meadow Dr	Side-Street STOP	Northbound Left	B	10.4	A	9.8
			Southbound Left	A	9.7	A	8.8
			Eastbound Left	F	63.3	E	43.5
			Eastbound Through-Right	B	13.2	B	11.5
			Westbound Left	F	143.0	E	40.2
			Westbound Through-Right	B	13.9	B	14.6
9	Double R Blvd / Double Diamond Pkwy	Signal	Overall	C	29.1	E	58.1
10	Damonte Ranch Pkwy / Double R Blvd	Signal	Overall	D	54.4	D	51.6
11	Damonte Ranch Pkwy / Steamboat Pkwy	Signal	Overall	A	2.9	A	3.8
12	Veterans Pkwy / Steamboat Pkwy	Signal	Overall	C	38.1	C	32.8
13	Steamboat Pkwy / Rio Wrangler Pkwy	All-Way STOP	Overall	F	98.9	B	11.6
14	Rio Wrangler Pkwy / McCauley Ranch Blvd	Side-Street STOP	Southbound Left	A	9.8	A	7.6
			Westbound Left	F	63.6	B	11.5
			Westbound Right	B	12.8	A	9.1
15	S. Virginia St / Veterans Parkway	Signal	Overall	C	24.2	C	26.9
16	Veterans Pkwy / Geiger Grade	Roundabout	Overall	B	13.9 *(0.64 v/c)*	C	17.2 *(0.79 v/c)*
			North Leg	C	17.1 *(0.36 v/c)*	B	10.6 *(0.25 v/c)*
			South Leg	B	13.9 *(0.57 v/c)*	C	16.3 *(0.49 v/c)*
			East Leg	C	19.1 *(0.64 v/c)*	B	10.6 *(0.25 v/c)*
			West Leg	A	6.8 *(0.34 v/c)*	C	21.1 *(0.79 v/c)*

As shown in **Table 5-3**, the following intersections currently operate at poor level of service conditions during a peak hour:

- S. Virginia Street / I-580 NB Off-Ramp
- Double R Boulevard / Sandhill Road
- S. Meadows Parkway / Wilbur May Parkway
- Veterans Parkway / Long Meadow Drive
- Double R Boulevard / Double Diamond Parkway
- Steamboat Parkway / Rio Wrangler Parkway
- Rio Wrangler Parkway / McCauley Ranch Boulevard

A traffic signal is planned at the Double R Boulevard / Sandhill Road intersection and that intersection will operate at Level of Service "B" when signalized.

Roadway Segments

Existing conditions road segment level of service analysis was performed for the regional roadway segments using the latest NDOT count data. The existing roadway segment volumes and levels of service are shown on **Figure 5-5**. All the study roadway segments currently operate at Level of Service "C" or better except for one section of S. Virginia Street near the I-580 NB Off-Ramp (Longley Lane to I-580 SB Ramps at LOS "F"). The segment level or service analysis is based on average daily traffic volumes and congestion may occur during the peak hours with high one-directional flows.

OTHER STUDY INTERSECTIONS

Citizen comments and concerns were voiced related to numerous intersections other than the 16 primary study intersections. This section summarizes the findings from field visits and safety review observations. Detailed level of service was not performed for these additional locations.

Damonte Ranch Parkway Interchange

Many comments were received asking about the lane configuration and controls at westbound Damonte Ranch Parkway to the northbound on-ramp at the Damonte Ranch/I-580 interchange. There are two right-turn lanes on Damonte Ranch Parkway onto the ramp, but only the outside lane is allowed to make a right turn on red. This configuration causes lane imbalance and queuing in the outside lane and drivers perceive this control as being inefficient.

The RTC, NDOT, and City of Reno worked together to improve the lane striping a couple years ago and improved the striping and signal controls for improved efficiency at both the Damonte Ranch and South Meadows interchanges. Right turn on red was considered for both right turn lanes at that time but was deemed not acceptable for safety reasons, unacceptable vehicular and pedestrian conflicts that would result, and due to state laws governing traffic controls. The intersection is currently in the best configuration possible given the current number of lanes and geometrics.

Other comments were made about the lane configuration at eastbound Damonte Ranch Parkway to the northbound on-ramp at the Damonte Ranch/I-580 interchange. Only the inside travel lane can use the dual eastbound left-turn lanes. For this reason, there are lane imbalances and queuing beginning at the southbound ramps. Lane configurations and striping improvements could be made so that two travel lanes can use dual lefts onto the northbound ramp. A potential striping improvement is listed in the vehicular improvements table (Table 8-5).

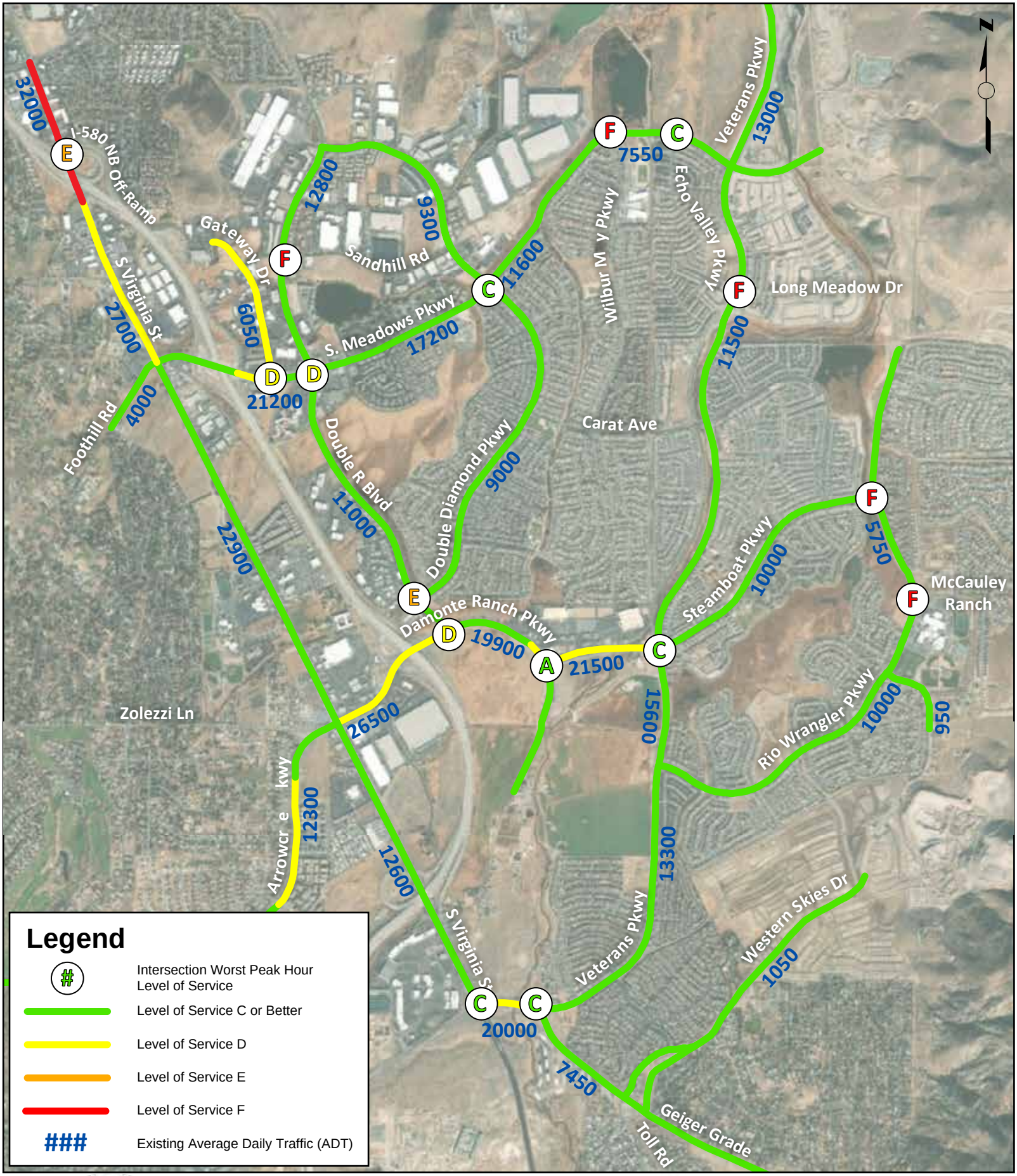


FIGURE 5-5. EXISTING AVERAGE DAILY TRAFFIC AND LEVEL OF SERVICE

S. Virginia Street / Holcomb Ranch Lane

Numerous comments were received suggesting the addition of a "free right turn movement" from Holcomb Ranch Lane to S. Virginia Street to improve the right turn movement that is currently STOP controlled. The intersection was reviewed to determine if this suggested modification is feasible. An eastbound to southbound free right turn movement cannot be implemented at Holcomb Ranch Lane because the free movement would create an inappropriate weave with the southbound right turn lane to Sierra Manor Drive located only 300 feet to the south. The safety benefit of a deceleration lane to Sierra Manor Dive takes precedence over a potential minor reduction to side street right turn delay. However, it is possible that access management or a traffic signal may be needed to prevent left-turn conflicts with the high number of access points in this area. Improvements for this location are listed in the safety improvements table (Table 8-3).

South Meadows Parkway / Mojave Sky Drive

South Meadows Parkway currently ends at Steamboat Creek just east of Mojave Sky Drive and a temporary cul-de-sac has been constructed at its terminus to enable U-turns until the roadway is extended further east with future approved development projects. The Mojave Sky Drive approach has ¾ access permitting all movements except the left turn out. This intersection was constructed in accordance with the Access Management Standards established in the Regional Transportation Plan for access to an arterial roadway. Adding a left turn out movement, as suggested by local community members, is not appropriate from Mojave Sky Drive given the intersection proximity to Veterans Parkway.

Veterans Parkway / Carat Avenue

A few comments were received reporting delay, capacity, and potential signal coordination issues at the Veterans Parkway / Carat Avenue intersection. While divided intersections of this style are generally less efficient than a single intersection, field observation indicates the two traffic signals appear to be coordinated. Perceived delay is most likely attributable to the lane configurations on Carat Avenue which have shared through/right-turn movements. The eastbound and westbound right turns are blocked at this pair of intersections by through vehicles at the stop bar. It is recommended that eastbound and westbound right-turn lanes should be constructed on Carat Avenue at Veterans Parkway (Table 8-5).

Arrowcreek Parkway / Zolezzi Lane

This intersection was recently modified to improve the intersection geometrics, reduce speeds on the westbound right turn from Arrowcreek Parkway to Zolezzi Lane, and provide more spacing between the adjacent driveway just west on Zolezzi Lane. Comments received from local residents suggest existing congestion issues and a restricted sight line from the eastbound right turn channel. Field review indicates adequate sight lines from the eastbound right turn lane yield point. The intersection already has dual left-turn lanes from Zolezzi Lane to Arrowcreek Parkway and has effectively already been built to the maximum number of reasonable lanes. No improvements are recommended at this location.

Rio Wrangler Parkway / Spring Flower Drive / Summer Glen Drive

Comments from concerned citizens suggest the northbound merge, from two lanes to one, on Rio Wrangler Parkway between Spring Flower Drive/Summer Glen Drive and Western Skies Drive does not have clear signing and striping. The consultant team field review confirmed the signage is aging, somewhat obscured by overgrown landscaping, and could generally be improved. This comment/concern has been forwarded to the City of Reno for earlier action than would be

provided by this regional level study and improvement programming. Consideration should be given to extending the two northbound lanes Western Skies Drive with the outside lane ending as a right turn lane (shown in Table 8-5).

Rio Wrangler Parkway / Yee Haw Way

The Rio Wrangler Parkway/Yee Haw Way intersection was recently widened to include a new southbound left-turn lane from Rio Wrangler to Yee Haw Way. The comments received concerning this intersection indicate congestion during school hours. One of the main access points for Damonte Ranch High School (McCauley Ranch Boulevard) is located about 600 feet south of the Yee Haw Way intersection. Higher degrees of traffic congestion are typical surrounding schools during the peak arrival and dismissal periods and should be expected. Intersection improvements (either an all-way stop, traffic signal, or roundabout) are programmed within this study for the McCauley Ranch Boulevard/Rio Wrangler Parkway intersection. That improvement would create gaps in traffic on Rio Wrangler that would also create longer gaps at the Yee Haw Way intersection and thereby create a modest operational improvement at Yee Haw Way. No improvements are recommended at this location.

Steamboat Parkway / Carat Avenue / Kentfield Place

Several comments were received indicating difficulty making left turns out from the minor street approaches at the Carat Avenue and Kentfield Place intersection with Steamboat Parkway. Left turn movements are often challenging across major arterial roadways, particularly during peak travel hours. Similar conditions exist at countless intersections throughout the urban area because it is not reasonable or appropriate to construct traffic signals or roundabouts at every intersection. The Carat Avenue/Kentfield Place intersection is located only 1,000 feet from Rio Wrangler Parkway and therefore the intersection would not meet regional standards for the spacing of traffic signals. A traffic signal may ultimately be constructed at the Hampton Park Drive intersection with Steamboat Parkway and would create gaps in eastbound traffic that would potentially ease the left-out movements from Carat Avenue and Kentfield Place. A signal at Hampton Park Dive would also serve the northbound left-turn demand, just at another location further west in the neighborhood. Landscaping in the intersection sight triangles should be regularly trimmed to ensure drivers have adequate visibility of approaching vehicles.

Steamboat Parkway / Brittany Meadows Drive / Piper Peak Lane

Community members reported difficulty making left-turns from the side-street approaches of Brittany Meadows Drive and Piper Peak Lane to Steamboat Parkway. The intersection is large, has growing traffic volumes, and a high number of eastbound to westbound U-turns were observed during field visits. Left turns are often challenging across major arterial roadways and this intersection does pose a complex driving situation for outbound left turning maneuvers. Review of this intersection, the Steamboat Parkway/Hampton Park Drive intersection, and the Steamboat/Carat/Kentfield intersection indicate a traffic signal will probably be needed in the future at the Hampton Park intersection with Steamboat Parkway. Landscaping in the intersection sight triangles of the Brittany Meadows/Piper Peak intersection should be regularly trimmed to ensure drivers have adequate visibility of approaching vehicles.

Steamboat Parkway / Hampton Park Drive

Review of the Steamboat Parkway corridor between Veterans Parkway and Rio Wrangler Parkway indicates a traffic signal will ultimately be necessary within this segment to serve left-turns and U-turns from the numerous stop-controlled side-streets along Steamboat Parkway. The Hampton Park intersection appears to be the best from an overall network perspective, will serve the greatest number of local residents (as it is located central to the neighborhoods), and would improve the intersection having the most restricted sight triangles associated with roadway/intersection geometrics. A traffic signal at Hampton Park is included in the potential improvement list (shown in Table 8-5). It should be noted that a signal would not be installed until an engineering study verifies the appropriateness of a signal and satisfaction of applicable justification criteria known as traffic signal warrants.

CHAPTER 6 - TRAFFIC FORECASTING

This chapter presents the methodology for forecasting future intersection and roadway volumes in the South Meadows area. A 21-year horizon (2040 build-out) scenario was chosen for future conditions analysis as this is the furthest horizon scenario in the RTC travel demand model and projecting realistic turn movements at intersections would be difficult beyond this time frame.

FORECASTING METHODOLOGY

With significant continued development and land use intensification, traffic volumes in the South Meadows area are anticipated to substantially increase over the next 20 years. 2040 build-out traffic volumes were developed using the following approach:

- Obtain the most recent (2018/2019) average daily traffic volumes (ADT) from Nevada Department of Transportation (NDOT).
- Retrieve daily traffic volume outputs from RTC's travel demand model for the 2020 and horizon (2040 build-out) scenarios.
- Apply the "Difference Adjustment Method" prescribed in NCHRP Report 255 procedures (consistent with NDOT's Traffic Forecasting Guidelines).
- Calculate the growth difference between the 2020 and 2040 build-out daily traffic volumes. Determine the percent change, and percent per year change, over the 20-year model range, by roadway segment.
- Review the growth trends and make adjustments for general consistency throughout the roadway segments.
- Apply the growth difference and trends to the existing ADT to obtain 2040 build-out ADT by roadway segment.

2040 MODEL VOLUMES

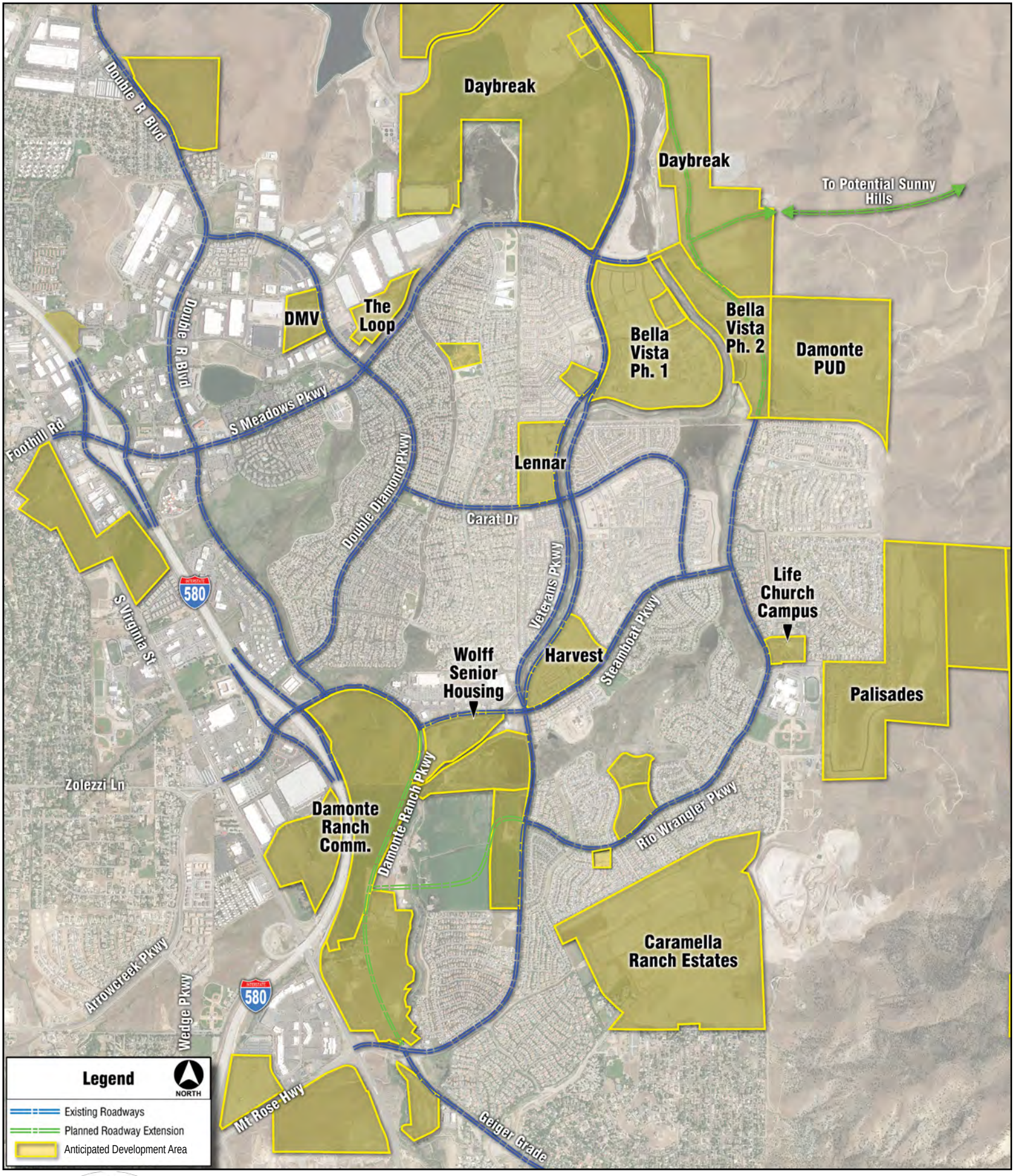
For this study, a "special run" was conducted in the 2040 RTC travel demand model that included all the anticipated and approved but unbuilt development projects in the South Meadows area. It is recognized that this 2040 build-out scenario is conservative compared to the consensus forecast and that all developments may not be fully built out by the 2040 horizon year. **Table 6-1** shows a comparison between the 2040 consensus forecast and the 2040 build-out scenario.

Table 6-1. 2040 Forecast Comparison

Model Forecast	Households	Population	Employment
2040 Consensus	22,635	55,829	32,879
2040 Build-Out	40,784	102,713	36,656

However, the analysis provides a more complete representation of the total growth that is anticipated within the South Meadows and is valuable for long-term planning. **Figure 6-1** shows the anticipated and approved development that was included in the 2040 build-out traffic demand model.

The final 2040 build-out ADT's and growth rates/factors for each study roadway segment are shown in **Table 6-2**. On average, traffic volumes are estimated to grow at a rate between 2.5% to 5.0% per year. This correlates to a 21-year growth factor between 1.5 and 2.0 (double existing) on many segments in the study area.



SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 6-1. ANTICIPATED DEVELOPMENT AREA

RTC

Table 6.2 - 2040 Build-Out Traffic Volume Forecasts

Location -->	Exit-51 NB Ramp	S. Virginia	Gateway	S. Meadows	S. Meadows	S. Meadows	Double R	Double R
	E/O Virginia	S/O Off-Ramp	N/O S. Meadows	W/O Gateway	E/O Gateway	E/O Double R	N/O S. Meadows	S/O S. Meadows
2019 NDOT ADT	4,000	32,000	6,050	32,150	21,200	17,200	12,800	11,000
Demand Model Volumes								
2020 RTC ADT	6,040	25,707	4,546	24,288	15,541	12,689	6,457	6,056
2040 RTC ADT	9,980	36,437	6,043	30,982	22,097	18,178	11,914	10,569
Model Difference 2040-2020	3,940	10,730	1,497	6,694	6,556	5,489	5,457	4,513
Growth Rate Method								
20 Years % Change	65%	42%	33%	28%	42%	43%	85%	75%
% per year	3.3%	2.1%	1.6%	1.4%	2.1%	2.2%	4.2%	3.7%
21 years growth factor	1.7	1.4	1.3	1.3	1.4	1.5	1.9	1.8
2040 Adjusted Model ADT	**6,800**	**46,100**	**8,200**	**41,500**	**30,600**	**25,100**	**24,200**	**19,700**
Growth Difference Method								
20 Years Increase	2,100	10,730	1,497	6,694	6,556	5,489	5,457	4,513
2040 ADT	**6,100**	**42,730**	**7,547**	**38,844**	**27,756**	**22,689**	**18,257**	**15,513**
2040 ADT-2019 NDOT ADT	2,100	10,730	1,497	6,694	6,556	5,489	5,457	4,513
% Change	53%	34%	25%	21%	31%	32%	43%	41%
% per year	2.5%	1.6%	1.2%	1.0%	1.5%	1.5%	2.0%	2.0%
21 years growth factor	**1.5**	**1.3**	**1.2**	**1.2**	**1.3**	**1.3**	**1.4**	**1.4**

Location -->	S. Meadows	S. Meadows	Double Diamond	Double Diamond	S. Meadows	S. Meadows	Wilbur May	Veterans
	W/O Double Diamond	E/O Double Diamond	N/O S. Meadows	S/O S. Meadows	E/O Wilbur May	E/O Echo Valley	S/O S. Meadows	N/O Long Meadows
2019 NDOT ADT	14,000	11,600	9,300	9,000	7,550	5,850	3,550	11,500
Demand Model Volumes								
2020 RTC ADT	8,928	4,722	8,785	11,631	5,844	3,374	1,122	14,683
2040 RTC ADT	15,189	17,562	15,189	11,901	20,306	16,426	2,413	27,346
Model Difference 2040-2020	6,261	12,840	6,404	270	14,462	13,052	1,291	12,663
Growth Rate Method								
20 Years % Change	70%	272%	73%	2%	247%	387%	115%	86%
% per year	3.5%	13.6%	3.6%	0.1%	12.4%	19.3%	5.8%	4.3%
21 years growth factor	1.7	3.9	1.8	1.0	3.6	5.1	2.2	1.9
2040 Adjusted Model ADT	**24,400**	**44,800**	**16,500**	**9,300**	**27,200**	**29,700**	**7,900**	**22,000**
Growth Difference Method								
20 Years Increase	6,261	9,744	6,404	945	14,462	13,052	1,291	12,663
2040 ADT	**20,261**	**21,344**	**15,704**	**9,945**	**22,012**	**18,902**	**4,841**	**24,163**
2040 ADT-2019 NDOT ADT	6,261	9,744	6,404	945	14,462	13,052	1,291	12,663
% Change	45%	84%	69%	11%	192%	223%	36%	110%
% per year	2.1%	4.0%	3.3%	0.5%	9.1%	10.6%	1.7%	5.2%
21 years growth factor	**1.4**	**1.8**	**1.7**	**1.1**	**2.9**	**3.2**	**1.4**	**2.1**

Location -->	Double R	Double R	Double Diamond	Damonte Ranch	Damonte Ranch	Damonte Ranch	Steamboat	Steamboat	Veterans
	N/O Damonte	N/Double Diamond	E/O Double R	W/O Double R	E/O Double R	S/O Steamboat	E/O Damonte Ranch	E/O Veterans	N/O Steamboat
2019 NDOT ADT	11,000	11,000	9,000	31,300	19,900	150	21,500	10,000	11,500
Demand Model Volumes									
2020 RTC ADT	13,734	8,890	7,744	32,269	23,582	91	22,437	7,344	16,090
2040 RTC ADT	20,325	15,347	7,986	46,403	35,868	2,536	34,077	14,853	26,764
Model Difference 2040-2020	6,591	6,457	242	14,134	12,286	2,445	11,640	7,509	10,674
Growth Rate Method									
20 Years % Change	48%	73%	3%	44%	52%	2687%	52%	102%	66%
% per year	2.4%	3.6%	0.2%	2.2%	2.6%	134.3%	2.6%	5.1%	3.3%
21 years growth factor	1.5	1.8	1.0	1.5	1.5	29.2	1.5	2.1	1.7
2040 Adjusted Model ADT	**16,600**	**19,400**	**9,300**	**45,700**	**30,800**	**4,400**	**33,300**	**20,800**	**19,600**
Growth Difference Method									
20 Years Increase	6,591	6,457	945	14,134	12,286	2,445	11,640	7,509	10,674
2040 ADT	**17,591**	**17,457**	**9,945**	**45,434**	**32,186**	**2,595**	**33,140**	**17,509**	**22,174**
2040 ADT-2019 NDOT ADT	6,591	6,457	945	14,134	12,286	2,445	11,640	7,509	10,674
% Change	60%	59%	11%	45%	62%	1630%	54%	75%	93%
% per year	2.9%	2.8%	0.5%	2.2%	2.9%	77.6%	2.6%	3.6%	4.4%
21 years growth factor	**1.6**	**1.6**	**1.1**	**1.5**	**1.6**	**17.3**	**1.5**	**1.8**	**1.9**

Location -->	Veterans	Steamboat	Rio Wrangler	Virginia St	Virginia St	Mt Rose	Geiger Grade	Veterans	Geiger Grade
	S/O Steamboat	W/O Rio Wrangler	S/O Steamboat	N/O Geiger Grade	S/O Geiger Grade	W/O Virginia	E/O Virginia	E/O Geiger Grade	S/O Veterans
2019 NDOT ADT	15,600	10,000	5,750	12,600	11,000	10,300	20,000	13,300	7,450
Demand Model Volumes									
2020 RTC ADT	14,445	7,817	5,062	27,829	14,159	10,341	17,690	10,367	9,435
2040 RTC ADT	23,850	15,611	10,953	43,345	22,340	19,348	33,999	21,460	18,849
Model Difference 2040-2020	9,405	7,794	5,891	15,516	8,181	9,007	16,309	11,093	9,414
Growth Rate Method									
20 Years % Change	65%	100%	116%	56%	58%	87%	92%	107%	100%
% per year	3.3%	5.0%	5.8%	2.8%	2.9%	4.4%	4.6%	5.4%	5.0%
21 years growth factor	1.7	2.0	2.2	1.6	1.6	1.9	2.0	2.1	2.0
2040 Adjusted Model ADT	**26,300**	**20,500**	**12,800**	**20,000**	**17,700**	**19,800**	**39,400**	**28,300**	**15,300**
Growth Difference Method									
20 Years Increase	9,405	7,794	5,891	10,319	8,181	9,007	16,309	11,093	9,414
2040 ADT	**25,005**	**17,794**	**11,641**	**22,919**	**19,181**	**19,307**	**36,309**	**24,393**	**16,864**
2040 ADT-2019 NDOT ADT	9,405	7,794	5,891	10,319	8,181	9,007	16,309	11,093	9,414
% Change	60%	78%	102%	82%	74%	87%	82%	83%	126%
% per year	2.9%	3.7%	4.9%	3.9%	3.5%	4.2%	3.9%	4.0%	6.0%
21 years growth factor	**1.6**	**1.8**	**2.0**	**1.8**	**1.7**	**1.9**	**1.8**	**1.8**	**2.3**

Manually Adjusted

2040 Design Volumes

2040 Intersection Volumes

2040 peak hour turning movement volumes were estimated by combining the forecasting methodology described earlier with NCHRP Report 255 procedures. NCHRP Report 255, Highway Traffic Data for Urbanized Area Project Planning and Design, is a document published by the Federal Highway Administration that discusses post processing of travel demand model outputs and developing turning movement volumes. NCHRP 255 has standardized procedures to translate travel demand outputs into information to support project development decisions. These procedures account for variance in the detail and precision of forecasts and uncertainty in land-use forecasts by improving consistency and analytic quality of input data and output forecasts. The growth rates (**Table 6-2**) were further refined by applying these principles in developing peak hour turning movement counts. To develop 2040 build-out peak hour turning movements, Turns W32, a turning movement volumes balancing tool that incorporates NCHRP 255 procedures, was used. 2040 build-out peak hour turning movements were developed based on existing turning movement counts and the growth rates obtained through the daily volume forecasts. Turns W32 calculates future year turning movement volumes and balances future turning movement distribution based on current turning movement counts and the growth rates on all the approaches of intersection. The resulting 2040 build-out AM and PM peak hour turning movement volumes are shown in **Figure 6-2** and **Figure 6-3**.

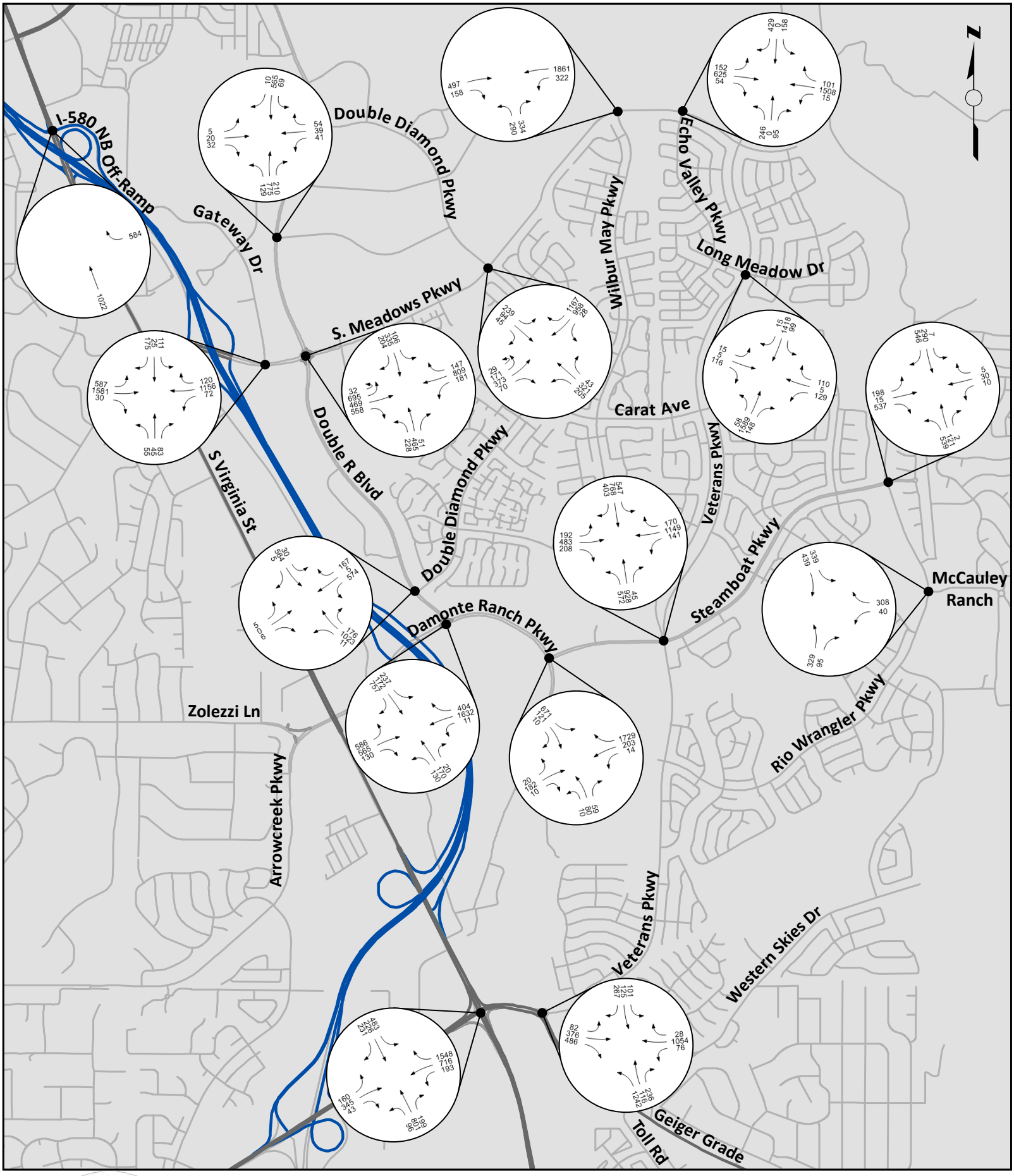


FIGURE 6-2. 2040 AM PEAK HOUR TRAFFIC VOLUMES

SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

RTC

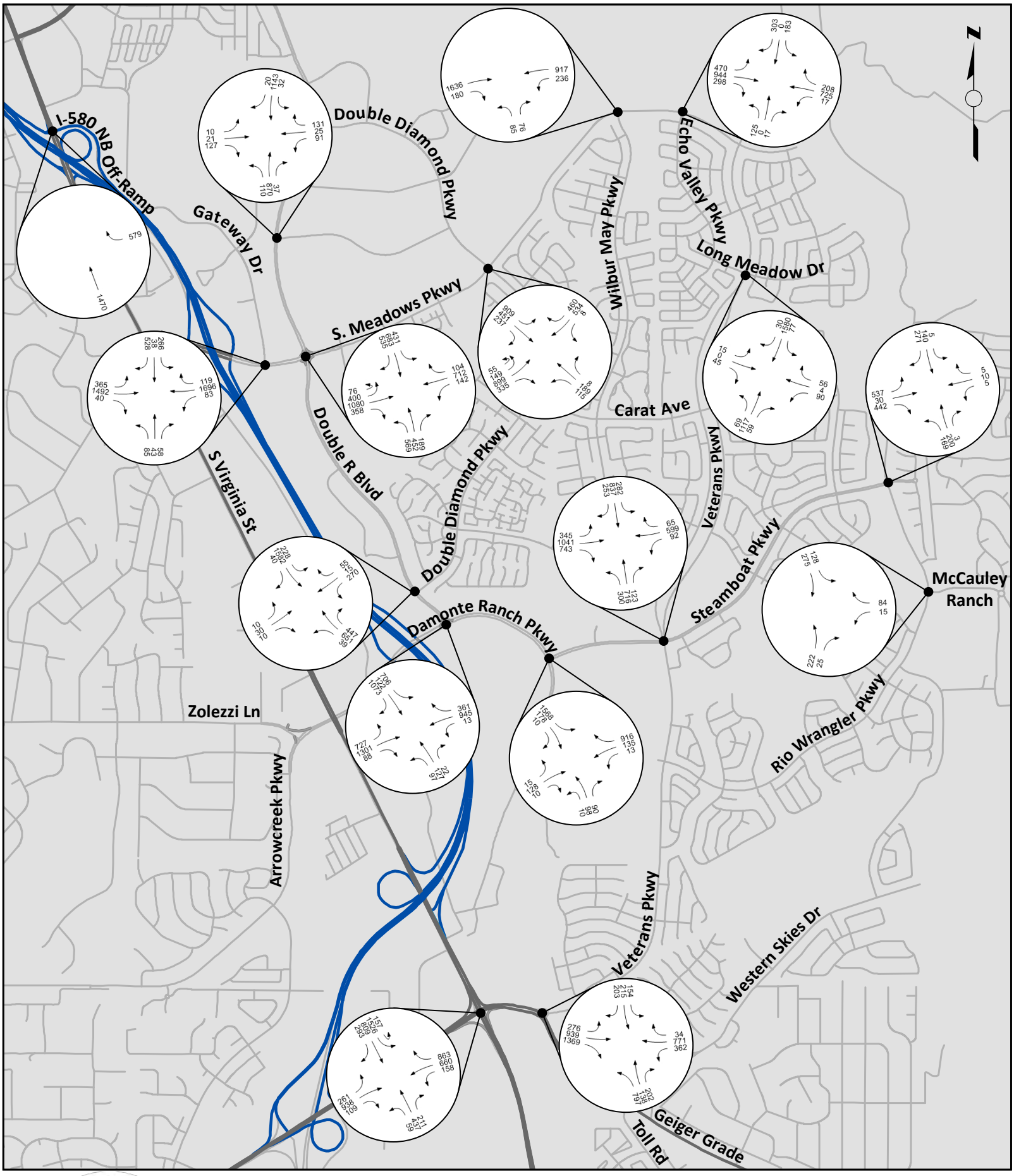


FIGURE 6-3. 2040 PM PEAK HOUR TRAFFIC VOLUMES

CHAPTER 7 – FUTURE CONDITIONS (2040) LEVEL OF SERVICE ANALYSIS

This chapter evaluates the future year (2040 build-out) traffic operations at the study roadway segments and intersections if no improvements were made by public agencies. Intersection and roadway improvements that are already anticipated to be made by private development projects are as follows:

- Double R Boulevard/Sandhill Road Traffic Signal
- S. Meadows Parkway/Echo Valley Parkway Traffic Signal
- Rio Wrangler Parkway Extension north to South Meadows Parkway (2 Lanes)
- Damonte Ranch Parkway Extension to Veterans Parkway (2 Lanes)
- Western Skies Drive Connection north to Rio Wrangler Parkway (2 Lanes)
- South Meadows Parkway Extension to Storey County Line (4 Lanes)
- Rio Wrangler Extension west to Damonte Ranch Parkway (2 Lanes)

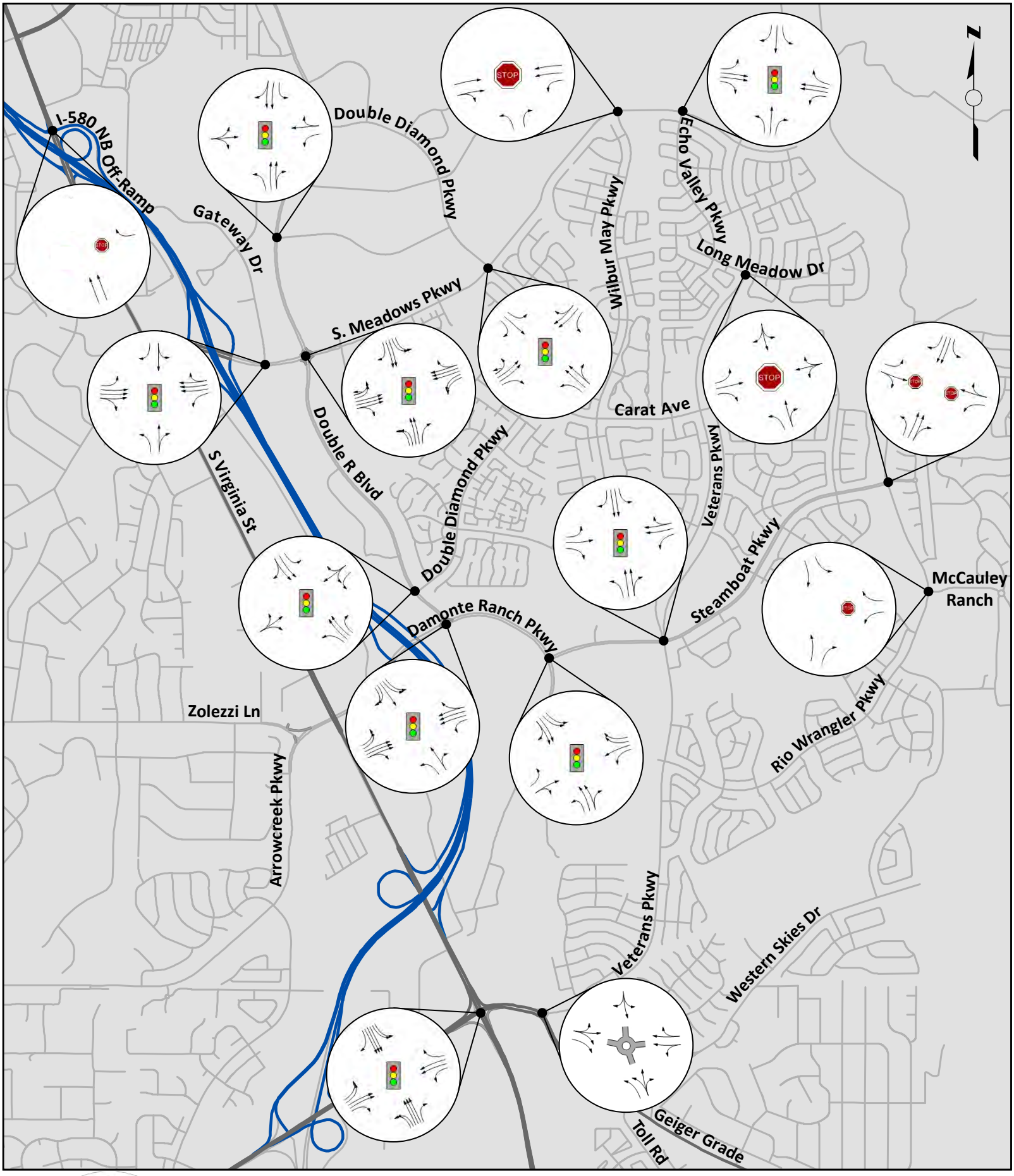
The anticipated 2040 Build-Out (no improvements) lane configurations and controls are shown in **Figure 7-1**. The 2040 AM Peak Hour and PM Peak Hour traffic volumes are shown in *Chapter 6 – Traffic Forecasting*.

2040 BUILD-OUT TRAFFIC OPERATIONS

This section reports the findings of the 2040 "no improvements" level of service analysis. The level of service methodology for roadway segments and intersections is described in Chapter 5.

2040 Build-Out Intersection Level of Service

2040 conditions intersection level of service analysis was performed for the study intersections considering already programmed improvements and modifications by developers and the projected 2040 AM and PM peak hour traffic volumes. With the increase in regional traffic, the peak hour factor (PHF) was increased to 0.95 at all intersections and traffic signal timing was optimized. A 120 second cycle length with proper pedestrian crossing times was used at most of the study intersections unless a longer cycle length was present in existing signal timings. **Table 7-1** shows the 2040 AM and PM peak hour level of service results at the study intersections.



SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 7-1. 2040 (NO IMPROVEMENT LANE CONFIGURATION & CONTROL

RTC

Table 7-1. 2040 Intersection Level of Service (Without Improvements)

ID	Intersection	Intersection Control	Movement	2040 Conditions			
				AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	S. Virginia St / I-580 NB Off-Ramp	Side-Street STOP	Westbound Approach	F	160.6	F	>300
2	Double R Blvd / Sandhill Rd	Signal	Overall	B	12.0	B	14.9
3	S. Meadows Pkwy / Gateway Dr *	Signal	Overall	D	36.6	D	53.2
4	S. Meadows Pkwy / Double R Blvd	Signal	Overall	D	43.6	E	58.2
5	S. Meadows Pkwy / Double Diamond Pkwy	Signal	Overall	F	161.5	F	152.1
6	S. Meadows Pkwy / Wilbur May Pkwy	All-Way STOP	Overall	F	>300	F	>300
7	S. Meadows Pkwy / Echo Valley Pkwy	Signal	Overall	C	27.7	C	32.1
8	Veterans Pkwy / Long Meadow Dr	Side-Street STOP	Northbound Left	B	14.7	C	16.6
			Southbound Left	C	21.6	B	12.5
			Eastbound Left	F	>300	F	>300
			Eastbound Through-Right	F	>300	F	>300
			Westbound Left	F	>300	F	>300
			Westbound Through-Right	F	>300	F	>300
9	Double R Blvd / Double Diamond Pkwy	Signal	Overall	C	27.0	D	54.9
10	Damonte Ranch Pkwy / Double R Blvd	Signal	Overall	F	117.0	E	74.6
11	Damonte Ranch Pkwy / Steamboat Pkwy *	Signal	Overall	B	18.3	C	20.4
12	Veterans Pkwy / Steamboat Pkwy	Signal	Overall	F	126.5	F	100.2
13	Steamboat Pkwy / Rio Wrangler Pkwy	All-Way STOP	Overall	F	273.4	F	75.9
14	Rio Wrangler Pkwy / McCauley Ranch Blvd	Side-Street STOP	Southbound Left	A	9.8	A	8.1
			Westbound Left	F	80.3	C	16.8
			Westbound Right	B	14.7	B	10.0
15	S. Virginia St / Veterans Parkway	Signal	Overall	C	33.1	F	137.6
16	Veterans Pkwy / Geiger Grade	Roundabout	Overall	F	166.2 *(1.82 v/c)*	F	344.3 *(2.11 v/c)*
			North Leg	F	412.2 *(1.82 v/c)*	F	465.7 *(1.95 v/c)*
			South Leg	F	172.4 *(1.31 v/c)*	F	98.7 *(1.11 v/c)*
			East Leg	F	179.1 *(1.31 v/c)*	F	134.6 *(1.20 v/c)*
			West Leg	B	11.3 *(0.55 v/c)*	F	520.1 *(2.11 v/c)*

*Improvements required where intersection operates at acceptable overall LOS

As shown in **Table 7-1**, many study intersections are expected to operate at poor levels of service with build-out of the South Meadows. The number of intersections operating at poor levels of service conditions is shown to increase from 6 intersections under existing conditions to 10 intersections under 2040 conditions.

The intersections that are expected to operate at poor LOS and require capacity improvements are:

- S. Virginia Street / I-580 NB Off-Ramp
- S. Meadows Parkway / Double Diamond Parkway
- S. Meadows Parkway / Wilbur May Parkway
- Veterans Parkway / Long Meadow Parkway
- Damonte Ranch Parkway / Double R Boulevard
- Veterans Parkway / Steamboat Parkway
- Steamboat Parkway / Rio Wrangler Parkway
- Rio Wrangler Parkway / McCauley Ranch Boulevard
- S. Virginia Street / Veterans Parkway
- Veterans Parkway / Geiger Grade (Roundabout)
- South Meadows Parkway / Gateway Drive
    - The eastbound left turn queue extends outside the pocket and onto S. Meadows Parkway. A longer eastbound left turn pocket will store more vehicles. Dual left turn lanes are not viable at this location as Gateway Drive has only one receiving lane.
- Damonte Ranch Parkway / Steamboat Parkway
    - Due to the high southbound left turn volume, a triple southbound left is recommended to process more vehicles during the peak hours.

2040 Build-Out Roadway Segment Level of Service

2040 conditions road segment level of service analysis was performed for the study roadway segments using the projected 2040 volumes from Chapter 6 – Traffic Forecasting. The 2040 roadway segment volumes and levels of service are shown on **Figure 7-2**. The majority of the study roadway segments are expected to currently operate at acceptable level of service conditions. The roadway segments that are anticipated to operate at poor level of service conditions are:

- S. Virginia Street – from Longley Lane to Holcomb Ranch Lane
- Damonte Ranch Parkway – from I-580 to Double R Boulevard
- Damonte Ranch Parkway – from Promenade Way to Steamboat Parkway
- Steamboat Parkway – from Damonte Ranch Parkway to Veterans Parkway
- Veterans Parkway – from S. Virginia Street to Damonte Ranch Extension

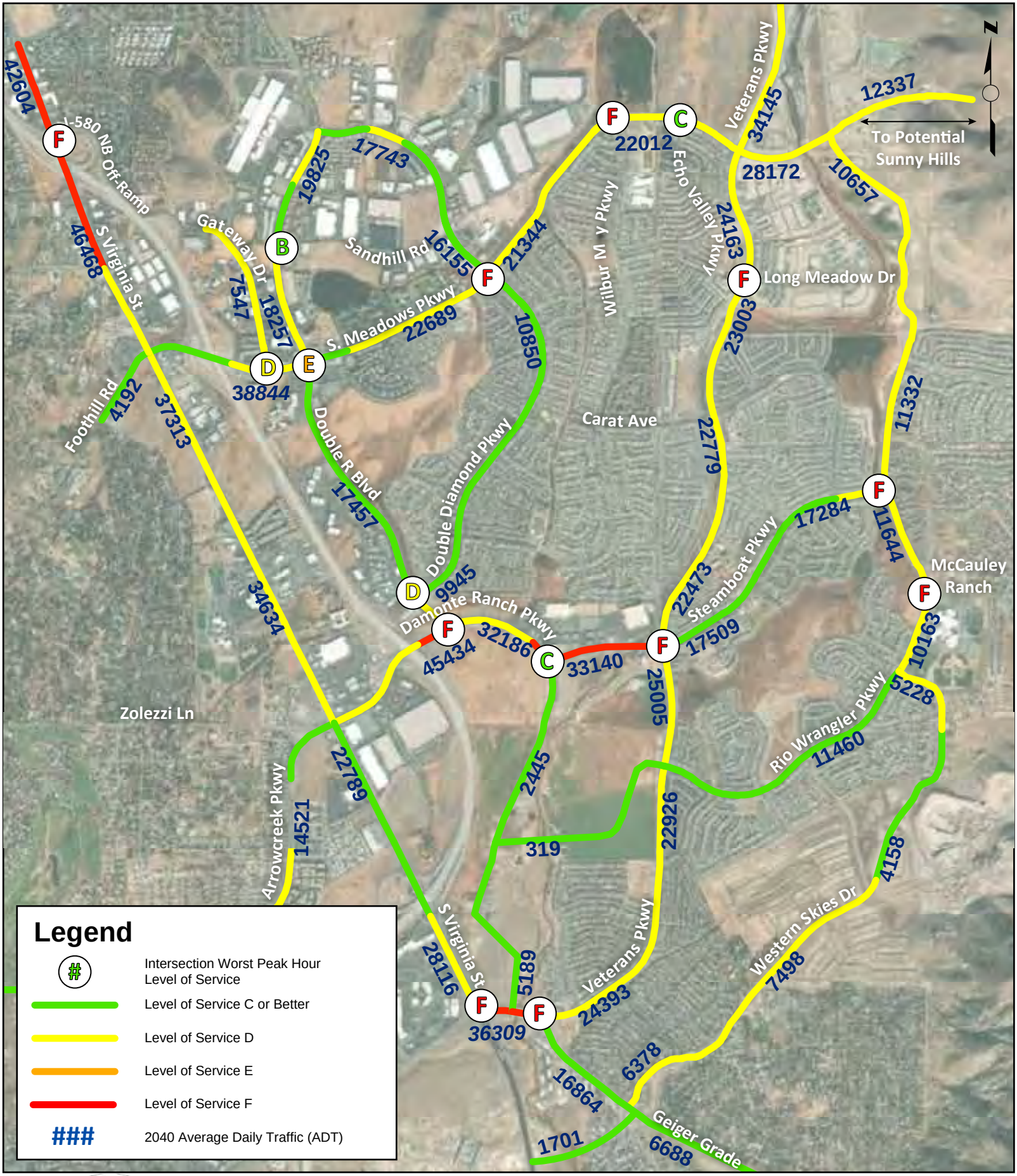


FIGURE 7-2. 2040 AVERAGE DAILY TRAFFIC AND LEVEL F ERVICE (BUILD- UT CENARI WITH N IMPR VEMENT)

CHAPTER 8 - POTENTIAL IMPROVEMENTS

This chapter identifies a significant number of potential improvements that could be implemented to expand a safe and efficient multimodal transportation system in the South Meadows area. These potential improvements are a culmination of reviewing prior RTC planning documents, conducting the 2040 traffic analysis, and considering thousands of comments made by local residents. The improvements are divided into three timeframes: short-term, mid-term, and long-term. The priority of projects were determined by prior planning documents, urgency to resolve existing concerns, and throughout the public engagement process. The suggested priority of improvements is listed by timeframe, not by ID number. The ID number is only for cross referencing with the corresponding figure.

POTENTIAL BICYCLE AND PEDESTRIAN IMPROVEMENTS

The bicycle and pedestrian improvements were developed by reviewing the projects listed in the 2040 RTP, the 2017 Bicycle and Pedestrian Masterplan (BPMP), and key areas of concerns identified by the public comment process. The priority of projects listed in the BPMP was carried over to this study for general consistency between the documents.

It should be noted that many of the bicycle and pedestrian projects can, and should, be combined with each other and with other projects for cost efficiency. For example, a multi-use path built with a roadway widening project could serve as the improvement listed for bicycle and pedestrian modes.

The potential bicycle improvements are shown in **Table 8-1** and graphically on **Figure 8-1**.

Table 8-1. Potential Bicycle Improvements

ID	Potential Improvement
Near Term	
1	S. Meadows Parkway Bicycle Facility Improvements (S. Virginia Street to Double Diamond Parkway)
2	S. Meadows Parkway Bicycle Facility Upgrades (Double Diamond Parkway to Veterans Parkway)
3	S. Virginia Street Multimodal Improvements (Patriot Boulevard to Mt. Rose Highway)
4	Double Diamond Boulevard Bicycle Facility Upgrades (Double R Boulevard to S. Meadows Parkway)
5	Veterans Parkway/Steamboat Parkway Bicycle Facility Upgrades
Mid Term	
6	Veterans Parkway Bicycle Facility Upgrades (S. Meadows Pkwy to Steamboat Parkway)
7	Double R Boulevard Bicycle Facility Upgrades (S. Meadows Parkway to Damonte Ranch Parkway)
8	Western Skies Drive Bicycle Facility Improvements (Geiger Grade to Rio Wrangler Parkway)
Long Term	
9	Foothill Road Bicycle Facility Upgrades (S. Virginia Street to Caribou Road)
10	Huffaker Lane Bicycle Facility Improvements (Bluestone Drive to Longley lane)
11	Geiger Grade Bicycle Facility Improvements (Equestrian Road to Rim Rock Drive)

Programmed in the 2040 RTP

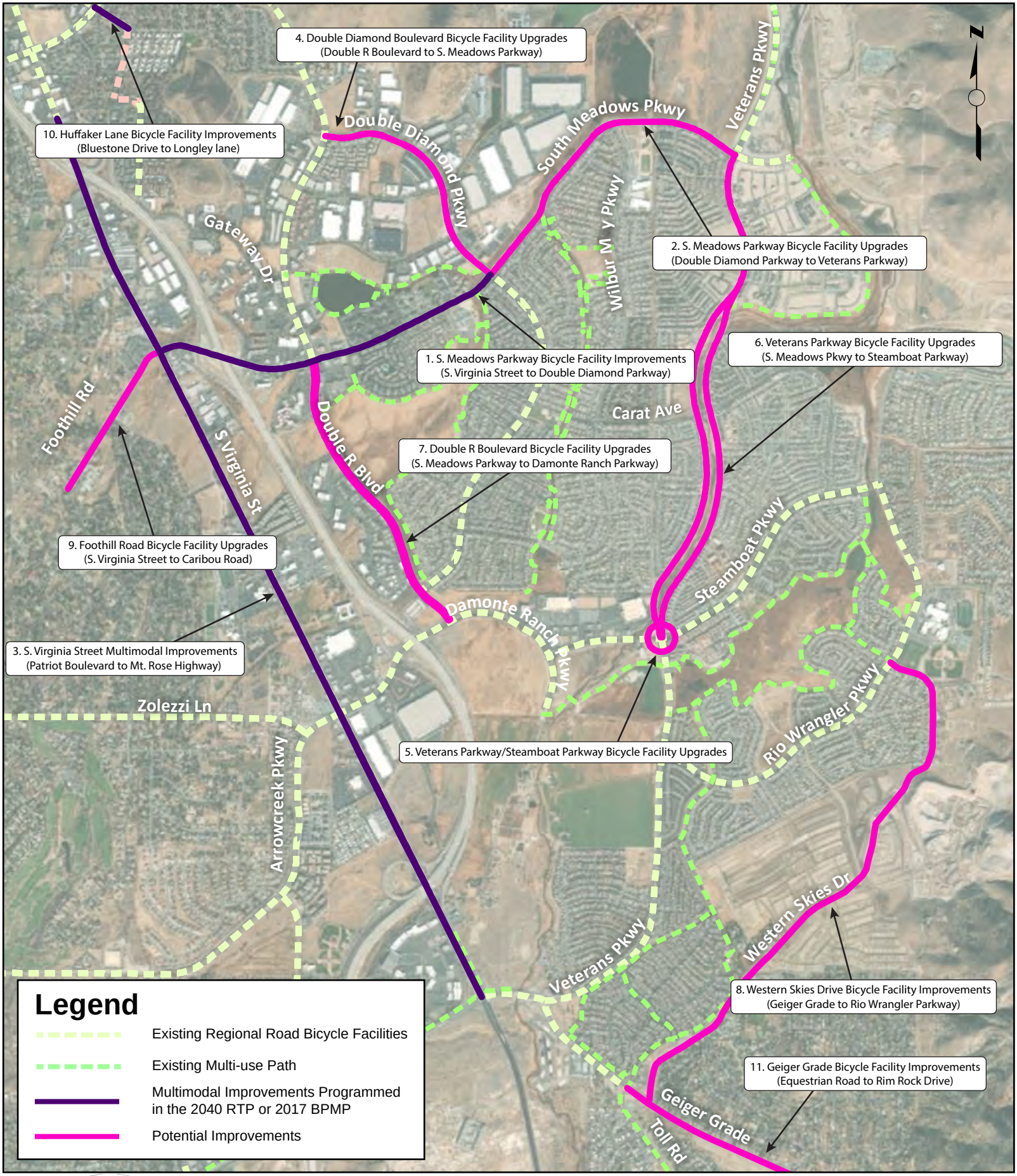


FIGURE 8-1. POTENTIAL BICYCLE IMPRO EMENT

The potential pedestrian improvements are shown in **Table 8-2** and graphically on **Figure 8-2**.

Table 8-2. Potential Pedestrian Improvements

ID	Potential Improvement
Near Term	
1	RTC Planned Bus Stop Improvements (5 Locations)
2	Veterans Parkway Pedestrian Crossing Improvements (S. Meadows Parkway to Carat Avenue)
3	S. Meadows Parkway Pedestrian Facility Improvements (Evergreen Street to Double Diamond Walking Path)
4	Steamboat Parkway Pedestrian Crossing Improvements (Veterans Parkway to Rio Wrangler Parkway)
5	Veterans Wetland Loop Under-Crossing Maintenance (By Others)
Mid Term	
6	Rio Wrangler Parkway Pedestrian Crossing Improvements (Steamboat Parkway to Veterans Parkway)
7	Double R Boulevard Pedestrian Crossing Improvements (S. Meadows Parkway to Lauren Court)
8	Double Diamond Parkway Pedestrian Facility Enhancements (Double R Boulevard to Trademark Drive)
9	Double R Boulevard Pedestrian Facility Enhancements (Lauren Court to Double Diamond Parkway)
10	Gateway Drive Pedestrian Facility Enhancements (Offenhauser Drive to S. Meadows Parkway)
11	Zolezzi Lane Multimodal Improvements (S. Virginia Street to Thomas Creek Road)
12	Wedge Parkway Pedestrian Facility Enhancements (Arrowcreek Parkway to Ghost Rider Drive)
13	Prototype Drive Pedestrian Facility Enhancements (Double R Boulevard to Gateway Drive)
Long Term	
14	Foothill Road Pedestrian Facility Improvements (S. Virginia Street to Broken Hills Road)
15	Geiger Grade Pedestrian Facility Improvements (S. Virginia Street to Rim Rock Drive)
16	Mt. Rose Highway Pedestrian Facility Enhancements (Thomas Creek Road to S. Virginia Street)
17	Arrowcreek Parkway Pedestrian Facility Enhancements (Zolezzi Lane to Thomas Creek Road)

Programmed in the 2040 RTP
Identified in the 2017 BPMP

The exact locations and types of bicycle and pedestrian projects will be determined when the potential improvement project reaches the design stage. **Figure 8-3A** and **Figure 8-3B** shows examples of bicycle and pedestrian treatments that could be implemented. In certain cases, a traffic signal will serve as a pedestrian crossing treatment. Note that the potential traffic signal locations are shown in **Figure 8-2**.

Several bicycle and pedestrian improvements are shown on South Meadows Parkway. The South Meadows Parkway right-of-way is constrained and serious consideration should be given to replacing the existing on-street bike lanes with a multi-use path. As discussed elsewhere in this study, on-street bike lanes are not as effective as multi-use paths on Arterial roadways.

Some pedestrian and bicycle improvements along future project frontages could be conditioned and constructed by private development projects. This improvement list or the cost analysis does not identify or consider which project may or could be constructed by private developments.

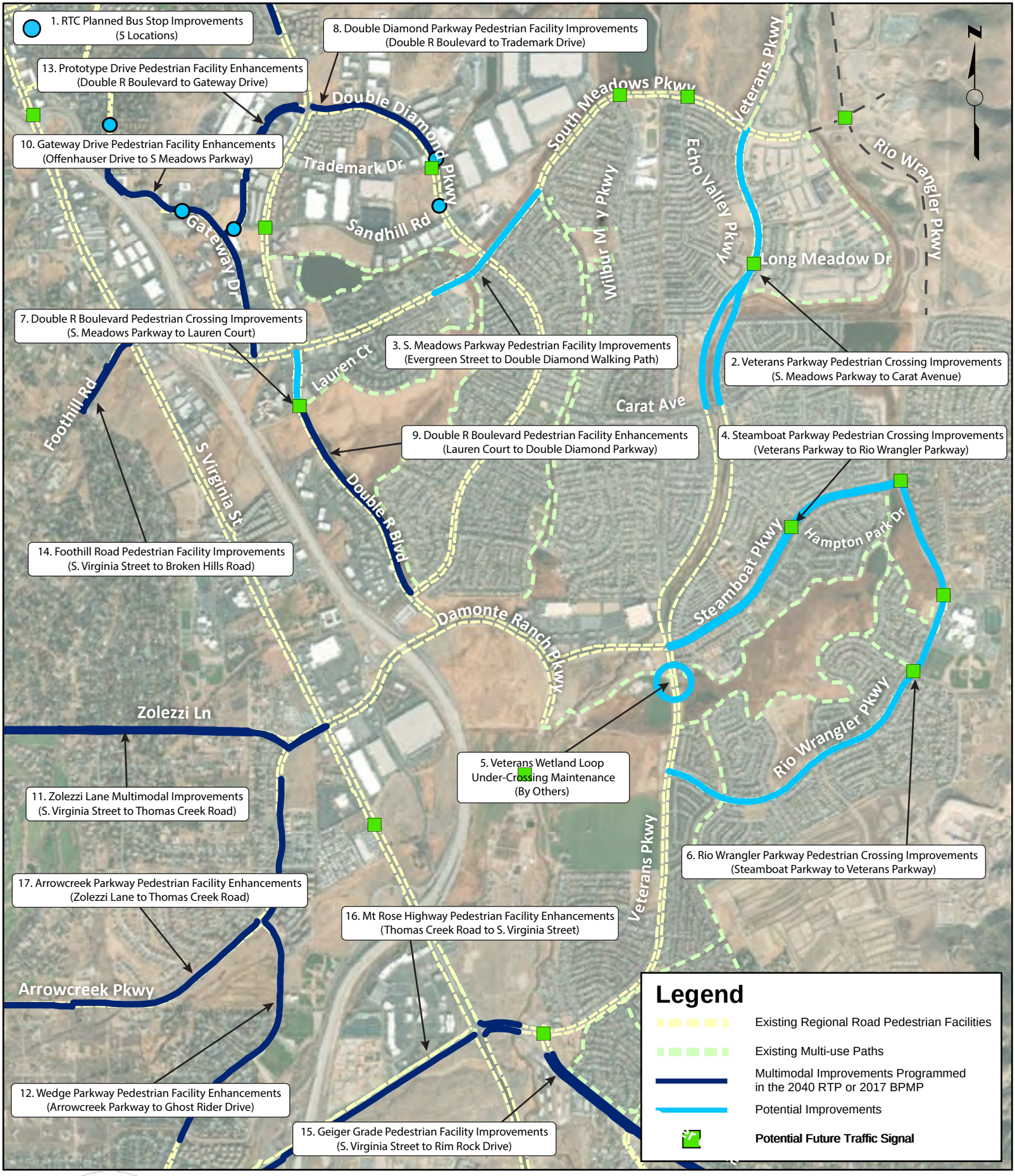


FIGURE 8-2. POTENTIAL PEDE TRIAN IMPRO EMENT

SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

RTC

1 Enhanced Pedestrian Crossing

2 New Bike Facilities

3 Multi-Use Path Connections

4 Sidewalk Gap Closures and Improvements

SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 8-3A. EXAMPLE PEDE TRIAN AND BICYCLE IMPRO EMENT (LOW- PEED LOW- OLUME)

RTC

1

Enhanced Pedestrian Crossing

2

New Bike Facilities

3

Multi-Use Path Connections

4

Sidewalk Gap Closures and Improvements

SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 8-3B. EXAMPLE PEDE TRIAN AND BICYCLE IMPRO EMENT (HIGH- PEED HIGH OLUME)

RTC

POTENTIAL SAFETY IMPROVEMENTS

The following potential safety improvements were developed by identifying major safety concerns based on public comment and considering typical safety practices such as sight lines and safe routes to school. Additionally, the RTC is coordinating with other agencies and horse advocate groups to address the safety of motorists and horses within South Meadows. The potential safety improvements are shown in **Table 8-3** and graphically on **Figure 8-4**. Locations around schools and high pedestrian generators are considered the highest priority projects.

