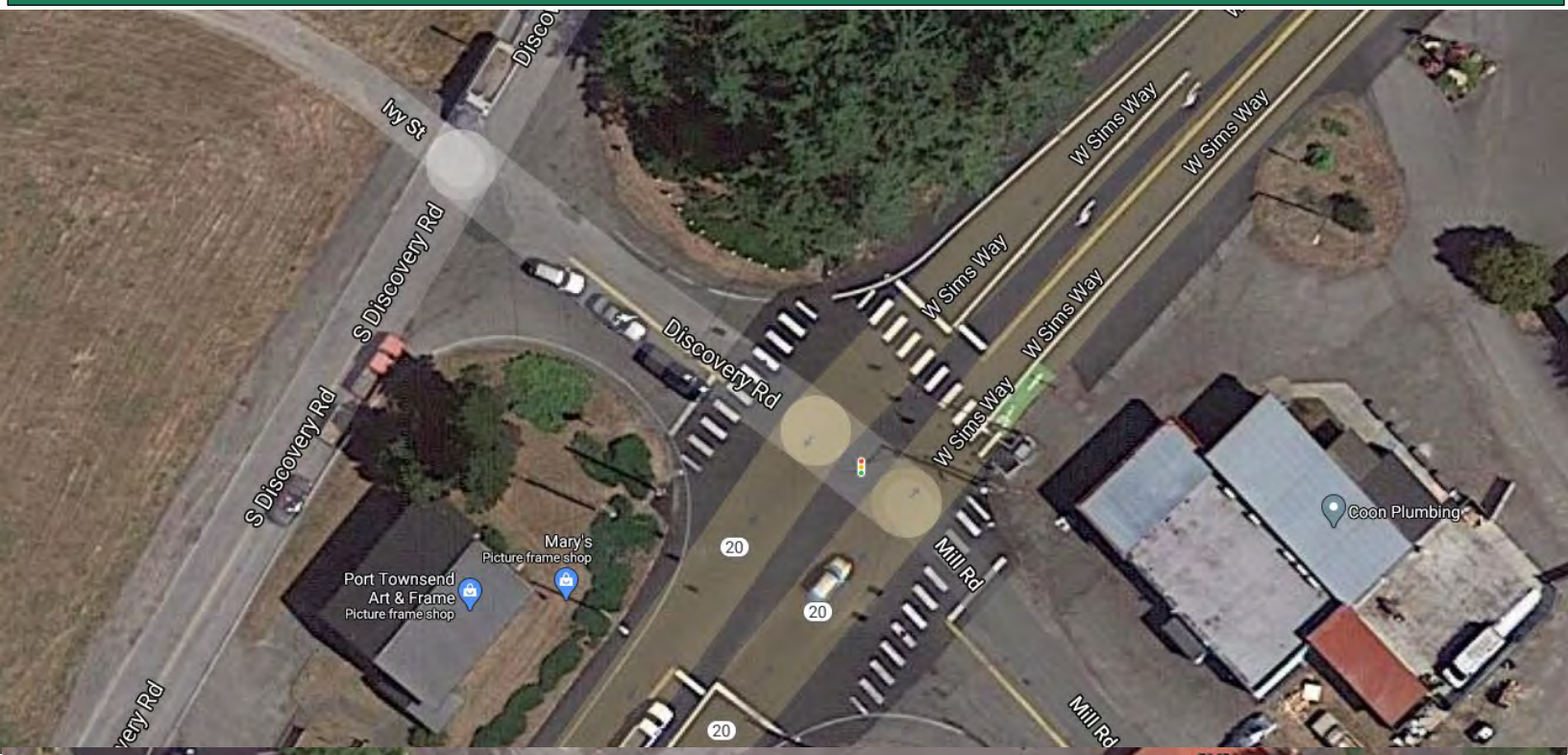
WSDOT

SR 20 Discovery Road and SR 20 Kearney Street Roundabouts Pre-Design Study



December 2020

Prepared by WSDOT's Olympic Region
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Background and Purpose

In April 2020, WSDOT began this pre-design study for two intersections along SR 20 (Sims Way) in Port Townsend. These two proposed roundabout locations are SR 20/Discovery Road and SR 20/Kearney Street, as shown in Exhibit 1.

The purpose of a pre-design phase for a project is to complete the early design work necessary to finalize a baseline scope and cost estimate. WSDOT conducts pre-design efforts to revise or validate the project scope, schedule, and budget using a scalable multimodal, multi-discipline, and multi-agency process.

Exhibit 1: Study Area

The intersection roundabouts project was identified a few years ago as part of a Preservation (P3) Selection Process, which is a programmatic review of highway traffic signal systems statewide. The traffic signals along SR 20 at Discovery Road/Mill Road and at the Kearney Street intersections are considered obsolete. The signal heads are suspended on span wire instead of the preferred mast arms; and the signals require frequent and extensive updates to keep them working. The intersections were further analyzed using an Intersection Control Evaluation. As part of this pre-design study, a Context and Model Accommodation Report (CMAR) and Basis of Design (BOD) were developed. Copies of these documents are available upon request.

This report documents the following tasks:

- Related analysis and documentation
- Traffic operational analysis
- Safety analysis
- Other considerations
- Community engagement process
- Recommendations
- Next steps

Related Analysis and Documentation

Preservation (P3) Selection Process

WSDOT's Transportation Asset Management Plan and Preservation (P3) program supports practical design and serves as the Department's plan to maintain, preserve, and improve highway assets for our current and future generations. Therefore, the traffic control section criteria will look at future operation, but the recommendation is weighted toward build year mobility, safety, reliability, and future costs.

The Preservation program established as part of the WSDOT Transportation Asset Management Plan includes pavements (P1), structures (P2), and other facilities (P3). P3 projects include major electrical systems such as traffic signals. WSDOT's Transportation Asset Management Plan and P3 program goals are to preserve the transportation system, not to expand it.

Changing intersection control type from a traffic signal (currently in need of rehabilitation) to a roundabout is possible within the P3 program. Any proposal for a signal conversion to a roundabout must go through the pre-design process. It is expected that the Intersection Control Evaluation (ICE) report be completed at the beginning of the pre-design phase. The following will be consideration for approval:

- The project cost for the signal rehabilitation has been vetted with the technical specialists.
- The roundabout takes a Practical Solutions approach to installation.
- The project cost to convert to a roundabout is:
    - At or less to the amount to the signal rehabilitation project cost.
    - Within 125% of the signal rehabilitation project cost are likely to be approved.
    - Higher cost conversions may be allowed.

Intersection Control Evaluation (ICE)

One of the first steps WSDOT takes after the funding is obligated is to collect data and evaluate each intersection. The Intersection Control Evaluation is a data-driven, performance-based process used to objectively screen alternatives and identify an optimal geometric and control solution for the intersection. An ICE report is required for signal replacement projects in accordance with WSDOT's Design Manuel's Chapter 1300.05. This process has led to safer, more balanced, and cost-effective solutions on state highways. The ICE report is provided in Appendix A.

Context and Modal Accommodation Report (CMAR)

Context refers to the environmental, economic, and social features that influence livability and travel characteristics. Context characteristics provide insight into the activities, functions, and performance that can be influenced by the roadway design. Context also informs roadway design, including the selection of design controls, such as target speed and modal priority, and other design decisions.

For the purpose of transportation planning and design, WSDOT uses a CMAR to identify baseline and contextual needs, including performance metrics and targets. A CMAR was completed for this project.

Basis of Design (BOD)

A Basis of Design captures important information, decisions, and analysis needed in the development of a project design, including all factors leading to the development and selection of a project alternative, and the selection of design elements associated with that alternative. A BOD was completed for this project.

Traffic Operational Analysis

Discovery Road/Mill Road

WSDOT's Olympic Region Traffic Office conducted a Traffic Operations Level of Service and Delay analysis to determine safety needs and operational efficiencies along SR 20 at the Discovery Road/Mill Road intersection. In 2019 the Traffic Operations Level of Service and Delay indicates an average of 20 seconds of vehicle delay during peak hours that increases to over 35 seconds of delay by 2039 at this location.

Note: All roads feeding the intersection are two lane roads with no known plans for expansion.

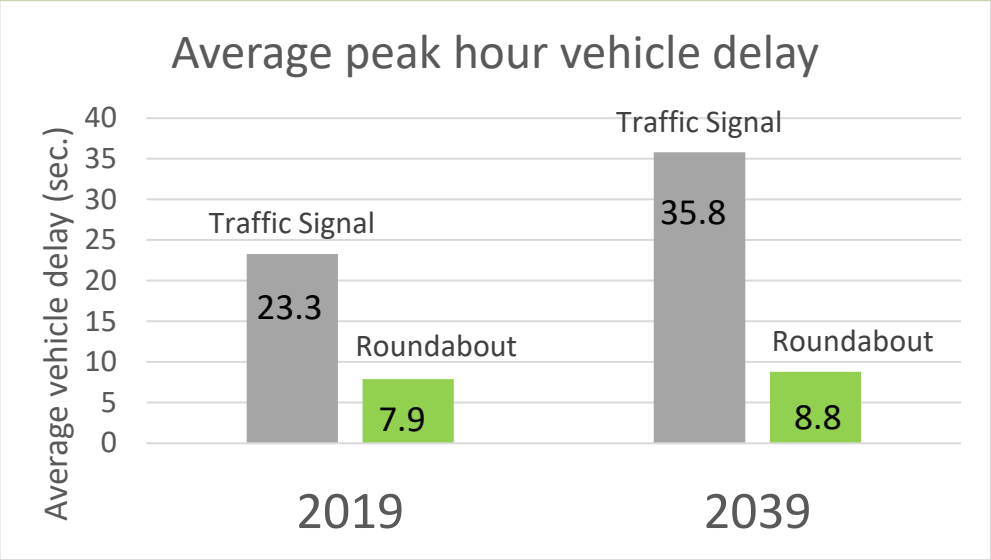
The analysis of traffic operations at intersections is based on the concept of level of service (LOS). The LOS of an intersection is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity.

Exhibits 2 and 3 depict the intersection delay and comparison table and chart. These graphics highlight the average peak hour vehicle delay for each intersection control option. In 2019 during the PM peak hours, the traffic signal option LOS and delay is: LOS C with 23.3 seconds of delay. In comparison, the single lane compact roundabout option LOS and delay is: LOS A with 7.9 seconds of delay. In 2039 during the PM peak hours, the traffic signal option LOS and delay is LOS D with 35.8 seconds of delay. In comparison the single lane compact roundabout option LOS and delay is LOS A with 8.8 seconds of delay.

Exhibit 2: Discovery Road/Mill Road Intersection Delay and Comparison Table

Alternative	2019 PM Peak Hour	2039 PM Peak Hour
Existing Traffic Signal	LOS C, delay 23.3 seconds	LOS D, delay 35.8 seconds
Single Lane Compact Roundabout	LOS A, delay 7.9 seconds	LOS A, 8.8 seconds

Exhibit 3: Discovery Road/Mill Road Intersection Delay Comparison Chart



LOS D is the minimum acceptable LOS for urban areas. The future 2039 volumes are based on a 0.7% annual growth rate provided by WSDOT's Transportation Data, GIS, and Modeling Office.

The single lane compact roundabout outperforms the signalized intersection during the 2039 PM peak hour. During off-peak hours, it is expected that the single lane compact roundabout will also outperform the traffic signal because of the low delay for all entering vehicles. In addition, off-peak hours will typically have free-flow conditions, thus, lower travel times and less idling vehicles which reduces carbon emissions. Relative to a single lane compact roundabout, a traffic signal does not process vehicles as efficiently.

Note: The ICE evaluated traffic conditions using a traffic count from fall 2019. Port Townsend experiences higher traffic volumes in the summer months due to tourism. A supplemental traffic conditions evaluation (Appendix G) was conducted to evaluate the differences between the two seasons. The higher volume summer tourist season does induce longer delays and backups at the intersection. However, as the ICE Report concluded the roundabout is expected to operate better than a traffic signal during the peak and off-peak seasons in Port Townsend.

Kearney Street

WSDOT's Olympic Region Traffic Office conducted a Traffic Operations Level of Service and Delay analysis to determine safety needs and operational efficiencies along SR 20 at the Kearney Street intersection. In 2019 the Traffic Operations Level of Service and Delay indicates an average of 20 seconds of vehicle delay during peak hours that increases to over 35 seconds of delay by 2040 at this location.

Note: All roads feeding the intersection are two lane roads with no known plans for expansion.

The analysis of traffic operations at intersections is based on the concept of level of service (LOS). The LOS of an intersection is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity.

Exhibits 4 and 5 depict the intersection delay and comparison table and chart. These graphics highlight the average peak hour vehicle delay for each intersection control option. In 2019 during the PM peak hours, the traffic signal option LOS and delay is: LOS B with 11.4 seconds of delay. In comparison, the single lane compact roundabout option is: LOS A with 7.6 seconds of delay.

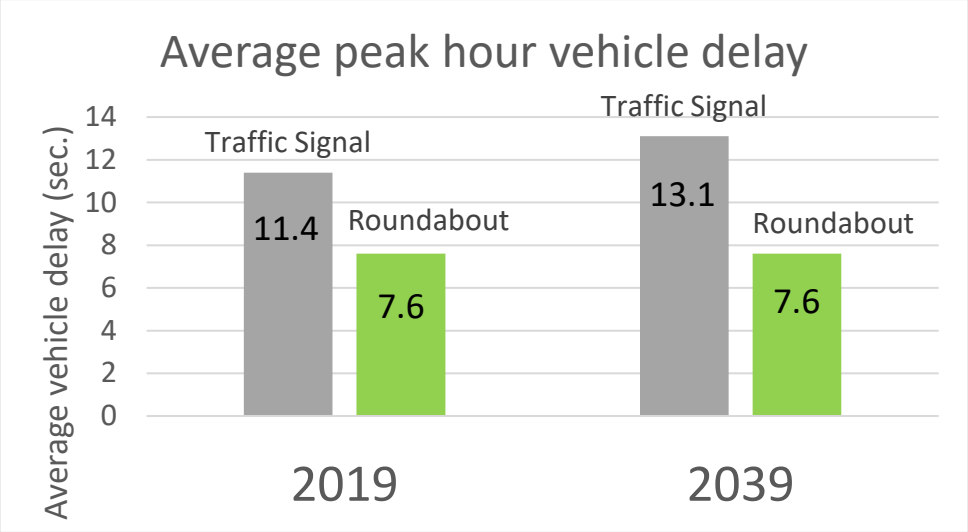
In 2039 during the PM peak hours, the traffic signal option LOS and delay is LOS B with 13.1 seconds of delay. In comparison, the single lane compact roundabout option is: LOS A with 7.6 seconds of delay.

Exhibit 4: Kearney Street Intersection Delay and Comparison Table

Alternative	2019 PM Peak Hour	2039 PM Peak Hour
Existing Traffic Signal	LOS B, delay 11.4 seconds	LOS B, delay 13.1 seconds
Single Lane Compact Roundabout	LOS A, delay 7.6 seconds	LOS A, delay 7.6 seconds

The single lane compact roundabout outperforms the signalized intersection during the 2039 PM peak hour. During off-peak hours, it is expected that the single lane compact roundabout will also outperform the traffic signal because of the low delay for all entering vehicles. In addition, off-peak hours will typically have free-flow conditions, thus, lower travel times and less idling vehicles which reduces carbon emissions. Relative to a single lane compact roundabout, a traffic signal does not process vehicles as efficiently.

Exhibit 5: Kearney Street Intersection Delay Comparison Chart



LOS D is the minimum acceptable LOS for urban areas. The future 2039 volumes are based on a 0.7% annual growth rate provided by WSDOT's Transportation Data, GIS, and Modeling Office.

Note: The ICE evaluated traffic conditions using a traffic count from fall 2019. Port Townsend experiences higher traffic volumes in the summer months due to tourism. A supplemental traffic conditions evaluation was conducted to evaluate the differences between the two seasons. The higher volume summer tourist season does induce longer delays and backups at the intersection. However, as the ICE Report concluded the roundabout is expected to operate better than a traffic signal during the peak and off-peak seasons in Port Townsend.

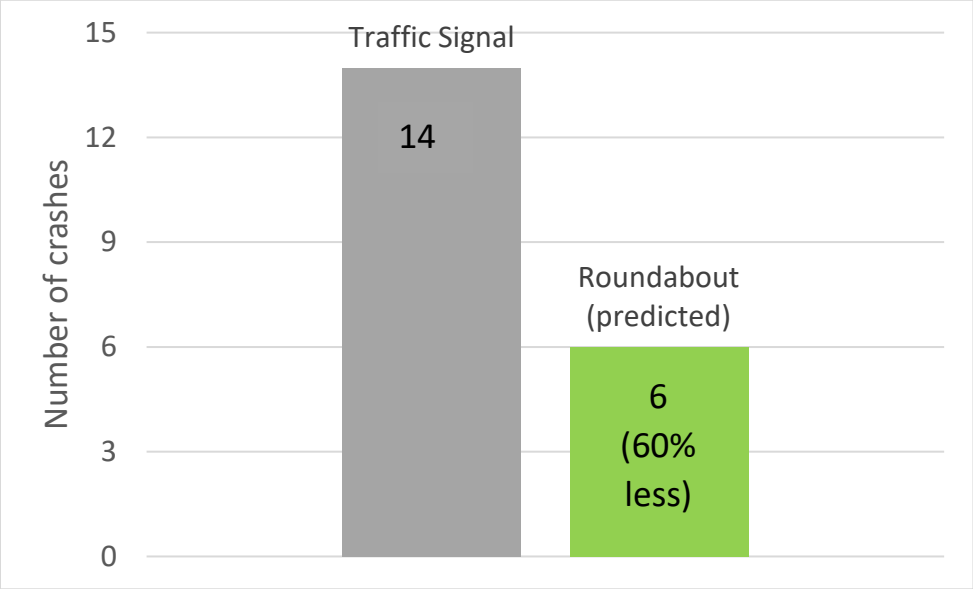
Safety Analysis

Discovery Road/Mill Road

Over a five-year period from 2014-2018 there were a total of 14 reported crashes at the Discovery Road/Mill Road intersection. Three evident injury, 4 possible injuries and 7 property damage only type crashes were reported. Most of the crashes involved more than one vehicle (25 vehicles involved). Replacing the signal system is not anticipated to change the past safety performance.

Exhibit 6 depicts a safety performance comparison of the 14 reported crashes, half of these crashes resulted in injuries and involved 3 bicyclists. Based upon crash types, we expect about a 60% reduction in crashes after the roundabout is installed. WSDOT predicts the crashes will be reduced from 14 to 6 per 5-year period. There will still be crashes in the future but likely less severe which means fewer injuries and life altering crashes. Everyone deserves to get home safely.

Exhibit 6: Discovery Road/Mill Road Intersection Safety Performance Comparison Chart



The compact roundabout alternative is expected to improve the safety performance at the intersection. FHWA identified compact roundabouts as a Proven Safety Countermeasure because of their ability to substantially reduce the types of crashes that result in injury or loss of life. Replacing the existing traffic signal with a signal lane compact roundabout should reduce collisions by 78% according to FHWA.

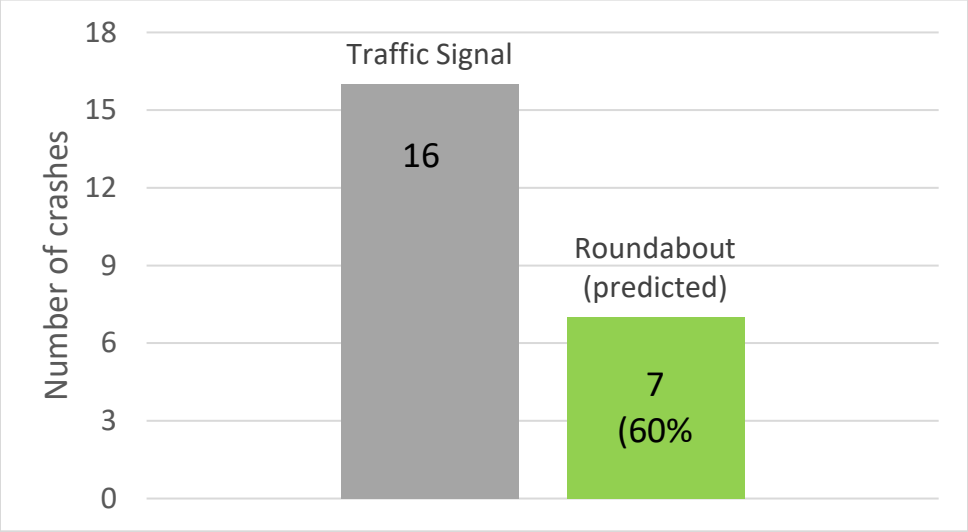
- Compact roundabouts have fewer conflict points. A single lane compact roundabout has 50% fewer pedestrian-vehicle conflict points than a comparable stop or signal-controlled intersection. Conflicts between bicycles and vehicles are reduced as well.
- Pedestrians cross a shorter distance of only one direction of traffic at a time since the entering and exiting flows are separated. Drivers focus on pedestrians apart from entering, circulating and exiting maneuvers.
- Traffic speed at any road or intersection is vitally important to the safety of everyone, and especially non-motorized users. Lower speed is associated with better yielding rates, reduced vehicle stopping distance, and lower risk of collision injury or fatality. Also, the speed of traffic through a compact roundabout is more consistent with comfortable bicycle riding speeds.

Kearney Street

Over a five-year period from 2014-2018 there were a total of 16 reported crashes at this intersection location. One serious injury, one evident injury, 6 possible injuries and 8 property damage only type crashes were reported. Most of the crashes involved more than one vehicle. (32 vehicles involved). Replacing the signal system is not anticipated to change the past safety performance.

Exhibit 7 depicts the safety performance comparison of the 16 reported crashes, half of these crashes resulted in injuries and 2 crashes involved pedestrians. Based upon crash types, we expect about a 60% reduction in crashes after the roundabout is installed. WSDOT predicts the crashes will be reduced from 16 to 7 per 5-year period. There will still be crashes in the future but likely less severe which means fewer injuries and life altering crashes. Everyone deserves to get home safely.

Exhibit 7: Kearney Street Intersection Safety Performance Comparison



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- Traffic speed at any road or intersection is vitally important to the safety of everyone, and especially non-motorized users. Lower speed is associated with better yielding rates, reduced vehicle stopping distance, and lower risk of collision injury or fatality. Also, the speed of traffic through a compact roundabout is more consistent with comfortable bicycle riding speeds.

Other Selection Considerations

- Compact roundabouts do not need electric power other than illumination.
- Compact roundabouts operations result in overall lower vehicle emissions than a comparative traffic signal.
- Compact roundabouts have lower overall maintenance and operations costs as compared to traffic signals.
- Compact roundabouts will exceed operational performance of other alternatives during off-peak conditions.

Major Employer: Port Townsend Paper Corporation

The Port Townsend Paper Corporation is one of Jefferson County's major employers and the roadway operation of the SR 20 and Mill Road intersection is a vital component for the paper mill's business. The paper mill is located off of SR 20 at the end of Mill Road. Three hundred employees work two 12-hour shifts from 5 to 5. The paper mill's onsite old-corrugated container recycling plant processes 294 million pounds of corrugated container material into paper pulp each year. Arriving daily at the paper mill are between 100 -140 trucks delivering raw materials and shipping finished products to customers each day. Manufactured products include dozens of finished products such as Kraft Linerboard; fruit and pizza boxes; paper bags and cardboard displays; and fiber cement siding. Trucks range in size up to 75' long. The 75' hopper style semi-trucks delivering wood chips to the recycling plant also have a lower ground clearance. The 75' sized trucks also require a larger turning-radius onto Mill Road from SR 20 using a significant portion of the intersection footprint. The paper mill receives materials such as wood chips, and old corrugated containers materials for their onsite recycling plant.

Jefferson Transit Authority

Near the Kearney Street intersection, Jefferson Transit Authority has two regular service transit stops, one in each direction along SR 20. The transit pull-out in front of the Penny Saver Mart is a very popular stop with many riders going to the Food Co-op. Safety and Training Supervisor Gary Maxfield offered the following feedback for WSDOT to consideration (Appendix A) after viewing the conceptual compact roundabout sketch. Exhibit 8 shows the transit routes and the service frequency for the Penny Saver Mart and Triangle Park stops. Also highlighted are the number of left-turning movements required that may result in vehicle tail swing as the bus negotiates the compact roundabout.

Exhibit 8: Jefferson Transit Authority's Sims Way and Kearney Street bus service

Jefferson Transit Authority Bus Service: Sims/Kearney St Intersection				
Number of buses serving the Penny Saver Mart Stop	Route No.	Mon – Fri	Saturday	# total/week
	Route 2	12	10	22
	Route 11b	11	10	21
Number of buses serving the Triangle Park Stop	Route 11a	14	11	43
Number of transit bus left turns onto Kearney Street				
Early uptown/downtown loop		10	3	13
	Route 2	12	10	22
	Route 11b	11	10	21
Total number of transit bus left turns				56

Considerations for SR 20/Kearney St Triangle Park in-lane stop:

- Fixed route buses stopping for ADA clients need time to deploy lifts, load/unload passengers, and secure passengers. Timing may vary depending on clients' needs; estimated 5-7 minutes on average.
- Passengers with bicycles need time to load/unload secure bicycles: estimated average time 3 minutes.

Consideration for SR 20/Kearney St Penny Saver transit pull-out stop:

- With a 35' bus, which is often used on the routes servicing this stop, there is approximately only 25-30 feet for the bus to pull out in traffic.
- When a driver pulls out of the stop, they would have to wait for a vehicle to let them out, the bus would also block the bike lane.
- When the bus maneuvers through the roundabout from Hwy 20 to turn left on Kearney Street, there could be issues with tail swing.
- Gary recommends the Penny Saver stop remain located in the same spot; there is a lot of activity at this stop and the time required to load/unload ADA passengers would block traffic [estimated 5-7 minutes.]
- When taking the right turn coming out of the roundabout the operators speed will be between 8-10 mph, which will have the potential for traffic slow down.

Community Engagement

Community engagement consisted of a stakeholder group and an online public open house meeting.

Stakeholder Committee

WSDOT's Olympic Region Multimodal Planning Office worked closely with the City of Port Townsend in conducting this pre-design study. Community outreach efforts included convening a stakeholder committee with invited representatives from the City of Port Townsend, East Jefferson Fire Rescue, Jamestown S'Klallam Tribe, Jefferson County Chamber of Commerce, Jefferson Transit, Lower Elwha Klallam Tribe, Port Gamble S'Klallam Tribe, Port of Port Townsend, Port Townsend Paper Corporation, Port Townsend School District Transportation and various WSDOT's Headquarters and Olympic Region subject matter experts and staff. Members are listed in Appendix B.

During the October 1, 2020 virtual stakeholder meeting, WSDOT shared the following: project development process; the difference between standard and compact roundabouts; provided an intersection delay and safety performance comparisons; relayed design considerations to accommodate the Port Townsend Paper Mill who is a major employer; and explained the limitations of the project's Preservation type funding and the project's shorter timeline. Stakeholders relayed their roundabout design challenges and concerns. Where possible, WSDOT modified the roundabout design sketches to accommodate the stakeholder's concerns. Further detail is provided in Appendix C.

Online Public Open House

WSDOT hosted an online open house to accept public comments on the proposed SR 20 Roundabouts project for a 14-day period (Oct. 19 – Nov. 2). Community members were able to view and provide their comments electronically on the conceptual visualizations of the proposed compact roundabouts. The outreach effort was promoted by social media, project stakeholders, and the local newspapers. Nearly two hundred public comments were collected. Further detail is provided in Appendix D.

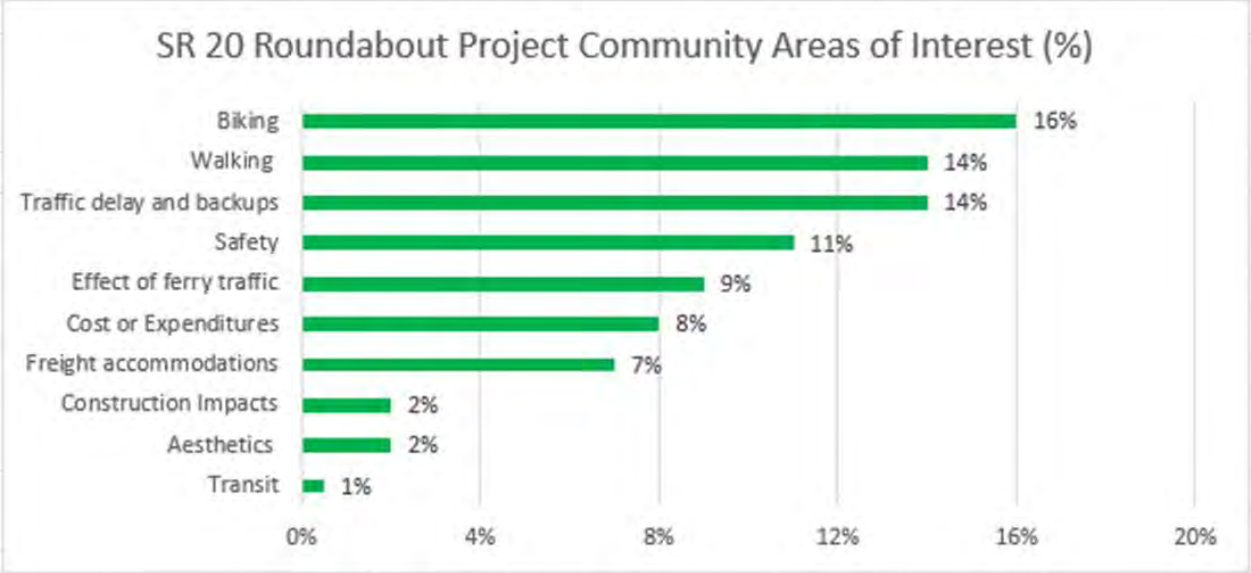
The Peninsula Daily News and the Port Townsend Leader newspapers published the initial request for public comments on the proposed SR 20 roundabouts project. A second article was published directly following the end of the public comment period by the Port Townsend Leader newspaper. See Appendix E.