Table 8-3. Potential Safety Improvements

ID	Potential Improvement
Near Term	
1	School Zone Safety/Safe Routes to School (Depaoli, Double Diamond, Poulakidas)
2	Veterans Parkway/Geiger Grade Striping/Signage Upgrades
3	Interagency Coordination for Wild Horse Issue
4	S. Virginia Street Safety Improvements (Arrowcreek Pkwy to I-580 Interchange)
5	S. Virginia St / Holcomb Ranch Ln Safety Improvements (Signal or Access Management)
Mid Term	
6	Geiger Grade Operations and Safety Improvements (Toll Road to Rim Rock Drive)
7	School Zone Safety/Safe Routes to School (Locations TBD)
8	Sight Triangle Identification Program
9	Spot Location Safety Improvements (Locations TBD)
Long Term	
10	Spot Location Safety Improvements (Locations TBD)

POTENTIAL PARK & RIDE IMPROVEMENTS

Adding new Park & Ride locations is a key concept in reducing reliance on single-occupant vehicles within the South Meadows region. The Park & Ride conceptual locations were developed exclusively by preferred locations identified through public comments. The potential location will have to be vetted with property owners and adjustments to this concept will be necessary. The potential Park & Ride improvements are shown in **Table 8-4** and graphically on **Figure 8-5**.

Table 8-4. Potential Park & Ride Improvements

ID	Potential Improvement
Near Term	
1	Veterans Parkway/S. Meadows Park & Ride
2	Damonte Ranch Park & Ride
Mid Term	
3	Veterans Parkway/Geiger Grade Park & Ride
4	S. Meadows Parkway/Double R Boulevard Park & Ride

POTENTIAL VEHICULAR IMPROVEMENTS

Potential vehicular improvements were developed by reviewing the projects listed in the 2040 RTP and through the traffic analysis described in previous chapters. The potential vehicular improvements are shown in **Table 8-5** and graphically on **Figure 8-6**. Several regional roadway projects and intersection improvements are conditioned to be constructed by private developments. These projects are highlighted in gold within the vehicular improvements list. It is important to note that

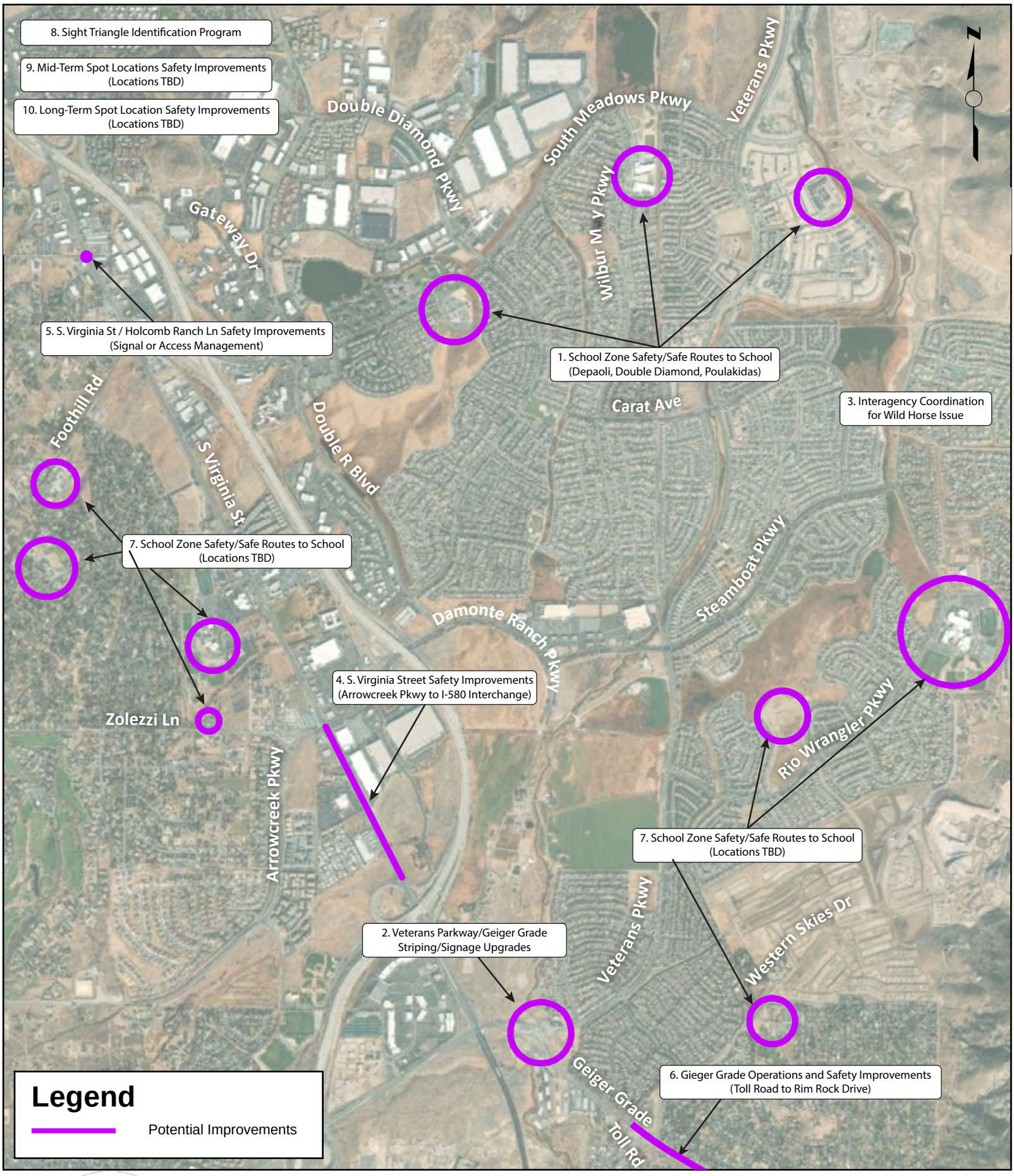


FIGURE 8-4. POTENTIAL AFETY IMPRO EMENT

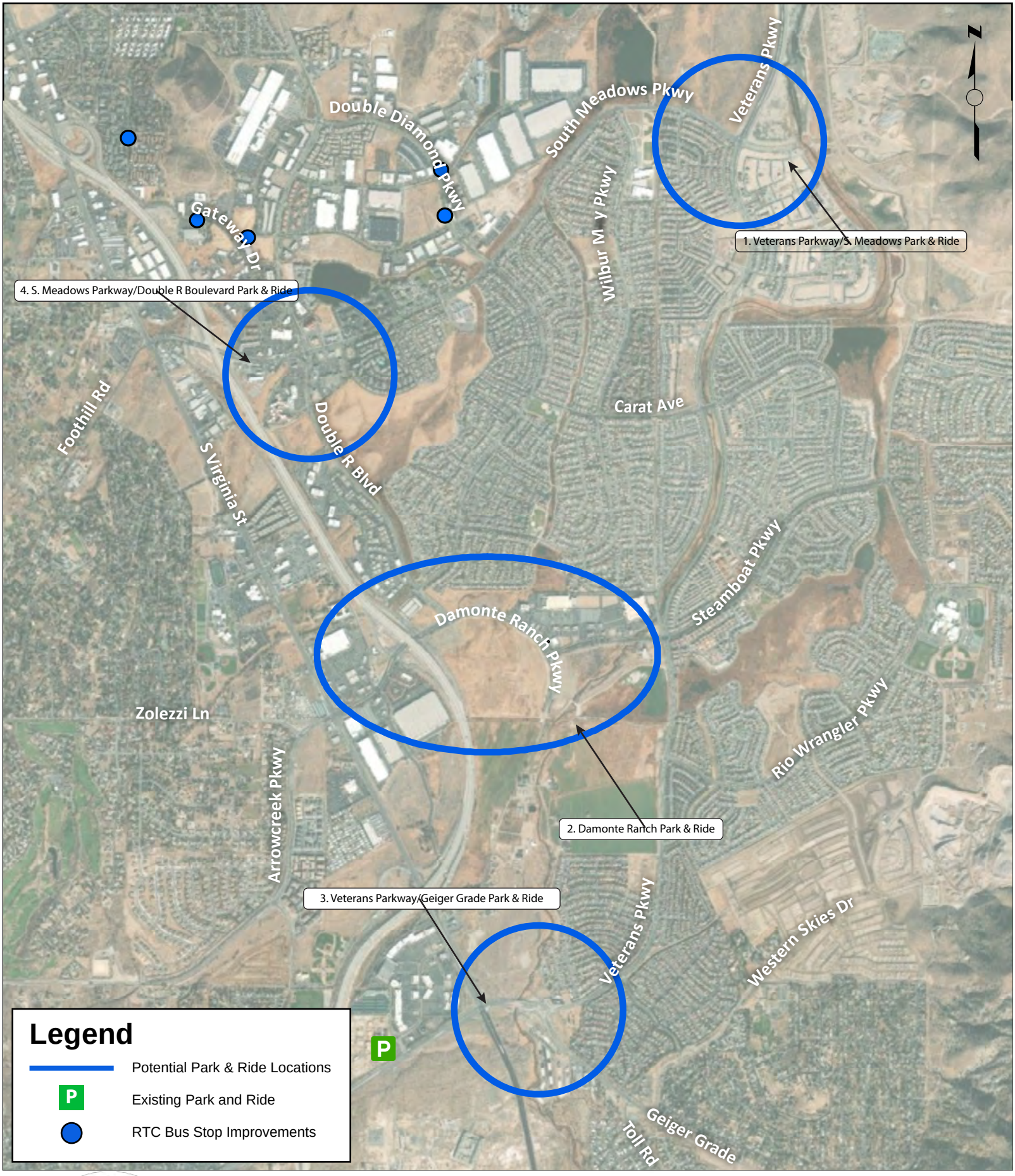


FIGURE 8-5. POTENTIAL PARK & RIDE IMPRO EMENT

this study recommends removing the Geiger Grade roadway widening from the current RTP project list. In addition, this study also found that the Arrowcreek widening and Geiger Grade realignment are necessary in the future. The Geiger Grade Roundabout will need major modifications or potentially be converted to a traffic signal. The roundabout and Geiger Grade realignment will require a focused future study to identify the proper improvements and mitigations. Priority (timeframe) is based on the operating conditions and urgency to resolve significant existing or anticipated congestion. Intersections currently operating at poor level of service conditions have been grouped into the near term improvements. Timeframes are also dependent on funding levels and difficulty of implementation.

Table 8-5. Potential Vehicular Improvements

ID	Potential Improvement
	Near Term
1	S. Meadows Pkwy / Gateway Dr Enhancements (Extend EB Left Turn Pocket)
2	Rio Wrangler Pkwy Widening (4 Lanes From Summer Glen Dr to Western Skies Dr)
3	S. Virginia St Widening (6 Lanes From Longley Lane to I-580 SB Ramps)
4	S. Virginia St / I-580 NB Off Ramp Improvements (Traffic Signal or Free Right)
5	Veterans Pkwy / Long Meadow Dr Improvements (Traffic Signal)
6	Damonte Ranch Pkwy / Double R Blvd Enhancements (Add WB Right)
7	Veterans Pkwy / Carat Ave Enhancements (Add EB & WB Right Turn Lanes)
8	Veterans Pkwy / Steamboat Pkwy Enhancements (Add EB & WB Right Turn Lanes, NB Right Turn, NB & SB Dual Lefts)
9	S. Meadows Pkwy / Wilbur May Pkwy Improvements (Traffic Signal)
10	Rio Wrangler Pkwy / Steamboat Pkwy Improvements (Traffic Signal or Roundabout)
11	Rio Wrangler Pkwy / McCauley Ranch Blvd Improvements (All-Way STOP, Traffic Signal, or Roundabout)
12	Western Skies Dr Extension (New 2 Lane Roadway)
	Mid Term
13	Steamboat Pkwy / Hampton Park Dr Improvements (Traffic Signal)
14	S. Meadows Pkwy / Double Diamond Pkwy Enhancements (Add WB Right, Dual SB Left)
15	Steamboat Pkwy Widening (6 Lanes From Damonte Ranch Pkwy to Veterans Pkwy)
16	Damonte Ranch Pkwy Widening (6 Lanes From Promenade Way to Steamboat Pkwy)
17	Damonte Ranch Pkwy / Steamboat Pkwy Enhancements (Lane Alignment & Triple SB Lefts)
18	Damonte Ranch Pkwy / I-580 SB Ramps (Lane Alignment to NB On-Ramps)
19	Veterans Pkwy / Damonte Ranch Extension Improvements (Traffic Signal)
20	Veterans Pkwy Widening (6 Lanes from S. Virginia St to Damonte Ranch Extension)
21	S. Virginia St / Veterans Pkwy Enhancements (Triple SB Left)
22	S. Meadows Pkwy / Echo Valley Pkwy Improvements (Traffic Signal)
23	Rio Wrangler Pkwy Extension to South Meadows (New 2 Lane Roadway)
24	S. Meadows Pkwy Extension to Storey County Line (New 4 Lane Roadway)
	Long Term
25	Damonte Ranch Pkwy Capacity Improvements (I-580 to Double R Blvd)
26	Geiger Grade Realignment (New 4 Lane Roadway)
27	Damonte Ranch Pkwy Extension to Veterans Parkway (New 2 Lane Roadway)
28	Rio Wrangler Pkwy Extension to Damonte Ranch Parkway (New 2 Lane Roadway)
29	Arrowcreek Pkwy Widening (4 Lanes From Zolezzi Ln to Wedge Pkwy)
~~30~~	Geiger Grade Widening (4 Lanes from Toll Rd to Rim Rock Dr)

Programmed in the 2040 RTP
Remove from future RTP
Funded by Private Developments

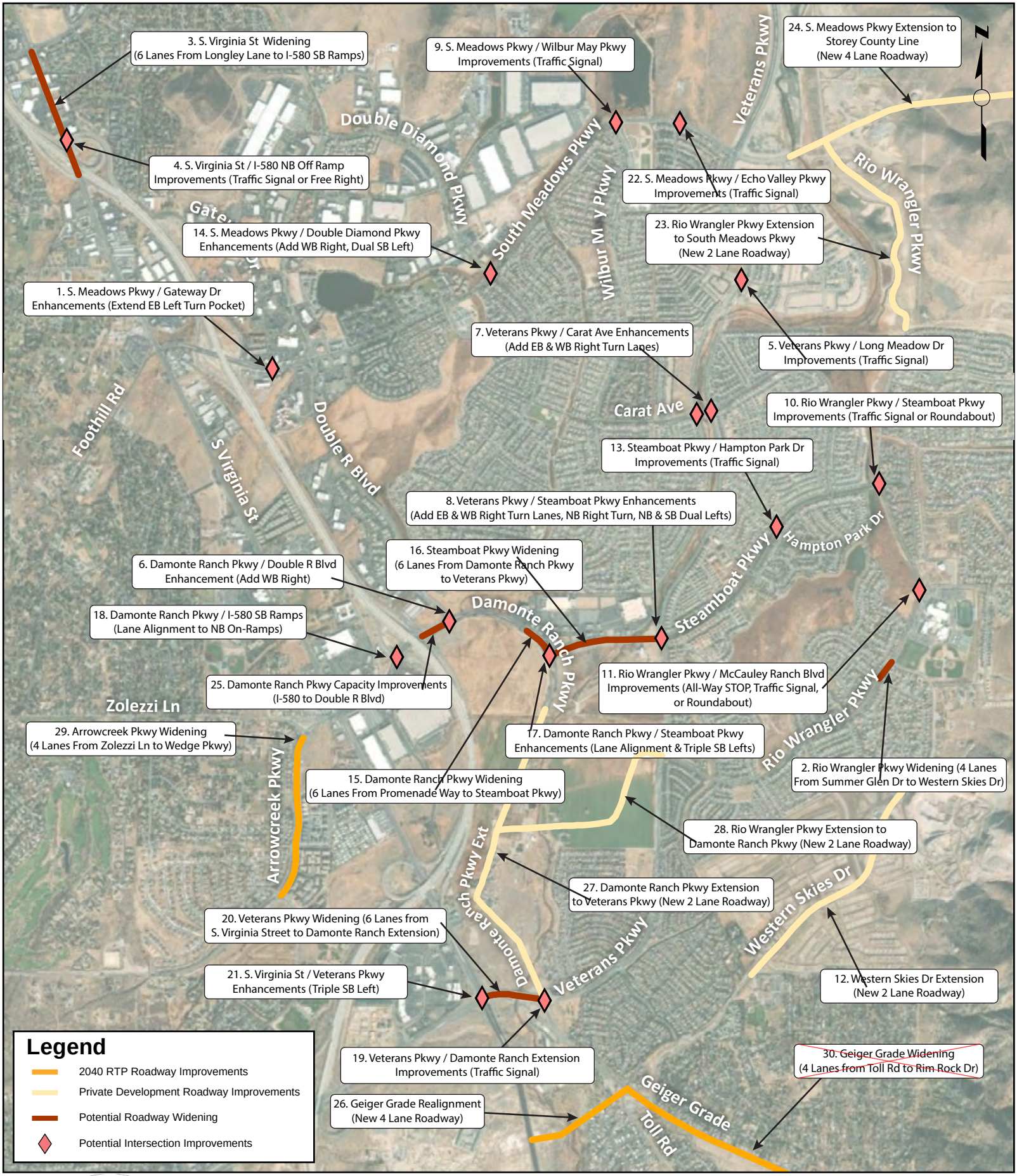


FIGURE 8-6. POTENTIAL VEHICLE CAPACITY IMPROVEMENT

Preliminary concepts were created for three key projects in the South Meadows study area as follows:

- S. Virginia Street / I-580 NB Off-Ramp Improvement (**Figure 8-7**)
- Steamboat Parkway / Rio Wrangler Parkway Roundabout (**Figure 8-8**)
- Veterans Parkway / Steamboat Parkway Improvement **(Figure 8-9)**

NDOT has considered installing a traffic signal with two westbound right turn lanes at the S. Virginia Street / I-580 NB Off-Ramp (Exit 61) intersection. The dual right turns would run concurrently with the southbound left turns onto southbound I-580. Both the free-right and traffic signal improvements should be considered at this location.

With the construction of the vehicular improvements outlined in **Figure 8-6,** all studied intersections and roadways are anticipated to operate at acceptable levels of service. The anticipated level of service for each study intersection is shown in **Table 8-6** and the improved lane configurations and controls are shown in **Figure 8-10**.

All roadway segments except for S. Virginia Street between I-580 and Holcomb Ranch Lane will operate at LOS "D" or better as shown in **Figure 8-11**. No additional capacity improvements are recommended for this segment of S. Virginia Street as the volume only slightly exceeds the LOS "E" upper threshold. Level of service calculations for all scenarios are shown in **Appendix C**.

Table 8-6. 2040 Mitigated Level of Service

ID	Intersection	Intersection Control	Movement	2040 Mitigated Conditions			
				AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	S. Virginia St / I-580 NB Off-Ramp	Signal	Overall	C	25.8	C	25.9
2	Double R Blvd / Sandhill Rd	Signal	Overall	B	12.0	B	14.9
3	S. Meadows Pkwy / Gateway Dr	Signal	Overall	D	36.6	D	53.2
4	S. Meadows Pkwy / Double R Blvd	Signal	Overall	D	43.6	E	58.2
5	S. Meadows Pkwy / Double Diamond Pkwy	Signal	Overall	D	37.5	C	27.5
6	S. Meadows Pkwy / Wilbur May Pkwy	Signal	Overall	C	27.5	C	20.5
7	S. Meadows Pkwy / Echo Valley Pkwy	Signal	Overall	C	27.7	C	32.1
8	Veterans Pkwy / Long Meadow Dr	Signal	Overall	D	51.3	B	14.0
9	Double R Blvd / Double Diamond Pkwy	Signal	Overall	C	27.0	D	54.9
10	Damonte Ranch Pkwy / Double R Blvd	Signal	Overall	E	76.5	E	68.7
11	Damonte Ranch Pkwy / Steamboat Pkwy	Signal	Overall	B	17.6	B	17.5
12	Veterans Pkwy / Steamboat Pkwy	Signal	Overall	D	48.5	D	40.6
13	Steamboat Pkwy / Rio Wrangler Pkwy	Signal or RAB	Overall (Signal)	C	27.1	B	14.6
			Overall (RAB)	A	9.2 (0.79 v/c)	A	9.0 (0.66 v/c)
14	Rio Wrangler Pkwy / McCauley Ranch Blvd	Signal, AWS, or RAB	Overall (Signal)	B	18.7	A	9.3
			Overall (AWS)	D	26.6	B	10.4
			Overall (RAB)	C	15.1 (0.77 v/c)	A	6.8 (0.39 v/c)
15	S. Virginia St / Veterans Pkwy	Signal	Overall	C	29.9	E	60.6
16	Veterans Pkwy / Geiger Grade	Signal	Overall	D	52.4	E	56.8

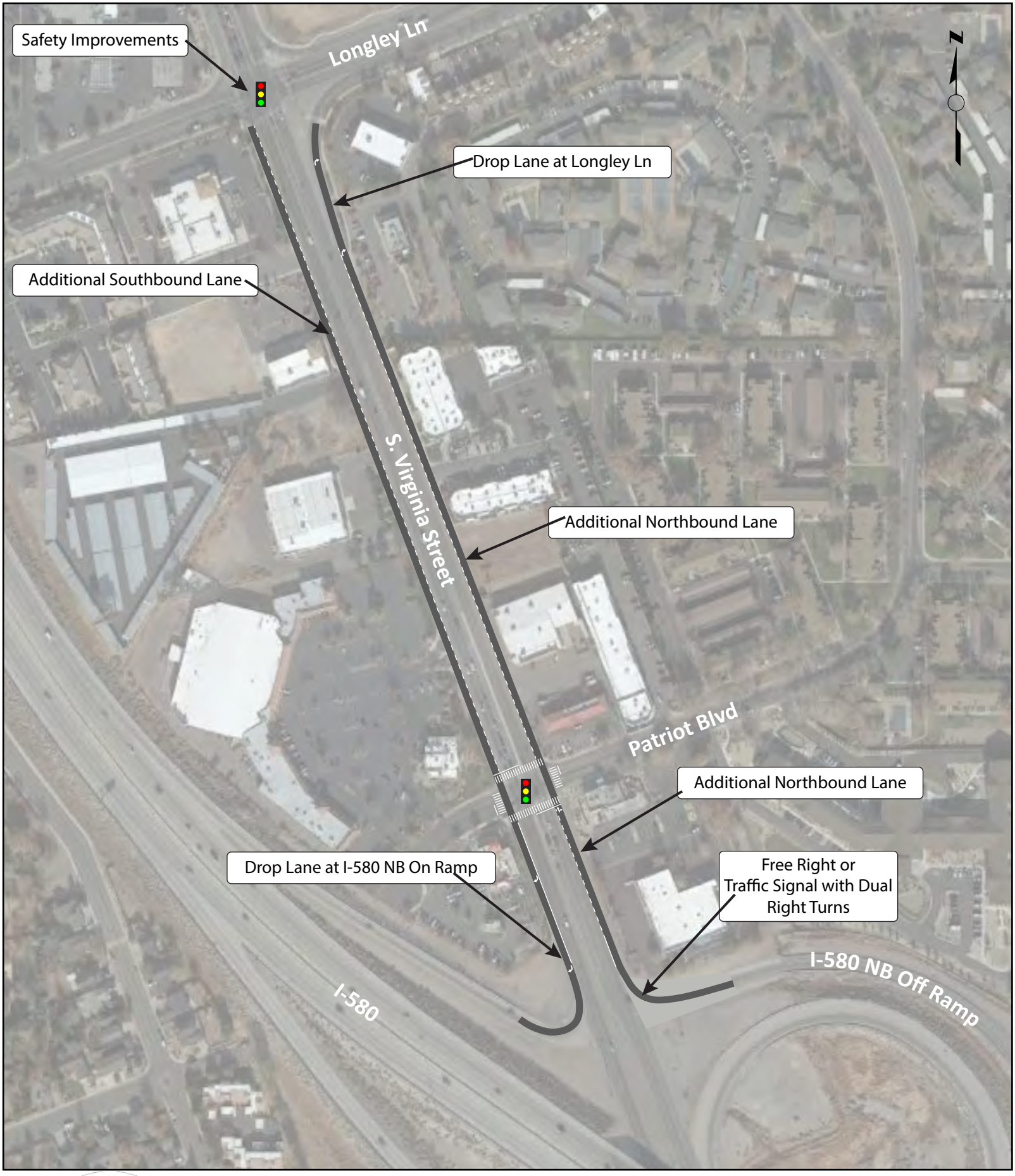


FIGURE 8-7. S. VIRGINIA STREET / I-580 NB OFF-RA
I ROVE ENT CONCE T

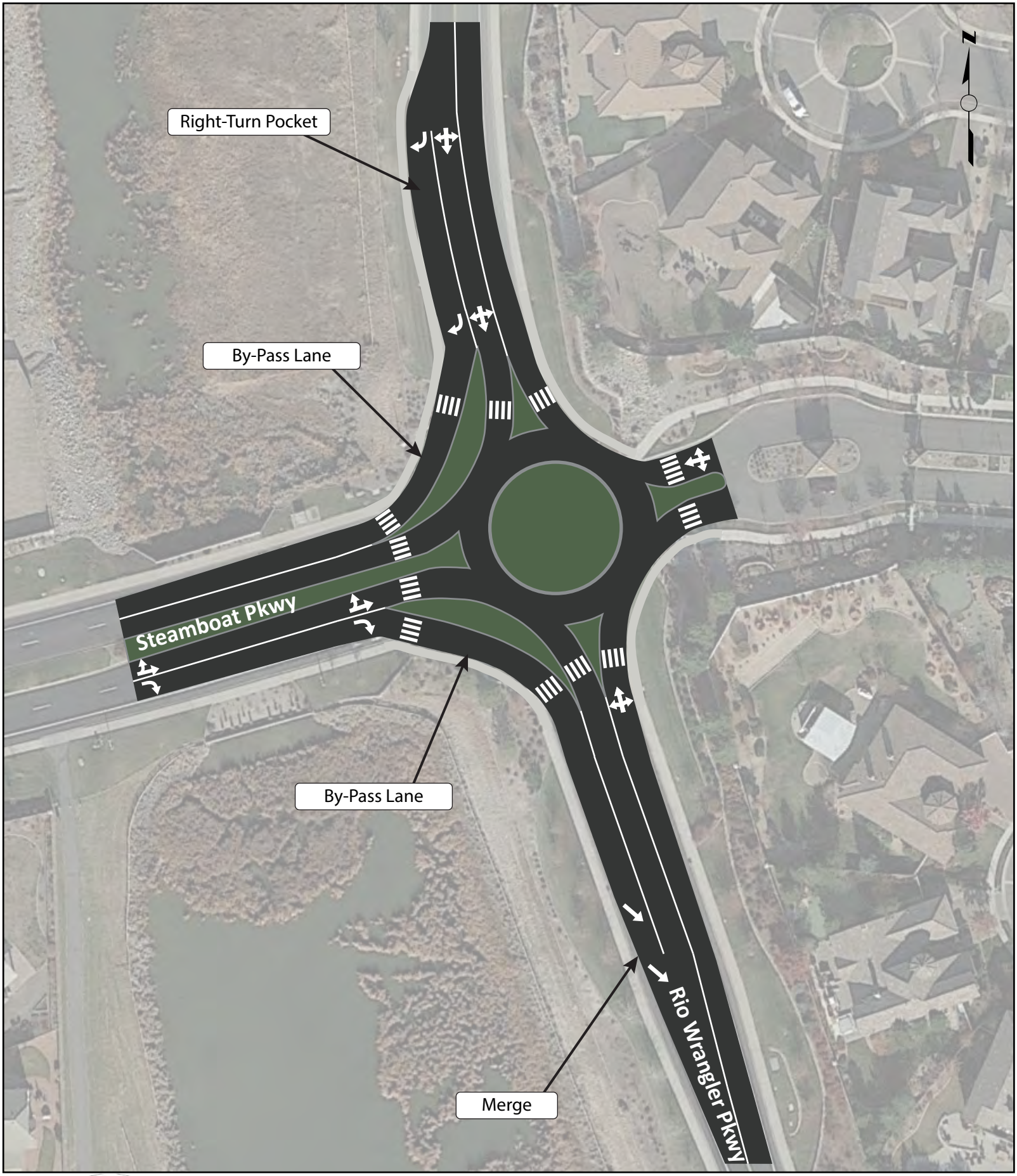
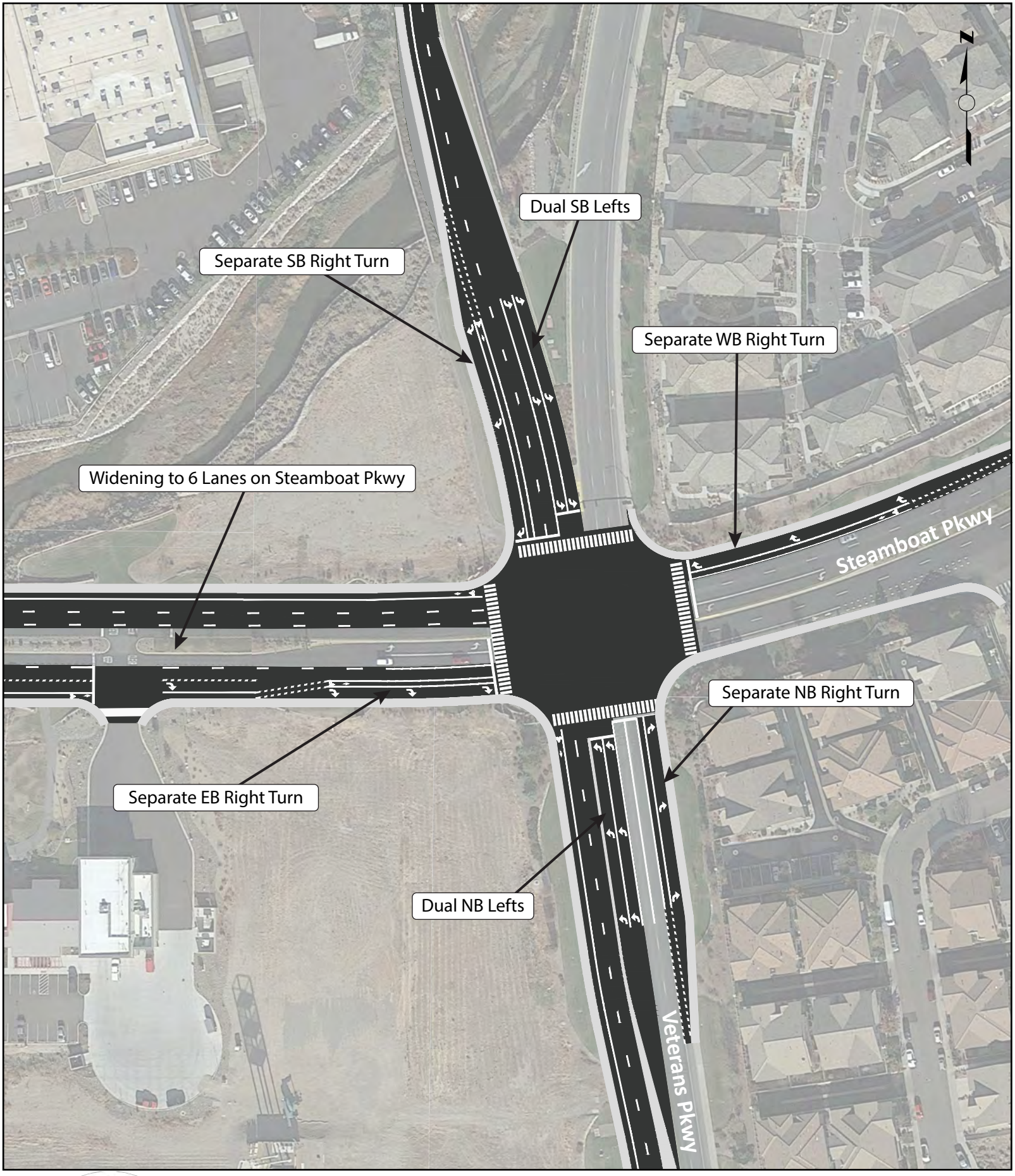


FIGURE 8-8. STEA BOAT KWY / RIO WRANGLER KWY ROUNDABOUT CONCE T



SOUTH MEADOWS MULTIMODAL TRANSPORTATION STUDY

FIGURE 8-9. VETERANS PARKWAY / STEAMBOAT PARKWAY IMPROVEMENT CONCEPT

RTC

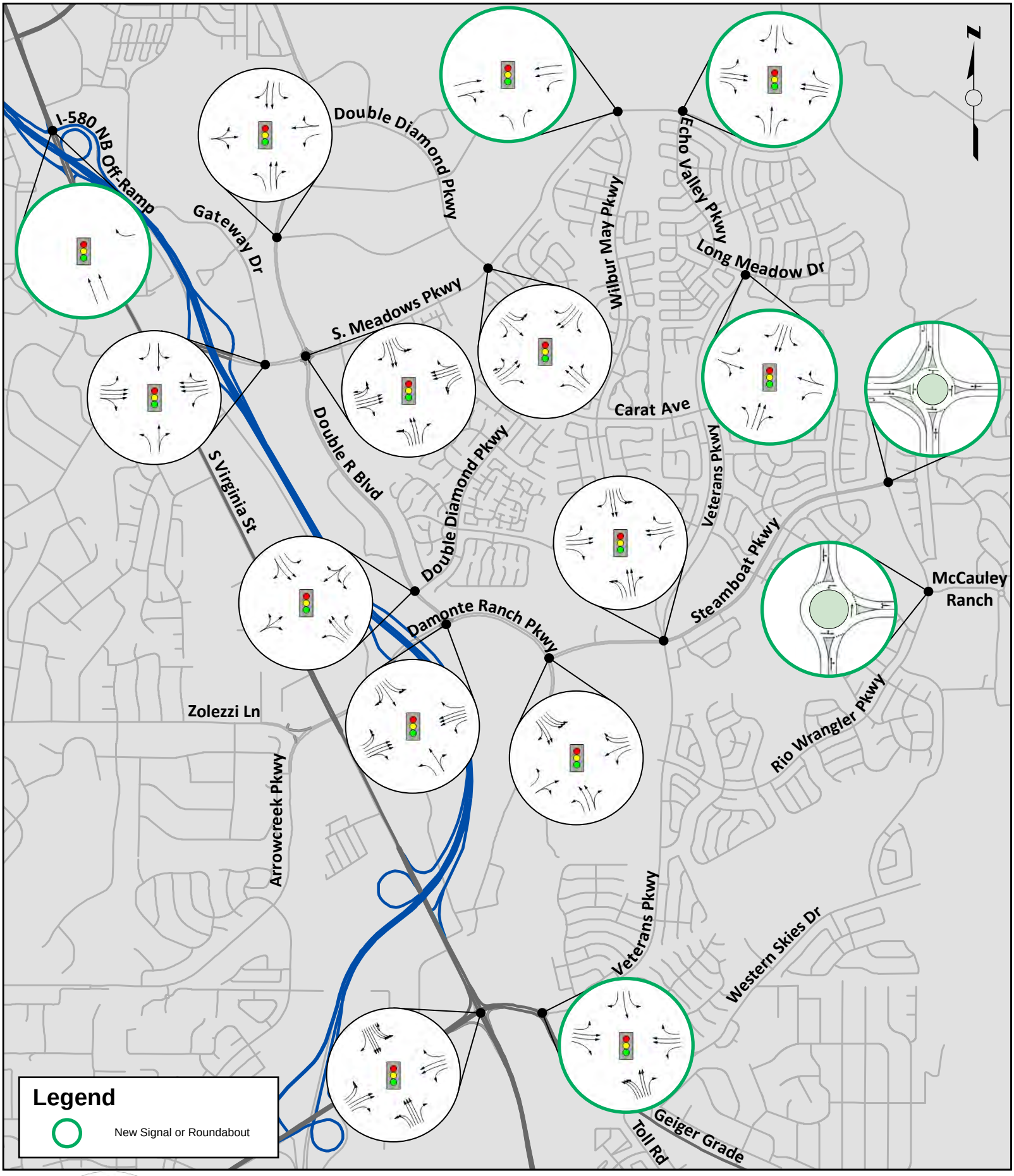


FIGURE 8-10. 2040 MITIGATED LANE CONFIGURATIONS

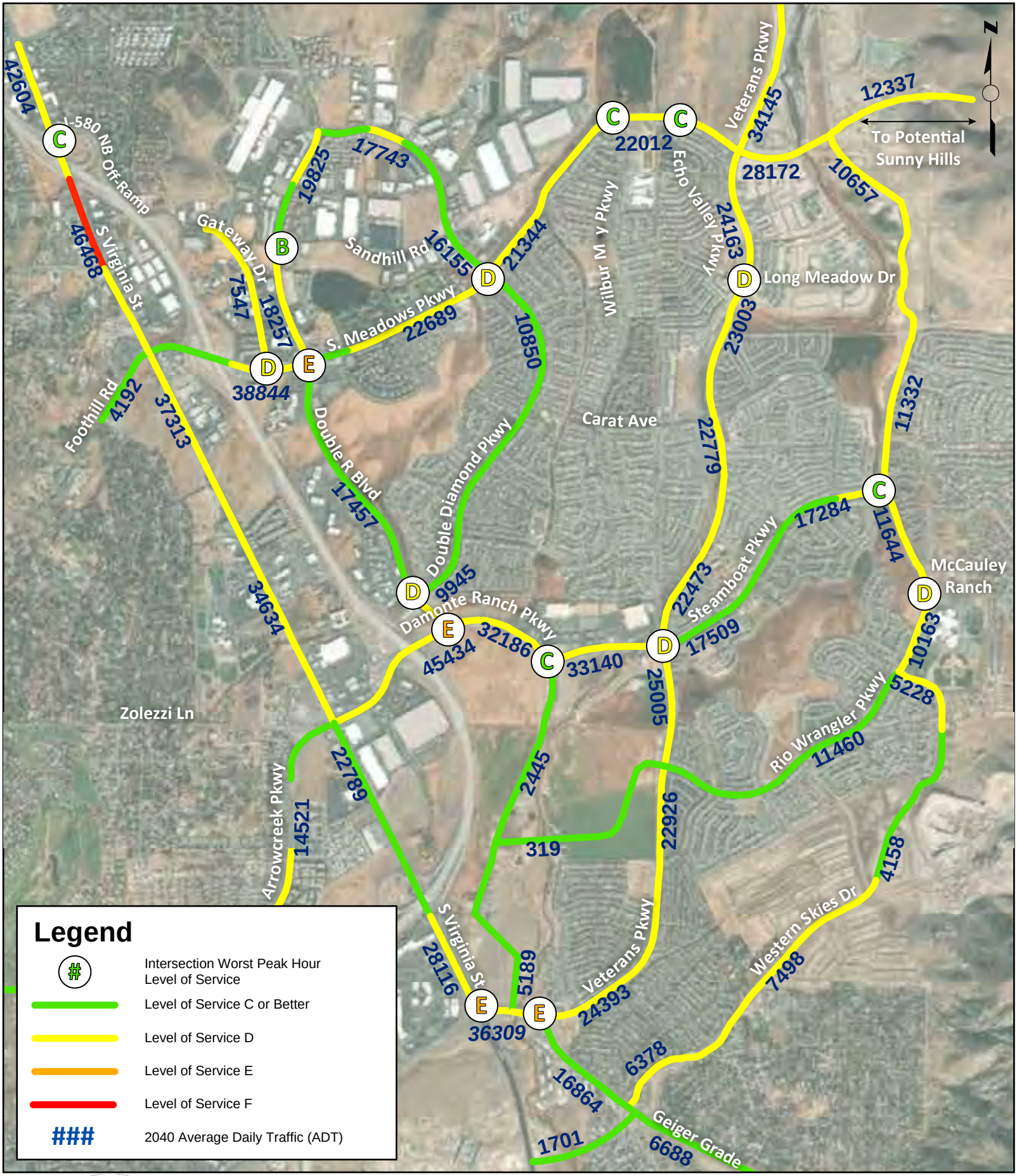


FIGURE 8-11. 2040 AVERAGE DAILY TRAFFIC
A D LEVEL F SERVICE
(BUILD- UT SCE ARI WITH IMPR VEME TS)

COST ESTIMATES

This section presents planning level cost estimates for the broad range of potential improvements. The quantities and costs have been generalized based on planning level conceptual designs. It is not feasible at this time to address all the specific items that would be included in construction ready documents. Soft costs (engineering, specialty consultant services, construction administration, etc.) and contingency were added to the total to complete the budget. Should these prices be extended into future years, it would be advisable to include a 3% per year increase to allow for inflation and other pricing fluctuations. The following tables present planning level cost estimates for the five different project types (Bicycle, Pedestrian, Safety, Park & Ride, and Vehicular Capacity). Additional detail is provided in **Appendix D**.

Table 8-7. Potential Bicycle Improvements Cost Estimates

ID	Improvement	Total Cost
	Near Term	
1	S. Meadows Parkway Bicycle Facility Improvements (S. Virginia Street to Double Diamond Parkway)	$ 6,700,000
2	S. Meadows Parkway Bicycle Facility Upgrades (Double Diamond Parkway to Veterans Parkway)	$ 1,750,000
3	S. Virginia Street Multimodal Improvements (Patriot Boulevard to Mt. Rose Highway)	$ 18,000,000
4	Double Diamond Boulevard Bicycle Facility Upgrades (Double R Boulevard to S. Meadows Parkway)	$ 1,250,000
5	Veterans Parkway/Steamboat Parkway Bicycle Facility Upgrades	$ 100,000
	Mid Term	
6	Veterans Parkway Bicycle Facility Upgrades (S. Meadows Pkwy to Steamboat Parkway)	$ 3,000,000
7	Double R Boulevard Bicycle Facility Upgrades (S. Meadows Parkway to Damonte Ranch Parkway)	$ 1,600,000
8	Western Skies Drive Bicycle Facility Improvements (Geiger Grade to Rio Wrangler Parkway)	$ 200,000
	Long Term	
9	Foothill Road Bicycle Facility Upgrades (S. Virginia Street to Caribou Road)	$ 1,000,000
10	Huffaker Lane Bicycle Facility Improvements (Bluestone Drive to Longley lane)	$ 200,000
11	Geiger Grade Bicycle Facility Improvements (Equestrian Road to Rim Rock Drive)	$ 1,500,000

As outlined in **Table 8-7**, the total cost estimate for the potential bicycle improvements is $45,800,000.

Table 8-8. Potential Pedestrian Improvements Cost Estimates

ID	Improvement	Total Cost
	Near Term	
1	RTC Planned Bus Stop Improvements (5 Locations)	$ 500,000
2	Veterans Parkway Pedestrian Crossing Improvements (S. Meadows Parkway to Carat Avenue)	$ 750,000
3	S. Meadows Parkway Pedestrian Facility Improvements (Evergreen Street to Double Diamond Walking Path)	$ 250,000
4	Steamboat Parkway Pedestrian Crossing Improvements (Veterans Parkway to Rio Wrangler Parkway)	$ 750,000
5	Veterans Wetland Loop Under-Crossing Maintenance (By Others)	Private
	Mid Term	
6	Rio Wrangler Parkway Pedestrian Crossing Improvements (Steamboat Parkway to Veterans Parkway)	$ 750,000
7	Double R Boulevard Pedestrian Crossing Improvements (S. Meadows Parkway to Lauren Court)	$ 750,000
8	Double Diamond Parkway Pedestrian Facility Enhancements (Double R Boulevard to Trademark Drive)	$ 400,000
9	Double R Boulevard Pedestrian Facility Enhancements (Lauren Court to Double Diamond Parkway)	$ 1,700,000
10	Gateway Drive Pedestrian Facility Enhancements (Offenhauser Drive to S. Meadows Parkway)	$ 1,000,000
11	Zolezzi Lane Multimodal Improvements (S. Virginia Street to Thomas Creek Road)	$ 10,500,000
12	Wedge Parkway Pedestrian Facility Enhancements (Arrowcreek Parkway to Ghost Rider Drive)	$ 700,000
13	Prototype Drive Pedestrian Facility Enhancements (Double R Boulevard to Gateway Drive)	$ 500,000
	Long Term	
14	Foothill Road Pedestrian Facility Improvements (S. Virginia Street to Caribou Road)	$ 500,000
15	Geiger Grade Pedestrian Facility Improvements (S. Virginia Street to Rim Rock Drive)	$ 1,000,000
16	Mt Rose Highway Pedestrian Facility Enhancements (Thomas Creek Road to S. Virginia Street)	$ 1,700,000
17	Arrowcreek Parkway Pedestrian Facility Enhancements (Zolezzi Lane to Thomas Creek Road)	$ 1,500,000

As outlined in **Table 8-8**, the total cost estimate for the potential pedestrian improvements is $12,750,000.

Table 8-9. Potential Safety Improvements Cost Estimates

ID	Improvement	Total Cost
	Near Term	
1	School Zone Safety/Safe Routes to School (Depaoli, Double Diamond, Poulakidas)	$ 500,000
2	Veterans Parkway/Geiger Grade Striping/Signage Upgrades	$ 100,000
3	Interagency Coordination for Wild Horse Issue	$ 100,000
4	S. Virginia Street Safety Improvements (Arrowcreek Pkwy to I-580 Interchange)	$ 5,000,000
5	S. Virginia St / Holcomb Ranch Ln Safety Improvements (Signal or Access Management)	$ 750,000
	Mid Term	
6	Geiger Grade Operations and Safety Improvements (Toll Road to Rim Rock Drive)	$ 15,000,000
7	School Zone Safety/Safe Routes to School (Locations TBD)	$ 500,000
8	Sight Triangle Identification Program	$ 500,000
9	Spot Location Safety Improvements (Locations TBD)	$ 2,000,000
	Long Term	
10	Spot Location Safety Improvements (Locations TBD)	$ 2,000,000

As outlined in **Table 8-9**, the total cost estimate for the potential safety improvements is $26,450,000.

Table 8-10. Potential Park & Ride Improvements Cost Estimates

ID	Improvement	Total Cost
Near Term		
1	Veterans Parkway/S. Meadows Park & Ride	$ 2,000,000
2	Damonte Ranch Park & Ride	$ 2,000,000
Mid Term		
3	Veterans Parkway/Geiger Grade Park & Ride	$ 2,000,000
4	S. Meadows Parkway/Double R Boulevard Park & Ride	$ 2,000,000

As outlined in **Table 8-10**, the total cost estimate for the potential Park & Ride improvements is $8,000,000.

Table 8-11. Potential Vehicle Capacity Improvements Cost Estimates

ID	Improvement	Total Cost
Near Term		
1	S. Meadows Pkwy / Gateway Dr Enhancements (Extend EB Left Turn Pocket)	$ 500,000
2	Rio Wrangler Pkwy Widening (4 Lanes From Summer Glen Dr to Western Skies Dr)	$ 750,000
3	S. Virginia St Widening (6 Lanes From Longley Lane to I-580 SB Ramps)	$ 21,000,000
4	S. Virginia St / I-580 NB Off Ramp Improvements (Traffic Signal or Free Right)	$ 500,000
5	Veterans Pkwy / Long Meadow Dr Improvements (Traffic Signal)	$ 750,000
6	Damonte Ranch Pkwy / Double R Blvd Enhancements (Add WB Right)	$ 500,000
7	Veterans Pkwy / Carat Ave Enhancements (Add EB & WB Right Turn Lanes)	$ 1,000,000
8	Veterans Pkwy / Steamboat Pkwy Enhancements (Add EB & WB Right Turn Lanes, NB Right Turn, NB & SB Dual Lefts)	$ 2,500,000
9	S. Meadows Pkwy / Wilbur May Pkwy Improvements (Traffic Signal)	$ 750,000
10	Rio Wrangler Pkwy / Steamboat Pkwy Improvements (Traffic Signal or Roundabout)	$ 3,000,000
11	Rio Wrangler Pkwy / McCauley Ranch Blvd Improvements (All-Way STOP, Traffic Signal, or Roundabout)	$ 3,000,000
12	Western Skies Dr Extension (New 2 Lane Roadway)	Private
Mid Term		
13	Steamboat Pkwy / Hampton Park Dr Improvements (Traffic Signal)	$ 750,000
14	S. Meadows Pkwy / Double Diamond Pkwy Enhancements (Add WB Right, Dual SB Left)	$ 2,000,000
15	Damonte Ranch Pkwy Widening (6 Lanes From Promenade Way to Steamboat Pkwy)	$ 100,000
16	Steamboat Pkwy Widening (6 Lanes From Damonte Ranch Pkwy to Veterans Pkwy)	$ 4,000,000
17	Damonte Ranch Pkwy / Steamboat Pkwy Enhancements (Lane Alignment & Triple SB Lefts)	$ 1,000,000
18	Damonte Ranch Pkwy / I-580 SB Ramps (Lane Alignment to NB On-Ramps)	$ 5,000,000
19	Veterans Pkwy / Damonte Ranch Extension Improvements (Traffic Signal)	$ 750,000
20	Veterans Pkwy Widening (6 Lanes from S. Virginia St to Damonte Ranch Extension)	$ 5,000,000
21	S. Virginia St / Veterans Pkwy Enhancements (Triple SB Left)	$ 9,000,000
22	S. Meadows Pkwy / Echo Valley Pkwy Improvements (Traffic Signal)	Private
23	Rio Wrangler Pkwy Extension (New 2 Lane Roadway from North End of Pavement to S. Meadows Pkwy)	Private
24	S. Meadows Pkwy Extension to Storey County Line	Private
Long Term		
25	Damonte Ranch Pkwy Capacity Improvements (I-580 to Double R Blvd)	$ 10,000,000
26	Geiger Grade Realignment (New 4 Lane Roadway)	$ 75,100,000
27	Damonte Ranch Pkwy Extension (New 2 Lane Roadway)	Private
28	Rio Wrangler Pkwy Extension (New 2 Lane Roadway from Veterans Pkwy to Damonte Ranch Pkwy Extension)	Private
29	Arrowcreek Pkwy Widening (4 Lanes From Zolezzi Ln to Wedge Pkwy)	$ 8,300,000
30	Geiger Grade Widening (4 Lanes from Toll Road to Rim Rock Drive)	Remove

As outlined in **Table 8-11**, the total cost estimate for the potential vehicular capacity improvements is $138,650,000.

Overall, it would cost approximately $231,650,000 (current 2019 dollars) to construct every potential improvement identified in this study.

Note that many of the improvements should be combined during the design and implementation phase for construction cost efficiency.

CHAPTER 9 - RECOMMENDATIONS

The thousands of comments received through this study demonstrate the wide variety of challenges that exists in managing a regional, multimodal, transportation system. The most common theme was complaints about traffic congestion and delay (evidence of a need for more vehicular capacity) but counter comments were offered that suggested speeds are too high, better pedestrian crossings are needed, that safety is a concern, and that more signals are needed (suggesting changes that calm roadways but generally reduce capacity). Questions were raised about how many lanes are appropriate, what the speed limits should be, the safety of bicycle lanes on high speed arterials, and where trucks belong.

The solution to all of these issues and competing interests is found in the concept of "roadway hierarchy". In short, freeways, arterials, collectors, and local streets are intentionally designed and managed to serve different purposes. Freeways and arterials have the express purpose of moving large volumes of vehicular traffic across the region. Collectors and local streets serve the function of providing direct access and multimodal circulation for neighborhoods, schools, and commercial centers. The design of each roadway type (classification) must be different to best serve its purpose in the overall network.

ROADWAY HIERARCHY AND CLASS

Roadway hierarchy and classification is established in the Regional Transportation Plan (RTP). Most of the "regional roads" within the South Meadows are currently classified as Moderate Access Control arterials. The 2040 RTP states "arterials that are direct connections between freeways and other arterials, insure continuity throughout the region and generally accommodate longer trips within the region, especially in the peak periods on high traffic volume corridors". The primary purpose of these types of roadways is vehicular throughput and these roadways serve a vital role in the transportation network. Since it is almost impossible to add significant roadway capacity after a community is built, agencies must be extremely diligent in maintaining the capacity of their existing roadways. The City of Reno, RTC, and NDOT should strictly maintain the access management standards established in the RTP for all regional roadways as shown in **Table 9-1**.

Table 9-1. 2040 RTP Access Management and Standards

Access Management Standards-Arterials[1] and Collectors							
Access Management Class	Posted Speeds	Signals Per Mile and Spacing[2]	Median Type	Left From Major Street? (Spacing from signal)	Left From Minor Street or Driveway?	Right Decel Lanes at Driveways?	Driveway Spacing[3]
High Access Control	45-55 mph	2 or less Minimum spacing 2350 feet	Raised w/channelized turn pockets	Yes 750 ft. minimum	Only at signalized locations	Yes[4]	250 ft./500 ft.
Moderate Access Control	40-45 mph	3 or less Minimum spacing 1590 feet	Raised or painted w/turn pockets	Yes 500 ft. minimum	No, on 6- or 8-lane roadways w/o signal	Yes[5]	200 ft./300 ft.
Low Access Control	35-40 mph	5 or less Minimum spacing 900 feet	Raised or painted w/turn pockets or undivided w/painted turn pockets or two-way, left-turn lane	Yes 350 ft. minimum	Yes	No	150 ft./200 ft.
Ultra-Low Access Control	30-35 mph	8 or less Minimum spacing 560 feet	Raised or painted w/turn pockets or undivided w/painted turn pockets or two-way left-turn lane	Yes 350 ft. minimum	Yes	No	150 ft./200 ft. 100 ft./100 ft.[6]

SPEED LIMITS

Speed limits are, and should continue to be, based on roadway classification as established in the RTP. As shown in **Table 9-1**, the posted speeds on "regional roads" should be between 45 and 55 mph for High Access Control facilities, 40 to 45 mph for Moderate Access Control facilities, 40 mph or less for Low Access Control streets, and 35 mph or less on Ultra Low Access Control facilities (typically Collectors). Local streets are typically posted at 25 mph, or as otherwise determined by the City of Reno or Washoe County.

Artificially low speed limits are ineffective, cause undesirable cut-thru traffic on lower hierarchy roadways (causing other more significant safety issues), and degrade the overall roadway network functionality.

TRAFFIC SIGNAL LOCATIONS

As the South Meadows continues to build out, there will be a growing number of requests for new traffic signals. Traffic signals are important for managing high volume intersections but are not appropriate everywhere. The over-installation of traffic signals is commonly the most significant contributor to congested corridors, excessive delay, and regional travel time issues. Traffic signals should only be installed where justified by an engineering study.

The appropriate spacing of traffic signals is established in the RTP Access Management and Standards and should be strictly followed unless significantly unusual circumstances exist. Traffic signals must be strategically placed at high volume intersections or at locations that provide controlled pedestrian crossings, enable U-turns, or create gaps in otherwise unimpeded traffic flows. **Figure 9-1** is a recommended "traffic signal masterplan" for the South Meadows area showing the most appropriate locations for new traffic signals.

TRUCK ROUTES

Trucks and other heavy vehicles are integral to the daily operation of businesses throughout the South Meadows area and the region as a whole. Truck traffic should be limited to the regional roadway system wherever possible and should be prohibited on local streets and collectors unless those roadways are the only route to/from the destination. Trucks should be allowed, expected, and designed for, on all Moderate and High Access Control arterials within the South Meadows as these roadways are the most appropriate for handling these types of vehicles. Where trucks are a concern on certain segments of Arterials, the roadway configuration and controls should be adjusted to better blend all users rather than prohibiting trucks from the arterial system.

BETTER BICYCLE FACILITIES

Nationwide there is growing evidence that the placement of bike lanes on high speed arterial roadways is not effective in attracting bicycle ridership or shifting users to alternate modes. South Meadows residents echoed the national sentiment and commented that they feel unsafe using bike lanes on the major arterials within the study area. Data from the Truckee Meadows area, obtained through the RTC Bicycle and Pedestrian Data Collection Program, shows that the bicycle ridership declines as posted speeds increase.

Going forward, new roadways or those undergoing major widening or reconfiguration, to be posted with speed limits 35 mph or higher, should be constructed with separated multi-use paths rather than on-street bike lanes. Since it is critical to maintain roadway hierarchy and long-term capacity on arterials, the appropriate action is to provide additional separation between the various modes rather than lowering speed limits.

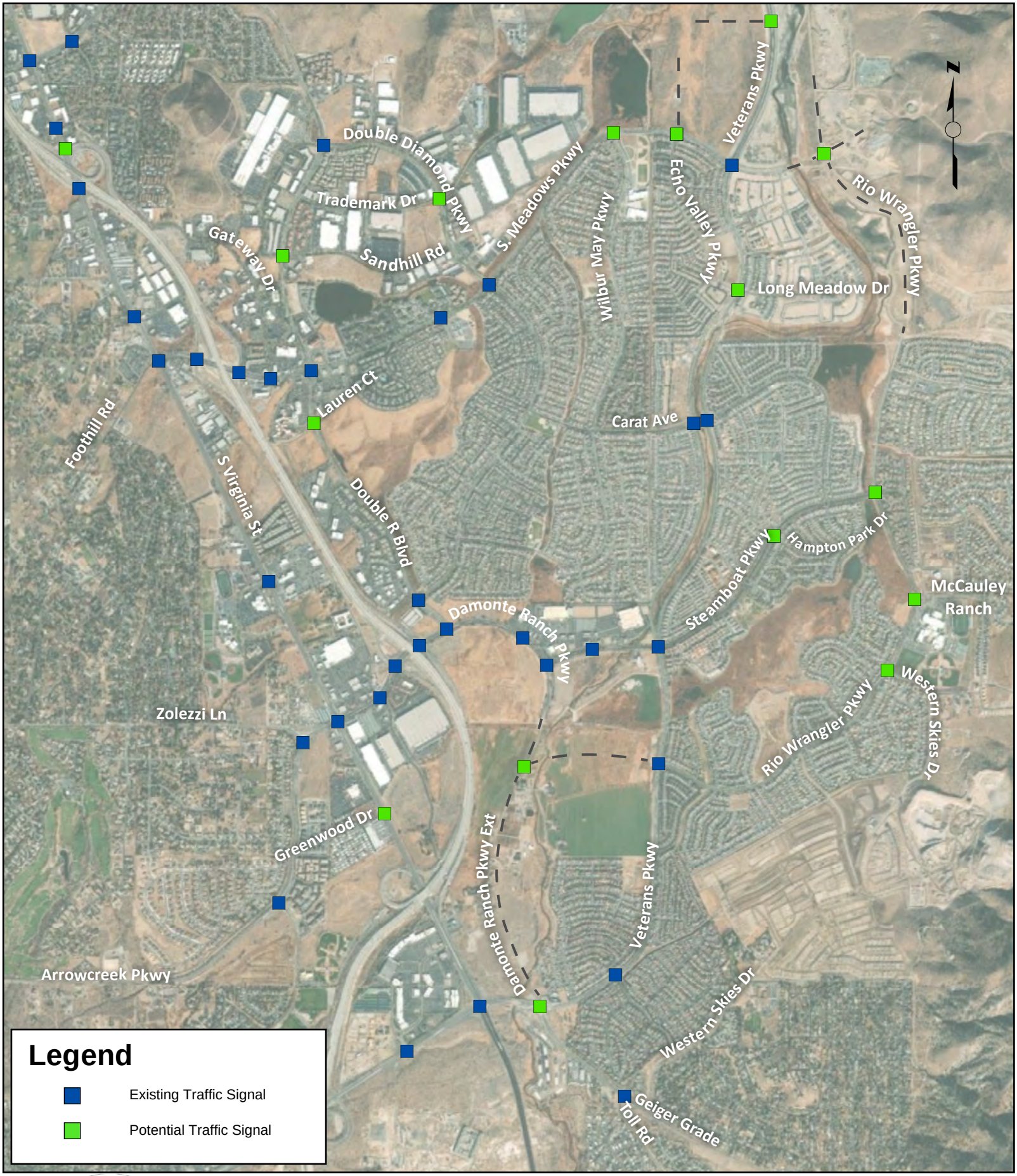


FIGURE 9-1. TRAFFIC SIGNAL MASTERPLAN

MAINTAINING ROADWAY CAPACITY

At the time of this study, the South Meadows area has reached approximately 65% of its build-out potential (roughly 35% of the developable land is vacant). Considering the current traffic volumes and projected levels of traffic at build-out, the RTC and City of Reno should diligently preserve the capacity of arterials and regional roadways. The most important elements of capacity are the number of travel lanes, limiting the number of traffic signals, access management limiting the number of connection points, limiting enhanced crosswalks to the most appropriate locations, and maintaining appropriate speed limits.

RECOMMENDED IMPROVEMENTS FOR ALL MODES

Chapter 8 of this study presents approximately seventy (70) potential improvements that could enhance vehicular, bicycle, and pedestrian circulation, improve safety for all roadway users, and encourage car/van pooling through park & ride facilities. This list of potential improvements should be forwarded to the Regional Transportation Plan update process where the projects will be vetted and prioritized in comparison to other regional transportation needs for future funding and implementation of the highest priority projects.

In general terms, the community has recommended the following distribution of funds by travel mode specifically in the South Meadows study area:

- Vehicular Capacity – 35%
- Safety Improvements –25%
- Pedestrian Improvements – 13%
- Bicycle Improvements – 12%
- Transit – 10%
- Park & Ride Facilities – 5%

FUTURE STUDIES

Geiger Grade and Veterans Parkway

An additional study is needed specifically of the Geiger Grade and Veterans Parkway area between S. Virginia Street and Western Skies Drive. Realignment of Geiger Grade is likely still necessary as programmed in the 2040 RTP, however, a holistic approach including Western Skies Drive and replacement of the existing roundabout with a higher capacity intersection is needed. Consideration of the planned Damonte Ranch Parkway extension to Veterans Parkway, Equestrian Road and Toll Road, alignment alternatives, and right-of-way will be key factors. This study should also identify the long-term configurations of Equestrian Road and Western Skies Drive and the alignment of Toll Road to Geiger Grade.

South Meadows Parkway Extension

This study assumes the extension of South Meadows Parkway, as a 4-lane arterial, east to the proposed Sunny Hills development and Storey County line. Approximately 1,500 single family homes within the Washoe County portion of Sunny Hills have been included in the land use and travel forecasting. At the time of this report, a coalition of land holders and developers have proposed a connection of South Meadows Parkway through Storey County to USA Parkway, approximately 17 miles to the east. The development coalition contemplates 4,000 residential units in Storey County and the proposed arterial as link between major employers in the Tahoe Reno Industrial Center and a significant and growing

population in south Reno. Evaluation of the potentially significant impacts on the South Meadows transportation network are beyond the scope of this particular study, but should be considered. In general terms, if South Meadows Parkway was extended into Storey County to serve significant residential development and/or to connect with USA Parkway, higher traffic volumes should be expected on South Meadows Parkway between Veterans Parkway and I-580 and on Veterans Parkway (both north and south of South Meadows Parkway) in particular. A future study should be conducted to evaluate the impacts and costs of expanding roadways in the South Meadows area to support the proposed new regional connection.

S. Virginia / I-580 Interchange (Exit 57)

The proposed multi-modal improvements on South Virginia Street between Mt. Rose Highway and S. Meadows Parkway presents some challenges at the S. Virginia / I-580 Interchange (Exit 57). The interchange has multiple ramp locations with high-speed free vehicle movements. A future study should be conducted to analyze the conflicting movements between vehicles and pedestrians/bicycles. Options to consider would range from potential signals at the free-way ramps, grade separated crossings, or possibly changing the entire configuration of the interchange that would allow for safer multi-modal access.

Appendix A
Public Comment/Concerns Summary

Road	Intersection	Category	Comment
Veterans Parkway	--	Bicycling	Fix the bicycle underpass (closed) at Veterans Parkway near Fire Station 12
Rio Wrangler Parkway	--	Bicycling	Add ADA/bike ramps and crosswalks to cross Rio Wrangler (locations unclear)
Veterans Parkway	--	Bicycling	Add crosswalk and/or RRFB to cross Veterans Parkway (approximately 1000 ft south of Long Meadows)
--	--	Bicycling	Ensure all bike paths are re-paved with roadwork
--	--	Bicycling	Extend Tahoe-Pyramid path to provide cycling option to Tri Center
Rio Wrangler Parkway	--	Bicycling	Improve Bicycle Safety on Rio Wrangler
Veterans Parkway	--	Bicycling	Extend SouthEast Connector multi-use path to S. Virginia Street (Entire Length)
--	--	Bicycling	Install barrier separated bike paths on high speed roadways
--	--	Bicycling	Install barrier separated bike path from Mt. Rose Highway to Center Street
--	I-580 & S. Virginia Street	Capacity	Create dual right turns onto NB S. Virginia Street
--	I-580 & S. Virginia Street	Capacity	Create a through lane for NB Virginia to NB & SB I-580 (Similar to Mt. Rose interchange)
--	I-580 & S. Virginia Street	Capacity	Install a signal at the NB Off Ramp and coordinate with E Patriot signal
Rio Wrangler Parkway	Rio Wrangler Parkway / Spring Flower Drive / Summer Glen Drive	Capacity	Transition from 2-lanes to 1 lane is awkward. Convert a through lane into a right turn lane into Summer Glen Dr.
--	Double R Boulevard / Damonte Ranch Parkway	Capacity	Install "No right turn on Red" sign for both southbound right turn lanes
--	Double R Boulevard / Double Diamond Parkway	Capacity	Re-stripe westbound approach as left & through-right
--	Veterans Parkway / Long Meadow Drive	Capacity	Install a Signal
--	Veterans Parkway / Steamboat Parkway	Capacity	Delays & Queueing at EB Through-Lane (single)
Veterans Parkway	--	Capacity	Install more flashing yellow left turns
--	South Meadows Parkway / Echo Valley Drive	Capacity	Install a traffic signal
--	Veterans Parkway / Pesaro Way / Cesena Way	Capacity	Difficult to turn left onto Veterans Parkway
--	Damonte Ranch Parkway / Steamboat Parkway	Capacity	Add a third WB Right turn lane
--	Veterans Parkway / Steamboat Parkway	Capacity	Lane alignment & striping issues - The 2 northbound lanes widen out to the right at the intersection and people have been using this extra space as a through lane which causes merging congestion when the 3 lanes reduce to 2 lanes north of Steamboat Pkwy.
Damonte Ranch Parkway	--	Capacity	Not enough eastbound lanes between Damonte Ranch Parkway and Veterans Parkway
--	Veterans Parkway / Geiger Grade Road	Capacity	Make the EB right turn only lane barrier separated
--	South Meadows Parkway / Wilbur May Parkway	Capacity	Suggested dual left turn lane from NB Wilbur May to WB S. Meadows
South Meadows Parkway	--	Capacity	Widen and Stripe a right turn pocket into Sprouts Shopping Center
--	Virginia Street / Holcomb Ranch	Capacity	Free right from Holcomb Ranch to SB Virginia - Comment from Naomi Duerr
--	Virginia Street / Damonte Ranch Pkwy	Capacity	Construct dedicated right turn lane on WB Damonte Ranch to NB Virginia
--	--	Capacity	What is process for determining ROW needed for future capacity when constructing new road? Person felt that it's not possible to add capacity because no room was left in medians.
--	South Meadows Parkway / Wilbur May	Capacity	Northbound left-turn issues
Carat Ave	--	Capacity	Carat Avenue does not have enough capacity between Double Diamond Parkway and Veterans Parkway
--	Veterans Parkway / Carat Avenue	Capacity	Improve signal coordination east-west on Carat Ave
--	Steamboat Parkway / Rio Wrangler Parkway	Capacity	Capacity issues - signal is needed
--	Trail Rider Drive / Gold Mine Drive	Capacity	Install a 4 way stop at Trail Rider Dr / Gold Mine Dr
--	Veterans Parkway / Steamboat Parkway	Capacity	Intersection Delay
--	Double R Boulevard / Damonte Ranch Parkway	Capacity	Construct an eastbound right turn lane
Damonte Ranch Parkway	--	Capacity	Congestion between Double R Blvd & Veterans Pkwy
Damonte Ranch Parkway	--	Capacity	Poor lane alignment between Double R Blvd & Veterans Pkwy
--	Double R Boulevard / Damonte Ranch Parkway	Capacity	Capacity issues
--	Veterans Parkway / Carat Avenue	Capacity	Capacity Concerns
--	Steamboat Parkway / Carat Avenue	Capacity	Traffic Signal Warrants
--	South Meadows Parkway / Lauren Court	Capacity	High delay on side streets
--	Steamboat Parkway / Horse Ranch Road	Capacity	High delay on side streets
Steamboat Parkway	--	Capacity	Change lane alignment between Damonte Ranch Pkwy and Veterans Pkwy
--	South Meadows Parkway / Double Diamond Boulevard	Capacity	There is not enough room to make a southbound U-turn for most vehicles
--	Steamboat Parkway / Rio Wrangler Parkway	Capacity	Do not like the roundabout concept presented at public meeting #1
Curti Ranch Road	--	Circulation	Close Equestrian Road to through traffic
Curti Ranch Road	--	Circulation	Close through traffic on Curti Ranch Road
Carat Avenue	--	Circulation	Traffic Calming on Carat Ave to discourage traffic by-passing Veterans to South Meadows
--	--	Circulation	Update truck route list
Double Diamond Boulevard	Double R Boulevard / Double Diamond Parkway	Circulation	Dual left from SB Double Diamond to SB Double R, but must merge immediately if in left lane to right lane if wanting to turn right onto Damonte Ranch from Double R
--	--	Connectivity	Little connectivity for pedestrians and bicyclists to travel east & west of I-80 & Virginia Street. Would like to see protected bike lanes/passages to connect both sides.
Damonte Ranch Extension	--	Connectivity	Construct a bike path paralleling the new extension
--	--	Connectivity	Better connectivity for sidewalks and bike paths between existing and incoming developments
Rio Wrangler Parkway	--	Connectivity	Crosswalks and walking paths do not align
Curti Ranch Road	--	Connectivity	Congestion from through traffic
Western Skies Dr	--	Connectivity	Install bike facilities on Western Skies Drive
Western Skies Dr	--	Connectivity	Install pedestrian facilities
Western Skies Dr	--	Connectivity	Construct a roadway connection from Western Skies Drive to McCauley Ranch Boulevard (behind Damonte Ranch HS)
--	--	Future Development	Include all future development (approved and unapproved) in South Meadows Study
--	--	Future Development	Include Sunny Hills in South Meadows Study
Rio Wrangler Parkway	--	Future Development	Limited access onto Rio Wrangler for new development north of Damonte Ranch HS (north side of McCauley Ranch Blvd)
--	Double Diamond Parkway / Carat Avenue	General	Exiting conditions is stop controlled not a signal
Geiger Grade	--	Horses	Add fencing from Geiger Grade to Hidden Valley
--	--	Horses	Maintain wildlife watering stations
--	--	Horses	New developments in Virginia Hills should construct permanent fencing around the development area
Kenneth Way	--	Horses	Kenneth Way needs Cattle Guard (east of Virginia Foothills Road)
Veterans Parkway	--	Horses	Add permanent fencing between S. Virginia Street and Geiger Grade
Geiger Grade	--	Horses	Needs fencing and cattle guards
--	I-580 & S. Virginia Street	Park & Ride	Establish a Park & Ride near interchange
--	--	Pedestrian	Construct a pedestrian bridge behind Double Diamond Elementary School (closed due to flooding)
Rio Wrangler Parkway	--	Pedestrian	Add a mid-block crosswalk on Rio Wrangler between Misty Meadows and Copper Springs
Rio Wrangler Parkway	--	Pedestrian	Add a mid-block crosswalk on Rio Wrangler approximately 100 feet west of Brittany Park
--	--	Pedestrian	Provide greenspace between sidewalks/paths and busy streets
--	Veterans Parkway / Pesaro Way / Cesena Way	Pedestrian	Stripe crosswalks across Veterans Parkway
Veterans Parkway	--	Pedestrian	Install a trail crossing approximately 700' south of the Veterans Parkway / Long Meadows Drive intersection
Steamboat Parkway	--	Pedestrian	Install pedestrian crossing in front of Damonte Ranch Park
--	Rio Wrangler Parkway / Western Skies Drive	Pedestrian	Pedestrian crossing on north leg of intersection
Steamboat Parkway	--	Pedestrian	Improve crosswalks
--	--	Presentations	Include City of Reno Ward 3 Neighborhood Advisory Board in public meetings
--	--	Presentations	Choose a new venue for the next South Meadows public meeting
Rio Wrangler Parkway	Rio Wrangler Parkway / Baton Drive	Safety	Install a RRFB at the south crosswalk at the Rio Wrangler Pkwy / Baton Dr intersection
Rio Wrangler	Rio Wrangler Parkway / Baton Drive	Safety	Install better lighting at the south crosswalk at the Rio Wrangler Pkwy / Baton Dr intersection
Rio Wrangler Parkway	Rio Wrangler Parkway / Curti Ranch Road	Safety	Install advance signal warning signs on SB Rio Wrangler at Curti Ranch Rd. Signal is obstructed from trees/shrubs.

Foothill Road	--	Safety	Very Narrow, No sidewalks or shoulder
--	South Meadows Parkway / Echo Valley Drive	Safety	No visibility/sight line issues
--	South Meadows Parkway / Echo Valley Drive	Safety	Unusual dual NB left-turn lanes at stop control
Veterans Parkway	Veterans Parkway / Long Meadow Drive	Safety	Trim vegetation along Veterans Parkway
Cesena Way	--	Safety	Traffic Calming on Cesena Way
Sandhill Road	--	Safety	Speeding
Trademark Drive	--	Safety	Speeding
Double Diamond Boulevard	--	Safety	Speeding
--	Double R Boulevard / Lauren Court	Safety	Very busy with conflicting movements
--	Veterans Parkway / Geiger Grade Road	Safety	Install advance signage for the EB right turn only lane
South Meadows Parkway	--	Safety	Lane departure issues between Wilbur May and Double Diamond especially an issue with trucks coming from industrial area.
--	Steamboat Parkway / Carat Avenue	Safety	Sight issues turning left onto Steamboat due to landscaping
--	Rio Wrangler Parkway / Yee Haw Way	Safety	Sight issues turning onto Rio Wrangler Parkway
--	Rio Wrangler Parkway / Yee Haw Way	Safety	Vehicles turning onto Rio Wrangler not looking for pedestrians/students
--	Veterans Parkway / Wind Walker Drive	Safety	Entrance to Bella Vista should be right-in/right-out at Wind Walker due to proximity to nearby intersections
--	--	Safety	Traffic Calming on Streets
--	--	Safety	Lower Speed Limits / Enforce Posted Limits
--	--	Safety	Trees in medians impact medians on several Roadways (i.e. i.e. Veteran's, Steamboat, Rio Wrangler)
Carat Avenue	--	Safety	Pedestrians jaywalking across Carat Ave between Double Diamond Ranch Walking/Bike Path and Wilbur May Parkway
South Meadows Parkway	--	Safety	Speeding between Double Diamond Pkwy and Wilbur May Pkwy
South Meadows Parkway	--	Safety	Semi trucks do not have enough space for lane crossings/drifting between Double Diamond Pkwy and Wilbur May Pkwy
--	Steamboat Parkway / Rio Wrangler Parkway	Safety	Pedestrian safety concern crossing the south crosswalk on Rio Wrangler Parkway
Mt. Rose Highway	--	Safety	Improve Pedestrian/Bike safety on Mt. Rose Hwy at I-580 interchange
S. Virginia Street	--	Safety	Improve Pedestrian/Bike safety on N. Virginia St at I-580 interchange (south)
--	Veterans Parkway / Geiger Grade Road	Safety	Improve Pedestrian/Bike safety at Geiger Grade Roundabout
--	Arrowcreek Parkway / Zolezzi Ln	Safety	Low Visibility from yielding EB right turn
--	Double R Boulevard / Sandhill Road	Safety	Safety concern with increased traffic from DMV
--	Steamboat Parkway / Brittany Meadows Drive	Safety	Safety concern with left turns from side-street
Carat Ave	--	Safety	Excessive Speeding
--	Carat Avenue / Wilber May Parkway	Safety	Vehicles running through stop sign
Steamboat Parkway	--	Safety	Increase crosswalk visibility
Veterans Parkway	--	Safety	Evaluate speed limits
Baton Drive	--	School Zone	Install a flashing yellow on Baton Drive when school zone is active
--	--	School Zone	Nick Poulakidas ES at APN 165-251-10, scheduled to open in Aug 2019
--	--	School Zone	Planned new ES on APN 140-731-01 which is anticipated to open in the 2024-2028 timeframe
--	South Meadows Parkway / Mojave Sky Drive	School Zone	Median Reconstructed to allow left-turns
Yee Haw Way	Rio Wrangler Parkway / Yee Haw Way	School Zone	Increase school zone north of Yee Haw Way
Zolezzi Lane	--	School Zone	General safety concerns at Mountain View Montessori School
South Meadows Parkway	--	School Zone	School zone safety on South Meadows Pkwy
Carat Avenue	--	Signage	Install goose crossing signs on Carat Ave (near the pond between Rio Wrangler)
Rio Wrangler Parkway	--	Signage	No traffic control for new apartments on north side of Rio Wrangler (by Misty Meadows?)
--	--	Signage	Signage for lane direction/selection should be located further away from intersection due to queue lengths
--	Veterans Parkway / Geiger Grade Road	Signage	Better lane designation/signage prior to roundabout
--	--	Transit	Provide a nearby service to the Veteran's Administration's Benefits building at 5460 Reno Corporate Drive
South Meadows Parkway	--	Transit	Buses are backing up traffic on South Meadows during peak times - incorporate bus pullouts and/or consolidate stops.
Mt. Rose Highway	--	Transit	Create a transit route on Mt. Rose Highway to TMCC/UNR Redfield

Appendix B
Existing Turning Movement Counts

Prepared by National Data & Surveying Services

S Virginia St & I-580 NB Ramps

Peak Hour Turning Movement Count

ID: 19-07286-001
City: Reno

Day: Tuesday
Date: 08/27/2019

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

S Virginia St — SOUTHBOUND

	Right	Thru	Left	U-Turn	Total (approach)
AM	330	863	0	0	1175
NOON	0	0	0	0	0
PM	0	0	0	0	0
(red)	0	0	0	0	

I-580 NB Ramps — EASTBOUND

	AM	NOON	PM	(red)
Exit total	330	0	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	0	0	0
Right	0	0	0	0

I-580 NB Ramps — WESTBOUND

	(red)	PM	NOON	AM
Right	0	0	0	389
Thru	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
Exit total		0	0	248

CONTROL

0

	AM	NOON	PM
TEV	2616	0	0
PHF	0.89		

S Virginia St — NORTHBOUND

	Exit total	U-Turn	Left	Thru	Right
(red)		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	863	0	0	786	248

Cars (AM)

Approach	Left	Thru	Right
Southbound	0	822	323
Eastbound	0	0	0
Westbound	0	0	381
Northbound	0	777	241

HT (AM)

Approach	Left	Thru	Right
Southbound	0	41	7
Eastbound	0	0	0
Westbound	0	0	8
Northbound	0	9	7

Cars (NOON)

All movements: N/A

HT (NOON)

All movements: N/A

Cars (PM)

All movements: N/A

HT (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg	0	0	0
West leg	0	0	0
East leg	0	0	0
South leg	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

S Virginia St & I-580 NB Ramps

Peak Hour Turning Movement Count

ID: 19-07235-001
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

S Virginia St — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	307	1331	0	0	1517	PM

I-580 NB Ramps — EASTBOUND

AM	NOON	PM	
0	0	307	⇦
0	0	0	↶ 0
0	0	0	↱ 0
0	0	0	→ 0
0	0	0	↴ 0
AM	NOON	PM	

CONTROL

0

TEV	0 AM	0 NOON	3501 PM
PHF	0		0.96

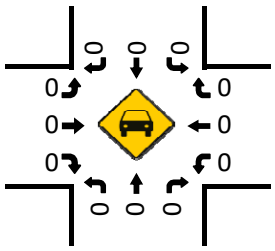
I-580 NB Ramps — WESTBOUND

PM	NOON	AM	
386	0	0	0 ↰
0	0	0	0 ←
0	0	0	0 ↰
0	0	0	0 ↶
346	0	0	⇨
PM	NOON	AM	

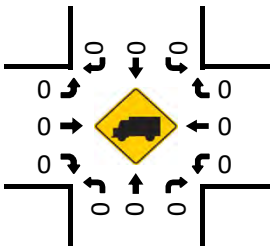
S Virginia St — NORTHBOUND

PM	1331	0	0	1131	346	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

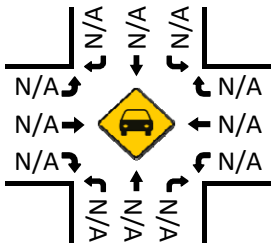
Cars (AM)



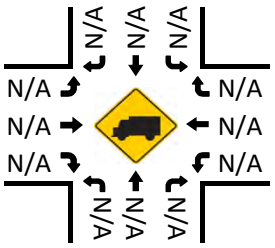
HT (AM)



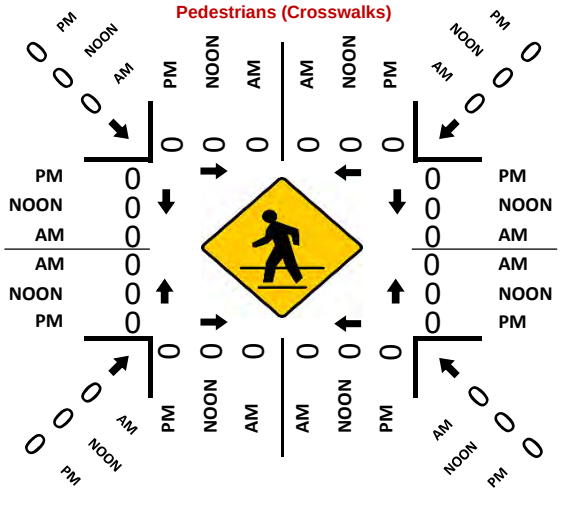
Cars (NOON)



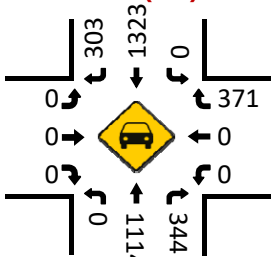
HT (NOON)



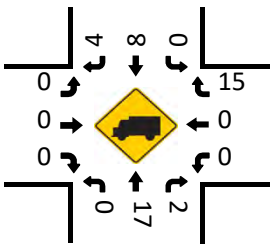
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Double R Blvd & Sandhill Rd

Peak Hour Turning Movement Count

ID: 19-07286-011
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

Double R Blvd — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	9	400	53	0	589
NOON	0	0	0	0	0
PM	0	0	0	0	0
	0	0	0	0	

Sandhill Rd — EASTBOUND

	AM	NOON	PM	
Departing	160	0	0	
U-Turn	0	0	0	0
Left	2	0	0	0
Thru	19	0	0	0
Right	28	0	0	0

Sandhill Rd — WESTBOUND

		PM	NOON	AM
Right	0	0	0	38
Thru	0	0	0	35
Left	0	0	0	25
U-Turn	0	0	0	0
Departing		0	0	212

Double R Blvd — NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	453	0	116	549	140

CONTROL			
	0		
TEV	1414 (AM)	0 (NOON)	0 (PM)
PHF	0.84		

Cars (AM)

	U-Turn/Right	Thru	Left/Right
Southbound	9	379	49
Eastbound (Left / Thru / Right)	2	19	28
Westbound (Right / Thru / Left)	36	35	21
Northbound (Left / Thru / Right)	116	529	136

HT (AM)

Southbound	0	21	4
Eastbound (Left / Thru / Right)	0	0	0
Westbound (Right / Thru / Left)	2	0	4
Northbound (Left / Thru / Right)	0	20	4

Cars (NOON)

All movements: N/A

HT (NOON)

All movements: N/A

Cars (PM)

All movements: N/A

HT (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg (west side)	1	0	0
North leg (east side)	0	0	0
West leg (north)	0	0	0
West leg (south)	0	0	0
East leg (north)	1	0	0
East leg (south)	0	0	0
South leg (west side)	0	0	0
South leg (east side)	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Double R Blvd & Sandhill Rd

Peak Hour Turning Movement Count

ID: 19-07235-011
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Double R Blvd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	15	807	24	0	719	PM

Sandhill Rd — EASTBOUND

AM	NOON	PM	
0	0	127	
0	0	0	0
0	0	5	0
0	0	20	0
0	0	114	0
AM	NOON	PM	

CONTROL

0

	AM	NOON	PM
TEV	0	0	1894
PHF	0		0.83

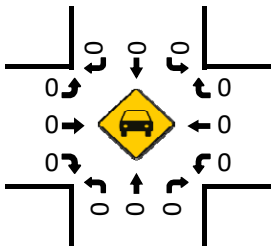
WESTBOUND — Sandhill Rd

PM	NOON	AM	
101	0	0	0
24	0	0	0
53	0	0	0
0	0	0	0
65	0	193	
PM	NOON	AM	

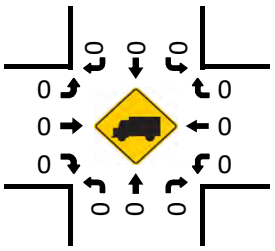
Double R Blvd — NORTHBOUND

PM	983	9	88	613	21	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

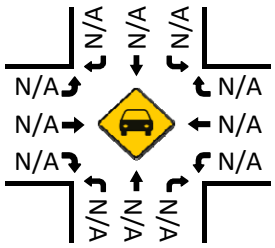
Cars (AM)



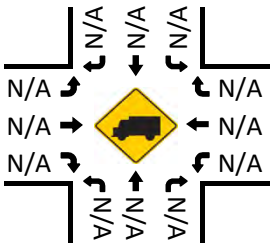
HT (AM)



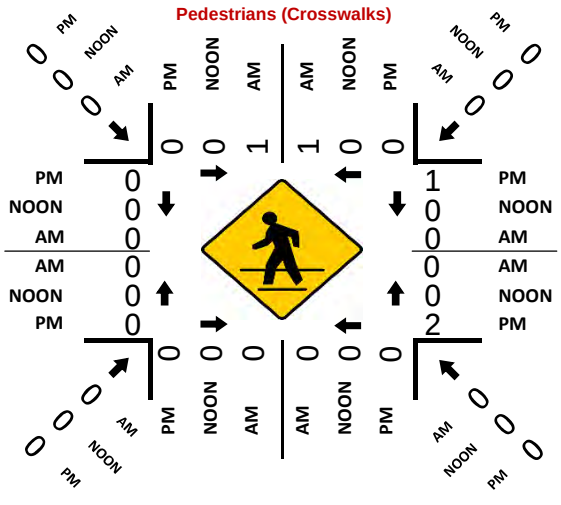
Cars (NOON)



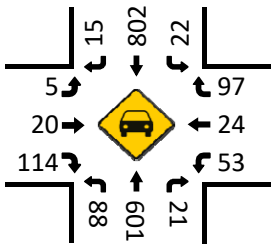
HT (NOON)



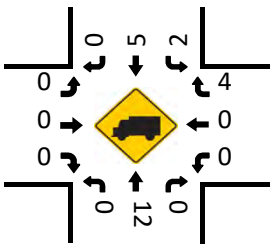
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Gateway Dr & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07286-009
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS	
AM	07:15 AM - 08:15 AM
NOON	NONE
PM	NONE

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

SOUTHBOUND — Gateway Dr

AM	163	22	61	0	627	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — S Meadows Pkwy

AM	NOON	PM	
1141	0	0	
3	0	0	0
529	0	0	0
1251	0	0	0
26	0	0	0
AM	NOON	PM	

WESTBOUND — S Meadows Pkwy

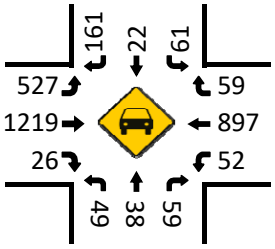
PM	NOON	AM	
0	0	60	0
0	0	921	0
0	0	53	0
0	0	3	0
0	0	1376	
PM	NOON	AM	

NORTHBOUND — Gateway Dr

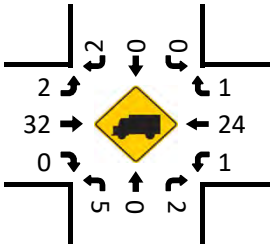
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	101	0	54	38	61	AM

CONTROL			
0			
TEV	3245	0	0
	AM	NOON	PM
PHF	0.91		

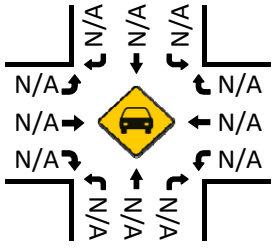
Cars (AM)



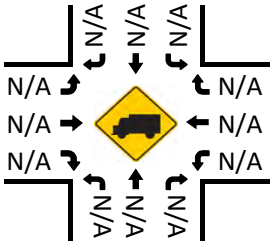
HT (AM)



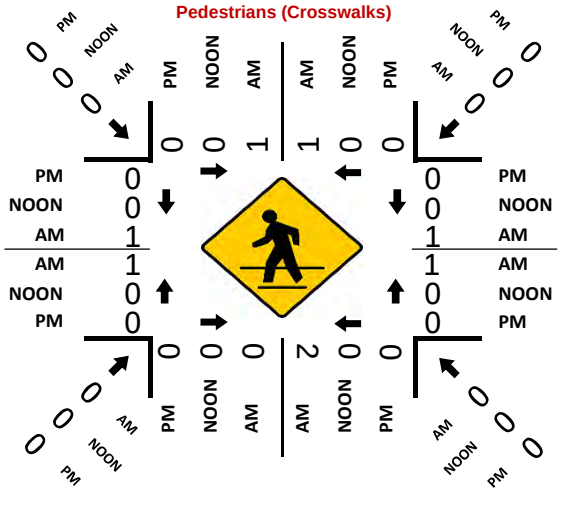
Cars (NOON)



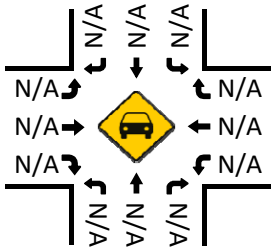
HT (NOON)



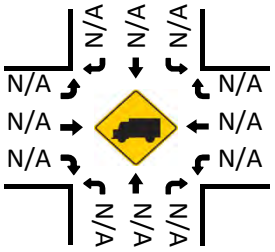
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Gateway Dr & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07235-009
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Gateway Dr

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	499	36	161	0	427	PM

EASTBOUND — S Meadows Pkwy

AM	NOON	PM	
0	0	1930	⇦
0	0	14	↶ 0
0	0	322	↱ 0
0	0	1195	→ 0
0	0	35	↴ 0
AM	NOON	PM	

WESTBOUND — S Meadows Pkwy

PM	NOON	AM	
69	0	0	↰ 0
1334	0	0	← 0
65	0	0	↰ 0
0	0	0	↶ 0
1398	0	0	⇨
PM	NOON	AM	

NORTHBOUND — Gateway Dr

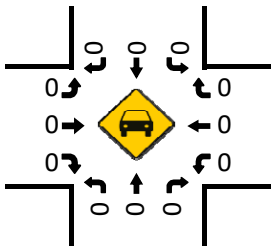
PM	136	0	83	36	42	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL

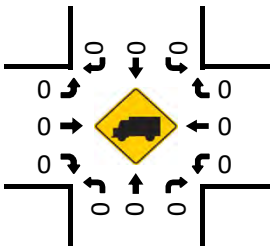
0

TEV	0 AM	0 NOON	3891 PM
PHF	0		0.96

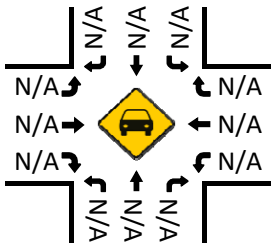
Cars (AM)



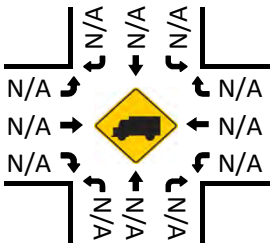
HT (AM)



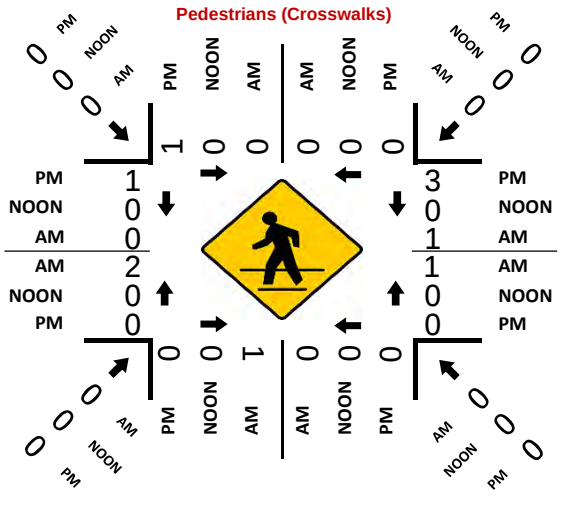
Cars (NOON)



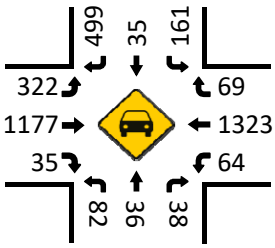
HT (NOON)



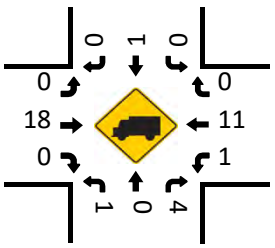
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Double R Blvd & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07286-008
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS	
AM	07:30 AM - 08:30 AM
NOON	NONE
PM	NONE

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Double R Blvd — SOUTHBOUND

AM	154	227	71	5	947	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

S Meadows Pkwy — EASTBOUND

AM	NOON	PM		
988	0	0		
24	0	0	0	
521	0	0	0	
373	0	0	0	
419	0	0	0	
AM	NOON	PM		

CONTROL

0

TEV	3191	0	0
	AM	NOON	PM
PHF	0.88		

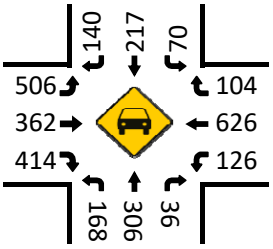
WESTBOUND — S Meadows Pkwy

PM	NOON	AM		
0	0	104	0	
0	0	637	0	
0	0	128	0	
0	0	0	0	
0	0	481		
PM	NOON	AM		

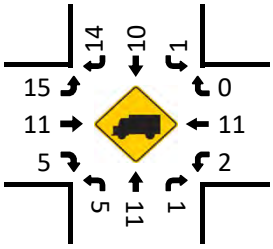
Double R Blvd — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	775	1	173	317	37	AM

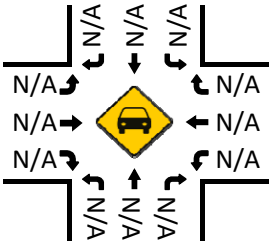
Cars (AM)



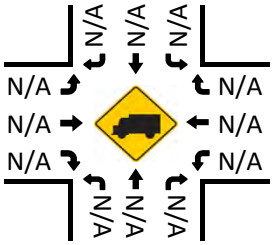
HT (AM)



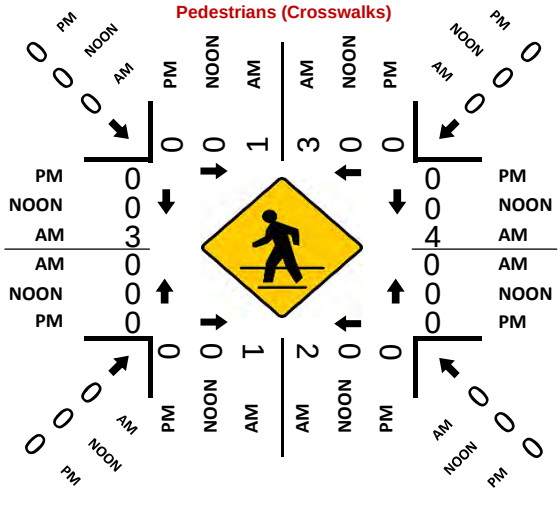
Cars (NOON)



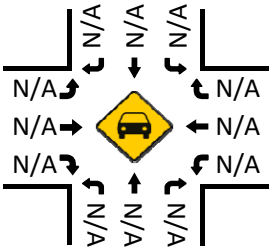
HT (NOON)



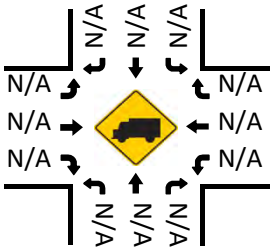
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Double R Blvd & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07235-008
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS	
AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Double R Blvd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	402	470	310	2	680	PM

S Meadows Pkwy — EASTBOUND

AM	NOON	PM	
0	0	1445	
0	0	58	0
0	0	296	0
0	0	854	0
0	0	269	0

S Meadows Pkwy — WESTBOUND

PM	NOON	AM	
75	0	0	0
564	0	0	0
93	0	0	0
10	0	0	0
1311	0	0	

CONTROL

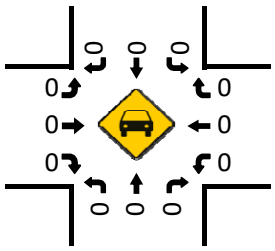
0

TEV	0 AM	0 NOON	4273 PM
PHF	0		0.96

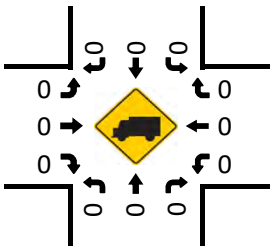
Double R Blvd — NORTHBOUND

PM	837	5	421	307	137	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

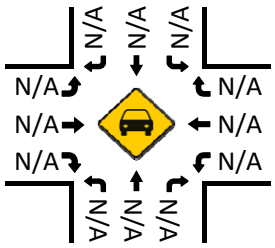
Cars (AM)



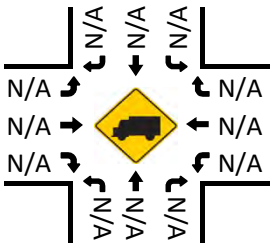
HT (AM)



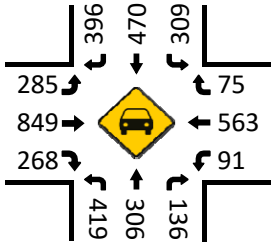
Cars (NOON)



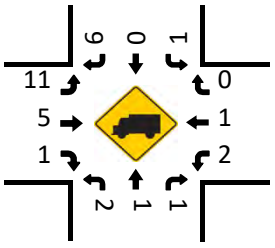
HT (NOON)



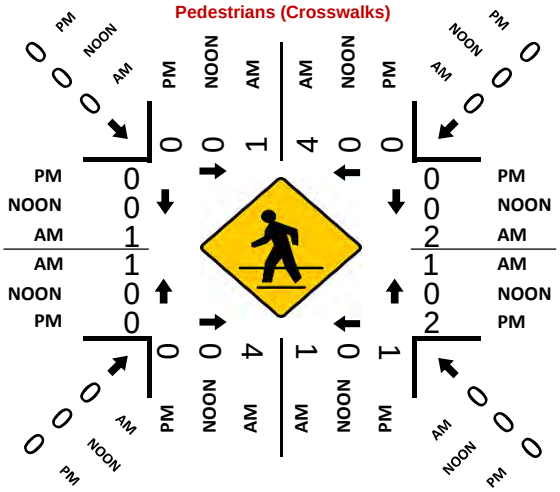
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Double Diamond Pkwy & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07286-007
City: Reno

Day: Tuesday
Date: 08/27/2019

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

Double Diamond Pkwy – SOUTHBOUND

	Right	Thru	Left	U-Turn	Exit
AM	42	82	96	3	938
NOON	0	0	0	0	0
PM	0	0	0	0	0
Bikes	0	0	0	0	

S Meadows Pkwy – EASTBOUND

	AM	NOON	PM	Bikes
Exit	820	0	0	
U-Turn	0	0	0	0
Left	126	0	0	0
Thru	203	0	0	0
Right	68	0	0	0

S Meadows Pkwy – WESTBOUND

	PM	NOON	AM	Bikes
Right	0	0	509	0
Thru	0	0	575	0
Left	0	0	14	0
U-Turn	0	0	0	0
Exit	0	0	334	

Double Diamond Pkwy – NORTHBOUND

	Exit	U-Turn	Left	Thru	Right
Bikes		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	164	0	203	300	35

CONTROL

0

	AM	NOON	PM
TEV	2256	0	0
PHF	0.96		

Cars (AM)

	Left	Thru	Right
Southbound	86	79	38
Eastbound	124	197	62
Westbound	14	569	496
Northbound	200	298	35

HT (AM)

	Left	Thru	Right
Southbound	10	3	4
Eastbound	2	6	6
Westbound	0	6	13
Northbound	3	2	0

Cars (NOON)

All movements: N/A

HT (NOON)

All movements: N/A

Cars (PM)

All movements: N/A

HT (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg (west side)	0	0	0
North leg (east side)	0	0	0
West leg (north side)	4	0	0
West leg (south side)	2	0	0
East leg (north side)	0	0	0
East leg (south side)	0	0	0
South leg (west side)	0	0	0
South leg (east side)	4	0	0
Northwest diagonal	0	0	0
Northeast diagonal	0	0	0
Southwest diagonal	0	0	0
Southeast diagonal	0	0	0

Prepared by National Data & Surveying Services

Double Diamond Pkwy & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07235-007
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Double Diamond Pkwy

SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	197	360	374	11	454	PM

S Meadows Pkwy

EASTBOUND

AM	NOON	PM	
0	0	619	⇦
0	0	1	↶ 0
0	0	102	↱ 0
0	0	517	→ 0
0	0	329	↴ 0
AM	NOON	PM	

CONTROL

0

TEV	0 AM	0 NOON	2663 PM
PHF	0		0.92

WESTBOUND

PM	NOON	AM	
188	0	0	↰ 0
312	0	0	← 0
5	0	0	↰ 0
0	0	0	↶ 0
896	0	0	⇨
PM	NOON	AM	

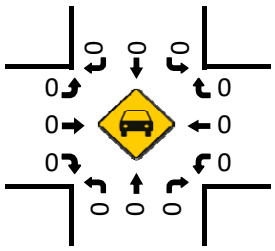
S Meadows Pkwy

PM	694	0	109	153	5	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

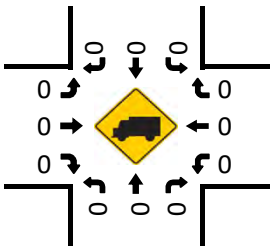
NORTHBOUND

Double Diamond Pkwy

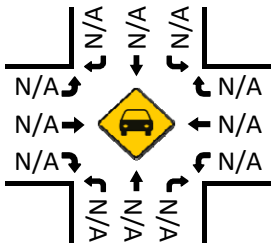
Cars (AM)



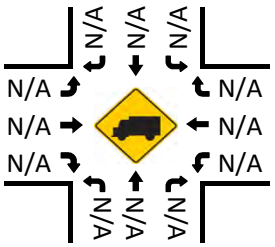
HT (AM)



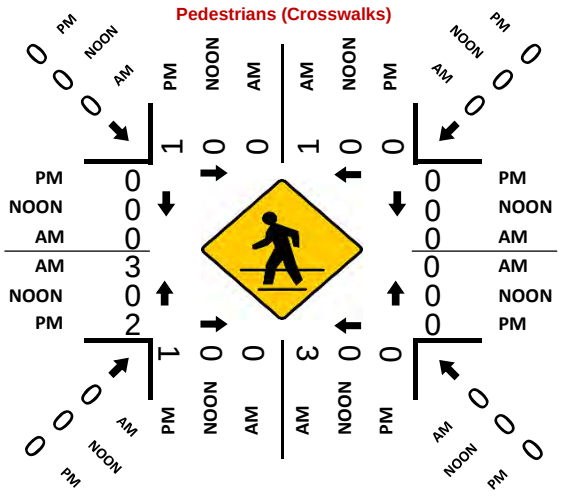
Cars (NOON)



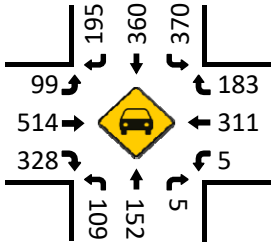
HT (NOON)



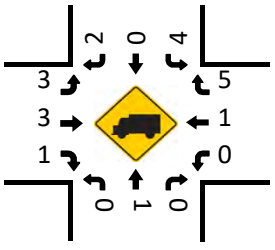
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Wilbur May Pkwy & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07286-006
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS	
	07:00 AM - 08:00 AM
	NONE
	NONE

COUNT PERIODS	
	07:00 AM - 09:00 AM
	NONE
	NONE

Wilbur May Pkwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

S Meadows Pkwy — EASTBOUND

AM	NOON	PM	
1074	0	0	⇦
0	0	0	↰ 0
0	0	0	↱ 0
238	0	0	→ 0
153	0	0	↴ 0

CONTROL

0

TEV	1772	0	0
	AM	NOON	PM
PHF	0.79		

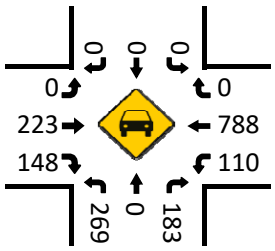
S Meadows Pkwy — WESTBOUND

PM	NOON	AM	
0	0	0	↰ 0
0	0	797	← 0
0	0	121	↱ 0
0	0	1	↴ 0
0	0	424	⇨

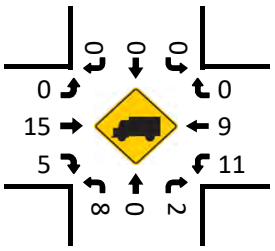
Wilbur May Pkwy — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	274	0	277	0	185	AM

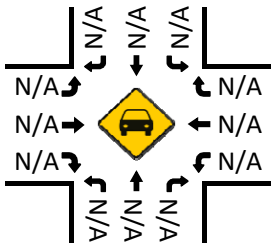
Cars (AM)



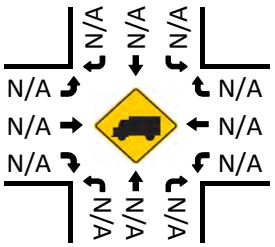
HT (AM)



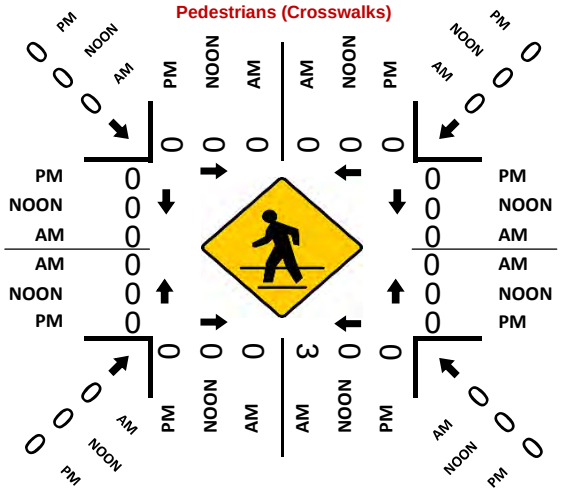
Cars (NOON)



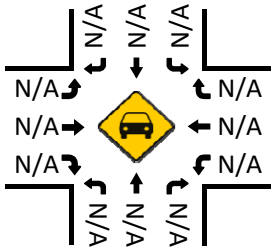
HT (NOON)



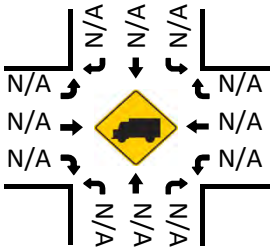
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Wilbur May Pkwy — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	274	0	277	0	185	AM

Prepared by National Data & Surveying Services

Wilbur May Pkwy & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07235-006
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Wilbur May Pkwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

S Meadows Pkwy — EASTBOUND

AM	NOON	PM	
0	0	501	⇦
0	0	0	↶ 0
0	0	0	↱ 0
0	0	737	→ 0
0	0	164	↴ 0
AM	NOON	PM	

CONTROL

0

TEV	0 AM	0 NOON	1459 PM
PHF	0		0.91

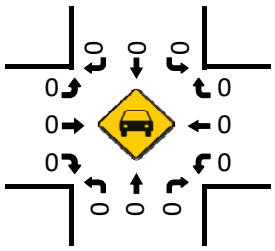
S Meadows Pkwy — WESTBOUND

PM	NOON	AM	
0	0	0	↶ 0
417	0	0	← 0
35	0	0	↰ 0
0	0	0	↴ 0
758	0	0	⇨
PM	NOON	AM	

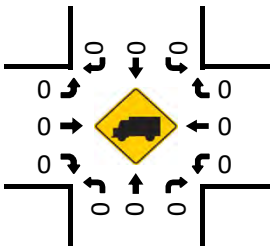
Wilbur May Pkwy — NORTHBOUND

PM	200	1	84	0	21	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

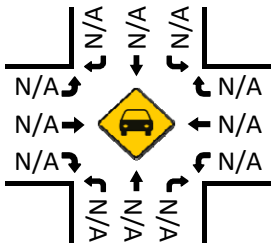
Cars (AM)



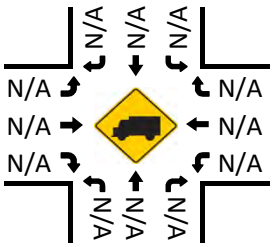
HT (AM)



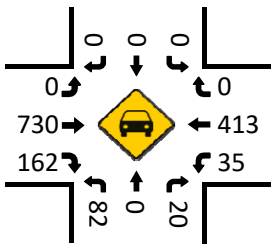
Cars (NOON)



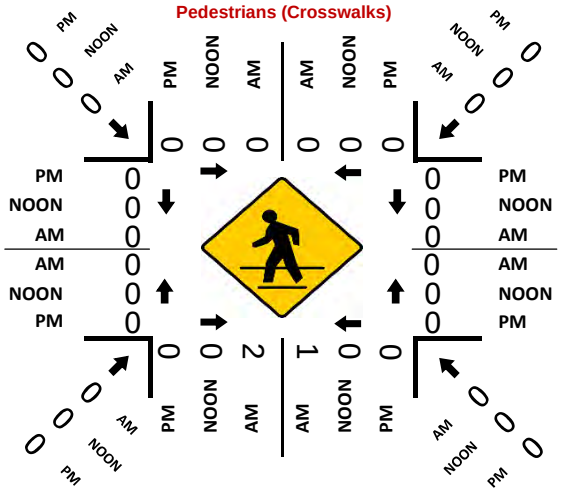
HT (NOON)



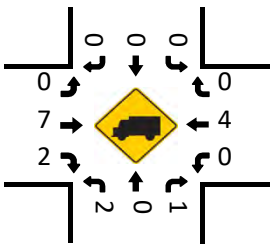
Cars (PM)



Pedestrians (Crosswalks)



HT (PM)



Prepared by National Data & Surveying Services

Echo Valley Pkwy & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07286-005
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Echo Valley Pkwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

S Meadows Pkwy — EASTBOUND

AM	NOON	PM	
972	0	0	
0	0	0	0
0	0	0	0
390	0	0	0
47	0	0	0
AM	NOON	PM	

S Meadows Pkwy — WESTBOUND

PM	NOON	AM	
0	0	0	0
0	0	762	0
0	0	8	0
0	0	0	0
0	0	474	
PM	NOON	AM	

CONTROL

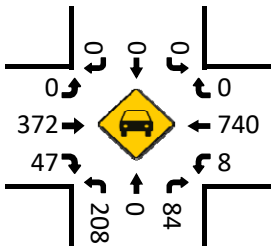
0

TEV	1502	0	0
	AM	NOON	PM
PHF	0.93		

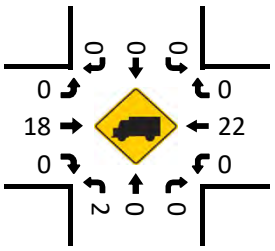
Echo Valley Pkwy — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	56	1	210	0	84	AM

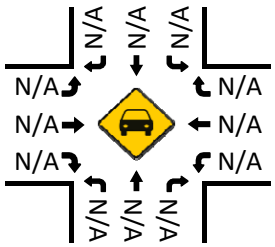
Cars (AM)



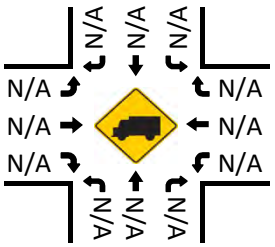
HT (AM)



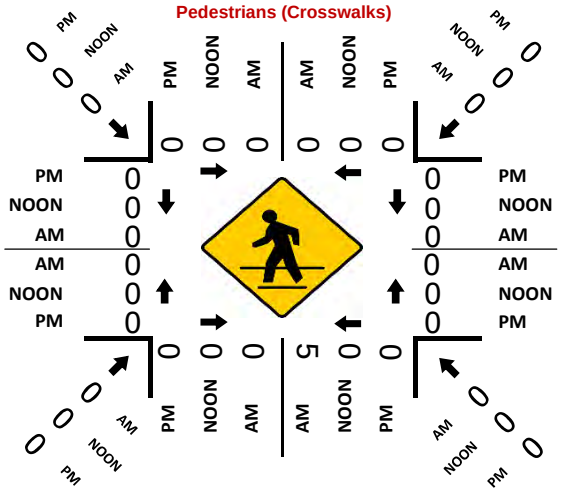
Cars (NOON)



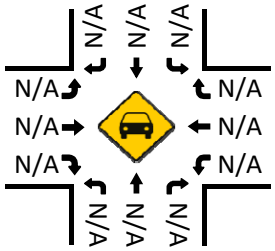
HT (NOON)



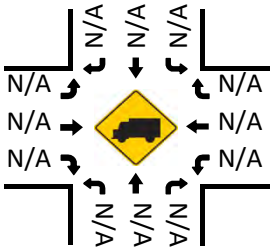
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Echo Valley Pkwy & S Meadows Pkwy

Peak Hour Turning Movement Count

ID: 19-07235-005
City: Reno

Day: Tuesday
Date: 06/18/2019

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Echo Valley Pkwy – SOUTHBOUND

	Right	Thru	Left	U-Turn	Out
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
Bikes	0	0	0	0	

S Meadows Pkwy – EASTBOUND

	AM	NOON	PM	Bikes
Out	0	0	455	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	0	545	0
Right	0	0	216	0

S Meadows Pkwy – WESTBOUND

	PM	NOON	AM	Bikes
Right	0	0	0	0
Thru	374	0	0	0
Left	15	0	0	0
U-Turn	0	0	0	0
Out	560	0	0	

Echo Valley Pkwy – NORTHBOUND

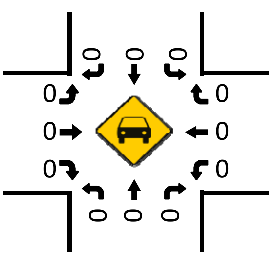
	Out	U-Turn	Left	Thru	Right
Bikes		0	0	0	0
PM	231	0	81	0	15
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

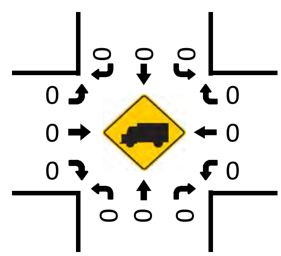
0

	AM	NOON	PM
TEV	0	0	1246
PHF	0		0.89

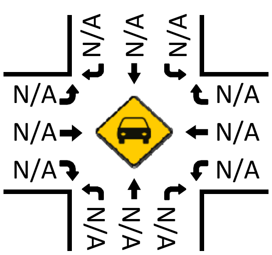
Cars (AM)



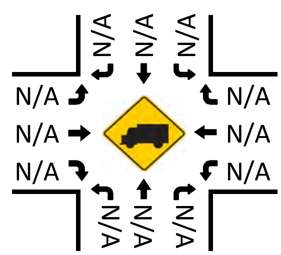
HT (AM)



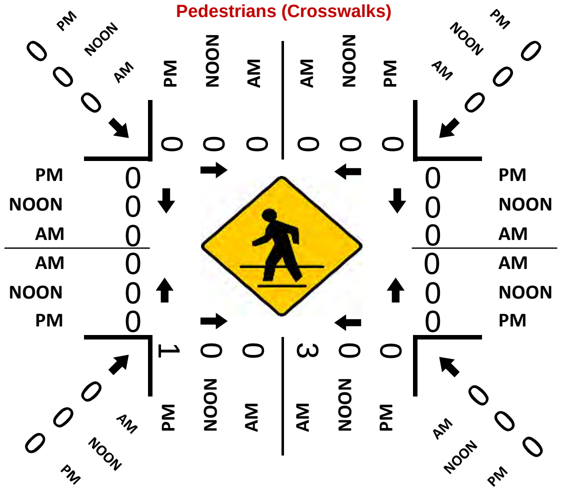
Cars (NOON)



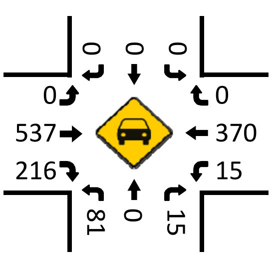
HT (NOON)



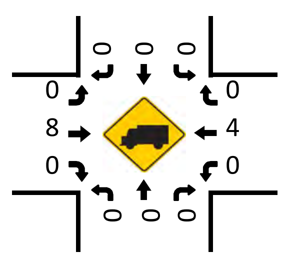
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Veterans Pkwy & Long Meadow Dr

Peak Hour Turning Movement Count

ID: 19-07286-003
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Veterans Pkwy — SOUTHBOUND

AM	13	665	38	3	822	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Long Meadow Dr — EASTBOUND

AM	NOON	PM	
64	0	0	
0	0	0	0
11	0	0	0
1	0	0	0
101	0	0	0
AM	NOON	PM	

CONTROL

0

TEV	1762	0	0
	AM	NOON	PM
PHF	0.86		

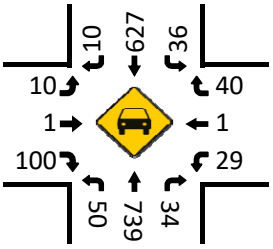
WESTBOUND — Long Meadow Dr

PM	NOON	AM	
0	0	44	0
0	0	1	0
0	0	32	0
0	0	0	0
PM	NOON	AM	
0	0	78	

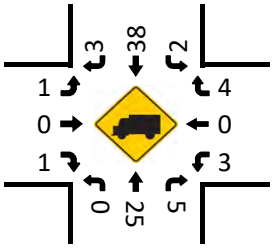
Veterans Pkwy — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	798	0	50	764	39	AM

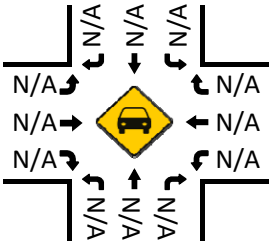
Cars (AM)



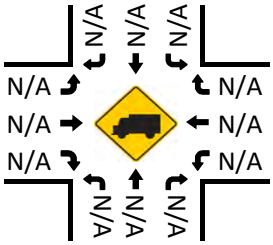
HT (AM)



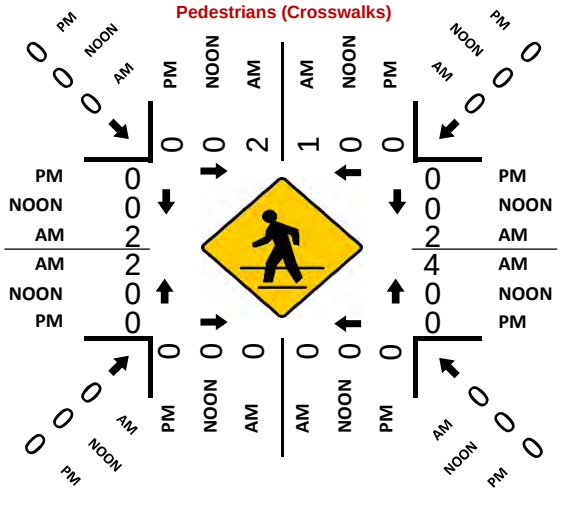
Cars (NOON)



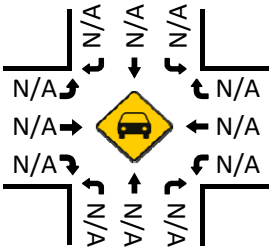
HT (NOON)



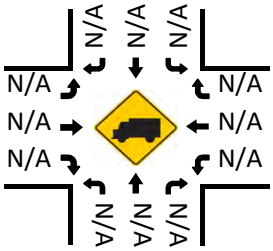
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Veterans Pkwy & Long Meadow Dr

Peak Hour Turning Movement Count

ID: 19-07235-003
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Veterans Pkwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	28	748	28	0	561	PM

Long Meadow Dr — EASTBOUND

AM	NOON	PM	
0	0	89	⇦
0	0	0	↶ 0
0	0	14	↱ 0
0	0	0	→ 0
0	0	39	↴ 0
AM	NOON	PM	

CONTROL

0

TEV	0 AM	0 NOON	1506 PM
PHF	0		0.93

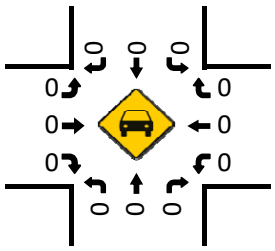
Long Meadow Dr — WESTBOUND

PM	NOON	AM	
21	0	0	0 ↰
3	0	0	0 ←
25	0	0	0 ↰
0	0	0	0 ↶
44	0	0	⇨
PM	NOON	AM	

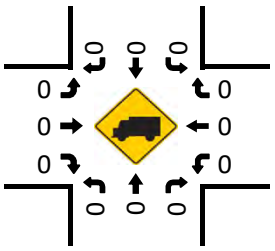
Veterans Pkwy — NORTHBOUND

PM	812	0	58	526	16	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

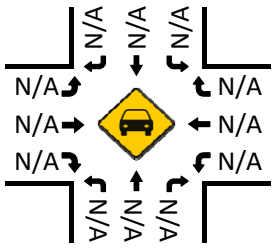
Cars (AM)



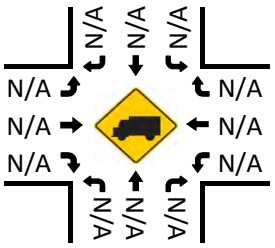
HT (AM)



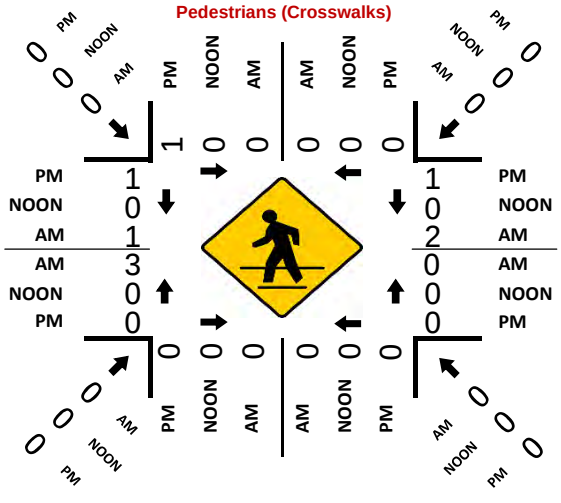
Cars (NOON)



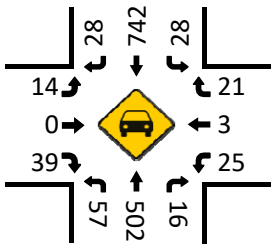
HT (NOON)



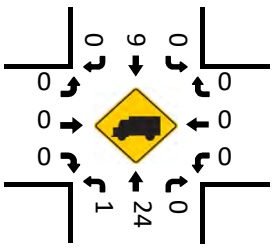
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Double R Blvd & Double Diamond Pkwy

Peak Hour Turning Movement Count

ID: 19-07286-012
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS	
AM	07:30 AM - 08:30 AM
NOON	NONE
PM	NONE

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

SOUTHBOUND — Double R Blvd

AM	2	223	27	0	773	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Double Diamond Pkwy

AM	NOON	PM	
12	0	0	⇦
0	0	0	↶ 0
3	0	0	↱ 0
0	0	0	→ 0
4	0	0	↴ 0
AM	NOON	PM	

WESTBOUND — Double Diamond Pkwy

PM	NOON	AM	
0	0	152	↰ 0
0	0	2	← 0
0	0	487	↶ 0
0	0	0	↩ 0
0	0	178	⇨
PM	NOON	AM	

NORTHBOUND — Double R Blvd

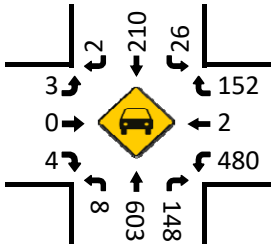
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	714	0	8	618	151	AM

CONTROL

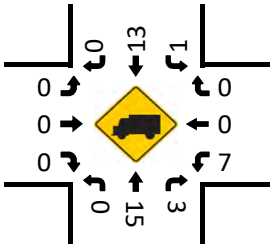
0

		AM	NOON	PM
TEV	1677	0	0	
PHF	0.90			

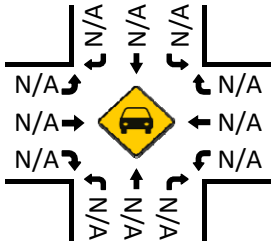
Cars (AM)



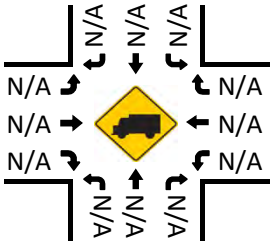
HT (AM)



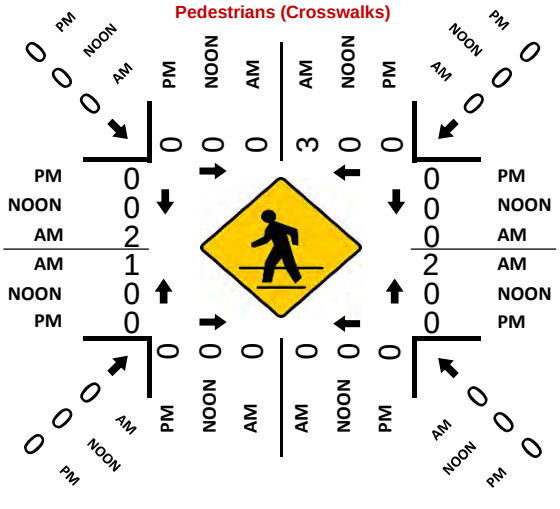
Cars (NOON)



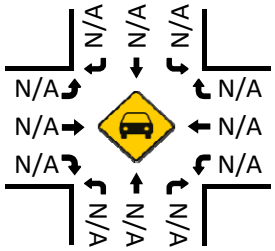
HT (NOON)



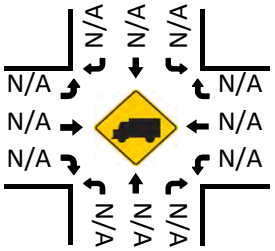
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Double R Blvd & Double Diamond Pkwy

Peak Hour Turning Movement Count

ID: 19-07235-012
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Double R Blvd

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	37	936	208	0	363	PM

EASTBOUND — Double Diamond Pkwy

AM	NOON	PM	
0	0	77	⇦
0	0	0	↶ 0
0	0	9	↱ 0
0	0	25	→ 0
0	0	7	↴ 0
AM	NOON	PM	

WESTBOUND — Double Diamond Pkwy

PM	NOON	AM	
53	0	0	↰ 0
14	0	0	← 0
245	0	0	↰ 0
0	0	0	↶ 0
640	0	0	⇨
PM	NOON	AM	

CONTROL

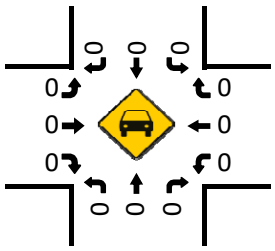
0

TEV	0 AM	0 NOON	2268 PM
PHF	0		0.89

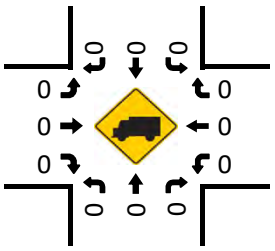
NORTHBOUND — Double R Blvd

PM	1188	0	26	301	407	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

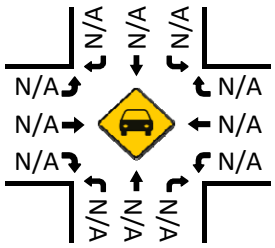
Cars (AM)



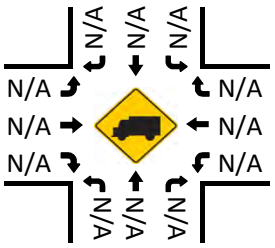
HT (AM)



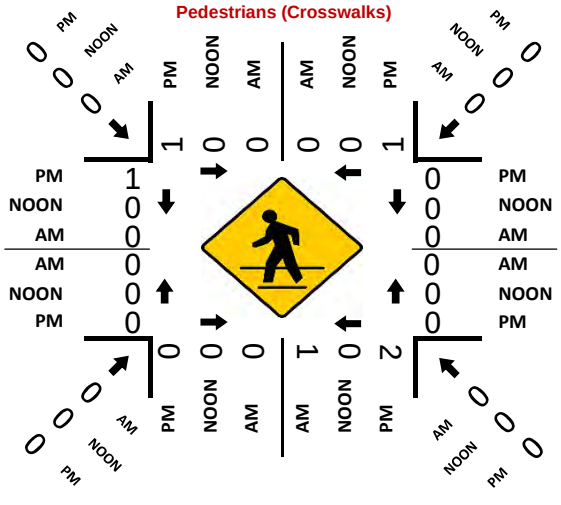
Cars (NOON)



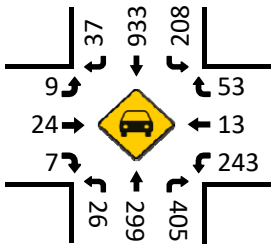
HT (NOON)



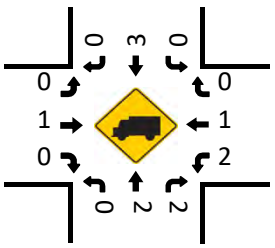
Pedestrians (Crosswalks)



Cars (PM)