Summary of Issues

Exhibit 9 depicts community response concerns to the SR 20 roundabouts grouped by areas of interest. The general pulse of the community indicated slightly more support for the two roundabouts than those against; some respondents split their support between the two intersections, others did not indicate support one way or the other; and a few respondents provided design suggestions or had design related questions (Appendix D). The following graphic provides a general impression of community member's areas of interest. The top five public concerns were:

1) Bike and pedestrian safety
2) Intersection operations (including affect from ferry traffic on side street delay
3) Port Townsend Paper Mill delivery trucks
4) Local road issues (not shown in graphic)
5) The most popular local road issue was the city's Discovery Road intersection.

Exhibit 9: SR 20 Roundabout Community Areas of Interest



Port Townsend City Council Concerns

The Port Townsend City Council voiced the following concerns over the first draft of the conceptual compact roundabout sketches. The city was also concerned with the level of activity at the Kearney Street intersection (Peds, Bikes, and vehicles) along with proximity of other local street intersections.

1. Jefferson St short-cut access to SR 20. Both the angle of approach with SR 20 and the proximity of the intersection.
2. The volume of pedestrians and vehicles trying to access Kearney St at Jefferson St
3. Proximity of driveways to SR 20 & Kearney St at the Cherry Blossom furniture store
4. Head in parking at the Cherry Blossom furniture store

5. The Washington St intersection on both sides of SR 20. The angle of approaches to SR 20 should be 90 degrees.
6. Driveway proximity to the businesses adjacent to the Cherry Blossom furniture store.
7. How are bike lanes handled?

Preservation funded projects are limited in scope and are only allocated for specific work and it doesn't allow for additional work outside of the project's scope. Concerns number one, two and five are outside of the scope of the project. For concerns number three, four, and six, the proposed roundabout does not change the existing conditions other than slowing vehicle down through and near the intersection. Concern number seven, how are bike lanes handled with the proposed roundabout. Similar to other roundabouts whereas a rider will have the option of using the roundabout's vehicle lane or for those bicycle riders not as comfortable in traffic, to exit to the existing pedestrian crossing. Roundabouts are proven to be safer and more efficient than other types of intersections. Roundabouts are designed to improve safety for all users, including pedestrians, and bicyclists. Design features include fewer conflict points, lower speeds, and shorter exposed crossing distances.

Port Townsend Public Works Director Steve King and City Engineer David Peterson also voiced two additional concerns following the October 8, 2020 virtual meeting with WSDOT.

1. Will WSDOT's design include the installation of new curbing? This is especially important at the Kearney Street intersection.
2. At the Kearney intersections there is a tremendous amount of bicycle and pedestrian traffic. We believe that changing this signal to a roundabout necessitates a close look at pedestrian and bicycle traffic. Some specific efforts to guide pedestrians outside of the curb are likely going to be a necessity as would be done with a signal replacement project.

WSDOT's conceptual sketch of the compact roundabouts design was revised based on discussions with the City of Port Townsend (Exhibit 10). The revised conceptual sketch shows the crosswalks closer to the intersection to take advantage of the yellow striped pedestrian "refuge island" between the traffic lanes.

A suggestion to add bike sharrows (shared lane markings) in the roundabouts was mentioned. WSDOT's designers will consider adding bike sharrows and/or "Watch for Bikes" signage when they take a closer look at bicycle and pedestrian accommodations towards the final design stage of the roundabouts next year. Bike lane markings will stop approximately 100 feet before the crosswalk. Please keep in mind that bicycle lanes shall not be provided on the circular roadway of a roundabout (per section 9C.12, MUTCD). This conceptual sketch includes a combination of raised islands, pavement markings, colored and textured concrete, and other features to assist in delineating the roundabout. The WSDOT designers will take a closer look at these features during the design stage. WSDOT has successfully used textured and colored Portland cement concrete and striping to highlight roadway shoulder and crosswalk areas.

Funding for the SR 20 compact roundabouts would still be available if the city chooses to request in writing a one-year project delay in order to obtain possible grant funding.

Recommendations

WSDOT worked closely with the City of Port Townsend, project stakeholders, and community members to further refine a solution for the traffic control replacement along SR 20 at the Discovery Road/Mill Road and Kearney Street intersections. In this case, the recommended solution is installing two compact roundabouts. The proposed conceptual compact roundabout sketches for SR 20 at the Discovery Road/Mill Road and Kearney Street intersections are shown in Exhibits 10 and 11. Please note crosswalks, markings, and signing as well as the use of guide-posts or medians for vehicle deflection will be evaluated during the design phase

Exhibit 10: Conceptual Discovery Road/Mill Road compact roundabout sketch

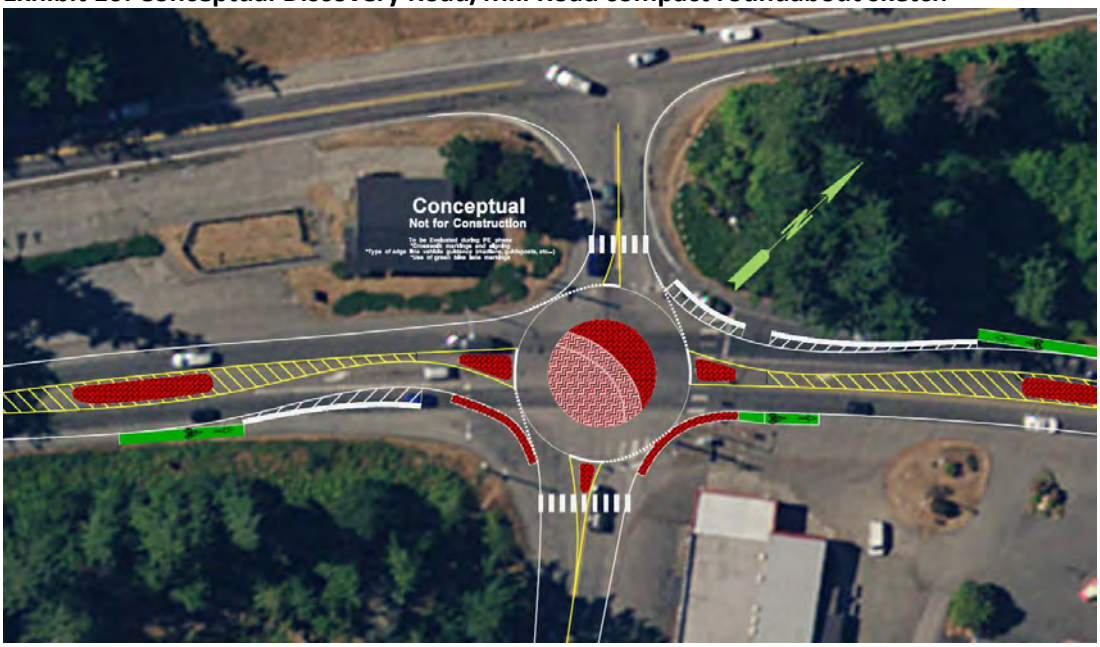
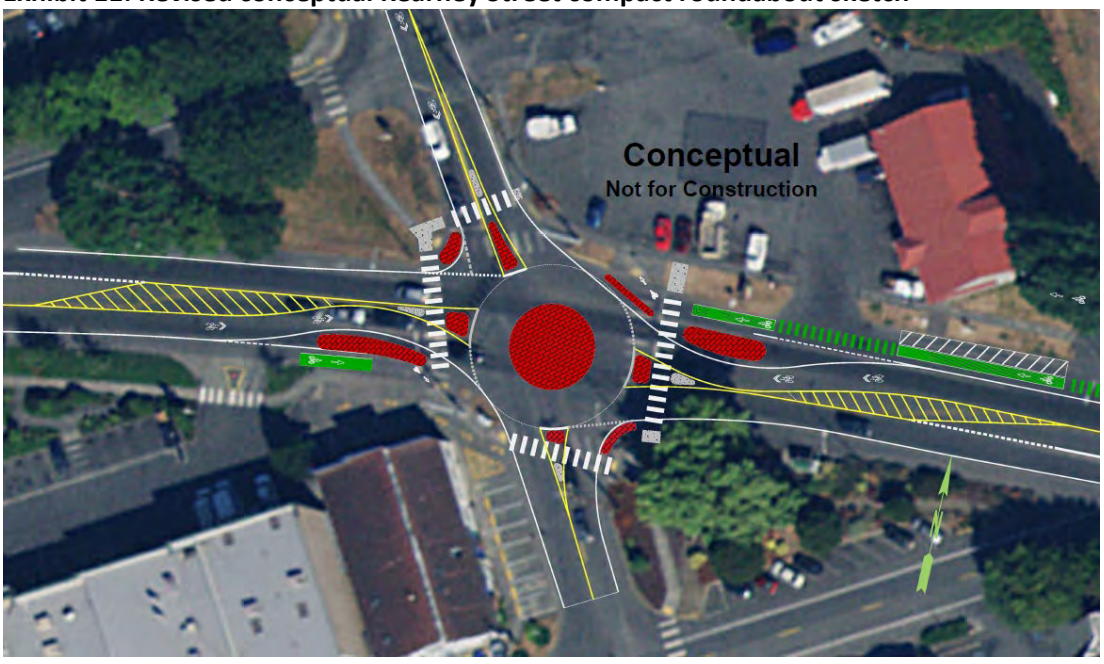


Exhibit 11: Revised conceptual Kearney Street compact roundabout sketch



Multimodal Approach

Intersections are an important part of highway design. Intersection control choice requires consideration of all potential users of the facility, including drivers of motorcycles, passenger cars, heavy vehicles of different classifications, public transit, and bicyclists and pedestrians. Design users have varying skills and abilities. Younger and older drivers in particular are subject to a variety of behavior or human factors that can influence elements of their driving ability. The selection process evaluates these competing needs and results in an optimal balance of tradeoffs for all design users, recognizing the context and priorities of the location.

Practical Solutions

Safety is not the only consideration, and in this case the solution needs to fit within the existing right of way. WSDOT also considered how the intersection functions when there is no power or in an emergency. We also need to stay within a pre-defined budget parameters. There may be a lot of great solutions, but the cost-effective ones are what will survive the vetting process. One of our biggest considerations for roundabouts is financial stewardship. If a roundabout is installed, WSDOT may not need to come and repeat this process in say 20, 30, or 40 years, at a cost savings to the state of millions of dollars.

Planning Level Cost Estimate

Using conceptual information about the roundabouts design, WSDOT prepared a preliminary planning level cost estimate for the recommended alternative of a single-lane compact roundabout along SR 20 at both the Discovery Road/Mill Road and the Kearney Street intersections. A combined planning level cost estimate for both compact roundabouts is estimated at $1,920,000 (Discovery Road/Mill Road roundabout: $970,000 and Kearney Street roundabout: $950,000).

Funding

This project is funded through WSDOT's Preservation Program. Preservation funded projects: have a shorter timeline than the more expanded corridor improvement projects; the purpose of the project is to make the intersections function more efficient and lessen the amount of time and cost to maintain them; and they have a limited amount of funding. The funds are only allocated for specific work and it doesn't allow for additional work outside of the project scope.

Next Steps

Following the completion of the SR 20 Discovery Road and SR 20 Kearney Street Roundabouts Pre-Design Study:

- In January 2021, the project moves to WSDOT's Port Angeles Project Engineer's Office for the Design phase.
- In October 2022, this project is programmed to go out to bid for construction.

Appendices

Appendix A

Jefferson Transit Service Route Map and Comments

JTA Bus Service: Sims/Kearney Intersection

Regular service (Full M-S)		M-F	S	total/week
# of Buses Serving Penny Saver Stop				
	#2	12	10	22
	#11b	11	10	21
				43
# of Buses Serving Triangle Park Stop				
	#11A	14	11	25
# of left turns onto Kearny				
	early uptown/downtown loop	10	3	13
	#2	12	10	22
	#11b	11	10	21
				56

Routing at Sims/ Kearney Intersection

Considerations for in-lane stop:

- Fixed route buses stopping for ADA clients need time to deploy lifts, load/unload passengers, and secure passengers. Timing may vary depending on clients' needs; estimated 5-7 minutes on average.
- Passengers with bicycles need time to load/unload secure bicycles: estimated average time 3 minutes.

Penny Saver Bus Stop

Feedback from JTA's Safety & Training Supervisor, Gary Maxfield:

- With a 35' bus, which is often used on the routes servicing this stop, there is approximately only 25-30 feet for the bus to pull out in traffic.
- When a driver pulls out of the stop, they would have to wait for a vehicle to let them out, the bus would also block the bike lane.
- When the bus maneuvers through the roundabout from Hwy 20 to turn left on Kearney Street, there could be issues with tail swing.

Gary Maxfield recommends the Penny Saver stop remain located in the same spot; there is a lot of activity at this stop and the time required to load/unload ADA passengers would block traffic [estimated 5-7 minutes.]

When taking the right turn coming out of the roundabout the operators speed will be between 8-10 mph, which will have the potential for traffic slow down.

Appendix B

SR 20 Stakeholders List

SR 20 Discovery Road & Kearney Street Intersection Roundabouts Pre-Design Study Stakeholders

City of Port Townsend

- Steve King, Public Works Director
- David Peterson, City Engineer
- Laura Parsons, Civil Engineer
- Bill Corrigan, Reserve Police Officer

East Jefferson Fire Rescue

- Fire Chief James Walkowski
- Terri Ysseldyke-All, District Secretary

Jamestown S'Klallam Tribe

- Annette Nesse, Transportation Program Manager

Jefferson County

- Monte Reinders, Public Works Director
- Eric Kuzma, Assistant Public Works Director
- Wendy Clark-Getzin, Public Works

Jefferson County Chamber of Commerce

- Arlene Alen, Executive Director

Jefferson County PUD

- Sam Harper, Project Manager

Jefferson Transit Authority

- Gary Maxfield, Service & Training Supervisor
- Miranda Nash, Mobility Outreach Coordinator

Lower Elwha Klallam Tribe

- Carol Brown, Community Development Director

Port Gamble S'Klallam Tribe

- Joe Sparr, Planning

Port of Port Townsend

- Eron Berg, Executive Director
- Sue Nelson, Lease and Contracts Administrator

SR 20 Discovery Road & Kearney Street Intersection Roundabouts Pre-Design Study Stakeholders

Port Townsend Paper Corporation

- Kevin C. Scott, General Manager
- Jennifer Gallant, Logistics Service Manager

Port Townsend School District

- Monica Mulligan, Transportation Supervisor

WSDOT Headquarters Design

- Scott Zeller, Asst State Design Engineer

WSDOT Headquarters Traffic Design

- Brian Walsh, State Traffic Design Manager
- Scott Davis, Asst State Traffic Design Manager

WSDOT Olympic Region Multimodal Planning

- Dennis Engel, Multimodal Planning Manager
- Matt Pahs, Principal Senior Planner
- Debbie Clemen, Senior Planner

WSDOT Olympic Region Planning & Program Management

- Joseph Perez, Planning and Program Manager

WSDOT Port Angeles Project Office

- Dan McKernan, Project Engineer
- Daniel Hjelmeseth, Transportation Engineer

WSDOT Olympic Region Traffic

- Manuel Abarca, Traffic Operations
- Kumiko Izawa, Traffic Operations

WSDOT Olympic Region Communications

- Stefanie Randolph, Communications Manager
- Tina Werner, Communications Consultant

Oct. 1, 2020 SR 20 Stakeholder Meeting Summary

SR 20 – Discovery Road and Kearney Street Intersection Roundabouts Pre-Design Study

October 1, 2020 - Stakeholder Meeting Summary

Attendees:

Steve King, City of Port Townsend
David Peterson, City of Port Townsend
Brian Tracer, East Jefferson Fire Rescue
Terri Ysseldyke-All, East Jefferson Fire Rescue
Monte Reinders, Jefferson County
Wendy Clark-Getzin, Jefferson County
Arlene Alen, Jefferson County Chamber of Commerce
Leesa Munroe, Jefferson Transit
Miranda Nash, Jefferson Transit
Gary Maxfield, Jefferson Transit
Kevin C. Scott, Port Townsend Paper Corporation
Jennifer Gallant, Port Townsend Paper Corporation
Annette Nesse, Jamestown S'Kalllam Tribe
Scott Zeller, WSDOT Headquarters Design
Brian Walsh, WSDOT Headquarters Traffic Design
Scott Davis, WSDOT Headquarters Traffic Design
Dan McKernan, WSDOT, Port Angeles PEO
Daniel Hjelmeseth, WSDOT, Port Angeles PEO
Manuel Abarca, WSDOT Olympic Region Traffic
Kumiko Izawa, WSDOT Olympic Region Traffic
Christina Werner, WSDOT Olympic Region Communications
Dennis Engel, WSDOT Olympic Region Multimodal Planning
Matt Pahs, WSDOT Olympic Region Multimodal Planning
Debbie Clemen, WSDOT Olympic Region Multimodal Planning

Introduction

Debbie Clemen from WSDOT's Olympic Region Multimodal Planning office introduced herself and commented that she is the study lead for this outreach effort. Debbie relayed that the existing signal systems on SR 20 at both the Discovery/Mill Road and Kearney Street intersections in Port Townsend have reached the end of their useful life. They require frequent and extensive maintenance to keep them operational, and the signal heads are suspended on span wire instead of the preferred mast arms. WSDOT has proposed replacing the outdated signals at both locations with compact roundabouts that fit within the intersection footprint. WSDOT is looking for stakeholders' assistance in identifying any issues or concerns with the proposed intersection control alternatives. Debbie emphasized that WSDOT's compact roundabouts are different from the standard size roundabouts in Port Townsend. Compact roundabouts fit within the existing intersection footprint, and if needed, the center island can be driven over by larger vehicles.

Debbie asked the stakeholders' if there were any other groups not identified in the stakeholders list, that should be included in the study. The stakeholders' in attendance thought that all pertinent representatives are identified in the list. Study stakeholders include: Port Townsend, East Jefferson Fire Rescue, Jamestown S'Klallam Tribe, Jefferson County, Jefferson County Chamber of Commerce, Jefferson Transit, Lower Elwha Klallam Tribe, Port Gamble S'Klallam Tribe, Port of Port Townsend, Port Townsend Paper Corporation, Port Townsend School District Transportation Division, and WSDOT.

Project Development Process

Debbie reviewed the Project Development Process topic with stakeholders. She commented that the signal replacement projects at the Discovery/Mill Road and Kearney Street intersections were identified a few years ago as part of a programmatic review of state highway traffic signal systems. Once the intersection is identified, WSDOT goes through a process to prioritize and program the limited funding available for signal replacements. Once the funding is obligated, data is collected and evaluated for each intersection. This evaluation is called an Intersection Control Evaluation. This project is currently in the pre-design phase for community outreach. A pre-design report will be completed by December 2020. In January 2021 the project will be transferred to the Port Angeles Project Engineer's Office for design. This project is programmed to go out to bid for construction in fall 2022.

Common Consideration in selecting intersection type

Debbie relayed that when considering changes to intersections like this, WSDOT considers a variety of factors such as: safety, traffic delay, maintenance, operations, replacement cost, space needs, resiliency, and cost. She remarked that cost is often the last consideration and WSDOT needs to stay within a pre-defined budget limits. Only the cost-effective solutions that are at or near the cost of a signal replacement move beyond this vetting process. In this case the recommended solution is installing two compact roundabouts.

Debbie shared the roadway conditions information with the stakeholders.

<u>SR 20 and Discovery/Mill Road Intersection</u>

- 40 mph speed limit
- Over 1,800 vehicles pass through the SR 20 and Discovery/Mill Road intersection during the afternoon peak hours from 2-6 p.m.
- 5-year crash data – 14 crashes of which 7 reported injury and 3 involved bicyclists.
- Traffic Operations Level of Service and Delay

  2019 – Traffic signal: Level of Service (LOS) C, 23.3 seconds of delay
  2019 – Compact roundabout: LOS A, 7.9 seconds of delay
  2040 – Traffic signal: LOS D, 35.8 seconds of delay (LOS D is the minimum acceptable LOS for rural areas).
  2040 – Compact roundabout: LOS A, 8.8 seconds of delay

- Safety performance comparison: WSDOT predicts a 60% reduction (from 14 to about 6) in crashes after the compact round is installed.

<u>SR 20 and Kearney Street Intersection</u>

- 30 mph speed limit
- Over 1,300 vehicles pass through the SR 20 and Kearney Street intersection during the afternoon peak hours from 2-6 p.m.
- 5-year crash data - 17 crashes of which 9 reported injury and 2 involved pedestrians.
- Traffic Operations Level of Service and Delay

  2019 - Traffic signal: Level of Service (LOS) B, 11.4 seconds of delay
  2019 - Compact roundabout: LOS A, 7.6 seconds of delay

2040 - Traffic signal: LOS B, 13.1 seconds of delay
2040 – Compact roundabout: LOS A, 7.6 seconds of delay

- Safety performance comparison: WSDOT predicts a 60% reduction (from 17 to about 7) in crashes after the compact round is installed.

Discovery/Mill Road Major Employer

Debbie informed the stakeholders of a major employer's reliance on the Discovery/Mill Road intersection. She relayed that the Port Townsend Paper Mill creates dozens of products for their customers; the mill employs 300 employees working 2 12-hour shifts from 5 a.m. to 5 p.m. and 5 p.m. to 5 a.m.; an on-site old corrugated container (OCC) recycling plant that processes 294 million pounds of ICC into paper pulp annually; between 100-150 shipping and receiving trucks arriving at the mill daily; these trucks range in size and can be up to 75' long and include some trucks with a double trailer. Debbie commented that the proposed compact roundabout is intended to accommodate these different vehicles and loads.

Draft Conceptual Compact Roundabout Images

Debbie shared the aerial design visuals of the conceptual compact roundabout for each intersection with the stakeholders requesting their comments. WSDOT's Traffic Design Engineer, Scott Davis reminded stakeholders that these roundabout images are not the final design.

Stakeholders had the following comments:

Assistant Fire Chief Brian Tracer from East Jefferson Fire Rescue asked how trucks coming from Port Townsend access the Paper Mill?

Debbie responded that the design of the roundabout uses mountable elements to provide flexibility for large trucks. The truck driver would negotiate the truck's tractor through the roundabout and the truck's trailer would off-track behind, overrunning the center island as needed. The center island and the shorter tri-angle shaped splitter islands are designed to be driven over by larger vehicles. The dark red third of the center island is 3" tall and the pink area is 1" tall.

Scott Davis commented that trucks do fine using the compact roundabout example in Shelton. The mountable areas provide flexibility for larger vehicles.

Port Townsend's City Engineer David Peterson asked if the bikes are behind the white plastic "candles" in the roundabout visual design image? Debbie replied yes, the white plastic curbing(candles) protect the bicyclists from vehicle traffic.

Port Townsend's Public Works Director Steve King asked about the Washington Street "shortcut" located at Kearney Street/Washington Street that gives motorists direct access to SR 20. Steve asked if the city should close it?

Debbie responded that the "shortcut" couldn't be addressed with this particular type of funding that we are using. However, WSDOT's Headquarters Assistant State Design Engineer Scott Zeller asked Port Townsend if they have crash data or have prepared a Local Safety Plan? Scott Zeller relayed that having a Local Safety Plan could help the city access additional grant funding. Unfortunately, David Peterson responded that the city doesn't have a Local Safety Plan in place. Scott Zeller added that Highway Safety Improvement Program (HSIP) funding may be available for the "shortcut" location. Steve King thanked Scott for the lead on the possible grant funding source.

Steve King commented that Port Townsend is thinking about safety. City Engineer David Peterson added that traffic modeling could help make the decision as to whether to close the "shortcut" access or not. Closing it off eliminates the bad roadway angle to SR 20. Scott Davis responded that the point is well taken on the roadway angle. He stated that

Olympic Region Traffic may have to answer your question and that funding is another question. Olympic Region Assistant Traffic Design Engineer, Kumiko Izawa commented that we do we have traffic data. David Peterson offered that the city could do traffic counts. Scott Davis relayed that operations are good so a compact roundabout could probably accommodate that change. David Peterson offered that the city can share their data with WSDOT. Steve King commented that some of the legs are worse than others. Scott Davis confirmed Steve's assumption replying correct, and that this is something that we can look into and collaborate on. David Peterson commented that downtown delay would be improved with a roundabout, and that ferry traffic would also be improved, as well as, safety. Steve King asked what partnership opportunities exist. He will follow-up with WSDOT. David Peterson relayed that Kearney Street is failing so opportunities to the north are of interest.

Brian Tracer asked if WSDOT had any data on emergency response delay in and out of Port Townsend? He stated that it is difficult for traffic to get out of the way of emergency responders.

Debbie responded that the design of the roundabout using mountable elements provides flexibility for emergency vehicles. Shorter tri-angle shaped splitter islands make it easier to go around parked vehicles. The paved shoulders remain intact except immediately at the roundabout providing room for vehicles to pull out of the way of emergency vehicles. Emergency responder can also drive over the red splitter and center islands. Debbie showed a drawing of the roundabout with two sets of directional arrows. The pink set of arrows depicted driving over the splitter and center islands and the orange set of arrows depicted driving around the roundabout in the opposite direction of traffic. Brian commented that he liked the option of driving over the splitter and center islands more than driving in the opposite direction of traffic. Scott Davis commented that the lower curb heights will help.

David Peterson commented that he really likes the idea of the double yellow striping pavement markings to slow traffic and funnel traffic down to a single lane. He relayed that the city's existing full-size roundabouts in town are too tight and curbs too high to accommodate emergency vehicles. The city won't be designing anymore of the full-size roundabouts in the future. Scott Davis remarked lessons learned over the years. David Peterson added that education of users is also important. He mentioned that the city could add roundabout tips to the driver's manual. He added that design is important but so is education. Brian Tracer commented that it is important for fire trucks. He mentioned that roundabouts are better because signals don't always change when emergency vehicles approach depending on whether or not the emergency vehicle has an Opticom receiver.

Brian Tracer asked if WSDOT could describe delay difference between signals and roundabouts – just averages.

Olympic Region's Assistant Traffic Design Engineer Kumiko Izawa stated that data can be shared and the data includes side streets. Scott Davis commented that the data does include all legs. Even the ferry traffic was included.

Steve King asked if there are any crashes related to the current configuration at Discovery Road, especially since the Intersection spacing between Discovery Road and Mill Road is tight. He added that a lot of traffic goes up Discovery Road. David Peterson commented that it is better to do this than both at that location.

Jefferson County Public Works Director Monte Reinders remarked that Mill Road and Discovery Road has a conflict point, noting that sometimes traffic waits for the light to turn red at the SR 20/Mill Road intersection prior to turning due to safety. He cautioned to be aware of the challenging intersection geometrics.

Brian Tracer relayed that the fire department is nearby and uses Discovery Road as its primary route and that the ambulances and police use it too. Steve King remarked that the Mill Road signal is providing some protection now.

Jefferson County Planner Wendy Clark-Getzin asked what the operating speed of the roundabouts are.

Kumiko Izawa responded that when WSDOT designs a roundabout the targets speed is 15 mph or between 15 – 25 mph.

Wendy Clark-Getzin inquired how traffic will decrease from 40 mph to 15 mph at the Mill Road roundabout.

Scott Davis responded that the geometric design of the approaches helps slow vehicles down as they approach the roundabout.

Miranda Nash Jefferson Transit's Mobility Outreach Coordinator commented that she did see the Gateway Park bus stop depicted in the design visual images. She asked if the intention is to have an in-lane stop at this location or will the pull-out be maintained.

Scott Davis responded the intent is not to change the existing transit stops. Whether there is an in-lane or pull-out may be a good discussion between transit and Port Townsend. These are sketches and not final design so we have flexibility.

Olympic Region Communicator Tina Werner asked Port Townsend if they have a Communication person that WSDOT can coordinate with to leverage outreach with the city. Steve King asked Tina to forward any requests to him with courtesy copies going to David Peterson, and Laura Parsons.

Wendy Clark-Getzin stated that Jefferson County shared a Transpo traffic study for South Discovery Road with WSDOT's OR Traffic office. She relayed that these intersections are related.

Directly following the meeting, Jefferson County and the City of Port Townsend submitted the following questions that stakeholders may find pertinent.

Is the WSDOT's Design Team available for an in-person site visit of the Discovery Road and SR 20/Mill Road intersection operations? The city and county would like to provide WSDOT with a better understanding of how the adjacent Discovery/Mill Road intersection functions and how the proposed roundabout might impact that. The intersections are located very close and the two intersections kind of operate in tandem.

Thank you for the invitation to observe the Discovery Road and SR 20/Mill Road intersection operations in person. However at this time, WSDOT is limiting all nonessential work during the Governor's Stay Home and Stay Safe order and is not be able to participate in a site visit. When this project moves to the design phase in January 2021, please contact Dan McKernan, Port Angeles Project Engineer to set-up a site visit at 360-565-0623.

For the public outreach portion, be prepared to discuss costs.

As part of the public outreach process, WSDOT will create a specific to SR 20 project webpage that is scheduled to go live on October 19, 2020. The webpage will feature project information such as background, location, roundabout benefits, stakeholders, compact roundabout cost estimates, project timeline and project contacts as well as the design visuals of the SR 20/Mill Road and SR 20/Kearney Street roundabouts. Public comments will also be collected via a direct email link to and voice message number for WSDOT's Pre-Design Lead, Debbie Clemen. Since we are only in the pre-design phase, costs are considered preliminary rough estimates and subject to changes based on final design factors and project award.

Where will the traveling public receive visual or physical cues pertaining to the change in speed from 40 mph down to the target speed of 15 mph for negotiating the Mill Road roundabout as in how far back from the intersection?

The visual queues are subject to design but roughly 500 feet +/- from the intersection on SR 20. Visual queues would include signing, channelization, advance channelization islands, splitter island, and ultimately the roundabout itself.

What is the proposed operations for the compact roundabout option under existing conditions at SR 20 Discovery/Mill Road?