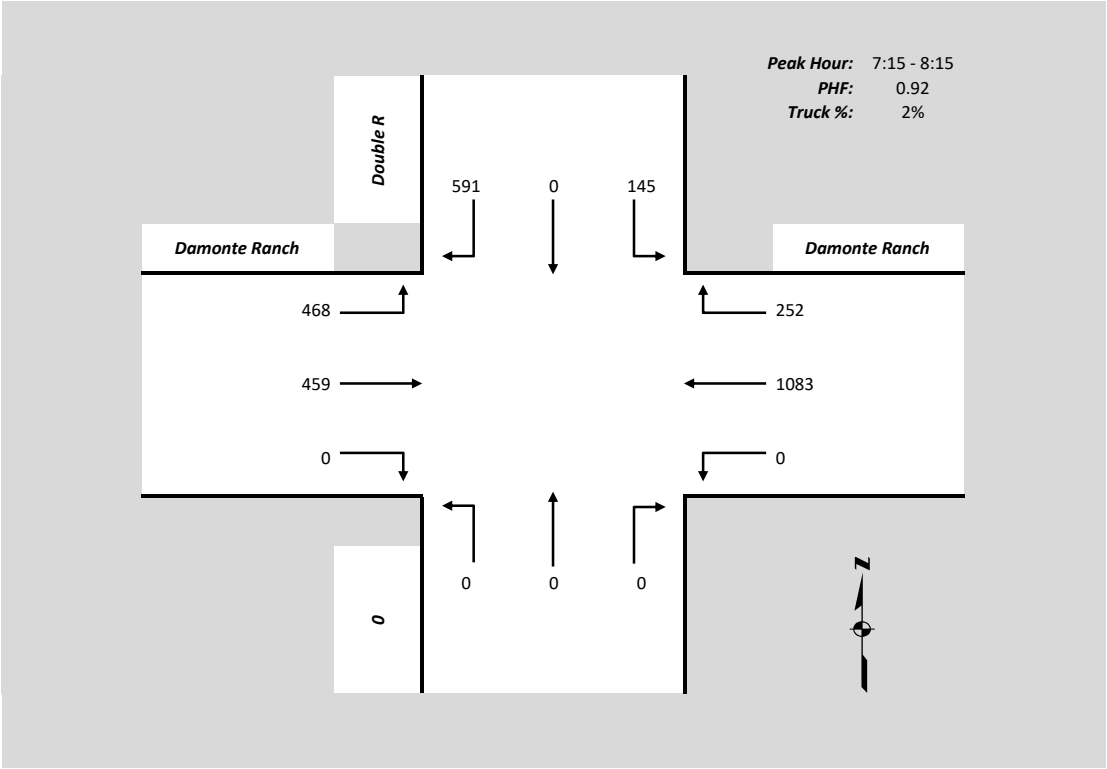
HT (PM)



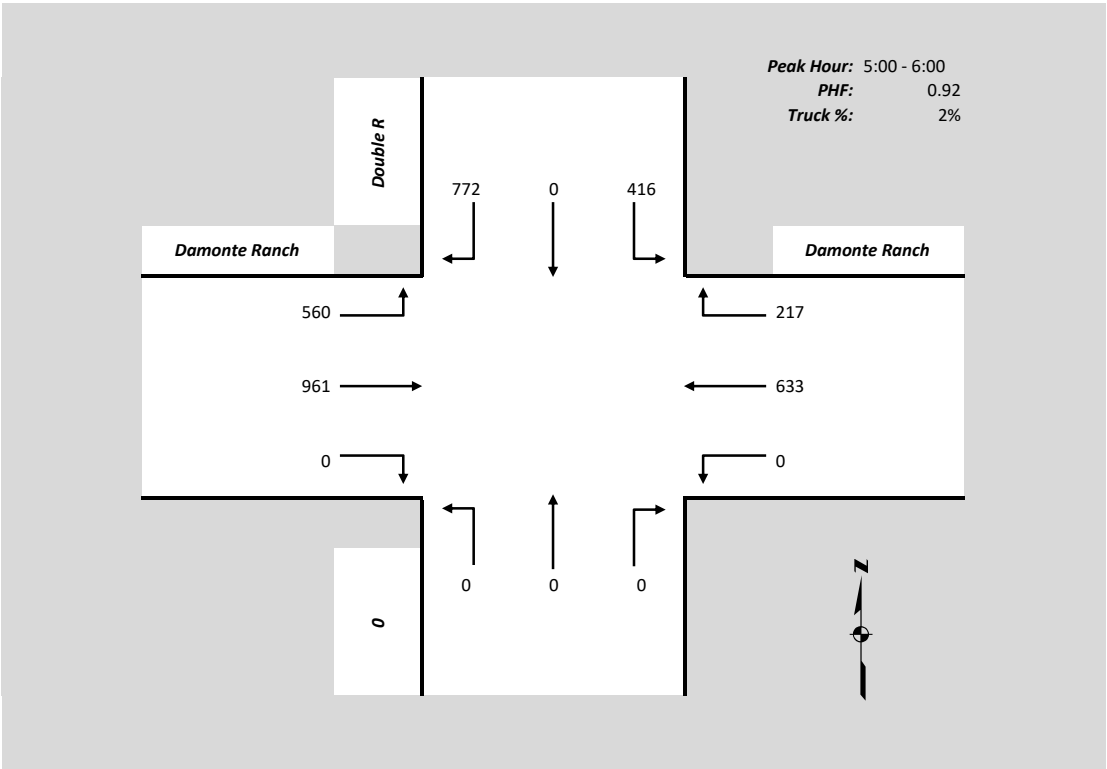
Intersection: Damonte Ranch & Double R

Date Collected: 1/22/2019

AM PEAK HOUR TURNING MOVEMENT VOLUME



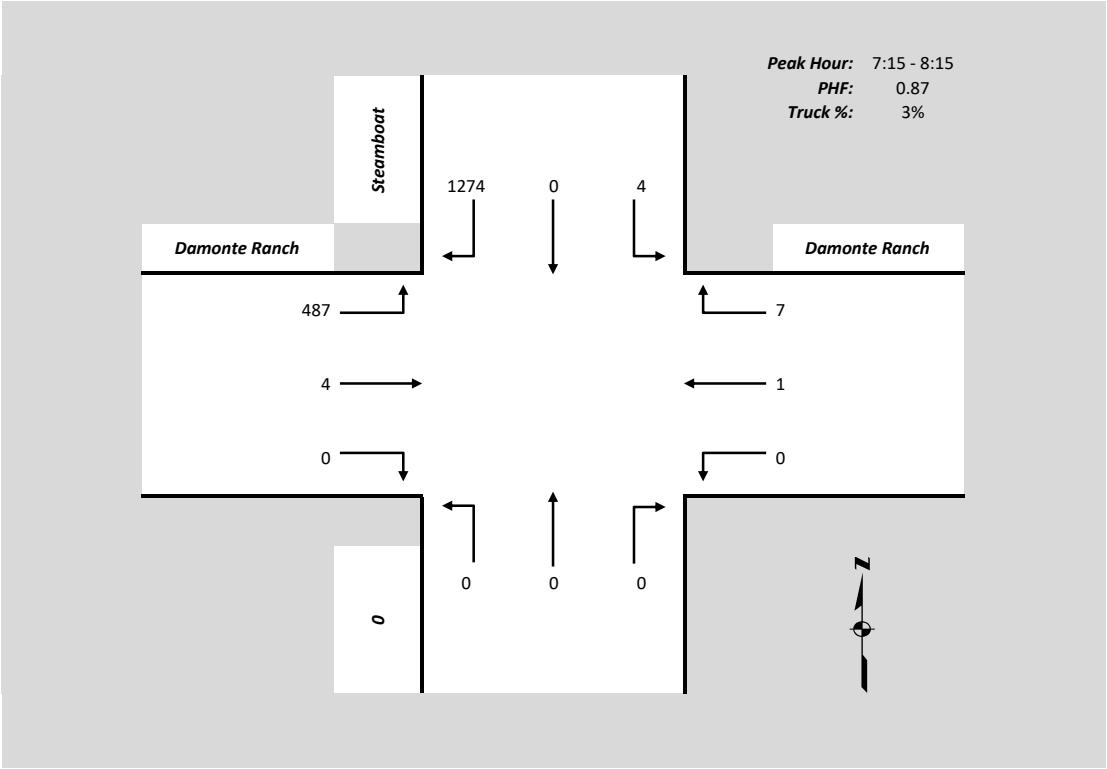
PM PEAK HOUR TURNING MOVEMENT VOLUME



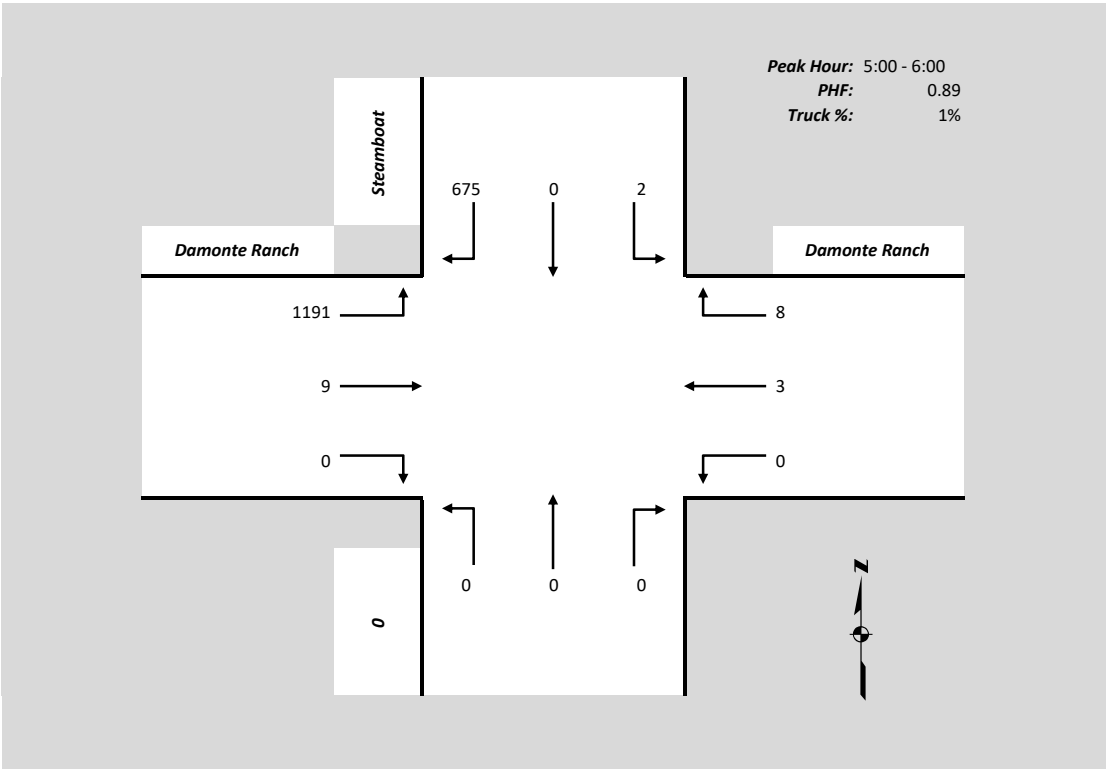
Intersection: Damonte Ranch & Steamboat

Date Collected: 1/22/2018

AM PEAK HOUR TURNING MOVEMENT VOLUME



PM PEAK HOUR TURNING MOVEMENT VOLUME



Prepared by National Data & Surveying Services

Veterans Pkwy & Steamboat Pkwy

Peak Hour Turning Movement Count

ID: 19-07286-004
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Veterans Pkwy — SOUTHBOUND

AM	243	435	242	2	670	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Steamboat Pkwy

AM	NOON	PM	
1391	0	0	⇦
0	0	0	↶ 0
111	0	0	↱ 0
316	0	0	→ 0
173	0	0	↴ 0
AM	NOON	PM	

WESTBOUND — Steamboat Pkwy

PM	NOON	AM	
0	0	66	0 ↰
0	0	683	0 ←
0	0	79	0 ↶
0	0	0	0 ↩
0	0	585	⇨
PM	NOON	AM	

CONTROL

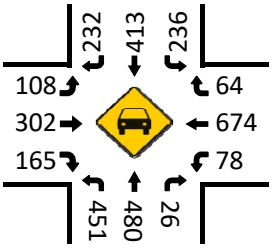
0

TEV	3333	0	0
	AM	NOON	PM
PHF	0.92		

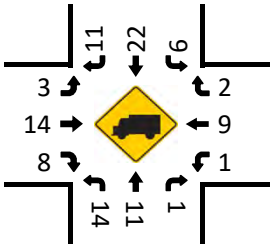
NORTHBOUND — Veterans Pkwy

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	687	0	465	491	27	AM

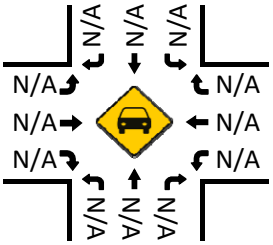
Cars (AM)



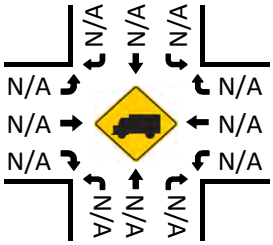
HT (AM)



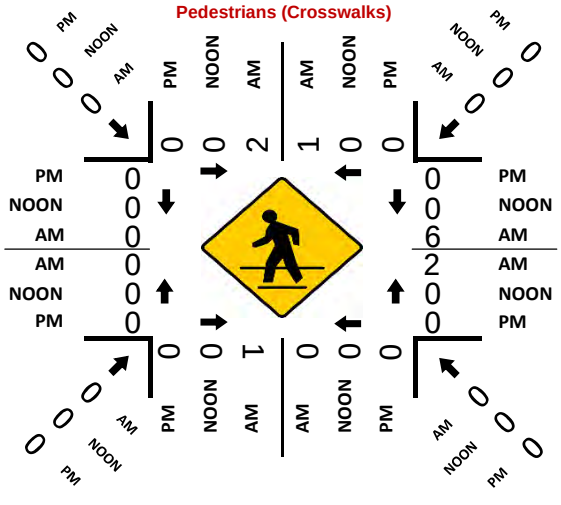
Cars (NOON)



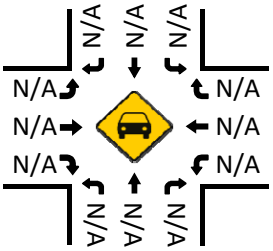
HT (NOON)



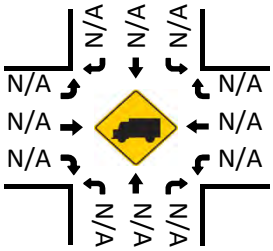
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Veterans Pkwy & Steamboat Pkwy

Peak Hour Turning Movement Count

ID: 19-07235-004
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Veterans Pkwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	161	437	115	2	601	PM

EASTBOUND — Steamboat Pkwy

AM	NOON	PM	
0	0	780	⇦
0	0	6	↰ 0
0	0	199	↑ 0
0	0	629	→ 0
0	0	570	↱ 0
AM	NOON	PM	

WESTBOUND — Steamboat Pkwy

PM	NOON	AM	
23	0	0	↰ 0
351	0	0	← 0
44	0	0	↰ 0
0	0	0	↰ 0
812	0	0	⇨
PM	NOON	AM	

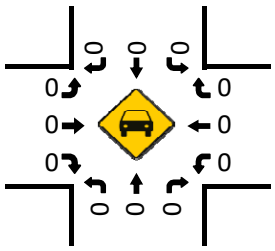
CONTROL: 0

TEV	2347	0	3244
	AM	NOON	PM
PHF	0.91		0.96

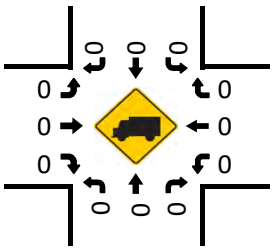
Veterans Pkwy — NORTHBOUND

PM	1051	0	262	377	68	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

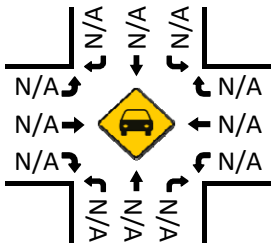
Cars (AM)



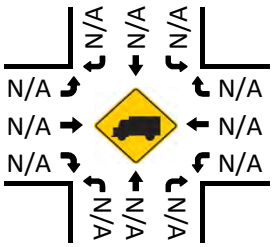
HT (AM)



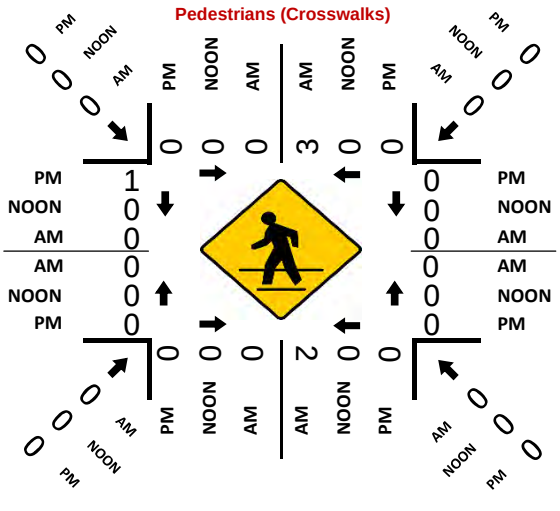
Cars (NOON)



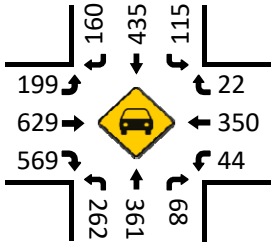
HT (NOON)



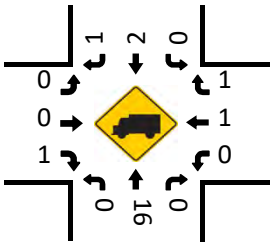
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Rio Wrangler Pkwy & Steamboat Pkwy

Peak Hour Turning Movement Count

ID: 19-07286-013
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Rio Wrangler Pkwy — SOUTHBOUND

AM	211	32	1	1	70	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Steamboat Pkwy — EASTBOUND

AM	NOON	PM	
717	0	0	⇦
5	0	0	↰ 0
59	0	0	↱ 0
14	0	0	→ 0
500	0	0	↴ 0
AM	NOON	PM	

CONTROL

0

	AM	NOON	PM
TEV	1340	0	0
PHF	0.85		

WESTBOUND — Steamboat Pkwy

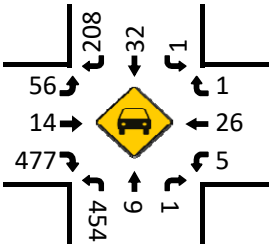
PM	NOON	AM	
0	0	1	0 ↰
0	0	27	0 ←
0	0	5	0 ↶
0	0	0	0 ↩
0	0	16	⇨
PM	NOON	AM	

Rio Wrangler Pkwy — NORTHBOUND

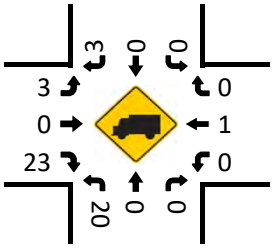
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	537	0	474	9	1	AM

Rio Wrangler Pkwy

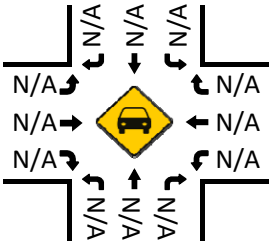
Cars (AM)



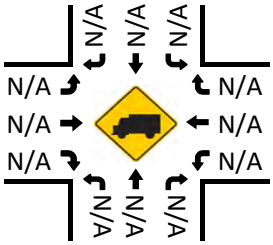
HT (AM)



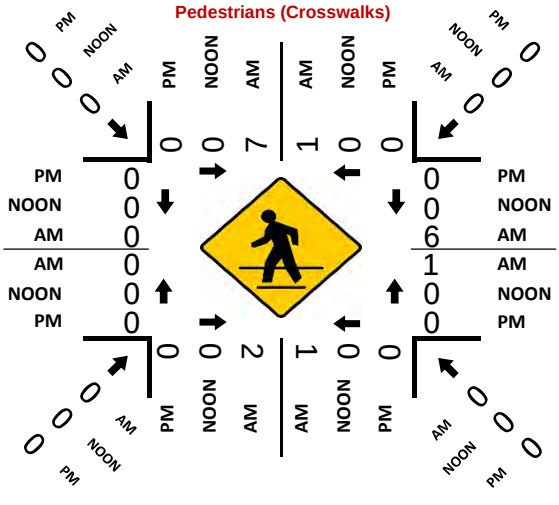
Cars (NOON)



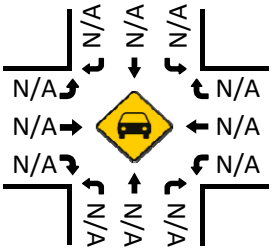
HT (NOON)



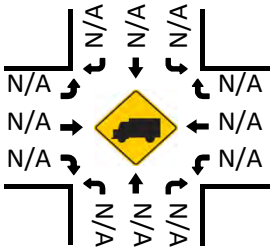
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Rio Wrangler Pkwy & Steamboat Pkwy

Peak Hour Turning Movement Count

ID: 19-07235-013
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Rio Wrangler Pkwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	92	6	0	1	197	PM

Steamboat Pkwy — EASTBOUND

AM	NOON	PM	
0	0	0	0
0	0	184	0
0	0	28	0
0	0	306	0
0	0	263	

Steamboat Pkwy — WESTBOUND

PM	NOON	AM	
0	0	0	0
9	0	0	0
2	0	0	0
0	0	0	0
29	0	0	

CONTROL

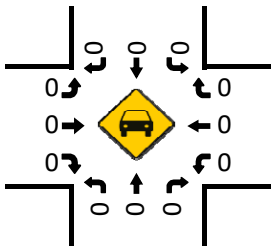
0

TEV	0 AM	0 NOON	803 PM
PHF	0		0.89

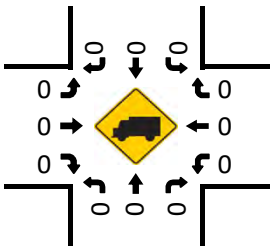
Rio Wrangler Pkwy — NORTHBOUND

PM	314	0	162	12	1	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

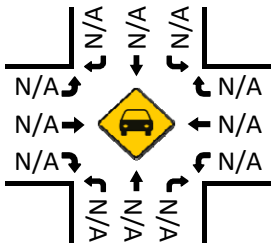
Cars (AM)



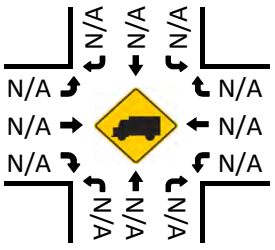
HT (AM)



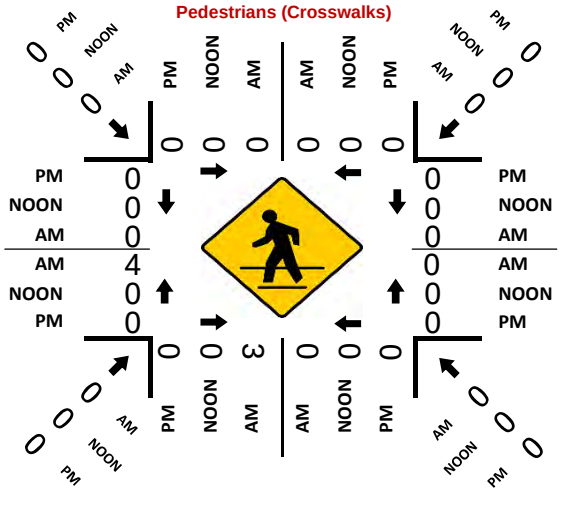
Cars (NOON)



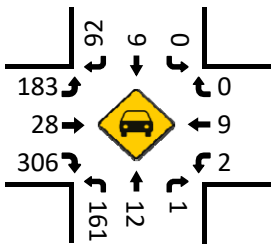
HT (NOON)



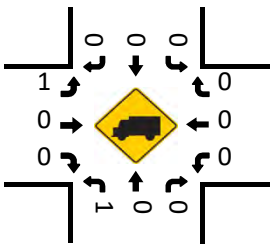
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Rio Wrangler Pkwy & McCauley Ranch Blvd

Peak Hour Turning Movement Count

ID: 19-07286-010
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS	
AM	07:00 AM - 08:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Rio Wrangler Pkwy — SOUTHBOUND

AM	0	223	301	0	435	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

McCauley Ranch Blvd — EASTBOUND

AM	NOON	PM	
0	0	0	⇦
0	0	0	↶ 0
0	0	0	→ 0
0	0	0	→ 0
0	0	0	↷ 0
AM	NOON	PM	

McCauley Ranch Blvd — WESTBOUND

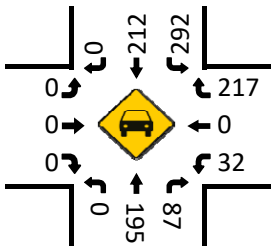
PM	NOON	AM	
0	0	222	↷ 0
0	0	0	← 0
0	0	35	↶ 0
0	0	0	↶ 0
0	0	391	⇨
PM	NOON	AM	

Rio Wrangler Pkwy — NORTHBOUND

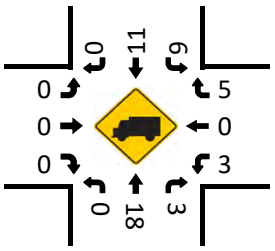
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	258	0	0	213	90	AM

CONTROL			
0			
TEV	1084	0	0
	AM	NOON	PM
PHF	0.76		

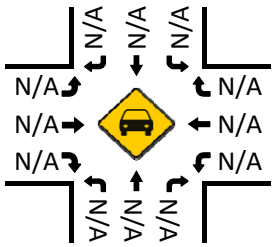
Cars (AM)



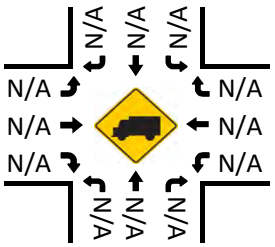
HT (AM)



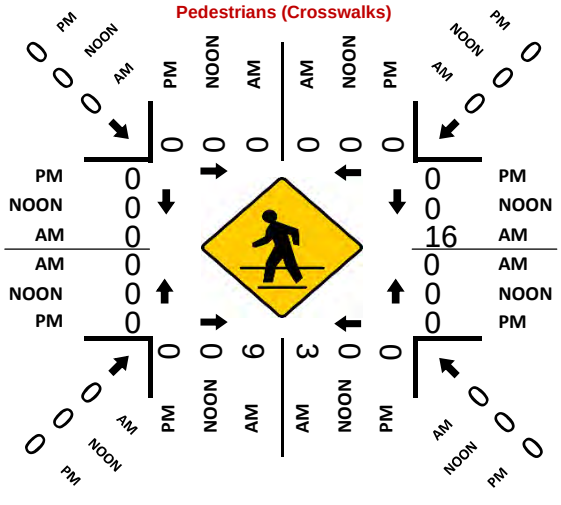
Cars (NOON)



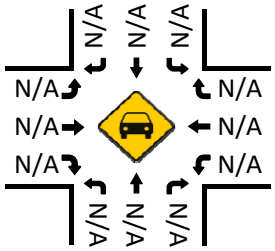
HT (NOON)



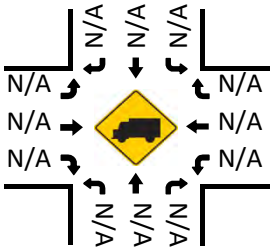
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Rio Wrangler Pkwy & McCauley Ranch Blvd

Peak Hour Turning Movement Count

ID: 19-07235-010
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS	
AM	07:45 AM - 08:45 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Rio Wrangler Pkwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	142	63	0	152	PM

McCauley Ranch Blvd — EASTBOUND

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

CONTROL

0

	AM	NOON	PM
TEV	0	0	388
PHF	0		0.90

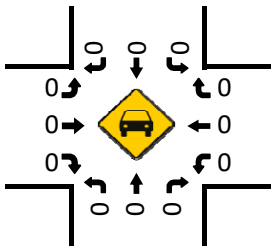
McCauley Ranch Blvd — WESTBOUND

PM	NOON	AM	
44	0	0	0
0	0	0	0
11	0	0	0
0	0	0	0
83	0	0	
PM	NOON	AM	

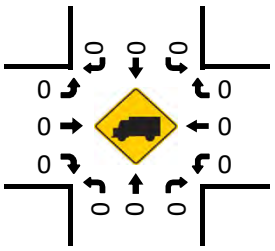
Rio Wrangler Pkwy — NORTHBOUND

PM	153	0	0	108	20	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

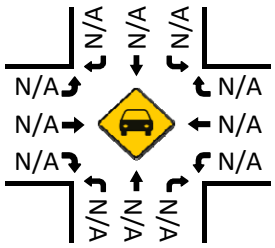
Cars (AM)



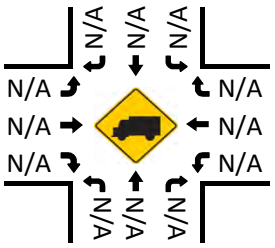
HT (AM)



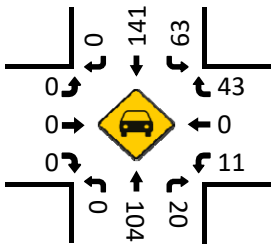
Cars (NOON)



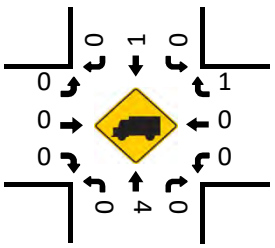
HT (NOON)



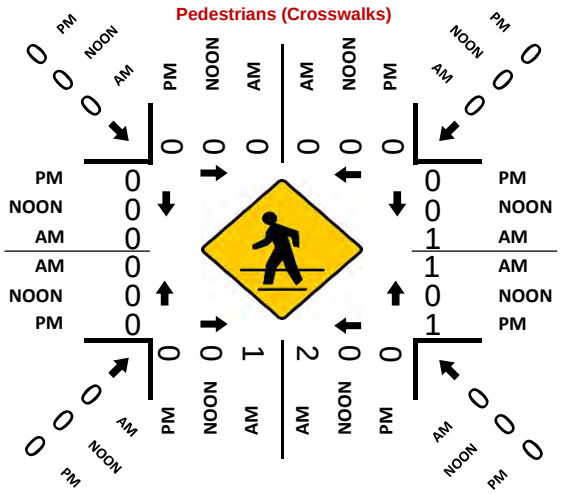
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

S Virginia St & Geiger Grade Rd

Peak Hour Turning Movement Count

ID: 19-07286-002
City: Reno

Day: Tuesday
Date: 08/27/2019

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

SOUTHBOUND — S Virginia St

AM	118	132	266	4	1476	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Geiger Grade Rd

AM	NOON	PM	
753	0	0	
1	0	0	0
81	0	0	0
183	0	0	0
24	0	0	0

WESTBOUND — Geiger Grade Rd

PM	NOON	AM	
0	0	925	0
0	0	580	0
0	0	116	0
0	0	2	0
0	0	573	

NORTHBOUND — S Virginia St

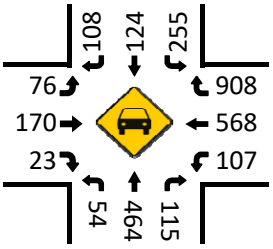
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	272	0	54	466	122	AM

CONTROL

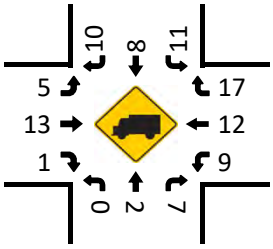
0

TEV	3074	0	0
	AM	NOON	PM
PHF	0.86		

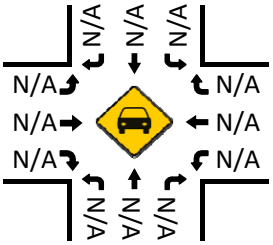
Cars (AM)



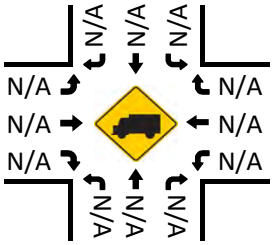
HT (AM)



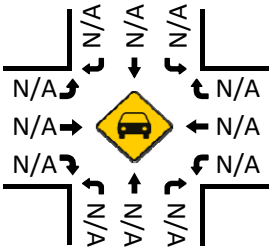
Cars (NOON)



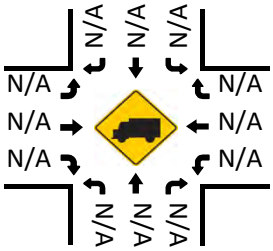
HT (NOON)



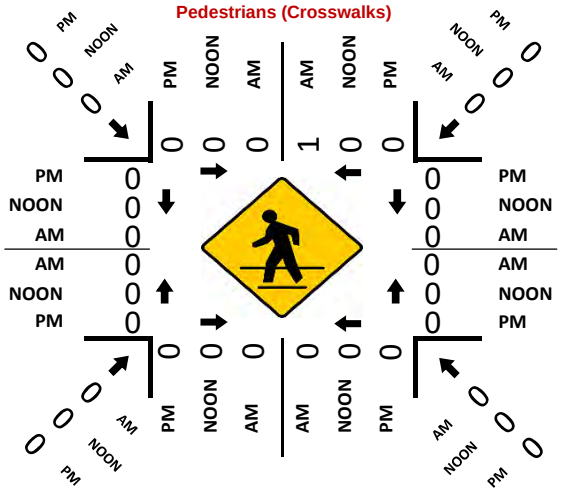
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

S Virginia St & Geiger Grade Rd

Peak Hour Turning Movement Count

ID: 19-07235-002
City: Reno

Day: Tuesday
Date: 06/18/2019

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

S Virginia St — SOUTHBOUND

AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	146	472	850	88	952
	0	0	0	0	

Geiger Grade Rd — EASTBOUND

	AM	NOON	PM	
	0	0	533	
	0	0	1	0
	0	0	129	0
	0	0	501	0
	0	0	61	0

Geiger Grade Rd — WESTBOUND

	PM	NOON	AM
0	482	0	0
0	353	0	0
0	97	0	0
0	2	0	0
	1484	0	0

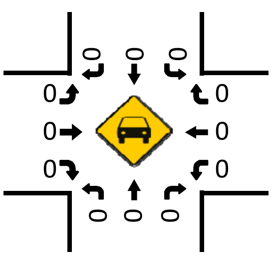
CONTROL

CONTROL			
	0		
	AM	NOON	PM
TEV	0	0	3599
PHF	0		0.94

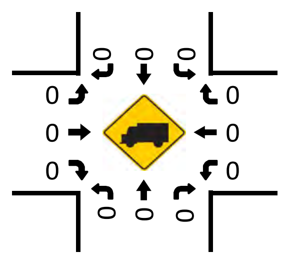
S Virginia St — NORTHBOUND

		0	0	0	0
PM	630	0	33	253	131
NOON	0	0	0	0	0
AM	0	0	0	0	0

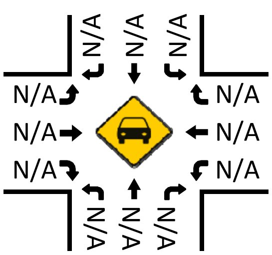
Cars (AM)



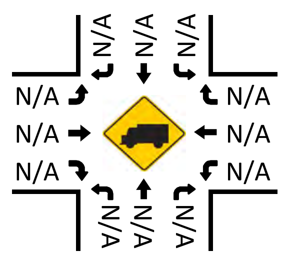
HT (AM)



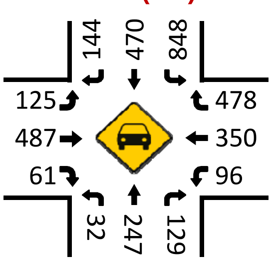
Cars (NOON)



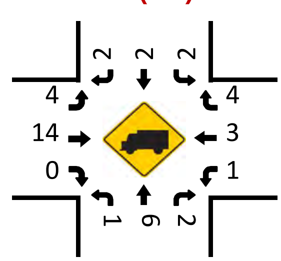
HT (NOON)



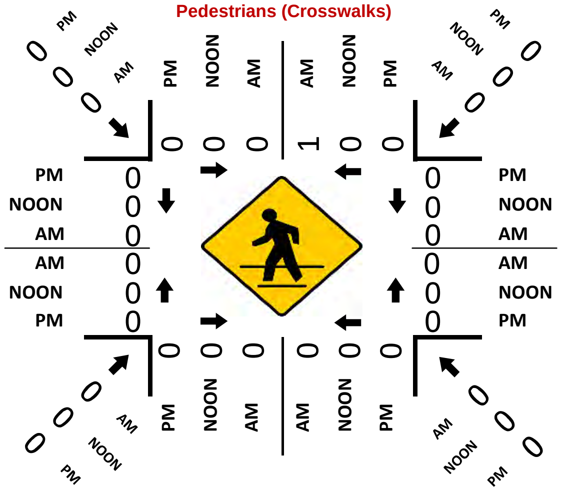
Cars (PM)



HT (PM)



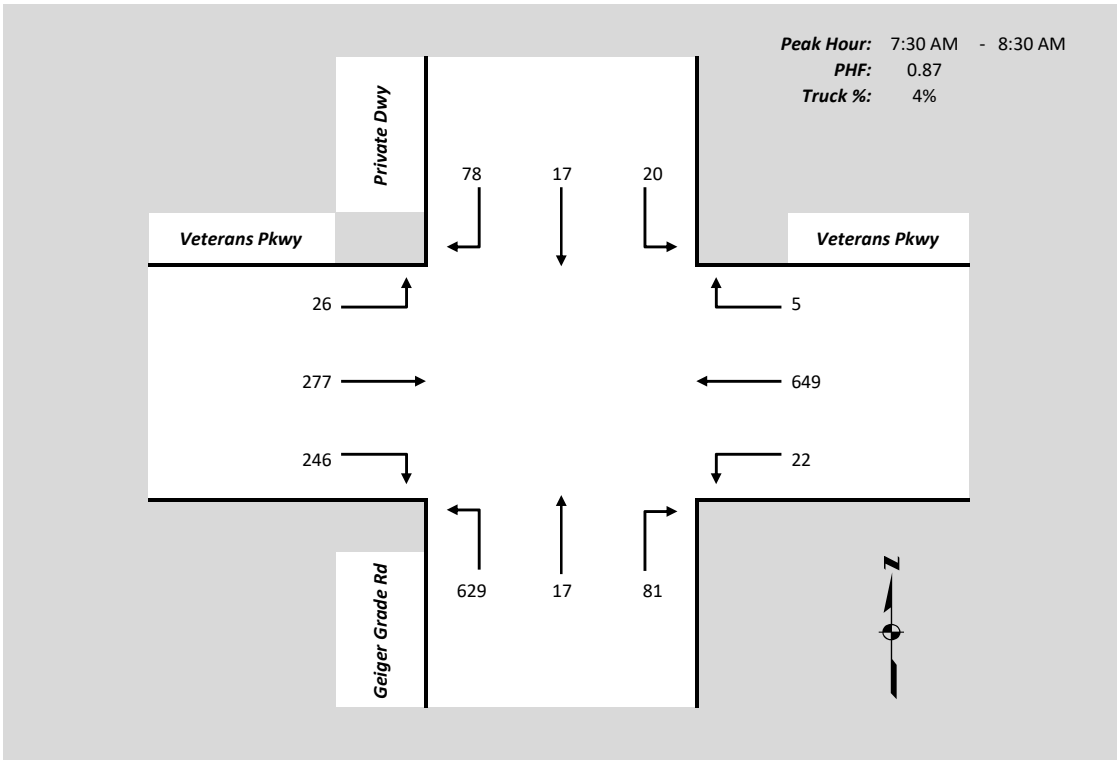
Pedestrians (Crosswalks)



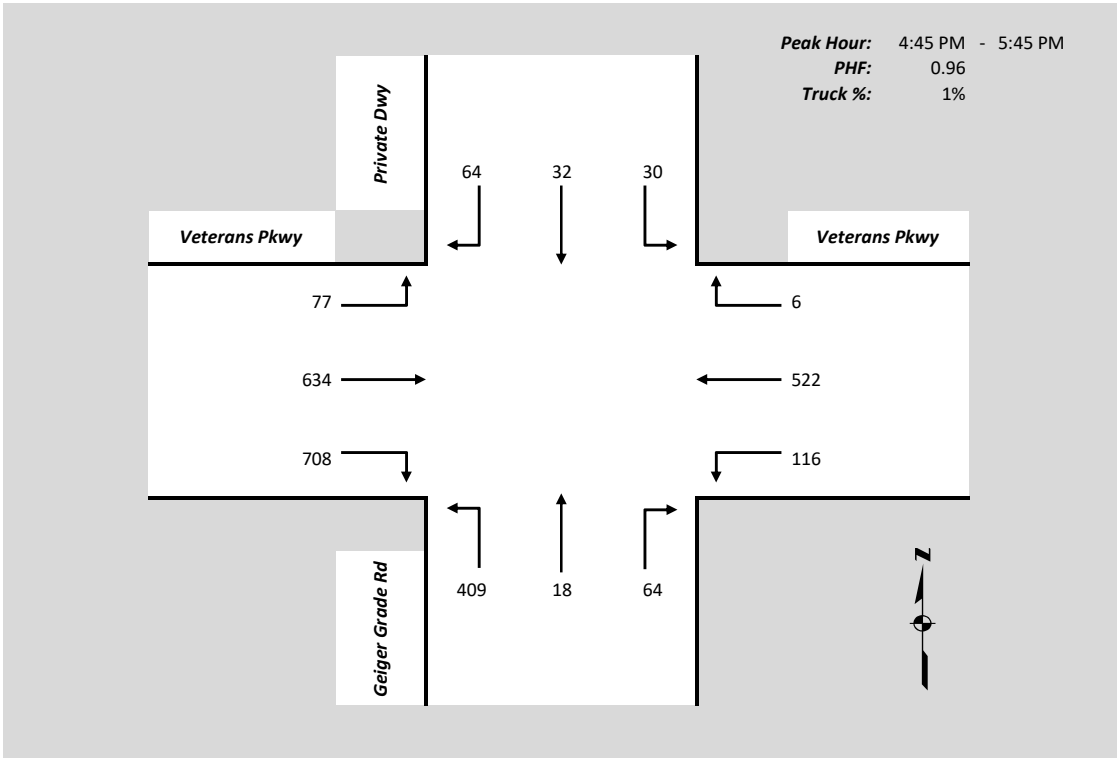
Intersection: Geiger Grade Roundabout

Date Collected: 9/27/2018

AM PEAK HOUR TURNING MOVEMENT VOLUME



PM PEAK HOUR TURNING MOVEMENT VOLUME



Appendix C
Level of Service Calculations

Intersection Level Of Service Report
Intersection 1: S. Virginia St / I-580 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	30.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	S. Virginia St			S. Virginia St			North On-Ramp			North Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	S. Virginia St			S. Virginia St			North On-Ramp			North Off-Ramp		
Base Volume Input [veh/h]	0	786	0	0	863	330	0	0	0	0	0	389
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.70	2.00	2.00	2.70	2.70	2.00	2.00	2.00	2.00	2.00	2.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	786	0	0	863	330	0	0	0	0	0	389
Peak Hour Factor	1.0000	0.8900	1.0000	1.0000	0.8900	0.8900	1.0000	1.0000	1.0000	1.0000	1.0000	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	221	0	0	242	93	0	0	0	0	0	109
Total Analysis Volume [veh/h]	0	883	0	0	970	371	0	0	0	0	0	437
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.78
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.31
Movement LOS		A			A	A						D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.20
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	179.88
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			30.31		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	4.98											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 2: Double R Blvd / Sandhill Rd

Control Type:	Two-way stop	Delay (sec / veh):	110.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.489

Intersection Setup

Name	Double R Blvd			Double R Blvd			Sandhill Rd			Sandhill Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	115.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Double R Blvd			Double R Blvd			Sandhill Rd			Sandhill Rd		
Base Volume Input [veh/h]	116	549	140	53	400	9	2	19	28	25	35	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	116	549	140	53	400	9	2	19	28	25	35	38
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	163	42	16	119	3	1	6	8	7	10	11
Total Analysis Volume [veh/h]	138	654	167	63	476	11	2	23	33	30	42	45
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.01	0.00	0.08	0.00	0.00	0.03	0.32	0.04	0.49	0.53	0.08
d_M, Delay for Movement [s/veh]	8.91	0.00	0.00	9.94	0.00	0.00	79.82	71.32	25.47	110.30	82.78	43.63
Movement LOS	A	A	A	A	A	A	F	F	D	F	F	E
95th-Percentile Queue Length [veh/ln]	0.45	0.00	0.00	0.26	0.00	0.00	1.73	1.73	1.73	1.92	3.18	3.18
95th-Percentile Queue Length [ft/ln]	11.19	0.00	0.00	6.46	0.00	0.00	43.20	43.20	43.20	48.11	79.44	79.44
d_A, Approach Delay [s/veh]	1.28			1.14			45.53			74.78		
Approach LOS	A			A			E			F		
d_I, Intersection Delay [s/veh]	7.87											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: S. Meadows Pkwy / Gateway Dr

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.577

Intersection Setup

Name	Gateway Dr			Gateway Dr			S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gateway Dr			Gateway Dr			S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	54	38	61	61	22	163	533	1251	26	56	921	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	32	0	0	85	0	0	14	0	0	31
Total Hourly Volume [veh/h]	54	38	29	61	22	78	533	1251	12	56	921	29
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	10	8	17	6	21	146	344	3	15	253	8
Total Analysis Volume [veh/h]	59	42	32	67	24	86	586	1375	13	62	1012	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	25.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	0	0	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	5	0	6	8	0	5	5	0
Maximum Green [s]	0	20	0	0	30	0	35	35	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.9	4.8	0.0	3.0	3.0	0.0
All red [s]	0.0	1.5	0.0	0.0	1.0	0.0	1.5	1.5	0.0	1.0	1.0	0.0
Split [s]	0	45	0	0	45	0	45	65	0	25	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	8	0	0	5	0	0	7	0	0	5	0
Pedestrian Clearance [s]	0	29	0	0	10	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.0	0.0	3.4	4.3	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.50	4.50	4.00	4.00	5.40	6.30	6.30	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.00	3.40	4.30	4.30	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	20	20	20	47	94	94	6	54	54
g / C, Green / Cycle	0.15	0.15	0.15	0.15	0.35	0.70	0.70	0.05	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.04	0.04	0.09	0.05	0.33	0.26	0.26	0.03	0.19	0.19
s, saturation flow rate [veh/h]	1386	1736	1021	1588	1780	3558	1860	1780	3558	1839
c, Capacity [veh/h]	79	256	128	240	616	2483	1298	80	1436	742
d1, Uniform Delay [s]	66.96	51.27	57.31	51.45	43.01	8.28	8.28	63.77	29.77	29.78
k, delay calibration	0.11	0.11	0.14	0.11	0.26	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.18	0.62	8.73	0.90	16.87	0.42	0.80	14.40	1.15	2.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.29	0.71	0.36	0.95	0.37	0.37	0.77	0.48	0.48
d, Delay for Lane Group [s/veh]	80.14	51.89	66.05	52.35	59.88	8.69	9.08	78.17	30.92	31.99
Lane Group LOS	F	D	E	D	E	A	A	E	C	C
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.34	2.31	3.11	2.71	21.59	5.19	5.56	2.42	8.45	8.97
50th-Percentile Queue Length [ft/ln]	58.60	57.72	77.65	67.80	539.74	129.67	139.11	60.54	211.21	224.13
95th-Percentile Queue Length [veh/ln]	4.22	4.16	5.59	4.88	29.21	8.92	9.43	4.36	13.22	13.88
95th-Percentile Queue Length [ft/ln]	105.48	103.90	139.77	122.04	730.25	223.05	235.83	108.97	330.38	346.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	80.14	51.89	51.89	66.05	66.05	52.35	59.88	8.82	9.08	78.17	31.26	31.99
Movement LOS	F	D	D	E	E	D	E	A	A	E	C	C
d_A, Approach Delay [s/veh]	64.42			59.39			23.98			33.92		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	30.66											
Intersection LOS	C											
Intersection V/C	0.577											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	9.0	9.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.95	58.80	58.80	56.03
l_p,int, Pedestrian LOS Score for Intersection	2.080	2.340	3.243	3.213
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	607	870	607
d_b, Bicycle Delay [s]	33.08	32.73	21.56	32.73
l_b,int, Bicycle LOS Score for Intersection	1.832	1.992	2.653	2.185
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: S. Meadows Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name	Double R Blvd			Double R Blvd			S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	0	2	0	0
Entry Pocket Length [ft]	250.00	100.00	275.00	225.00	100.00	450.00	315.00	100.00	100.00	225.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	35.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double R Blvd			Double R Blvd			S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	173	317	37	76	227	154	545	373	419	128	637	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	19	0	0	80	0	0	123	0	0	54
Total Hourly Volume [veh/h]	173	317	18	76	227	74	545	373	419	128	637	104
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	90	5	22	64	21	155	106	119	36	181	30
Total Analysis Volume [veh/h]	197	360	20	86	258	84	619	424	476	145	724	118
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	5.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	0	4	6	0	6	10	0	6	10	0
Maximum Green [s]	25	30	0	25	30	0	35	35	0	16	35	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	0.0	3.2	4.1	0.0	3.2	4.1	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	23	41	0	25	43	0	34	44	0	25	35	0
Vehicle Extension [s]	2.5	2.5	0.0	2.5	2.5	0.0	2.5	3.0	0.0	2.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	25	0	0	25	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	0.0	2.7	3.6	0.0	2.7	3.6	0.0
Minimum Recall	No	No		No	No		Yes	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	5.40	6.30	6.30	4.70	5.60	5.60	4.70	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	3.40	4.30	4.30	2.70	3.60	3.60	2.70	3.60	3.60
g_i, Effective Green Time [s]	10	17	17	5	12	12	27	83	83	8	64	64
g / C, Green / Cycle	0.07	0.12	0.12	0.04	0.09	0.09	0.20	0.62	0.62	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10	0.01	0.03	0.07	0.05	0.18	0.12	0.30	0.04	0.16	0.16
s, saturation flow rate [veh/h]	3439	3540	1581	3439	3540	1581	3439	3540	1581	3439	3540	1730
c, Capacity [veh/h]	252	440	196	135	320	143	690	2182	974	196	1675	818
d1, Uniform Delay [s]	61.52	57.65	52.45	63.92	60.26	59.01	52.63	11.29	14.22	62.67	22.31	22.34
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.97	2.86	0.17	3.65	3.61	2.84	3.41	0.20	1.75	2.04	0.55	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.82	0.10	0.64	0.81	0.59	0.90	0.19	0.49	0.74	0.34	0.34
d, Delay for Lane Group [s/veh]	65.49	60.51	52.62	67.56	63.88	61.85	56.03	11.48	15.97	64.71	22.86	23.47
Lane Group LOS	E	E	D	E	E	E	E	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.45	6.13	0.61	1.53	4.51	2.88	10.47	2.77	8.14	2.50	5.71	5.76
50th-Percentile Queue Length [ft/ln]	86.16	153.35	15.29	38.27	112.68	72.11	261.78	69.29	203.56	62.43	142.78	144.01
95th-Percentile Queue Length [veh/ln]	6.20	10.20	1.10	2.76	7.99	5.19	15.78	4.99	12.82	4.49	9.63	9.70
95th-Percentile Queue Length [ft/ln]	155.09	254.90	27.52	68.89	199.73	129.79	394.45	124.73	320.55	112.37	240.76	242.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.49	60.51	52.62	67.56	63.88	61.85	56.03	11.48	15.97	64.71	22.99	23.47
Movement LOS	E	E	D	E	E	E	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	61.94			64.22			31.04			29.18		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	39.64											
Intersection LOS	D											
Intersection V/C	0.473											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.95	55.13	56.03	56.03
l_p,int, Pedestrian LOS Score for Intersection	2.941	2.992	3.271	3.108
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	514	544	569	436
d_b, Bicycle Delay [s]	37.26	35.79	34.56	41.30
l_b,int, Bicycle LOS Score for Intersection	2.051	1.979	2.463	2.132
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Meadows Pkwy / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.516

Intersection Setup

Name	S. Meadows Pkwy			S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	175.00	100.00	175.00	100.00	100.00	100.00	250.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Meadows Pkwy			S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Base Volume Input [veh/h]	126	203	68	14	575	509	203	300	35	99	82	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	153	0	0	18	0	0	22
Total Hourly Volume [veh/h]	126	203	68	14	575	356	203	300	17	99	82	20
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	53	18	4	150	93	53	78	4	26	21	5
Total Analysis Volume [veh/h]	131	211	71	15	599	371	211	313	18	103	85	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	4	6	0	4	6	0
Maximum Green [s]	35	35	0	16	35	0	25	30	0	25	30	0
Amber [s]	3.2	4.1	0.0	3.2	4.1	0.0	3.3	4.2	0.0	3.3	4.2	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	3.0	0.0	2.0	3.0	0.0	2.5	2.5	0.0	2.5	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	18	0	0	20	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.7	3.6	0.0	2.7	3.6	0.0	2.8	3.7	0.0	2.8	3.7	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	61	61	61	61	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	4.70	5.60	4.70	5.60	5.60	4.80	5.70	5.70	4.80	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	3.60	2.70	3.60	3.60	2.80	3.70	3.70	2.80	3.70	3.70
g_i, Effective Green Time [s]	6	25	1	20	20	9	9	9	5	5	5
g / C, Green / Cycle	0.10	0.41	0.02	0.33	0.33	0.15	0.15	0.15	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.07	0.06	0.01	0.28	0.28	0.12	0.09	0.09	0.06	0.05	0.01
s, saturation flow rate [veh/h]	1775	3549	1775	1864	1628	1775	1864	1829	1775	1864	1584
c, Capacity [veh/h]	172	1444	40	619	541	265	288	283	136	153	130
d1, Uniform Delay [s]	26.96	11.45	29.53	18.91	18.91	25.17	24.03	24.04	27.73	27.03	26.15
k, delay calibration	0.08	0.11	0.04	0.11	0.11	0.08	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.10	0.05	2.21	3.07	3.50	4.11	1.36	1.40	6.33	2.32	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.15	0.38	0.84	0.84	0.80	0.58	0.58	0.76	0.56	0.16
d, Delay for Lane Group [s/veh]	32.06	11.50	31.74	21.98	22.41	29.28	25.39	25.44	34.06	29.36	26.57
Lane Group LOS	C	B	C	C	C	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.97	0.79	0.23	6.43	5.68	3.02	2.17	2.14	1.61	1.21	0.28
50th-Percentile Queue Length [ft/ln]	49.31	19.76	5.71	160.69	141.97	75.42	54.18	53.44	40.32	30.23	7.02
95th-Percentile Queue Length [veh/ln]	3.55	1.42	0.41	10.59	9.59	5.43	3.90	3.85	2.90	2.18	0.51
95th-Percentile Queue Length [ft/ln]	88.76	35.57	10.27	264.64	239.68	135.76	97.53	96.19	72.58	54.42	12.63

Movement, Approach, & Intersection Results

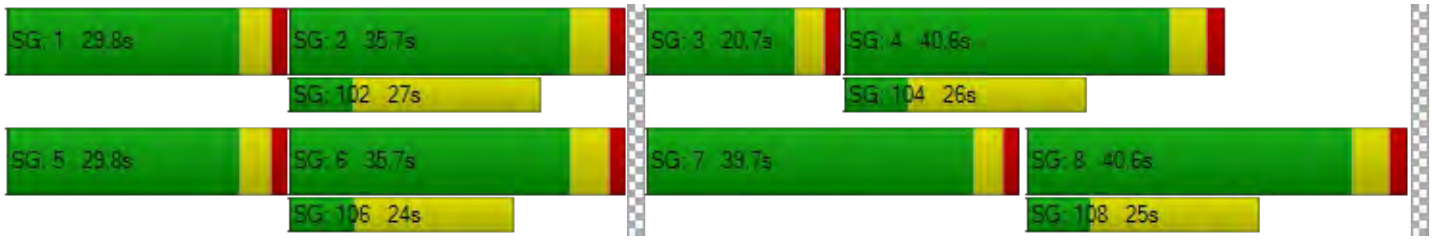
d_M, Delay for Movement [s/veh]	32.06	11.50	0.00	31.74	22.04	22.41	29.28	25.41	25.44	34.06	29.36	26.57
Movement LOS	C	B		C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.38			22.32			26.92			31.39		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	23.95											
Intersection LOS	C											
Intersection V/C	0.516											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.753	2.870	2.358	2.618
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	500	500
d_b, Bicycle Delay [s]	30.10	30.10	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	1.842	2.498	2.022	1.941
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: S. Meadows Pkwy / Wilbur May Pkwy

Control Type:	All-way stop	Delay (sec / veh):	87.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.223

Intersection Setup

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Approach	Northbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	75.00	100.00	125.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Base Volume Input [veh/h]	277	185	121	797	238	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	2.80	2.80	2.80	2.80	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	277	185	121	797	238	153
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	59	38	252	75	48
Total Analysis Volume [veh/h]	351	234	153	1009	301	194
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	360	408	389	505	505	363	384
Degree of Utilization, x	0.98	0.57	0.39	1.22	1.22	0.68	0.64

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	10.93	3.47	1.83	20.65	20.65	4.82	4.33
95th-Percentile Queue Length [ft]	273.18	86.78	45.69	516.31	516.31	120.43	108.23
Approach Delay [s/veh]	53.23		130.07			29.45	
Approach LOS	F		F			D	
Intersection Delay [s/veh]	87.80						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 7: S. Meadows Pkwy / Echo Valley Pkwy

Control Type:	Two-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

Intersection Setup

Name	Echo Valley Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	275.00	150.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Echo Valley Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Base Volume Input [veh/h]	211	84	390	47	8	762
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	2.80	2.80	2.80	2.80	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	211	84	390	47	8	762
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	23	105	13	2	205
Total Analysis Volume [veh/h]	227	90	419	51	9	819
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.76	0.11	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	24.41	10.11	0.00	0.00	8.21	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.72	0.38	0.00	0.00	0.02	0.00
95th-Percentile Queue Length [ft/ln]	43.12	9.55	0.00	0.00	0.60	0.00
d_A, Approach Delay [s/veh]	20.35		0.00		0.09	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.04					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Veterans Pkwy / Long Meadow Dr

Control Type:	Two-way stop	Delay (sec / veh):	143.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	Veterans Pkwy			Long Meadow Dr			Veterans Pkwy			Long Meadow Dr		
Approach	Southbound			Westbound			Northeastbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	250.00	100.00	250.00	75.00	100.00	100.00	175.00	100.00	100.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			25.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Long Meadow Dr			Veterans Pkwy			Long Meadow Dr		
Base Volume Input [veh/h]	41	665	13	32	1	44	50	764	39	11	1	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	665	13	32	1	44	50	764	39	11	1	101
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	193	4	9	0	13	15	222	11	3	0	29
Total Analysis Volume [veh/h]	48	773	15	37	1	51	58	888	45	13	1	117
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Free	Stop
Flared Lane		No		No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance		No		No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.01	0.00	0.64	0.02	0.10	0.07	0.01	0.00	0.17	0.02	0.19
d_M, Delay for Movement [s/veh]	10.41	0.00	0.00	143.00	68.08	12.70	9.72	0.00	0.00	63.30	70.89	12.67
Movement LOS	B	A	A	F	F	B	A	A	A	F	F	B
95th-Percentile Queue Length [veh/ln]	0.22	0.00	0.00	2.65	0.38	0.38	0.23	0.00	0.00	0.59	0.79	0.79
95th-Percentile Queue Length [ft/ln]	5.40	0.00	0.00	66.17	9.43	9.43	5.69	0.00	0.00	14.73	19.81	19.81
d_A, Approach Delay [s/veh]	0.60			67.49			0.57			18.14		
Approach LOS	A			F			A			C		
d_I, Intersection Delay [s/veh]	4.61											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Double R Blvd / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.392

Intersection Setup

Name	Double Diamond Pkwy			Double Diamond Pkwy			Double R Blvd			Double R Blvd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	200.00	275.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double Diamond Pkwy			Double Diamond Pkwy			Double R Blvd			Double R Blvd		
Base Volume Input [veh/h]	3	0	4	487	2	152	8	618	151	27	223	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	2	0	0	79	0	0	79	0	0	1
Total Hourly Volume [veh/h]	3	0	2	487	2	73	8	618	72	27	223	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	135	1	20	2	172	20	8	62	0
Total Analysis Volume [veh/h]	3	0	2	541	2	81	9	687	80	30	248	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	115.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	6	8	0	4	8	0
Maximum Green [s]	0	15	0	0	30	0	12	35	0	20	35	0
Amber [s]	0.0	3.4	0.0	0.0	4.1	0.0	3.9	4.8	0.0	3.9	4.8	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	35	0	0	35	0	20	35	0	15	30	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.5	0.0	3.0	3.0	0.0	2.5	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	21	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.9	0.0	0.0	3.6	0.0	3.4	4.3	0.0	3.4	4.3	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.90	5.60	5.60	5.40	6.30	6.30	5.40	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.90	3.60	3.60	3.40	4.30	4.30	3.40	4.30	4.30
g_i, Effective Green Time [s]	1	24	24	2	71	71	3	72	72
g / C, Green / Cycle	0.01	0.20	0.20	0.01	0.59	0.59	0.02	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.00	0.18	0.18	0.01	0.19	0.05	0.02	0.07	0.07
s, saturation flow rate [veh/h]	1695	1777	1723	1777	3552	1586	1777	1865	1863
c, Capacity [veh/h]	9	354	343	24	2090	933	39	1113	1112
d1, Uniform Delay [s]	59.50	46.80	46.82	58.70	12.60	10.70	58.39	10.45	10.45
k, delay calibration	0.04	0.08	0.08	0.11	0.50	0.50	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.93	6.09	6.38	9.81	0.42	0.18	21.30	0.20	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.89	0.90	0.38	0.33	0.09	0.78	0.11	0.11
d, Delay for Lane Group [s/veh]	75.42	52.90	53.20	68.51	13.02	10.89	79.69	10.65	10.65
Lane Group LOS	E	D	D	E	B	B	E	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.19	9.68	9.43	0.33	4.44	0.90	1.12	1.38	1.38
50th-Percentile Queue Length [ft/ln]	4.87	241.94	235.87	8.24	111.00	22.53	27.88	34.47	34.45
95th-Percentile Queue Length [veh/ln]	0.35	14.78	14.47	0.59	7.90	1.62	2.01	2.48	2.48
95th-Percentile Queue Length [ft/ln]	8.76	369.49	361.81	14.83	197.40	40.55	50.19	62.04	62.01

Movement, Approach, & Intersection Results

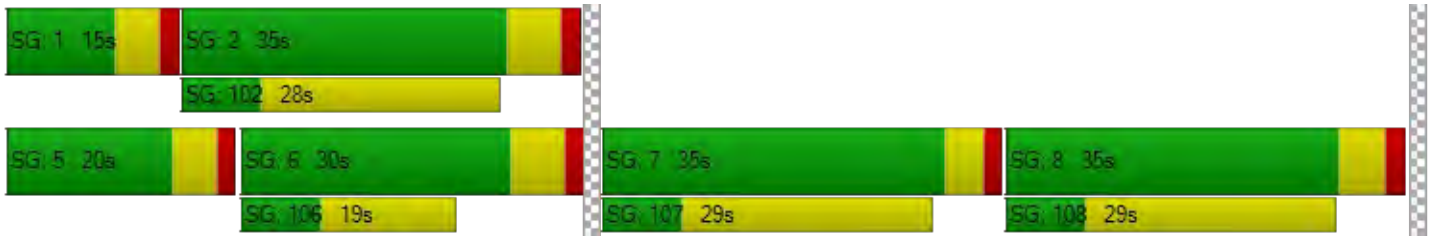
d_M, Delay for Movement [s/veh]	75.42	75.42	75.42	53.02	53.20	53.20	68.51	13.02	10.89	79.69	10.65	10.65
Movement LOS	E	E	E	D	D	D	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	75.42			53.05			13.45			18.08		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	29.07											
Intersection LOS	C											
Intersection V/C	0.392											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	1.740	2.405	2.981	2.646
Crosswalk LOS	A	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	502	490	478	395
d_b, Bicycle Delay [s]	33.68	34.20	34.73	38.64
l_b,int, Bicycle LOS Score for Intersection	1.571	2.720	2.265	1.791
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Damonte Ranch Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	54.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.573

Intersection Setup

Name	Damonte Ranch Pkwy		Damonte Ranch Pkwy		Double R Blvd	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	1
Entry Pocket Length [ft]	415.00	100.00	100.00	100.00	225.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Damonte Ranch Pkwy		Damonte Ranch Pkwy		Double R Blvd	
Base Volume Input [veh/h]	468	459	1083	252	145	591
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	76	0	177
Total Hourly Volume [veh/h]	468	459	1083	176	145	414
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	127	125	294	48	39	113
Total Analysis Volume [veh/h]	509	499	1177	191	158	450
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Overlap
Signal Group	7	4	8	0	2	1
Auxiliary Signal Groups						1,2,7
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	6	6	0	2	4
Maximum Green [s]	38	41	41	0	33	20
Amber [s]	3.9	4.8	4.8	0.0	3.0	3.9
All red [s]	1.5	1.5	1.5	0.0	1.0	1.5
Split [s]	25	70	45	0	20	30
Vehicle Extension [s]	3.0	3.0	3.0	0.0	1.0	3.0
Walk [s]	0	13	13	0	7	0
Pedestrian Clearance [s]	0	35	25	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	4.3	4.3	0.0	2.0	3.4
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	Yes	Yes		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	131	131	131	131	131	131
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	6.30	4.00	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	4.30	2.00	0.00
g_i, Effective Green Time [s]	33	79	41	41	32	83
g / C, Green / Cycle	0.25	0.60	0.31	0.31	0.25	0.63
(v / s)_i Volume / Saturation Flow Rate	0.15	0.10	0.26	0.26	0.05	0.16
s, saturation flow rate [veh/h]	3459	5094	3560	1741	3459	2813
c, Capacity [veh/h]	870	3082	1113	544	847	1769
d1, Uniform Delay [s]	43.10	11.34	41.69	42.01	39.21	129.45
k, delay calibration	0.11	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.11	6.79	14.31	0.04	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.16	0.82	0.84	0.19	0.25
d, Delay for Lane Group [s/veh]	43.73	11.46	48.47	56.32	39.25	129.48
Lane Group LOS	D	B	D	E	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.16	2.03	14.25	15.47	1.99	11.49
50th-Percentile Queue Length [ft/ln]	179.02	50.83	356.30	386.70	49.75	287.36
95th-Percentile Queue Length [veh/ln]	11.55	3.66	20.44	21.92	3.58	17.05
95th-Percentile Queue Length [ft/ln]	288.73	91.49	511.08	547.96	89.55	426.36

Movement, Approach, & Intersection Results

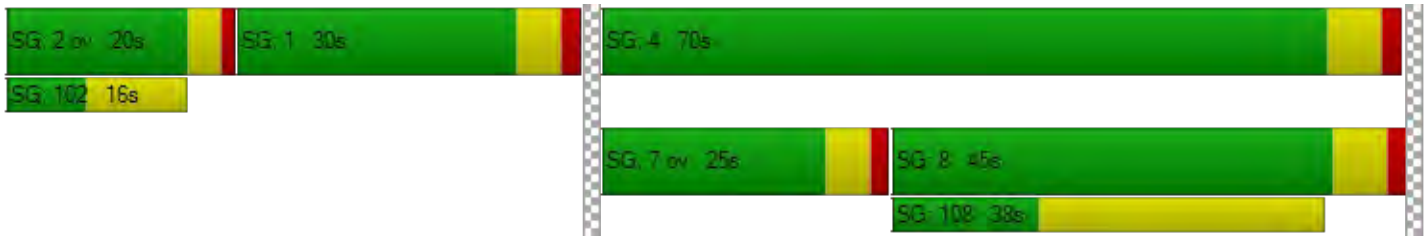
d_M, Delay for Movement [s/veh]	43.73	11.46	50.24	56.32	39.25	129.48
Movement LOS	D	B	D	E	D	F
d_A, Approach Delay [s/veh]	27.75		51.09		106.03	
Approach LOS	C		D		F	
d_I, Intersection Delay [s/veh]	54.40					
Intersection LOS	D					
Intersection V/C	0.573					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	17.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.50	44.20
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.087	3.094
Crosswalk LOS	F	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1062	645	267
d_b, Bicycle Delay [s]	13.21	27.54	45.07
I_b,int, Bicycle LOS Score for Intersection	2.114	2.354	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Steamboat Pkwy / Damonte Ranch Pkwy

Control Type:	Signalized	Delay (sec / veh):	2.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.284

Intersection Setup

Name	Damonte Ranch Pkwy		Damonte Ranch Pkwy		Steamboat Pkwy	
Approach	Northbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	250.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Damonte Ranch Pkwy		Damonte Ranch Pkwy		Steamboat Pkwy	
Base Volume Input [veh/h]	1	7	4	1274	487	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	4	0	382	0	0
Total Hourly Volume [veh/h]	1	3	4	892	487	4
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	1	256	140	1
Total Analysis Volume [veh/h]	1	3	5	1025	560	5
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Overlap	Protected	Permissive
Signal Group	2	0	3	8	1	6
Auxiliary Signal Groups				1,8		
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	0	4	4	6	6
Maximum Green [s]	15	0	15	15	30	15
Amber [s]	4.3	0.0	3.5	3.5	4.3	4.3
All red [s]	1.5	0.0	0.5	0.5	1.5	1.5
Split [s]	19	0	17	32	59	78
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	5	0	7
Pedestrian Clearance [s]	6	0	20	10	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.8	0.0	2.0	2.0	3.8	3.8
Minimum Recall	No		No	No	Yes	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.80	5.80	4.00	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.80	3.80	2.00	0.00	3.80	3.80
g_i, Effective Green Time [s]	0	0	11	98	83	89
g / C, Green / Cycle	0.00	0.00	0.10	0.89	0.75	0.81
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.37	0.16	0.00
s, saturation flow rate [veh/h]	1855	1577	1767	2791	3431	3532
c, Capacity [veh/h]	8	7	183	2484	2574	2852
d1, Uniform Delay [s]	54.51	54.58	44.32	1.05	4.10	2.04
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.47	36.77	0.06	0.51	0.19	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.43	0.03	0.41	0.22	0.00
d, Delay for Lane Group [s/veh]	60.98	91.36	44.38	1.56	4.29	2.04
Lane Group LOS	E	F	D	A	A	A
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.04	0.15	0.12	0.18	1.57	0.01
50th-Percentile Queue Length [ft/ln]	1.04	3.80	3.06	4.38	39.36	0.17
95th-Percentile Queue Length [veh/ln]	0.07	0.27	0.22	0.32	2.83	0.01
95th-Percentile Queue Length [ft/ln]	1.87	6.84	5.52	7.89	70.84	0.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.98	91.36	44.38	1.56	4.29	2.04
Movement LOS	E	F	D	A	A	A
d_A, Approach Delay [s/veh]	83.76		1.77		4.27	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	2.86					
Intersection LOS	A					
Intersection V/C	0.284					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.153	3.432	2.836
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	240	236	1313
d_b, Bicycle Delay [s]	42.59	42.77	6.49
l_b,int, Bicycle LOS Score for Intersection	1.566	1.560	2.026
Bicycle LOS	A	A	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 12: Veterans Pkwy / Steamboat Pkwy

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	Veterans Pkwy			Veterans Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Veterans Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	465	491	27	244	435	243	111	316	173	79	683	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	14	0	0	73	0	0	90	0	0	34
Total Hourly Volume [veh/h]	465	491	13	244	435	170	111	316	83	79	683	32
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	133	4	66	118	46	30	86	23	21	186	9
Total Analysis Volume [veh/h]	505	534	14	265	473	185	121	343	90	86	742	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	115.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	6	7	4	4	3	8	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	4	0	4	4	4	4	6	6	4	6	0
Maximum Green [s]	30	30	0	15	30	30	15	30	30	15	30	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	4.8	3.9	4.8	4.8	3.2	4.8	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.0
Split [s]	32	37	0	25	30	30	20	38	38	20	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	15	15	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	4.3	3.4	4.3	4.3	2.7	4.3	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	Yes	Yes	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	5.40	6.30	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.30	4.30	0.00	4.30	4.30	0.00	4.30	0.00	0.00	4.30	4.30
g_i, Effective Green Time [s]	51	32	32	51	19	19	56	46	79	56	44	44
g / C, Green / Cycle	0.43	0.26	0.26	0.43	0.16	0.16	0.47	0.39	0.66	0.47	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.36	0.15	0.15	0.23	0.13	0.12	0.14	0.19	0.06	0.08	0.21	0.21
s, saturation flow rate [veh/h]	1413	1853	1837	1165	3529	1575	885	1853	1575	1132	1853	1824
c, Capacity [veh/h]	576	488	483	480	562	251	382	716	1040	467	679	669
d1, Uniform Delay [s]	29.30	38.30	38.31	24.63	49.02	48.09	20.49	27.78	7.35	19.26	30.56	30.56
k, delay calibration	0.50	0.12	0.12	0.50	0.11	0.11	0.50	0.50	0.50	0.12	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.06	1.18	1.19	4.53	3.49	4.19	2.17	2.29	0.16	0.21	3.54	3.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.56	0.56	0.55	0.84	0.74	0.32	0.48	0.09	0.18	0.58	0.58
d, Delay for Lane Group [s/veh]	46.36	39.48	39.49	29.15	52.50	52.28	22.66	30.07	7.51	19.47	34.09	34.15
Lane Group LOS	D	D	D	C	D	D	C	C	A	B	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	13.75	6.96	6.90	5.46	6.96	5.42	2.13	7.75	0.83	1.35	9.59	9.46
50th-Percentile Queue Length [ft/ln]	343.86	173.97	172.46	136.60	173.98	135.61	53.13	193.69	20.70	33.65	239.86	236.40
95th-Percentile Queue Length [veh/ln]	19.84	11.29	11.21	9.30	11.29	9.24	3.83	12.31	1.49	2.42	14.67	14.50
95th-Percentile Queue Length [ft/ln]	495.92	282.13	280.14	232.43	282.14	231.10	95.63	307.81	37.26	60.56	366.86	362.48

Movement, Approach, & Intersection Results

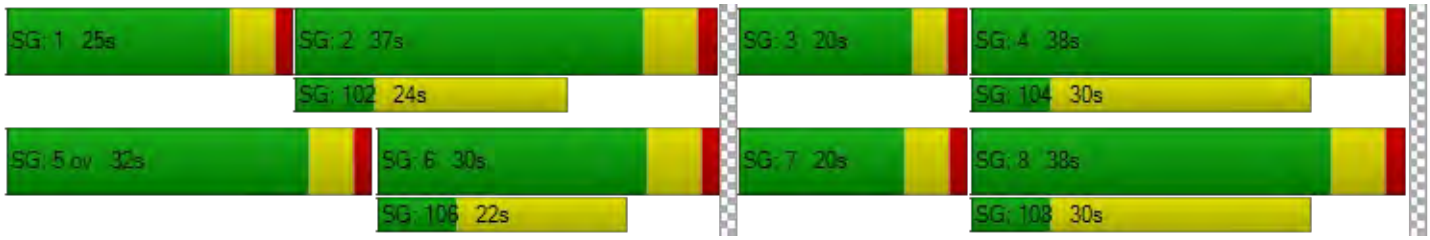
d_M, Delay for Movement [s/veh]	46.36	39.49	39.49	29.15	52.50	52.28	22.66	30.07	7.51	19.47	34.12	34.15
Movement LOS	D	D	D	C	D	D	C	C	A	B	C	C
d_A, Approach Delay [s/veh]	42.78			45.75			24.79			32.66		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	38.08											
Intersection LOS	D											
Intersection V/C	0.623											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.911	3.056	3.057	2.734
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	512	395	528	528
d_b, Bicycle Delay [s]	33.23	38.64	32.49	32.49
l_b,int, Bicycle LOS Score for Intersection	2.440	2.381	2.622	2.300
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Rio Wrangler Pkwy / Steamboat Pkwy

Control Type:	All-way stop	Delay (sec / veh):	99.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.287

Intersection Setup

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	474	9	1	2	32	211	64	14	500	5	27	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	474	9	1	2	32	211	64	14	500	5	27	1
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	139	3	0	1	9	62	19	4	147	1	8	0
Total Analysis Volume [veh/h]	558	11	1	2	38	248	75	16	588	6	32	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	558	464	458	459	489	588	385
Degree of Utilization, x	1.29	0.03	0.63	0.16	0.03	1.09	0.10

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	24.19	0.08	4.23	0.58	0.10	18.10	0.34
95th-Percentile Queue Length [ft]	604.81	1.99	105.78	14.49	2.53	452.60	8.41
Approach Delay [s/veh]	166.86		23.22	79.07			13.43
Approach LOS	F		C	F			B
Intersection Delay [s/veh]	98.99						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 14: Rio Wrangler Pkwy / McCauley Ranch Blvd

Control Type:	Two-way stop	Delay (sec / veh):	63.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	110.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Base Volume Input [veh/h]	213	90	301	223	35	222
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.50	4.50	4.50	4.50	4.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	213	90	301	223	35	222
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	30	99	73	12	73
Total Analysis Volume [veh/h]	280	118	396	293	46	292
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.35	0.00	0.44	0.39
d_M, Delay for Movement [s/veh]	0.00	0.00	9.78	0.00	63.62	12.78
Movement LOS	A	A	A	A	F	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.56	0.00	1.87	1.84
95th-Percentile Queue Length [ft/ln]	0.00	0.00	38.90	0.00	46.64	46.04
d_A, Approach Delay [s/veh]	0.00		5.62		19.70	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	7.39					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 15: S. Virginia St / Geiger Grade Rd

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.417

Intersection Setup

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	1	2	0	0
Entry Pocket Length [ft]	350.00	100.00	700.00	725.00	100.00	250.00	525.00	100.00	100.00	600.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Base Volume Input [veh/h]	118	580	925	81	183	24	54	466	122	270	132	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	278	0	0	12	0	0	63	0	0	61
Total Hourly Volume [veh/h]	118	580	647	81	183	12	54	466	59	270	132	57
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	169	188	24	53	3	16	135	17	78	38	17
Total Analysis Volume [veh/h]	137	674	752	94	213	14	63	542	69	314	153	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	2	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	35	0	20	35	0	25	40	40	40	40	40
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	1.0	2.0	2.0	2.0	2.0	2.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	28	0	0	28	0	0	18	18	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.5	3.5	0.0	3.0	5.0	5.0	4.0	5.0	5.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	61	61	61	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50	5.00	7.00	7.00	6.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.50	3.50	3.50	3.00	5.00	5.00	4.00	5.00	5.00
g_i, Effective Green Time [s]	6	15	4	13	3	10	10	8	16	16
g / C, Green / Cycle	0.10	0.24	0.07	0.21	0.05	0.16	0.16	0.14	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.08	0.19	0.03	0.06	0.02	0.11	0.04	0.09	0.03	0.04
s, saturation flow rate [veh/h]	1765	3529	3428	3529	3428	5049	1575	3428	5049	1575
c, Capacity [veh/h]	182	851	226	749	187	822	256	464	1313	410
d1, Uniform Delay [s]	26.50	21.63	27.26	20.08	27.68	23.87	22.28	25.01	17.16	17.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.16	1.71	1.22	0.21	1.06	0.91	0.56	1.73	0.04	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.79	0.42	0.28	0.34	0.66	0.27	0.68	0.12	0.16
d, Delay for Lane Group [s/veh]	32.66	23.34	28.49	20.28	28.74	24.78	22.84	26.75	17.20	17.55
Lane Group LOS	C	C	C	C	C	C	C	C	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.09	4.23	0.63	1.12	0.42	2.20	0.80	2.01	0.47	0.63
50th-Percentile Queue Length [ft/ln]	52.32	105.77	15.65	28.02	10.60	55.04	20.00	50.30	11.82	15.84
95th-Percentile Queue Length [veh/ln]	3.77	7.60	1.13	2.02	0.76	3.96	1.44	3.62	0.85	1.14
95th-Percentile Queue Length [ft/ln]	94.17	190.10	28.17	50.43	19.07	99.06	35.99	90.54	21.27	28.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.66	23.34	0.00	28.49	20.28	0.00	28.74	24.78	22.84	26.75	17.20	17.55
Movement LOS	C	C		C	C		C	C	C	C	B	B
d_A, Approach Delay [s/veh]	24.91			22.79			24.95			22.86		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.18											
Intersection LOS	C											
Intersection V/C	0.417											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.731	2.838	3.105	3.135
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	778	778	889	889
d_b, Bicycle Delay [s]	16.81	16.81	13.89	13.89
l_b,int, Bicycle LOS Score for Intersection	2.229	1.813	1.965	1.886
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MOVEMENT SUMMARY

Site: Geiger/Veterans AM

New Site
Roundabout

Movement Performance Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Geiger Grade											
3	L2	723	4.0	0.566	13.9	LOS B	3.3	86.1	0.65	0.69	29.9
8	T1	20	4.0	0.566	13.9	LOS B	3.3	86.1	0.65	0.69	30.0
18	R2	93	4.0	0.566	13.9	LOS B	3.3	86.1	0.65	0.69	29.0
Approach		836	4.0	0.566	13.9	LOS B	3.3	86.1	0.65	0.69	29.8
East: Veterans Pkwy											
1	L2	25	4.0	0.640	19.4	LOS C	3.0	77.8	0.69	0.77	29.8
6	T1	746	4.0	0.640	19.1	LOS C	3.0	77.8	0.68	0.76	29.7
16	R2	6	4.0	0.640	18.8	LOS C	2.9	75.1	0.67	0.75	28.9
Approach		777	4.0	0.640	19.1	LOS C	3.0	77.8	0.68	0.76	29.7
North: Private Access											
7	L2	23	4.0	0.361	17.1	LOS C	1.0	26.5	0.75	0.79	30.2
4	T1	20	4.0	0.361	17.1	LOS C	1.0	26.5	0.75	0.79	29.9
14	R2	90	4.0	0.361	17.1	LOS C	1.0	26.5	0.75	0.79	29.0
Approach		132	4.0	0.361	17.1	LOS C	1.0	26.5	0.75	0.79	29.3
West: Veterans Pkwy											
5	L2	30	4.0	0.344	7.1	LOS A	1.6	41.4	0.24	0.12	35.3
2	T1	318	4.0	0.344	7.1	LOS A	1.6	41.4	0.24	0.12	34.9
12	R2	283	4.0	0.279	6.3	LOS A	1.2	31.0	0.22	0.11	33.9
Approach		631	4.0	0.344	6.8	LOS A	1.6	41.4	0.23	0.11	34.5
All Vehicles		2376	4.0	0.640	13.9	LOS B	3.3	86.1	0.55	0.57	30.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection Level Of Service Report
Intersection 1: S. Virginia St / I-580 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	49.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.887

Intersection Setup

Name	S. Virginia St			S. Virginia St			North On-Ramp			North Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	S. Virginia St			S. Virginia St			North On-Ramp			North Off-Ramp		
Base Volume Input [veh/h]	0	1131	0	0	1331	307	0	0	0	0	0	386
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	1.30	2.00	2.00	1.30	1.30	2.00	2.00	2.00	2.00	2.00	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1131	0	0	1331	307	0	0	0	0	0	386
Peak Hour Factor	1.0000	0.9600	1.0000	1.0000	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	295	0	0	347	80	0	0	0	0	0	101
Total Analysis Volume [veh/h]	0	1178	0	0	1386	320	0	0	0	0	0	402
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.89
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.28
Movement LOS		A			A	A						E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.49
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	237.13
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			49.28		
Approach LOS	A			A			A			E		
d_I, Intersection Delay [s/veh]	6.03											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 2: Double R Blvd / Sandhill Rd

Control Type:	Two-way stop	Delay (sec / veh):	817.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.157

Intersection Setup

Name	Double R Blvd			Double R Blvd			Sandhill Rd			Sandhill Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	115.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Double R Blvd			Double R Blvd			Sandhill Rd			Sandhill Rd		
Base Volume Input [veh/h]	96	613	21	24	807	15	5	20	114	53	24	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	613	21	24	807	15	5	20	114	53	24	101
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	185	6	7	243	5	2	6	34	16	7	30
Total Analysis Volume [veh/h]	116	739	25	29	972	18	6	24	137	64	29	122
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.01	0.00	0.03	0.01	0.00	0.27	0.52	0.26	2.16	0.63	0.20
d_M, Delay for Movement [s/veh]	11.17	0.00	0.00	9.39	0.00	0.00	281.86	200.28	128.51	817.16	138.62	66.17
Movement LOS	B	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.59	0.00	0.00	0.11	0.00	0.00	8.46	8.46	8.46	7.49	5.81	5.81
95th-Percentile Queue Length [ft/ln]	14.81	0.00	0.00	2.65	0.00	0.00	211.62	211.62	211.62	187.33	145.35	145.35
d_A, Approach Delay [s/veh]	1.47			0.27			144.33			299.49		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	39.48											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: S. Meadows Pkwy / Gateway Dr

Control Type:	Signalized	Delay (sec / veh):	39.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.683

Intersection Setup

Name	Gateway Dr			Gateway Dr			S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gateway Dr			Gateway Dr			S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	83	36	42	161	36	499	336	1195	35	65	1334	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	22	0	0	150	0	0	18	0	0	36
Total Hourly Volume [veh/h]	83	36	20	161	36	349	336	1195	17	65	1334	33
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	9	5	42	9	91	88	311	4	17	347	9
Total Analysis Volume [veh/h]	86	38	21	168	38	364	350	1245	18	68	1390	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	0	0	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	6	8	0	6	12	0
Maximum Green [s]	0	20	0	0	30	0	35	35	0	20	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.4	0.0	3.9	4.8	0.0	3.2	4.1	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	45	0	0	45	0	45	70	0	20	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	29	0	0	28	0	0	14	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.9	0.0	3.4	4.3	0.0	2.7	3.6	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.50	4.50	4.90	4.90	5.40	6.30	6.30	4.70	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.50	2.90	2.90	3.40	4.30	4.30	2.70	3.60	3.60
g_i, Effective Green Time [s]	30	30	30	30	28	82	82	7	61	61
g / C, Green / Cycle	0.23	0.23	0.22	0.22	0.21	0.61	0.61	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.06	0.03	0.18	0.23	0.19	0.23	0.23	0.04	0.26	0.26
s, saturation flow rate [veh/h]	1414	1775	1165	1604	1797	3592	1873	1797	3592	1864
c, Capacity [veh/h]	83	400	307	357	376	2194	1144	88	1618	840
d1, Uniform Delay [s]	64.72	41.86	52.83	52.44	52.36	13.28	13.28	63.40	27.55	27.55
k, delay calibration	0.11	0.11	0.15	0.45	0.25	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	55.63	0.17	3.51	50.43	19.86	0.50	0.95	13.43	1.52	2.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.15	0.67	1.02	0.93	0.38	0.38	0.77	0.58	0.58
d, Delay for Lane Group [s/veh]	120.34	42.03	56.34	102.87	72.23	13.78	14.23	76.83	29.07	30.46
Lane Group LOS	F	D	E	F	E	B	B	E	C	C
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.58	1.63	7.05	17.14	13.60	6.34	6.76	2.63	11.44	12.19
50th-Percentile Queue Length [ft/ln]	89.44	40.72	176.18	428.48	340.02	158.56	168.98	65.68	285.95	304.81
95th-Percentile Queue Length [veh/ln]	6.44	2.93	11.40	24.22	19.65	10.47	11.02	4.73	16.98	17.92
95th-Percentile Queue Length [ft/ln]	160.99	73.29	285.02	605.46	491.22	261.81	275.57	118.23	424.61	447.97

Movement, Approach, & Intersection Results

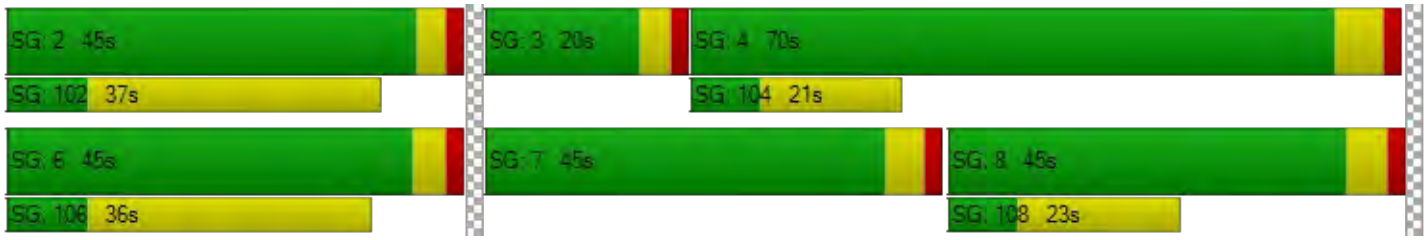
d_M, Delay for Movement [s/veh]	120.34	42.03	42.03	56.34	56.34	102.87	72.23	13.93	14.23	76.83	29.53	30.46
Movement LOS	F	D	D	E	E	F	E	B	B	E	C	C
d_A, Approach Delay [s/veh]	88.48			86.05			26.58			31.70		
Approach LOS	F			F			C			C		
d_I, Intersection Delay [s/veh]	39.81											
Intersection LOS	D											
Intersection V/C	0.683											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.95	56.95	56.03	56.03
l_p,int, Pedestrian LOS Score for Intersection	2.075	2.492	3.337	3.388
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	594	944	584
d_b, Bicycle Delay [s]	33.08	33.36	18.83	33.85
l_b,int, Bicycle LOS Score for Intersection	1.835	2.748	2.457	2.400
Bicycle LOS	A	B	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S. Meadows Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	46.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.562

Intersection Setup

Name	Double R Blvd			Double R Blvd			S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	0	2	0	0
Entry Pocket Length [ft]	250.00	100.00	275.00	225.00	100.00	450.00	315.00	100.00	100.00	225.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double R Blvd			Double R Blvd			S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	426	307	137	312	470	402	354	854	269	103	564	75
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	71	0	0	121	0	0	0	0	0	0
Total Hourly Volume [veh/h]	426	307	66	312	470	281	354	854	269	103	564	75
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	80	17	81	122	73	92	222	70	27	147	20
Total Analysis Volume [veh/h]	444	320	69	325	490	293	369	890	280	107	588	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	0	4	6	0	6	10	0	6	10	0
Maximum Green [s]	25	30	0	25	30	0	35	35	0	16	35	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	0.0	3.2	4.1	0.0	3.2	4.1	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	24	41	0	24	41	0	35	50	0	20	35	0
Vehicle Extension [s]	2.5	2.5	0.0	2.5	2.5	0.0	2.5	3.0	0.0	2.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	25	0	0	25	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	0.0	2.7	3.6	0.0	2.7	3.6	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		Yes	Yes		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	5.40	6.30	6.30	4.70	5.60	5.60	4.70	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	3.40	4.30	4.30	2.70	3.60	3.60	2.70	3.60	3.60
g_i, Effective Green Time [s]	19	32	32	15	27	27	35	61	61	6	32	32
g / C, Green / Cycle	0.14	0.23	0.23	0.11	0.20	0.20	0.26	0.45	0.45	0.05	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.13	0.09	0.04	0.09	0.14	0.18	0.11	0.22	0.22	0.03	0.12	0.12
s, saturation flow rate [veh/h]	3495	3598	1606	3495	3598	1606	3495	3598	1667	3495	3598	1779
c, Capacity [veh/h]	502	840	375	380	714	319	906	1617	749	158	847	419
d1, Uniform Delay [s]	56.68	43.51	41.42	59.11	50.18	53.02	41.38	26.29	26.29	63.44	44.98	45.07
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.26	0.50	0.50	0.50	0.04	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	0.21	0.17	4.25	0.88	21.32	1.36	1.08	2.33	1.87	0.50	1.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.38	0.18	0.86	0.69	0.92	0.41	0.49	0.49	0.68	0.52	0.53
d, Delay for Lane Group [s/veh]	60.76	43.72	41.60	63.36	51.06	74.34	42.74	27.37	28.61	65.31	45.49	46.11
Lane Group LOS	E	D	D	E	D	E	D	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.66	4.52	1.87	5.66	7.73	11.54	5.26	9.25	8.83	1.85	6.53	6.61
50th-Percentile Queue Length [ft/ln]	191.46	113.10	46.63	141.38	193.19	288.54	131.44	231.17	220.82	46.13	163.13	165.32
95th-Percentile Queue Length [veh/ln]	12.20	8.01	3.36	9.56	12.29	17.11	9.02	14.23	13.71	3.32	10.71	10.83
95th-Percentile Queue Length [ft/ln]	304.93	200.31	83.94	238.88	307.17	427.83	225.45	355.85	342.68	83.04	267.86	270.75

Movement, Approach, & Intersection Results

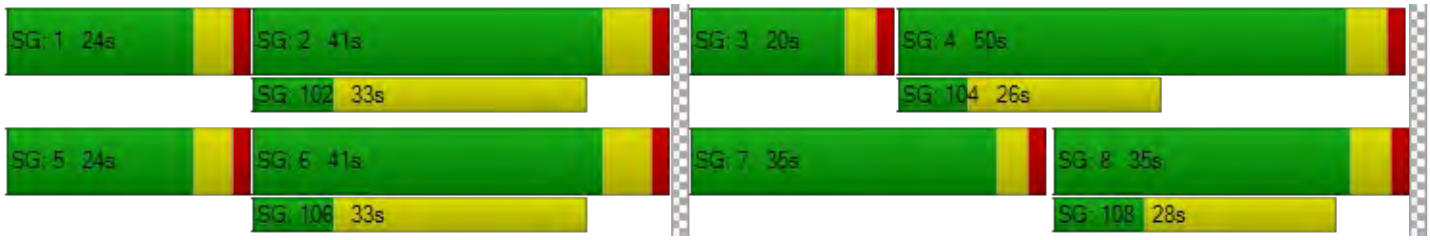
d_M, Delay for Movement [s/veh]	60.76	43.72	41.60	63.36	51.06	74.34	42.74	27.50	28.61	65.31	45.64	46.11
Movement LOS	E	D	D	E	D	E	D	C	C	E	D	D
d_A, Approach Delay [s/veh]	52.63			60.83			31.35			48.41		
Approach LOS	D			E			C			D		
d_I, Intersection Delay [s/veh]	46.30											
Intersection LOS	D											
Intersection V/C	0.562											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.95	55.13	56.03	56.03
l_p,int, Pedestrian LOS Score for Intersection	3.027	3.111	3.111	3.062
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	514	514	658	436
d_b, Bicycle Delay [s]	37.26	37.26	30.40	41.30
l_b,int, Bicycle LOS Score for Intersection	2.305	2.574	2.406	1.985
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: S. Meadows Pkwy / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.470

Intersection Setup

Name	S. Meadows Pkwy			S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	175.00	100.00	175.00	100.00	100.00	100.00	250.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S. Meadows Pkwy			S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Base Volume Input [veh/h]	103	517	329	5	312	188	109	153	5	385	360	197
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	75	0	0	0	0	0	79
Total Hourly Volume [veh/h]	103	517	329	5	312	113	109	153	5	385	360	118
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	140	89	1	85	31	30	42	1	105	98	32
Total Analysis Volume [veh/h]	112	562	358	5	339	123	118	166	5	418	391	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	4	6	0	4	6	0
Maximum Green [s]	35	35	0	16	35	0	25	30	0	25	30	0
Amber [s]	3.2	4.1	0.0	3.2	4.1	0.0	3.3	4.2	0.0	3.3	4.2	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	3.0	0.0	3.0	3.0	0.0	2.5	2.5	0.0	2.5	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	18	0	0	20	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.7	3.6	0.0	2.7	3.6	0.0	2.8	3.7	0.0	2.8	3.7	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	57	57	57	57	57	57	57	57	57	57	57
L, Total Lost Time per Cycle [s]	4.70	5.60	4.70	5.60	5.60	4.80	5.70	5.70	4.80	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	3.60	2.70	3.60	3.60	2.80	3.70	3.70	2.80	3.70	3.70
g_i, Effective Green Time [s]	5	15	0	10	10	5	6	6	15	16	16
g / C, Green / Cycle	0.09	0.26	0.01	0.18	0.18	0.09	0.10	0.10	0.27	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.06	0.16	0.00	0.13	0.13	0.07	0.05	0.05	0.23	0.21	0.08
s, saturation flow rate [veh/h]	1798	3595	1798	1888	1721	1798	1888	1869	1798	1888	1605
c, Capacity [veh/h]	159	928	15	336	306	157	187	185	484	530	450
d1, Uniform Delay [s]	25.20	18.55	28.04	21.99	22.07	25.34	24.18	24.19	19.79	18.56	15.99
k, delay calibration	0.08	0.11	0.11	0.11	0.11	0.08	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.23	0.64	13.03	2.78	3.31	5.29	1.31	1.33	3.58	1.52	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.61	0.34	0.71	0.73	0.75	0.46	0.46	0.86	0.74	0.28
d, Delay for Lane Group [s/veh]	29.43	19.19	41.07	24.77	25.38	30.62	25.49	25.52	23.37	20.08	16.25
Lane Group LOS	C	B	D	C	C	C	C	C	C	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.53	2.94	0.12	2.95	2.80	1.65	1.06	1.06	5.06	4.28	1.18
50th-Percentile Queue Length [ft/ln]	38.25	73.50	2.90	73.78	70.09	41.33	26.56	26.45	126.52	106.93	29.38
95th-Percentile Queue Length [veh/ln]	2.75	5.29	0.21	5.31	5.05	2.98	1.91	1.90	8.75	7.67	2.12
95th-Percentile Queue Length [ft/ln]	68.84	132.30	5.22	132.80	126.16	74.40	47.81	47.62	218.76	191.72	52.89

Movement, Approach, & Intersection Results

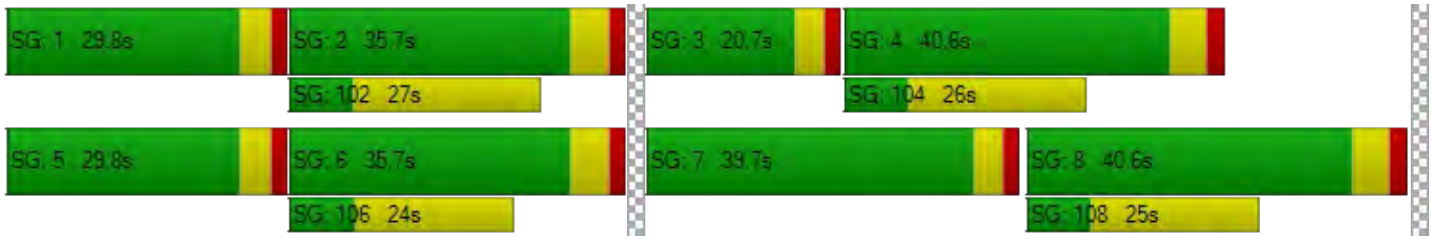
d_M, Delay for Movement [s/veh]	29.43	19.19	0.00	41.07	24.95	25.38	30.62	25.50	25.52	23.37	20.08	16.25
Movement LOS	C	B		D	C	C	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	20.89			25.24			27.59			21.02		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	22.62											
Intersection LOS	C											
Intersection V/C	0.470											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.764	2.768	2.340	2.765
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	500	500
d_b, Bicycle Delay [s]	30.10	30.10	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	2.116	2.007	1.798	3.236
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: S. Meadows Pkwy / Wilbur May Pkwy

Control Type:	All-way stop	Delay (sec / veh):	26.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.866

Intersection Setup

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Approach	Northbound		Westbound		Northeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	0
Entry Pocket Length [ft]	75.00	100.00	125.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Base Volume Input [veh/h]	84	22	35	417	737	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	1.10	1.10	1.10	1.10	1.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	84	22	35	417	737	164
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	6	10	115	202	45
Total Analysis Volume [veh/h]	92	24	38	458	810	180
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	418	484	475	509	509	571	595
Degree of Utilization, x	0.22	0.05	0.08	0.45	0.45	0.87	0.83

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.83	0.16	0.26	2.30	2.30	9.66	8.72
95th-Percentile Queue Length [ft]	20.79	3.90	6.49	57.60	57.60	241.60	218.08
Approach Delay [s/veh]	13.08		15.09			34.27	
Approach LOS	B		C			D	
Intersection Delay [s/veh]	26.80						
Intersection LOS	D						

Intersection Level Of Service Report
Intersection 7: S. Meadows Pkwy / Echo Valley Pkwy

Control Type:	Two-way stop	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.436

Intersection Setup

Name	Echo Valley Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	275.00	150.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Echo Valley Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Base Volume Input [veh/h]	114	15	545	271	15	374
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	1.10	1.10	1.10	1.10	1.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	15	545	271	15	374
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	4	153	76	4	105
Total Analysis Volume [veh/h]	128	17	612	304	17	420
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.44	0.02	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	20.66	10.33	0.00	0.00	8.78	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.81	0.08	0.00	0.00	0.05	0.00
95th-Percentile Queue Length [ft/ln]	20.35	1.89	0.00	0.00	1.34	0.00
d_A, Approach Delay [s/veh]	19.45		0.00		0.34	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.98					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Veterans Pkwy / Long Meadow Dr

Control Type:	Two-way stop	Delay (sec / veh):	43.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.139

Intersection Setup

Name	Veterans Pkwy			Long Meadow Dr			Veterans Pkwy			Long Meadow Dr		
Approach	Southbound			Westbound			Northeastbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	250.00	100.00	250.00	75.00	100.00	100.00	175.00	100.00	100.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			25.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Long Meadow Dr			Veterans Pkwy			Long Meadow Dr		
Base Volume Input [veh/h]	28	748	28	25	3	21	58	526	16	14	0	39
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	748	28	25	3	21	58	526	16	14	0	39
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	201	8	7	1	6	16	141	4	4	0	10
Total Analysis Volume [veh/h]	30	804	30	27	3	23	62	566	17	15	0	42
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Free	Stop
Flared Lane		No		No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance		No		No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.01	0.00	0.21	0.03	0.03	0.08	0.01	0.00	0.14	0.00	0.07
d_M, Delay for Movement [s/veh]	8.76	0.00	0.00	40.23	41.86	10.69	9.78	0.00	0.00	43.54	42.17	11.48
Movement LOS	A	A	A	E	E	B	A	A	A	E	E	B
95th-Percentile Queue Length [veh/ln]	0.09	0.00	0.00	0.75	0.20	0.20	0.25	0.00	0.00	0.46	0.23	0.23
95th-Percentile Queue Length [ft/ln]	2.35	0.00	0.00	18.79	5.01	5.01	6.15	0.00	0.00	11.60	5.65	5.65
d_A, Approach Delay [s/veh]	0.30			27.50			0.94			19.91		
Approach LOS	A			D			A			C		
d_I, Intersection Delay [s/veh]	2.14											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 9: Double R Blvd / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	58.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.440

Intersection Setup

Name	Double Diamond Pkwy			Double Diamond Pkwy			Double R Blvd			Double R Blvd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	200.00	275.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double Diamond Pkwy			Double Diamond Pkwy			Double R Blvd			Double R Blvd		
Base Volume Input [veh/h]	9	25	7	245	14	53	26	301	407	208	936	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	4	0	0	28	0	0	122	0	0	19
Total Hourly Volume [veh/h]	9	25	3	245	14	25	26	301	285	208	936	18
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	7	1	69	4	7	7	85	80	58	263	5
Total Analysis Volume [veh/h]	10	28	3	275	16	28	29	338	320	234	1052	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	6	8	0	4	8	0
Maximum Green [s]	0	15	0	0	30	0	12	35	0	20	35	0
Amber [s]	0.0	3.4	0.0	0.0	4.1	0.0	3.9	4.8	0.0	3.9	4.8	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	35	0	0	35	0	20	35	0	15	30	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.5	0.0	3.0	3.0	0.0	2.5	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	21	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.9	0.0	0.0	3.6	0.0	3.4	4.3	0.0	3.4	4.3	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			Yes		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.90	5.60	5.60	5.40	6.30	6.30	5.40	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.90	3.60	3.60	3.40	4.30	4.30	3.40	4.30	4.30
g_i, Effective Green Time [s]	3	30	30	4	55	55	10	61	61
g / C, Green / Cycle	0.03	0.25	0.25	0.03	0.46	0.46	0.08	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.09	0.02	0.09	0.20	0.13	0.28	0.28
s, saturation flow rate [veh/h]	1846	1802	1773	1802	3603	1609	1802	1892	1880
c, Capacity [veh/h]	54	451	443	56	1641	733	145	955	949
d1, Uniform Delay [s]	57.83	37.06	37.06	57.23	19.64	22.21	55.18	20.58	20.58
k, delay calibration	0.04	0.50	0.50	0.11	0.50	0.50	0.22	0.40	0.40
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.84	2.20	2.24	7.09	0.28	1.89	290.90	1.91	1.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.36	0.36	0.51	0.21	0.44	1.62	0.56	0.56
d, Delay for Lane Group [s/veh]	65.67	39.25	39.30	64.32	19.92	24.10	346.08	22.48	22.51
Lane Group LOS	E	D	D	E	B	C	F	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.36	4.14	4.08	0.96	2.78	6.21	15.97	10.22	10.17
50th-Percentile Queue Length [ft/ln]	34.08	103.40	102.05	23.95	69.58	155.20	399.15	255.57	254.27
95th-Percentile Queue Length [veh/ln]	2.45	7.44	7.35	1.72	5.01	10.29	25.84	15.47	15.40
95th-Percentile Queue Length [ft/ln]	61.35	186.12	183.68	43.10	125.25	257.35	646.04	386.66	385.03

Movement, Approach, & Intersection Results

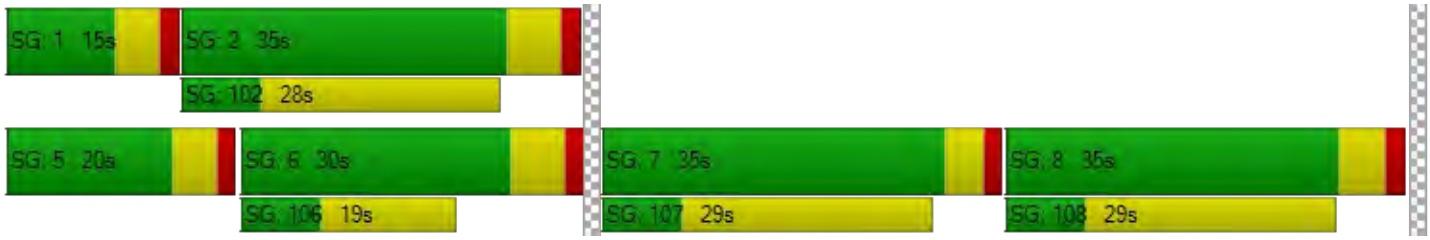
d_M, Delay for Movement [s/veh]	65.67	65.67	65.67	39.27	39.30	39.30	64.32	19.92	24.10	346.08	22.49	22.51
Movement LOS	E	E	E	D	D	D	E	B	C	F	C	C
d_A, Approach Delay [s/veh]	65.67			39.28			23.74			80.47		
Approach LOS	E			D			C			F		
d_I, Intersection Delay [s/veh]	58.07											
Intersection LOS	E											
Intersection V/C	0.440											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	1.787	2.392	3.163	2.846
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	502	490	478	395
d_b, Bicycle Delay [s]	33.68	34.20	34.73	38.64
l_b,int, Bicycle LOS Score for Intersection	1.634	2.132	2.227	2.653
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Damonte Ranch Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	51.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.551

Intersection Setup

Name	Damonte Ranch Pkwy		Damonte Ranch Pkwy		Double R Blvd	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	1
Entry Pocket Length [ft]	415.00	100.00	100.00	100.00	225.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Damonte Ranch Pkwy		Damonte Ranch Pkwy		Double R Blvd	
Base Volume Input [veh/h]	560	961	633	217	416	772
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	87	0	232
Total Hourly Volume [veh/h]	560	961	633	130	416	540
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	261	172	35	113	147
Total Analysis Volume [veh/h]	609	1045	688	141	452	587
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Overlap
Signal Group	7	4	8	0	2	1
Auxiliary Signal Groups						1,2,7
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	6	6	0	2	4
Maximum Green [s]	38	41	41	0	33	20
Amber [s]	3.9	4.8	4.8	0.0	3.0	3.9
All red [s]	1.5	1.5	1.5	0.0	1.0	1.5
Split [s]	40	75	35	0	30	15
Vehicle Extension [s]	3.0	3.0	3.0	0.0	1.0	3.0
Walk [s]	0	13	13	0	12	0
Pedestrian Clearance [s]	0	35	15	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	4.3	4.3	0.0	2.0	3.4
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	Yes	Yes		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	137	137	137	137	137	137
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	6.30	4.00	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	4.30	2.00	0.00
g_i, Effective Green Time [s]	38	84	41	41	33	88
g / C, Green / Cycle	0.28	0.62	0.30	0.30	0.24	0.65
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.16	0.16	0.13	0.21
s, saturation flow rate [veh/h]	3459	5094	3560	1716	3459	2813
c, Capacity [veh/h]	958	3134	1064	513	832	1816
d1, Uniform Delay [s]	43.51	12.77	39.89	40.17	45.49	145.37
k, delay calibration	0.11	0.50	0.50	0.50	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.29	1.81	4.02	0.21	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.33	0.52	0.54	0.54	0.32
d, Delay for Lane Group [s/veh]	44.22	13.05	41.70	44.19	45.69	145.41
Lane Group LOS	D	B	D	D	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	8.95	4.94	7.84	8.19	6.62	16.51
50th-Percentile Queue Length [ft/ln]	223.82	123.50	195.89	204.84	165.40	412.64
95th-Percentile Queue Length [veh/ln]	13.86	8.58	12.43	12.89	10.83	23.17
95th-Percentile Queue Length [ft/ln]	346.50	214.62	310.65	322.20	270.86	579.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.22	13.05	42.19	44.19	45.69	145.41
Movement LOS	D	B	D	D	D	F
d_A, Approach Delay [s/veh]	24.53		42.53		102.03	
Approach LOS	C		D		F	
d_I, Intersection Delay [s/veh]	51.63					
Intersection LOS	D					
Intersection V/C	0.551					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	16.0	17.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	45.07	44.20
l_p,int, Pedestrian LOS Score for Intersection	0.000	3.175	3.306
Crosswalk LOS	F	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1145	478	433
d_b, Bicycle Delay [s]	10.97	34.73	36.82
l_b,int, Bicycle LOS Score for Intersection	2.469	2.063	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Steamboat Pkwy / Damonte Ranch Pkwy

Control Type:	Signalized	Delay (sec / veh):	3.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.428

Intersection Setup

Name	Damonte Ranch Pkwy		Damonte Ranch Pkwy		Steamboat Pkwy	
Approach	Northbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	250.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Damonte Ranch Pkwy		Damonte Ranch Pkwy		Steamboat Pkwy	
Base Volume Input [veh/h]	3	8	2	710	1207	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	4	0	213	0	0
Total Hourly Volume [veh/h]	3	4	2	497	1207	9
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	140	339	3
Total Analysis Volume [veh/h]	3	4	2	558	1356	10
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Overlap	Protected	Permissive
Signal Group	2	0	3	8	1	6
Auxiliary Signal Groups				1,8		
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	4	0	4	4	6	6
Maximum Green [s]	15	0	15	15	30	15
Amber [s]	4.3	0.0	3.5	3.5	4.3	4.3
All red [s]	1.5	0.0	0.5	0.5	1.5	1.5
Split [s]	17	0	15	30	63	80
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	7	0	7	5	0	7
Pedestrian Clearance [s]	4	0	18	10	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.8	0.0	2.0	2.0	3.8	3.8
Minimum Recall	No		No	No	Yes	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.80	5.80	4.00	5.80	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.80	3.80	2.00	0.00	3.80	3.80
g_i, Effective Green Time [s]	1	1	6	98	87	94
g / C, Green / Cycle	0.01	0.01	0.06	0.89	0.79	0.85
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.20	0.39	0.00
s, saturation flow rate [veh/h]	1885	1602	1795	2836	3486	3589
c, Capacity [veh/h]	14	12	104	2516	2765	3062
d1, Uniform Delay [s]	54.26	54.31	48.86	0.87	3.85	1.19
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.88	16.76	0.07	0.20	0.62	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.35	0.02	0.22	0.49	0.00
d, Delay for Lane Group [s/veh]	62.14	71.07	48.93	1.07	4.47	1.19
Lane Group LOS	E	E	D	A	A	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.11	0.16	0.05	0.07	3.78	0.01
50th-Percentile Queue Length [ft/ln]	2.76	4.03	1.32	1.78	94.59	0.18
95th-Percentile Queue Length [veh/ln]	0.20	0.29	0.09	0.13	6.81	0.01
95th-Percentile Queue Length [ft/ln]	4.96	7.26	2.37	3.20	170.26	0.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.14	71.07	48.93	1.07	4.47	1.19
Movement LOS	E	E	D	A	A	A
d_A, Approach Delay [s/veh]	67.25		1.24		4.45	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	3.75					
Intersection LOS	A					
Intersection V/C	0.428					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.155	3.237	2.868
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	204	200	1349
d_b, Bicycle Delay [s]	44.37	44.55	5.83
l_b,int, Bicycle LOS Score for Intersection	1.569	1.560	2.687
Bicycle LOS	A	A	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 12: Veterans Pkwy / Steamboat Pkwy

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Veterans Pkwy			Veterans Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Veterans Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	262	377	68	115	437	163	199	629	576	44	351	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	35	0	0	85	0	0	173	0	0	12
Total Hourly Volume [veh/h]	262	377	33	115	437	78	199	629	403	44	351	11
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	98	9	30	114	20	52	164	105	11	91	3
Total Analysis Volume [veh/h]	273	393	34	120	455	81	207	655	420	46	366	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	6	7	4	4	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	4	0	4	4	4	4	6	6	4	6	0
Maximum Green [s]	30	30	0	15	30	30	15	30	30	15	30	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	4.8	3.9	4.8	4.8	3.2	4.8	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.0
Split [s]	22	32	0	20	30	30	30	53	53	15	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	15	15	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	4.3	3.4	4.3	4.3	2.7	4.3	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	Yes	
Maximum Recall	No	No		No	No		Yes	Yes		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.30	4.30	0.00	4.30	4.30	0.00	4.30	4.30	0.00	4.30	4.30
g_i, Effective Green Time [s]	40	27	27	40	18	18	67	59	59	67	47	47
g / C, Green / Cycle	0.34	0.23	0.23	0.34	0.15	0.15	0.56	0.49	0.49	0.56	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.20	0.11	0.11	0.10	0.13	0.05	0.17	0.35	0.26	0.05	0.10	0.10
s, saturation flow rate [veh/h]	1374	1889	1837	1199	3598	1606	1231	1889	1606	875	1889	1870
c, Capacity [veh/h]	436	428	416	396	542	242	707	933	793	364	736	729
d1, Uniform Delay [s]	32.48	40.54	40.55	29.06	49.56	45.59	13.53	23.54	20.82	16.76	24.85	24.86
k, delay calibration	0.22	0.11	0.11	0.23	0.11	0.11	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.03	0.92	0.95	0.90	3.57	0.81	1.05	4.40	2.52	0.15	0.18	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.51	0.51	0.30	0.84	0.33	0.29	0.70	0.53	0.13	0.26	0.26
d, Delay for Lane Group [s/veh]	35.51	41.47	41.51	29.96	53.12	46.39	14.58	27.94	23.35	16.91	25.04	25.05
Lane Group LOS	D	D	D	C	D	D	B	C	C	B	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.35	5.54	5.40	2.49	6.72	2.17	2.91	14.93	8.38	0.56	3.66	3.64
50th-Percentile Queue Length [ft/ln]	158.75	138.43	135.01	62.23	167.88	54.14	72.81	373.23	209.46	14.05	91.52	90.92
95th-Percentile Queue Length [veh/ln]	10.48	9.40	9.21	4.48	10.96	3.90	5.24	21.27	13.13	1.01	6.59	6.55
95th-Percentile Queue Length [ft/ln]	262.07	234.90	230.29	112.01	274.12	97.45	131.06	531.65	328.14	25.28	164.73	163.66

Movement, Approach, & Intersection Results

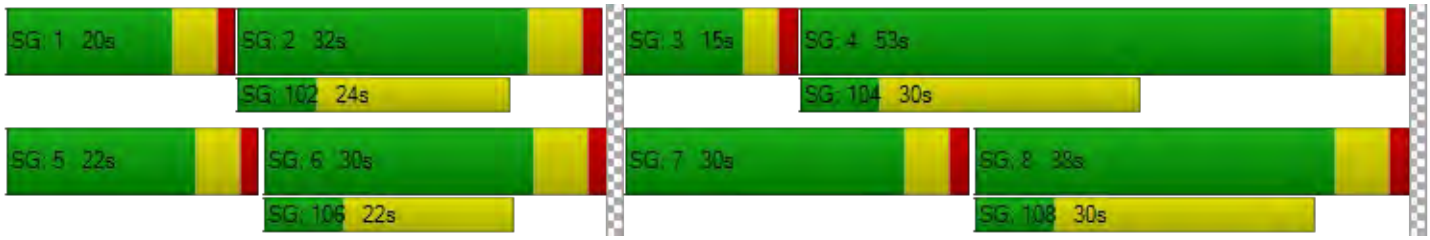
d_M, Delay for Movement [s/veh]	35.51	41.49	41.51	29.96	53.12	46.39	14.58	27.94	23.35	16.91	25.04	25.05
Movement LOS	D	D	D	C	D	D	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	39.16			48.05			24.28			24.16		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.76											
Intersection LOS	C											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.932	3.040	3.139	2.567
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	428	395	778	528
d_b, Bicycle Delay [s]	37.05	38.64	22.39	32.49
l_b,int, Bicycle LOS Score for Intersection	2.166	2.171	3.960	1.918
Bicycle LOS	B	B	D	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Rio Wrangler Pkwy / Steamboat Pkwy

Control Type:	All-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.459

Intersection Setup

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	162	12	1	1	6	92	184	28	306	2	9	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	12	1	1	6	92	184	28	306	2	9	0
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	3	0	0	2	26	52	8	86	1	3	0
Total Analysis Volume [veh/h]	182	13	1	1	7	103	207	31	344	2	10	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	533	581	602	599	654	750	532
Degree of Utilization, x	0.34	0.02	0.18	0.35	0.05	0.46	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.50	0.07	0.67	1.54	0.15	2.43	0.07
95th-Percentile Queue Length [ft]	37.52	1.85	16.76	38.38	3.73	60.73	1.73
Approach Delay [s/veh]	12.62		10.32	11.47			9.93
Approach LOS	B		B	B			A
Intersection Delay [s/veh]	11.56						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 14: Rio Wrangler Pkwy / McCauley Ranch Blvd

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	110.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Base Volume Input [veh/h]	108	20	63	142	11	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	1.50	1.50	1.50	1.50	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	20	63	142	11	44
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	6	18	39	3	12
Total Analysis Volume [veh/h]	120	22	70	158	12	49
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.02	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.62	0.00	11.52	9.07
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.15	0.00	0.07	0.17
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.82	0.00	1.63	4.15
d_A, Approach Delay [s/veh]	0.00		2.34		9.56	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.59					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 15: S. Virginia St / Geiger Grade Rd

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	1	2	0	0
Entry Pocket Length [ft]	350.00	100.00	700.00	725.00	100.00	250.00	525.00	100.00	100.00	600.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Base Volume Input [veh/h]	99	353	482	130	501	61	33	253	131	938	472	146
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	145	0	0	32	0	0	68	0	0	76
Total Hourly Volume [veh/h]	99	353	337	130	501	29	33	253	63	938	472	70
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	94	90	35	133	8	9	67	17	249	126	19
Total Analysis Volume [veh/h]	105	376	359	138	533	31	35	269	67	998	502	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	2	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	35	0	20	35	0	25	40	40	40	40	40
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	1.0	2.0	2.0	2.0	2.0	2.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	28	0	0	28	0	0	18	18	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.5	3.5	0.0	3.0	5.0	5.0	4.0	5.0	5.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50	5.00	7.00	7.00	6.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.50	3.50	3.50	3.00	5.00	5.00	4.00	5.00	5.00
g_i, Effective Green Time [s]	6	14	5	14	3	7	7	25	30	30
g / C, Green / Cycle	0.08	0.19	0.07	0.18	0.03	0.09	0.09	0.34	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.10	0.04	0.15	0.01	0.05	0.04	0.29	0.10	0.05
s, saturation flow rate [veh/h]	1794	3586	3484	3586	3484	5131	1601	3484	5131	1601
c, Capacity [veh/h]	139	684	228	664	121	455	142	1171	2070	646
d1, Uniform Delay [s]	33.98	27.51	34.20	29.32	35.39	32.95	32.58	23.22	14.83	14.03
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.05	0.69	2.59	2.32	1.31	1.22	2.42	1.87	0.06	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.55	0.61	0.80	0.29	0.59	0.47	0.85	0.24	0.11
d, Delay for Lane Group [s/veh]	42.04	28.20	36.79	31.65	36.69	34.17	35.00	25.09	14.89	14.11
Lane Group LOS	D	C	D	C	D	C	C	C	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.11	2.96	1.23	4.42	0.31	1.51	1.17	7.49	1.66	0.70
50th-Percentile Queue Length [ft/ln]	52.72	73.92	30.64	110.41	7.87	37.79	29.36	187.30	41.44	17.56
95th-Percentile Queue Length [veh/ln]	3.80	5.32	2.21	7.86	0.57	2.72	2.11	11.98	2.98	1.26
95th-Percentile Queue Length [ft/ln]	94.90	133.06	55.16	196.57	14.16	68.03	52.85	299.53	74.59	31.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.04	28.20	0.00	36.79	31.65	0.00	36.69	34.17	35.00	25.09	14.89	14.11
Movement LOS	D	C		D	C		D	C	C	C	B	B
d_A, Approach Delay [s/veh]	31.22			32.70			34.56			21.32		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.91											
Intersection LOS	C											
Intersection V/C	0.546											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersection	2.887	2.879	3.143	3.319
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	438	438	500	500
d_b, Bicycle Delay [s]	48.83	48.83	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	1.956	2.113	1.801	2.467
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MOVEMENT SUMMARY

Site: Geiger/Veterans PM

New Site
Roundabout

Movement Performance Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Geiger Grade											
3	L2	426	1.0	0.498	16.3	LOS C	2.3	59.1	0.71	0.78	29.1
8	T1	19	1.0	0.498	16.3	LOS C	2.3	59.1	0.71	0.78	29.2
18	R2	67	1.0	0.498	16.3	LOS C	2.3	59.1	0.71	0.78	28.3
Approach		511	1.0	0.498	16.3	LOS C	2.3	59.1	0.71	0.78	29.0
East: Veterans Pkwy											
1	L2	121	1.0	0.441	10.7	LOS B	1.7	43.7	0.53	0.56	32.7
6	T1	544	1.0	0.441	10.6	LOS B	1.7	43.7	0.52	0.54	33.0
16	R2	6	1.0	0.441	10.5	LOS B	1.7	41.6	0.51	0.53	32.3
Approach		671	1.0	0.441	10.6	LOS B	1.7	43.7	0.52	0.54	33.0
North: Private Access											
7	L2	31	1.0	0.254	10.6	LOS B	0.7	17.8	0.61	0.61	33.0
4	T1	33	1.0	0.254	10.6	LOS B	0.7	17.8	0.61	0.61	32.6
14	R2	67	1.0	0.254	10.6	LOS B	0.7	17.8	0.61	0.61	31.5
Approach		131	1.0	0.254	10.6	LOS B	0.7	17.8	0.61	0.61	32.1
West: Veterans Pkwy											
5	L2	80	1.0	0.798	21.3	LOS C	10.0	252.5	0.82	0.72	29.0
2	T1	660	1.0	0.798	21.3	LOS C	10.0	252.5	0.82	0.72	28.7
12	R2	737	1.0	0.795	21.0	LOS C	9.9	248.3	0.81	0.71	27.8
Approach		1478	1.0	0.798	21.1	LOS C	10.0	252.5	0.82	0.72	28.3
All Vehicles		2792	1.0	0.798	17.2	LOS C	10.0	252.5	0.72	0.68	29.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection Level Of Service Report
Intersection 1: S. Virginia St / I-580 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	160.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.266

Intersection Setup

Name	S. Virginia St			S. Virginia St			North On-Ramp			North Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	S. Virginia St			S. Virginia St			North On-Ramp			North Off-Ramp		
Base Volume Input [veh/h]	0	1022	0	0	0	0	0	0	0	0	0	584
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.70	2.00	2.00	2.70	2.70	2.00	2.00	2.00	2.00	2.00	2.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1022	0	0	0	0	0	0	0	0	0	584
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	269	0	0	0	0	0	0	0	0	0	154
Total Analysis Volume [veh/h]	0	1076	0	0	0	0	0	0	0	0	0	615
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	160.63
Movement LOS		A			A	A						F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.28
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	631.97
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			160.63		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	58.42											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: Double R Blvd / Sandhill Rd

Control Type:	Signalized	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.391

Intersection Setup

Name	Double R Blvd			Double R Blvd			Sandhill Rd			Sandhill Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	115.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double R Blvd			Double R Blvd			Sandhill Rd			Sandhill Rd		
Base Volume Input [veh/h]	129	775	210	69	565	10	5	20	32	41	39	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	112	0	0	5	0	0	17	0	0	28
Total Hourly Volume [veh/h]	129	775	98	69	565	5	5	20	15	41	39	26
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	204	26	18	149	1	1	5	4	11	10	7
Total Analysis Volume [veh/h]	136	816	103	73	595	5	5	21	16	43	41	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	22	0	16	22	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	49	49	4	46	46	5	5	5
g / C, Green / Cycle	0.11	0.70	0.70	0.06	0.66	0.66	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.09	0.28	0.28	0.05	0.18	0.18	0.06	0.04	0.04
s, saturation flow rate [veh/h]	1578	1657	1593	1578	1657	1652	683	1215	1549
c, Capacity [veh/h]	170	1164	1119	92	1083	1080	104	108	105
d1, Uniform Delay [s]	30.56	4.32	4.32	32.58	5.14	5.14	31.38	31.85	31.88
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.44	1.04	1.08	13.75	0.64	0.64	2.53	2.35	6.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.40	0.40	0.79	0.28	0.28	0.41	0.40	0.65
d, Delay for Lane Group [s/veh]	39.00	5.36	5.40	46.33	5.77	5.78	33.91	34.20	38.46
Lane Group LOS	D	A	A	D	A	A	C	C	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.45	1.77	1.71	1.48	1.35	1.34	0.72	0.75	1.26
50th-Percentile Queue Length [ft/ln]	61.36	44.22	42.84	37.10	33.67	33.60	18.06	18.67	31.55
95th-Percentile Queue Length [veh/ln]	4.42	3.18	3.08	2.67	2.42	2.42	1.30	1.34	2.27
95th-Percentile Queue Length [ft/ln]	110.44	79.59	77.12	66.78	60.61	60.48	32.52	33.61	56.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.00	5.38	5.40	46.33	5.77	5.78	33.91	33.91	33.91	34.20	38.46	38.46
Movement LOS	D	A	A	D	A	A	C	C	C	C	D	D
d_A, Approach Delay [s/veh]	9.71			10.17			33.91			36.81		
Approach LOS	A			B			C			D		
d_I, Intersection Delay [s/veh]	12.02											
Intersection LOS	B											
Intersection V/C	0.391											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.044	2.755	1.865	2.136
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	514	514	800	800
d_b, Bicycle Delay [s]	19.31	19.31	12.60	12.60
l_b,int, Bicycle LOS Score for Intersection	2.522	2.119	1.657	1.789
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: S. Meadows Pkwy / Gateway Dr

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name	Gateway Dr			Gateway Dr			S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gateway Dr			Gateway Dr			S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	55	45	83	111	25	175	587	1581	30	72	1156	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	43	0	0	93	0	0	16	0	0	62
Total Hourly Volume [veh/h]	55	45	40	111	25	82	587	1581	14	72	1156	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	12	11	29	7	22	154	416	4	19	304	15
Total Analysis Volume [veh/h]	58	47	42	117	26	86	618	1664	15	76	1217	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	25.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	0	0	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	6	8	0	6	12	0
Maximum Green [s]	0	20	0	0	30	0	35	35	0	20	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.4	0.0	3.9	4.8	0.0	3.2	4.1	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	45	0	0	45	0	45	65	0	25	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	29	0	0	28	0	0	14	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.9	0.0	3.4	4.3	0.0	2.7	3.6	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.50	4.50	4.90	4.90	5.40	6.30	6.30	4.70	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.50	2.90	2.90	3.40	4.30	4.30	2.70	3.60	3.60
g_i, Effective Green Time [s]	25	25	25	25	49	87	87	7	46	46
g / C, Green / Cycle	0.19	0.19	0.18	0.18	0.36	0.65	0.65	0.05	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.16	0.05	0.35	0.31	0.31	0.04	0.24	0.24
s, saturation flow rate [veh/h]	1421	1725	919	1588	1780	3558	1860	1780	3558	1823
c, Capacity [veh/h]	59	319	216	289	645	2298	1201	97	1202	616
d1, Uniform Delay [s]	65.11	47.27	57.81	47.74	42.02	12.26	12.27	63.04	38.81	38.82
k, delay calibration	0.11	0.11	0.45	0.11	0.34	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	48.51	0.47	13.52	0.57	20.63	0.72	1.38	12.98	3.46	6.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.28	0.66	0.30	0.96	0.48	0.48	0.79	0.70	0.70
d, Delay for Lane Group [s/veh]	113.62	47.74	71.32	48.31	62.65	12.98	13.65	76.02	42.27	45.42
Lane Group LOS	F	D	E	D	E	B	B	E	D	D
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.47	2.66	5.64	2.59	23.39	8.35	8.97	2.92	12.61	13.47
50th-Percentile Queue Length [ft/ln]	61.83	66.49	141.05	64.81	584.64	208.75	224.22	72.92	315.34	336.69
95th-Percentile Queue Length [veh/ln]	4.45	4.79	9.54	4.67	31.32	13.09	13.88	5.25	18.44	19.49
95th-Percentile Queue Length [ft/ln]	111.30	119.68	238.43	116.65	782.91	327.23	347.01	131.26	460.95	487.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	113.62	47.74	47.74	71.32	71.32	48.31	62.65	13.21	13.65	76.02	43.23	45.42
Movement LOS	F	D	D	E	E	D	E	B	B	E	D	D
d_A, Approach Delay [s/veh]	73.73			62.68			26.51			45.17		
Approach LOS	E			E			C			D		
d_I, Intersection Delay [s/veh]	36.57											
Intersection LOS	D											
Intersection V/C	0.740											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.95	56.95	56.03	56.03
l_p,int, Pedestrian LOS Score for Intersection	2.108	2.393	3.325	3.401
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	594	870	584
d_b, Bicycle Delay [s]	33.08	33.36	21.56	33.85
l_b,int, Bicycle LOS Score for Intersection	1.873	2.091	2.832	2.338
Bicycle LOS	A	B	C	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: S. Meadows Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	43.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.598