SR20/Mill Road/Discovery Road – Roundabout Operations under existing traffic conditions

- Northbound Mill Road has 10 seconds of delay with a 10' rolling queue
- Southbound Discovery Road has 13 seconds of delay with 100'+ rolling queue
- Westbound SR 20 has 7 seconds delay with 300'+ rolling queue
- Eastbound SR 20 has 8 seconds of delay with 130'+ rolling queue

The Intersection Control Evaluation (ICE) Report notes that the compact roundabout option is a significant improvement upon the existing signal at least from a software perspective. For your reference, a copy of the ICE Report is attached.

How are WSDOT's context sensitive design objectives applied to WSDOT's projects such as the SR 20 Roundabouts project? Maintaining tree canopy could be one of these objectives, however it plays a role in sight distance for the RAB visual cues. Street illumination for pedestrian safety could be in conflict with fixed object crashes for trucks. How will the WSDOT approach this topic?

Since the compact roundabout is designed to fit within the existing intersection footprint, impacts should be minimal. There is no clearing or street removal planned for this project other than what may be necessary for the power pole relocation. The roundabout is expected to lower speeds and lower speeds lead to less severe crashes when they do happen including running off the road type.

It would be good to experience driving an example of a compact roundabout as well as watch driver behavior from the sidelines. Where should we go to see firsthand a mountable traffic circle with high truck traffic?

Assistant State Traffic Design Engineer Scott Davis recommended visiting the following locations to view and drive examples of a compact roundabout.

SR 20 Discovery/Mills Road Examples:

- Blaine, WA: The best example of a rural(ish) compact roundabout is in Whatcom County near Blaine along SR 548 (Grandview Road) at Kickerville Road. This area has higher speeds, is rural in context, and the compact roundabout is almost fully mountable https://goo.gl/maps/sTdnBrNES9c2uhUy6. https://www.flickr.com/photos/wsdot/40385387743/
- Kelso, WA: I-5 at SR 432 and Old Pacific Highway - https://goo.gl/maps/9sVohkrC81cWCMFw9. Compact fully mountable roundabout at ramp exit/entry and intersection with local road. Central island has a faux central island that is Portland Cement Concrete grey and the apron is red. The roundabout is non-circular.
- Ephrata, WA: SR 282 at Dodson Rd NW - https://goo.gl/maps/1kcKcu5DZAFF6fwZ6. Low cost, non-circular roundabout. Paint/hatching used for outside and pre-cast curbing backfilled with Hot Mix Asphalt used for the central island and splitter. Westbound approach is 50 mph posted speed whereas eastbound is about ¼ mile from Two-Way Stop-Controlled intersection with posted speed limit of 35 mph. News article - Ephrata roundabout drastically reduces collisions 17 months after its completion. iFiberOne News http://www.ifiberone.com/columbia_basin/ephrata-roundabout-drastically-reduces-collisions-17-months-after-its-completion/article_e3201c6e-0818-11eb-9a93-572d8357bf49.html

SR 20 Kearney Street Example:

- Shelton, WA: West Alder St at North 1st Avenue -https://goo.gl/maps/ZU5ZuXL3FKKf9yQq9 - https://goo.gl/maps/sW8Bdnby7cZQPHHg6 fully mountable center island. Very bright red concrete.

Study Schedule

Debbie reviewed the study schedule with stakeholders. She commented that the data collection and working with WSDOT's internal offices began last April. Olympic Region's Traffic Office drafted the Intersection Control Evaluation and determined the intersection control recommendation of a compact roundabout for both intersections. Debbie commented that we have built in flexibility of scheduling a second stakeholder meeting into the schedule if that is preferred. David Peterson replied that he would appreciate another stakeholder's meeting following the public outreach to hear their comments on the proposed roundabouts. Debbie relayed that she will schedule a second stakeholder meeting following the public outreach effort. She continued that the project's webpage is scheduled to go live on Monday, October 19th. Members of the community will be able to view the visual roundabout displays and provide their comments by email or voice message through noon on Monday, November 2nd.

Next Steps

The online community outreach effort is scheduled for October 19th through November 2nd. Public comments will be collected via the project's webpage with a direct email link and phone number to Debbie. The pre-design report will be completed by December 2020. In January 2021, the project will be transferred to the Port Angeles Project Engineer's Office for design. Dan McKernan is WSDOT's Port Angeles Project Engineer. The project is scheduled for construction advertisement in the fall of 2022. Debbie thanked stakeholders for their time and participation and adjourned the meeting.

Appendix D

SR 20 Roundabouts Project Online Public Open House Comments

SR 20 Roundabouts Project Online Public Open House Comments

1. Laurie M.	Traffic doesn't justify the expense. I use this all the time, it is not a problem. My experience with the 2 roundabouts now on Sims Way is quite negative. Slows the busiest traffic and some drivers delight in dangerously racing through a yield, further slowing roundabout traffic. Please don't do this. Aren't there sensitive traffic lights that sense any kinds of line up?
2. Tom L.	I live just off Cape George Rd and use the present lights frequently. I like roundabouts as a replacement. APPROVED! :)
3. Lynda S.	I love the roundabouts. You don't have to wait for lights and the traffic continues to move. Put them in!
4. Faith M.	Hello, Respectfully, enough with the smooth joy of driving and constant obstacles. Put a stop sign there and pave the bad roads. Better yet fix the electric and pave the roads for the taxpayers. Good roads don't mean slowing people down, they mean blight. And, I'm a total liberal. I'm finding myself in odd company. Sincerely, Faith M.
5. Cherylann T.	I would totally "vote" in favor for both roundabouts!
6. K. Austin K.	I am one of those unusual old folks who observes that roundabouts improve both safety and the flow of traffic. I applaud your efforts to improve intersections. My wife has similar thoughts. We have driven in England and have observed motorists accustomed to roundabouts driving safely. I live in Port Ludlow. K. Austin K.
7. Patt R.	The proposed roundabouts for Hwy 20 in Port Townsend will be an improvement in both locations. Seems that I always hit Mill Rd intersection just as light turns red. It should solve the problem of people making illegal, unsafe and really annoying left turns into the Subway parking lot also?
8. Samuel N.	We don't need any more roundabouts. Thank you.
9. Judith M.	I don't have an objection to roundabouts in general, but the two that Port Townsend already has really impact the ability of anyone trying to get onto Highway 20 from a side side street. Before, with the stoplights, there were occasional breaks in the traffic when the lights turned red. Those breaks allowed access to 20 from the side roads. Now you take your life in your hands trying to get onto 20 with the constant stream of traffic which has been undeterred by a stoplight. I'm not sure what impact the two proposed new roundabouts will have, but it won't be good. Judy M.
10. Heather L.	I would prefer that we install more street lights. We replaced the road on Sims Way and you can't see anything when it rains. The kids have to wait on corners for school busses in the dark. There is not enough light in the main areas of town. Better ways to spend the money that ANOTHER wasted roundabout.. if you ask me.
11. Lisa J.	The two roundabouts that you're proposing in Port Townsend is a bad idea for a number of reasons. I've seen the mess that they've created between Gorst and Belfair. I drive a lot of times in Lacey and they work there, because most of them are two lanes. Even so there are a number of places there that they were not needed. We already have two roundabouts on that stretch of road in Port Townsend and you are also proposing to put 2 roundabouts at 104 which will ruin ANY kind of traffic that is much

	needed to come to Port Townsend. We are hurting deeply because of Covid and the impacts won't even be felt until next spring and you want to impact anybody that does come here? You guys are destroying traffic to the Olympic Peninsula! Your plans on 104 aren't even for two lane roundabouts which are so much needed! Your plans are a joke and they don't take anybody that lives in the area into consideration. You only do what you want to do. Putting in a two-lane roundabout at the Mill intersection would be a decent idea but trying to put one downtown at the busiest intersection, and then have it be a small one, is absolutely ludicrous. Port Townsend roads are horrible and they don't have the financing to do all the side roads that are going to necessarily be needing to be repaved since all the traffic will be going on those roads while you're under construction. I could go on and on but I'm not going to waste my breath since you guys never listen to the locals anyway.
12. Brad S.	Ms. Clemen, Mr. Engel, Mr. King, Comments about what? There is NO information about the roundabouts on the announcement page except for their locations. My primary concern is the amount of space needed for the Kearney proposal, but there is nothing on your web page about what is going to happen. How can anyone comment on a proposal when absolutely no details are forthcoming? Brad S.
13. John R.	Hi Debbie, I supervise a detachment of troopers who work in the Forks, Port Angeles, and Port Townsend areas and wanted to comment on the roundabouts planned for SR 20. I am a big fan of them and I think it is a great idea to install those things in as many intersections as feasible. The two intersections mentioned could definitely benefit from them. I'm especially happy about the one going in on SR 104 at the HCB! I have been to many collisions there over the years and I think a roundabout will greatly improve the safety of that intersection. We could also use one on the east side of the HCB as that intersection gets jammed up in heavy traffic. A roundabout would let traffic keep flowing in heavy traffic as opposed to that traffic light that grinds everything to a halt. Another local area that would definitely benefit from them is in Carlsborg. The three intersections along SR 101 there: Taylor Cutoff Rd, Mill Road, and Carlsborg Road (take out the light) would be far safer if they were roundabouts. The intersections at Taylor Cutoff and Mill Road are super sketchy to cross. And we routinely stop W/B traffic 55+ in the 45 zone (SR View: 40 MPH Zone), going right through the Mill Road intersection. We have had at least two pedestrians killed in this area over the years too. This area gets my vote for them. Sorry for getting distracted with other the other areas. Just know that you have a fan of roundabouts here! Kind regards, John R.
14. James G.	I lived/worked near Port Townsend for 8 years so this projects personal. These are good locations for roundabouts, but I'm concerned about the pedestrian and bike designs which I've explained further on. Discovery Rd Roundabout: Currently there is a marked crosswalk on the north leg of SR 20, but it's missing in your new design. This would decrease the safety of the intersection for pedestrians and bikes, especially with the connection to the Larry Scott / Olympic Discovery Trail in the south corner. You have a great opportunity with this project to promote better pedestrian and bike connections by paving this short regional trail connection? Is this something you will consider? Further, the current crosswalks are signalized but will the new crosswalks be signalized as well? How will bikes and pedestrians navigate the west quadrant if the red area is for turning trucks? As with the current signal, will the roundabout be ADA accessible? Have sidewalks been considered such as those built at the nearby SR 20 / Rainier St

	Roundabout? Finally, with an effective 50 MPH approach speed on the south SR 20 leg (most people ignore the 40 MPH speed reduction until the last minute), the chicane shown in the design doesn't look like it will slow drivers approaching the roundabout, or to put it another way, it looks like someone going 50 mph could take a straight path thru the approach. As this is a blind curve approaching the intersection, and seeing how other roundabouts on similar speed roadways have much larger and curved chicanes, will this be enough to slow drivers down? Kearney St Roundabout: as with the first roundabout, will this have signalized pedestrian crossings? How will the reduced safety of un-signalized crosswalks be mitigated? Especially for those of the community with disabilities (ADA)? This intersection is in the heart of downtown and the waterfront, providing a direct path from the neighborhoods and parks to the waterfront restaurants, businesses, and Marina. With existing sidewalks, it has very high pedestrian and bike volumes and was recently upgraded by a paver and ADA project. Will the new roundabout improve the existing sidewalk connections? Especially those in the northeast and southwest quadrants? Pedestrians have to walk thru a store driveway in the southwest quadrant and in your design visual, it shows bikes being directed into this driveway? Is that safe and ADA compliant? Since you're re-building the entire intersection, why are new sidewalks not being constructed on this corner? Considering bikes are being directed into the driveway? Further, the bike lanes approaching the roundabout do not match with the current buffered bike lanes that were established by the recent paving project, will the buffered bike lanes be maintained? The green bike lane also appears to have been removed from the south side of the Washington St intersection and north side of the Jefferson/Decatur St intersection? Why? Finally, is there any way the nearby Washington St intersection could be included in this project? The extremely shallow intersection angles contribute to a lot of close calls and minor accidents, especially the left turns from the northeast leg of Washington St to the east leg of SR 20, it's almost a U-turn movement and people cut thru the existing left turn lane for southwest Washington and Water St. With the roundabout providing U-turns to the west, you could restrict the Washington St intersection with curbing and delineation so that only the eastbound SR 20 left turn to northeast Washington St. is allowed. This would really improve the safety of that intersection. Finally, for both roundabouts, will they be fully lit up with street lights? This is vital for pedestrian and bike visibility in the evening and night time, especially for the Kearney St roundabout. I hope these are good questions and suggestions. Thank you for the opportunity to comment and it will be exciting to see what becomes of these projects.
15. Candace Y.	I much prefer roundabouts to traffic lights.
16. Fred Z.	PT roundabouts' cost compared to current costs suggest an unreasonably long time before a cost savings is realized. There is not an existing accident problem that requires fixing.
17. Dennis H.	This is the one of the worst ideas that I have heard for Port Townsend. I travel through this intersection many times each week and have for years. There is no need for this and it will not improve the traffic when the traffic is handled just fine with the lights that are presently at that location. If the present signal at this intersection needs to be updated, then do that. At least we get a break to get onto highway 20 when the ferry traffic is heavy. Using the traffic circle would not allow the public to enter the circle while all of the vehicles from the ferry have passed by. Why screw up the present

SR 20 Roundabouts Project Online Public Open House Comments

	intersection without demonstrating need for the change? Who's is making the complaint regarding the traffic at this location?? As for the $10,000 cost. to maintain the light at this location? I would. like to see a breakdown of the cost. Dennis H.
18. Greg K.	Hi, my wife and I think that putting a roundabout on Kearney Street would be a total mess and a waste of money. It would not accomplish anything and would in fact make congestion worse. The same goes for the Hood Canal site. What a mess it would become? regards...Greg K..
19. Andy S.	I prefer to have traffic lights at both of these intersections. I use them both frequently and think they would be very difficult to enter from the non-highway sides during high traffic times (summer, ferry arrivals, etc.) I generally favor circles on less busy intersections, but not here.
20. Josh S.	Ms. Clemen, I'm writing to express my support for the two proposed roundabouts on SR 20 in Port Townsend. I'm a former resident of Port Townsend and I worked for four years in the City Clerk's office until 2018. Resident concerns about pedestrian safety at the intersection of Kearney and SR 20 were frequent and often warranted. I believe the proposed compact roundabout designs will help a great deal in making this intersection safer. I now work for the City of Gig Harbor. We are in the process of designing and installing two new compact roundabouts here which will give us a total of six in our city limits. In every instance here, I believe we have seen greatly improved safety and traffic flow conditions. The safety benefits of installing roundabouts in lieu of traffic signals have been statistically demonstrated many times over. I have no doubt that this will hold true for these intersections as well. Thank you for allowing the opportunity to comment. Josh S.
21. Joseph K.	My name is Joseph K. & my mother's name is Karen K....we live in Port Townsend. We both just wanted to let you know that we fully support the Proposed roundabouts to replace costly Signal systems and improve traffic flow along both sections of SR 20! Thank you for all you do within our community, & making decisions that better the beautiful towns we all live in! People probably don't say this enough, but without your part in this system...there would be no system! Thanks again, Sincerely, Joseph K.
22. William B.	I support both of these roundabout projects proposed on St Rt 20 in Port Townsend. Only concern I have is the disruption the construction will have to local business and the detouring of traffic onto Discovery Road coming into town.
23. Ben F.	I would appreciate a phone call to guide me through the tinyurl.com/PTplanningstudies website. I could not find any useful information. I did notice a list of stakeholders. I did not see and endorsements. I am a resident of the area and consider my wife and I to be stakeholder. We have several questions: What is a compact roundabout? Are there any in the PT area we might look at? Will they adequately handle large trucks and emergency equipment? Since the opening of the two existing roundabouts we have notice longer streams of traffic that make turns onto or off of Hwy 20 take substantially longer. Have any studies projected the impact of additional roundabouts on wait

	times that will be needed to enter or exit Hwy 20 at locations other than the traffic circles? I look forward to hearing from you, Ben F.
24. Concerned Citizen	Is this where I can express my support of this project? If so, yes, please do this!
25. Marti H.	The places need there, Highway 19 and Irondale Rd.; Highway 19 and Center Rd.; Highway 104 and Center Rd. Thank you. Marti H.
26. Mike A.	Good Morning Ms. Clemen: I've lived in Port Townsend for the last 10 years. I use Route 20 regularly. I object to both proposed roundabouts. The most critical one is the KEARNEY ST/Rt 20. This area has a major Grocery a 1/4 block in from Rt 20. It is a key area for cars, bikes and pedestrians making their way to and from the Harbor and the Food Co-op, OR traveling Downtown, OR South to Safeway. The area is complicated by a heavily "backed up" use of WASHINGTON ST to avoid WATER ST and go North into TOWN. (((this really needs to be physically observed in order to be understood)))) As it is, the lights are the only thing that protects the fairly heavy PEDESTRIAN and BIKE Traffic at this intersection. In addition to the Food Co-op, there is a heavily used Convenience store very near the Corner of the intersection. WITHOUT A LIGHT.....Pedestrians and Bikers will be at the mercy of Commercial truckers, uninformed Tourists, and heavily distracted Ferry users. Really not a good mix. In regards to Tourists.....they are clueless about roundabouts. The MILL ROAD/RT 20.....is also problematic. It is heavily used. It is a spot where many PT residents make a RIGHT turn from the intersection to get onto RT 20. THE OVERLOADED Mill Trucks contribute to what would be a "confrontation" at the roundabout. This intersection is, in a way,...the Entrance" to Port Townsend. The light slows traffic and gives travelers a breather....having almost reached their destination. Hurrying them through a tangled roundabout allows for much driver error. Here Pedestrians and Bikers would have to play a disadvantage offense to be able to bring to awareness the wide variety of tourists, commercial drivers, and hurrying residents. I have seen the department's stats that compare "lights" versus "roundabouts" accident statistics....with the roundabouts coming out safer. But....with these two specifics....I think you need to take a closer look. Very Best Regards, Mike A.
27. David T.	I have a question on the Discovery Road/Kearney Street roundabouts regarding bicycle infrastructure. Is there a planner that I could have a short conversation with? Thanks
28. Everett S.	Hello Ms. Clemen, I fully support conversions to roundabouts at Hwy 20 & Mill Rd, and Hwy 20 & Kearney St. I've observed roundabouts in numerous states and foreign countries, and have no doubt regarding statistics on improved safety and lower maintenance costs. I think our community has learned that the three existing roundabouts make driving smoother here in PT. The more traffic lights we can remove, the better! Thank you, Everett
29. Bob T.	I am in favor of the proposed roundabouts for the SR 20 & Discovery Road intersection and the SR 20 & Kearney Road intersection. Bob T.
30. Robert G.	Hi. Barbara and I live in Port Townsend and we are very much in favor of these two roundabouts. We drive the main street daily and those two intersections need improvement. The only concern we saw was the Mill Road roundabout drawing looks

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	like it has removed the building at the north west corner. That building has a very nice business frame shop with a hard working owner. We would hate to see her lose her business. Thanks for asking our opinions. Bob and Barbara G.
31. Sharon R.	More roundabouts are NOT the answer! I have seen roundabouts create disastrous results in other towns. The intersection at Kearney is much too busy and complicated and needs a traffic signal. And the intersection at Discovery is the only reason people downstream are able to get out into traffic...when that light gives a break from the relentless and constant stream of traffic. PLEASE do not make this mistake in our town!
32. Ray L.	They come into town in tourist season. Tear up the road and traffic is horrendous for months, when light was working fine. A very inefficient way to spend our tax dollars.
33. Carolyn S.	Too bad WSDOT can't spend some money keeping our interstate in good repair.
34. Dennis S.	WSDOT of course there is no money, it all gets spent on ridiculous roundabouts.
35. Ed L.	WSDOT no problem! Want some examples? Start with the bridge on hwy 18 between I-90 and Tiger Mountain. It's always been rough enough to throw a driver out of their seat but now that WSDOT "fixed" it, It's 10 x worse! In fact it's so rough now my Dad broke a front spring a couple weeks ago! That's great work guys!!! You've made a bad road bad enough to break springs on a loaded semi-truck! Excellent use of tax-payer funds! If money is short perhaps there shouldn't be 8 supervisors making 6 figures standing around watching 1-man work. You people are a disgrace and a laughing- stock. I travel all over the west and Washington is the absolute worst! I've never seen a bigger bunch of incompetence in my life. You'll better be thankful for your union protection cause every member of the road department would be fired if it way private!
36. Richard W.	Thanks. Interstate 5. Where they are putting in those 2 new overpasses. I don't have one spot to point out. The work at exits 123-122. In the right late on the right side, there is drains or vent covers that are about 2-4 inches below the road surface one right after another. Makes it hard to stay in your lane if you are not familiar with them.
37. Jeremy B.	WSDOT in Whitecenter they literally cut out parking spots to put in plants that no one is going to maintain and more sidewalks. Its infuriating.
38. Carolyn S.	John F. We were traveling this summer, and nowhere did we encounter worse interstates than in Washington. I-5 in Puget Sound; I-90 east from Seattle. Prioritizing highway maintenance should take priority over installing roundabouts, esp in rural areas where they are not needed.
39. John F.	Carolyn S. Travel the country and you'll gain a new respect for how well our transportation system is maintained.
40. Lea W.	Love roundabouts. It's the people who can't yield nor follow lines that make them crappy to use. Kyle N. I have and find it funny. Some people see so impatient. I would rather be behind a slow download semi then a speeder who is impatient.

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41. Kyle N.	Lea W. ever be behind a semi between all these round shouts? Just when they get up to speed they have to slow down again traffic behind them backs up and car drivers get pissed, then try to go around them in the round about.
42. Dan Becker	Lea W. agree - but I'd still rather drive thru a roundabout with bad drivers around me, than deal with people running lights - they're deadly.
43.Tom Barr	Lea W. yep! Exactly right.
44. Diane F.	We love our roundabouts here in Sequim! Occasionally you run into a person who is unsure of what to do but for the most part they beat sitting at more lights.
45. Johnson M.	Only if you put up signage with how to use them for those unfamiliar with their use. Otherwise, the light works fine. Can you imagine getting onto Sims way without the light after a ferry unloads? Your problem is with the ferry traffic. Move the dock if you don't like the ferry traffic in PT.
46. Debbie P.	Johnston M. in Olympia they actually have signs on how to use them. They even have 3 lanes. I thought those were cool. To bad people can’t read. Lol.
47. GF Good Fellow	I enjoy riding my motorcycle around those things a couple times before going on my way. This is the original intention for roundabouts usages
48. Jeff B.	G F Good Fellow I do that in my car if its not to busy, glad to see I'm not the only one.
49. Peter M.	Port Townsend is a beautiful town!!!
50. Clayton B.	Love it. Do more!! Replace all the lights with roundabouts!! Not my problem Ethel and Margaret have been driving for 50 years and still can't handle a gentle curve at a roundabout.
51. Stacey W.	NO! Please don't do this! If any accidents happen in this proposed roundabout it will impact all incoming and outgoing traffic to downtown port townsend. This is a main street for all outgoing and incoming ferry traffic as well and that could be impact
52. Johnston M.	No.
53. Simon D.	More safely? Apparently they do not watch people's inability to use the roundabouts we already have. I guess this is another one of those stupid ideas to get someone a business contact.
54. Sandra H.	I'd think improvements to existing roads would be a better way to use tax dollars.
55. Craig D.	You guys have roundabouts for brains.
56. Joline C.	That's crazy!
57. Kathy C.	I think the Bureaucracy should take a lesson on this roundabout craze, in making decisions! Everyone should form a circle and go around until you lie down and sleep on it!

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58. Terry S.	Private companies can do it cheaper and better. DEFUND WSDOT, they are the reason our gas prices are killing us!
59. Richard W.	Terry S. ever notice a private contractor job goes over budget and over time but a WSDOT job gets done a lot faster.
60. Tom B.	Hmmm, so ALL roads get tolled then, yeah that would be "cheaper?" WTHeck failed logic is that? Pure NONSENSICAL comment.
61. Pete S.	Terry Smith you know WSDOT uses private sector contractors to build roads. All WSDOT does is Design, Fund and inspect the contractors work. The funding is provided by the Legislature and the Legislature tells them what they are allowed to build.
62. Kyle N.	Terry Smith If you think WSDOT is doing you bad it's not them as much as the legislators and administration adding needless layers. The folks at ground level are awesome hard working folks. I deal with those people all the time. Engineers?? That's a whole-nutha-level of discussion!!
63. Myron C.	I dislike those dang things. SR 3 is sure screwed up now between Belfair and Gorst.
64. Brent S.	Excellent solution!
65. Michael W.	I'm in favor of roundabouts here in town and like the plan for the Kearney Discovery roundabout. The previous and new roundabouts have kept traffic flowing smoothly and safely.
66. Denise	Great idea!
67. Lesa B.	Dear Ms. Clemen, I fully support the idea of roundabouts at the Mill Road and Kearney Street intersections. I use both intersections regularly. Safety and traffic flow will improve; and the removal of the overhead wires and traffic lights will remove visual clutter and improve the appearance of both intersections. I am pleased that this plan is finally moving forward. Lesa B.
68. Elizabeth A.	Hello- 1) I support the proposed roundabout at Kearney St. and Hwy 20. I've thought for years there should be one there. It's a very difficult crossing for cyclists, pedestrians, and cars, so I can see the roundabout would benefit all. 2) Rather that the Hwy 20 at Mill Road roundabout, I'd prefer to see the funding spent on a roundabout at Hwy 19 and Prospect Ave. Mill Road at least has a traffic light, whereas there is nothing at Hwy 19 and Prospect other than 1 stop sign. Over 500 households are accessed via Prospect Ave. and there is no other way into or out of the area! So everyone must enter and exit at Hwy 19. It's treacherous for motorized vehicles, and even worse for cyclists, especially since there's no shoulder on Prospect Ave. That's another story, and safety issue. Thanks for the chance to comment. Have a great week! Elizabeth A.. I live on one of the streets off of Prospect Ave.

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69. Jason V.	Dear Debbie, I am trying to visualize how a roundabout will successfully and safely address traffic from Hwy 20 and Discovery Road (Mill Road), which includes cars on three major (for Port Townsend) throughfares and huge lumber trucks. I can't imagine how this will be safe. The intersection of Kearney and Sims would perhaps be a safer bet. Jason V. Port Townsend.
70. Dennis L.	I support the above. The current roundabouts in town work just fine. I expect you will receive far more comments not in favor of roundabouts as most folks here are not in favor of change. I also support the roundabout at the Hood Canal Bridge. Apart from morning and evening traffic there is not much traffic to justify the initial and annual cost of maintaining traffic lights in town. Dennis L. Port Townsend.
71. Cherylann T.	Summitted two separate similar comments see comment #5: I think both roundabouts would be great!
72. Mary D.	I like the idea/plan for the two roundabouts. Could the roundabout at Kearney Street have low-lying (for visibility) planting in the middle? While this wouldn't be possible at the Discovery Road roundabout (due to trucks needing to cross center circle), beautiful plantings would certainly help bring beauty and clean air to our city, and would support its stature as an arts community.
73. Anne R.	Would love more information. I am FOR roundabouts…..BUT drivers really need to be educated in how to drive through them! IF everyone would go slower (at least 15 mph, maybe less) the incoming cars could meld right in. Unfortunately they are mostly greedy. I slow down when someone is trying to enter. Another VERY IMPORTANT thought: Cars coming from the north on Discovery Road that have a stop sign. The light does space out cars trying to go straight or to turn left. This might impact them with a more constant stream of cars coming at them. Understand what I mean? Solution? Not sure.
74. Sean C.	I believe the roundabouts are not needed. The lights that are there are sufficient, they don't cause backups of more than 3-4 cars on the side streets and successfully reduce speed.
75. Myron R.	With lower traffic flow, roundabouts tend to work well. With high traffic like on Sims Way there is to much traffic and people can get stuck for long periods of time waiting for traffic to clear. On SR 20, there is a lower volume of traffic though. But if the road picks-up in volume, it could be a problem. It would make it harder to change to a signal later. To know what the best answer is, we would have to know what the projected growth and traffic volume for the area is.
76. Phyllis M.	Dear Ms. Clemen, My first thought on the proposed elimination of two signal lights and replacement with roundabouts does not make sense to me. Since there is a crosswalk at the Kearney St./Hwy 20 light, how safe would it be to cross at a roundabout? My second thought, is related to the many drivers poor comprehension of how to properly use roundabouts...I can't say how long our first two have been in use, and too many still don't know to signal when entering or leaving Hwy 20. Also is the lack of giving the right of way to drivers when indicated. My third thought is, since the signal lights seem

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	safest, the wiring is there....why not replace the signal lights themselves with new ones. I can't imagine that would be more costly than creating and maintaining roundabouts. What Port Townsend really needs is help with our side streets...most are in deplorable condition with pot holes which have been filled with blacktop so many times that it doesn't stay in place for long. Thank you for Your Consideration of My Concerns, Phyllis M.
77. Doug L.	I believe these will really screw up a nice small town. The ones we have are bad enough. There is a lot of foot traffic at Kearney, and getting on Hwy 20 at Discovery would be terrible at traffic times. Please don't build anymore roundabouts here. Doug L.
78. Mary W.	We are for the new roundabouts in Port Townsend.
79. Dorothy H.	I think the roundabouts are wonderful. I think the place that needs one the most is on Sims Way where folks turn into the hospital.
80. Christina L.	This is a terrible idea. The roundabouts we already have are a hazard. They are dangerous as only 50% of people use them properly and/or pay attention when entering or leaving them. People don't use blinkers. I am very slow and cautious when I have to use them. On a last but not least note they create even worse traffic slow-downs!
81. Janis B.	I and my husband are in support for roundabouts as an alternative to moving traffic. It provides a smoother flow of traffic. Provided the adequate lanes are included as part of the design. Roundabouts are plentiful in Europe, when designed well accommodate various traffic loads. Most public opposition stems from lack of familiarity, fear, and not being used to driving in a different manner. Thank you for thinking differently.
82. Patty D.	I love the idea of roundabouts in those two locations. It's too bad people usually dislike change. The roundabouts are safer like it was stated in the information. Cars and big trucks can negotiate them. We would really like the one at Mill Road and Discovery. Keeps speeding people from going too fast.
83. Ben S.	Thanks for looking at roundabouts for improving the traffic situation on SR 20 in Port Townsend! Roundabouts already constructed in the city have been a big improvement.
84. Ross	Hello, I don't think a roundabout at Kearney would be good. Pedestrians and cyclists use that intersection quite a bit and the thought of being a vulnerable road users trying to navigate a roundabout there seems dangerous for the typical person.
85. Rebecca J.	Yes, yes, definitely yes to the proposed roundabouts in Port Townsend.
86. Lisa S.	I am not in favor of a roundabout at this location.
87. Kimberlee W.	I think they are a wonderful idea! The more roundabouts we have the better. People need to learn how to use them but once they do it is much better than a stop sign!
88. Larry H.	I want to see more roundabouts in and around Port Townsend. Thanks.

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89. Fran P.	Dear Ms. Clemen, I am writing in support of replacing the traffic signals with traffic circles on Hwy 20. I have traveled throughout England, New Zealand, and Australia where circles are very common. As well, I lived in the Bay Area in California where they are also common. We currently have 3 in Port Townsend and I appreciate their ability to calm traffic. I look forward to more in Port Townsend. Thank you, Fran P.
90. Ken N.	They cost to much for very little need. Use the money to repave Lawrence Street, It's embarrassing. I suggest instead to install a couple of speed bumps. roundabouts makes it difficult for residents on the south to make a left turn and pedestrians will have to go to the middle of the block to cross and a new crosswalk will be required that will also be speed bumps. Don't cause the street to shut down for dumb roundabouts.
91. Susan R.	I'm strongly in favor of both compact roundabouts. Just moved to Port Townsend from Bainbridge Island where there is a heavy use roundabout at Madison and High School Road which still works well, and two new ones are in process, one already under construction at Wyatt Way and Madison.
92. Yvonne S.	Debbie, I am in support of roundabouts. It seems like the areas are small but I assume the engineering will address that concern. Thank you. Yvonne S.
93. Joni B.	This is completely unnecessary! I've turned off and on of Discovery at that intersection for 33 years and HAVE NEVER had a problem!! I've never seen a problem!! There WILL be problems for the MANY big semi trucks that turn on and off of the highway right there to go down to the mill! A roundabout won't work there. Use the $$ elsewhere where there is a problem that needs solving!! Joni B.
94. Kevin B.	The traffic signal at the food coop is troublesome at times. Despite this replacing the signal with a roundabout will prove to worsen traffic each time a ferry docks. In addition I wonder if the roundabout is designed to safely handle a 35 foot transit bus needing to exit at the third turn that was previously heading north on hwy 20. Nightmarish to someone who must navigate said vehicle then add ferry traffic to the mix creates even more issues. One accident (and there will be more than one) will tie up the intersection for hours. Replace the wires with poles if you are that concerned. Also, by taking out the only two signals in town traffic timing will be altered enough to make side street access to hwy 20 nearly impossible. There have been times I waited for just that brief pause in order to merge into traffic. Take that away and you will see more accidents by impatient drivers.
95. David B.	I like the concept of roundabouts. I especially like the large one in Sequim on River Road, as it has bypasses for right turns which seems to ease traffic congestion in the roundabout. Is it feasible to do this at Mill Road, or is there not enough room?
96. Joni B.	Second comment see comment #68. I've used the intersection of MIll Rd/Discovery Rd. for 33 years daily. The light changes quickly when there isn't much traffic (which is most of the day). I've NEVER had or seen a problem there. Semi-trucks turn at that intersection daily quite often - day and night coming and going to the mill. Semi-trucks and roundabouts aren't very compatible. They'll tear it up in no time. Maintenance will be high and you'll create many many pissed off truckers. And me. It's a waste of $$.

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	There is no problem there. A roundabout will create one. Who's silly idea is this??? Those who will stand to profit from building and maintaining it? Not a bright idea at all.
97. Keith S.	At Discovery/Mill Rd I see problems for the northbound wood chip tractor-trailers making the right turn towards the mill. Also no provision for pedestrian crossing of SR20 is made. At Kearney I see that it will be highly problematic to enter SR20 from Kearney during the ferry arrivals. Perhaps changing the signal cycles at the ferry dock can force traffic into pulses which will allow for some traffic breaks to facilitate the entry to the roundabout from Kearney can be achieved. - this is also needed from traffic entering SR20 from Washington.
98. Freke M.	I live in Port Townsend and I believe the two proposed roundabouts is a good idea.
99. Lee H.	Dear Ms. Clemen, The new roundabouts (on Washington) are horrid! They are a traffic hazard, as well as a general safety hazard. They are confusing as I at first thought they were indicating that the road was closed. The white poles leading up make the roadway too narrow. The “roundabouts” themselves are so full of signs that one can not even see the plant inside the ever so small circle. Overall, they are an eye-sore and a disaster. Also, as a pedestrian or bicyclists these roundabouts are equally as bad as driving as there is now limited space to walk or bike safely. Lee, Port Townsend resident for over 6 years.
100. K D.	I am concerned that the proposed roundabouts at these 2 locations will not provide adequate access across the SR for pedestrians and bicycles. There is an almost continuous stream of traffic along the road these days and the lights do protect pedestrians and bicycles. There is too much traffic to just assume drivers will yield to them at those locations and it is difficult to see pedestrians and bicycles across a roundabout as you are transiting around when they decide to dash across the road in a gap in traffic. Or as they do now at the other roundabouts - just go up 1/2 a block and cross without the crosswalk because at least they can see what's coming. Then there is the whole issue of seeing pedestrians and bicycles in the darks hours...
101. Karen B.	I support the idea of these roundabouts. I live west of town and use the light at Mill Road and SR20 almost daily. The light at Kearney and Discovery creates backups and a roundabout will help that. However, the Kearney intersection has a lot of pedestrian traffic and I am concerned since drivers, especially non-local cars coming over on the ferry, don't do a good job of watching for pedestrians in crosswalks. I also cringe at the disruption during construction...yuck!
102. Laurie R.	I support the proposed new roundabouts on Hwy 20 leading into Port Townsend. They prevent traffic tie-ups and are safer than stop lights. Laurie Riley, Port Townsend.
103.Doug M.	I am generally a fan or traffic circles and it might be a good choice for SR 20 , Discovery Road, and Mill Road, although I don't see how it would be a compact roundabout. The intersection at the ferry terminal seems to be better served by a light. Most of the time there is not cross traffic at the intersection and only when the ferry is offloading is there significant traffic. An extended green light when the ferry is offloading would see an efficient way of dealing with traffic without putting everyone through a circle all of the time. The area available for a circle is limited at the ferry terminal and I assume would reduce traffic flow in an area that currently has no appreciable problem. I am generally

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	a fan of traffic circles and it might be a good choice for SR 20 , Discovery Road, and Mill Road, although I don't see how it would be a compact roundabout. I think the circle will also work at Kearney street. I had mistakenly thought the plan was to put a circle at the ferry terminal, which would not have been a good idea.
104. Brian K.	Greetings! We would like to receive an email copy of the intersection evaluation report for the roundabouts proposed for SR 20 in Port Townsend. Thanks! Brian K.
105.Janet M.	I have believed for a long time that a roundabout is needed at that intersection. However, I don't think the proposed plan goes far enough. Ideally, the roundabout would service the entire H shaped intersection with another set of exits for Discovery Road. I do understand that neither Discovery Road nor Mill Road fall under the state's jurisdiction, but that would be such an improvement. Currently, traffic coming from SR 20 does not stop while traffic on Discovery Road either turning to SR 20 or continuing straight must yield, and anticipate with little time or space. Also, from the plan, I am not clear about bicycle traffic safety coming from Discovery Road and going to Mill Road to access the Larry Scott trail. For future consideration, a roundabout at SR 20 and Sheridan would be good, too. Thank you for your hard work. Traffic in this once small town keeps increasing and it's good to see plans to help ease it. Janet M.
106. Cherie P.	I like roundabouts! The one proposed for Discovery/Mill Roads seems a good choice. There is a lot of year around traffic through there, especially during the “rush hours”. It seems removing the light would more efficiently move traffic. The one downtown seems a bit problematic. My experience at Kearney is I can get through there both ways, expeditiously. Turning left off 20 onto Kearney seems to take a “long time”. When the ferry is offloading, many cars back up towards the ferry and then must wait even longer for those of us in the turn lane to enter Kearney. There’s also the dicey intersection of Washington Street and Hwy 20. I’d hate to see it become a one-way down the hill, but putting in a roundabout could worsen this turn and the wait time for those entering downhill. A roundabout will worsen, I believe, a drivers’ chances of entering this roundabout at Kearney when the ferry is offloading. (From my experience in Sequim, too many folks take to heart the law that says we’re not to enter the circle if there’s traffic coming on the left. That can create quite a backlog and seems to try a lot of patience. Drivers, then, "crowd the circle," keeping following cars so close together the opportunity for those waiting ahead to enter is reduced or eliminated. This breeds further impatience, exasperation and, finally, “jumping in” regardless of what’s coming at them!) Thank you for working on these issues. I appreciate your due diligence and don’t envy you standing before the mean ones in our midst. Take care and of your health. Cherie P.
107. Rachel R.	Roundabouts are wonderful idea. They have been used in Europe for decades, and research proves they are successful in slowing and calming traffic, and increased safety. I would like to see many more.
108. Brody T.	Yes, build both the roundabouts sitting at a stop light is a waste of time and gas.
109. Patricia Z.	I think the idea of more roundabout is terrible! The most difficult place to maneuver about is near QFC and Water Street. You keep choosing not to do anything about that so people could feel more comfortable getting in and out. But the roundabouts in the

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	places you're intending seems ludicrous and a terrible waste of money and burden on taxpayers.
110. Julie K.	The roundabout is a good idea. The pictured design lacks crosswalks across SR-20 and also looks unsafe for bicyclists heading southbound on SR-20 who wish to turn east on Mill Road to access the Larry Scott trail. There is currently a crosswalk on the north side of the intersection crossing SR -20. Safe pedestrian crossing needs to be retained. I frequently see a guy (a runner) who lives off Discovery Road using that crosswalk/stoplight to cross the highway and get to the trail, which can be accessed very close to that intersection. The lack of safe pedestrian and cyclist access in this plan for cross SR-20 is hazardous.
111. Rachel H.	Roundabouts are awesome!! Reduces accidents, keeps traffic moving, and safer for pedestrians.
112. Elaine S.	How are you supposed to take a left hand turn from Washington Street onto Cass St? I believe that the roundabout is either too large or too poorly placed. A driver is supposed to go 3/4 of the way around the rotary to take a left hand turn. Here one would have to cut in front of the rotary to make the left onto Cass St. What can be done to make the left from Washington onto Cass safer and more accessible?
113. Johann V.	My objection to small compact roundabouts are that large trucks going into the mill, large travel trailers, and larger, longer vehicles have a huge problem negotiating around the small circles and slowdown traffic. They need to be larger to accommodate longer vehicles. Would 2 lane roundabouts help.? I don't know but it does seem that heavy traffic through these roundabouts create long lines and more congestion. Roundabouts are particularly annoying to me because average drivers don't seem to comprehend the meaning of a yield sign. Would a merge sign have any more significance to drivers. Merge does not give drivers the right of way and they would need to yield to traffic. Do I have that right? My experience traveling in Sequim roundabouts, drivers tend to approach and come to a complete stop more frequently, even more so than in Port Townsend. That's more apparent in heavy traffic hours. I also question whether this is an age related reaction or lack of drivers education and comfort level negotiating roundabouts. My license renewal doesn't require a written test and roundabouts were practically nonexistent when I started driving.
114. Steve K. Port Townsend Transportation Committee Comments	Mill Road Intersection concerns: 1) truck counts and disruption of traffic flow… 2) functionality of the intersection given proximity to Discovery Road. Kearney Street intersection concerns: 1) safety associated with the short cut. Both the angle of approach with Sims and the proximity of the Jefferson intersection with Kearney to the SR 20/Kearney Street intersection. 2) Volume of pedestrians and vehicles trying to access Kearney Street at Jefferson from what appears to be a driveway approach, but is actually a public right of way. 3) Proximity of driveways to SR 20 and Kearney Street at Blossom furniture store. 4) Head-in parking at Blossom furniture store. 5) From the city attorney who lives nearby, the Washington Street intersection on both sides of SR 20, backs-up from northeast bound left turns on to Washington Street. Also angle of approaches and how Gaines Street ties into the intersection as well. 6) Driveway proximity. 7) How are bike lanes handled. I also had a chance to visit with the City Manager about this intersection. There is a lot of community interest. Dan Burden lives here in Port Townsend who is a huge proponent of roundabouts. We would love to find

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	extra funding for this project to make it a showcase/demonstration project for urban roundabouts for WSDOT and the City. We recognize it will take a significant funding to do this right. Any leads on sources of funding would be great. I remember Dan suggesting the highway safety funds. Any insights on that would be helpful. One thing is for sure…. There will be a lot of attention given to these projects! That's ok… we are here to partner. Finally, I have promised to get back to our council with answers to these questions. I'm assuming that after the online open house, we can assemble all comments and create a response to comments to share out? Also, years ago the community put together a roundabout design concept led by Dan Burden. It was only conceptual, but I'm attaching to give you a sense of the interest in this intersection. Dan (McKernan) if you want to get started early in looking at these issues, we can put our heads together. I will try to spend some time observing the intersection operations as well although it is hard with COVID…. For example the Washington Street traffic volumes have shrunk from 3,700 per day to 2,700 per day comparing Oct 2019 to Oct. 2020. I hope this is helpful. Thanks! Steve
115. Eric H.	I am in favor of roundabouts at these locations. There are 3 roundabouts in PT right now, and I ride my bicycle though them at least as much as I drive through them. I have two bicycle related comments: 1) Please keep in mind that cyclists have different skill levels and levels of comfort with sharing space with cars. One of the roundabouts in town indicates that as a cyclist I should go to the sidewalk (though the paint may be worn off for that now). I took that sidewalk route exactly one time. It was a terrible experience, and I always ride through the roundabouts with the cars now. 2) Regarding the proposed roundabout at SR20 and Discovery Rd / Mill Rd: Many more cyclists will use this roundabout in the future to access the Larry Scott Trail once the stretch of Discovery Rd from the new elementary school to Mill Rd/SR20 is improved with new pavement, wider lanes and a bike lane. I ride that stretch of Discovery by myself or with other experienced cyclists, but will not ride it with my children. I take less experience riders down Rainier to SR20.
116. Lynn Z.	1. Roundabouts force quiet, small-towns to become aggressive in driving. Those who usually enter an intersections slowly are forced to accelerate quickly in order to get in between cars that are already in the roundabout (except on low-traffic times - which there's very little of during tourist season or near schools at school year). It also negates the idea of saving fuel, to an extent. 2. If you don't care about your fellow citizens becoming more aggressive, then please at least protect people who drive bicycles and walk. I see only one corner in your example that has 'candles' protecting those driving bicycles. I don't drive a bike and am careful to look before turning right, but a bike is easily hidden in a blind spot. It only takes a second to kill a human being if they are not protected. Your proposals look like they almost protect as much as the Dutch design (considered the safest), but you need all 4 sides to protect them, not just one.
117. Jeff C.	I feel the Kearney/Sims roundabout proposal will be problematic. This is a very busy intersection for pedestrians, bicycles, and wheelchairs. Sims Way traffic needs to be stopped to allow crossing the streets. Having a continual flow roundabout will make it very difficult for foot and bike users dealing with the high traffic flow through this intersection. The SR20/Mill Rd roundabout is a good idea. It should be a full roundabout that also incorporates Discovery Rd. I use this intersection virtually every day on the way to work at the courthouse when commuting by vehicle. It can be a

	challenge coming into this complex of roads from either direction of Discovery Rd since it always leaves a question on who has the right of way (particularly for those not familiar with the triple road - double intersection). A roundabout should help with traffic flow. I believe a more major intersection with a roundabout should be engineered along with eliminating the Jacob Miller hill climb to that Discovery Rd intersection (which has many accidents at the Discovery Rd crossing). The problem with all this will be accommodating trucks coming from the Port Townsend Paper Mill.
118. Jason C.	Hello, I'm writing in response to an article in the Port Townsend Leader which states that there are two roundabouts proposed along Highway 20 in Port Townsend. I would like to register my concern about this. I own Mystic Monkey Yoga, a small business located at the corner of Kearney St. and Hwy 20, where one of the roundabouts would be located. I am concerned that a construction project directly in front of my business would be very detrimental. Last year there was a major road project downtown which severely reduced revenues in the community for several months. This year we are dealing with pandemic losses and restrictions on business activity. To ask local businesses to shoulder another weight on revenue at this time is too much. I urge you to consider the impact on businesses of this project. If it is truly beneficial to traffic flow, I suggest at least waiting some time before moving forward with this. The state should not be adding additional obstacles to small business survival at this time. Thank you for your time. Jason C.
119. Brianna C.	Good Afternoon, I just saw an article on the proposed roundabout in the Leader, that shows a picture of a proposed roundabout at the intersection that leads to the mill. And I apologize, but has the state gone mental!? If that picture was true, that is the absolutely worse place for a Roundabout, especially if a "compact" roundabout means the size that they have on the main road already. You know, the first of which is only down a little ways from the stop light? I don't know which people you guys are having survey these areas, because you certainly aren't ASKING THE PEOPLE THAT ACTUALLY LIVE HERE!! If you were doing that you would find out that a majority of the people HATE those two small roundabouts. I have even heard tourists say that they hate coming to town because of the small roundabouts. And have you even thought of the mill traffic? One of the biggest employers in Port Townsend? As it stands now, i have seen those big semis struggle to go down to the Safeway around those small roundabouts on sims way. There are 10 times as many semis coming and going from the mill! It might be okay if you were to build a large one like the one that was built on the backroad of Discovery RD and Rainier street. But at that point you would need to cut into Coon's plumbing and that little frame store on the opposite end and take out our little "Welcome to Port Townsend" sign. And honestly I doubt those buisnesses are going to let you. I don't think you understand that the majority of people over here still hate the thought of a round about going in at the bridge on this side. I do hope the State actually THINKS about the options rather than going full speed ahead with this stupid plan. Have a lovely Friday, Brianna C.
120. Sam K.	Hello my name is sam k. The point of these round abouts are supposed to make traffic easier as well as replacing outdated traffic lights. But having 3 round abouts that close to each other is going to cause more than usual traffic. Already there is alot of traffic because people can't see to get how to use the roundabout or signal if they are going to go all the way around. My fear with having 3 of these roundabouts so close together is

	more traffic as well as more accidents. Why not up-date the traffic light or make that Intersection a 4 way stop. A 3rd roundabout is a waste of money as well as causing more issues and traffic later and we don't need more traffic.
121. Tim C.	Love to see roundabouts implemented. Would greatly prefer more protection for cyclists and more prominent markings for pedestrian crossings. For cyclists, it appears there are several pinch points where the bike lanes die, and from the visuals, it's unclear how a bike would proceed. For peds, please consider starker paint markings, such as shark's teeth. Bravo for the funneling of lanes. Great to see WSDOT adopting reliable and simple traffic calming.
122. Carol A.	I would like to comment on the proposed roundabouts/rotaries proposed for Port Townsend. I have lived here for almost 10 years (prior to Massachusetts where I grew up and 5+ years living in the UK and 2 years in Italy and France). I have observed that the use of roundabouts/rotaries (as they are referenced in Europe and eastern US states) is to provide ease for travel when more than 4+ streets intersect and there are no traffic lights present. I have observed that the use of roundabouts/rotaries (as they are referenced in Europe and eastern US states) is to provide ease for travel when more than 4+ streets intersect and there are no traffic lights present. Discovery Road and Kearney Street - may be practical but I wonder if in our need to provide ease of access we are not creating monsters. I am unclear where (which I would think is part of the criteria) these streets have points of intersecting and traffic patterns make them applicable. I think their use in this town is more cumbersome than justifiable plus what accommodations would be made for cyclists. I have also noticed that in some cases, they have created more accidents because people just don't know what they are supposed to do. I also think funds would be best spent on paving some of our roads in Port Townsend. I would appreciate input on the thought process that arrived at this solution as to what is conceived as an issue. Thank you. Carol A.
123. Leslie A.	Hi Debbie, When the first roundabout in Port Townsend was proposed, I thought it was a bunch of posh nonsense. I was wrong!!! Roundabouts require drivers to be a bit more alert, which is a good thing, and they handle traffic beautifully. I'm a big fan and would welcome them, where appropriate and needed, pretty much anywhere. Thanks Leslie A.
124. Fred V.	As a driver, I think these roundabouts will be great. As a pedestrian, I think the one at Kearney and Hwy 20 as depicted will be more dangerous than the current stop light. I would encourage a design at that intersection that forces automobiles to slow to 15 mph or less, and plenty of cur-protected safe space for pedestrians trying to cross.
125.Scott W.	I am pleased to see that WashDOT has adopted the roundabout as the preferred high volume intersection treatment. I am very pleased to see you considering implementing them for SR20 at both Mill Rd. and Kearney St. in Port Townsend. That said, I have several suggestions for improvement. First off, the design of the two existing roundabouts on SR20 along Upper Sims have some issues that I would not want to see on the proposed roundabouts. One is the design speed for entering vehicles is greater than the comfortable speed of the circulating vehicles, thus creating a moderately awkward melding. The other issue is the design of the entering lane width eliminates the little margin of safety offered to bicyclists who want to ride in the traffic around the roundabout. Here's my comments on the proposed roundabouts: 1. Use a full-size

	design for the Kearney St. intersection rather than a compact. It will require taking a piece of the small triangular "parked" area, but it will be safer for pedestrians and bicyclists, and more attractive yet still be accessible for even the largest trucks. 2. Design such that bicyclists can choose to stay in the travel lanes or slip out to the sidewalks as pedestrians. A design mandate to force all cyclists onto the sidewalks is not actually accommodating them. Perhaps shorten the length of candles on the approaching side to allow cyclists to meld into the travel lane. 3. Consider using solid barriers for protecting the bike lane on the approaches and exits. 4. Extend the splitter islands so pedestrians have a refuge between traffic flow directions. 5. Eliminate the Jefferson St. access in front of the bank in favor of a dedicated slip lane if needed. 6. Install parallel parking on Kearney in front of the bank to eliminate having travel lanes on either side of the bike lane. 7. Relocating the power pole in front of Coon Plumbing at Mill Rd. likely won't be necessary as there is almost no right turning trucks off Mill Rd. onto SR20. Thank you for the opportunity to comment. I strongly encourage?
126.Jim M.	Roundabouts are a good and proven idea to eliminate cars idling at stoplights, eliminate accidents, and they require way less maintenance. They have worked very well all over Europe for many years. Some folks are just against any change and fail to see the bigger picture, and some still refuse to listen to the scientists. It's a good idea. Build it!
127.Larry D.	I'm in favor of replacing the current traffic light at the Highway 20 and Mill Road intersection with a roundabout, but I'm afraid that the current idea of a small roundabout is not going to be the answer to the problem. I drive through this set of intersections constantly, and one of the biggest issues is just getting through on Discovery Road. Cars back up in both directions waiting to turn and then no one can get anywhere. Cars coming from the left all want to go right and cars from the right want to go left. That little stub of Mill Road isn't big enough to handle the volume. Instead you should plan for a big roundabout that will also include Discovery Road. That might cut down on the congestion. Or move Discovery Road away from the highway to make more room for cars waiting their turn. Or perhaps the goal is not to improve traffic flow but just reduce maintenance costs for the traffic lights? Larry D..
128.Jerry M.	State Route 20 roundabouts at Discovery Rd and Kearney St. will improve traffic flow, calm traffic, and reduce inefficient and noisey 'stop and go' traffic. Three cheers for both! At least the Kearney roundabout should be a sharrow to accommodate the many bicycles.
129.Marina P.	NO MORE ROUNDABOUTS. People don’t even know how to use them, they are on stupid intersections that don’t actually need them (the one on discovery that only has 3.5 exits and there’s no traffic anyways??). If there was a busy intersection that had multiple exits they could be useful, like the ones that enter the highway in gig harbor. These roundabouts in town are silly. Spend our tax dollars on something that actually benefits our community.
130.Jane L.	I think the circle at Kearney and highway 20 may be fine. But the circle at highway 20/discovery road/mill road is very concerning. There are Frequent semi traffic loads coming up from the mill turning left. A circle will be difficult for a single truck, let alone several In succession to access with traffic along Highway 20 heading to and from town and the ferry.The radius they will need is significant. If traffic can’t access there they

	will head to other uncontrolled crossings onto highway 20. (no light, only a stop sign) there they will make left turns onto a typically busy state highway. There is a road paralleling this road, discovery road, which has a steady volume. I think that there will be an increased risk and congestion at this already tricky T. I have come from all directions in a vehicle and on bicycle. I am always holding my breath as cars and bicycles have to look so many directions to proceed both at discovery road and Mill road and at mill road and highway 20. I think a circle will increase hazard to bicycles. The Larry Scott trail crosses Mill Road very close to this proposed circle and intersection. This intersection is the best access for bikes to safely head north or into other areas of town. Again, increasing the moving..yield, right of way meeting points for bicycles and vehicles increases hazards. While this is a highway, bicyclists of all ages are crossing here. The light is the one safe way for people to cross on bike or foot. The tendency of drivers is to accelerate early, decelerate late around this intersection. Many are out of area drivers. The ferry plays into where they are focused. Natural light is diminished not only at night but during our rainy..foggy...shifts during the day and year. There is also a fair amount of deer crossing in this area with tree areas/deer paths and paths. Many of us have witnessed near misses and tragedy Particularly in low lighting times. I really would ask you to look more closely at this intersection. Traffic counters are such a small part of whether a circle can maintain or to improve safety at thIs primary entrance to Port Townsend. Thank you. Jane A.
131.Julia C.	Thank you for these. I go through many roundabouts on Highway 20 on my way to Bellingham and back, and find them an easy way to travel and I'm sure they save gas from stopping and starting. Thank you, Julie C.
132.Curtis W.	Ms. Clemen: I am a resident of Port Townsend and a cyclist. I go through the intersection of SR20 and Discovery Road regularly cycling to Chimacum. That particular intersection is, so far as I know, the most dangerous in the area. Drivers do not slow down approaching the intersection. Drivers making left hand turns in either direction are exposed to dangerously fast cars on 20. The lanes are confusing. A traffic calming roundabout would be very helpful there. As for SR20 and Kearny, I think a roundabout would work there and would make sense given the other roundabouts in town, but the intersection is nowhere near as dangerous as the intersection at Discover...unless you're a pedestrian. There are a LOT of pedestrians there, and the traffic is often so thick, especially when the ferry lets out, that drivers don't see them right away because they're looking for other cars. It's very busy. Very busy intersection, long walk across 20, lots of pedestrians adds up to something less than ideal. Thank you, Curtis W., Port Townsend.
133.Tom T.	Regarding the proposed "**SR20 and Kearney St**." project: The only concern I have is that the proposed roundabout needs to do as much as possible to be safer for pedestrians; e.g., flashing markers alongside occupied pedestrian paths (these might even be automated using camera sensors). Regarding the proposed "SR 20 at Discovery Road" project: The proposed concept is a good start, but the design doesn't go nearly far enough to resolve the many existing issues of this intersection. The short segment outlined in green between SR20 and Discovery is currently dangerous, and it will actually be even more dangerous with a roundabout because the proposed design does not add any accumulator space there. Discovery Rd. is only two lanes, so traffic on Discovery backs up – often in both directions – as soon as there are 3 cars (at most)

	waiting in that short segment to go onto SR20 toward Port Townsend. That would continue to be the case with the proposed roundabout. The existing traffic light at least allows that segment to empty. But, with the proposed small roundabout, and with a heavy flow of traffic on SR 20 dominating the roundabout, there will be essentially no opportunity for that short collector to empty and Discovery will be backed up to an even greater extent. Frustrated drivers will, inevitably, make dangerous moves to get past that choke point. A much better solution would be to expand the roundabout into an oval, as shown below. This approach requires a short segment to be built across a parcel that is currently owned by Jefferson County, so purchase (or eminent domain proceedings) would not be needed, just an agreement with the county for an easement. The rest of the oval repurposes existing roads. The sketch below shows what an oval roundabout might look like. The part outlined in red shows the segment that would have to be built on county property. With this oval design, there should be no issue of backups on Discovery Road, in either direction. Notice also how much easier it will be for the large trucks that enter and exit Mill Road. Parcel ID: 001162016, Owner: JEFFERSON COUNTY. Here is the parcel map with the segment to be added shown in red. I don't have the sophisticated drawing tools that WSDOT uses, so I hope the above adequately describes what I'm recommending. Because only the one short segment would need to be built, on land already owned by the public, the additional cost to change the proposed small roundabout to a larger oval roundabout should be minimal. Please contact me if you have any questions about what I'm proposing. Thank you, Tom T.
134.Cheri K.	I'd rather see the $$$ spent on streets that haven't been fixed in 30 years. Morgan Hill around Sather Park especially. I moved back after 30 years and they are the same as when I was high school!
135.Mary J.	To: Debbie Clemen, Study Lead, From: Mary Jenkins, 1931 S Discovery Rd, Port Townsend. Re: Roundabouts at Mill Rd and South Discovery/Discovery Rd., I live on South Discovery Road, and navigate this intersection almost daily. I am so glad that you are addressing this intersection. I have spent a lot of time thinking about how to improve the traffic flow here, but a roundabout was not something I had considered. Since we have experience with the two roundabouts already on SR 20, I can visualize this idea a little better. I like a lot of things about the roundabouts we have, and a few reservations. **CURRENT SITUATION:** I am sure that your study includes all this information, but here goes: On Discovery Road, there are currently stop signs on both sides at Mill Road, while the Mill Road traffic coming off of SR20 passes through without stopping. This is a confusing intersection at best. The proposed roundabout may solve some flow problems on SR 20, but it does nothing to address the weaving traffic on the adjacent city/county road (this is right at the city limits). As the intersection is now, we on Discovery Rd. stop and wait for the traffic turning left or right off of SR 20 to clear, then pull in and wait for the light to change. There is space for three cars turning right and three turning left if we all pull in perfectly on the short length of Mill Road. The rest back up at the stop signs unless they are thoughtless and pull out and block the whole intersection until the light changes. For motorists at the stop signs, It is hard to see the left turn lane for traffic turning onto Mill Road coming from out of town, and the right turning traffic leaving town generally comes around the corner on two wheels and can

	be difficult to see. And when the tourists come in the summer and are unfamiliar with the "Cross traffic does not stop" idea, the intersection gets even more interesting. **WITH THE ROUNDABOUTS:** : I am assuming the speed limit will go down to 40 or even 30 a little sooner. The roundabout will definitely slow the traffic down, which is a good thing. The roundabout would improve visibility for traffic proceeding straight on Discovery Road a little since all the turning traffic off of SR20 would be coming from one place. However, with the flow of traffic on SR20 uninterrupted by a light, I can see backups at the stop signs in both directions on Discovery Road getting worse. The traffic has really increased in the 30 years I have lived on Discovery Road. With the flow of traffic on SR20 uninterrupted by a light, chip trucks and other trucks turning left out of Mill Road would have a tough time pulling into the circle from a complete stop. Their navigation of the circle would be slow.
136.Mary J.	**CROSSWALKS AND BIKE LANES:** I like the idea of a curb on the bike lane on the right turns. However, there does not seem to be any place for the bikes or pedestrians to cross SR 20 here. How do we cross the street? The crosswalks on Mill Road in your drawing are, in my opinion, too close to the roundabout. The reason I say this is because I have seen this problem at the other roundabouts on SR20 in Port Townsend. There are crosswalks right where drivers are accelerating into the roundabout or coming out of the roundabout, when we are looking for an opening in traffic – we are looking at cars. The crosswalks on the straightaway parts of Upper Sims way are better, even though the waist high vegetation that looks so great in photos makes pedestrians nearly impossible to see. I suggest a flashing overhead light triggered by a button at the crosswalks as we have down by the QFC. **CONCLUSION**: I can't see spending almost a million dollars on this interchange if this tricky part of the interchange on Discovery Road is not addressed. I understand that this is an intersection between a city street, a county road, and a state highway and that all of these government agencies will need to work at the same time to solve the problem in the long run. I think more study is needed. It would be better to keep the lights for a few more years and really rethink the whole interchange, and maybe incorporate Jacob Miller Road into the traffic flow for traffic entering SR20 from Discovery Rd. and Mill Road for the traffic coming off of SR20 onto Discovery Road. I am thinking that maybe the long-term plan probably will eliminate the connecting segment of Mill Road between SR20 and Discovery Road and just have us proceed straight and use the next roundabout. Thank you for taking my input. Sincerely, Mary J..
137. Brighid M.	I have no issues with roundabouts. They're great when people know how to use them, **but people here do not.** We need signs placed in the island that would inform motorists of the rules! They work great in Europe, but that's because people know how they are supposed to work. Signs would inform the ignorant about the following: 1. You are **not** supposed to stop before you enter but yield into it; 2. **TURN SIGNALS** are still necessary! The majority of cars NEVER signal when they are going to turn left or continue through to reverse direction; and 3. EVERYONE has the right of way equally! Therefore, everyone should slow down when entering and be on the lookout for the other vehicles entering. There is one roundabout in Sequim on the Old Olympic Highway where the cars going straight on Old Olympic Highway just plow through so fast without ever slowing down so that if you are on North Sequim Ave you have to