Intersection Setup

Name	Double R Blvd			Double R Blvd			S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	0	2	0	0
Entry Pocket Length [ft]	250.00	100.00	275.00	225.00	100.00	450.00	315.00	100.00	100.00	225.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	35.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double R Blvd			Double R Blvd			S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	228	465	51	106	335	204	727	469	558	181	809	147
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	25	0	0	61	0	0	123	0	0	54
Total Hourly Volume [veh/h]	228	465	26	106	335	143	727	469	558	181	809	147
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	122	7	28	88	38	191	123	147	48	213	39
Total Analysis Volume [veh/h]	240	489	27	112	353	151	765	494	587	191	852	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	5.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	0	4	6	0	6	10	0	6	10	0
Maximum Green [s]	25	30	0	25	30	0	35	35	0	16	35	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	0.0	3.2	4.1	0.0	3.2	4.1	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	23	41	0	25	43	0	34	44	0	25	35	0
Vehicle Extension [s]	2.5	2.5	0.0	2.5	2.5	0.0	2.5	3.0	0.0	2.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	25	0	0	25	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	0.0	2.7	3.6	0.0	2.7	3.6	0.0
Minimum Recall	No	No		No	No		Yes	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	5.40	6.30	6.30	4.70	5.60	5.60	4.70	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	3.40	4.30	4.30	2.70	3.60	3.60	2.70	3.60	3.60
g_i, Effective Green Time [s]	12	21	21	6	16	16	33	76	76	10	53	53
g / C, Green / Cycle	0.09	0.16	0.16	0.05	0.12	0.12	0.24	0.56	0.56	0.07	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.07	0.14	0.02	0.03	0.10	0.10	0.22	0.14	0.37	0.06	0.19	0.19
s, saturation flow rate [veh/h]	3439	3540	1581	3439	3540	1581	3439	3540	1581	3439	3540	1717
c, Capacity [veh/h]	296	553	247	166	420	188	840	1988	888	244	1375	667
d1, Uniform Delay [s]	60.66	55.78	48.91	63.22	58.27	58.00	49.63	15.09	20.66	61.75	31.26	31.28
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.50	0.50	0.04	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.00	3.69	0.14	3.48	3.44	5.93	3.26	0.30	3.86	2.11	1.27	2.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.88	0.11	0.67	0.84	0.80	0.91	0.25	0.66	0.78	0.49	0.49
d, Delay for Lane Group [s/veh]	64.66	59.48	49.06	66.70	61.70	63.94	52.89	15.39	24.52	63.85	32.53	33.89
Lane Group LOS	E	E	D	E	E	E	D	B	C	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.19	8.38	0.79	1.98	6.12	5.35	12.80	3.90	13.38	3.28	8.54	8.56
50th-Percentile Queue Length [ft/ln]	104.70	209.53	19.85	49.52	152.96	133.72	320.03	97.56	334.46	82.05	213.53	213.93
95th-Percentile Queue Length [veh/ln]	7.54	13.13	1.43	3.57	10.18	9.14	18.67	7.02	19.38	5.91	13.33	13.35
95th-Percentile Queue Length [ft/ln]	188.45	328.23	35.73	89.14	254.38	228.55	466.73	175.61	484.42	147.69	333.35	333.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.66	59.48	49.06	66.70	61.70	63.94	52.89	15.39	24.52	63.85	32.80	33.89
Movement LOS	E	E	D	E	E	E	D	B	C	E	C	C
d_A, Approach Delay [s/veh]	60.75			63.16			33.83			37.89		
Approach LOS	E			E			C			D		
d_I, Intersection Delay [s/veh]	43.63											
Intersection LOS	D											
Intersection V/C	0.598											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.95	55.13	56.03	56.03
l_p,int, Pedestrian LOS Score for Intersection	2.978	2.985	3.303	3.126
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	514	544	569	436
d_b, Bicycle Delay [s]	37.26	35.79	34.56	41.30
l_b,int, Bicycle LOS Score for Intersection	2.204	2.118	2.643	2.248
Bicycle LOS	B	B	B	B

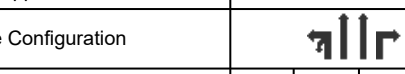
Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Meadows Pkwy / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	161.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	S. Meadows Pkwy				S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Approach	Northeastbound				Southwestbound			Northwestbound			Southeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	175.0	100.0	100.0	175.0	100.00	100.00	100.00	250.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			35.00			35.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	S. Meadows Pkwy				S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Base Volume Input [veh/h]	29	171	373	70	28	958	1167	205	321	43	239	94	45
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	36	0	0	350	0	0	22	0	0	23
Total Hourly Volume [veh/h]	29	171	373	34	28	958	817	205	321	21	239	94	22
Peak Hour Factor	0.950	0.950	0.950	0.950	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	45	98	9	7	252	215	54	84	6	63	25	6
Total Analysis Volume [veh/h]	31	180	393	36	29	1008	860	216	338	22	252	99	23
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Unsig	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	4	0	3	8	0	5	2	0	1	6	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	6	0	6	6	0	4	6	0	4	6	0
Maximum Green [s]	0	35	35	0	16	35	0	25	30	0	25	30	0
Amber [s]	0.0	3.2	4.1	0.0	3.2	4.1	0.0	3.3	4.2	0.0	3.3	4.2	0.0
All red [s]	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	2.5	3.0	0.0	2.0	3.0	0.0	2.5	2.5	0.0	2.5	2.5	0.0
Walk [s]	0	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	19	0	0	18	0	0	20	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	3.6	0.0	2.7	3.6	0.0	2.8	3.7	0.0	2.8	3.7	0.0
Minimum Recall		No	Yes		No	Yes		No	No		No	No	
Maximum Recall		No	No		No	No		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	97	97	97	97	97	97	97	97	97	97	97
L, Total Lost Time per Cycle [s]	4.70	5.60	4.70	5.60	5.60	4.80	5.70	5.70	4.80	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	3.60	2.70	3.60	3.60	2.80	3.70	3.70	2.80	3.70	3.70
g_i, Effective Green Time [s]	14	45	3	35	35	14	12	12	16	14	14
g / C, Green / Cycle	0.14	0.47	0.03	0.36	0.36	0.14	0.12	0.12	0.16	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.12	0.11	0.02	0.51	0.58	0.12	0.10	0.10	0.14	0.05	0.01
s, saturation flow rate [veh/h]	1775	3549	1775	1864	1602	1775	1864	1824	1775	1864	1584
c, Capacity [veh/h]	250	1657	60	671	577	254	227	223	290	265	226
d1, Uniform Delay [s]	40.73	15.53	46.10	31.09	31.09	40.64	41.50	41.52	39.65	37.74	36.27
k, delay calibration	0.08	0.11	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	0.07	2.21	189.98	280.86	6.00	4.78	4.96	6.02	0.65	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.24	0.48	1.40	1.61	0.85	0.80	0.80	0.87	0.37	0.10
d, Delay for Lane Group [s/veh]	46.57	15.61	48.31	221.07	311.95	46.64	46.29	46.48	45.67	38.39	36.41
Lane Group LOS	D	B	D	F	F	D	D	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.26	2.55	0.72	50.47	57.92	5.34	4.44	4.37	6.20	2.14	0.48
50th-Percentile Queue Length [ft/ln]	131.52	63.77	17.98	1261.64	1448.11	133.47	110.94	109.26	154.88	53.48	11.90
95th-Percentile Queue Length [veh/ln]	9.02	4.59	1.29	75.58	90.05	9.13	7.89	7.80	10.28	3.85	0.86
95th-Percentile Queue Length [ft/ln]	225.56	114.79	32.37	1889.53	2251.21	228.21	197.32	194.97	256.92	96.26	21.42

Movement, Approach, & Intersection Results

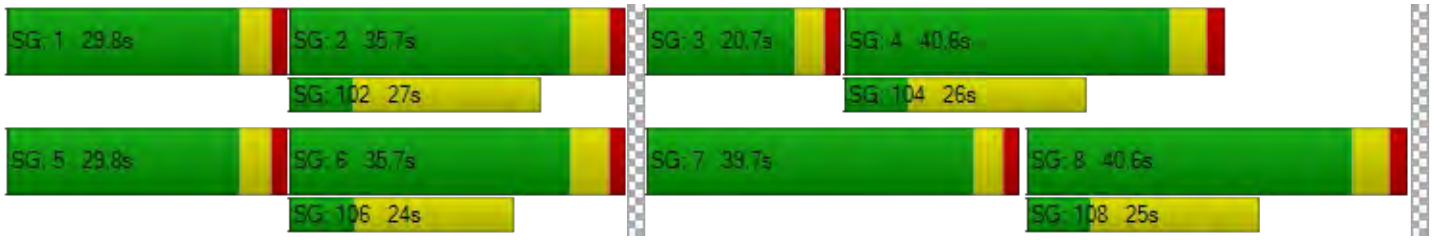
d_M, Delay for Movement [s/veh]	46.57	46.57	15.61	0.00	48.31	227.07	311.95	46.64	46.38	46.48	45.67	38.39	36.41
Movement LOS	D	D	B		D	F	F	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	26.42				262.81			46.48			43.17		
Approach LOS	C				F			D			D		
d_I, Intersection Delay [s/veh]	161.53												
Intersection LOS	F												
Intersection V/C	0.937												

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.883	3.384	2.383	2.830
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	500	500
d_b, Bicycle Delay [s]	30.10	30.10	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	1.909	3.413	2.053	2.215
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: S. Meadows Pkwy / Wilbur May Pkwy

Control Type:	All-way stop	Delay (sec / veh):	459.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.619

Intersection Setup

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	75.00	100.00	100.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Base Volume Input [veh/h]	290	334	497	158	322	1861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	2.80	2.80	2.80	2.80	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	290	334	497	158	322	1861
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	88	131	42	85	490
Total Analysis Volume [veh/h]	305	352	523	166	339	1959
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	305	352	345	345	356	980	980
Degree of Utilization, x	1.07	1.12	1.16	1.13	0.95	2.62	2.62

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	12.08	14.13	14.82	14.17	10.29	80.27	80.27
95th-Percentile Queue Length [ft]	301.98	353.25	370.38	354.16	257.19	2006.65	2006.65
Approach Delay [s/veh]	117.61		133.84		654.82		
Approach LOS	F		F		F		
Intersection Delay [s/veh]	459.46						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 7: S. Meadows Pkwy / Echo Valley Pkwy

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Echo Valley Pkwy						S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	275.00	100.00	275.00	150.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Echo Valley Pkwy						S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	246	0	95	158	0	429	152	625	54	15	1508	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	49	0	0	129	0	0	28	0	0	53
Total Hourly Volume [veh/h]	246	0	46	158	0	300	152	625	26	15	1508	48
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	0	12	42	0	79	40	164	7	4	397	13
Total Analysis Volume [veh/h]	259	0	48	166	0	316	160	658	27	16	1587	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	32	0	9	32	0	16	70	0	9	63	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	15	15	24	15	14	82	2	70	70
g / C, Green / Cycle	0.20	0.12	0.12	0.20	0.12	0.12	0.69	0.02	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.19	0.00	0.03	0.12	0.00	0.10	0.21	0.01	0.50	0.04
s, saturation flow rate [veh/h]	1363	1672	1421	1363	1672	1593	3184	1593	3184	1421
c, Capacity [veh/h]	352	204	174	352	204	186	2182	28	1865	833
d1, Uniform Delay [s]	47.32	0.00	47.84	43.46	0.00	52.03	7.48	58.53	20.52	10.67
k, delay calibration	0.27	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.34	0.00	0.85	0.98	0.00	10.94	0.36	17.92	5.11	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.00	0.28	0.47	0.00	0.86	0.30	0.58	0.85	0.06
d, Delay for Lane Group [s/veh]	54.66	0.00	48.69	44.44	0.00	62.97	7.84	76.46	25.63	10.81
Lane Group LOS	D	A	D	D	A	E	A	E	C	B
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.17	0.00	1.36	4.52	0.00	5.25	3.17	0.62	18.25	0.60
50th-Percentile Queue Length [ft/ln]	204.27	0.00	34.06	112.98	0.00	131.22	79.19	15.41	456.20	14.96
95th-Percentile Queue Length [veh/ln]	12.86	0.00	2.45	8.01	0.00	9.01	5.70	1.11	25.25	1.08
95th-Percentile Queue Length [ft/ln]	321.47	0.00	61.30	200.14	0.00	225.15	142.55	27.73	631.35	26.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.66	0.00	48.69	44.44	0.00	0.00	62.97	7.84	0.00	76.46	25.63	10.81
Movement LOS	D	A	D	D	A		E	A		E	C	B
d_A, Approach Delay [s/veh]	53.72			44.44			18.62			25.67		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	27.69											
Intersection LOS	C											
Intersection V/C	0.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.250	3.170	3.106
Crosswalk LOS	F	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	467	1100	983
d_b, Bicycle Delay [s]	35.27	35.27	12.15	15.50
l_b,int, Bicycle LOS Score for Intersection	2.147	1.834	2.234	2.968
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Veterans Pkwy / Long Meadow Dr

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Veterans Pkwy			Long Meadow Dr			Veterans Pkwy			Long Meadow Dr		
Approach	Southbound			Westbound			Northeastbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	250.00	100.00	250.00	75.00	100.00	100.00	175.00	100.00	100.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			25.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Long Meadow Dr			Veterans Pkwy			Long Meadow Dr		
Base Volume Input [veh/h]	99	1418	15	129	5	110	58	1589	148	15	5	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	1418	15	129	5	110	58	1589	148	15	5	116
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	373	4	34	1	29	15	418	39	4	1	31
Total Analysis Volume [veh/h]	104	1493	16	136	5	116	61	1673	156	16	5	122
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Free	Stop
Flared Lane		No		No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance		No		No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.33	0.01	0.00	0.00	1.65	0.43	0.14	0.02	0.00	0.00	1.86	0.35
d_M, Delay for Movement [s/veh]	21.61	0.00	0.00	10000.0	1776.11	602.30	14.67	0.00	0.00	10000.0	1990.06	658.15
Movement LOS	C	A	A	F	F	F	B	A	A	F	F	F
95th-Percentile Queue Length [veh/ln]	1.38	0.00	0.00	19.60	11.72	11.72	0.49	0.00	0.00	3.65	12.51	12.51
95th-Percentile Queue Length [ft/ln]	34.44	0.00	0.00	490.05	292.95	292.95	12.17	0.00	0.00	91.14	312.70	312.70
d_A, Approach Delay [s/veh]	1.39			5598.24			0.47			1749.97		
Approach LOS	A			F			A			F		
d_I, Intersection Delay [s/veh]	433.55											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Double R Blvd / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	Double Diamond Pkwy			Double Diamond Pkwy			Double R Blvd			Double R Blvd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	200.00	275.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double Diamond Pkwy			Double Diamond Pkwy			Double R Blvd			Double R Blvd		
Base Volume Input [veh/h]	5	0	6	574	5	167	11	1023	176	30	564	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	3	0	0	87	0	0	92	0	0	3
Total Hourly Volume [veh/h]	5	0	3	574	5	80	11	1023	84	30	564	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	151	1	21	3	269	22	8	148	1
Total Analysis Volume [veh/h]	5	0	3	604	5	84	12	1077	88	32	594	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	115.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	6	8	0	4	8	0
Maximum Green [s]	0	15	0	0	30	0	12	35	0	20	35	0
Amber [s]	0.0	3.4	0.0	0.0	4.1	0.0	3.9	4.8	0.0	3.9	4.8	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	35	0	0	35	0	20	35	0	15	30	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.5	0.0	3.0	3.0	0.0	2.5	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	21	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.9	0.0	0.0	3.6	0.0	3.4	4.3	0.0	3.4	4.3	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.90	5.60	5.60	5.40	6.30	6.30	5.40	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.90	3.60	3.60	3.40	4.30	4.30	3.40	4.30	4.30
g_i, Effective Green Time [s]	1	26	26	2	68	68	3	68	68
g / C, Green / Cycle	0.01	0.22	0.22	0.02	0.56	0.56	0.02	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.00	0.20	0.20	0.01	0.30	0.06	0.02	0.16	0.16
s, saturation flow rate [veh/h]	1700	1777	1727	1777	3552	1586	1777	1865	1863
c, Capacity [veh/h]	15	390	379	30	2000	893	42	1063	1062
d1, Uniform Delay [s]	59.22	45.55	45.60	58.34	16.42	12.12	58.21	13.21	13.21
k, delay calibration	0.04	0.08	0.08	0.11	0.50	0.50	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.91	5.90	6.29	8.10	1.04	0.22	18.23	0.66	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.90	0.90	0.39	0.54	0.10	0.76	0.28	0.28
d, Delay for Lane Group [s/veh]	70.12	51.44	51.89	66.44	17.47	12.34	76.44	13.87	13.87
Lane Group LOS	E	D	D	E	B	B	E	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.29	10.64	10.45	0.42	8.76	1.08	1.16	4.01	4.00
50th-Percentile Queue Length [ft/ln]	7.23	266.07	261.13	10.53	219.06	26.90	28.97	100.20	100.11
95th-Percentile Queue Length [veh/ln]	0.52	15.99	15.75	0.76	13.62	1.94	2.09	7.21	7.21
95th-Percentile Queue Length [ft/ln]	13.01	399.83	393.64	18.95	340.42	48.42	52.14	180.36	180.19

Movement, Approach, & Intersection Results

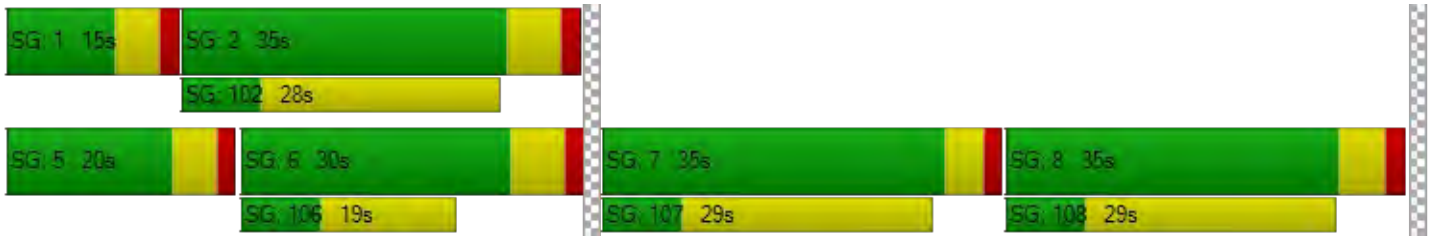
d_M, Delay for Movement [s/veh]	70.12	70.12	70.12	51.63	51.89	51.89	66.44	17.47	12.34	76.44	13.87	13.87
Movement LOS	E	E	E	D	D	D	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	70.12			51.67			17.58			17.06		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	27.04											
Intersection LOS	C											
Intersection V/C	0.524											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	1.746	2.454	3.200	2.869
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	502	490	478	395
d_b, Bicycle Delay [s]	33.68	34.20	34.73	38.64
l_b,int, Bicycle LOS Score for Intersection	1.578	2.847	2.607	2.080
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Damonte Ranch Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	117.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name	Steamboat Pkwy			Damonte Ranch Pkwy						Double R Blvd		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	0	1	0	0	1	0	2
Entry Pocket Length [ft]	150.00	100.00	100.00	415.00	100.00	100.00	250.00	100.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	2	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Steamboat Pkwy			Damonte Ranch Pkwy						Double R Blvd		
Base Volume Input [veh/h]	11	1632	404	586	565	130	130	170	20	237	172	757
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	121	0	0	68	0	0	11	0	0	227
Total Hourly Volume [veh/h]	11	1632	283	586	565	62	130	170	9	237	172	530
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	429	74	154	149	16	34	45	2	62	45	139
Total Analysis Volume [veh/h]	12	1718	298	617	595	65	137	179	9	249	181	558
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												1,6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	6	0	4	6	0	4	4	0	4	6	6
Maximum Green [s]	30	41	0	38	41	0	30	33	0	20	30	30
Amber [s]	3.9	4.8	0.0	3.9	4.8	0.0	3.9	4.8	0.0	3.9	4.8	4.8
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	1.5
Split [s]	10	44	0	23	57	0	37	40	0	13	16	16
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	1.0	0.0	3.0	3.0	3.0
Walk [s]	0	13	0	0	7	0	0	13	0	0	0	0
Pedestrian Clearance [s]	0	18	0	0	35	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	0.0	3.4	4.3	0.0	3.4	4.3	4.3
Minimum Recall	No	Yes		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	5.40	6.30	6.30	5.40	6.30	5.40	6.30	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	3.40	4.30	4.30	3.40	4.30	3.40	4.30	3.85
g_i, Effective Green Time [s]	1	38	38	18	54	54	11	14	27	30	55
g / C, Green / Cycle	0.01	0.31	0.31	0.15	0.45	0.45	0.09	0.12	0.23	0.25	0.46
(v / s)_i Volume / Saturation Flow Rate	0.01	0.38	0.38	0.18	0.12	0.12	0.08	0.10	0.07	0.10	0.20
s, saturation flow rate [veh/h]	1781	3560	1733	3459	3560	1777	1781	1854	3459	1870	2813
c, Capacity [veh/h]	20	1113	542	514	1603	800	166	216	786	468	1291
d1, Uniform Delay [s]	59.08	41.24	41.24	51.08	20.69	20.69	53.42	52.13	38.62	37.36	174.41
k, delay calibration	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.04	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.76	104.58	117.85	94.06	0.09	0.18	9.68	4.19	0.23	0.52	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	1.21	1.23	1.20	0.27	0.27	0.82	0.87	0.32	0.39	0.43
d, Delay for Lane Group [s/veh]	85.84	145.82	159.09	145.14	20.78	20.87	63.10	56.32	38.85	37.88	174.65
Lane Group LOS	F	F	F	F	C	C	E	E	D	D	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.51	32.37	33.51	14.23	3.73	3.75	4.50	5.81	3.00	4.36	15.45
50th-Percentile Queue Length [ft/ln]	12.74	809.34	837.76	355.63	93.20	93.64	112.62	145.25	75.04	109.03	386.18
95th-Percentile Queue Length [veh/ln]	0.92	46.89	48.64	22.09	6.71	6.74	7.99	9.76	5.40	7.79	21.89
95th-Percentile Queue Length [ft/ln]	22.94	1172.25	1216.06	552.33	167.76	168.55	199.64	244.08	135.08	194.65	547.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	85.84	148.66	159.09	145.14	20.80	20.87	63.10	56.32	56.32	38.85	37.88	174.65
Movement LOS	F	F	F	F	C	C	E	E	E	D	D	F
d_A, Approach Delay [s/veh]	149.82			80.88			59.18			115.37		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	117.01											
Intersection LOS	F											
Intersection V/C	0.966											

Other Modes

g_Walk,mi, Effective Walk Time [s]	17.0	0.0	11.0	17.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.20	0.00	49.50	44.20
l_p,int, Pedestrian LOS Score for Intersection	3.274	0.000	2.185	3.434
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	628	845	562	162
d_b, Bicycle Delay [s]	28.22	20.01	31.03	50.69
l_b,int, Bicycle LOS Score for Intersection	2.742	2.299	2.114	3.564
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 11: Steamboat Pkwy / Damonte Ranch Pkwy

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.317

Intersection Setup

Name	Damonte Ranch Pkwy			Damonte Ranch Pkwy						Steamboat Pkwy		
Approach	Northbound			Westbound			Northeastbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	2	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Damonte Ranch Pkwy			Damonte Ranch Pkwy						Steamboat Pkwy		
Base Volume Input [veh/h]	10	80	59	14	203	1729	20	182	10	671	121	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	3.00	3.00	2.00	3.00	2.00	2.00	2.00	3.00	3.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	31	0	0	518	0	0	5	0	0	5
Total Hourly Volume [veh/h]	10	80	28	14	203	1211	20	182	5	671	121	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	21	7	4	53	319	5	48	1	177	32	1
Total Analysis Volume [veh/h]	11	84	29	15	214	1275	21	192	5	706	127	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	3	8	8	7	4	0	1	6	0
Auxiliary Signal Groups						1,8						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	4	0	4	4	4	4	4	0	6	4	0
Maximum Green [s]	20	30	0	20	30	30	20	30	0	30	30	0
Amber [s]	3.5	4.3	0.0	3.5	3.5	3.5	3.5	3.5	0.0	4.3	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	9	41	0	30	50	50	17	37	0	12	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	5	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	20	30	30	0	26	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.8	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.8	3.0	0.0
Minimum Recall	No	No		No	No	No	No	No		Yes	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.80	5.80	5.00	5.00	5.80	5.00	5.00	5.80	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.80	3.80	3.00	3.00	0.00	3.00	3.00	3.80	3.00	3.00
g_i, Effective Green Time [s]	1	6	6	2	21	95	2	21	69	76	76
g / C, Green / Cycle	0.01	0.05	0.05	0.01	0.17	0.79	0.02	0.18	0.58	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.03	0.01	0.11	0.46	0.01	0.11	0.21	0.04	0.04
s, saturation flow rate [veh/h]	1781	1855	1699	1767	1870	2791	1781	1862	3431	1855	1830
c, Capacity [veh/h]	19	93	85	24	327	2216	31	332	1982	1170	1154
d1, Uniform Delay [s]	59.09	55.86	55.98	58.88	46.17	4.69	58.64	45.32	13.48	8.50	8.50
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.63	6.34	8.16	22.89	2.23	1.09	22.85	1.69	0.50	0.02	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.61	0.65	0.62	0.66	0.58	0.68	0.59	0.36	0.06	0.06
d, Delay for Lane Group [s/veh]	82.72	62.20	64.14	81.77	48.40	5.78	81.49	47.02	13.98	8.52	8.52
Lane Group LOS	F	E	E	F	D	A	F	D	B	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	0.45	1.82	1.82	0.60	5.99	4.19	0.83	5.56	5.00	0.64	0.63
50th-Percentile Queue Length [ft/ln]	11.32	45.52	45.46	14.95	149.78	104.71	20.79	138.93	125.06	15.98	15.78
95th-Percentile Queue Length [veh/ln]	0.81	3.28	3.27	1.08	10.01	7.54	1.50	9.42	8.67	1.15	1.14
95th-Percentile Queue Length [ft/ln]	20.37	81.93	81.82	26.91	250.14	188.48	37.42	235.58	216.76	28.77	28.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	82.72	62.82	64.14	81.77	48.40	5.78	81.49	47.02	47.02	13.98	8.52	8.52
Movement LOS	F	E	E	F	D	A	F	D	D	B	A	A
d_A, Approach Delay [s/veh]	64.90			12.60			50.34			13.12		
Approach LOS	E			B			D			B		
d_I, Intersection Delay [s/veh]	18.25											
Intersection LOS	B											
Intersection V/C	0.317											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.448	3.930	2.110	3.060
Crosswalk LOS	B	D	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	587	750	533	650
d_b, Bicycle Delay [s]	29.96	23.44	32.27	27.34
l_b,int, Bicycle LOS Score for Intersection	1.687	4.896	1.928	2.255
Bicycle LOS	A	E	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 12: Veterans Pkwy / Steamboat Pkwy

Control Type:	Signalized	Delay (sec / veh):	126.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.932

Intersection Setup

Name	Veterans Pkwy			Veterans Pkwy			Damonte Ranch Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Veterans Pkwy			Damonte Ranch Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	572	928	45	547	768	403	192	483	208	141	1149	170
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	23	0	0	121	0	0	62	0	0	88
Total Hourly Volume [veh/h]	572	928	22	547	768	282	192	483	146	141	1149	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	244	6	144	202	74	51	127	38	37	302	22
Total Analysis Volume [veh/h]	602	977	23	576	808	297	202	508	154	148	1209	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	115.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	6	7	4	4	3	8	0
Auxiliary Signal Groups						6,7			4,5			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	4	0	4	4	4	4	6	6	4	6	0
Maximum Green [s]	30	30	0	15	30	30	15	30	30	15	30	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	4.8	3.9	4.8	4.8	3.2	4.8	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.0
Split [s]	32	37	0	25	30	30	20	38	38	20	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	15	15	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	4.3	3.4	4.3	4.3	2.7	4.3	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	Yes	Yes	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.30	6.30	6.30	6.30	6.30	5.40	6.30	6.30	5.40	6.30	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.30	4.30	0.00	4.30	0.00	0.00	4.30	0.00	0.00	4.30	4.30
g_i, Effective Green Time [s]	56	35	35	56	24	45	52	39	72	52	32	32
g / C, Green / Cycle	0.46	0.29	0.29	0.46	0.20	0.37	0.43	0.32	0.60	0.43	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.48	0.27	0.27	0.60	0.23	0.19	0.23	0.27	0.10	0.14	0.35	0.35
s, saturation flow rate [veh/h]	1260	1853	1839	957	3529	1575	891	1853	1575	1072	1853	1811
c, Capacity [veh/h]	542	544	540	386	694	585	361	598	940	326	490	479
d1, Uniform Delay [s]	36.73	41.06	41.11	37.82	48.21	29.22	26.61	37.92	10.81	25.90	44.15	44.15
k, delay calibration	0.50	0.46	0.46	0.50	0.11	0.23	0.50	0.50	0.50	0.45	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	72.51	21.90	22.57	235.32	77.42	1.47	6.14	14.04	0.37	4.08	163.51	166.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.11	0.92	0.92	1.49	1.16	0.51	0.56	0.85	0.16	0.45	1.33	1.34
d, Delay for Lane Group [s/veh]	109.24	62.96	63.68	273.14	125.62	30.69	32.75	51.96	11.18	29.98	207.66	211.02
Lane Group LOS	F	E	E	F	F	C	C	D	B	C	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	22.12	17.03	17.06	32.28	17.50	6.60	4.28	16.12	1.90	2.93	36.52	36.13
50th-Percentile Queue Length [ft/ln]	553.02	425.85	426.49	806.93	437.38	164.97	107.08	403.01	47.51	73.24	913.08	903.18
95th-Percentile Queue Length [veh/ln]	32.13	23.80	23.83	52.21	26.29	10.81	7.68	22.70	3.42	5.27	54.17	53.75
95th-Percentile Queue Length [ft/ln]	803.25	595.07	595.83	1305.21	657.13	270.30	191.93	567.62	85.52	131.83	1354.32	1343.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	109.24	63.31	63.68	273.14	125.62	30.69	32.75	51.96	11.18	29.98	209.21	211.02
Movement LOS	F	E	E	F	F	C	C	D	B	C	F	F
d_A, Approach Delay [s/veh]	80.58			159.40			40.20			190.93		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	126.53											
Intersection LOS	F											
Intersection V/C	0.932											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.236	3.488	3.254	3.419
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	512	395	528	528
d_b, Bicycle Delay [s]	33.23	38.64	32.49	32.49
l_b,int, Bicycle LOS Score for Intersection	2.900	3.046	3.088	2.823
Bicycle LOS	C	C	C	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 13: Rio Wrangler Pkwy / Steamboat Pkwy

Control Type:	All-way stop	Delay (sec / veh):	273.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.083

Intersection Setup

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	539	121	2	7	290	546	198	15	537	10	30	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	539	121	2	7	290	546	198	15	537	10	30	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	32	1	2	76	144	52	4	141	3	8	1
Total Analysis Volume [veh/h]	567	127	2	7	305	575	208	16	565	11	32	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	567	414	887	425	451	565	343
Degree of Utilization, x	1.45	0.31	2.08	0.49	0.04	1.14	0.14

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	29.19	1.31	62.94	2.62	0.11	19.58	0.48
95th-Percentile Queue Length [ft]	729.73	32.68	1573.44	65.53	2.75	489.59	12.05
Approach Delay [s/veh]	197.92		514.66	84.58			15.20
Approach LOS	F		F	F			C
Intersection Delay [s/veh]	273.44						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 14: Rio Wrangler Pkwy / McCauley Ranch Blvd

Control Type:	Two-way stop	Delay (sec / veh):	80.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.483

Intersection Setup

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	110.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Base Volume Input [veh/h]	329	95	339	439	40	308
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.50	4.50	4.50	4.50	4.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	329	95	339	439	40	308
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	25	89	116	11	81
Total Analysis Volume [veh/h]	346	100	357	462	42	324
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.32	0.00	0.48	0.47
d_M, Delay for Movement [s/veh]	0.00	0.00	9.83	0.00	80.29	14.72
Movement LOS	A	A	A	A	F	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.42	0.00	2.05	2.51
95th-Percentile Queue Length [ft/ln]	0.00	0.00	35.44	0.00	51.37	62.73
d_A, Approach Delay [s/veh]	0.00		4.28		22.24	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	7.14					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 15: S. Virginia St / Geiger Grade Rd

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	1	2	0	0
Entry Pocket Length [ft]	350.00	100.00	700.00	725.00	100.00	250.00	525.00	100.00	100.00	600.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Base Volume Input [veh/h]	193	716	1548	160	345	43	96	801	199	483	226	231
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	464	0	0	22	0	0	103	0	0	69
Total Hourly Volume [veh/h]	193	716	1084	160	345	21	96	801	96	483	226	162
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	188	285	42	91	6	25	211	25	127	59	43
Total Analysis Volume [veh/h]	203	754	1141	168	363	22	101	843	101	508	238	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	2	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	35	0	20	35	0	25	40	40	40	40	40
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	1.0	2.0	2.0	2.0	2.0	2.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	28	0	0	28	0	0	18	18	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.5	3.5	0.0	3.0	5.0	5.0	4.0	5.0	5.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	86	86	86	86	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50	5.00	7.00	7.00	6.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.50	3.50	3.50	3.00	5.00	5.00	4.00	5.00	5.00
g_i, Effective Green Time [s]	12	21	6	16	5	18	18	16	31	31
g / C, Green / Cycle	0.14	0.25	0.07	0.19	0.05	0.21	0.21	0.18	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.12	0.21	0.05	0.10	0.03	0.17	0.06	0.15	0.05	0.11
s, saturation flow rate [veh/h]	1765	3529	3428	3529	3428	5049	1575	3428	5049	1575
c, Capacity [veh/h]	246	880	253	669	181	1085	339	629	1803	563
d1, Uniform Delay [s]	36.09	30.90	38.90	31.57	39.86	31.91	28.40	33.77	18.71	20.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.81	2.54	2.96	0.69	2.66	1.23	0.49	2.53	0.03	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.86	0.66	0.54	0.56	0.78	0.30	0.81	0.13	0.30
d, Delay for Lane Group [s/veh]	42.90	33.44	41.86	32.26	42.52	33.14	28.89	36.30	18.75	20.30
Lane Group LOS	D	C	D	C	D	C	C	D	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.47	7.43	1.75	3.26	1.06	5.25	1.69	4.98	0.99	2.31
50th-Percentile Queue Length [ft/ln]	111.82	185.64	43.63	81.58	26.49	131.35	42.18	124.54	24.73	57.85
95th-Percentile Queue Length [veh/ln]	7.94	11.89	3.14	5.87	1.91	9.01	3.04	8.64	1.78	4.16
95th-Percentile Queue Length [ft/ln]	198.54	297.36	78.54	146.84	47.69	225.33	75.92	216.05	44.52	104.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.90	33.44	0.00	41.86	32.26	0.00	42.52	33.14	28.89	36.30	18.75	20.30
Movement LOS	D	C		D	C		D	C	C	D	B	C
d_A, Approach Delay [s/veh]	35.44			35.29			33.64			28.76		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.10											
Intersection LOS	C											
Intersection V/C	0.578											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.838	2.933	3.253	3.271
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	778	778	889	889
d_b, Bicycle Delay [s]	16.81	16.81	13.89	13.89
l_b,int, Bicycle LOS Score for Intersection	2.349	1.998	2.191	2.102
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MOVEMENT SUMMARY

Site: Geiger/Veterans AM

New Site
Roundabout

Movement Performance Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Geiger Grade											
3	L2	1307	2.0	1.314	172.4	LOS F	76.1	1933.8	1.00	3.72	10.0
8	T1	122	2.0	1.314	172.4	LOS F	76.1	1933.8	1.00	3.72	9.9
18	R2	248	2.0	1.314	172.4	LOS F	76.1	1933.8	1.00	3.72	9.8
Approach		1678	2.0	1.314	172.4	LOS F	76.1	1933.8	1.00	3.72	10.0
East: Veterans Pkwy											
1	L2	80	2.0	1.309	180.1	LOS F	51.0	1296.4	1.00	3.62	9.7
6	T1	1109	2.0	1.309	179.1	LOS F	53.6	1362.2	1.00	3.70	9.7
16	R2	29	2.0	1.309	178.2	LOS F	53.6	1362.2	1.00	3.77	9.6
Approach		1219	2.0	1.309	179.1	LOS F	53.6	1362.2	1.00	3.70	9.7
North: Private Access											
7	L2	106	2.0	1.819	412.2	LOS F	79.3	2013.9	1.00	4.57	4.9
4	T1	132	2.0	1.819	412.2	LOS F	79.3	2013.9	1.00	4.57	4.9
14	R2	281	2.0	1.819	412.2	LOS F	79.3	2013.9	1.00	4.57	4.8
Approach		519	2.0	1.819	412.2	LOS F	79.3	2013.9	1.00	4.57	4.8
West: Veterans Pkwy											
5	L2	86	2.0	0.545	11.3	LOS B	3.2	80.9	0.52	0.40	32.9
2	T1	396	2.0	0.545	11.3	LOS B	3.2	80.9	0.52	0.40	32.6
12	R2	512	2.0	0.545	11.3	LOS B	3.2	80.9	0.52	0.40	31.6
Approach		994	2.0	0.545	11.3	LOS B	3.2	80.9	0.52	0.40	32.1
All Vehicles		4409	2.0	1.819	166.2	LOS F	79.3	2013.9	0.89	3.07	10.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection Level Of Service Report
Intersection 1: S. Virginia St / I-580 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	387.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.776

Intersection Setup

Name	S. Virginia St			S. Virginia St			North On-Ramp			North Off-Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	S. Virginia St			S. Virginia St			North On-Ramp			North Off-Ramp		
Base Volume Input [veh/h]	0	1470	0	0	0	0	0	0	0	0	0	579
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	1.30	2.00	2.00	1.30	1.30	2.00	2.00	2.00	2.00	2.00	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1470	0	0	0	0	0	0	0	0	0	579
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	387	0	0	0	0	0	0	0	0	0	152
Total Analysis Volume [veh/h]	0	1547	0	0	0	0	0	0	0	0	0	609
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.78
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	387.15
Movement LOS		A			A	A						F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.10
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	977.42
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			387.15		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	109.36											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: Double R Blvd / Sandhill Rd

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.512

Intersection Setup

Name	Double R Blvd			Double R Blvd			Sandhill Rd			Sandhill Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	115.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double R Blvd			Double R Blvd			Sandhill Rd			Sandhill Rd		
Base Volume Input [veh/h]	110	870	37	32	1143	20	10	21	127	91	25	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	20	0	0	10	0	0	67	0	0	68
Total Hourly Volume [veh/h]	110	870	17	32	1143	10	10	21	60	91	25	63
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	229	4	8	301	3	3	6	16	24	7	17
Total Analysis Volume [veh/h]	116	916	18	34	1203	11	11	22	63	96	26	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	39	0	9	22	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	53	53	3	48	48	13	13	13
g / C, Green / Cycle	0.09	0.66	0.66	0.03	0.60	0.60	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.07	0.28	0.28	0.02	0.36	0.36	0.07	0.08	0.06
s, saturation flow rate [veh/h]	1613	1694	1682	1613	1694	1688	1464	1189	1503
c, Capacity [veh/h]	146	1117	1110	54	1021	1018	280	160	236
d1, Uniform Delay [s]	35.67	6.40	6.40	38.20	9.85	9.85	30.34	33.52	30.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.48	1.16	1.17	11.79	2.56	2.57	0.72	3.61	1.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.42	0.42	0.64	0.60	0.60	0.34	0.60	0.39
d, Delay for Lane Group [s/veh]	45.15	7.56	7.57	49.99	12.41	12.42	31.06	37.12	31.32
Lane Group LOS	D	A	A	D	B	B	C	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.46	2.94	2.93	0.80	5.71	5.70	1.66	1.91	1.60
50th-Percentile Queue Length [ft/ln]	61.62	73.57	73.14	19.94	142.76	142.42	41.45	47.72	40.01
95th-Percentile Queue Length [veh/ln]	4.44	5.30	5.27	1.44	9.63	9.61	2.98	3.44	2.88
95th-Percentile Queue Length [ft/ln]	110.91	132.43	131.65	35.90	240.73	240.28	74.60	85.90	72.01

Movement, Approach, & Intersection Results

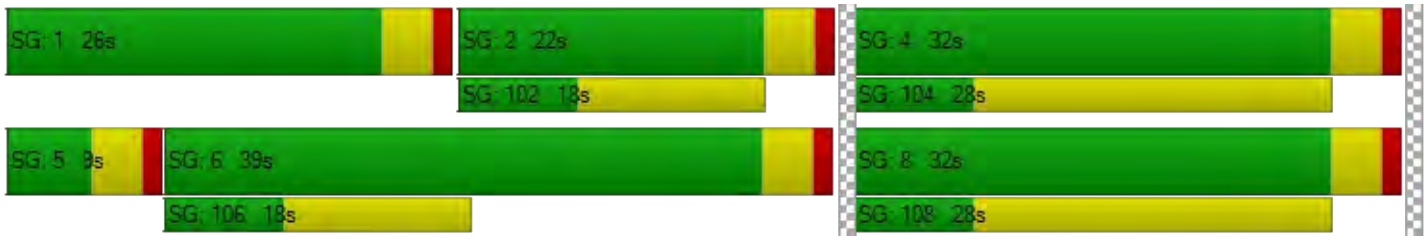
d_M, Delay for Movement [s/veh]	45.15	7.56	7.57	49.99	12.41	12.42	31.06	31.06	31.06	37.12	31.32	31.32
Movement LOS	D	A	A	D	B	B	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	11.72			13.44			31.06			34.29		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.91											
Intersection LOS	B											
Intersection V/C	0.512											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.76	29.76	29.76	29.76
l_p,int, Pedestrian LOS Score for Intersection	3.189	3.001	1.989	2.163
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	875	450	700	700
d_b, Bicycle Delay [s]	12.66	24.03	16.90	16.90
l_b,int, Bicycle LOS Score for Intersection	2.442	2.597	1.829	1.982
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: S. Meadows Pkwy / Gateway Dr

Control Type:	Signalized	Delay (sec / veh):	53.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name	Gateway Dr			Gateway Dr			S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	40.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gateway Dr			Gateway Dr			S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	85	43	58	266	38	528	365	1492	40	83	1696	119
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	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	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	30	0	0	158	0	0	21	0	0	62
Total Hourly Volume [veh/h]	85	43	28	266	38	370	365	1492	19	83	1696	57
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	11	7	70	10	97	96	393	5	22	446	15
Total Analysis Volume [veh/h]	89	45	29	280	40	389	384	1571	20	87	1785	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	2	0	0	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	6	8	0	6	12	0
Maximum Green [s]	0	20	0	0	30	0	35	35	0	20	35	0
Amber [s]	0.0	3.0	0.0	0.0	3.4	0.0	3.9	4.8	0.0	3.2	4.1	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	45	0	0	45	0	45	70	0	20	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	29	0	0	28	0	0	14	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.9	0.0	3.4	4.3	0.0	2.7	3.6	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	135	135	135	135	135	135	135	135	135	135
L, Total Lost Time per Cycle [s]	4.50	4.50	4.90	4.90	5.40	6.30	6.30	4.70	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.50	2.90	2.90	3.40	4.30	4.30	2.70	3.60	3.60
g_i, Effective Green Time [s]	30	30	30	30	31	81	81	8	58	58
g / C, Green / Cycle	0.23	0.23	0.22	0.22	0.23	0.60	0.60	0.06	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.06	0.04	0.29	0.24	0.21	0.29	0.29	0.05	0.34	0.34
s, saturation flow rate [veh/h]	1412	1764	1091	1604	1797	3592	1874	1797	3592	1855
c, Capacity [veh/h]	59	399	293	358	410	2148	1121	110	1549	800
d1, Uniform Delay [s]	65.13	42.21	57.69	52.44	51.16	15.38	15.39	62.53	33.02	33.05
k, delay calibration	0.11	0.11	0.44	0.50	0.31	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	250.82	0.22	75.88	72.95	22.38	0.79	1.51	11.98	4.07	7.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.52	0.19	1.09	1.09	0.94	0.49	0.49	0.79	0.79	0.79
d, Delay for Lane Group [s/veh]	315.95	42.43	133.57	125.39	73.54	16.17	16.90	74.51	37.09	40.72
Lane Group LOS	F	D	F	F	E	B	B	E	D	D
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.69	2.06	16.40	19.44	15.17	9.04	9.67	3.30	17.61	19.03
50th-Percentile Queue Length [ft/ln]	142.16	51.56	409.95	486.09	379.14	226.03	241.79	82.50	440.19	475.86
95th-Percentile Queue Length [veh/ln]	10.24	3.71	24.17	27.96	21.55	13.97	14.77	5.94	24.49	26.19
95th-Percentile Queue Length [ft/ln]	255.90	92.80	604.13	699.03	538.81	349.31	369.30	148.50	612.23	654.74

Movement, Approach, & Intersection Results

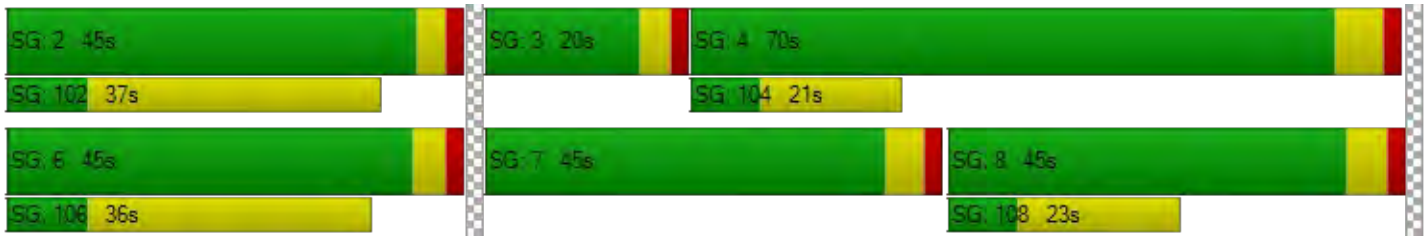
d_M, Delay for Movement [s/veh]	315.95	42.43	42.43	133.57	133.57	125.39	73.54	16.42	16.90	74.51	38.25	40.72
Movement LOS	F	D	D	F	F	F	E	B	B	E	D	D
d_A, Approach Delay [s/veh]	191.78			129.08			27.53			39.96		
Approach LOS	F			F			C			D		
d_I, Intersection Delay [s/veh]	53.22											
Intersection LOS	D											
Intersection V/C	0.846											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.95	56.95	56.03	56.03
l_p,int, Pedestrian LOS Score for Intersection	2.100	2.568	3.436	3.734
Crosswalk LOS	B	B	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	594	944	584
d_b, Bicycle Delay [s]	33.08	33.36	18.83	33.85
l_b,int, Bicycle LOS Score for Intersection	1.878	2.990	2.657	2.656
Bicycle LOS	A	C	B	B

Sequence

Ring 1	-	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: S. Meadows Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	58.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name	Double R Blvd			Double R Blvd			S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	2	0	0	2	0	0
Entry Pocket Length [ft]	250.00	100.00	275.00	225.00	100.00	450.00	315.00	100.00	100.00	225.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	35.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double R Blvd			Double R Blvd			S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	569	452	189	431	683	535	476	1080	358	142	712	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	96	0	0	161	0	0	0	0	0	0
Total Hourly Volume [veh/h]	569	452	93	431	683	374	476	1080	358	142	712	104
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	150	119	24	113	180	98	125	284	94	37	187	27
Total Analysis Volume [veh/h]	599	476	98	454	719	394	501	1137	377	149	749	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	0	4	6	0	6	10	0	6	10	0
Maximum Green [s]	25	30	0	25	30	0	35	35	0	16	35	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	0.0	3.2	4.1	0.0	3.2	4.1	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	24	41	0	24	41	0	35	50	0	20	35	0
Vehicle Extension [s]	2.5	2.5	0.0	2.5	2.5	0.0	2.5	3.0	0.0	2.0	3.0	0.0
Walk [s]	0	8	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	25	0	0	25	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	0.0	2.7	3.6	0.0	2.7	3.6	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		Yes	Yes		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	137	137	137	137	137	137	137	137	137	137	137	137
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	5.40	6.30	6.30	4.70	5.60	5.60	4.70	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	3.40	4.30	4.30	2.70	3.60	3.60	2.70	3.60	3.60
g_i, Effective Green Time [s]	25	36	36	19	30	30	35	52	52	8	25	25
g / C, Green / Cycle	0.18	0.27	0.27	0.14	0.22	0.22	0.26	0.38	0.38	0.06	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.17	0.13	0.06	0.13	0.20	0.25	0.14	0.29	0.29	0.04	0.16	0.16
s, saturation flow rate [veh/h]	3495	3598	1606	3495	3598	1606	3495	3598	1661	3495	3598	1770
c, Capacity [veh/h]	636	952	425	475	787	351	892	1373	634	201	661	325
d1, Uniform Delay [s]	55.39	42.74	39.49	58.86	52.33	53.59	44.43	36.76	37.03	63.66	54.37	54.43
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.48	0.50	0.50	0.50	0.04	0.11	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.97	0.30	0.20	9.01	3.57	84.48	2.56	3.81	8.50	2.04	3.64	10.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.50	0.23	0.96	0.91	1.12	0.56	0.75	0.76	0.74	0.87	0.87
d, Delay for Lane Group [s/veh]	61.36	43.04	39.69	67.87	55.90	138.08	46.98	40.57	45.53	65.70	58.01	64.94
Lane Group LOS	E	D	D	E	E	F	D	D	D	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.67	6.87	2.62	8.43	12.47	20.33	7.71	15.49	15.47	2.61	9.89	10.42
50th-Percentile Queue Length [ft/ln]	266.70	171.72	65.56	210.85	311.77	508.22	192.68	387.13	386.72	65.26	247.34	260.57
95th-Percentile Queue Length [veh/ln]	16.02	11.17	4.72	13.20	18.26	29.52	12.26	21.94	21.92	4.70	15.05	15.72
95th-Percentile Queue Length [ft/ln]	400.61	279.17	118.00	329.93	456.55	738.04	306.50	548.47	547.97	117.47	376.30	392.94

Movement, Approach, & Intersection Results

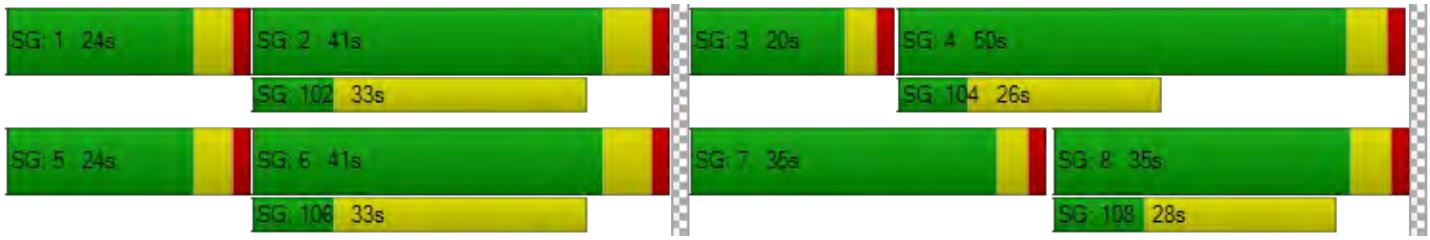
d_M, Delay for Movement [s/veh]	61.36	43.04	39.69	67.87	55.90	138.08	46.98	41.04	45.53	65.70	59.63	64.94
Movement LOS	E	D	D	E	E	F	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	52.11			80.03			43.36			61.10		
Approach LOS	D			F			D			E		
d_I, Intersection Delay [s/veh]	58.22											
Intersection LOS	E											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.95	55.13	56.03	56.03
l_p,int, Pedestrian LOS Score for Intersection	3.111	3.156	3.165	3.100
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	514	514	658	436
d_b, Bicycle Delay [s]	37.26	37.26	30.40	41.30
l_b,int, Bicycle LOS Score for Intersection	2.607	2.985	2.668	2.113
Bicycle LOS	B	C	B	B

Sequence

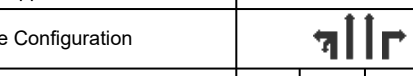
Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: S. Meadows Pkwy / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	152.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.960

Intersection Setup

Name	S. Meadows Pkwy				S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Approach	Northeastbound				Southwestbound			Northwestbound			Southeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	175.0	100.0	100.0	175.0	100.00	100.00	100.00	250.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			35.00			35.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	S. Meadows Pkwy				S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Base Volume Input [veh/h]	55	149	899	335	8	534	460	115	189	8	909	451	237
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	101	0	0	138	0	0	4	0	0	71
Total Hourly Volume [veh/h]	55	149	899	234	8	534	322	115	189	4	909	451	166
Peak Hour Factor	0.950	0.950	0.950	0.950	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	39	237	62	2	141	85	30	50	1	239	119	44
Total Analysis Volume [veh/h]	58	157	946	246	8	562	339	121	199	4	957	475	175
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Unsig	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	4	0	3	8	0	5	2	0	1	6	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	6	0	6	6	0	4	6	0	4	6	0
Maximum Green [s]	0	35	35	0	16	35	0	25	30	0	25	30	0
Amber [s]	0.0	3.2	4.1	0.0	3.2	4.1	0.0	3.3	4.2	0.0	3.3	4.2	0.0
All red [s]	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	2.5	3.0	0.0	3.0	3.0	0.0	2.5	2.5	0.0	2.5	2.5	0.0
Walk [s]	0	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	19	0	0	18	0	0	20	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	3.6	0.0	2.7	3.6	0.0	2.8	3.7	0.0	2.8	3.7	0.0
Minimum Recall		No	Yes		No	Yes		No	No		No	No	
Maximum Recall		No	No		No	No		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	96	96	96	96	96	96	96	96	96	96	96
L, Total Lost Time per Cycle [s]	4.70	5.60	4.70	5.60	5.60	4.80	5.70	5.70	4.80	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	3.60	2.70	3.60	3.60	2.80	3.70	3.70	2.80	3.70	3.70
g_i, Effective Green Time [s]	14	40	1	27	27	8	9	9	25	26	26
g / C, Green / Cycle	0.14	0.41	0.01	0.29	0.29	0.09	0.10	0.10	0.26	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.12	0.26	0.00	0.25	0.25	0.07	0.05	0.05	0.53	0.25	0.11
s, saturation flow rate [veh/h]	1798	3595	1798	1888	1653	1798	1888	1875	1798	1888	1605
c, Capacity [veh/h]	253	1489	22	539	472	153	186	184	467	515	438
d1, Uniform Delay [s]	40.39	22.43	47.23	32.99	33.00	43.23	41.40	41.41	35.68	34.06	28.61
k, delay calibration	0.08	0.11	0.11	0.21	0.21	0.08	0.08	0.08	0.50	0.26	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.89	0.45	10.12	9.75	10.97	6.64	1.86	1.89	480.56	15.33	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.64	0.37	0.89	0.89	0.79	0.55	0.55	2.05	0.92	0.40
d, Delay for Lane Group [s/veh]	46.28	22.89	57.35	42.74	43.96	49.87	43.26	43.30	516.24	49.38	29.05
Lane Group LOS	D	C	E	D	D	D	D	D	F	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.32	8.29	0.25	11.90	10.59	3.05	2.35	2.35	72.77	12.56	3.26
50th-Percentile Queue Length [ft/ln]	132.93	207.33	6.25	297.58	264.69	76.26	58.83	58.64	1819.31	313.89	81.52
95th-Percentile Queue Length [veh/ln]	9.10	13.02	0.45	17.56	15.92	5.49	4.24	4.22	114.43	18.37	5.87
95th-Percentile Queue Length [ft/ln]	227.47	325.40	11.25	439.03	398.10	137.28	105.90	105.56	2860.79	459.17	146.74

Movement, Approach, & Intersection Results

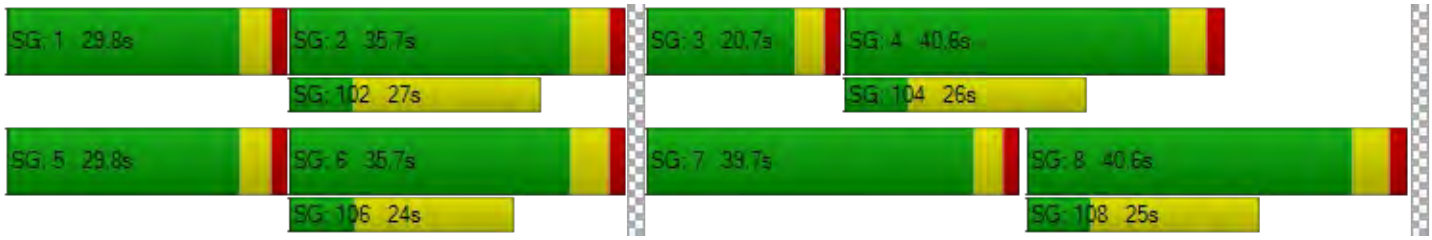
d_M, Delay for Movement [s/veh]	46.28	46.28	22.89	0.00	57.35	42.92	43.96	49.87	43.28	43.30	516.24	49.38	29.05
Movement LOS	D	D	C		E	D	D	D	D	D	F	D	C
d_A, Approach Delay [s/veh]	27.22				43.44			45.74			325.19		
Approach LOS	C				D			D			F		
d_I, Intersection Delay [s/veh]	152.08												
Intersection LOS	F												
Intersection V/C	0.960												

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.892	3.087	2.381	2.986
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	500	500
d_b, Bicycle Delay [s]	30.10	30.10	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	2.388	2.423	1.830	4.328
Bicycle LOS	B	B	A	E

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: S. Meadows Pkwy / Wilbur May Pkwy

Control Type:	All-way stop	Delay (sec / veh):	340.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.169

Intersection Setup

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	75.00	100.00	100.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Base Volume Input [veh/h]	85	76	1636	180	236	917
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	1.10	1.10	1.10	1.10	1.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	85	76	1636	180	236	917
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	20	431	47	62	241
Total Analysis Volume [veh/h]	89	80	1722	189	248	965
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	311	346	956	956	438	483	483
Degree of Utilization, x	0.29	0.23	2.17	2.13	0.57	1.03	1.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.16	0.88	69.52	68.64	3.42	14.48	14.48
95th-Percentile Queue Length [ft]	28.91	21.95	1738.08	1716.09	85.45	361.90	361.90
Approach Delay [s/veh]	17.60		543.30		66.71		
Approach LOS	C		F		F		
Intersection Delay [s/veh]	340.76						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 7: S. Meadows Pkwy / Echo Valley Pkwy

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

Intersection Setup

Name	Echo Valley Pkwy						S. Meadows Pkwy			S. Meadows Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	275.00	100.00	275.00	150.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Echo Valley Pkwy						S. Meadows Pkwy			S. Meadows Pkwy		
Base Volume Input [veh/h]	125	0	17	183	0	303	470	944	298	17	725	208
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	9	0	0	91	0	0	89	0	0	62
Total Hourly Volume [veh/h]	125	0	8	183	0	212	470	944	209	17	725	146
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	0	2	48	0	56	124	248	55	4	191	38
Total Analysis Volume [veh/h]	132	0	8	193	0	223	495	994	220	18	763	154
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsigna	ProtPer	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	0	4	6	0	4	6	0	4	6	0
Maximum Green [s]	25	35	0	25	35	0	25	35	0	25	35	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	9	33	0	17	41	0	40	61	0	9	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	14	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	2.5	0.0	2.5	2.5	0.0	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.50	0.00	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	28	11	28	19	19	35	76	2	43	43
g / C, Green / Cycle	0.24	0.09	0.24	0.16	0.16	0.30	0.64	0.02	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.09	0.00	0.12	0.00	0.14	0.28	0.28	0.01	0.21	0.10
s, saturation flow rate [veh/h]	1518	1883	1622	1883	1601	1794	3586	1794	3586	1601
c, Capacity [veh/h]	448	177	472	303	257	529	2283	27	1280	572
d1, Uniform Delay [s]	37.83	0.00	39.27	0.00	49.11	41.22	10.96	58.80	31.51	27.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.19	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	0.00	0.57	0.00	8.60	12.86	0.61	24.54	2.05	1.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.00	0.41	0.00	0.87	0.94	0.44	0.67	0.60	0.27
d, Delay for Lane Group [s/veh]	38.19	0.00	39.84	0.00	57.71	54.08	11.56	83.34	33.56	28.60
Lane Group LOS	D	A	D	A	E	D	B	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.30	0.00	4.96	0.00	7.12	15.83	6.38	0.72	9.25	3.31
50th-Percentile Queue Length [ft/ln]	82.41	0.00	124.01	0.00	177.90	395.69	159.49	18.12	231.21	82.68
95th-Percentile Queue Length [veh/ln]	5.93	0.00	8.61	0.00	11.49	22.35	10.52	1.30	14.24	5.95
95th-Percentile Queue Length [ft/ln]	148.34	0.00	215.33	0.00	287.27	558.80	263.05	32.62	355.90	148.83

Movement, Approach, & Intersection Results

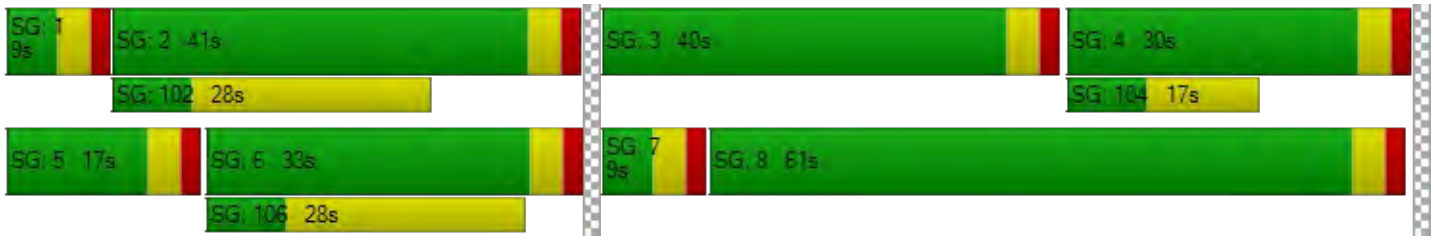
d_M, Delay for Movement [s/veh]	38.19	0.00	0.00	39.84	0.00	57.71	54.08	11.56	0.00	83.34	33.56	28.60
Movement LOS	D	A		D	A	E	D	B		F	C	C
d_A, Approach Delay [s/veh]	38.19			49.42			25.70			33.70		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.09											
Intersection LOS	C											
Intersection V/C	0.689											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.571	3.011	2.999
Crosswalk LOS	F	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	475	608	942	425
d_b, Bicycle Delay [s]	34.88	29.05	16.80	37.21
l_b,int, Bicycle LOS Score for Intersection	1.777	2.396	2.788	2.382
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Veterans Pkwy / Long Meadow Dr

Control Type:	Two-way stop	Delay (sec / veh):	3,599.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	7.667

Intersection Setup

Name	Veterans Pkwy			Long Meadow Dr			Veterans Pkwy			Long Meadow Dr		
Approach	Southbound			Westbound			Northeastbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	250.00	100.00	250.00	75.00	100.00	100.00	175.00	100.00	100.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			25.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Long Meadow Dr			Veterans Pkwy			Long Meadow Dr		
Base Volume Input [veh/h]	77	1580	30	90	4	56	69	1117	59	15	0	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	1580	30	90	4	56	69	1117	59	15	0	45
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	416	8	24	1	15	18	294	16	4	0	12
Total Analysis Volume [veh/h]	81	1663	32	95	4	59	73	1176	62	16	0	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Stop	Free	Stop
Flared Lane		No		No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance		No		No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.02	0.00	7.67	0.57	0.14	0.19	0.01	0.00	3.29	0.00	0.15
d_M, Delay for Movement [s/veh]	12.54	0.00	0.00	3599.35	581.05	78.04	16.60	0.00	0.00	2425.46	543.32	18.55
Movement LOS	B	A	A	F	F	F	C	A	A	F	F	C
95th-Percentile Queue Length [veh/ln]	0.50	0.00	0.00	13.06	3.48	3.48	0.69	0.00	0.00	3.24	0.52	0.52
95th-Percentile Queue Length [ft/ln]	12.62	0.00	0.00	326.38	87.10	87.10	17.35	0.00	0.00	81.06	13.07	13.07
d_A, Approach Delay [s/veh]	0.57			2208.02			0.92			629.82		
Approach LOS	A			F			A			F		
d_I, Intersection Delay [s/veh]	118.13											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Double R Blvd / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	55.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name	Double Diamond Pkwy			Double Diamond Pkwy			Double R Blvd			Double R Blvd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	200.00	275.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Double Diamond Pkwy			Double Diamond Pkwy			Double R Blvd			Double R Blvd		
Base Volume Input [veh/h]	10	30	10	270	15	55	39	651	447	228	1582	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	5	0	0	29	0	0	134	0	0	21
Total Hourly Volume [veh/h]	10	30	5	270	15	26	39	651	313	228	1582	19
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	8	1	71	4	7	10	171	82	60	416	5
Total Analysis Volume [veh/h]	11	32	5	284	16	27	41	685	329	240	1665	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	6	8	0	4	8	0
Maximum Green [s]	0	15	0	0	30	0	12	35	0	20	35	0
Amber [s]	0.0	3.4	0.0	0.0	4.1	0.0	3.9	4.8	0.0	3.9	4.8	0.0
All red [s]	0.0	1.5	0.0	0.0	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	34	0	0	35	0	12	35	0	16	39	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.5	0.0	3.0	3.0	0.0	2.5	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	21	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.9	0.0	0.0	3.6	0.0	3.4	4.3	0.0	3.4	4.3	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			Yes		No	Yes		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.90	5.60	5.60	5.40	6.30	6.30	5.40	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.90	3.60	3.60	3.40	4.30	4.30	3.40	4.30	4.30
g_i, Effective Green Time [s]	4	30	30	5	53	53	11	59	59
g / C, Green / Cycle	0.03	0.25	0.25	0.04	0.44	0.44	0.09	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.09	0.09	0.02	0.19	0.20	0.13	0.45	0.45
s, saturation flow rate [veh/h]	1838	1802	1775	1802	3603	1609	1802	1892	1885
c, Capacity [veh/h]	64	451	444	68	1591	710	160	932	928
d1, Uniform Delay [s]	57.42	37.15	37.16	56.86	23.12	23.54	54.67	27.85	27.94
k, delay calibration	0.04	0.50	0.50	0.11	0.50	0.50	0.23	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.51	2.28	2.32	8.28	0.85	2.17	238.61	13.76	14.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.37	0.37	0.60	0.43	0.46	1.50	0.90	0.91
d, Delay for Lane Group [s/veh]	63.92	39.43	39.48	65.14	23.97	25.71	293.28	41.61	42.12
Lane Group LOS	E	D	D	E	C	C	F	D	D
Critical Lane Group	Yes	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.57	4.25	4.20	1.35	6.55	6.65	15.34	23.81	23.97
50th-Percentile Queue Length [ft/ln]	39.27	106.29	104.98	33.83	163.68	166.16	383.55	595.30	599.15
95th-Percentile Queue Length [veh/ln]	2.83	7.63	7.56	2.44	10.74	10.87	24.70	31.81	31.99
95th-Percentile Queue Length [ft/ln]	70.69	190.83	188.96	60.89	268.59	271.87	617.53	795.37	799.87