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	actually stop and wait until there is a break long enough to get in. This is exactly what roundabouts are trying to avoid. Stopped and backed up traffic! Perhaps some media campaign might help the uninformed masses. Lastly, a roundabout or traffic light is desperately needed at the intersection of Prospect Ave and Airport Cutoff Rd! You practically risk your life trying to turn onto the highway especially during the summer and times when the ferry is unloading or going to load. I witnessed a lady killed there a few years back in December when she was trying to turn left onto the highway. Prospect Ave is the only point of ingress and egress for literally thousands of motorists onto and off of highway. I wonder what the percentage of total population of Port Townsend lives off of Prospect considering you have Kala Point and all the other loose developments that exist. Plus you have a lot of elderly motorists using this intersection whose judgements are not what they use to be. SCARY!! I'm just waiting for the next fatal accident and subsequent lawsuit. Thank you for your time. Brighid M.
138.Jane L.	The discovery Road intersection is not a good idea. There is a parallel street which will have a difficult time accessing Highway 20. There is a nearby Larry Scott Trail which has bikers of all ages bicyclists where this is the only safe intersection for crossing Highway 20 with the light. There is mill traffic of semis trying to turn left which will need a large diameter. There is heavy visitor and ferry traffic on this highway, people unfamiliar with traffic approaches either accelerating early or decelerating late. Never mind the deer. Traffic counters are not an adequate indication that this can work. Poor lighting is often the case with fog mist and of course post sunset hours. If traffic backs up to access people will look for other unregulated the access is further out which are even more hazardous for a left or right turns.
139.Susan	I'm all for roundabouts. I've lived in Europe for a couple years and they're everywhere and on the east coast as well. My only concern is the crosswalks. There are quite a few people crossing from Penny Saver to other sides. Will you have pedestrian flags or something? Also, the crosswalk by the Safeway gas station is very dangerous. There needs to be better signs and crossing flags for pedestrians there as well. It seems like it just popped up one day.
140. Rosemary S.	I am in favor of compact roundabouts at Kearney and Hwy 20 as well as Discovery Road and Hwy 20. I live in Port Townsend and frequent those intersections often. I travel as a pedestrian, bicyclist, and driver. The roundabouts are safer for all three, as I have experienced with the two existing roundabouts on Hwy 20 and the one on Rainer street.
141. Concerned Citizen	Would prefer to continue with lights not a roundabout at Kearney. RA probably ok at discovery road
142. Robert W.	Debbie – I want to express my support for placement of two roundabouts, one at Mill Road and one at Kearney Street. I am hopeful that the roundabout at Mill Road can include Hwy 20, Discovery Road and the Mill Road cross Street. I believe that for these type intersections, roundabouts are a safe, efficient and practical means of traffic control and routing, and work better than a traffic light. Please include my support for this approach for these two intersections in the public record. Thanks. Robert W.
143. Frank B.	Gag us with another roundabout. Not needed!!!

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144. Nancy E.	Hi - seeing this in a small article in the PT Leader on October 21 and requiring comments by November 2 means 99% of people will not see article or comment. Anyway roundabouts at Highway 20 and Discovery and Kearney is the most ridiculous idea we have ever heard of. For one thing the traffic coming from these side roads will never get a chance to enter as the traffic on 20 is almost continuous. The semis from the mill won't be able to get around compact roundabouts. The ones the city put in were too small and yours sound smaller and the first week a truck knocked out a power pole on the first roundabout. All the traffic goes off the pavement because they are so narrow. Also if it is so expensive to maintain traffic lights maybe you could find better quality ones. For the cost of these roundabouts it will probably pay for 50 years of traffic lights. Please reconsider this doomed plan and find a way to let more people know so you can get more comments to convince you this is a really bad idea. Thank you. Nancy E..
145. Lib S.	This is a terrible idea! SR20 is a heavily used highway, ESPECIALLY as it approaches and exits Port Townsend (ie it's the only way in or out of town). Roundabouts indeed "calm" traffic by slowing it down, and the resulting congestion will be untenable. I access SR20 southbound via Jacob Miller and the stoplight at Mill Road is needed to create a gap so I am able to enter the highway. Roundabouts CLOSE the gap, and traffic trying to enter the main arterial will be forced to wait an interminable amount of time. THIS WILL ONLY EXACERBATE THE PROBLEM. Mill Road/Discovery Road is even worse! Has the paper mill weighed in on this proposal yet? Has anyone thought about the traffic entering town during big annual events (Rhody weekend, Wooden Boat Festival)? Traffic is terrible then--how are roundabouts going to make the congestion BETTER? Every workday morning traffic entering PT is bumper to bumper and every evening the traffic leaving PT is bumper to bumper. The EXISTING roundabouts already slow traffic; more will only make it worse. Roundabouts are a backwards solution; we need more and IMPROVED traffic lights, not fewer!
146. Sue T. and John R.	Hi Debbie, We are Port Townsend residents. We looked at the proposed new roundabouts for Discovery Road and for Kearney St intersection. We think they are both a good idea. Thanks for taking our comments. Sue T. and John R.
147. Michael A.	First, thank you for the information provided about this project. Although it appears that the roundabouts on SR-20 are a foregone conclusion, I think they are the wrong approach for these intersections. Discovery Road and Kearney intersections are high volume SR-20 traffic crossed by low volume, intermittent city streets. If you read the literature, this a situation where traffic lights are better for traffic flow than are roundabouts. See https://www.iihs.org/topics/roundabouts: "An intersection with highly unbalanced traffic flows (that is, a very high traffic volume on the main street and very light traffic on the side street) may not be an ideal candidate for a roundabout. " I am not aware that either of these intersections have a history of frequent traffic accidents, so the safety element doesn't appear to be a factor. The oft-cited IIHS study purporting to support the improved safety does not convince me because the study aggregated stop sign-controlled intersections and stop light-controlled intersections. That strikes me as poor methodology. The project cost estimates are each just under $1 million, but no figure was given for replacing the stoplights with modern pole-mounted equipment. I would hazard a guess that it is a fraction of the cost of these compact roundabouts. The roundabout is lower maintenance, but no figures are given to allow a lifetime cost comparison. One initial reaction to the proposal was curiosity about how a

	roundabout could be constructed without increasing the intersection's footprint. Then I found the description of the projects and learned that these are meant to be compact roundabouts with center sections that are meant to be driven over by large vehicles. I suppose that can work, but the roundabout is still an over-engineered answer to this particular traffic situation. Thanks for the opportunity to comment.
148. Charles N.	I drive on the current roundabouts daily and its a shit show always and I nearly get hit every time and I am shocked I haven't been hit yet. We really do not need any more roundabouts more is just an overuse of them. I honestly think that this should be voted on by the residents of this county and not left up to out of touch bureaucrats.
149. Amanda H.	I use this intersection several times a day. There are very large number of semi-trucks leaving and entering the highway from Mill Road. They utilize the entire intersection to execute their turns, and often I have to back-up in the left-turn lane to Discovery Rd. It is not an ideal layout now, so just making sure this point is under consideration for the new design. Thank you. Amanda H..
150. Eric and Claire N.	Dear Ms. Clemen, I have looked closely at WSDOT's pre-design study for the two roundabouts in Port Townsend. I have a few concerns about them, particularly the one proposed for Kearney St./Highway 20. Did your study monitor this intersection at the height of the summer tourist season, perhaps on a Saturday afternoon? Or right after a ferry has disgorged its vehicles? In both cases, vehicle traffic can flow along Highway 20 in an almost unending stream. In such instances, the current traffic light stops this stream so that residents such as I, who patronize businesses to the east and west of the intersection, can easily get onto Highway 20 to travel either north or south. My fear is that if there is a roundabout at this intersection, we won't be able to break into this steady stream from the west or the east. Traffic will then back up along westbound and eastbound Kearney, as drivers wait and wait for a crease of opening to get into the roundabout. Already in Port Townsend, at the Highway 20 roundabouts at Rainier and Thomas, residents who live on those feeders often dart dangerously in front of drivers in the circle – because they've learned that if they don't boldly cut in they might be waiting interminably for an opening. And those two intersections are not nearly as busy as Kearney. Also, as someone who frequently rides his bike in the Kearney/Hwy 20 area, the traffic light stops vehicle flow so I can safely get through the intersection riding east or west. If there is no light, only a striped crosswalk, I will have to rely on the good graces of drivers to stop for me. My experience at other such intersections is that some do, many don't. I read in our local paper that the roundabout is being proposed because the traffic light has "reached the end of its useful life." OK … how about installing a new traffic light? I think that would be a preferred alternative to the frustration that a roundabout will create at busy times. Thank you for fielding my input. Eric N., Port Townsend.
151. Lloyd M.	These "round-a-bouts" make Washington st. a much more dangerous road for walkers. I live nearby on Calhoun st. and making a left turn is nearly impossible now without driving into the grass where pedestrians walk. Being as there are no sidewalks on the southern most half of the block, cars now have to drive into a makeshift roundabout which pushes them into the shoulder, closer to pedestrians. The only change I would recommend for this street is adding a sidewalk. Please use tax payer dollars to make

	this a more walkable area before you make expensive changes to the road. We already have a street. How about a sidewalk?
152. Ellen D.	Hello, I think that they are a great idea. It will be a great improvement over the stop signs. Ellen
153. Ralph S.	Debbie, My guess is that the traffic studies for the intersections for the two new roundabouts looked mostly at what happens at those intersections with respect to traffic flow on Hwy 20, and did not focus too much on anticipating consequences for surrounding roads or areas. Every road or business, and residential area off Hwy 20 between Discovery Road and it's intersection with Hwy 19, must use Hwy 20. There are no other connecting roads out.. No back roads access those areas. Roundabouts are used by many jurisdictions for "traffic calming measures". They slow the traffic and meter traffic flow through intersections. After exiting the traffic circles, traffic speed rapidly goes back to the speed limits.The proposed roundabouts will do just that at the expense of cross traffic and other local traffic.. At Hwy 20 and Discovery Road it may reduce Hwy 20 waiting time through the intersection, but will make travel more dangerous for any local traffic coming on or off the main highway between the new roundabout and the junction of Hwy 20 and Hwy 19. Because of the metering effect, finding a gap large enough for a safe left turn onto Hwy 20 from any road or business, especially on the west side of the highway, will be even tougher than it is today. This stretch of road has had many accidents from people trying to make left turns onto or off of this road because the traffic can be heavy and continuous, especially when ferry traffic is on the road. Currently the only saving graces are the traffic lights that periodically interrupt traffic on Hwy 20 just long enough for vehicles to safely turn onto or off of the highway. If roundabouts are built, numerous turn lanes and lanes allowing left turns to go half way when entering the highway need to be added for safety. There will be no traffic light at Discovery Road to stop traffic and allow vehicles to safely enter the highway from businesses and residences accessed from the highway. Jacob Miller Road, A+ Rentals, Westside Marine, Arrow Lumber, Edensaw, Fredrickson Electric, Powertrip Energy, etc., to name a few places. In short, roundabouts might be good for out of towners passing through, but extremely frustrating and dangerous for locals who live and work here. Kearney Street will have similar issues. Thank you, Ralph S.
154.Ron S.	Debbie, I am writing in favor of the planned roundabouts at the Highway 20 Mill Rd. intersection at the entrance to Port Townsend as well as the intersection of Kearney St. and Highway 20. I use the first intersection to access Discovery Rd. and would appreciate the convenience of a roundabout to permit a smoother flow of traffic. I also think a roundabout would improve traffic flow at Kearney and HW 20. The dividers at roundabouts allow pedestrians to cross safely one lane of traffic at a time. Ron S.
155. P.J. S.	I am supportive of roundabouts. What is the primary purpose of these 2 proposed Ras? Improve Safety? Improve traffic congestion? Replace signals? Big concern with RA at city limits is the PT Paper mill truck traffic; looks like you are accounting for truck turns. Ferry traffic: when a full ferry unloads in PT, it is easy for traffic to back up from Kearney St light back to the ferry dock. With that much traffic headed outbound on SR 20, will there be enough gaps for cross traffic at Kearney? Likewise, at the SR 20 & Thomas St RA (near my house so I see this all the time), when ferry traffic has made it that far headed out of town, it can easily back up from Thomas to Hancock Street. So, any mitigation for when a ferry offloads 60 vehicles at once? There are times in winter when

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	the SR 20 incline from the Mill Road intersection into town is so slick with even a small amount of snow, vehicles are stuck & traffic stalls. In those times, Discovery Road becomes most easily passable way in & out of town. So how will a RA at Mill Road change access to Discovery Road? --Lastly, are these RA more of a priority for WSDOT than the proposed 2 RA on SR 104, one at Paradise Bay Rd/Shine Rd & one at SR 19? Understand those are for "safety" but WSDOT no longer has a timeline for the SR 104 project (they originally were to be built in 2021). There is HUGE opposition in Jefferson County to the SR 104 RAs because of the floating bridge. Not so much opposition, I don't believe, for the PT roundabouts.
156. LB D.	First off, do you really believe that roundabouts will be necessary if you shut down the Port Townsend ferry? Second, if you have “extra” millions to spend (I don’t want to pay for this! We’re already getting taxed to death by the city & county!) make wiser choices with it. We don’t need more roundabouts. The ones we have are annoying and ineffective, at best. Take care of what we already have, then let’s talk “improvements.”
157. Jubilee H.	I think they’re a terrible idea. Waste of money and some drivers don’t know how to do them. So please don’t put any more in!
158. Kris K.	Good Afternoon. I am a resident of unincorporated Port Townsend. I must travel through both the traffic lights in question in order to get to downtown Port Townsend. I strongly support the idea of roundabouts. There are frequent accidents at the Mill Road intersection, and during times when I have been waiting for the light in the left hand turn lane to turn onto Discovery Road I have been concerned that large trucks trying to go south from Mill Road might not be able to negotiate the intersection without scraping my car. By incorporating access to Discovery Road into a new roundabout system, this hazard could be avoided. The center of such a roundabout would be an ideal site for the sign welcoming People to Port Townsend, where it would get much more notice than it presently does. In addition, it is my observation that roundabouts serve a traffic calming function, requiring a slower speed to negotiate. I am also in favor of the proposed roundabout at Kearney Street, which would make turns easier and safer. Please do not be discouraged by naysayers. Kristin K.
159. Forest S.	The current proposal, it appears, stops short of the Sims/Washington intersection, yet that is where the most existing conflict occurs in traffic. The intersection is marked with several signs indicating 'right turn only', etc. , yet drivers make those illegal turns all day long, some of them quite knowingly; or drive straight through on Washington despite the signage. I would like to see the traffic revision include that intersection. It might incorporate 'soft' deterrents such as mounted reflectors to divert drivers from making a dash across the Sims ROW. Or perhaps wiser, the entire treed island could be the center of a larger roundabout involving Sims, Washington, and Kearney. That, in fact, is something I've envisioned for many years, as the traffic volume has gradually built on all three streets. Lastly, a successful design must take into consideration peak bursts of traffic every 45 or 90 minutes, at certain times, coming from ferry traffic moving west on Sims.
160. Forest S.	Currently the most difficult part of the SR 20/Discovery intersection is entry to the intersection from southbound Discovery. There may be only two seconds to observe approaching traffic coming off southbound SR 20 that is headed toward southbound Discovery. Something that slows that stream (SR 20 into southbound Discovery) will

	make the intersection safer and bring approaching traffic on Discovery out of the city into a more equal role in the overall intersection.
161. David O.	These roundabouts are a stupid idea. Are the minds that built the nightmare of a stoplight in Silverdale the same ones inflicting this on us? I think we would be just fine without their help.
162. David A.	To Ms. Clemen: Welcome to Port Townsend politics where everyone has a constitutional right to practice law. I support the roundabouts but like any good citizen have a few questions. At Kearney Street, I hope the plan is to not take too much of or destroy the triangular Soroptimist Park. At both of them, please clearly mark the route for bicycles to take, I am a bicyclist and find that at the existing roundabouts I have to go all the way around the circle and have to cross the traffic that is on traveling on the road I was not originally traveling on. So if I coming off Kearney and want to head north (left) on SR 20 I will have to cross SR 20 traffic and SR 20 traffic will have no need to come to a complete stop b/c traffic light is gone. I find the best way to make what used to be a left hand turn at a roundabout is to put my bicycle in the traffic lane and just occupy the traffic lane as long as I need to. I don't know if there is a better way for me to do it, because staying on the sidewalk or the bike path still means the person on the bicycle has to dash across (perpendicular to) the traffic on the other road that is no longer forced to come to a complete stop. I should add that I know there is no magic wand to fix this problem. Maybe insist on signage that states "Watch for bicycles." At Discovery Road there are two southbound roads, i.e., SR 20 and Discovery Road which at the light is some 50 to 100 feet to the west of SR 20. A common route taken by vehicles is to continue south on Discovery Road. You may want to create a separate lane for traffic that is heading south on Discovery and wants to continue heading south on Discovery. The way I see this is that this lane would NOT be part of the roundabout by being west of the roundabout. The roundabout would be serving the persons who come south on Discovery stop at the stop sign and signal to go left so that they are on Mill Road where they can then access either Mill Road towards the Paper Mill or SR 20. The roundabout would also serve persons coming from the south (Chimacum) and wishing to go north on Discovery Road, i.e., towards Sheridan. The amount of traffic that would come to the Mill Road roundabout from the south (Chimacum) make a left onto Mill Road and then a left on to Discovery Road is minimal and there would be no need to build a lane for that eventuality because someone wishing to go on Discovery southbound can make a left on Jacob Miller Road some 400 yards further south. Also ideally you would establish a right hand turn ramp for traffic heading north (towards town) wishing to go to the Mill, i.e., the big trucks. My nephew just got his planning degree from Hunter College in NYC and wants to be an urban planner. Any helpful hints? David A.
163. Sally L.	I think the Mill Rd roundabout looks pretty good, but there is no crosswalk marking for the occasional jogger/walker who is trying to cross route 20. There isn't much pedestrian demand at this intersection, and I see the little red islands in Rte 20 for the pedestrian if needed, but I still worry about the ability of pedestrian & bicyclists trying to cross Rte 20. They currently can rely on the light giving them a safe crossing. At the Kearney St intersection, I have different concerns. There is much more pedestrian activity at that intersection, and the traffic light allows them to group up. Given the heavy car volume at that intersection from Kearney and Rte 20, I can't help but wonder

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	if you're going to get some rear-end crashes from drivers not paying attention when the car in front stops for that pedestrian. Also the white plastic poles seem to "protect" cyclists from cars by way of running the bikes off the macadam. I assume that is faulty artwork? It's also not clear if cyclists are to take the lane at this roundabout or not, the way the green bike lane and plastic poles are in the design. Given human nature, most cyclists will want to take the lane and not divert to the pedestrian crosswalks. We found that to be true with both Upper Sims Way roundabouts. Cyclists rarely get off the road as signage demands, instead they ride in the car lane. On flat areas Like Kearney St. this can be easier to manage, but at the Thomas St. roundabout it is more of a concern. (Already built, nothing you can do - just pointing out human nature vs design ideals).
164. Tara	No to both. We are a small town we don't need anymore round about. The ones we have now are awful NO NO NO
165. George R.	Hi Ms. Clemen: In 2007 I found myself casting the deciding vote on the Port Townsend City Council supporting the two existing roundabouts on Route 20 just after it crosses into the city. Before that vote I studied carefully and concluded that the roundabouts – at least those with only one lane in each direction -- would both smooth traffic and make walking, bicycling and driving safer. Since then I believe that those conclusions have been validated. So hearing that WSDOT is considering two additional roundabouts on Route 20, one at Mill Road and the other at Kearney Street, fell on receptive ears. Each one will help alleviate problems and, I believe, enhance safety for those who use them, on foot, on bikes, or in motor vehicles. With unlimited resources, any proposal can be made better. But resources during the awful COVID-19 pandemic are not unlimited, and post-pandemic recovery will not be either easy or immediate. In this, as in almost everything, reasonable compromises are imperative. I am hopeful that these proposals can go forward and that we can try our best not to let the perfect be the enemy of the good. I would make one minor suggestion that I think would enhance the plan for the Kearney Street intersection. That's a place where substantial numbers of pedestrians and bicyclists share the streets with cars and other motor vehicles. A case can be made that small roundabouts are safer for all, but it's possible that at this particular intersection in the future we would have to consider enhanced safety provisions. I recommend anticipating that by installing, during the initial construction, conduit and other logical provisions that could be put to use, if needed, at a future date to install a pedestrian-operated street crossing system should that prove to be desirable. This change would be vastly less expensive done initially as opposed to being constructed at a future date. And of course the installation would also be far less disruptive to users of the intersection as well. Having them in place would demonstrate WSDOT's foresight which would be appreciated by Washingtonians of the future who will applaud this attention to good planning and economy. I hope the debate over these improvements is robust and thoughtful, but not eternal. WSDOT needs to listen carefully, of course, to everyone's comments. But I also urge you to stick as much as is reasonably possible to the schedule so we can anticipate these improvements being installed at a relatively early date. Thanks for your attention to these comments, and if I can be of any further assistance, please don't hesitate to contact me. George R. Port Townsend.

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166. Nadine J.	No roundabouts! I'd prefer third option Upgrade traffic light or leave as is $10,000 per year brings lots of years of maintenance vs the cost of a roundabout. The one on Kearney would really back up off loading Ferry traffic. The landscape maintenance of the ones we have are terrible and what little is done is not free either. Half the people don't know how to use a roundabout and enter to soon or come to a complete stop when they get there instead of entering. Have seen many close calls How safe is that? Most locale are taking alternate routes to avoid the roundabouts when possible putting a burden on roads not designed for the heavier traffic Old Discovery has the largest roundabout???? That services the most rundown stretch of road that truly needs upgrading, plus Bike lane and sidewalks if you really want to make a road safe to connect to this roundabout This would be the very best place spend money to make our roads safe The 2 roundabouts proposed really are not needed since we do have a light at each place. The major disruption of traffic would be crazy bad forcing people to use Old Discovery Hwy even more and wear down a road that needs to be resurface now. Thanks for reading this letter. I hope you reconsider and actual listen to alternatives that would more benefit our community and spend the money to upgrade Old Discovery Hwy instead.
167. Debra J.	I am not in favor of more roundabouts in Port Townsend anywhere - especially the two that are proposed. They simply do NOT help traffic flow because there is never a break in traffic. This is a huge problem when the ferry dumps a lot of cars onto Hwy 20! I've waited long times just to enter the roundabout at the entrance to town. If I'm coming from Goodwill, the traffic is so constant, I can't get into the roundabout. They are confusing and don't do what they are stated to do. We are much better off with traffic signals where the traffic in both directions stops at some point to allow turns and entering the intersections. Roundabouts are also particularly confusing and risky for pedestrians of which there are a LOT near the Coop. Please just keep the traffic lights!
168. Jennifer F.	I fully support the installation of the 2 proposed roundabouts. They are a practical, low cost solution for traffic control and calming. I do feel like extra explanation to drivers regarding the safety of pedestrians and cyclists is warranted. Too many drivers think they are the only objects on the road
169. Bianca T.	Dear Ms. Clemen, I would like to voice my STRONG OPPOSITION to the two proposed roundabouts on SR20 in Port Townsend. I live in Port Townsend and travel through both of the intersections on a regular basis, and see no reason to spend one million dollars apiece to end up replacing traffic lights. The lowest cost solution would be to replace the hanging traffic lights with ones on proper poles, and leave the intersections as is. It is also the BEST solution to keep traffic flowing and pedestrians safe. Let me elaborate on each of the intersections as to why I believe this is best. The intersection at Discovery Road/Mill Road and SR20 is one that definitely requires a traffic light to allow the big trucks leaving the Paper Mill to turn left on SR20. If there was a roundabout there, with traffic flowing continuously on SR20 into and out of town, then the trucks would never be able to get into the intersection. And DOT would have to make a very large roundabout to accommodate a tractor trailer going all the way around to 270 degrees of a circle. The trucks would have to go very slow, once they were able to get into the circle, and it would certainly slow down traffic flowing into the circle from SR20 and cause significant back-ups. In addition, the cars trying to access SR20 from Discovery Road would also have a difficult time getting into traffic in a

	roundabout. Only the ones heading south would be able to get in fairly easily; the ones heading north into town would only be able to squeeze in when there is an opening, and the trucks would also be trying to get in at the same time, thereby blocking them. Right now, the trucks and cars can both make left turns at the same time, but that would not happen with a roundabout, since most car drivers are too nervous to pull out in front of a truck coming in the roundabout. Our demographic here in Port Townsend is mostly older people who are timid in roundabouts and we already get significant back ups at the two roundabouts that are on SR20 now. The other major impact of a roundabout at SR20 and Discovery Road/Mill Road is how it would cause backups at the intersection of Jacob Miller Road & SR20, which is very close by. Many cars and trucks going to the Jefferson County Transfer Station turn left onto Jacob Miller Road from SR20, and are able to do so when the light at SR20 & Mill Rd is red. It gives them a window of opportunity. If this window is no longer there, due to continuous traffic flow on SR20, then traffic will back up on both SR20 in the left turn lane, and also backup Discovery Road & Jacob Miller Road, which is only about 100 yards away, for the people wanting to turn south on SR20 from Jacob Miller Rd. So before you consider putting in a roundabout at Discovery Rd/Mill Rd & SR20 you need to look at the major impact on surrounding intersections that get heavy usage. The solution is upgrading the light poles to the proper type, NOT changing and impacting flow by installing a million dollar roundabout! The intersection at Kearney Road and SR20 is a very busy one for pedestrians as well as bicycles crossing to go to and from the Food Co-op. Putting a roundabout there will severely limit the ability for pedestrians to cross there, as all traffic has to stop on SR20 in one direction to allow them to cross. Someone using a cane is certainly going to be in danger and that will certainly cause backups and potential traffic deaths. The light that is there, with the current pedestrian signals, work just fine. If the current light is in need of replacement, then replacing it with a proper upgraded light pole will make it work better, less maintenance, and it definitely won't cost one million dollars!! And let's not forget about the major disruption to traffic when DOT would be building the roundabouts -- the one you build in Anacortes on SR20 caused backups for miles! I know, I had to sit in that backup many times. In summary, I firmly believe that the two proposed roundabouts for SR20 in Port Townsend are a very BAD idea -- both very wasteful of our taxpayer dollars now, and certainly creating BAD outcomes for traffic in Port Townsend for many years to come. I suggest we spend much less money putting proper traffic lights on poles at these intersections, and let the people who live in Port Townsend have better traffic flow in these areas and keep pedestrians safe. With Regards, Bianca T.
170. Richard T.	Ms. Clemen, WSDOT is proposing replacing traffic signals with traffic circles on Highway 20 at Discovery Road (Mill Road) and Kearney Street in Port Townsend. I have several comments. 1) 1. Traffic circles can improve traffic flow in some situations, BUT traffic circles are awkward for less experienced bicyclists and most unsafe for pedestrians. They work well in more rural areas, and on major arterials where pedestrian/ bicycle traffic is restricted, but present use conflicts in small towns such as Port Townsend. With regard to Discovery Road (Mill Road) my concerns are as follows: 1) It is essential to maintain safe access to/from Discovery Road with Highway 20, as Discovery Road is proposed to be an alternative route diverting traffic to the West side of Port Townsend, away from the Kearney St intersection. The proposed traffic circle needs to be large enough to provide entry/exit for Discovery Road. 2) Failing that, the intersections of Discovery Road/Jacob Miller Road and Jacob Miller Road/Highway 20 should then be

	reconfigured to meet this goal; this could be easily achieved with a second traffic circle. 3) Large tractor-trailer units that service the PT Paper Mill regularly make left turns from Mill Road onto Highway 20. The proposed traffic circle must be designed and large enough to accommodate this use. 4) Bicycle lanes on Highway 20 could (should) be continued through the traffic circle. Pedestrian use is very light and could perhaps be accommodated with overpasses. 5.With solutions to the above concerns, a traffic circle may be cost-effective in this location. With regard to Kearney Street my concerns are as follows. 1) This essentially "in-City" intersection does not need improved "traffic flow" – it has significant bicycle use and pedestrian use, and safety should be the priority, not traffic flow. 2) The use of Crosswalks on the legs some distance back from the traffic circle is, in my experience, an unsafe attempt to accommodate pedestrian/bicycle traffic with a traffic circle - particularly the case on the Highway 20 (Sims Way) legs where traffic speed is set at 30 mph and is frequently exceeded in practice. 3) Vehicle access to businesses on both Sims Way and Kearney St very close to the Highway 20/Kearney intersection do create backups that may impede flow through a traffic circle. Business access needs to be maintained. 4) The intersection of Highway 20 (Sims Way) with Washington Street, also quite heavily used, could cause backups that interfere with the traffic circle flow when heavy traffic has no stop signal to allow openings for turning traffic to move. 5) Since traffic on Highway 20 (Sims Way) is already regulated by traffic signals at Haines St it makes no sense to then interject a traffic circle at Kearney. 6) THIS PROPOSAL SHOULD NOT BE PURSUED. Just Replace the traffic signals! Thank you, Richard T.
171. George P.	I feel that the SR20/Mill Rd. roundabout is a poor idea on several aspects. Semis coming from the mill will have an extremely difficult time coming into the roundabout given the amount traffic congestion here as well as the reluctance of vehicles willing to yield to larger trucks. Also as part of this project I have seen a proposal that would eliminate the connecting portion of Jacob-Miller between Discovery Rd. and SR20 forcing drivers to turn left (north) off of J-M onto Discovery and down to the roundabout to turn back to head south (or north bound SR20 drivers being forced to go to the roundabout to get on Discovery to then get to J-M Rd.). Given that we send and receive multiple semi loads daily from our SW transfer station which is located off of J-M Rd. they will not be able to navigate that tight of a turn, and will create a worse traffic situation than already exists. I do hope that these issues are addressed when considering the final options.
172. Cheryl L.	My questions are related to the Kearney St roundabout, as I often ride through there on my bicycle. What is the expected path for bicyclists? Are we supposed to use the crosswalks or can we take the lane if we are going 3/4 around the circle? (like from Kearney heading into downtown). I feel like I'd be more vulnerable using three crosswalks, if cars are not paying attention or distracted by all the various colored markings. As a driver, I do find the current markings confusing when driving from downtown and needing to turn onto Kearney, so I think it is an improvement with the proposed plan. Oops. I guess it would only be two crosswalks on a bicycle, but still seems less convenient than being in the lane...
173. Ginger F.	I do not favor the proposed roundabouts. I do not think they will be good for pedestrians. Let's slow things down in Port Townsend rather than speed them up.

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174. Chris A.	Please build the round-abouts on 104. I commute across the Hood Canal every day and I think roundabouts - if designed correctly - will make the highway safer.
175. Mara D.	The biggest issue that I haven't seen addressed is the stress these have already put on the side streets in between. The roundabouts allow for very long continuous flows of traffic which doesn't allow traffic on either side of the roundabouts time to merge into traffic. I am very concerned that this will only get worse with the addition of these 2 roundabouts. We have a serious problem getting out into traffic at Sims way and Sherman that has worsened with the other installations of roundabouts. When the ferry lets out there's no getting out onto Sims. Thank you for taking my feedback into consideration. Mara.
176. Mike D.	I don't think the proposed Kearney St Hwy 20 roundabout in Port Townsend adequately meets the needs of bicyclists as currently designed. This is a major bicycling route both locally and for long-distance cyclers. The current light is best negotiated by bikes on the bike lane (if on Hwy 20) or in the middle of the traffic lane (commanding traffic) if crossing on Kearney St. Crosswalks do not meet most biker's needs if they are traveling close to the speed of car traffic because they require going well out of your normal route through the intersection, and you scare the pedestrians in the crosswalk unless you dismount and walk. Most cyclers aren't going to do that. If you try to go through the roundabout it is dangerous with unpredictable car behavior, and cars don't expect you in the roundabout. Can there be some kind of bike lane in a roundabout? Or a bike lane bypass?
177. Debbie F.	NO! Please don't do this! If any accidents happen in this proposed roundabout it will impact all incoming and outgoing traffic to downtown Port Townsend. This is a main street for all outgoing and incoming ferry traffic as well and that could be impacted. The lights work great from someone's perspective that has lived here for 43 years!
178. Dave K	Why are we just hearing about this on the last day for input? Roundabouts only work when drivers know how to merge. Our population is older drivers who are timid and view the roundabout as a 4 way stop. It doesn't work well.
179. John F.	Please allow bicyclists to take the motor vehicle lane in the roundabout, contrary to the SR-20 roundabouts in Port Townsend at Rainier St and Thomas St. When commuting by bicycle along SR-20, at 10 to 20 mph, having to make an exit onto a sidewalk and crossing roads in cross walks creates additional hazards and barriers to bicycling the roundabout.
180. Karen O.	I'm happy to see the planned project to improve the intersections of Mill Rd and Kearney st. on HWY20. I happy to see the plan for safer and more efficient roundabout design proposal includes accommodations for those who walk or roll with white candles/curbing to protect bicyclists from vehicle traffic.
181. Renee T.	A roundabout at Kearney St and SR 20 would seriously jeopardize the safety of pedestrians attempting to cross the streets, increase rear-end collisions, and impede the flow of heavy flow of ferry and festival traffic.

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182. Liz A.	This is absolutely horrible. First off, we have so many accidents/fender benders in the current roundabout coming into town. I have even personally seen many near-misses of cars almost hitting pedestrians. Yes, there is evidence that roundabouts are safer than stop lights in big cities. However, I would be hesitant to believe that this would be the case in Port Townsend. This area is full of deer that I see off the road on a daily basis. If you put in a roundabout and there is a constant steady stream of traffic, I would suspect that there will be many more car vs deer collisions coming into town. Currently, when you leave town, you break around the bend to go to the stoplight; with a roundabout there, I would assume people to be less cautious altogether. I am curious to see the projected costs of this versus the cost of maintaining our existing system. Has this been provided, because I am not seeing it? Also, with so many big semis leaving the mill, is this really a safe choice? Are they going to be able to get around a roundabout? And if not, are you now going to send these through our neighborhoods down by the mill? The medians currently in place have bushes too high where you can barely see the pedestrians; they are being poorly maintained. Where is the certainty that this new one will be any different? This works in England, where cars are smaller, but I would think twice about it being in Port Townsend.
183. Katherine K.	Hello, I am writing to voice my opposition to the proposal to add traffic circles at Discovery Road and Kearney Street where they intersect with SR 20. I am in favor of keeping traffic lights at those intersections. I reviewed the intersection evaluation report produced by your office and was not impressed. I think the circles represent a false economy. They may be cheaper to operate, but they also bring lesser quality of life: less safety for pedestrians, longer wait times for those on side streets trying to break into the flow of traffic on the main street (especially when there is traffic from the ferry), and although I saw no explicit mention of it in the report, an apparent need to take private property in order to fit the circle, at least at Kearney Street. Respectfully, Katherine K..
184. Lisa M.	I am concerned about the cross walk at Kearney St. It is already a dangerous crossing even with a light. How will safety be maintained with a roundabout? Will there continue to be a pedestrian crossing light? I am also concerned that it will be very difficult for traffic to enter Hwy 20 at both locations. There are many times that the line of cars goes back many blocks and the only opportunity to get on to Hwy 20 is when the light changes.
185. Lee H.	Please allow bicyclists to take the motor vehicle lane in the roundabout, contrary to the SR-20 roundabouts in Port Townsend at Rainier St and Thomas St. When commuting by bicycle along SR-20, at 10 to 20 mph, having to make an exit onto a sidewalk and crossing roads in cross walks creates additional hazards and barriers to bicycling the roundabout.
186. Christine A.	I'm happy to see the planned project to improve the intersections of Mill Rd and Kearney St. on HWY20. I happy to see the plan for safer and more efficient roundabout design proposal includes accommodations for those who walk or roll with white candles/curbing to protect bicyclists from vehicle traffic.

SR 20 Roundabouts Project Online Public Open House Comments

187. Amber	A roundabout at Kearney St and SR 20 would seriously jeopardize the safety of pedestrians attempting to cross the streets, increase rear-end collisions, and impede the flow of heavy flow of ferry and festival traffic.
188. John F.	This is absolutely horrible. First off, we have so many accidents/fender benders in the current roundabout coming into town. I have even personally seen many near-misses of cars almost hitting pedestrians. Yes, there is evidence that roundabouts are safer than stop lights in big cities. However, I would be hesitant to believe that this would be the case in Port Townsend. This area is full of deer that I see off the road on a daily basis. If you put in a roundabout and there is a constant steady stream of traffic, I would suspect that there will be many more car vs deer collisions coming into town. Currently, when you leave town, you break around the bend to go to the stoplight; with a roundabout there, I would assume people to be less cautious altogether. I am curious to see the projected costs of this versus the cost of maintaining our existing system. Has this been provided, because I am not seeing it? Also, with so many big semis leaving the mill, is this really a safe choice? Are they going to be able to get around a roundabout? And if not, are you now going to send these through our neighborhoods down by the mill? The medians currently in place have bushes too high where you can barely see the pedestrians; they are being poorly maintained. Where is the certainty that this new one will be any different? This works in England, where cars are smaller, but I would think twice about it being in Port Townsend.
189. Katherine K.	Hello, I am writing to voice my opposition to the proposal to add traffic circles at Discovery Road and Kearney Street where they intersect with SR 20. I am in favor of keeping traffic lights at those intersections. I reviewed the intersection evaluation report produced by your office and was not impressed. I think the circles represent a false economy. They may be cheaper to operate, but they also bring lesser quality of life: less safety for pedestrians, longer wait times for those on side streets trying to break into the flow of traffic on the main street (especially when there is traffic from the ferry), and although I saw no explicit mention of it in the report, an apparent need to take private property in order to fit the circle, at least at Kearney Street. Respectfully, Katherine K.
190. Renee T.	I am concerned about the cross walk at Kearney St. It is already a dangerous crossing even with a light. How will safety be maintained with a roundabout? Will there continue to be a pedestrian crossing light? I am also concerned that it will be very difficult for traffic to enter Hwy 20 at both locations. There are many times that the line of cars goes back many blocks and the only opportunity to get on to Hwy 20 is when the light changes.
191. Liz A.	Please allow bicyclists to take the motor vehicle lane in the roundabout , contrary to the SR-20 roundabouts in Port Townsend at Rainier St and Thomas St . When commuting by bicycle along SR-20, at 10 to 20 mph, having to make an exit onto a sidewalk and crossing roads in cross walks creates additional hazards and barriers to bicycling the roundabout.
192. Katherine K.	Hello, I am writing to voice my opposition to the proposal to add traffic circles at Discovery Road and Kearney Street where they intersect with SR 20. I am in favor of keeping traffic lights at those intersections. I reviewed the intersection evaluation

	report produced by your office and was not impressed. I think the circles represent a false economy. They may be cheaper to operate, but they also bring lesser quality of life: less safety for pedestrians, longer wait times for those on side streets trying to break into the flow of traffic on the main street (especially when there is traffic from the ferry), and although I saw no explicit mention of it in the report, an apparent need to take private property in order to fit the circle, at least at Kearney Street. Respectfully, Katherine K..
193. Lisa M.	I am concerned about the cross walk at Kearney St. It is already a dangerous crossing even with a light. How will safety be maintained with a roundabout? Will there continue to be a pedestrian crossing light? I am also concerned that it will be very difficult for traffic to enter Hwy 20 at both locations. There are many times that the line of cars goes back many blocks and the only opportunity to get on to Hwy 20 is when the light changes.
194. Lee H.	Ms. Clemen, I wanted to add that as a walker or bicyclist these roundabouts are equally as bad as driving as there is now limited space to walk or bike safely. Lee
195. Christine A.	I am assuming this email provides you with my identity and contact info. I generally like roundabouts. However I must condition that statement with, 'well designed'. Both of the proposed roundabouts appear to ignore existing traffic patterns. The Discovery road access will be seriously and dangerously impacted unless additional designs Address the parallel traffic on and off Discovery to the proposed 20 roundabout. Your design may be within existing guidelines, but just barely. Having driven similar trucks as anticipated, the amount of clearances proposed for turns on the roundabout also appear to be minimum at best. And as far as the proposed roundabout in town, you are not serious! How will you address the existing access road in front of the Bank which flows easily to the right, running into constant traffic from the proposed roundabout, from the drivers left, better known as the sun glare side.? The bicycle clearance on the one existing roundabout in town is currently already hazardous for bicyclists. Your diagrams addressing these hazards especially for a town like Port Townsend with more and more bicyclists do nothing to comfort or encourage such users of the road. Unless serious, progressive and realistic thought is wholistically enginerred today, this proposal will NOT save money, and will reduce the safety and efficiency records for future development of roundabouts in general.
196. Amber	I'm very concerned about pedestrian safety at the Kearny/Hwy 20 intersection with the proposed roundabout. It's already dangerous at times to cross, with cars turning right from Hwy 20 onto Kearney and left from Kearney onto Hwy 20 without looking for pedestrians in the crosswalk. Port Townsend is a very walkable community; my family, as with many others, almost exclusively walks. The roundabouts on Upper Sims Way have led cars to speed, making it extremely dangerous to cross along that entire stretch, even at the lighted crosswalk by the QFC shopping center. The traffic lights at Kearney and Haines are the only things breaking up traffic. A pedestrian overpass on Sims Way between Haines and Kearney is sorely needed and has been for a long time. It's nerve-wracking enough as it is trying to cross with small children; the roundabout will make things even more dangerous. There does not seem to be any logical reason to spend funds making this change. Funds would be much better spent on a pedestrian/bike overpass.

SR 20 Roundabouts Project Online Public Open House Comments

197. Tiran L.	These intersections are already dangerous for pedestrian safety. I've almost been hit by cars multiple times while attempting to cross the street on foot. Roundabouts would only severely increase the safety hazard for pedestrians. The two lights that are purposed to be removed are the only things that create safe breaks from the non-stop flow of traffic during the tourist season. If you remove the lights you better install pedestrian overpasses. The overpasses would definitely exceed any savings created by installing roundabouts. Expect lawsuits if any pedestrians are injured due to the removal of these traffic lights.
198. David G.	I do not think that the proposed roundabout at the Kearney St intersection is a good idea and believe that a traffic light should be retained at that location. There is significant pedestrian traffic at that intersection with retail businesses and bus stops on both sides of HWY 20 and roundabouts are not pedestrian friendly when there is a lot of traffic. There are also traffic pulses in this location following ferry docking which will make it almost impossible to enter the roundabout from Kearney St, often for 10 minutes or more during the summer.
199. Randal M.	Concerning Discovery Rd and SR 20 Roundabout. There is a lot of traffic coming south from Port Townsend on Discovery Rd that accesses SR 20 at the proposed roundabout. Currently there is a stop sign in both directions on Discovery Rd. (note Discovery becomes S. Discovery at this 2-way stop sign intersection.) This intersection is immediately adjacent to SR 20. South bound traffic leaving Port Townsend on Discovery Rd. turns left to access SR 20. This is already a bit difficult. During higher traffic volumes this traffic depends on the stop light to stop traffic so the traffic on Discovery can turn left then immediately right to access SR 20. PLEASE consider revising the traffic flow at the Discovery and S. Discovery Rd intersection. The proposed roundabout will make this a much more dangerous intersection as traffic will be moving thru this intersection faster and without the gaps in traffic the light provided for this left turning traffic. This is a significant intersection as many Port Townsend residents leave and enter SR 20 at this intersection. Please incorporate modifications to the Discovery Rd. / S. Discovery Rd intersection into the proposed roundabout. OR can you feed Discovery Rd directly into the roundabout? I am very confident that failure to address this issue will result in increased accidents' and injuries, not mention frustration for the residents of Port Townsend. Respectfully, Randal M.
200. Jude R.	Hello, I just learned about this. As a 25-year resident, I oppose the roundabout proposal for Kearny Street. Disruptive, unnecessary and a real hazard to the high level of bike and pedestrian traffic. My daughter, husband and I are all bike commuters, and this unnecessary change would endanger our safety and that of other cyclists and pedestrians. NO NEW ROUNDABOUTS IN PORT TOWNSEND! Jude R..
201. Ben F.	Ms. Clemen Thanks you for sending me the pdf describing the compact roundabouts proposed for SR 20 in Port Townsend. I offer these comments on the proposal: 1. Inadequate consideration has been given to prolonged streams of traffic that will result from the removal of traffic lights at the proposed intersections. The current traffic signals cause SR 20 to proceed in blocks with breaks that allow cross and turning traffic at other intersections along SR 20 to clear. 2. Inadequate consideration has been given to the large blocks of traffic on SR 20 resulting from the discharge of vehicles from the Port Townsend ferry. The traffic studies described in the pdf to not mention

	observations that ought to have been taken during ferry traffic surges. It has been my experience that such surges can last for minutes, not the seconds cited in the repost. The traffic light at the ferry dock is programed to allow rapid exit of ferry traffic and this sends large waves of traffic southbound on SR 20. 3. Further study and consideration of the traffic flow resulting from the proposal should be conducted to fully understand the ramifications of this proposal. Thank you for the opportunity to comment. Ben F.
202. Laura R.	I think these roundabouts are a great idea.
203. Eric and Claire N.	Thank you, Ms. Clemen, for your response. I raised a key consideration, and you addressed it directly. I asked if any study had been conducted during the summer or on a Saturday, to which you said the intersections were studied on Nov. 6, a Wednesday. So … I guess that's a no. Port Townsend is a tourist destination, and a very popular one. When the weather is fair in the summer months, vehicle traffic flows into the historic district every day of the week in an almost unending stream, as I reported in the original email. In the offseason – November, for example – the midweek vehicle traffic is a comparative trickle. On offseason Saturdays, however, it often picks up to high levels if the weather is decent. On a Wednesday in November – which is when the intersections were studied – Port Townsend is effectively dead, with only the very light traffic of local residents. This gives DOT is an entirely unrepresentative view of those intersections. It's like a supermarket trying to figure out how many checkers to employ and sampling customer demand at 2 in the morning, So all of your subsequent figures about 10-second delays in certain time windows is irrelevant. Please imagine a sunny Saturday in July. You've just had lunch at the Pourhouse on Washington Street and you want to enter the new SR 20/Kearney St. roundabout from the east and head south on SR 20. As you drive up to the roundabout, you're confronted with is a slow-moving stream of vehicles from the south (or left). This stream passes in front of you and continues on toward Water Street and Port Townsend's historic district, the vehicles just a few feet apart. And it just keeps coming and coming. You have no crease of opportunity to merge into that stream. You might think to yourself, "You know, back on that Wednesday in November, I only had to wait 10 seconds." But that won't do you much good now. Please consider this. Please wait until the height of the next tourist season and conduct further studies. Thank you again, Eric N.

Appendix E

Nov. 2, 2020 Port Townsend Leader Newspaper Article

Roundabout plan in PT prompts concerns

A draft conceptual design for a roundabout at Highway 20 and Kearney Street in Port Townsend.
IMAGE COURTESY OF WSDOT

Posted Monday, November 2, 2020 8:23 am

"I think this is not a place I feel good about for this project."
COUNCILMEMBER PAMELA ADAMS, PORT TOWNSEND CITY COUNCIL

Brian Kelly
bkelly@ptleader.com

Port Townsend city councilmembers raised a few concerns, but offered a bit of support, for the state's plan to build two traffic roundabouts on Highway 20 during a committee discussion on the project last week. One roundabout is proposed for the city's southern end, at the entrance to Port Townsend at the Highway 20 intersection with Mill Road. Another roundabout is planned for the Kearney Street intersection at the edge of downtown. Officials with the Washington State Department of Transportation have said the roundabouts are needed to replace outdated traffic signals on the highway, which have reached the end of their useful life.

WSDOT released preliminary details of its pre-design study for the Highway 20 roundabout improvements earlier this month. The agency started an online open house for people to learn about the road improvements last week, and public input will be accepted through noon Monday, Nov. 2.

City councilmembers got a briefing on the roundabout plan at the council's Transportation Committee meeting Oct. 21. According to WSDOT, the existing traffic signals need frequent and extensive updates to keep them working. The signals cost an average of $10,000 annually to maintain. Beyond the annual costs, agency officials said roundabouts will also improve safety on Highway 20, reduce traffic delays, and stay operational during power outages.

DISCOVERY ROAD TIE-IN

City officials shared concerns about the proximity of Discovery Road to the roundabout project at last week's committee meeting. At the highway's intersection with Mill Road, councilmembers noted that the city has long looked at Discovery Road as an alternative route for drivers instead of Highway 20.

Without that option, lane capacity on Highway 20 may need to be increased. "Traffic is only going to increase, so we need to get ahead of that solution," Councilmember Owen Rowe told his fellow committee members. Councilmember Pamela Adams said she was worried about the city's gateway entrance. "We don't want to lose, with all of this, the entrance to Port Townsend feeling that is now," Adams said. It wasn't a major consideration, she said. But still. "It is a moment that people know they are entering Port Townsend," Adams said. "We don't want to lose that."

More than 1,800 vehicles pass through the Highway 20/Mill Road/Discovery Road intersection during the peak hour of travel. According to WSDOT, there have been 14 crashes at the intersection over a five-year period, and seven have led to injuries, and three involved bicyclists. Peak-hour traffic delays for drivers average about 20 seconds, officials said, but that is expected to climb to 35 seconds by the year 2040. With a roundabout in place, the delay is expected to drop to 7.9 seconds during the peak hour of travel, and a delay of 8.8 seconds is forecast for 2040 with a roundabout in place.

KEARNEY CONCERNS

Councilmembers were more concerned about the Kearney Street roundabout. City officials noted that traffic often backs up on Highway 20 for drivers turning onto Washington Street. Another concern is pedestrians crossing Highway 20 without the protection of a traffic signal. “I think this is not a place I feel good about for this project,” Adams said. Rowe pointed out the number of pedestrians who cross the street by the Penny Saver Market, who are assisted now by a button-triggered crosswalk. “It gets kinda nuts,” he said of the intersection. Others wondered what would happen to parking on one side of Highway 20 near the Cherry Blossom Home Store, or access to the nearby branch of Wells Fargo Bank.

Roundabouts, in general, also raised a few eyebrows. “I have to say my piece about roundabouts,” Adams said. “We’re supposed to be an enlightened town, a forward-thinking town. And we’re still doing something that really only benefits drivers and cars. And maybe WSDOT. “And I just don’t understand why we want to design our town for the benefit of drivers, compared to the benefits of non-motorized people,” Adams continued. She said roundabouts were regressive for Port Townsend. “To me, the roundabout is all for the benefit of keeping traffic flowing and my main question is, ‘Why do we want traffic to continue to flow?’ “I just don’t understand the concept, when we think about the future of our town being a town which is trying to deter the traffic flow into our town, rather than encourage it,” Adams said. Councilmember David Faber disagreed. Roundabouts are safer for pedestrians and bicyclists because they lower the speed of vehicles passing through, he said. “This is an improvement for everyone,” Faber added. “This is forward-looking.” He noted that a roundabout at Kearney Street would lessen backups for people turning onto Washington Street.

BUSY INTERSECTION

More than 1,300 vehicles pass through the Highway 20/Kearney Street intersection during the peak hour of travel. There have been 17 crashes at the intersection over a five-year period, according to WSDOT, and nine have been injury crashes, and two have involved pedestrians. Drivers face an average 11-second delay at the intersection during the peak travel hour. Traffic delays are expected to drop to 7.6 seconds with a roundabout in place. According to WSDOT, roundabouts reduce injury crashes by 76 percent — and deaths by 90 percent — and reduce vehicle collisions with pedestrians by 30 to 40 percent.

FINAL PLAN IN DECEMBER

The roundabout study will continue through the end of the year. Community outreach will extend into December, with a final report expected sometime that month. Project design is forecast for January, with construction planned for October 2022.

Appendix F

Intersection Control Evaluation (ICE) Report

SR 20/Discovery Road & SR 20/Kearney Street Roundabouts

MP 9.81 to MP 12.01

C02018A

Intersection Control Evaluation

August 2020

Region Traffic Engineer Approval:

Manuel

Digitally signed by Manuel Abarca
Date: 2020.08.17 13:45:07 -07'00'

Manuel Abarca — Date

Olympic Region Traffic Engineer

HQ Traffic Concurrence:

2020.08.17 14:06:52 -07'00'

Brian Walsh — Date

State Traffic Design & Operations Manager

SR 20/Discovery Road/Mill Road – Intersection Safety Improvements

Intersection Control Evaluation

Project Needs

The existing signal system is outdated and requires frequent and extensive maintenance. An Intersection Control Evaluation (ICE) is required for signal replacement projects in accordance with Design Manual 1300.05. This project will remove the existing obsolete signal system and provide new intersection control with a compact roundabout as part of the P3 program. The P(reservation) program established as part of the WSDOT Transportation Asset Management Plan includes pavements (P1), structures (P2), and other facilities (P3). P3 projects include major electrical systems such as traffic signals. WSDOT's Transportation Asset Management Plan and P3 program support practical design and serves as the departments plan to maintain, preserve, and improve highway assets for our current and future generations. In other word, taking care of the transportation system, not expanding it. Therefore, the traffic control selection criteria will look at future operations, but, the recommendation is weighted toward build year mobility, safety, reliability, and future costs.

Background

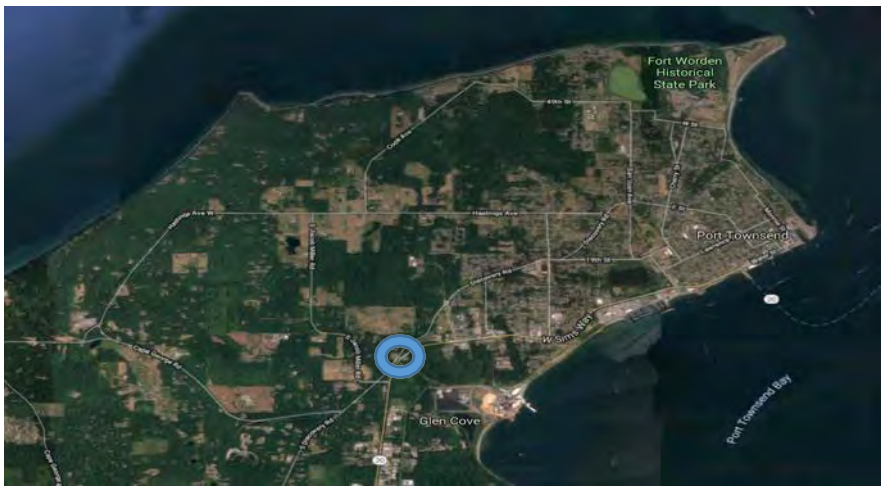
SR 20 at this location is functionally classified as an urban-principal arterial. It has one lane in each direction. This 4-legged intersection is located at milepost 9.81. This intersection is in Jefferson County and is an NHS route. The posted speed within the project limits is 40 mph. The WSDOT database shows the ADT is 17,000. This project is categorized as a P3 preservation project.

Alternatives

- Traffic Signal
- Single lane compact roundabout

Traffic Volume

An annual growth rate of 0.7% was provided by the WSDOT Transportation Data, GIS and Modelling Office (TDGMO). Note: all roads feeding the intersection are two lane roads with no known plans for expansion.



Methodology

The following analysis software was used:

- Roundabout Analysis - SIDRA 8, version 8.0.5.7916, software was used for the compact roundabout analysis. The WSDOT Sidra Policy Settings were followed in the compact roundabout analysis. The measures of effectiveness (MOE) used is control delay and volume to capacity ratio (v/c) from the Highway Capacity Manual 6th edition. The level of service (LOS) for signalized intersections is defined by the average vehicle delay for the entire intersection.
- Signalized Analysis - Synchro/SimTraffic 10.1, build 2, revision 20 (10.1.2.20). The MOEs used are control delay and v/c ratio from the Highway Capacity Manual 6th edition. The level of service (LOS) for signalized intersections is defined by the average vehicle delay for the entire intersection. The minimum level of service for this location is LOS D.

Operational Analysis Results

For this analysis, a compact roundabout with a 76 foot inscribed circle diameter was used, but, it may range from 65 feet to 85 feet during the design phase.