Movement, Approach, & Intersection Results

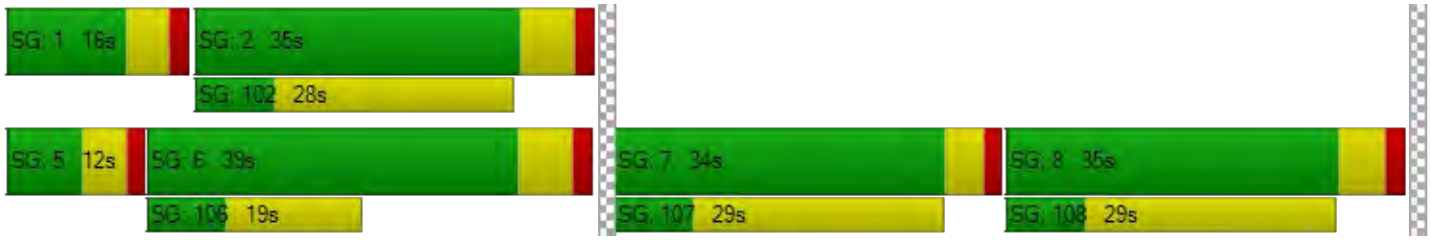
d_M, Delay for Movement [s/veh]	63.92	63.92	63.92	39.45	39.48	39.48	65.14	23.97	25.71	293.28	41.86	42.12
Movement LOS	E	E	E	D	D	D	E	C	C	F	D	D
d_A, Approach Delay [s/veh]	63.92			39.46			26.11			73.21		
Approach LOS	E			D			C			E		
d_I, Intersection Delay [s/veh]	54.98											
Intersection LOS	D											
Intersection V/C	0.587											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	1.797	2.409	3.456	3.133
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	485	490	478	545
d_b, Bicycle Delay [s]	34.43	34.20	34.73	31.76
l_b,int, Bicycle LOS Score for Intersection	1.647	2.147	2.541	3.165
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Damonte Ranch Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	74.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.756

Intersection Setup

Name	Steamboat Pkwy			Damonte Ranch Pkwy						Double R Blvd		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	415.00	100.00	100.00	250.00	100.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	2	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Steamboat Pkwy			Damonte Ranch Pkwy						Double R Blvd		
Base Volume Input [veh/h]	13	945	361	727	1301	88	97	127	22	706	122	1073
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	108	0	0	46	0	0	11	0	0	322
Total Hourly Volume [veh/h]	13	945	253	727	1301	42	97	127	11	706	122	751
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	249	67	191	342	11	26	33	3	186	32	198
Total Analysis Volume [veh/h]	14	995	266	765	1369	44	102	134	12	743	128	791
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												1,6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	0	4	6	0	4	4	0	4	6	6
Maximum Green [s]	30	41	0	38	41	0	30	33	0	20	30	30
Amber [s]	3.9	4.8	0.0	3.9	4.8	0.0	3.9	4.8	0.0	3.9	4.8	4.8
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	1.5
Split [s]	10	38	0	21	49	0	13	40	0	21	48	48
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	13	0	0	7	0	0	13	0	0	0	0
Pedestrian Clearance [s]	0	18	0	0	35	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	0.0	3.4	4.3	0.0	3.4	4.3	4.3
Minimum Recall	No	No		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	5.40	6.30	6.30	5.40	6.30	5.40	6.30	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	3.40	4.30	4.30	3.40	4.30	3.40	4.30	0.00
g_i, Effective Green Time [s]	2	38	38	31	68	68	14	12	16	14	64
g / C, Green / Cycle	0.01	0.32	0.32	0.26	0.57	0.57	0.11	0.10	0.13	0.11	0.53
(v / s)_i Volume / Saturation Flow Rate	0.01	0.24	0.24	0.22	0.26	0.26	0.07	0.08	0.21	0.07	0.28
s, saturation flow rate [veh/h]	1781	3560	1675	3459	3560	1840	1417	1843	3459	1870	2813
c, Capacity [veh/h]	23	1130	532	904	2015	1042	197	178	450	212	1498
d1, Uniform Delay [s]	58.97	36.83	36.85	42.05	15.30	15.32	52.81	53.23	52.22	50.63	14.60
k, delay calibration	0.11	0.11	0.22	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.28
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.55	1.07	4.46	2.30	0.76	1.48	2.11	9.11	296.67	2.74	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.76	0.76	0.85	0.46	0.46	0.52	0.82	1.65	0.60	0.53
d, Delay for Lane Group [s/veh]	83.52	37.90	41.30	44.35	16.06	16.80	54.93	62.34	348.89	53.37	15.36
Lane Group LOS	F	D	D	D	B	B	D	E	F	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.58	11.38	11.23	10.63	7.07	7.56	3.11	4.77	25.10	3.73	5.81
50th-Percentile Queue Length [ft/ln]	14.45	284.47	280.80	265.85	176.82	188.93	77.75	119.24	627.44	93.32	145.26
95th-Percentile Queue Length [veh/ln]	1.04	16.91	16.73	15.98	11.43	12.07	5.60	8.35	39.62	6.72	9.76
95th-Percentile Queue Length [ft/ln]	26.00	422.78	418.20	399.55	285.86	301.64	139.95	208.78	990.44	167.98	244.09

Movement, Approach, & Intersection Results

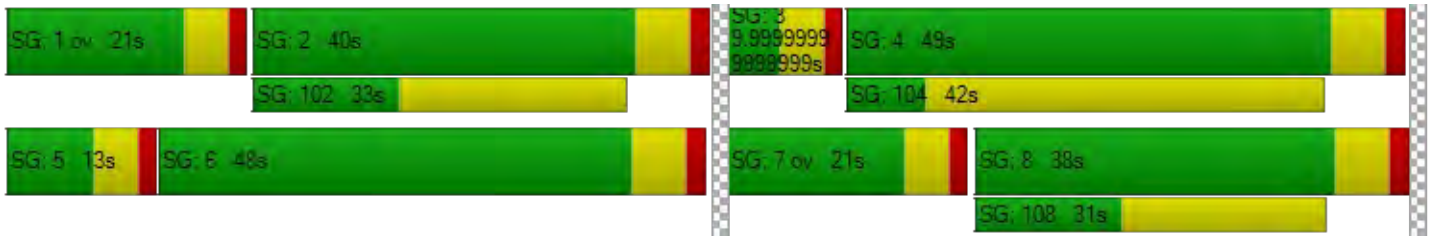
d_M, Delay for Movement [s/veh]	83.52	38.37	41.30	44.35	16.30	16.80	54.93	62.34	62.34	348.89	53.37	15.36
Movement LOS	F	D	D	D	B	B	D	E	E	F	D	B
d_A, Approach Delay [s/veh]	39.48			26.16			59.29			167.39		
Approach LOS	D			C			E			F		
d_I, Intersection Delay [s/veh]	74.63											
Intersection LOS	E											
Intersection V/C	0.756											

Other Modes

g_Walk,mi, Effective Walk Time [s]	17.0	0.0	11.0	17.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.20	0.00	49.50	44.20
l_p,int, Pedestrian LOS Score for Intersection	3.317	0.000	2.129	3.742
Crosswalk LOS	C	F	B	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	712	562	695
d_b, Bicycle Delay [s]	32.49	24.90	31.03	25.55
l_b,int, Bicycle LOS Score for Intersection	2.320	2.783	1.987	4.833
Bicycle LOS	B	C	A	E

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Steamboat Pkwy / Damonte Ranch Pkwy

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.608

Intersection Setup

Name	Damonte Ranch Pkwy			Damonte Ranch Pkwy						Steamboat Pkwy		
Approach	Northbound			Westbound			Northeastbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	2	0	0
Entry Pocket Length [ft]	150.00	100.00	100.00	150.00	100.00	100.00	150.00	100.00	100.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Damonte Ranch Pkwy			Damonte Ranch Pkwy						Steamboat Pkwy		
Base Volume Input [veh/h]	10	98	90	13	135	916	15	128	10	1568	178	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	1.00	1.00	1.00	2.00	1.00	2.00	2.00	2.00	1.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	47	0	0	275	0	0	5	0	0	5
Total Hourly Volume [veh/h]	10	98	43	13	135	641	15	128	5	1568	178	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	26	11	3	36	169	4	34	1	413	47	1
Total Analysis Volume [veh/h]	11	103	45	14	142	675	16	135	5	1651	187	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	0	3	8	8	7	4	0	1	6	0
Auxiliary Signal Groups						1,8						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	4	0	4	4	4	4	4	0	6	4	0
Maximum Green [s]	20	30	0	20	30	30	20	30	0	30	30	0
Amber [s]	3.5	4.3	0.0	3.5	3.5	3.5	3.5	3.5	0.0	4.3	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	9	41	0	29	58	58	9	38	0	12	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	5	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	18	30	30	0	26	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.8	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.8	3.0	0.0
Minimum Recall	No	No		No	No	No	No	No		Yes	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.80	5.80	5.00	5.00	5.80	5.00	5.00	5.80	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.80	3.80	3.00	3.00	0.00	3.00	3.00	3.80	3.00	3.00
g_i, Effective Green Time [s]	1	7	7	2	13	94	2	13	76	84	84
g / C, Green / Cycle	0.01	0.06	0.06	0.01	0.11	0.79	0.01	0.11	0.64	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.01	0.04	0.04	0.01	0.08	0.24	0.01	0.08	0.47	0.05	0.05
s, saturation flow rate [veh/h]	1781	1885	1700	1795	1870	2836	1781	1858	3486	1885	1868
c, Capacity [veh/h]	19	116	104	23	205	2229	26	206	2213	1317	1305
d1, Uniform Delay [s]	59.09	55.08	55.25	58.93	51.51	3.61	58.84	51.32	15.20	5.74	5.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.63	6.02	8.14	21.96	4.18	0.35	22.25	3.91	2.34	0.02	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.65	0.70	0.60	0.69	0.30	0.62	0.68	0.75	0.07	0.07
d, Delay for Lane Group [s/veh]	82.72	61.10	63.39	80.89	55.69	3.96	81.08	55.23	17.54	5.77	5.77
Lane Group LOS	F	E	E	F	E	A	F	E	B	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.45	2.37	2.35	0.56	4.25	1.68	0.64	4.28	14.89	0.71	0.71
50th-Percentile Queue Length [ft/ln]	11.32	59.15	58.65	13.93	106.33	42.03	16.06	106.90	372.28	17.70	17.68
95th-Percentile Queue Length [veh/ln]	0.81	4.26	4.22	1.00	7.64	3.03	1.16	7.67	21.22	1.27	1.27
95th-Percentile Queue Length [ft/ln]	20.37	106.46	105.57	25.07	190.88	75.66	28.92	191.69	530.49	31.86	31.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	82.72	61.72	63.39	80.89	55.69	3.96	81.08	55.23	55.23	17.54	5.77	5.77
Movement LOS	F	E	E	F	E	A	F	E	E	B	A	A
d_A, Approach Delay [s/veh]	63.65			14.09			57.88			16.32		
Approach LOS	E			B			E			B		
d_I, Intersection Delay [s/veh]	20.38											
Intersection LOS	C											
Intersection V/C	0.608											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.502	3.585	2.066	3.089
Crosswalk LOS	B	D	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	587	883	550	650
d_b, Bicycle Delay [s]	29.96	18.70	31.54	27.34
l_b,int, Bicycle LOS Score for Intersection	1.730	3.385	1.825	3.084
Bicycle LOS	A	C	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 12: Veterans Pkwy / Steamboat Pkwy

Control Type:	Signalized	Delay (sec / veh):	100.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.989

Intersection Setup

Name	Veterans Pkwy			Veterans Pkwy			Damonte Ranch Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Veterans Pkwy			Damonte Ranch Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	300	716	123	282	837	253	345	1041	743	92	599	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	64	0	0	76	0	0	223	0	0	34
Total Hourly Volume [veh/h]	300	716	59	282	837	177	345	1041	520	92	599	31
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	188	16	74	220	47	91	274	137	24	158	8
Total Analysis Volume [veh/h]	316	754	62	297	881	186	363	1096	547	97	631	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	6	7	4	4	3	8	0
Auxiliary Signal Groups						6,7			4,5			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	4	0	4	4	4	4	6	6	4	6	0
Maximum Green [s]	30	30	0	15	30	30	15	30	30	15	30	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	4.8	3.9	4.8	4.8	3.2	4.8	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.0
Split [s]	22	32	0	20	30	30	30	53	53	15	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	15	15	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	4.3	3.4	4.3	4.3	2.7	4.3	0.0
Minimum Recall	No	Yes		No	Yes	Yes	No	No	No	No	Yes	
Maximum Recall	No	No		No	No	No	Yes	Yes	Yes	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	6.30	6.30	6.30	6.30	6.30	5.40	6.30	6.30	5.40	6.30	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.30	4.30	0.00	4.30	0.00	0.00	4.30	0.00	0.00	4.30	4.30
g_i, Effective Green Time [s]	63	43	43	63	30	51	50	46	79	50	30	30
g / C, Green / Cycle	0.50	0.34	0.34	0.50	0.24	0.41	0.40	0.36	0.63	0.40	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.26	0.22	0.22	0.30	0.24	0.12	0.31	0.58	0.34	0.16	0.18	0.18
s, saturation flow rate [veh/h]	1205	1889	1840	995	3598	1606	1152	1889	1606	589	1889	1857
c, Capacity [veh/h]	535	645	628	459	860	656	418	686	1012	135	450	443
d1, Uniform Delay [s]	26.33	34.86	34.87	22.58	47.75	24.81	31.83	39.95	13.02	42.95	44.24	44.25
k, delay calibration	0.47	0.34	0.34	0.50	0.11	0.11	0.50	0.50	0.50	0.50	0.22	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.44	3.36	3.46	6.87	20.98	0.23	20.88	275.31	2.07	28.12	4.98	5.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.64	0.64	0.65	1.02	0.28	0.87	1.60	0.54	0.72	0.74	0.74
d, Delay for Lane Group [s/veh]	30.77	38.21	38.32	29.45	68.73	25.04	52.70	315.26	15.09	71.07	49.22	49.33
Lane Group LOS	C	D	D	C	F	C	D	F	B	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.00	10.88	10.62	5.83	15.48	3.63	10.61	73.31	8.88	2.87	10.16	10.00
50th-Percentile Queue Length [ft/ln]	149.93	271.95	265.42	145.73	387.06	90.74	265.21	1832.68	222.08	71.84	253.92	250.07
95th-Percentile Queue Length [veh/ln]	10.01	16.29	15.96	9.79	22.25	6.53	15.95	112.06	13.77	5.17	15.38	15.19
95th-Percentile Queue Length [ft/ln]	250.33	407.17	399.01	244.72	556.20	163.33	398.74	2801.62	344.28	129.31	384.58	379.75

Movement, Approach, & Intersection Results

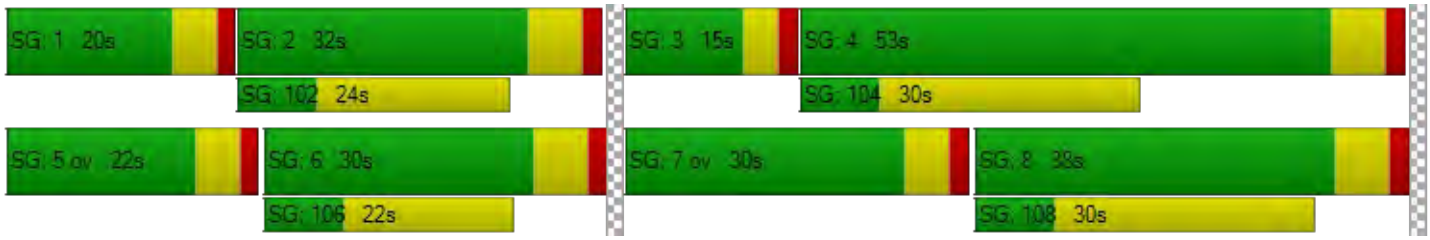
d_M, Delay for Movement [s/veh]	30.77	38.26	38.32	29.45	68.73	25.04	52.70	315.26	15.09	71.07	49.27	49.33
Movement LOS	C	D	D	C	F	C	D	F	B	E	D	D
d_A, Approach Delay [s/veh]	36.18			54.22			185.90			52.05		
Approach LOS	D			D			F			D		
d_I, Intersection Delay [s/veh]	100.22											
Intersection LOS	F											
Intersection V/C	0.989											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.318	3.346	3.457	3.002
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	428	395	778	528
d_b, Bicycle Delay [s]	37.05	38.64	22.39	32.49
l_b,int, Bicycle LOS Score for Intersection	2.546	2.748	5.237	2.215
Bicycle LOS	B	B	F	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Rio Wrangler Pkwy / Steamboat Pkwy

Control Type:	All-way stop	Delay (sec / veh):	75.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.258

Intersection Setup

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	169	200	3	5	140	271	537	30	442	5	10	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	169	200	3	5	140	271	537	30	442	5	10	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	53	1	1	37	71	141	8	116	1	3	1
Total Analysis Volume [veh/h]	178	211	3	5	147	285	565	32	465	5	11	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	390	413	448	565	480	531	353
Degree of Utilization, x	0.46	0.52	0.98	1.26	0.07	0.88	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.32	2.90	12.17	23.51	0.21	9.73	0.19
95th-Percentile Queue Length [ft]	57.96	72.41	304.24	587.76	5.34	243.33	4.73
Approach Delay [s/veh]	20.01		65.53	102.00			13.86
Approach LOS	C		F	F			B
Intersection Delay [s/veh]	75.88						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 14: Rio Wrangler Pkwy / McCauley Ranch Blvd

Control Type:	Two-way stop	Delay (sec / veh):	16.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.050

Intersection Setup

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	110.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Base Volume Input [veh/h]	222	25	128	275	15	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	1.50	1.50	1.50	1.50	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	222	25	128	275	15	84
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	7	34	72	4	22
Total Analysis Volume [veh/h]	234	26	135	289	16	88
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.10	0.00	0.05	0.11
d_M, Delay for Movement [s/veh]	0.00	0.00	8.07	0.00	16.79	10.01
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.34	0.00	0.16	0.37
95th-Percentile Queue Length [ft/ln]	0.00	0.00	8.62	0.00	3.92	9.15
d_A, Approach Delay [s/veh]	0.00		2.57		11.05	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.84					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 15: S. Virginia St / Geiger Grade Rd

Control Type:	Signalized	Delay (sec / veh):	137.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

Intersection Setup

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	1	2	0	0
Entry Pocket Length [ft]	350.00	100.00	700.00	725.00	100.00	250.00	525.00	100.00	100.00	600.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Base Volume Input [veh/h]	158	660	863	261	938	109	59	437	211	1683	809	293
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	259	0	0	57	0	0	63	0	0	88
Total Hourly Volume [veh/h]	158	660	604	261	938	52	59	437	148	1683	809	205
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	174	159	69	247	14	16	115	39	443	213	54
Total Analysis Volume [veh/h]	166	695	636	275	987	55	62	460	156	1772	852	216
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	2	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	35	0	20	35	0	25	40	40	40	40	40
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	1.0	2.0	2.0	2.0	2.0	2.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	28	0	0	28	0	0	18	18	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.5	3.5	0.0	3.0	5.0	5.0	4.0	5.0	5.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	128	128	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50	5.00	7.00	7.00	6.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.50	3.50	3.50	3.00	5.00	5.00	4.00	5.00	5.00
g_i, Effective Green Time [s]	14	36	12	35	5	16	16	40	52	52
g / C, Green / Cycle	0.11	0.28	0.10	0.27	0.04	0.12	0.12	0.31	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.09	0.19	0.08	0.28	0.02	0.09	0.10	0.51	0.17	0.13
s, saturation flow rate [veh/h]	1794	3586	3484	3586	3484	5131	1601	3484	5131	1601
c, Capacity [veh/h]	197	1006	340	976	123	637	199	1084	2092	653
d1, Uniform Delay [s]	56.15	41.27	56.83	46.77	60.89	54.16	54.63	44.27	27.03	26.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.30	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.47	0.86	4.62	16.10	3.15	1.57	6.68	288.10	0.13	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.69	0.81	1.01	0.50	0.72	0.79	1.63	0.41	0.33
d, Delay for Lane Group [s/veh]	65.63	42.13	61.45	62.87	64.04	55.73	61.31	332.37	27.16	26.36
Lane Group LOS	E	D	E	F	E	E	E	F	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.76	9.84	4.49	17.19	1.03	4.76	5.15	59.89	6.00	4.44
50th-Percentile Queue Length [ft/ln]	143.99	245.90	112.30	429.87	25.69	118.90	128.86	1497.28	150.02	110.88
95th-Percentile Queue Length [veh/ln]	9.70	14.98	7.97	24.16	1.85	8.33	8.88	92.38	10.02	7.89
95th-Percentile Queue Length [ft/ln]	242.39	374.49	199.20	603.92	46.24	208.32	221.95	2309.56	250.46	197.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.63	42.13	0.00	61.45	62.87	0.00	64.04	55.73	61.31	332.37	27.16	26.36
Movement LOS	E	D		E	F		E	E	E	F	C	C
d_A, Approach Delay [s/veh]	46.66			62.56			57.77			217.54		
Approach LOS	D			E			E			F		
d_I, Intersection Delay [s/veh]	137.58											
Intersection LOS	F											
Intersection V/C	0.974											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersection	3.208	3.107	3.252	3.597
Crosswalk LOS	C	C	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	438	438	500	500
d_b, Bicycle Delay [s]	48.83	48.83	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	2.270	2.601	1.967	3.170
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

MOVEMENT SUMMARY

Site: Geiger/Veterans PM

New Site
Roundabout

Movement Performance Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Geiger Grade											
3	L2	839	2.0	1.108	98.7	LOS F	31.0	788.3	1.00	2.36	14.5
8	T1	145	2.0	1.108	98.7	LOS F	31.0	788.3	1.00	2.36	14.5
18	R2	213	2.0	1.108	98.7	LOS F	31.0	788.3	1.00	2.36	14.2
Approach		1197	2.0	1.108	98.7	LOS F	31.0	788.3	1.00	2.36	14.5
East: Veterans Pkwy											
1	L2	381	2.0	1.203	135.5	LOS F	39.8	1010.1	1.00	3.07	11.9
6	T1	812	2.0	1.203	134.3	LOS F	41.4	1050.9	1.00	3.14	12.0
16	R2	36	2.0	1.203	133.8	LOS F	41.4	1050.9	1.00	3.16	11.8
Approach		1228	2.0	1.203	134.6	LOS F	41.4	1050.9	1.00	3.12	11.9
North: Private Access											
7	L2	162	2.0	1.947	465.6	LOS F	98.3	2497.3	1.00	5.09	4.4
4	T1	226	2.0	1.947	465.6	LOS F	98.3	2497.3	1.00	5.09	4.4
14	R2	214	2.0	1.947	465.6	LOS F	98.3	2497.3	1.00	5.09	4.4
Approach		602	2.0	1.947	465.6	LOS F	98.3	2497.3	1.00	5.09	4.4
West: Veterans Pkwy											
5	L2	291	2.0	2.109	520.1	LOS F	240.8	6117.4	1.00	6.72	4.0
2	T1	988	2.0	2.109	520.1	LOS F	240.8	6117.4	1.00	6.72	4.0
12	R2	1441	2.0	2.109	520.1	LOS F	240.8	6117.4	1.00	6.72	3.9
Approach		2720	2.0	2.109	520.1	LOS F	240.8	6117.4	1.00	6.72	3.9
All Vehicles		5747	2.0	2.109	344.3	LOS F	240.8	6117.4	1.00	4.87	5.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
The results of iterative calculations indicate a somewhat unstable solution. See the Diagnostics section in the Detailed Output report.

Intersection Level Of Service Report
Intersection 1: S. Virginia St / I-580 North Ramps

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	S. Virginia St		S. Virginia St		North Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		No	

Volumes

Name	S. Virginia St		S. Virginia St		North Off-Ramp	
Base Volume Input [veh/h]	1022	0	0	0	0	584
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	2.00	2.00	2.70	2.00	2.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	175
Total Hourly Volume [veh/h]	1022	0	0	0	0	409
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	0	0	0	0	108
Total Analysis Volume [veh/h]	1076	0	0	0	0	431
Presence of On-Street Parking	No	No			No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	0	0	4
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	5
Maximum Green [s]	50	0	0	0	0	30
Amber [s]	3.5	0.0	0.0	0.0	0.0	3.5
All red [s]	1.5	0.0	0.0	0.0	0.0	1.5
Split [s]	50	0	0	0	0	40
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	3.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No					No
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	0.0	0.0	3.0
Minimum Recall	No					No
Maximum Recall	Yes					No
Pedestrian Recall	No					No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C		R
C, Cycle Length [s]	90		90
L, Total Lost Time per Cycle [s]	5.00		5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00		0.00
l2, Clearance Lost Time [s]	3.00		3.00
g_i, Effective Green Time [s]	51		29
g / C, Green / Cycle	0.57		0.32
(v / s)_i Volume / Saturation Flow Rate	0.34		0.30
s, saturation flow rate [veh/h]	3186		1422
c, Capacity [veh/h]	1814		455
d1, Uniform Delay [s]	12.60		29.89
k, delay calibration	0.50		0.36
I, Upstream Filtering Factor	1.00		1.00
d2, Incremental Delay [s]	1.43		25.31
d3, Initial Queue Delay [s]	0.00		0.00
Rp, platoon ratio	1.00		1.00
PF, progression factor	1.00		1.00

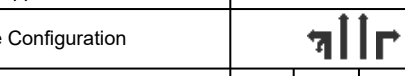
Lane Group Results

X, volume / capacity	0.59		0.95
d, Delay for Lane Group [s/veh]	14.03		55.20
Lane Group LOS	B		E
Critical Lane Group	Yes		Yes
50th-Percentile Queue Length [veh/ln]	6.22		11.50
50th-Percentile Queue Length [ft/ln]	155.50		287.58
95th-Percentile Queue Length [veh/ln]	10.31		17.07
95th-Percentile Queue Length [ft/ln]	257.75		426.63

Intersection Level Of Service Report
Intersection 5: S. Meadows Pkwy / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

Intersection Setup

Name	S. Meadows Pkwy				S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Approach	Northeastbound				Southwestbound			Northwestbound			Southeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	1	1	0	0	2	0	0
Entry Pocket Length [ft]	175.0	100.0	100.0	175.0	100.00	100.00	200.00	250.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			35.00			35.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	S. Meadows Pkwy				S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Base Volume Input [veh/h]	29	171	373	70	28	958	1167	205	321	43	239	94	45
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	36	0	0	350	0	0	22	0	0	23
Total Hourly Volume [veh/h]	29	171	373	34	28	958	817	205	321	21	239	94	22
Peak Hour Factor	0.950	0.950	0.950	0.950	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	45	98	9	7	252	215	54	84	6	63	25	6
Total Analysis Volume [veh/h]	31	180	393	36	29	1008	860	216	338	22	252	99	23
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Unsig	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	4	0	3	8	8	5	2	0	1	6	0
Auxiliary Signal Groups							1,8						
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	6	0	6	6	6	4	6	0	4	6	0
Maximum Green [s]	0	35	35	0	16	35	35	25	30	0	25	30	0
Amber [s]	0.0	3.2	4.1	0.0	3.2	4.1	4.1	3.3	4.2	0.0	3.3	4.2	0.0
All red [s]	0.0	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	2.5	3.0	0.0	2.0	3.0	3.0	2.5	2.5	0.0	2.5	2.5	0.0
Walk [s]	0	0	7	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	19	0	0	18	18	0	20	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	3.6	0.0	2.7	3.6	3.6	2.8	3.7	0.0	2.8	3.7	0.0
Minimum Recall		No	Yes		No	Yes	Yes	No	No		No	No	
Maximum Recall		No	No		No	No	No	No	No		No	No	
Pedestrian Recall		No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	107	107	107	107	107	107	107	107	107	107	107
L, Total Lost Time per Cycle [s]	4.70	5.60	4.70	5.60	4.80	4.80	5.70	5.70	4.80	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	3.60	2.70	3.60	0.00	2.80	3.70	3.70	2.80	3.70	3.70
g_i, Effective Green Time [s]	15	45	3	33	64	15	13	13	25	23	23
g / C, Green / Cycle	0.14	0.42	0.03	0.31	0.60	0.14	0.12	0.12	0.23	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.12	0.11	0.02	0.28	0.54	0.12	0.10	0.10	0.07	0.05	0.01
s, saturation flow rate [veh/h]	1775	3549	1775	3549	1584	1775	1864	1824	3447	1864	1584
c, Capacity [veh/h]	246	1488	58	1113	950	250	223	218	806	397	337
d1, Uniform Delay [s]	45.02	20.27	50.83	35.17	18.71	44.93	45.90	45.92	33.83	34.97	33.60
k, delay calibration	0.08	0.11	0.04	0.11	0.50	0.08	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.47	0.09	2.46	3.13	13.66	6.67	5.37	5.58	0.16	0.24	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.26	0.50	0.91	0.90	0.87	0.82	0.82	0.31	0.25	0.07
d, Delay for Lane Group [s/veh]	51.49	20.36	53.29	38.30	32.37	51.60	51.27	51.50	34.00	35.22	33.67
Lane Group LOS	D	C	D	D	C	D	D	D	C	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	5.87	3.19	0.80	12.78	20.48	5.96	4.96	4.89	2.68	2.14	0.48
50th-Percentile Queue Length [ft/ln]	146.74	79.71	20.00	319.55	511.99	149.12	124.01	122.13	67.03	53.51	11.94
95th-Percentile Queue Length [veh/ln]	9.84	5.74	1.44	18.65	27.90	9.97	8.61	8.51	4.83	3.85	0.86
95th-Percentile Queue Length [ft/ln]	246.07	143.47	36.01	466.14	697.54	249.26	215.32	212.75	120.66	96.32	21.50

Movement, Approach, & Intersection Results

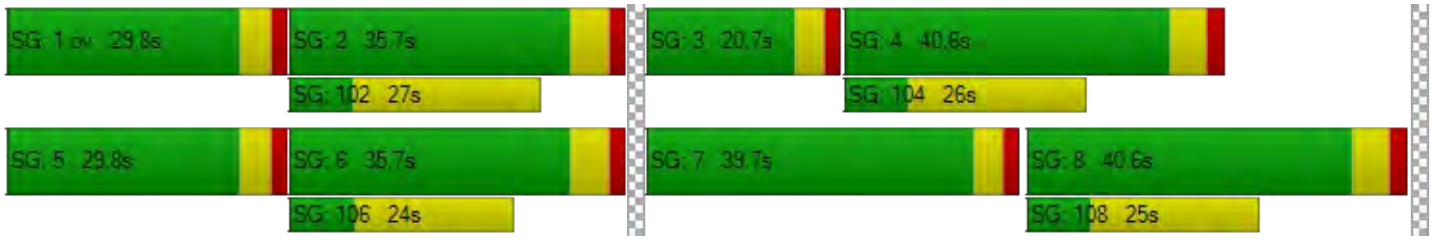
d_M, Delay for Movement [s/veh]	51.49	51.49	20.36	0.00	53.29	38.30	32.37	51.60	51.38	51.50	34.00	35.22	33.67
Movement LOS	D	D	C		D	D	C	D	D	D	C	D	C
d_A, Approach Delay [s/veh]	31.24				35.85			51.47			34.30		
Approach LOS	C				D			D			C		
d_I, Intersection Delay [s/veh]	37.48												
Intersection LOS	D												
Intersection V/C	0.394												

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.883	3.442	2.383	2.902
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	500	500
d_b, Bicycle Delay [s]	30.10	30.10	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	1.909	3.413	2.053	2.215
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: S. Meadows Pkwy / Wilbur May Pkwy

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	75.00	100.00	100.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Base Volume Input [veh/h]	290	334	497	158	322	1861
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	2.80	2.80	2.80	2.80	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	100	0	82	0	0
Total Hourly Volume [veh/h]	290	234	497	76	322	1861
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	62	131	20	85	490
Total Analysis Volume [veh/h]	305	246	523	80	339	1959
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	5	0	5	5
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	43	0	18	0	59	77
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	15	0	9	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	55	55	28	86
g / C, Green / Cycle	0.21	0.21	0.46	0.46	0.23	0.72
(v / s)_i Volume / Saturation Flow Rate	0.19	0.17	0.18	0.19	0.21	0.62
s, saturation flow rate [veh/h]	1593	1421	1672	1597	1593	3184
c, Capacity [veh/h]	340	303	762	728	368	2293
d1, Uniform Delay [s]	45.91	44.89	21.66	21.88	45.07	12.21
k, delay calibration	0.16	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.59	5.43	1.54	1.74	9.79	4.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.81	0.40	0.41	0.92	0.85
d, Delay for Lane Group [s/veh]	57.50	50.32	23.20	23.62	54.86	16.54
Lane Group LOS	E	D	C	C	D	B
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	9.81	7.33	5.85	5.94	10.70	17.22
50th-Percentile Queue Length [ft/ln]	245.20	183.25	146.37	148.45	267.41	430.53
95th-Percentile Queue Length [veh/ln]	14.94	11.77	9.82	9.93	16.06	24.03
95th-Percentile Queue Length [ft/ln]	373.60	294.25	245.57	248.35	401.50	600.67

Movement, Approach, & Intersection Results

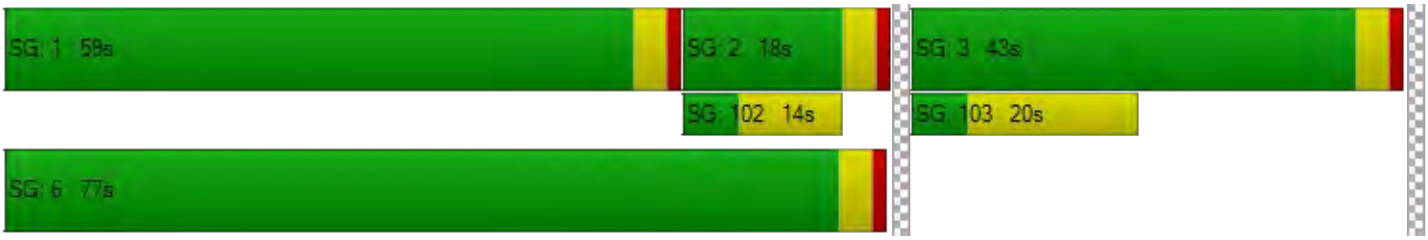
d_M, Delay for Movement [s/veh]	57.50	50.32	23.38	23.62	54.86	16.54
Movement LOS	E	D	C	C	D	B
d_A, Approach Delay [s/veh]	54.29		23.41		22.19	
Approach LOS	D		C		C	
d_I, Intersection Delay [s/veh]	27.53					
Intersection LOS	C					
Intersection V/C	0.807					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.534	3.102	3.036
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	233	1217
d_b, Bicycle Delay [s]	27.34	46.82	9.20
l_b,int, Bicycle LOS Score for Intersection	1.560	2.125	3.455
Bicycle LOS	A	B	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Veterans Pkwy / Long Meadow Dr

Control Type:	Signalized	Delay (sec / veh):	51.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.683

Intersection Setup

Name	Veterans Pkwy			Veterans Pkwy			Long Meadow Dr			Long Meadow Dr		
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	250.00	100.00	250.00	75.00	100.00	100.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Veterans Pkwy			Long Meadow Dr			Long Meadow Dr		
Base Volume Input [veh/h]	58	1589	148	99	1418	15	129	5	110	15	5	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	1589	148	99	1418	15	129	5	110	15	5	116
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	418	39	26	373	4	34	1	29	4	1	31
Total Analysis Volume [veh/h]	61	1673	156	104	1493	16	136	5	116	16	5	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	37	75	0	13	51	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	11	0	0	15	0	0	20	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	66	66	66	66	66	66	66	66	66	66
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	3	30	30	5	32	32	16	16	16	16
g / C, Green / Cycle	0.05	0.45	0.45	0.08	0.48	0.48	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.03	0.50	0.51	0.06	0.43	0.01	0.11	0.08	0.01	0.08
s, saturation flow rate [veh/h]	1744	1831	1777	1744	3486	1556	1237	1566	1244	1566
c, Capacity [veh/h]	89	832	807	136	1677	749	283	377	289	377
d1, Uniform Delay [s]	30.82	18.02	18.02	29.86	15.55	8.98	27.38	20.63	24.49	20.71
k, delay calibration	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.99	62.72	74.15	8.70	1.81	0.01	1.26	0.49	0.08	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	1.10	1.13	0.77	0.89	0.02	0.48	0.32	0.06	0.34
d, Delay for Lane Group [s/veh]	39.81	80.74	92.17	38.56	17.37	9.00	28.64	21.11	24.57	21.24
Lane Group LOS	D	F	F	D	B	A	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.10	24.35	26.20	1.81	8.22	0.10	2.10	1.53	0.22	1.61
50th-Percentile Queue Length [ft/ln]	27.47	608.72	654.98	45.17	205.58	2.47	52.54	38.22	5.44	40.32
95th-Percentile Queue Length [veh/ln]	1.98	34.77	37.73	3.25	12.93	0.18	3.78	2.75	0.39	2.90
95th-Percentile Queue Length [ft/ln]	49.44	869.18	943.31	81.30	323.15	4.45	94.57	68.80	9.80	72.57

Movement, Approach, & Intersection Results

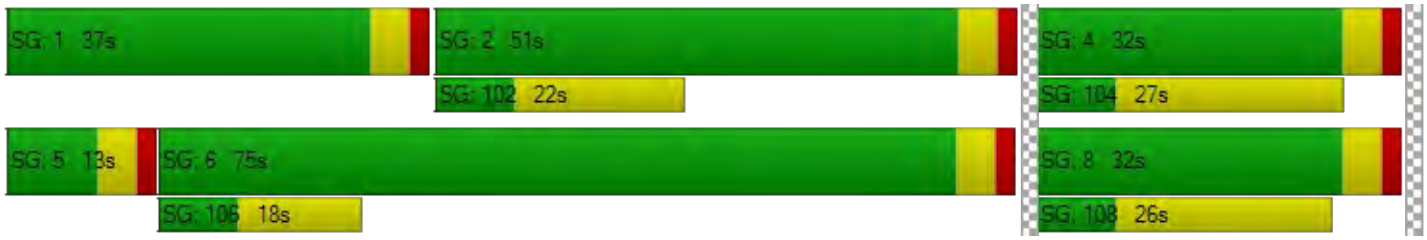
d_M, Delay for Movement [s/veh]	39.81	85.91	92.17	38.56	17.37	9.00	28.64	21.11	21.11	24.57	21.24	21.24
Movement LOS	D	F	F	D	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	84.94			18.65			25.10			21.61		
Approach LOS	F			B			C			C		
d_I, Intersection Delay [s/veh]	51.28											
Intersection LOS	D											
Intersection V/C	0.683											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.572	3.323	2.095	2.015
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	767	450	450
d_b, Bicycle Delay [s]	10.42	22.82	36.04	36.04
l_b,int, Bicycle LOS Score for Intersection	3.119	2.890	1.984	1.796
Bicycle LOS	C	C	A	A

Sequence

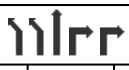
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Damonte Ranch Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	76.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.821

Intersection Setup

Name	Steamboat Pkwy			Damonte Ranch Pkwy						Double R Blvd		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	0	1	0	0	1	0	2
Entry Pocket Length [ft]	150.00	100.00	150.00	415.00	100.00	100.00	250.00	100.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Steamboat Pkwy			Damonte Ranch Pkwy						Double R Blvd		
Base Volume Input [veh/h]	11	1632	404	586	565	130	130	170	20	237	172	757
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	121	0	0	68	0	0	11	0	0	227
Total Hourly Volume [veh/h]	11	1632	283	586	565	62	130	170	9	237	172	530
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	429	74	154	149	16	34	45	2	62	45	139
Total Analysis Volume [veh/h]	12	1718	298	617	595	65	137	179	9	249	181	558
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												1,6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	6	0	4	6	0	4	4	0	4	6	6
Maximum Green [s]	30	41	0	38	41	0	30	33	0	20	30	30
Amber [s]	3.9	4.8	0.0	3.9	4.8	0.0	3.9	4.8	0.0	3.9	4.8	4.8
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	1.5
Split [s]	11	43	0	26	58	0	21	40	0	11	30	30
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	1.0	0.0	3.0	3.0	3.0
Walk [s]	0	13	0	0	7	0	0	13	0	0	0	0
Pedestrian Clearance [s]	0	18	0	0	35	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	0.0	3.4	4.3	0.0	3.4	4.3	4.3
Minimum Recall	No	Yes		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	5.40	6.30	6.30	5.40	6.30	5.40	6.30	5.85
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	3.40	4.30	4.30	3.40	4.30	3.40	4.30	0.00
g_i, Effective Green Time [s]	1	37	37	26	62	62	11	14	20	23	56
g / C, Green / Cycle	0.01	0.31	0.31	0.22	0.51	0.51	0.09	0.12	0.16	0.19	0.47
(v / s)_i Volume / Saturation Flow Rate	0.01	0.34	0.19	0.18	0.12	0.12	0.08	0.10	0.07	0.10	0.20
s, saturation flow rate [veh/h]	1781	5094	1589	3459	3560	1777	1781	1854	3459	1870	2813
c, Capacity [veh/h]	20	1566	489	748	1825	911	164	216	571	354	1309
d1, Uniform Delay [s]	59.08	41.56	35.43	44.87	16.27	16.28	53.56	52.13	45.08	43.67	172.63
k, delay calibration	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.04	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.76	54.27	5.59	2.38	0.07	0.14	10.42	4.19	0.53	1.15	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	1.10	0.61	0.83	0.24	0.24	0.83	0.87	0.44	0.51	0.43
d, Delay for Lane Group [s/veh]	85.84	95.83	41.02	47.25	16.34	16.41	63.99	56.32	45.60	44.82	172.86
Lane Group LOS	F	F	D	D	B	B	E	E	D	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.51	23.11	8.18	8.71	3.20	3.22	4.54	5.81	3.30	4.82	15.36
50th-Percentile Queue Length [ft/ln]	12.74	577.63	204.39	217.76	80.03	80.40	113.47	145.25	82.45	120.38	383.93
95th-Percentile Queue Length [veh/ln]	0.92	32.86	12.86	13.55	5.76	5.79	8.03	9.76	5.94	8.41	21.78
95th-Percentile Queue Length [ft/ln]	22.94	821.45	321.62	338.77	144.06	144.72	200.82	244.08	148.41	210.34	544.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	85.84	95.83	41.02	47.25	16.36	16.41	63.99	56.32	56.32	45.60	44.82	172.86
Movement LOS	F	F	D	D	B	B	E	E	E	D	D	F
d_A, Approach Delay [s/veh]	87.72			31.29			59.55			117.33		
Approach LOS	F			C			E			F		
d_I, Intersection Delay [s/veh]	76.47											
Intersection LOS	E											
Intersection V/C	0.821											

Other Modes

g_Walk,mi, Effective Walk Time [s]	17.0	0.0	11.0	17.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.20	0.00	49.50	44.20
l_p,int, Pedestrian LOS Score for Intersection	3.357	0.000	2.185	3.434
Crosswalk LOS	C	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	612	862	562	395
d_b, Bicycle Delay [s]	28.91	19.44	31.03	38.64
l_b,int, Bicycle LOS Score for Intersection	2.742	2.299	2.114	3.564
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 12: Veterans Pkwy / Steamboat Pkwy

Control Type:	Signalized	Delay (sec / veh):	48.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name	Veterans Pkwy			Veterans Pkwy			Damonte Ranch Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Veterans Pkwy			Damonte Ranch Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	572	928	45	547	768	403	192	483	208	141	1149	170
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	23	0	0	121	0	0	62	0	0	88
Total Hourly Volume [veh/h]	572	928	22	547	768	282	192	483	146	141	1149	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	151	244	6	144	202	74	51	127	38	37	302	22
Total Analysis Volume [veh/h]	602	977	23	576	808	297	202	508	154	148	1209	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	115.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	6	7	4	4	3	8	0
Auxiliary Signal Groups						6,7			4,5			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	4	0	4	4	4	4	6	6	4	6	0
Maximum Green [s]	30	30	0	15	30	30	15	30	30	15	30	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	4.8	3.9	4.8	4.8	3.2	4.8	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.0
Split [s]	32	35	0	26	29	29	10	45	45	14	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	15	15	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	4.3	3.4	4.3	4.3	2.7	4.3	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	Yes	Yes	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.30	6.30	6.30	6.30	6.30	5.40	6.30	6.30	5.40	6.30	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.30	4.30	0.00	4.30	0.00	0.00	4.30	0.00	0.00	4.30	4.30
g_i, Effective Green Time [s]	54	33	33	54	30	42	54	41	65	54	43	43
g / C, Green / Cycle	0.45	0.28	0.28	0.45	0.25	0.35	0.45	0.34	0.54	0.45	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.28	0.27	0.27	0.30	0.23	0.19	0.30	0.14	0.10	0.14	0.34	0.05
s, saturation flow rate [veh/h]	2153	1853	1839	1890	3529	1575	682	3529	1575	1061	3529	1575
c, Capacity [veh/h]	784	511	507	666	883	553	243	1207	859	468	1255	560
d1, Uniform Delay [s]	26.42	43.15	43.20	30.67	43.77	31.13	28.67	30.35	13.76	20.75	37.90	26.35
k, delay calibration	0.11	0.46	0.46	0.50	0.11	0.22	0.50	0.50	0.50	0.46	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.62	33.61	34.59	13.88	4.29	1.62	27.00	1.08	0.46	1.62	17.98	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.98	0.98	0.86	0.92	0.54	0.83	0.42	0.18	0.32	0.96	0.15
d, Delay for Lane Group [s/veh]	28.04	76.75	77.80	44.55	48.06	32.75	55.67	31.43	14.22	22.37	55.88	26.93
Lane Group LOS	C	E	E	D	D	C	E	C	B	C	E	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.62	18.90	18.95	6.44	11.75	6.85	5.35	5.83	2.21	2.67	20.03	1.76
50th-Percentile Queue Length [ft/ln]	140.47	472.58	473.87	161.11	293.64	171.36	133.83	145.87	55.20	66.87	500.73	44.04
95th-Percentile Queue Length [veh/ln]	9.51	26.03	26.09	10.61	17.37	11.15	9.15	9.80	3.97	4.81	27.37	3.17
95th-Percentile Queue Length [ft/ln]	237.65	650.83	652.37	265.19	434.15	278.70	228.69	244.90	99.37	120.37	684.22	79.28

Movement, Approach, & Intersection Results

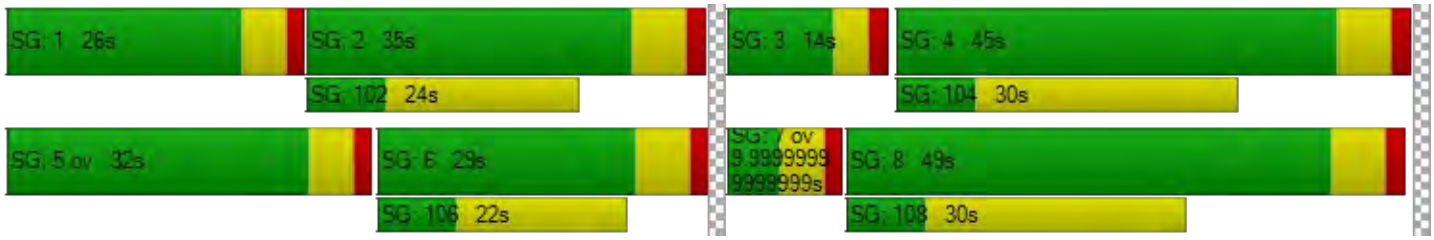
d_M, Delay for Movement [s/veh]	28.04	77.26	77.80	44.55	48.06	32.75	55.67	31.43	14.22	22.37	55.88	26.93
Movement LOS	C	E	E	D	D	C	E	C	B	C	E	C
d_A, Approach Delay [s/veh]	58.77			44.15			34.03			50.72		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	48.47											
Intersection LOS	D											
Intersection V/C	0.805											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.257	3.546	3.364	3.336
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	478	378	645	712
d_b, Bicycle Delay [s]	34.73	39.45	27.54	24.90
l_b,int, Bicycle LOS Score for Intersection	2.900	3.046	2.324	2.823
Bicycle LOS	C	C	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Rio Wrangler Pkwy / Steamboat Pkwy

Control Type:	Signalized	Delay (sec / veh):	27.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.677

Intersection Setup

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	539	121	2	7	290	546	198	15	537	10	30	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	1	0	0	164	0	0	161	0	0	3
Total Hourly Volume [veh/h]	539	121	1	7	290	382	198	15	376	10	30	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	32	0	2	76	101	52	4	99	3	8	1
Total Analysis Volume [veh/h]	567	127	1	7	305	402	208	16	396	11	32	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	ProtPer	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	2	3	8	8	7	4	0
Auxiliary Signal Groups						2,3			1,8			
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	5	5	5	5	0	5	0
Maximum Green [s]	30	30	0	0	30	30	30	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	23	63	0	0	40	40	18	47	47	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	11	0	0	24	24	0	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No			No	No	No	No	No		No	
Maximum Recall	No	No			No	No	No	No	No		No	
Pedestrian Recall	No	No			No	No	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	C
C, Cycle Length [s]	86	86	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	29	51	18	41	27	27	60	4
g / C, Green / Cycle	0.34	0.59	0.21	0.47	0.31	0.31	0.70	0.05
(v / s)_i Volume / Saturation Flow Rate	0.32	0.07	0.17	0.26	0.13	0.01	0.25	0.05
s, saturation flow rate [veh/h]	1757	1842	1833	1568	1660	1844	1568	914
c, Capacity [veh/h]	601	1096	421	742	585	575	1098	93
d1, Uniform Delay [s]	27.50	7.58	32.64	16.07	23.12	20.56	5.16	41.50
k, delay calibration	0.40	0.11	0.11	0.26	0.11	0.11	0.25	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.42	0.05	2.58	1.46	0.37	0.02	0.46	3.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.12	0.74	0.54	0.36	0.03	0.36	0.48
d, Delay for Lane Group [s/veh]	48.92	7.63	35.22	17.53	23.49	20.58	5.62	45.32
Lane Group LOS	D	A	D	B	C	C	A	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.75	0.86	6.09	5.18	3.09	0.21	2.04	1.05
50th-Percentile Queue Length [ft/ln]	343.71	21.39	152.13	129.56	77.37	5.27	50.91	26.33
95th-Percentile Queue Length [veh/ln]	19.83	1.54	10.13	8.92	5.57	0.38	3.67	1.90
95th-Percentile Queue Length [ft/ln]	495.73	38.49	253.27	222.90	139.27	9.48	91.64	47.39

Movement, Approach, & Intersection Results

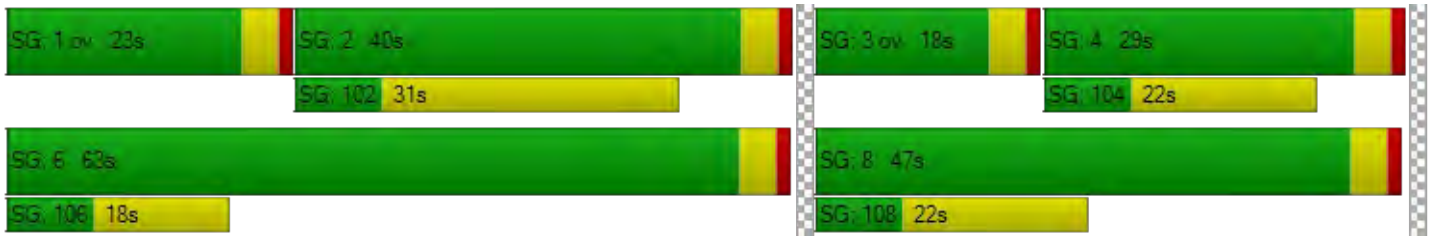
d_M, Delay for Movement [s/veh]	48.92	7.63	7.63	35.22	35.22	17.53	23.49	20.58	5.62	45.32	45.32	45.32
Movement LOS	D	A	A	D	D	B	C	C	A	D	D	D
d_A, Approach Delay [s/veh]	41.31			25.26			12.00			45.32		
Approach LOS	D			C			B			D		
d_I, Intersection Delay [s/veh]	27.11											
Intersection LOS	C											
Intersection V/C	0.677											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.732	2.797	3.081	1.768
Crosswalk LOS	B	C	C	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1073	655	782	455
d_b, Bicycle Delay [s]	11.82	24.89	20.40	32.84
l_b,int, Bicycle LOS Score for Intersection	2.708	3.008	2.848	1.639
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Rio Wrangler Pkwy / McCauley Ranch Blvd

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	110.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Base Volume Input [veh/h]	329	95	339	439	40	308
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.50	4.50	4.50	4.50	4.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	329	95	339	439	40	308
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	25	89	116	11	81
Total Analysis Volume [veh/h]	346	100	357	462	42	324
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	27	0	17	44	16	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	17	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	3.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	13	13	14	31	14	14
g / C, Green / Cycle	0.23	0.23	0.25	0.57	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.19	0.06	0.20	0.25	0.02	0.21
s, saturation flow rate [veh/h]	1832	1558	1745	1832	1745	1558
c, Capacity [veh/h]	428	364	428	1043	438	391
d1, Uniform Delay [s]	20.09	17.42	19.85	6.89	15.95	19.66
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.69	0.41	4.30	0.30	0.09	4.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.28	0.83	0.44	0.10	0.83
d, Delay for Lane Group [s/veh]	23.79	17.82	24.15	7.19	16.05	24.23
Lane Group LOS	C	B	C	A	B	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.94	0.92	4.42	2.40	0.39	4.12
50th-Percentile Queue Length [ft/ln]	98.61	22.98	110.57	59.96	9.82	103.00
95th-Percentile Queue Length [veh/ln]	7.10	1.65	7.87	4.32	0.71	7.42
95th-Percentile Queue Length [ft/ln]	177.50	41.36	196.80	107.92	17.67	185.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.79	17.82	24.15	7.19	16.05	24.23
Movement LOS	C	B	C	A	B	C
d_A, Approach Delay [s/veh]	22.45		14.58		23.29	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	18.69					
Intersection LOS	B					
Intersection V/C	0.601					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.01	0.00	20.01
l_p,int, Pedestrian LOS Score for Intersection	2.381	0.000	2.141
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	1300	367
d_b, Bicycle Delay [s]	12.03	3.68	20.01
l_b,int, Bicycle LOS Score for Intersection	2.296	2.911	1.560
Bicycle LOS	B	C	A

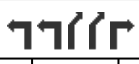
Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 15: S. Virginia St / Geiger Grade Rd

Control Type:	Signalized	Delay (sec / veh):	29.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	1	2	0	0
Entry Pocket Length [ft]	350.00	100.00	100.00	725.00	100.00	250.00	525.00	100.00	100.00	600.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Base Volume Input [veh/h]	193	716	1548	160	345	43	96	801	199	483	226	231
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	464	0	0	22	0	0	103	0	0	69
Total Hourly Volume [veh/h]	193	716	1084	160	345	21	96	801	96	483	226	162
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	188	285	42	91	6	25	211	25	127	59	43
Total Analysis Volume [veh/h]	203	754	1141	168	363	22	101	843	101	508	238	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	2	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	35	0	20	35	0	25	40	40	40	40	40
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	1.0	2.0	2.0	2.0	2.0	2.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	28	0	0	28	0	0	18	18	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.5	3.5	0.0	3.0	5.0	5.0	4.0	5.0	5.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	78	78	78	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50	5.00	7.00	7.00	6.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.50	3.50	3.50	3.00	5.00	5.00	4.00	5.00	5.00
g_i, Effective Green Time [s]	11	20	6	15	4	17	17	11	25	25
g / C, Green / Cycle	0.14	0.25	0.08	0.19	0.06	0.22	0.22	0.14	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.12	0.21	0.05	0.10	0.03	0.17	0.06	0.10	0.05	0.11
s, saturation flow rate [veh/h]	1765	3529	3428	3529	3428	5049	1575	5142	5049	1575
c, Capacity [veh/h]	250	896	261	687	196	1113	347	725	1601	500
d1, Uniform Delay [s]	32.37	27.54	34.91	28.13	35.63	28.38	25.26	31.86	19.04	20.35
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.20	2.24	2.64	0.63	2.09	1.08	0.46	1.24	0.04	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.84	0.64	0.53	0.52	0.76	0.29	0.70	0.15	0.34
d, Delay for Lane Group [s/veh]	38.57	29.78	37.55	28.76	37.72	29.46	25.72	33.10	19.08	20.76
Lane Group LOS	D	C	D	C	D	C	C	C	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.96	6.50	1.54	2.85	0.93	4.58	1.47	2.89	0.94	2.20
50th-Percentile Queue Length [ft/ln]	99.08	162.58	38.51	71.32	23.23	114.50	36.85	72.36	23.40	54.96
95th-Percentile Queue Length [veh/ln]	7.13	10.69	2.77	5.14	1.67	8.09	2.65	5.21	1.68	3.96
95th-Percentile Queue Length [ft/ln]	178.34	267.13	69.32	128.38	41.81	202.25	66.33	130.25	42.12	98.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.57	29.78	0.00	37.55	28.76	0.00	37.72	29.46	25.72	33.10	19.08	20.76
Movement LOS	D	C		D	C		D	C	C	C	B	C
d_A, Approach Delay [s/veh]	31.64			31.54			29.90			27.16		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	29.91											
Intersection LOS	C											
Intersection V/C	0.528											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.924	2.933	3.253	3.356
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	778	778	889	889
d_b, Bicycle Delay [s]	16.81	16.81	13.89	13.89
l_b,int, Bicycle LOS Score for Intersection	2.349	1.998	2.191	2.102
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Veterans Pkwy / Geiger Grade Rd

Control Type:	Signalized	Delay (sec / veh):	52.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name	Geiger Grade Rd			Damonte Ranch Ext			Geiger Grade Rd			Veterans Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	250.00	100.00	150.00	150.00	100.00	150.00	250.00	100.00	100.00	250.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Geiger Grade Rd			Damonte Ranch Ext			Geiger Grade Rd			Veterans Pkwy		
Base Volume Input [veh/h]	1242	116	236	101	125	267	82	376	486	76	1054	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	71	0	0	80	0	0	146	0	0	15
Total Hourly Volume [veh/h]	1242	116	165	101	125	187	82	376	340	76	1054	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	327	31	43	27	33	49	22	99	89	20	277	3
Total Analysis Volume [veh/h]	1307	122	174	106	132	197	86	396	358	80	1109	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	40	65	0	14	39	0	12	49	0	12	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	35	44	44	10	20	20	9	57	8	57	57
g / C, Green / Cycle	0.25	0.32	0.32	0.07	0.14	0.14	0.06	0.41	0.06	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.25	0.03	0.11	0.06	0.07	0.12	0.05	0.11	0.04	0.31	0.01
s, saturation flow rate [veh/h]	5188	3560	1589	1781	1870	1589	1781	3560	1781	3560	1589
c, Capacity [veh/h]	1295	1129	504	132	264	224	109	1454	103	1441	643
d1, Uniform Delay [s]	52.52	33.81	36.66	63.84	55.54	58.93	64.79	27.57	65.05	36.02	25.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.86	0.04	0.41	10.91	1.46	10.44	11.65	0.46	11.69	4.01	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.11	0.35	0.81	0.50	0.88	0.79	0.27	0.78	0.77	0.02
d, Delay for Lane Group [s/veh]	66.38	33.85	37.07	74.75	57.01	69.36	76.45	28.04	76.74	40.03	25.08
Lane Group LOS	F	C	D	E	E	E	E	C	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	17.05	1.53	4.77	4.19	4.51	7.61	3.43	4.67	3.20	17.47	0.30
50th-Percentile Queue Length [ft/ln]	426.29	38.23	119.19	104.64	112.64	190.37	85.86	116.84	80.04	436.81	7.59
95th-Percentile Queue Length [veh/ln]	23.95	2.75	8.35	7.53	7.99	12.14	6.18	8.22	5.76	24.33	0.55
95th-Percentile Queue Length [ft/ln]	598.83	68.82	208.71	188.35	199.66	303.50	154.54	205.48	144.07	608.19	13.66

Movement, Approach, & Intersection Results

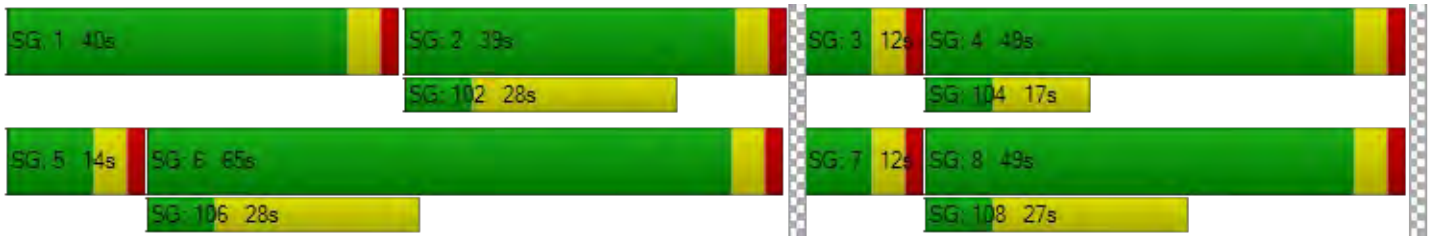
d_M, Delay for Movement [s/veh]	66.38	33.85	37.07	74.75	57.01	69.36	76.45	28.04	0.00	76.74	40.03	25.08
Movement LOS	F	C	D	E	E	E	E	C		E	D	C
d_A, Approach Delay [s/veh]	60.73			66.93			36.67			42.30		
Approach LOS	E			E			D			D		
d_I, Intersection Delay [s/veh]	52.38											
Intersection LOS	D											
Intersection V/C	0.736											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	59.43
l_p,int, Pedestrian LOS Score for Intersection	2.891	2.533	2.798	2.708
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	486	629	629
d_b, Bicycle Delay [s]	22.86	40.13	32.91	32.91
l_b,int, Bicycle LOS Score for Intersection	2.941	2.409	1.957	2.564
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



MOVEMENT SUMMARY

Site: Steamboat & Rio Wrangler AM

New Site
Roundabout

Movement Performance Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Rio Wrangler											
3	L2	567	2.0	0.797	22.1	LOS C	9.4	238.1	0.83	0.81	26.0
8	T1	127	2.0	0.797	22.1	LOS C	9.4	238.1	0.83	0.81	26.1
18	R2	2	2.0	0.797	22.1	LOS C	9.4	238.1	0.83	0.81	25.7
Approach		697	2.0	0.797	22.1	LOS C	9.4	238.1	0.83	0.81	26.0
East: Steamboat											
1	L2	11	2.0	0.107	9.7	LOS A	0.3	8.7	0.63	0.63	31.3
6	T1	32	2.0	0.107	9.7	LOS A	0.3	8.7	0.63	0.63	31.5
16	R2	5	2.0	0.107	9.7	LOS A	0.3	8.7	0.63	0.63	30.8
Approach		47	2.0	0.107	9.7	LOS A	0.3	8.7	0.63	0.63	31.4
North: Rio Wrangler											
7	L2	7	2.0	0.525	15.2	LOS C	2.7	68.6	0.70	0.76	29.4
4	T1	305	2.0	0.525	15.2	LOS C	2.7	68.6	0.70	0.76	29.5
14	R2	575	2.0	0.350	0.1	LOS A	0.0	0.0	0.00	0.00	36.5
Approach		887	2.0	0.525	5.4	LOS A	2.7	68.6	0.25	0.27	33.7
West: Steamboat											
5	L2	208	2.0	0.281	7.7	LOS A	1.1	28.8	0.47	0.41	30.9
2	T1	16	2.0	0.281	7.7	LOS A	1.1	28.8	0.47	0.41	31.0
12	R2	565	2.0	0.344	0.1	LOS A	0.0	0.0	0.00	0.00	36.5
Approach		789	2.0	0.344	2.2	LOS A	1.1	28.8	0.13	0.12	34.7
All Vehicles		2421	2.0	0.797	9.2	LOS A	9.4	238.1	0.39	0.38	31.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Rio Wrangler & McCauley Ranch AM

New Site
Roundabout

Movement Performance Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Rio Wrangler											
8	T1	346	2.0	0.580	13.8	LOS B	3.7	92.9	0.66	0.69	30.1
18	R2	100	2.0	0.580	13.8	LOS B	3.7	92.9	0.66	0.69	29.5
Approach		446	2.0	0.580	13.8	LOS B	3.7	92.9	0.66	0.69	30.0
East: McCauley Ranch											
1	L2	42	2.0	0.471	11.0	LOS B	2.4	61.3	0.58	0.57	31.0
16	R2	324	2.0	0.471	11.0	LOS B	2.4	61.3	0.58	0.57	30.4
Approach		366	2.0	0.471	11.0	LOS B	2.4	61.3	0.58	0.57	30.5
North: Rio Wrangler											
7	L2	357	2.0	0.772	17.7	LOS C	9.2	234.7	0.44	0.20	27.9
4	T1	462	2.0	0.772	17.7	LOS C	9.2	234.7	0.44	0.20	28.0
Approach		819	2.0	0.772	17.7	LOS C	9.2	234.7	0.44	0.20	28.0
All Vehicles		1632	2.0	0.772	15.1	LOS C	9.2	234.7	0.53	0.42	29.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection Level Of Service Report
Intersection 1: S. Virginia St / I-580 North Ramps

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	S. Virginia St		S. Virginia St		North Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		No	