	2019 PM	2039 PM (0.7% Annual Growth Rate)
SR 20/Discovery Rd/ Mill Rd	Intersection LOS (Delay) Worst Movement v/c ratio Worst Movement Queue, ft	Intersection LOS (Delay) Worst Movement v/c ratio Worst Movement Queue, ft
Existing Signal	C (23.3) v/c = 0.93 WBR 869 WBTR	D (35.8) v/c = 0.96 WBR 1378 WBTR
Compact Roundabout Single Lane	A (7.9) v/c = 0.845 East leg 330 East leg	A (8.8) v/c = 0.877 East leg 390 East leg

Per the operational analysis above, the compact roundabout outperforms the signalized intersection during the 2039 PM peak hour.

During off-peak hours, it is expected that the compact roundabout will also outperform the signal because of the low delay for all entering vehicles. In addition, off-peak hours will typically have free-flow conditions, thus, lower travel times and less idling vehicles which reduces carbon emissions. Relative to a compact roundabout, a signal does not process vehicles as efficiently.

Safety Analysis

The following table shows the five-year crash history for the years 2014 to 2018.

	2014	2015	2016	2017	2018	Total
Fatal Injury	0	0	0	0	0	0
Serious Injury	0	0	0	0	0	0
Evident Injury	0	1	1	1	0	3
Possible Injury	1	1	0	1	1	4
Property Damage	0	2	2	1	2	7
Total	1	4	3	3	3	14

Over a five-year period a total of 14 reported collisions occurred at this intersection. The total number of vehicles involved was 25 that indicates most collision involved multiple vehicles. Replacing the signal system is not anticipated to change the past safety performance.

The compact roundabout alternative is expected to improve the safety performance at the intersection. FHWA identified compact roundabouts as a Proven Safety Countermeasure because of their ability to substantially reduce the types of crashes that result in injury or loss of life. Replacing the existing traffic signal with a signal lane compact roundabout should reduce collisions by 78% according to FHWA.

- Compact roundabouts have fewer conflict points. A single lane compact roundabout has 50% fewer pedestrian-vehicle conflict points than a comparable stop or signal controlled intersection. Conflicts between bicycles and vehicles are reduced as well.

- Pedestrians cross a shorter distance of only one direction of traffic at a time since the entering and exiting flows are separated. Drivers focus on pedestrians apart from entering, circulating and exiting maneuvers

- Traffic speed at any road or intersection is vitally important to the safety of everyone, and especially non-motorized users. Lower speed is associated with better yielding rates, reduced vehicle stopping distance, and lower risk of collision injury or fatality. Also, the speed of traffic through a compact roundabout is more consistent with comfortable bicycle riding speeds.

Community Engagement

Community engagement will be necessary during the design phase.

Other Selection Considerations

- Compact roundabouts do not need electric power other than illumination.
- Compact roundabouts operations result in overall lower vehicle emissions than a comparative traffic signal.
- Compact roundabouts have lower overall maintenance and operations costs as compared to traffic signals.
- Compact roundabouts will exceed operational performance of other alternatives during off-peak conditions.

Selection and Conclusion

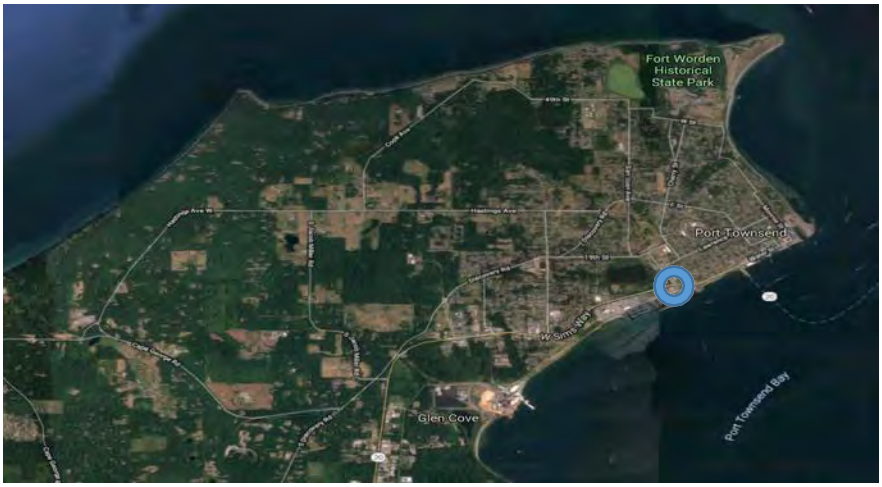
Based upon the evaluation a single lane compact roundabout is the recommended traffic control. Olympic Region will work with HQ Traffic on the geometric design.

SR 20/Kearney Street – Intersection Safety Improvements

Intersection Control Evaluation

Project Needs

The existing signal system is outdated and requires frequent and extensive maintenance. An Intersection Control Evaluation (ICE) is required for signal replacement projects in accordance with Design Manual 1300.05. This project will remove the existing obsolete signal system and provide new intersection control with a compact roundabout as part of the P3 program. The P(reservation) program established as part of the WSDOT Transportation Asset Management Plan includes pavements (P1), structures (P2), and other facilities (P3). P3 projects include major electrical systems such as traffic signals. WSDOT's Transportation Asset Management Plan and P3 program support practical design and serves as the departments plan to maintain, preserve, and improve highway assets for our current and future generations. In other words, taking care of the transportation system, not expanding it. Therefore, the traffic control selection criteria will look at future operations, but, the recommendation is weighted toward build year mobility, safety, reliability, and future costs.



Background

SR 20 at this location is functionally classified as an urban-principal arterial. It has one lane in each direction. This 4-legged intersection is located at milepost 12.01. This intersection is in Jefferson County and is an NHS route. The posted speed within the project limits is 30 mph. The WSDOT database shows the 2019 ADT on SR 20 is 13,000 to the south (or west) of the intersection and 11,000 north (or east) of the intersection. This project is categorized as a P3 preservation project.

Alternatives

- Traffic Signal
- Single lane compact roundabout

Traffic Volume

An annual growth rate of 0.7% was provided by the WSDOT Transportation Data, GIS and Modelling Office (TDGMO). Note: all roads feeding the intersection are two lane roads with no known plans for expansion.

Methodology

The following analysis software was used:

- Compact Roundabout Analysis - SIDRA 8, version 8.0.5.7916, software was used for the compact roundabout analysis. The WSDOT Sidra Policy Settings were followed in the compact roundabout analysis.
- Signalized Analysis - Synchro/SimTraffic 10.1, build 2, revision 20 (10.1.2.20). The measure of effectiveness (MOE) used is control delay from the Highway Capacity Manual 6th edition. The level of service (LOS) for signalized intersections is defined by the average vehicle delay for the entire intersection. The minimum level of service for this location is LOS D.

Operational Analysis Results

For this analysis, a compact roundabout with a 76 foot inscribed circle diameter was used, but, it may range from 65 feet to 85 feet during the design phase.

	2019 PM	2039 PM (0.7% Annual Growth Rate)
SR 20/Kearney St	Intersection LOS (Delay) Worst Movement LOS (Delay) Worst Movement v/c ratio Worst Movement Queue, ft	Intersection LOS (Delay) Worst Movement LOS (Delay) Worst Movement v/c ratio Worst Movement Queue, ft
Existing Signal	B (11.4) B (18.7) EBL v/c = 0.77 EBR 318 EBTR	B (13.1) C (22.5) EBL v/c = 0.82 EBR 369 EBTR
Compact Roundabout Single Lane	A (7.6) B (10.9) EBL v/c = 0.577 West leg 114 East leg	A (7.6) B (11.1) EBL v/c = 0.601 West leg 125 West leg

Per the results of the operational analysis, a single lane compact roundabout outperforms the existing signalized intersection during the 2039 PM peak hour.

During off-peak hours, it is expected that the compact roundabout will also outperform the signal because of the low delay for all entering vehicles. In addition, off-peak hours will typically have free-flow conditions, thus, lower travel times and less idling vehicles which reduces carbon emissions. Relative to a compact roundabout, a signal does not process vehicles as efficiently.

Safety Analysis

The following table shows the five year crash history for the years 2014 to 2018.

	2014	2015	2016	2017	2018	Total
Fatal Injury	0	0	0	0	0	0
Serious Injury	0	1	0	0	0	1
Evident Injury	0	1	0	0	0	1
Possible Injury	0	2	2	0	2	6
Property Damage	0	1	3	3	1	8
Total	0	5	5	3	3	16

Over a five year period a total of 16 reported collisions occurred at this intersection. The total number of vehicles involved was 32 which indicates most collisions involved multiple vehicles. Replacing the signal system is not anticipated to change the past safety performance.

The compact roundabout alternative is expected to improve the safety performance at the intersection. FHWA identified compact roundabouts as a Proven Safety Countermeasure because of their ability to substantially reduce the types of crashes that result in injury or loss of life. Replacing the existing traffic signal with a signal lane compact roundabout should reduce collisions by 78% according to FHWA.

- Compact roundabouts have fewer conflict points. A single lane compact roundabout has 50% fewer pedestrian-vehicle conflict points than a comparable stop or signal controlled intersection. Conflicts between bicycles and vehicles are reduced as well.

- Pedestrians cross a shorter distance of only one direction of traffic at a time since the entering and exiting flows are separated. Drivers focus on pedestrians apart from entering, circulating and exiting maneuvers

- Traffic speed at any road or intersection is vitally important to the safety of everyone, and especially non-motorized users. Lower speed is associated with better yielding rates, reduced vehicle stopping distance, and lower risk of collision injury or fatality. Also, the speed of traffic through a compact roundabout is more consistent with comfortable bicycle riding speeds.

Community Engagement

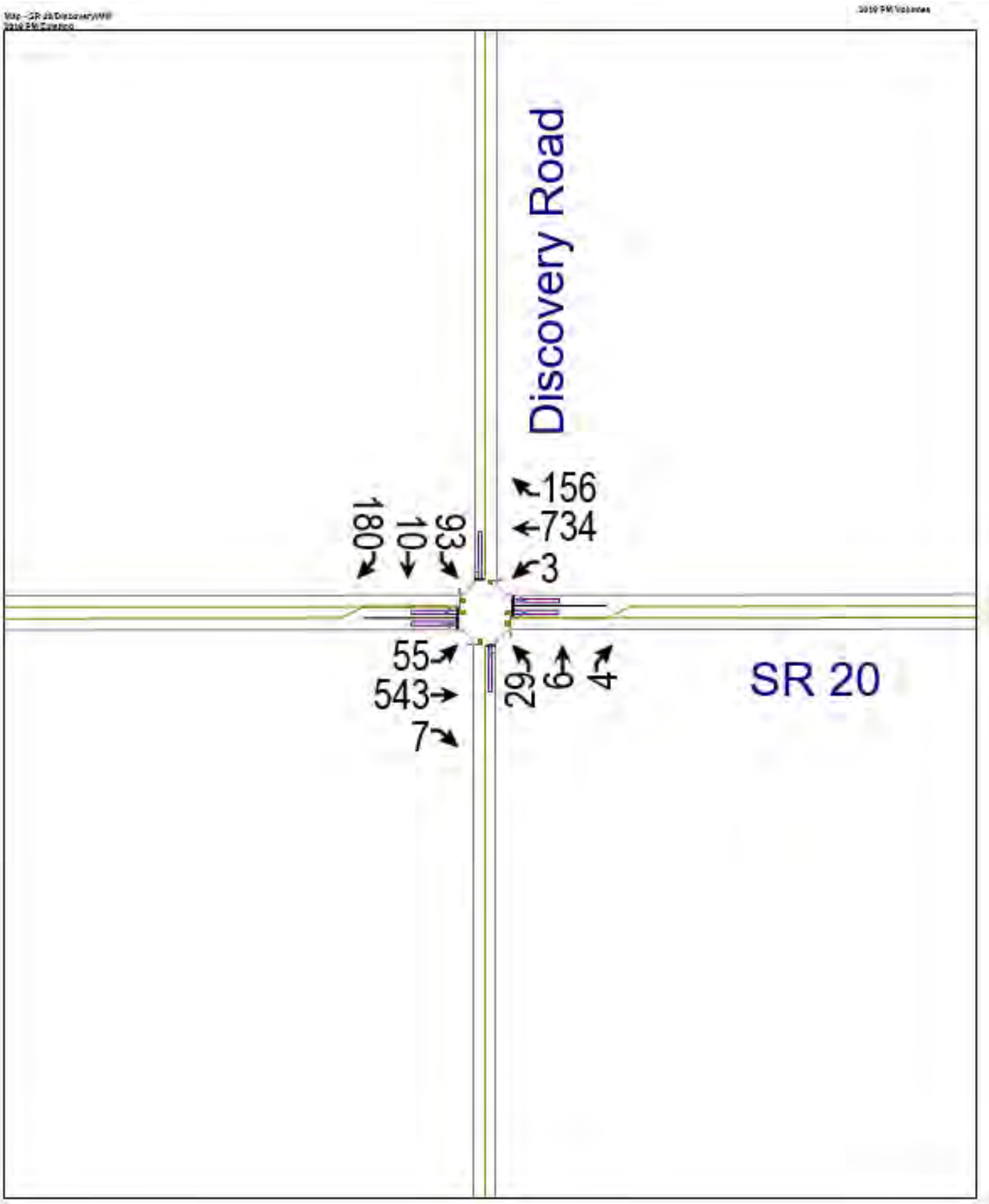
Community engagement will be necessary during the design phase.

Other Selection Considerations

- Compact roundabouts do not need electric power other than illumination.
- Compact roundabouts operations result in overall lower vehicle emissions than a comparative traffic signal.
- Compact roundabouts have lower overall maintenance and operations costs as compared to traffic signals.
- Compact roundabouts will exceed operational performance of other alternatives during off-peak conditions.

Selection and Conclusion

Based upon the evaluation a single lane compact roundabout is the recommended traffic control. Olympic Region will work with HQ Traffic on the geometric design.


Discovery Road
SR 20
180
10
93
156
734
3
55
543
7
29
6
4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	543	7	3	734	156	29	6	4	93	10	180
Future Volume (veh/h)	55	543	7	3	734	156	29	6	4	93	10	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1786	1715	1800	1772	1701	1715	1786	1786	1786	1786	1715
Adj Flow Rate, veh/h	55	543	7	3	734	156	29	6	4	93	10	180
Peak Hour 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
Percent Heavy Veh, %	0	1	1	0	2	2	1	1	1	1	1	1
Cap, veh/h	93	1042	13	29	787	167	246	48	24	161	28	214
Arrive On Green	0.05	0.59	0.59	0.02	0.56	0.54	0.22	0.22	0.21	0.22	0.22	0.21
Sat Flow, veh/h	1714	1759	23	1714	1417	301	711	215	106	421	126	956
Grp Volume(v), veh/h	55	0	550	3	0	890	39	0	0	283	0	0
Grp Sat Flow(s),veh/h/ln	1714	0	1782	1714	0	1718	1031	0	0	1504	0	0
Q Serve(g_s), s	2.3	0.0	13.1	0.1	0.0	34.4	0.0	0.0	0.0	10.7	0.0	0.0
Cycle Q Clear(g_c), s	2.3	0.0	13.1	0.1	0.0	34.4	1.8	0.0	0.0	12.9	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.18	0.74		0.10	0.33		0.64
Lane Grp Cap(c), veh/h	93	0	1056	29	0	954	318	0	0	402	0	0
V/C Ratio(X)	0.59	0.00	0.52	0.10	0.00	0.93	0.12	0.00	0.00	0.70	0.00	0.00
Avail Cap(c_a), veh/h	406	0	1091	406	0	1052	335	0	0	422	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.2	0.0	8.6	34.8	0.0	14.8	22.3	0.0	0.0	26.9	0.0	0.0
Incr Delay (d2), s/veh	5.9	0.0	0.4	1.5	0.0	13.7	0.2	0.0	0.0	4.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	3.9	0.1	0.0	13.9	0.5	0.0	0.0	5.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	0.0	9.0	36.3	0.0	28.5	22.5	0.0	0.0	31.9	0.0	0.0
LnGrp LOS	D	A	A	D	A	C	C	A	A	C	A	A
Approach Vol, veh/h		605			893			39			283	
Approach Delay, s/veh		11.8			28.5			22.5			31.9	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	43.9		20.0	5.2	46.6		20.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	43.0		16.0	16.0	43.0		16.0				
Max Q Clear Time (g_c+I1), s	4.3	36.4		3.8	2.1	15.1		14.9				
Green Ext Time (p_c), s	0.1	2.6		0.1	0.0	2.3		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			23.3									
HCM 6th LOS			C									

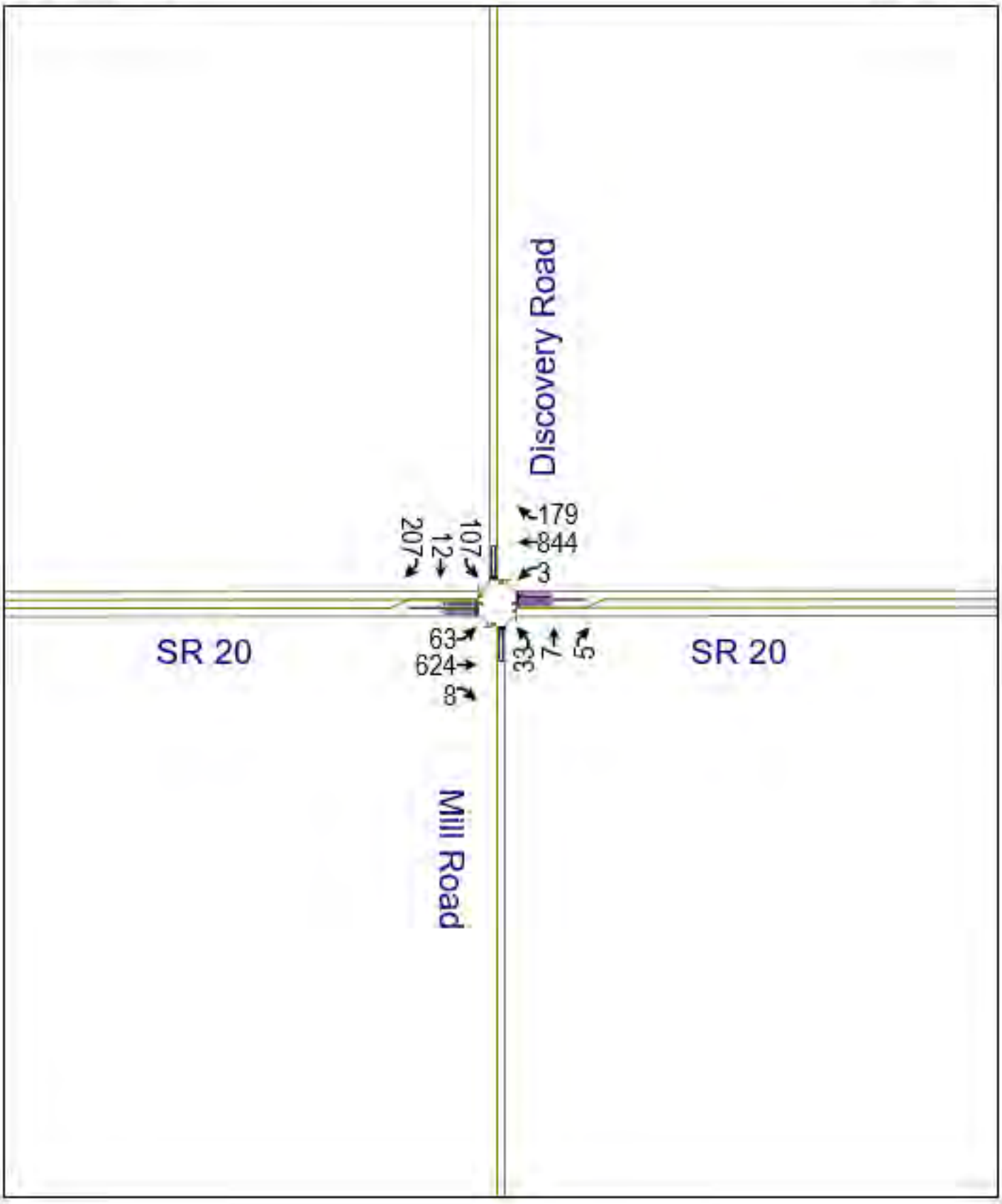
Intersection: 3: Mill Road/Discovery Road & SR 20

2019 PM

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	93	202	18	802	62	224
Average Queue (ft)	40	101	3	529	29	135
95th Queue (ft)	86	200	15	869	64	238
Link Distance (ft)		5524		8228	4036	4232
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100		100			
Storage Blk Time (%)	1	5		40		
Queuing Penalty (veh)	7	3		1		

Network Summary

Network wide Queuing Penalty: 11


Map - SR 20/Discovery/Mill
2039 PM Volumes
Discovery Road
SR 20
SR 20
Mill Road
179
844
3
107
12
207
63
624
8
33
7
5

3: Mill Road/Discovery Road & SR 20

2039 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	543	7	3	734	156	29	6	4	93	10	180
Future Volume (veh/h)	55	543	7	3	734	156	29	6	4	93	10	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1786	1715	1800	1772	1701	1715	1786	1786	1786	1786	1715
Adj Flow Rate, veh/h	63	624	8	3	844	179	33	7	5	107	12	207
Peak Hour 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
Percent Heavy Veh, %	0	1	1	0	2	2	1	1	1	1	1	1
Cap, veh/h	93	1167	15	19	878	186	183	37	22	146	21	226
Arrive On Green	0.05	0.66	0.66	0.01	0.62	0.61	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1714	1759	23	1714	1417	301	579	160	92	467	89	968
Grp Volume(v), veh/h	63	0	632	3	0	1023	45	0	0	326	0	0
Grp Sat Flow(s),veh/h/ln	1714	0	1782	1714	0	1718	832	0	0	1525	0	0
Q Serve(g_s), s	4.7	0.0	24.0	0.2	0.0	72.7	0.0	0.0	0.0	21.7	0.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	24.0	0.2	0.0	72.7	5.3	0.0	0.0	27.0	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.17	0.73		0.11	0.33		0.63
Lane Grp Cap(c), veh/h	93	0	1182	19	0	1065	242	0	0	393	0	0
V/C Ratio(X)	0.67	0.00	0.53	0.16	0.00	0.96	0.19	0.00	0.00	0.83	0.00	0.00
Avail Cap(c_a), veh/h	224	0	1222	224	0	1178	259	0	0	412	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	60.2	0.0	11.4	63.6	0.0	23.3	40.0	0.0	0.0	48.5	0.0	0.0
Incr Delay (d2), s/veh	8.2	0.0	0.4	4.0	0.0	16.8	0.4	0.0	0.0	12.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	8.8	0.1	0.0	31.3	1.2	0.0	0.0	11.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.4	0.0	11.8	67.6	0.0	40.1	40.3	0.0	0.0	61.4	0.0	0.0
LnGrp LOS	E	A	B	E	A	D	D	A	A	E	A	A
Approach Vol, veh/h		695			1026			45			326	
Approach Delay, s/veh		17.0			40.2			40.3			61.4	
Approach LOS		B			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.1	84.5		34.3	5.4	90.1		34.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	88.0		31.0	16.0	88.0		31.0				
Max Q Clear Time (g_c+I1), s	6.7	74.7		7.3	2.2	26.0		29.0				
Green Ext Time (p_c), s	0.1	4.8		0.1	0.0	2.9		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			35.8									
HCM 6th LOS			D									

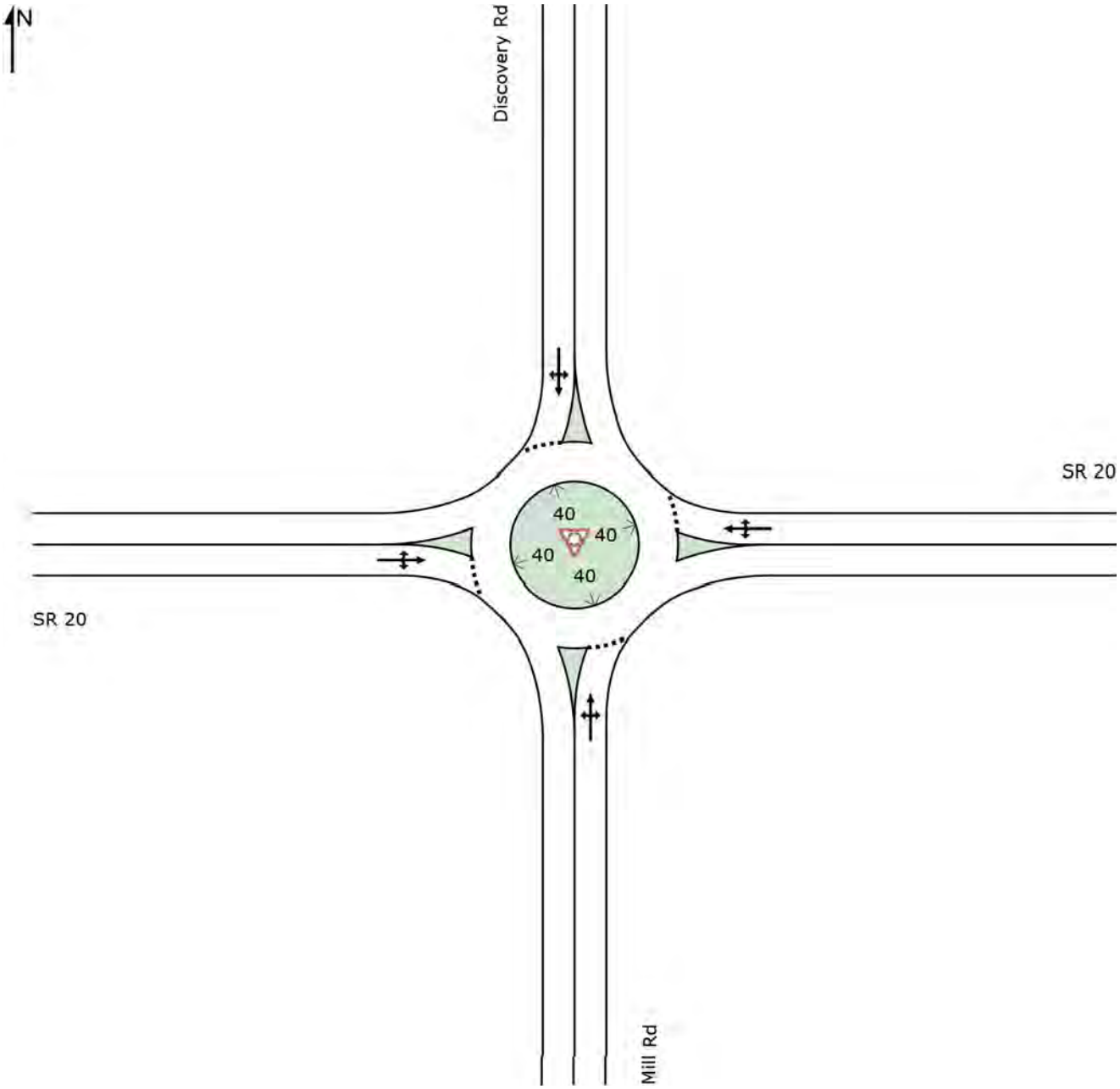
Intersection: 3: Mill Road/Discovery Road & SR 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	122	303	18	1264	93	370
Average Queue (ft)	57	184	3	821	38	232
95th Queue (ft)	114	317	18	1378	90	370
Link Distance (ft)		5524		8228	4036	4232
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100		100			
Storage Blk Time (%)	2	13		36		
Queuing Penalty (veh)	12	8		1		

SITE LAYOUT

Site: SR 20/Discovery Rd

SR 20/Discovery Rd/Mill Rd
Site Category: -
Roundabout



Organisation: WASHINGTON STATE DEPARTMENT OF TRANSPORTATION | Created: Thursday, March 19, 2020 3:52:58 PM
Project: G:_Analysis_State\SR 020\MP 9.81 - Discovery Rd & Mill Rd\Sidra\SR 20 & Discovery Rd ICE.sip8

MOVEMENT SUMMARY

Site: [SR 20/Discovery Rd Single Lane 2019 PM]

SR 20/Discovery Rd/Mill Rd
Site Category: -
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed mph
South: Mill Rd												
3	L2	29	10.0	0.069	11.7	LOS B	0.3	9.2	0.67	0.76	0.67	28.7
8	T1	6	1.0	0.069	7.5	LOS A	0.3	9.2	0.67	0.76	0.67	29.1
18	R2	4	1.0	0.069	7.6	LOS A	0.3	9.2	0.67	0.76	0.67	28.6
Approach		39	7.7	0.069	10.6	LOS B	0.3	9.2	0.67	0.76	0.67	28.7
East: SR 20												
1	L2	3	0.0	0.845	10.5	LOS B	13.0	330.2	0.80	0.57	0.80	30.5
6	T1	734	2.0	0.845	7.0	LOS A	13.0	330.2	0.80	0.57	0.80	34.0
16	R2	156	2.0	0.845	6.9	LOS A	13.0	330.2	0.80	0.57	0.80	27.6
Approach		893	2.0	0.845	7.0	LOS A	13.0	330.2	0.80	0.57	0.80	32.7
North: Discovery Rd												
7	L2	93	2.0	0.563	15.6	LOS B	4.6	117.4	0.92	1.08	1.16	25.4
4	T1	10	1.0	0.563	12.0	LOS B	4.6	117.4	0.92	1.08	1.16	23.5
14	R2	180	2.0	0.563	12.5	LOS B	4.6	117.4	0.92	1.08	1.16	25.2
Approach		283	2.0	0.563	13.5	LOS B	4.6	117.4	0.92	1.08	1.16	25.2
West: SR 20												
5	L2	55	0.0	0.586	9.6	LOS A	5.4	135.2	0.52	0.56	0.52	28.5
2	T1	543	1.0	0.586	6.1	LOS A	5.4	135.2	0.52	0.56	0.52	34.6
12	R2	7	29.0	0.586	7.0	LOS A	5.4	135.2	0.52	0.56	0.52	30.2
Approach		605	1.2	0.586	6.4	LOS A	5.4	135.2	0.52	0.56	0.52	33.9
All Vehicles		1820	1.9	0.845	7.9	LOS A	13.0	330.2	0.73	0.65	0.76	31.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: WASHINGTON STATE DEPARTMENT OF TRANSPORTATION | Processed: Tuesday, March 17, 2020 6:43:50 AM
Project: G:_Analysis_State\SR 020\MP 9.81 - Discovery Rd & Mill Rd\Sidra\SR 20 & Discovery Rd ICE.sip8