Volumes

Name	S. Virginia St		S. Virginia St		North Off-Ramp	
Base Volume Input [veh/h]	1470	0	0	0	0	579
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	2.00	2.00	1.30	2.00	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	173
Total Hourly Volume [veh/h]	1470	0	0	0	0	406
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	387	0	0	0	0	107
Total Analysis Volume [veh/h]	1547	0	0	0	0	427
Presence of On-Street Parking	No	No			No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	6	0	0	0	0	4
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	-	-
Minimum Green [s]	5	0	0	0	0	5
Maximum Green [s]	30	0	0	0	0	30
Amber [s]	3.0	0.0	0.0	0.0	0.0	3.0
All red [s]	1.0	0.0	0.0	0.0	0.0	1.0
Split [s]	59	0	0	0	0	31
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	3.0
Walk [s]	5	0	0	0	0	5
Pedestrian Clearance [s]	10	0	0	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No					No
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	2.0
Minimum Recall	No					No
Maximum Recall	No					No
Pedestrian Recall	No					No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C		R
C, Cycle Length [s]	90		90
L, Total Lost Time per Cycle [s]	4.00		4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00		0.00
l2, Clearance Lost Time [s]	2.00		2.00
g_i, Effective Green Time [s]	54		28
g / C, Green / Cycle	0.60		0.31
(v / s)_i Volume / Saturation Flow Rate	0.48		0.30
s, saturation flow rate [veh/h]	3222		1439
c, Capacity [veh/h]	1925		451
d1, Uniform Delay [s]	14.00		30.10
k, delay calibration	0.50		0.37
I, Upstream Filtering Factor	1.00		1.00
d2, Incremental Delay [s]	3.67		25.41
d3, Initial Queue Delay [s]	0.00		0.00
Rp, platoon ratio	1.00		1.00
PF, progression factor	1.00		1.00

Lane Group Results

X, volume / capacity	0.80		0.95
d, Delay for Lane Group [s/veh]	17.68		55.51
Lane Group LOS	B		E
Critical Lane Group	Yes		Yes
50th-Percentile Queue Length [veh/ln]	10.66		11.42
50th-Percentile Queue Length [ft/ln]	266.40		285.54
95th-Percentile Queue Length [veh/ln]	16.01		16.96
95th-Percentile Queue Length [ft/ln]	400.24		424.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.68	0.00	0.00	0.00	0.00	55.51
Movement LOS	B					E
d_A, Approach Delay [s/veh]	17.68		0.00		55.51	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	25.86					
Intersection LOS	C					
Intersection V/C	0.777					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1222	0	600
d_b, Bicycle Delay [s]	6.81	45.00	22.05
l_b,int, Bicycle LOS Score for Intersection	2.836	4.132	1.560
Bicycle LOS	C	D	A

Sequence

Ring 1	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: S. Meadows Pkwy / Double Diamond Pkwy

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name	S. Meadows Pkwy				S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Approach	Northeastbound				Southwestbound			Northwestbound			Southeastbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0	1	1	0	0	2	0	0
Entry Pocket Length [ft]	175.0	100.0	100.0	175.0	100.00	100.00	200.00	250.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			35.00			35.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	S. Meadows Pkwy				S. Meadows Pkwy			Double Diamond Pkwy			Double Diamond Pkwy		
Base Volume Input [veh/h]	55	149	899	335	8	534	460	115	189	8	909	451	237
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	91	0	0	138	0	0	4	0	0	71
Total Hourly Volume [veh/h]	55	149	899	244	8	534	322	115	189	4	909	451	166
Peak Hour Factor	0.950	0.950	0.950	0.950	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	39	237	64	2	141	85	30	50	1	239	119	44
Total Analysis Volume [veh/h]	58	157	946	257	8	562	339	121	199	4	957	475	175
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Unsig	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	4	0	3	8	8	5	2	0	1	6	0
Auxiliary Signal Groups							1,8						
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	6	0	6	6	6	4	6	0	4	6	0
Maximum Green [s]	0	35	35	0	16	35	35	25	30	0	25	30	0
Amber [s]	0.0	3.2	4.1	0.0	3.2	4.1	4.1	3.3	4.2	0.0	3.3	4.2	0.0
All red [s]	0.0	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	2.5	3.0	0.0	3.0	3.0	3.0	2.5	2.5	0.0	2.5	2.5	0.0
Walk [s]	0	0	7	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	19	0	0	18	18	0	20	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.7	3.6	0.0	2.7	3.6	3.6	2.8	3.7	0.0	2.8	3.7	0.0
Minimum Recall		No	Yes		No	Yes	Yes	No	No		No	No	
Maximum Recall		No	No		No	No	No	No	No		No	No	
Pedestrian Recall		No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	77	77	77	77	77	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	4.70	5.60	4.70	5.60	4.80	4.80	5.70	5.70	4.80	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.70	3.60	2.70	3.60	0.00	2.80	3.70	3.70	2.80	3.70	3.70
g_i, Effective Green Time [s]	11	26	1	16	45	7	6	6	23	23	23
g / C, Green / Cycle	0.15	0.33	0.01	0.20	0.58	0.09	0.08	0.08	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.12	0.26	0.00	0.16	0.21	0.07	0.05	0.05	0.27	0.25	0.11
s, saturation flow rate [veh/h]	1798	3595	1798	3595	1605	1798	1888	1875	3492	1888	1605
c, Capacity [veh/h]	262	1200	22	722	926	157	153	152	1061	562	478
d1, Uniform Delay [s]	32.11	23.31	37.94	29.31	8.78	34.58	34.55	34.55	25.84	25.50	21.42
k, delay calibration	0.08	0.11	0.11	0.11	0.15	0.08	0.08	0.08	0.08	0.15	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.80	1.19	9.55	1.86	0.35	5.87	3.62	3.68	2.37	4.75	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.79	0.36	0.78	0.37	0.77	0.66	0.67	0.90	0.84	0.37
d, Delay for Lane Group [s/veh]	36.91	24.50	47.49	31.17	9.13	40.46	38.17	38.23	28.21	30.25	21.77
Lane Group LOS	D	C	D	C	A	D	D	D	C	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.13	7.53	0.21	4.94	2.75	2.39	1.94	1.94	8.15	8.33	2.40
50th-Percentile Queue Length [ft/ln]	103.13	188.27	5.15	123.55	68.83	59.87	48.51	48.38	203.76	208.37	59.90
95th-Percentile Queue Length [veh/ln]	7.43	12.03	0.37	8.59	4.96	4.31	3.49	3.48	12.83	13.07	4.31
95th-Percentile Queue Length [ft/ln]	185.64	300.78	9.27	214.69	123.90	107.77	87.32	87.08	320.81	326.74	107.83

Movement, Approach, & Intersection Results

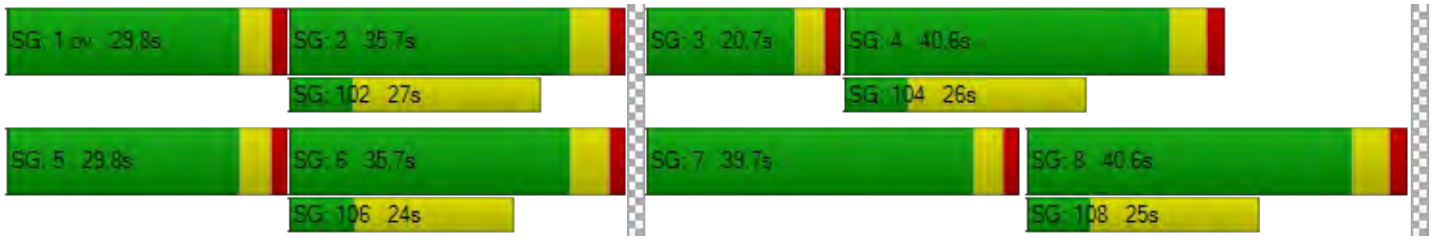
d_M, Delay for Movement [s/veh]	36.91	36.91	24.50	0.00	47.49	31.17	9.13	40.46	38.20	38.23	28.21	30.25	21.77
Movement LOS	D	D	C		D	C	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	26.80				23.10			39.04			28.11		
Approach LOS	C				C			D			C		
d_I, Intersection Delay [s/veh]	27.48												
Intersection LOS	C												
Intersection V/C	0.604												

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.892	3.144	2.381	3.044
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	500	500
d_b, Bicycle Delay [s]	30.10	30.10	33.75	33.75
l_b,int, Bicycle LOS Score for Intersection	2.388	2.423	1.830	4.328
Bicycle LOS	B	B	A	E

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: S. Meadows Pkwy / Wilbur May Pkwy

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	75.00	100.00	100.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wilbur May Pkwy		S. Meadows Pkwy		S. Meadows Pkwy	
Base Volume Input [veh/h]	85	76	1636	180	236	917
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	1.10	1.10	1.10	1.10	1.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	40	0	94	0	0
Total Hourly Volume [veh/h]	85	36	1636	86	236	917
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	9	431	23	62	241
Total Analysis Volume [veh/h]	89	38	1722	91	248	965
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	5	0	5	5
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	24	0	18	0	78	96
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	15	0	9	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9	79	79	21	103
g / C, Green / Cycle	0.07	0.07	0.66	0.66	0.17	0.86
(v / s)_i Volume / Saturation Flow Rate	0.06	0.03	0.53	0.54	0.15	0.30
s, saturation flow rate [veh/h]	1614	1441	1695	1666	1614	3228
c, Capacity [veh/h]	115	103	1114	1094	277	2782
d1, Uniform Delay [s]	54.74	53.12	15.17	15.49	48.64	1.63
k, delay calibration	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.36	2.19	6.56	7.26	9.92	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.37	0.81	0.83	0.90	0.35
d, Delay for Lane Group [s/veh]	65.10	55.31	21.73	22.75	58.55	1.98
Lane Group LOS	E	E	C	C	E	A
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.95	1.15	18.25	18.76	7.94	1.16
50th-Percentile Queue Length [ft/ln]	73.85	28.73	456.13	468.99	198.52	28.95
95th-Percentile Queue Length [veh/ln]	5.32	2.07	25.25	25.86	12.56	2.08
95th-Percentile Queue Length [ft/ln]	132.93	51.72	631.26	646.57	314.05	52.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.10	55.31	22.21	22.75	58.55	1.98
Movement LOS	E	E	C	C	E	A
d_A, Approach Delay [s/veh]	62.17		22.24		13.54	
Approach LOS	E		C		B	
d_I, Intersection Delay [s/veh]	20.50					
Intersection LOS	C					
Intersection V/C	0.753					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.240	3.122	3.001
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	233	1533
d_b, Bicycle Delay [s]	41.67	46.82	3.27
l_b,int, Bicycle LOS Score for Intersection	1.560	3.133	2.560
Bicycle LOS	A	C	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Veterans Pkwy / Long Meadow Dr

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Veterans Pkwy			Veterans Pkwy			Long Meadow Dr			Long Meadow Dr		
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	250.00	100.00	250.00	75.00	100.00	100.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Veterans Pkwy			Long Meadow Dr			Long Meadow Dr		
Base Volume Input [veh/h]	69	1117	59	77	1580	30	90	4	56	15	0	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	1117	59	77	1580	30	90	4	56	15	0	45
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	294	16	20	416	8	24	1	15	4	0	12
Total Analysis Volume [veh/h]	73	1176	62	81	1663	32	95	4	59	16	0	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	7	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Split [s]	9	77	0	11	79	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	11	0	0	15	0	0	20	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	55	55	55	55	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	3	27	27	4	29	29	9	9	9	9
g / C, Green / Cycle	0.06	0.50	0.50	0.06	0.52	0.52	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.04	0.33	0.33	0.05	0.47	0.02	0.07	0.04	0.01	0.03
s, saturation flow rate [veh/h]	1781	1870	1837	1781	3560	1589	1358	1605	1339	1589
c, Capacity [veh/h]	109	938	922	116	1864	832	258	255	244	252
d1, Uniform Delay [s]	25.07	10.17	10.18	25.00	11.63	6.33	24.17	20.11	23.19	19.91
k, delay calibration	0.11	0.15	0.15	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.82	1.12	1.16	7.47	1.67	0.02	0.88	0.50	0.11	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.66	0.67	0.70	0.89	0.04	0.37	0.25	0.07	0.19
d, Delay for Lane Group [s/veh]	31.89	11.29	11.34	32.47	13.30	6.34	25.05	20.61	23.30	20.26
Lane Group LOS	C	B	B	C	B	A	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.02	4.04	3.99	1.14	6.17	0.12	1.20	0.70	0.19	0.51
50th-Percentile Queue Length [ft/ln]	25.54	101.12	99.87	28.58	154.29	3.11	29.96	17.46	4.74	12.86
95th-Percentile Queue Length [veh/ln]	1.84	7.28	7.19	2.06	10.25	0.22	2.16	1.26	0.34	0.93
95th-Percentile Queue Length [ft/ln]	45.97	182.02	179.76	51.44	256.14	5.60	53.92	31.43	8.54	23.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.89	11.32	11.34	32.47	13.30	6.34	25.05	20.61	20.61	23.30	20.26	20.26
Movement LOS	C	B	B	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	12.46			14.05			23.28			21.03		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.00											
Intersection LOS	B											
Intersection V/C	0.578											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.360	3.227	2.036	2.001
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1233	450	450
d_b, Bicycle Delay [s]	9.60	8.82	36.04	36.04
l_b,int, Bicycle LOS Score for Intersection	2.641	3.025	1.820	1.664
Bicycle LOS	B	C	A	A

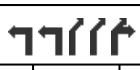
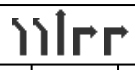
Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 10: Damonte Ranch Pkwy / Double R Blvd

Control Type:	Signalized	Delay (sec / veh):	68.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	Steamboat Pkwy			Damonte Ranch Pkwy						Double R Blvd		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	150.00	100.00	150.00	415.00	100.00	100.00	250.00	100.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Steamboat Pkwy			Damonte Ranch Pkwy						Double R Blvd		
Base Volume Input [veh/h]	13	945	361	727	1301	88	97	127	22	706	122	1073
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	108	0	0	46	0	0	11	0	0	322
Total Hourly Volume [veh/h]	13	945	253	727	1301	42	97	127	11	706	122	751
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	249	67	191	342	11	26	33	3	186	32	198
Total Analysis Volume [veh/h]	14	995	266	765	1369	44	102	134	12	743	128	791
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												1,6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	6	0	4	6	0	4	4	0	4	6	6
Maximum Green [s]	30	41	0	38	41	0	30	33	0	20	30	30
Amber [s]	3.9	4.8	0.0	3.9	4.8	0.0	3.9	4.8	0.0	3.9	4.8	4.8
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	1.5
Split [s]	10	38	0	21	49	0	13	40	0	21	48	48
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	13	0	0	7	0	0	13	0	5	0	0
Pedestrian Clearance [s]	0	18	0	0	35	0	0	20	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	0.0	3.4	4.3	0.0	3.4	4.3	4.3
Minimum Recall	No	No		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	L	C	R
C, Cycle Length [s]	143	143	143	143	143	143	143	143	143	143	143
L, Total Lost Time per Cycle [s]	5.40	6.30	6.30	5.40	6.30	6.30	5.40	6.30	5.40	6.30	5.85
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	4.30	4.30	3.40	4.30	4.30	3.40	4.30	3.40	4.30	0.00
g_i, Effective Green Time [s]	2	32	32	38	69	69	10	13	36	39	84
g / C, Green / Cycle	0.01	0.23	0.23	0.27	0.48	0.48	0.07	0.09	0.25	0.27	0.59
(v / s)_i Volume / Saturation Flow Rate	0.01	0.20	0.17	0.22	0.26	0.26	0.06	0.08	0.21	0.07	0.28
s, saturation flow rate [veh/h]	1781	5094	1589	3459	3560	1840	1781	1843	3459	1870	2813
c, Capacity [veh/h]	21	1151	359	919	1707	882	125	172	870	513	1661
d1, Uniform Delay [s]	70.35	53.24	51.45	49.53	26.22	26.26	65.57	63.85	51.02	40.40	195.33
k, delay calibration	0.11	0.11	0.13	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.57	2.08	3.61	2.05	1.25	2.43	12.00	10.98	2.52	0.25	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.86	0.74	0.83	0.54	0.55	0.82	0.85	0.85	0.25	0.48
d, Delay for Lane Group [s/veh]	98.92	55.32	55.06	51.58	27.48	28.69	77.58	74.83	53.54	40.65	195.56
Lane Group LOS	F	E	E	D	C	C	E	E	D	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.68	11.71	9.26	12.85	11.07	11.80	4.10	5.78	12.70	3.51	26.96
50th-Percentile Queue Length [ft/ln]	17.10	292.75	231.61	321.26	276.85	294.89	102.59	144.53	317.43	87.72	674.03
95th-Percentile Queue Length [veh/ln]	1.23	17.32	14.26	18.73	16.53	17.43	7.39	9.72	18.54	6.32	35.48
95th-Percentile Queue Length [ft/ln]	30.79	433.05	356.41	468.24	413.29	435.70	184.65	243.11	463.53	157.90	886.92

Movement, Approach, & Intersection Results

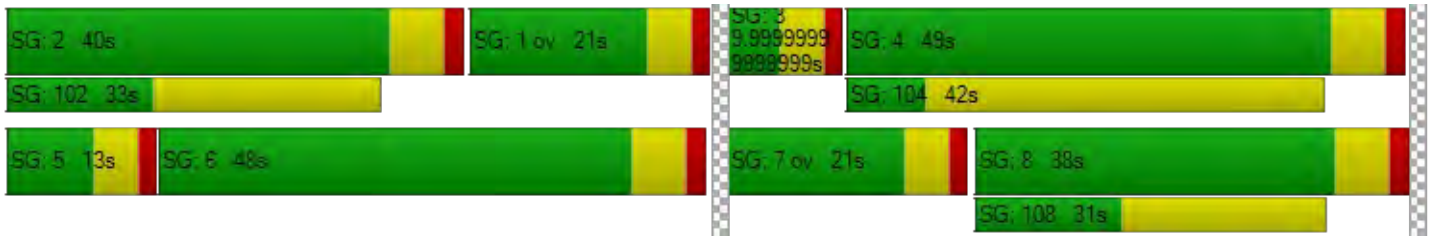
d_M, Delay for Movement [s/veh]	98.92	55.32	55.06	51.58	27.87	28.69	77.58	74.83	74.83	53.54	40.65	195.56
Movement LOS	F	E	E	D	C	C	E	E	E	D	D	F
d_A, Approach Delay [s/veh]	55.74			36.21			75.96			120.14		
Approach LOS	E			D			E			F		
d_I, Intersection Delay [s/veh]	68.70											
Intersection LOS	E											
Intersection V/C	0.784											

Other Modes

g_Walk,mi, Effective Walk Time [s]	17.0	0.0	11.0	17.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.20	0.00	49.50	44.20
l_p,int, Pedestrian LOS Score for Intersection	3.317	0.000	2.129	3.742
Crosswalk LOS	C	F	B	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	712	562	695
d_b, Bicycle Delay [s]	32.49	24.90	31.03	25.55
l_b,int, Bicycle LOS Score for Intersection	2.320	2.783	1.987	4.833
Bicycle LOS	B	C	A	E

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Veterans Pkwy / Steamboat Pkwy

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name	Veterans Pkwy			Veterans Pkwy			Damonte Ranch Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	200.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Veterans Pkwy			Veterans Pkwy			Damonte Ranch Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	300	716	123	282	837	253	345	1041	743	92	599	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	64	0	0	76	0	0	223	0	0	34
Total Hourly Volume [veh/h]	300	716	59	282	837	177	345	1041	520	92	599	31
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	188	16	74	220	47	91	274	137	24	158	8
Total Analysis Volume [veh/h]	316	754	62	297	881	186	363	1096	547	97	631	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	5	2	0	1	6	6	7	4	4	3	8	0
Auxiliary Signal Groups						6,7			4,5			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	4	0	4	4	4	4	6	6	4	6	0
Maximum Green [s]	30	30	0	15	30	30	15	30	30	15	30	0
Amber [s]	3.9	4.8	0.0	3.9	4.8	4.8	3.9	4.8	4.8	3.2	4.8	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.0
Split [s]	22	32	0	20	30	30	30	53	53	15	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	17	0	0	15	15	0	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.4	4.3	0.0	3.4	4.3	4.3	3.4	4.3	4.3	2.7	4.3	0.0
Minimum Recall	No	Yes		No	Yes	Yes	No	No	No	No	Yes	
Maximum Recall	No	No		No	No	No	Yes	Yes	Yes	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	6.30	6.30	6.30	6.30	6.30	5.40	6.30	6.30	5.40	6.30	6.30	6.30
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.30	4.30	0.00	4.30	0.00	0.00	4.30	0.00	0.00	4.30	4.30
g_i, Effective Green Time [s]	63	49	49	63	30	51	50	46	79	50	30	30
g / C, Green / Cycle	0.50	0.39	0.39	0.50	0.24	0.41	0.40	0.36	0.63	0.40	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.22	0.17	0.24	0.12	0.31	0.30	0.34	0.16	0.18	0.02
s, saturation flow rate [veh/h]	2341	1889	1840	1720	3598	1606	1168	3598	1606	589	3598	1606
c, Capacity [veh/h]	986	737	717	749	860	656	422	1306	1012	175	857	383
d1, Uniform Delay [s]	21.34	29.90	29.91	19.55	47.78	24.83	31.78	36.62	13.01	39.97	44.17	37.19
k, delay calibration	0.11	0.31	0.31	0.18	0.11	0.11	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	1.91	1.96	0.56	21.11	0.23	19.94	6.58	2.07	12.04	1.25	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.56	0.56	0.40	1.02	0.28	0.86	0.84	0.54	0.55	0.74	0.09
d, Delay for Lane Group [s/veh]	21.53	31.81	31.87	20.11	68.88	25.07	51.72	43.19	15.08	52.01	45.43	37.29
Lane Group LOS	C	C	C	C	F	C	D	D	B	D	D	D
Critical Lane Group	No	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.44	9.77	9.53	2.32	15.50	3.63	10.53	16.42	8.88	2.41	9.12	0.80
50th-Percentile Queue Length [ft/ln]	61.10	244.21	238.24	57.95	387.45	90.81	263.14	410.41	222.08	60.22	228.01	20.01
95th-Percentile Queue Length [veh/ln]	4.40	14.89	14.59	4.17	22.27	6.54	15.85	23.06	13.77	4.34	14.07	1.44
95th-Percentile Queue Length [ft/ln]	109.98	372.36	364.81	104.30	556.79	163.46	396.15	576.53	344.28	108.39	351.83	36.01

Movement, Approach, & Intersection Results

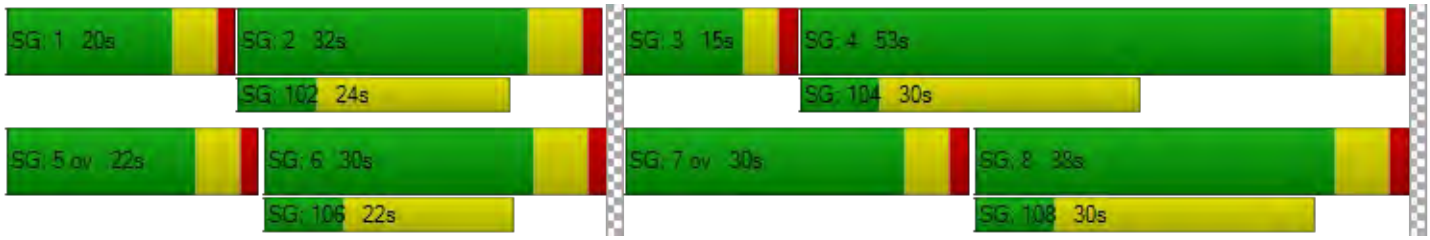
d_M, Delay for Movement [s/veh]	21.53	31.83	31.87	20.11	68.88	25.07	51.72	43.19	15.08	52.01	45.43	37.29
Movement LOS	C	C	C	C	F	C	D	D	B	D	D	D
d_A, Approach Delay [s/veh]	28.96			52.29			37.07			45.91		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	40.55											
Intersection LOS	D											
Intersection V/C	0.662											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.328	3.395	3.518	3.125
Crosswalk LOS	C	C	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	428	395	778	528
d_b, Bicycle Delay [s]	37.05	38.64	22.39	32.49
l_b,int, Bicycle LOS Score for Intersection	2.546	2.748	3.399	2.215
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Rio Wrangler Pkwy / Steamboat Pkwy

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.438

Intersection Setup

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	175.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			45.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rio Wrangler Pkwy			Rio Wrangler Pkwy			Steamboat Pkwy			Steamboat Pkwy		
Base Volume Input [veh/h]	169	200	3	5	140	271	537	30	442	5	10	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	169	200	3	5	140	271	537	30	442	5	10	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	53	1	1	37	71	141	8	116	1	3	1
Total Analysis Volume [veh/h]	178	211	3	5	147	285	565	32	465	5	11	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	1	6	0	0	2	2	3	8	8	0	4	0
Auxiliary Signal Groups						2,3			1,8			
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	5	5	5	5	0	5	0
Maximum Green [s]	30	30	0	0	30	30	30	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	44	0	0	35	35	38	66	66	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	11	0	0	24	24	0	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No			No	No	No	No	No		No	
Maximum Recall	No	No			No	No	No	No	No		No	
Pedestrian Recall	No	No			No	No	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	R	C
C, Cycle Length [s]	58	58	58	58	58	58	58	58
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	10	24	10	35	21	27	41	2
g / C, Green / Cycle	0.18	0.41	0.16	0.59	0.36	0.46	0.70	0.03
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.08	0.18	0.31	0.02	0.29	0.92
s, saturation flow rate [veh/h]	1805	1891	1795	1611	1805	1895	1611	23
c, Capacity [veh/h]	316	771	359	955	650	863	1126	77
d1, Uniform Delay [s]	22.09	11.57	22.22	5.89	17.43	8.83	3.73	29.27
k, delay calibration	0.11	0.11	0.11	0.11	0.16	0.11	0.13	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.57	0.19	0.80	0.17	5.52	0.02	0.29	8.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.28	0.42	0.30	0.87	0.04	0.41	0.27
d, Delay for Lane Group [s/veh]	23.65	11.76	23.02	6.06	22.95	8.85	4.02	37.88
Lane Group LOS	C	B	C	A	C	A	A	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.08	1.50	1.73	1.11	6.62	0.18	0.96	0.47
50th-Percentile Queue Length [ft/ln]	51.96	37.53	43.34	27.64	165.53	4.41	23.92	11.80
95th-Percentile Queue Length [veh/ln]	3.74	2.70	3.12	1.99	10.84	0.32	1.72	0.85
95th-Percentile Queue Length [ft/ln]	93.53	67.56	78.01	49.75	271.02	7.93	43.05	21.25

Movement, Approach, & Intersection Results

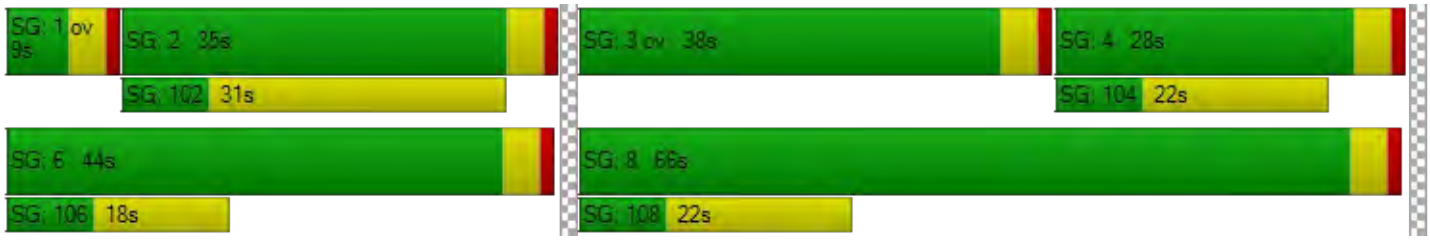
d_M, Delay for Movement [s/veh]	23.65	11.76	11.76	23.02	23.02	6.06	22.95	8.85	4.02	37.88	37.88	37.88
Movement LOS	C	B	B	C	C	A	C	A	A	D	D	D
d_A, Approach Delay [s/veh]	17.16			11.96			14.24			37.88		
Approach LOS	B			B			B			D		
d_I, Intersection Delay [s/veh]	14.58											
Intersection LOS	B											
Intersection V/C	1.438											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.449	2.544	2.702	1.756
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	727	564	1127	436
d_b, Bicycle Delay [s]	22.27	28.37	10.47	33.62
l_b,int, Bicycle LOS Score for Intersection	2.206	2.281	3.312	1.594
Bicycle LOS	B	B	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Rio Wrangler Pkwy / McCauley Ranch Blvd

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.255

Intersection Setup

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	110.00	100.00	125.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		30.00		25.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Rio Wrangler Pkwy		Rio Wrangler Pkwy		MCCauley Ranch Blvd	
Base Volume Input [veh/h]	222	25	128	275	15	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	1.50	1.50	1.50	1.50	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	222	25	128	275	15	84
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	7	34	72	4	22
Total Analysis Volume [veh/h]	234	26	135	289	16	88
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	6	0	5	2	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.5	0.0	1.5	1.5	1.5	0.0
Split [s]	27	0	37	64	56	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	15	0	0	17	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	3.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	25	25	25	25	25	25
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	5	5	3	13	3	3
g / C, Green / Cycle	0.18	0.18	0.12	0.50	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.12	0.02	0.08	0.15	0.01	0.06
s, saturation flow rate [veh/h]	1877	1596	1788	1877	1788	1596
c, Capacity [veh/h]	348	295	220	946	186	166
d1, Uniform Delay [s]	9.68	8.61	10.62	3.71	10.33	10.84
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.27	0.13	2.77	0.18	0.20	2.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.09	0.61	0.31	0.09	0.53
d, Delay for Lane Group [s/veh]	11.95	8.74	13.39	3.89	10.53	13.43
Lane Group LOS	B	A	B	A	B	B
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.81	0.07	0.65	0.26	0.07	0.46
50th-Percentile Queue Length [ft/ln]	20.16	1.71	16.33	6.53	1.74	11.54
95th-Percentile Queue Length [veh/ln]	1.45	0.12	1.18	0.47	0.12	0.83
95th-Percentile Queue Length [ft/ln]	36.29	3.08	29.39	11.75	3.12	20.77

Movement, Approach, & Intersection Results

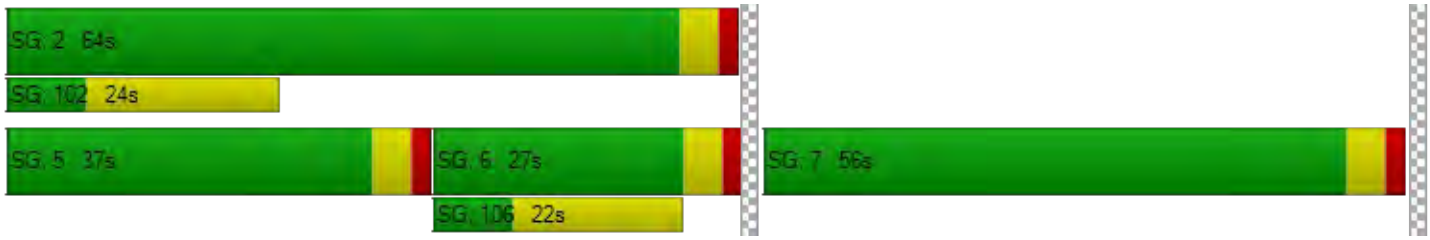
d_M, Delay for Movement [s/veh]	11.95	8.74	13.39	3.89	10.53	13.43
Movement LOS	B	A	B	A	B	B
d_A, Approach Delay [s/veh]	11.63		6.92		12.98	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.27					
Intersection LOS	A					
Intersection V/C	0.255					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	0.00	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.229	0.000	2.026
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	983	850
d_b, Bicycle Delay [s]	40.02	15.50	19.84
l_b,int, Bicycle LOS Score for Intersection	1.989	2.259	1.560
Bicycle LOS	A	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: S. Virginia St / Geiger Grade Rd

Control Type:	Signalized	Delay (sec / veh):	60.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Approach	Westbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	1	2	0	0
Entry Pocket Length [ft]	350.00	100.00	100.00	725.00	100.00	250.00	525.00	100.00	100.00	600.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Geiger Grade Rd			Mt. Rose Hwy			S. Virginia St			S. Virginia St		
Base Volume Input [veh/h]	158	660	863	261	938	109	59	437	211	1683	809	293
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	259	0	0	57	0	0	63	0	0	88
Total Hourly Volume [veh/h]	158	660	604	261	938	52	59	437	148	1683	809	205
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	174	159	69	247	14	16	115	39	443	213	54
Total Analysis Volume [veh/h]	166	695	636	275	987	55	62	460	156	1772	852	216
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	2	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	35	0	20	35	0	25	40	40	40	40	40
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	5.0	5.0	4.0	5.0	5.0
All red [s]	1.0	1.5	0.0	1.5	1.5	0.0	1.0	2.0	2.0	2.0	2.0	2.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	28	0	0	28	0	0	18	18	0	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.5	0.0	3.5	3.5	0.0	3.0	5.0	5.0	4.0	5.0	5.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	128	128	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	5.00	5.50	5.50	5.50	5.00	7.00	7.00	6.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.50	3.50	3.50	3.00	5.00	5.00	4.00	5.00	5.00
g_i, Effective Green Time [s]	14	36	12	35	5	16	16	40	52	52
g / C, Green / Cycle	0.11	0.28	0.10	0.27	0.04	0.12	0.12	0.31	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.09	0.19	0.08	0.28	0.02	0.09	0.10	0.34	0.17	0.13
s, saturation flow rate [veh/h]	1794	3586	3484	3586	3484	5131	1601	5225	5131	1601
c, Capacity [veh/h]	197	1006	340	976	123	637	199	1626	2092	653
d1, Uniform Delay [s]	56.15	41.27	56.83	46.77	60.89	54.16	54.63	44.27	27.03	26.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.47	0.86	4.62	16.10	3.15	1.57	6.68	43.10	0.13	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.69	0.81	1.01	0.50	0.72	0.79	1.09	0.41	0.33
d, Delay for Lane Group [s/veh]	65.63	42.13	61.45	62.87	64.04	55.73	61.31	87.37	27.16	26.36
Lane Group LOS	E	D	E	F	E	E	E	F	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.76	9.84	4.49	17.19	1.03	4.76	5.15	23.00	6.00	4.44
50th-Percentile Queue Length [ft/ln]	143.99	245.90	112.30	429.87	25.69	118.90	128.86	575.08	150.02	110.88
95th-Percentile Queue Length [veh/ln]	9.70	14.98	7.97	24.16	1.85	8.33	8.88	32.61	10.02	7.89
95th-Percentile Queue Length [ft/ln]	242.39	374.49	199.20	603.92	46.24	208.32	221.95	815.17	250.46	197.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.63	42.13	0.00	61.45	62.87	0.00	64.04	55.73	61.31	87.37	27.16	26.36
Movement LOS	E	D		E	F		E	E	E	F	C	C
d_A, Approach Delay [s/veh]	46.66			62.56			57.77			64.67		
Approach LOS	D			E			E			E		
d_I, Intersection Delay [s/veh]	60.62											
Intersection LOS	E											
Intersection V/C	0.804											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersection	3.245	3.107	3.252	3.655
Crosswalk LOS	C	C	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	438	438	500	500
d_b, Bicycle Delay [s]	48.83	48.83	45.00	45.00
l_b,int, Bicycle LOS Score for Intersection	2.270	2.601	1.967	3.170
Bicycle LOS	B	B	A	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 16: Veterans Pkwy / Geiger Grade Rd

Control Type:	Signalized	Delay (sec / veh):	56.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Geiger Grade Rd			E. Whites Creek Ln			Geiger Grade Rd			Veterans Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	250.00	100.00	150.00	250.00	100.00	150.00	250.00	100.00	100.00	250.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			20.00			20.00			20.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Geiger Grade Rd			E. Whites Creek Ln			Geiger Grade Rd			Veterans Pkwy		
Base Volume Input [veh/h]	797	138	202	154	215	203	276	939	1369	362	771	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	61	0	0	61	0	0	411	0	0	18
Total Hourly Volume [veh/h]	797	138	141	154	215	142	276	939	958	362	771	16
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	210	36	37	41	57	37	73	247	252	95	203	4
Total Analysis Volume [veh/h]	839	145	148	162	226	149	291	988	1008	381	812	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0	3.5	3.5	0.0
All red [s]	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	24	41	0	20	37	0	28	33	0	46	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	21	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	26	30	30	15	19	19	25	43	32	51	51
g / C, Green / Cycle	0.18	0.22	0.22	0.10	0.14	0.14	0.18	0.31	0.23	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.16	0.04	0.09	0.09	0.12	0.09	0.16	0.28	0.21	0.23	0.01
s, saturation flow rate [veh/h]	5230	3589	1602	1795	1885	1602	1795	3589	1795	3589	1602
c, Capacity [veh/h]	955	775	346	187	259	221	317	1108	410	1294	578
d1, Uniform Delay [s]	55.71	44.84	47.41	61.74	59.15	57.40	56.66	46.16	52.93	37.00	28.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.26	0.50	0.18	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.81	0.12	0.84	11.29	9.28	3.59	20.83	10.93	14.50	2.31	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.19	0.43	0.87	0.87	0.68	0.92	0.89	0.93	0.63	0.03
d, Delay for Lane Group [s/veh]	58.51	44.95	48.24	73.03	68.43	60.98	77.49	57.08	67.43	39.32	29.03
Lane Group LOS	E	D	D	E	E	E	E	E	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.03	2.13	4.65	6.36	8.66	5.33	12.11	18.34	14.99	12.18	0.40
50th-Percentile Queue Length [ft/ln]	250.68	53.29	116.35	159.02	216.47	133.28	302.82	458.54	374.69	304.50	10.01
95th-Percentile Queue Length [veh/ln]	15.22	3.84	8.19	10.50	13.48	9.12	17.82	25.37	21.34	17.90	0.72
95th-Percentile Queue Length [ft/ln]	380.51	95.92	204.80	262.42	337.12	227.94	445.51	634.13	533.42	447.60	18.02

Movement, Approach, & Intersection Results

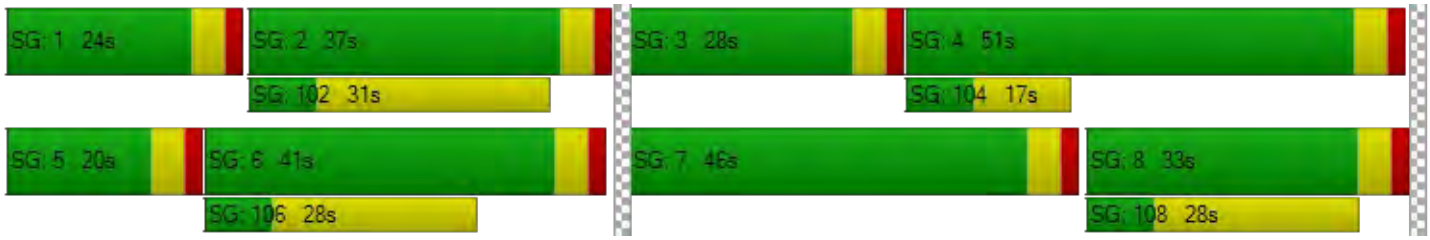
d_M, Delay for Movement [s/veh]	58.51	44.95	48.24	73.03	68.43	60.98	77.49	57.08	0.00	67.43	39.32	29.03
Movement LOS	E	D	D	E	E	E	E	E		E	D	C
d_A, Approach Delay [s/veh]	55.43			67.75			61.73			48.03		
Approach LOS	E			E			E			D		
d_I, Intersection Delay [s/veh]	56.80											
Intersection LOS	E											
Intersection V/C	0.768											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.43	59.43	59.43	59.43
l_p,int, Pedestrian LOS Score for Intersection	2.869	2.547	2.798	2.780
Crosswalk LOS	C	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	514	457	400	657
d_b, Bicycle Delay [s]	38.63	41.66	44.80	31.56
l_b,int, Bicycle LOS Score for Intersection	2.544	2.546	2.615	2.573
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



MOVEMENT SUMMARY

Site: Steamboat & Rio Wrangler PM

New Site
Roundabout

Movement Performance Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Rio Wrangler											
3	L2	178	2.0	0.660	20.4	LOS C	4.2	106.2	0.78	0.88	27.0
8	T1	211	2.0	0.660	20.4	LOS C	4.2	106.2	0.78	0.88	27.1
18	R2	3	2.0	0.660	20.4	LOS C	4.2	106.2	0.78	0.88	26.6
Approach		392	2.0	0.660	20.4	LOS C	4.2	106.2	0.78	0.88	27.0
East: Steamboat											
1	L2	5	2.0	0.050	9.3	LOS A	0.2	3.9	0.63	0.63	31.5
6	T1	11	2.0	0.050	9.3	LOS A	0.2	3.9	0.63	0.63	31.6
16	R2	5	2.0	0.050	9.3	LOS A	0.2	3.9	0.63	0.63	30.9
Approach		21	2.0	0.050	9.3	LOS A	0.2	3.9	0.63	0.63	31.4
North: Rio Wrangler											
7	L2	5	2.0	0.168	5.6	LOS A	0.6	16.1	0.34	0.23	33.6
4	T1	147	2.0	0.168	5.6	LOS A	0.6	16.1	0.34	0.23	33.7
14	R2	285	2.0	0.174	0.0	LOS A	0.0	0.0	0.00	0.00	36.5
Approach		438	2.0	0.174	2.0	LOS A	0.6	16.1	0.12	0.08	35.5
West: Steamboat											
5	L2	565	2.0	0.644	13.7	LOS B	4.8	121.4	0.56	0.42	28.6
2	T1	42	2.0	0.644	13.7	LOS B	4.8	121.4	0.56	0.42	28.7
12	R2	465	2.0	0.283	0.0	LOS A	0.0	0.0	0.00	0.00	36.5
Approach		1073	2.0	0.644	7.8	LOS A	4.8	121.4	0.32	0.24	31.5
All Vehicles		1923	2.0	0.660	9.0	LOS A	4.8	121.4	0.37	0.34	31.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Rio Wrangler & McCauley Ranch PM

New Site
Roundabout

Movement Performance Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Rio Wrangler											
8	T1	234	2.0	0.269	6.4	LOS A	1.1	29.1	0.31	0.20	33.4
18	R2	26	2.0	0.269	6.4	LOS A	1.1	29.1	0.31	0.20	32.7
Approach		260	2.0	0.269	6.4	LOS A	1.1	29.1	0.31	0.20	33.3
East: McCauley Ranch											
1	L2	16	2.0	0.119	5.3	LOS A	0.4	10.9	0.35	0.25	33.6
16	R2	88	2.0	0.119	5.3	LOS A	0.4	10.9	0.35	0.25	33.0
Approach		104	2.0	0.119	5.3	LOS A	0.4	10.9	0.35	0.25	33.0
North: Rio Wrangler											
7	L2	135	2.0	0.389	7.3	LOS A	2.1	52.2	0.11	0.03	32.2
4	T1	289	2.0	0.389	7.3	LOS A	2.1	52.2	0.11	0.03	32.3
Approach		424	2.0	0.389	7.3	LOS A	2.1	52.2	0.11	0.03	32.3
All Vehicles		788	2.0	0.389	6.8	LOS A	2.1	52.2	0.21	0.12	32.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix D
Cost Estimate Calculations

e Improvements

ID	Potential Improvement		Cost
1	**S. Meadows Pkwy / Gateway Dr Enhancements (Extend EB Left Turn Pocket)**		
	Removal/Demolition (roadway, curb, landscaping, etc.)	$	40,000
	Construct Improvements (1/2 roadway widening and reconstruction, curb, and striping)	$	330,000
	Design Services (survey, engineering)	$	40,000
	Construction Services (staking, testing, inspection, construction management)	$	40,000
	10% Contingency	$	50,000
		$	**500,000**
2	**Rio Wrangler Pkwy Widening (4 Lanes From Summer Glen Dr to Western Skies Dr)**		
	Removal/Demolition/Modification (roadway, curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	100,000
	Construct Improvements (roadway widening and reconstruction, curb, storm drain, and striping)	$	400,000
	Design Services (survey, engineering)	$	75,000
	Construction Services (staking, testing, inspection, construction management)	$	75,000
	10% Contingency	$	100,000
		$	**750,000**
3	**S. Virginia St Widening (6 Lanes From Longely Lane to I-580 S Ramps)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	1,800,000
	Construct Improvements (roadway widening, curb, storm drain, and striping)	$	9,800,000
	Traffic Signal Modifications	$	1,500,000
	Relocation/Undergrounding Overhead Electrical/Communication Lines	$	1,500,000
	Design Services (survey, engineering)	$	2,200,000
	Construction Services (staking, testing, inspection, construction management)	$	2,200,000
	10% Contingency	$	2,000,000
		$	**21,000,000**
4	**S. Virginia St / I-580 NB Off Ramp Improvements (Traffic Signal or Free Right)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	3,000
	Construct Improvements (roadway widening, curb, storm drain, and striping)	$	30,000
	Traffic Signal Modifications	$	300,000
	Design Services (survey, engineering)	$	50,000
	Construction Services (staking, testing, inspection, construction management)	$	50,000
	10% Contingency	$	100,000
		$	**500,000**
5	**Veterans Pkwy / Long Meadow Dr Improvements Traffic Signal**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	3,000
	Construct Improvements (curb and gutter, sidewalk, and signage and striping)	$	27,000
	Traffic Signal (including interconnect)	$	500,000
	Design Services (survey, engineering)	$	60,000
	Construction Services (staking, testing, inspection, construction management)	$	60,000
	10% Contingency	$	100,000
		$	**750,000**
6	**Damonte Ranch Pkwy / Double R Blvd Enhancements (Add WB Right)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	24,000
	Construct Improvements (curb and gutter, sidewalk, and signage and striping)	$	209,000
	Traffic Signal Modification	$	75,000
	Design Services (survey, engineering)	$	46,000
	Construction Services (staking, testing, inspection, construction management)	$	46,000
	10% Contingency	$	100,000
		$	**500,000**

7	**Veterans Pkwy / Carat Ave Enhancements (Add EB & WB Right Turn Lanes)**		
	Removal/Demolition/Modification (roadway, curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	70,000
	Construct Improvements (roadway wideing and reconstruction, curb and gutter, sidewalk, rockery walls, and signage and stripin	$	480,000
	Traffic Signal Modification	$	150,000
	Design Services (survey, engineering)	$	105,000
	Construction Services (staking, testing, inspection, construction management)	$	105,000
	10% Contingency	$	90,000
		$	**1,000,000**
8	**Veterans Pkwy / Steamboat Pkwy Enhancements (Add EB & WB Right Turn Lanes, NB Right Turn Lane, NB & SB Dual Lefts)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	170,000
	Construct Improvements (roadway widening, curb, storm drain, landscaping, signage and striping)	$	1,100,000
	Traffic Signal Modifications	$	500,000
	Design Services (survey, engineering)	$	265,000
	Construction Services (staking, testing, inspection, construction management)	$	265,000
	10% Contingency	$	200,000
		$	**2,500,000**
9	**S. Meadows Pkwy / Wilbur May Pkwy Improvements (Traffic Signal)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	3,000
	Construct Improvements (curb and gutter, sidewalk, and signage and striping)	$	27,000
	Traffic Signal (including interconnect)	$	500,000
	Design Services (survey, engineering)	$	60,000
	Construction Services (staking, testing, inspection, construction management)	$	60,000
	10% Contingency	$	100,000
		$	**750,000**
10	**Rio Wrangler Pkwy / Steamboat Pkwy Improvements (Traffic Signal or Roundabout)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	300,000
	Construct Improvements (curb and gutter, sidewalk, lighting, and signage and striping)	$	2,000,000
	Design Services (survey, engineering)	$	200,000
	Construction Services (staking, testing, inspection, construction management)	$	200,000
	10% Contingency	$	300,000
		$	**3,000,000**
	*Does not include acquisition of right of way		
11	**Rio Wrangler Pkwy / McCauley Ranch Blvd Improvements (All-Way STOP, Traffic Signal, or Roundabout)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	300,000
	Construct Improvements (curb and gutter, sidewalk, lighting, and signage and striping)	$	2,000,000
	Design Services (survey, engineering)	$	200,000
	Construction Services (staking, testing, inspection, construction management)	$	200,000
	10% Contingency	$	300,000
		$	**3,000,000**
	*Does not include acquisition of right of way		
12	**Western Skies Dr Extension (New 2 Lane Roadway)**		**Private**
13	**Steamboat Pkwy / Hampton Park Dr Improvements (Traffic Signal)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	3,000
	Construct Improvements (curb and gutter, sidewalk, and signage and striping)	$	27,000
	Traffic Signal (including interconnect)	$	500,000
	Design Services (survey, engineering)	$	60,000
	Construction Services (staking, testing, inspection, construction management)	$	60,000
	10% Contingency	$	100,000
		$	**750,000**

14	**S. Meadows Pkwy / Double Diamond Pkwy Enhancements (Add WB Right, Dual SB Left)**		
	Removal/Demolition/Modification (roadway, curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	120,000
	Construct Improvements (roadway widening, curb, storm drain, box culverts, landscaping, signage and striping)	$	1,120,000
	Traffic Signal Modifications	$	160,000
	Design Services (survey, engineering)	$	210,000
	Construction Services (staking, testing, inspection, construction management)	$	210,000
	10% Contingency	$	180,000
		$	**2,000,000**
15	**Damonte Ranch Pkwy Widening (6 Lanes From Promenade Way to Steamboat Pkwy)**		
	Removal/Demolition/Modification (striping)	$	3,000
	Construct Improvements (slurry seal, striping)	$	65,000
	Traffic Signal Modifications	$	5,000
	Design Services (survey, engineering)	$	9,000
	Construction Services (staking, testing, inspection, construction management)	$	9,000
	10% Contingency	$	9,000
		$	**100,000**
16	**Steamboat Pkwy Widening (6 Lanes From Damonte Ranch Pkwy to Veterans Pkwy)**		
	Removal/Demolition/Modification (roadway, curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	600,000
	Construct Improvements (roadway widening and reconstruction, curb, storm drain, and striping)	$	1,100,000
	Traffic Signal Modifications	$	600,000
	Relocation Underground Electrical/Communication Lines	$	500,000
	Design Services (survey, engineering)	$	400,000
	Construction Services (staking, testing, inspection, construction management)	$	400,000
	10% Contingency	$	400,000
		$	**4,000,000**
17	**Damonte Ranch Pkwy / Steamboat Pkwy Enhancements (Lane Alignment & Triple SB Lefts)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	50,000
	Construct Improvements (roadway widening, curb, storm drain, lighting, and striping)	$	410,000
	Traffic Signal Modifications	$	150,000
	Relocation Underground Electrical/Communication Lines	$	200,000
	Design Services (survey, engineering)	$	50,000
	Construction Services (staking, testing, inspection, construction management)	$	50,000
	10% Contingency	$	90,000
		$	**1,000,000**
18	**Damonte Ranch Pkwy / I-580 Ramps (Lane Alignment to NB On-Ramps)**		
	Removal/Demolition/Modification (striping)	$	700,000
	Construct Improvements (slurry seal, open grade paving, and signage and striping)	$	3,000,000
	Design Services (survey, engineering)	$	400,000
	Construction Services (staking, testing, inspection, construction management)	$	400,000
	10% Contingency	$	500,000
		$	**5,000,000**
19	**Veterans Pkwy / Damonte Ranch Extension Improvements (Traffic Signal)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	3,000
	Construct Improvements (curb and gutter, sidewalk, and signage and striping)	$	17,000
	Traffic Signal (including interconnect)	$	500,000
	Design Services (survey, engineering)	$	65,000
	Construction Services (staking, testing, inspection, construction management)	$	65,000
	10% Contingency	$	100,000
		$	**750,000**

20	**Veterans Pkwy Widening (6 Lanes from S. Virginia to Damonte Ranch Extension)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	700,000
	Construct Improvements (roadway widening and reconstruction, curb, storm drain, median, lighting, signage and striping)	$	2,800,000
	Design Services (survey, engineering)	$	500,000
	Construction Services (staking, testing, inspection, construction management)	$	500,000
	10% Contingency	$	500,000
		$	**5,000,000**
21	**S. Virginia St / Veterans Pkwy Enhancements (Triple SB Left)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	1,100,000
	Construct Improvements (1/2 roadway widening and reconstruction, curb, storm drain, median, signage and striping)	$	5,300,000
	Traffic Signal Modifications	$	200,000
	Design Services (survey, engineering)	$	800,000
	Construction Services (staking, testing, inspection, construction management)	$	800,000
	10% Contingency	$	800,000
		$	**9,000,000**
22	**S. Meadows Pkwy / Echo Valley Pkwy Improvements (Traffic Signal)**		**Private**
23	**Rio Wrangler Pkwy Extension (New 2 Lane Roadway)**		**Private**
24	**S. Meadows Pkwy Extension to Storey County Line (New 4 Lane Roadway)**		**Private**
25	**Damonte Ranch Capacity Improvements (I-580 to Double R Blvd)**		
	Removal/Demolition/Modification (curb and gutter, sidewalk, storm drain, landscaping, etc.)	$	1,400,000
	Construct Improvements (roadway widening and reconstruct, curb, storm drain, median, signage and striping)	$	4,700,000
	Traffic Signal Modifications	$	600,000
	Relocation Underground Electrical/Communication Lines	$	300,000
	Design Services (survey, engineering)	$	1,000,000
	Construction Services (staking, testing, inspection, construction management)	$	1,000,000
	10% Contingency	$	1,000,000
		$	**10,000,000**
26	**Geiger Grade Realignment (New 4 Lane Roadway)**	**$**	**75,100,000 †**
	† Programmed Cost in the 2040 RTP		
27	**Damonte Ranch Extension Pkwy (New 2 Lane Roadway)**		**Private**
28	**Rio Wrangler Pkwy Extension (New 2 Lane Roadway)**		**Private**
29	**Arrowcreek Pkwy Widening (4 Lanes From Zolezzi Ln to Wedge Pkwy)**	**$**	**8,300,000 †**
	† Programmed Cost in the 2040 RTP		
30	**Geiger Grade Widening (4 Lanes from Toll Rd to Rim Rock Dr)**		**Remove From RTP**

ner Improvements

ptions: New bike facilities/shared use paths are 10' wide.
New bike facilities/shared use path = $250/lf
New pedestrian facilities are 6' wide.
New pedestrian facilities =$60/lf
Bus stop improvements =$100,000/location

April 17, 2020 **AGENDA ITEM 5.1**

TO: Regional Transportation Commission

FROM: Bill Thomas, AICP
Executive Director

SUBJECT: Director's Report

Monthly verbal update/messages from RTC Executive Director Bill Thomas – *no action will be taken on this item.*

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April 17, 2020 **AGENDA ITEM 5.2**

TO: Regional Transportation Commission

FROM: Bill Thomas, AICP
Executive Director

SUBJECT: Federal Report

Monthly update/messages from RTC Executive Director Bill Thomas – *no action will be taken on this item.*

Federal Update for RTC of Washoe County
Prepared by Cardinal Infrastructure and Thompson Coburn
April 17, 2020 Board Meeting

CARES Act
On March 27, 2020, President Trump signed the Coronavirus Aid, Relief, and Economic Security (CARES) Act into law. The law provides approximately $2.3 trillion in economic aid, including $25 billion for public transit.

Summary of CARES Act funding for public transit:

- $25 billion to remain available until expended and apportioned under existing formula programs.
- Funds may be used for operating expenses related to COVID-19 response for costs incurred as of January 20, 2020.
- Operating expenses are not required to be included in a transportation improvement program, long-range transportation, statewide transportation plan, or statewide transportation improvement plan.
- Funds may be used for costs to maintain service, assist agencies due to losses in revenue, personal protective equipment, and "paying administrative leave of operations personnel due to reductions in service." Although these specific operating expenses are mentioned in the bill, other operating costs may also be eligible.
- Certain Federal requirements, specifically Davis Bacon prevailing wage and section 13(c) labor protection, are prohibited from being waived.
- Transit agencies do not need to match these Federal funds; expenses can be reimbursed with 100% of this Federal money.

FTA CARES Act Implementation
The FTA has been highly responsive and communicative with grantees and stakeholders in response to the COVID-19 pandemic.

The FTA apportioned the amounts available from CARES Act funds, with RTC allocated up to $20.8 million in this supplemental funding. The total funding is allocated as follows: $13.75 billion under Section 5307 Urbanized Area Formula Program, $2 billion under Section 5311 Rural Area Formula Program, $7.5 billion under Section 5337 State of Good Repair, $862.85 million under Section 5340 High Density States, and $600 million under Section 5340 Growing States, as well as funds for other 5311 programs. In addition, $75 million is set-aside for FTA administrative and oversight functions.

On April 6, 2020 FTA held a webinar on implementation of the CARES Act. A summary of this discussion is below.

- All activities normally eligible under the Urban and Rural Formula Programs are eligible for CARES Act funding. For example, CARES Act funds are eligible for procurement of rolling stock and for repairing bus facilities.
- Operating expenses also eligible including driver salaries, supplies, personal protective equipment, fuel and other expenses to keep transit system's operating.
- "Lost revenue" was further clarified by FTA; FTA cannot pay for lost revenue based on lost tax revenue or expected fares. FTA can pay for actual operating and capital costs no matter the amount of revenue the system receives, so long as the agency subtracts the fare revenue received from total operating expenses.
- Funds are available until expended – there is no lapse date. Agencies are encouraged to use the funds expeditiously. (As FTA mentioned, Congress could rescind unused funds at a later date).

The FTA have made continued efforts to maintain a robust FAQ section as a resource for grantees and stakeholders. This includes information on the use of "public transportation assets, such as vehicles and facilities, acquired with FTA funds [to] be used for non-transit activities in response to COVID-19." In referencing FTA Circular 5010.1E, FTA provides that "meal or grocery delivery" is a permitted use, so long as it "does not affect a property's transit capacity" or "does not interfere with [the transit agency's] remaining limited service."

FTA Emergency Relief Program

On March 16, 2020, in response to COVID-19, the FTA announced that grantees may now use their 5307 Urbanized Area and 5311 Rural formula funds to take measures to protect the health and safety of their riders and workforce. FTA Acting Administrator Jane Williams said, "Expansion of the permissible uses of federal funds will allow transit providers greater flexibility in the areas of the country that need it most. Invoking the eligibility of the Emergency Relief Program also provide funds at a higher federal share." This announcement permits operating expenses to be covered at an 80% federal share rather than 50%.

The FTA has also established an Emergency Relief Docket "that allows transit providers in states where the Governor has declared an emergency related to COVID-19 to request temporary relief" from certain federal requirements.

FAST Act Reauthorization/Infrastructure Funding

On April 1, 2020, House Speaker Pelosi held a conference call with House Transportation and Infrastructure Chairman DeFazio, Majority Whip Clyburn, and Energy and Commerce Chairman Pallone to discuss their preference for including infrastructure in a fourth stimulus package. The House Democrats' infrastructure proposal was opposed by Senate Majority Leader McConnell and House Minority Leader McCarthy, taking the position that Congress should first see the impact of the three relief packages enacted before moving forward on a fourth. However, President Trump signaled his support for infrastructure funding to be included in a fourth package.

On the conference call, Speaker Pelosi said, "We must take bold action to renew America's infrastructure" and that "critical impacts and vulnerabilities have been laid bare by coronavirus." Chairman DeFazio said, "This is investment. This is capital. We can justify this." Pelosi said there must be a focus on mobility to enable a faster recovery, and in an interview with MSNBC, specifically noted surface transportation. She also outlined the need for clean water, and broadband development to support tele-working and tele-schooling.

However, on April 6, 2020, Speaker Pelosi sent a 'Dear Colleague' letter to all Members of Congress concerning next steps to address COVID-19 relief efforts. With no mention of surface transportation reauthorization or infrastructure, the letter states that CARES 2 will "go further in assisting small businesses including farmers, extending and strengthening unemployment benefits and giving families additional direct payments," as well as "resources for our state and local governments, hospitals, community health centers, health systems and health workers, first responders and other providers on the frontlines of this crisis."

For the time being, it is unlikely that surface transportation reauthorization or a robust infrastructure package will be included in a fourth COVID-19 response bill; however, many congressional members and industry supporting organizations (APTA, AASHTO, ARTBA, etc.) continue to push for its consideration in future packages. APTA continues to advocate for its six year reauthorizations proposal and AASHTO, on behalf of State DOTs, is advocating for $50 billion in supplemental funding along with its reauthorization priorities.

Families First Act

The President signed into law the Emergency Paid Sick Leave Act and Emergency Family and Medical Leave Expansion Act, both part of the Families First Coronavirus Response Act (FFCRA). As provided in guidance issued by the Department of Labor (DOL), the law reimburses eligible "employers that have fewer than 500 employees with tax credits for the cost of providing employees with paid leave taken for specified reasons related to COVID-19." DOL is continuing to work on promulgating regulations to implement the provisions of FFCRA which offer public health emergency leave and emergency paid sick leave. In the meantime, DOL has issued temporary rules effective from April 1, 2020 through December 31, 2020 to address FFCRA provisions.

Grant Solicitation Announcements

Buses and Bus Facilities Program

The FTA notice of funding opportunity (NOFO) for the FY 2020 Buses and Bus Facilities grant program provides for $454.6 million in available funding. Due to the COVID-19 pandemic, applications are now due by April 29, 2020. The NOFO provides that FTA encourages innovative technologies and practices. Innovative practices may include new public transportation operational models, financial or procurement arrangements, value capture, or streamlining of fare collection systems into a single network.

Accelerating Innovative Mobility

The FTA NOFO for the Accelerating Innovative Mobility (AIM) initiative includes $11 million in challenge grants which "encourages innovation throughout the industry by promoting forward-thinking approaches to improve transit system design, service, and financing." The program will "help transit agencies experiment with new ways of doing business, such as exploring new service models that provide more efficient and frequent service." The program also established a network of innovation centers that will test and share project results. Due to the COVID-19 pandemic, the deadline for applications is now May 18, 2020.

Transit Employee Safety Protection

On March 20, 2020, the SMART-Transportation Division Union submitted a petition to FTA and FRA outlining proposed requirements and measures for proper operator station sanitation, vehicle sanitation, common room sanitation, operators exposed at fare boxes, employee temperature observation, employees at the away-from-home terminal, employee and passenger symptom development protocols, and furlough recall.

On April 2, 2020, 14 Members of Congress sent a letter to FTA Acting Administrator Jane Williams and Federal Railroad Administration (FRA) Administrator Ron Batory, urging FTA and FRA to "protect the health and safety needs of our frontline transit and rail workers" and "consider…recommendations [SMART-Transportation Division] outlined in its petitions for worker protections and sanitation standards to protect against the virus."

On April 3, 2020, the Transport Workers Union of America (TWU) (a prominent NY MTA union) and the Amalgamated Transit Union (ATU) published a press release on their intended collective efforts to "take aggressive action if system operators don't better protect their workers from COVID-19." The letter calls for transit agencies to, among other requests, provide personal protective equipment, enforce rear-door boarding, regularly disinfect rolling stock and facilities, urge riders to wear face coverings, and mandate social distancing.

On April 7, 2020, 21 Democratic Senators, including Senator Rosen, sent a letter to FTA Acting Administrator Jane Williams requesting "further assistance in ensuring transit agencies receive federal support in acquiring [personal protective equipment] and in updating [FTA's] guidance to transit agencies to ensure more robust safety protections are put in place for frontline workers." The letter includes a request that FTA work with transit agencies to ensure many of the actions recommended by TWU, ATU, and SMART-TD.

The FTA has added the Center for Disease Control's (CDC's) resources for transit employees, including bus transit operators. The CDC's resource page includes, but is not limited to, recommendations that bus operators "use gloves if required to touch surfaces contaminated with body fluids," "…regularly wash your hands…," and "[l]imit close contact with others by maintaining a distance of at least 6 feet, when possible."

Promoting Service in Transportation Act

Senator Rosen and Senator Cortez Masto introduced the Promoting Service in Transportation Act; the Senate companion bill to H.R. 5118. The press release provides that, “This bipartisan bill would authorize the [U.S. DOT] to develop a series of national broadcast, digital, and print media public service announcement campaigns to promote job opportunities and improve diversity in the transportation workforce." This legislation, according to a Congressional Resource Services summary, “[directs U.S. DOT] to establish and administer a transportation workforce outreach program to increase awareness of transportation career opportunities; and increase diversity such as race, gender, ethnicity, and socioeconomic status of professionals in the transportation sector.”

April 17, 2020 **AGENDA ITEM 5.3**

TO: Regional Transportation Commission

FROM: Kristina Swallow, Director NDOT

SUBJECT: **Nevada Department of Transportation**

Monthly verbal update/messages from NDOT Director Kristina Swallow – *no action will be taken on this item.*

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April 17, 2020 **AGENDA ITEM 6**

TO: Regional Transportation Commission

FROM: Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: **Legal Counsel Report**

The monthly Regional Transportation Commission (RTC) agenda includes a standing item for staff and legal counsel to provide information on any legal issues facing the RTC. This allows the Board to discuss such issues and provide direction to staff or take action as necessary.

The RTC may, consistent with Chapter 241 of NRS, decide to interrupt the public meeting at any time to conduct a closed session to confer with legal counsel and possibly deliberate on legal issues. Any action on pending legal matters will be made when the public meeting is reconvened.

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April 17, 2020 **AGENDA ITEM 7**

TO: Regional Transportation Commission

FROM: Amy Cummings
Amy Cummings, AICP, LEED AP
Interim Executive Director

SUBJECT: **Public Input**

This agenda item allows the public the opportunity to provide information on topics within the jurisdiction of the Regional Transportation Commission (RTC). Pursuant to Section 1 of Governor Steve Sisolak's Declaration of Emergency Directive 006 ("Directive 006"), the requirement contained in NRS 241.023(1)(b) that there be a physical location designated for meetings of public bodies where members of the public are permitted to attend and participate has been suspended.

Members of the public may provide public comment and also comment on Agenda Items without being physically present at the meeting by submitting their comments via online Public Comment Form (https://www.rtcwashoe.com/about/contact/contact-form/), or by emailing their comments to: rtcpubliccomments@rtcwashoe.com. Public commenters may also leave a voicemail at (775) 335-0018. Comments received prior to 4:00 p.m. on April 16, 2020, will be entered into the record.