MOVEMENT SUMMARY

Site: [SR 20/Discovery Rd Single Lane 2039 PM]

SR 20/Discovery Rd/Mill Rd
Site Category: -
Roundabout

Design Life Analysis (Final Year): Results for 20 years

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed mph
South: Mill Rd												
3	L2	33	10.0	0.076	11.9	LOS B	0.4	11.1	0.72	0.77	0.72	28.6
8	T1	7	1.0	0.076	7.8	LOS A	0.4	11.1	0.72	0.77	0.72	29.0
18	R2	5	1.0	0.076	7.9	LOS A	0.4	11.1	0.72	0.77	0.72	28.5
Approach		44	7.7	0.076	10.9	LOS B	0.4	11.1	0.72	0.77	0.72	28.6
East: SR 20												
1	L2	3	0.0	0.877	10.9	LOS D	15.4	390.1	0.90	0.59	0.90	30.3
6	T1	837	2.0	0.877	7.4	LOS D	15.4	390.1	0.90	0.59	0.90	33.8
16	R2	178	2.0	0.877	7.3	LOS D	15.4	390.1	0.90	0.59	0.90	27.4
Approach		1018	2.0	0.877	7.4	LOS A	15.4	390.1	0.90	0.59	0.90	32.4
North: Discovery Rd												
7	L2	106	2.0	0.668	19.9	LOS B	6.7	170.5	1.00	1.21	1.40	24.2
4	T1	11	1.0	0.668	16.3	LOS B	6.7	170.5	1.00	1.21	1.40	22.5
14	R2	205	2.0	0.668	16.8	LOS B	6.7	170.5	1.00	1.21	1.40	24.0
Approach		323	2.0	0.668	17.8	LOS B	6.7	170.5	1.00	1.21	1.40	24.0
West: SR 20												
5	L2	63	0.0	0.612	9.6	LOS A	5.9	150.1	0.56	0.57	0.56	28.5
2	T1	619	1.0	0.612	6.1	LOS A	5.9	150.1	0.56	0.57	0.56	34.5
12	R2	8	29.0	0.612	7.0	LOS A	5.9	150.1	0.56	0.57	0.56	30.1
Approach		690	1.2	0.612	6.4	LOS A	5.9	150.1	0.56	0.57	0.56	33.8
All Vehicles		2075	1.9	0.877	8.8	LOS A	15.4	390.1	0.80	0.68	0.86	31.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

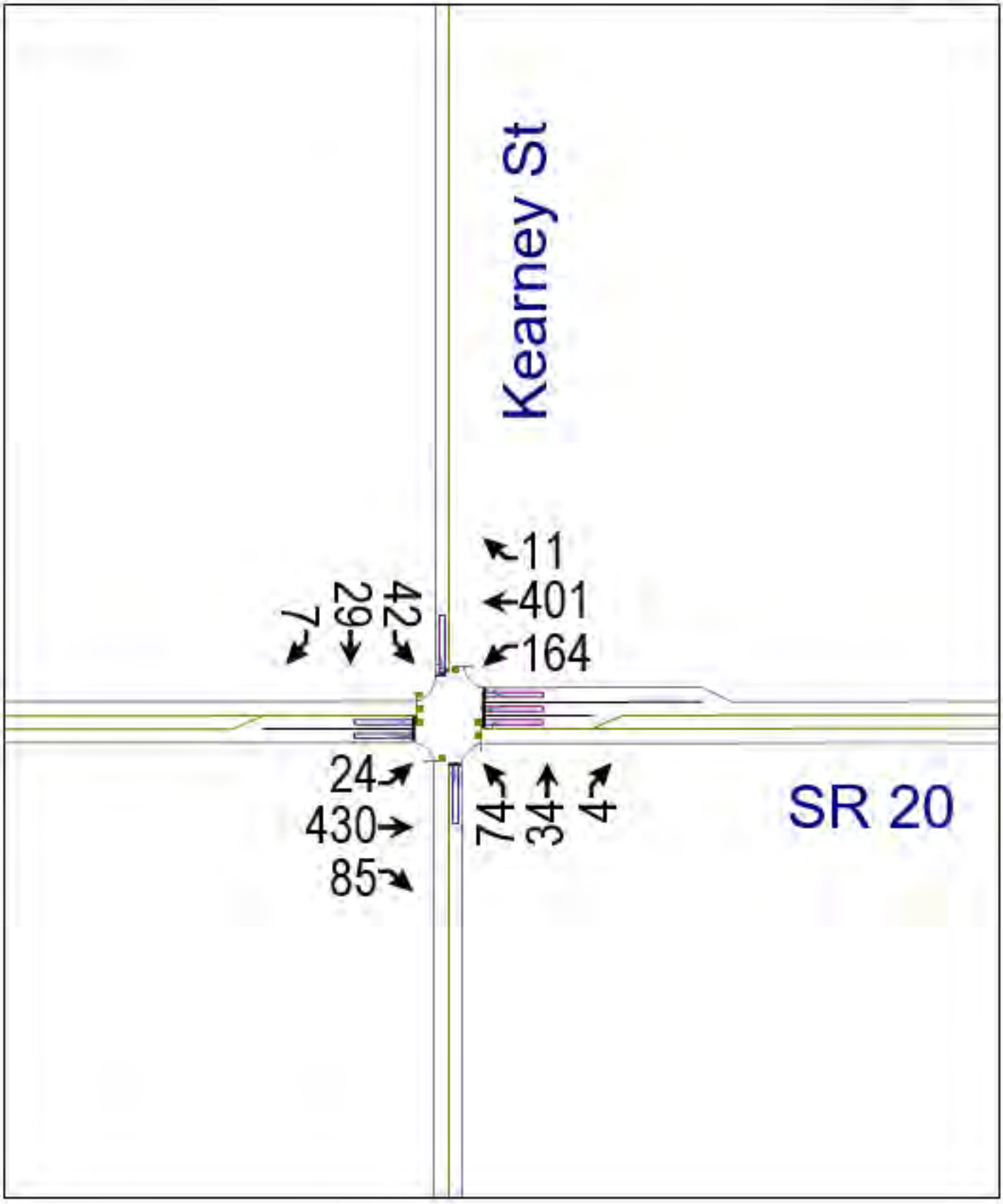
Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.


Kearney St
11
401
164
42
29
7
24
430
85
74
34
4
SR 20

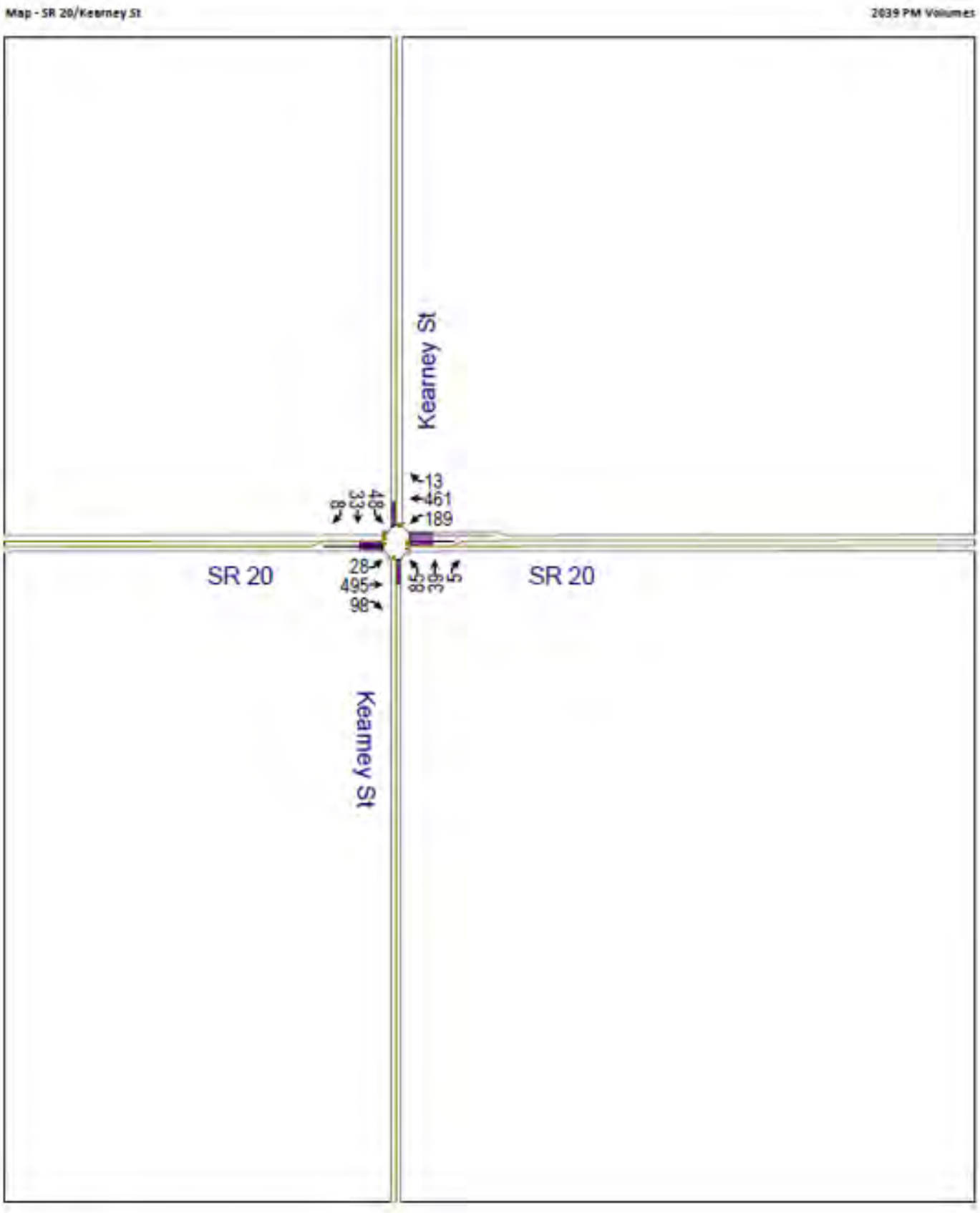
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	430	85	164	401	11	74	34	4	42	29	7
Future Volume (veh/h)	24	430	85	164	401	11	74	34	4	42	29	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1772	1701	1800	1772	1772	1758	1758	1758	1758	1758	1688
Adj Flow Rate, veh/h	24	430	85	164	401	11	74	34	4	42	29	7
Peak Hour 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
Percent Heavy Veh, %	0	2	2	0	2	2	3	3	3	3	3	3
Cap, veh/h	87	560	111	262	872	698	298	63	7	255	90	19
Arrive On Green	0.05	0.39	0.39	0.15	0.49	0.47	0.13	0.13	0.11	0.13	0.13	0.11
Sat Flow, veh/h	1714	1437	284	1714	1772	1502	1017	467	55	787	671	144
Grp Volume(v), veh/h	24	0	515	164	401	11	112	0	0	78	0	0
Grp Sat Flow(s),veh/h/ln	1714	0	1721	1714	1772	1502	1538	0	0	1601	0	0
Q Serve(g_s), s	0.5	0.0	9.7	3.3	5.5	0.1	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	9.7	3.3	5.5	0.1	2.4	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.17	1.00		1.00	0.66		0.04	0.54		0.09
Lane Grp Cap(c), veh/h	87	0	671	262	872	698	368	0	0	364	0	0
V/C Ratio(X)	0.28	0.00	0.77	0.63	0.46	0.02	0.30	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	784	0	1111	784	1144	929	841	0	0	848	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.0	0.0	9.9	14.7	6.2	5.4	14.9	0.0	0.0	14.6	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	1.9	2.5	0.4	0.0	0.5	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.9	1.2	1.3	0.0	0.8	0.0	0.0	0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	0.0	11.8	17.2	6.6	5.4	15.4	0.0	0.0	14.9	0.0	0.0
LnGrp LOS	B	A	B	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h		539			576			112			78	
Approach Delay, s/veh		12.1			9.6			15.4			14.9	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	22.3		9.0	9.7	18.5		9.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	23.0		16.0	16.0	23.0		16.0				
Max Q Clear Time (g_c+I1), s	2.5	7.5		4.4	5.3	11.7		3.5				
Green Ext Time (p_c), s	0.0	1.5		0.3	0.4	1.8		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		11.4	
HCM 6th LOS		B	

Intersection: 3: SR 20 & Kearney St

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	TR	L	T	R	LTR	LTR
Maximum Queue (ft)	100	289	114	226	24	106	70
Average Queue (ft)	33	179	76	111	5	53	33
95th Queue (ft)	102	318	124	223	24	98	70
Link Distance (ft)		5524		8228		4036	4220
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	125		90		180		
Storage Blk Time (%)	0	17	6	7			
Queuing Penalty (veh)	0	4	25	12			


Map - SR 20/Kearney St
2039 PM Volumes
Kearney St
SR 20
SR 20
Kearney St
13
461
189
48
33
8
28
495
98
85
39
5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	430	85	164	401	11	74	34	4	42	29	7
Future Volume (veh/h)	24	430	85	164	401	11	74	34	4	42	29	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1772	1701	1800	1772	1701	1688	1758	1758	1758	1758	1688
Adj Flow Rate, veh/h	28	494	98	189	461	13	85	39	5	48	33	8
Peak Hour 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
Percent Heavy Veh, %	0	2	2	0	2	2	3	3	3	3	3	3
Cap, veh/h	84	604	120	284	952	741	275	69	8	231	101	20
Arrive On Green	0.05	0.42	0.42	0.17	0.54	0.51	0.14	0.14	0.12	0.14	0.14	0.12
Sat Flow, veh/h	1714	1436	285	1714	1772	1442	989	494	60	748	718	145
Grp Volume(v), veh/h	28	0	592	189	461	13	129	0	0	89	0	0
Grp Sat Flow(s),veh/h/ln	1714	0	1721	1714	1772	1442	1543	0	0	1611	0	0
Q Serve(g_s), s	0.7	0.0	13.3	4.5	7.2	0.2	1.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	13.3	4.5	7.2	0.2	3.3	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		0.17	1.00		1.00	0.66		0.04	0.54		0.09
Lane Grp Cap(c), veh/h	84	0	724	284	952	741	353	0	0	353	0	0
V/C Ratio(X)	0.33	0.00	0.82	0.67	0.48	0.02	0.37	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	663	0	1136	663	1170	919	713	0	0	720	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.2	0.0	11.2	17.2	6.4	5.2	17.6	0.0	0.0	17.1	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	2.7	2.7	0.4	0.0	0.6	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.9	1.7	1.5	0.0	1.1	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	0.0	13.9	19.9	6.7	5.2	18.2	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	C	A	B	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h		620			663			129			89	
Approach Delay, s/veh		14.3			10.5			18.2			17.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	27.6		10.2	11.3	22.5		10.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	28.0		16.0	16.0	28.0		16.0				
Max Q Clear Time (g_c+I1), s	2.7	9.2		5.3	6.5	15.3		4.1				
Green Ext Time (p_c), s	0.0	1.8		0.3	0.4	2.1		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			13.1									
HCM 6th LOS			B									

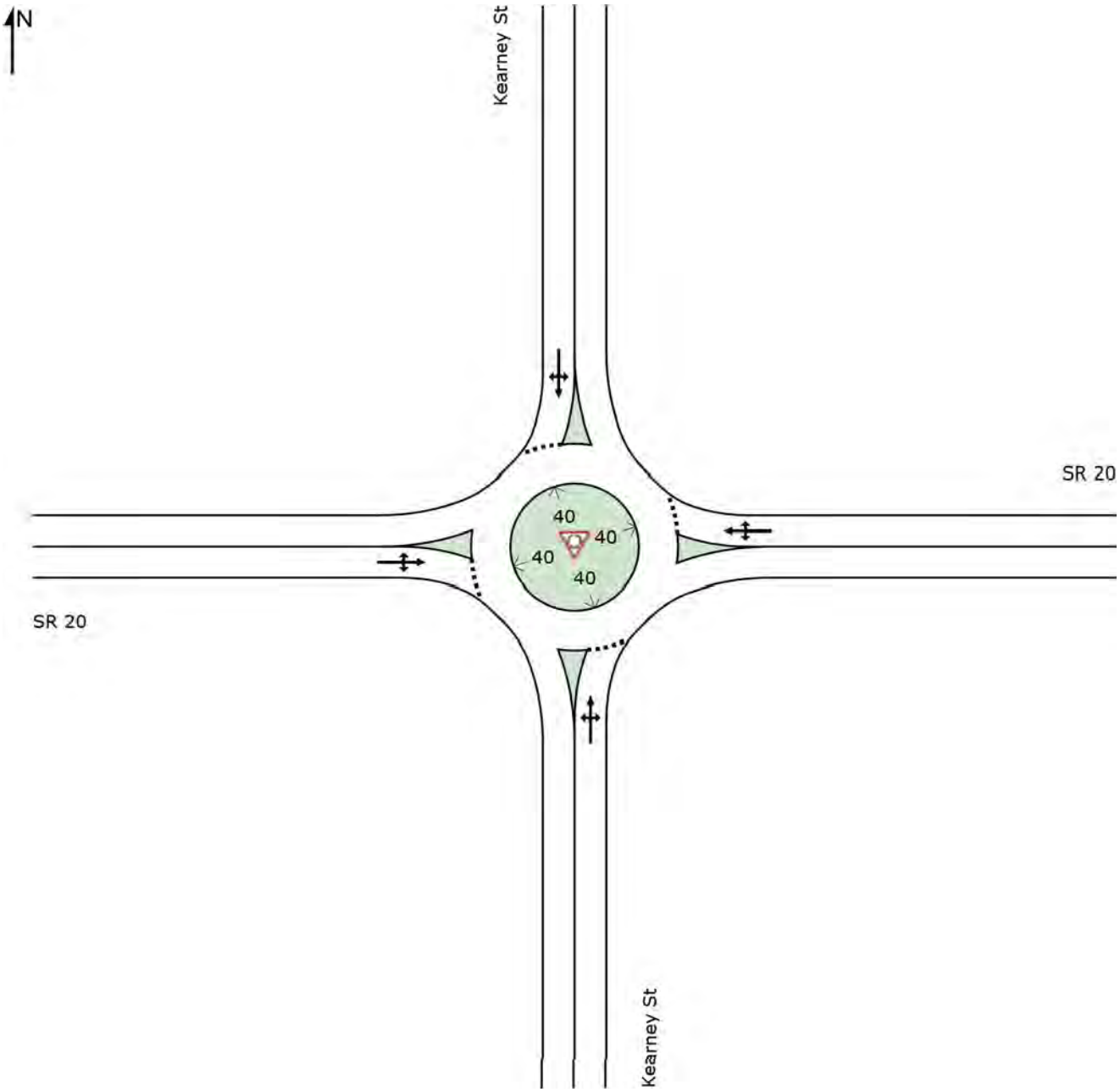
Intersection: 3: Kearney St & SR 20

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	TR	L	T	R	LTR	LTR
Maximum Queue (ft)	130	351	114	269	22	108	92
Average Queue (ft)	40	221	90	125	3	60	46
95th Queue (ft)	124	369	127	251	18	105	91
Link Distance (ft)		5524		8228		4036	4225
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	125		90		180		
Storage Blk Time (%)		24	10	6			
Queuing Penalty (veh)		7	49	12			

SITE LAYOUT

Site: SR 20/Kearney St

SR 20/Kearney St
Site Category: -
Roundabout



Organization: WASHINGTON STATE DEPARTMENT OF TRANSPORTATION | Created: Thursday, March 19, 2020 2:51:01 PM
Project: G:_Analysis_State\SR 020\MP 12.01 - Kearney St\Sidra\SR 20 & Kearney St ICE.sip8

MOVEMENT SUMMARY

Site: [SR 20/Kearney St Single Lane 2019 PM]

SR 20/Kearney St
Site Category: -
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed mph
South: Kearney St												
3	L2	74	0.0	0.153	9.7	LOS A	0.8	20.1	0.61	0.73	0.61	29.7
8	T1	34	3.0	0.153	6.3	LOS A	0.8	20.1	0.61	0.73	0.61	29.8
18	R2	4	1.0	0.153	6.4	LOS A	0.8	20.1	0.61	0.73	0.61	29.4
Approach		112	0.9	0.153	8.5	LOS A	0.8	20.1	0.61	0.73	0.61	29.7
East: SR 20												
1	L2	164	0.0	0.565	9.8	LOS A	4.5	113.8	0.51	0.61	0.51	30.8
6	T1	401	2.0	0.565	6.3	LOS A	4.5	113.8	0.51	0.61	0.51	34.3
16	R2	11	2.0	0.565	6.2	LOS A	4.5	113.8	0.51	0.61	0.51	27.8
Approach		576	1.4	0.565	7.3	LOS A	4.5	113.8	0.51	0.61	0.51	33.1
North: Kearney St												
7	L2	42	0.0	0.120	9.5	LOS A	0.6	15.7	0.66	0.73	0.66	27.1
4	T1	29	3.0	0.120	6.2	LOS A	0.6	15.7	0.66	0.73	0.66	25.0
14	R2	7	0.0	0.120	6.4	LOS A	0.6	15.7	0.66	0.73	0.66	26.9
Approach		78	1.1	0.120	8.0	LOS A	0.6	15.7	0.66	0.73	0.66	26.3
West: SR 20												
5	L2	24	0.0	0.577	10.9	LOS B	4.4	110.9	0.62	0.68	0.63	28.4
2	T1	430	2.0	0.577	7.4	LOS A	4.4	110.9	0.62	0.68	0.63	34.4
12	R2	85	0.0	0.577	7.2	LOS A	4.4	110.9	0.62	0.68	0.63	30.3
Approach		539	1.6	0.577	7.6	LOS A	4.4	110.9	0.62	0.68	0.63	33.4
All Vehicles		1305	1.4	0.577	7.6	LOS A	4.5	113.8	0.57	0.66	0.58	32.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [SR 20/Kearney St Single Lane 2039 PM]

SR 20/Kearney St
Site Category: -
Roundabout

Design Life Analysis (Final Year): Results for 20 years

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed mph
South: Kearney St												
3	L2	84	0.0	0.163	9.7	LOS A	0.9	23.2	0.65	0.74	0.65	29.7
8	T1	39	3.0	0.163	6.3	LOS A	0.9	23.2	0.65	0.74	0.65	29.8
18	R2	5	1.0	0.163	6.4	LOS A	0.9	23.2	0.65	0.74	0.65	29.3
Approach		128	0.9	0.163	8.6	LOS A	0.9	23.2	0.65	0.74	0.65	29.7
East: SR 20												
1	L2	187	0.0	0.588	9.8	LOS A	4.9	124.0	0.54	0.61	0.54	30.7
6	T1	457	2.0	0.588	6.3	LOS A	4.9	124.0	0.54	0.61	0.54	34.3
16	R2	13	2.0	0.588	6.2	LOS A	4.9	124.0	0.54	0.61	0.54	27.8
Approach		657	1.4	0.588	7.3	LOS A	4.9	124.0	0.54	0.61	0.54	33.0
North: Kearney St												
7	L2	48	0.0	0.130	9.7	LOS A	0.7	18.7	0.71	0.75	0.71	27.1
4	T1	33	3.0	0.130	6.4	LOS A	0.7	18.7	0.71	0.75	0.71	24.9
14	R2	8	0.0	0.130	6.6	LOS A	0.7	18.7	0.71	0.75	0.71	26.8
Approach		89	1.1	0.130	8.2	LOS A	0.7	18.7	0.71	0.75	0.71	26.2
West: SR 20												
5	L2	27	0.0	0.601	11.1	LOS B	4.9	124.7	0.65	0.70	0.68	28.3
2	T1	490	2.0	0.601	7.6	LOS A	4.9	124.7	0.65	0.70	0.68	34.3
12	R2	97	0.0	0.601	7.4	LOS A	4.9	124.7	0.65	0.70	0.68	30.2
Approach		614	1.6	0.601	7.7	LOS A	4.9	124.7	0.65	0.70	0.68	33.3
All Vehicles		1488	1.4	0.601	7.6	LOS A	4.9	124.7	0.60	0.67	0.61	32.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Signalized Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Last Upload Date: 01/25/2020

DATE: 01/31/20 TIME: 08:12

SR/SRID: 020 (Use only SR Number)

SRMP: 9.79A to 9.83A

Date Range: Jan 1, 2014 to Dec 31, 2018

Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway- highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

Years not showing represents no reported collisions that year.

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	SUSP MINOR INJ COLS	SUSP SER INJ COLS	TOTAL INJ COLS	FATAL COLS	# INJ	# FAT	# VEH	MV DRIVER ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTER AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2014	1	0	1	0	0	1	0	1	0	2	0	0	1	0	0	0	0	0
2015	4	2	1	1	0	2	0	2	0	7	0	0	3	0	0	0	1	0
2016	3	2	0	1	0	1	0	1	0	5	0	0	1	0	2	0	0	0
2017	3	1	1	1	0	2	0	2	0	5	0	0	2	0	0	0	1	0
2018	3	2	1	0	0	1	0	1	0	6	0	0	2	0	1	0	0	0
	14	**7**	**4**	**3**	**0**	**7**	**0**	**7**	**0**	**25**	**0**	**0**	**9**	**0**	**3**	**0**	**2**	**0**

Last Upload Date: 01/25/2020

DATE: 01/31/20 TIME: 08:14

SR/SRID: 020 (Use only SR Number)

SRMP: 11.99A to 12.03A

Date Range: Jan 1, 2014 to Dec 31, 2018

Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway- highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

Years not showing represents no reported collisions that year.

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	SUSP MINOR INJ COLS	SUSP SER INJ COLS	TOTAL INJ COLS	FATAL COLS	# INJ	# FAT	# VEH	MV DRIVER ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTER AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2015	5	1	2	1	1	4	0	5	0	10	0	0	3	0	0	0	0	1
2016	5	3	2	0	0	2	0	3	0	11	0	0	3	0	1	0	0	0
2017	3	3	0	0	0	0	0	0	0	6	1	0	2	0	1	0	0	0
2018	3	1	2	0	0	2	0	2	0	5	0	0	1	0	0	0	0	1
	16	**8**	**6**	**1**	**1**	**8**	**0**	**10**	**0**	**32**	**1**	**0**	**9**	**0**	**2**	**0**	**0**	**2**

Appendix G

Supplemental Traffic Evaluation

SR 20 Discovery Road & SR 20 Kearney Street

Supplemental Traffic Evaluation

December 2020

BACKGROUND

The intersection control evaluation (ICE) for SR20/Discovery Rd and SR20/Kearney St was completed in August 2020. The ICE used traffic counts obtained in November 2019 as a basis for the evaluation.

Community outreach began in October 2020 and included an on-line open house from October 19, 2020 to November 2, 2020. The open house included almost 200 responses. About 15% of the responses were concerned about vehicle delays and over 8% specified ferry traffic as a concern for roundabout operations. Some of the comments noted the data used in the study did not include peak tourist time periods when traffic is generally higher as is Ferry traffic.

This supplement evaluation is intended to look at a typical tourist period and illustrate the differences between data that was used in the project ICE.

TRAFFIC DATA

- August 2020 SR20/Discover Rd & SR20/Kearney St Intersection Control Evaluation
- SR 20/Discover Rd Traffic Signal Count, July 28, 2016 (Source: WSDOT)
- SR 20/Discover Rd Traffic Count, November 6, 2020 (Source: WSDOT)
- SR 20/Kearney St Traffic Signal Count, August 18, 2016 (Source: WSDOT)
- SR 20/Kearney St Traffic Count, November 6, 2020 (Source: WSDOT)

Note: Both traffic counts used in this evaluation included ferry traffic.

TRAFFIC GROWTH ESTIMATION

- 0.70 percent annual growth rate (Source: August 2020 SR20/Discovery Rd & SR20/Kearney St ICE)
- The annual growth rate was used to adjust the 2016 turning movement counts to the 2019 baseline.

TRAFFIC ANALYSIS

- Sidra 9.0 for roundabout analysis
- Synchro/Sim Traffic 10.1, build 2, revision 20 (10.1.2.20) for traffic signal analysis
- Assumed environmental factor of 1.0 for roundabout analysis due to the presence of two nearby roundabouts on SR20.

SR 20 AT KEARNEY ST

Based upon traffic counts available the summer traffic volumes are about 33% higher or 435 vehicles during the respective peak hours. The peak hour during the summer tourist season was from roughly 4 p.m. to 5 p.m. whereas during the fall it was earlier in mid-afternoon from about 2:45 p.m. to 3:45 p.m.

Traffic during the busier summer months does experience more delay at Kearney. For the planned roundabouts the calculated change in vehicle delay performance is calculated to be just over 1 second of additional overall intersection vehicle delay. This relates to about 8 seconds of overall intersection delay during the summer versus about 7 seconds during the fall. Notably but not unexpected the peak hour backups for all approaches increase during the summer. For example, westbound SR20 backups are calculated to reach over 150' while only reach about 100' during the fall. Backups in roundabouts are what is called rolling backups. This means vehicles are constantly moving forward but just more slowly. Summer side street delays are still expected to be relatively short with delays 10 seconds for Kearney on both sides of the intersection.

In contrast the traffic signal operates with more delay and backups during the fall and summer than the proposed roundabouts. For the existing traffic signal the calculated change in vehicle delay performance is calculated to be almost 10 seconds of additional overall intersection vehicle delay. This relates to about 21 seconds of overall intersection delay during the summer versus about 11 seconds during the fall. Notably but not unexpected the peak hour backups for all approaches increase during the summer. For example, westbound SR20 backups are calculated to reach over 400' while only reach about 200' during the fall.

Note: variations in vehicle delay and backups can be expected depending on the number of walkers and bikers crossing the intersection and where they are crossing.

SR 20 AT MILL RD/DISCOVERY RD

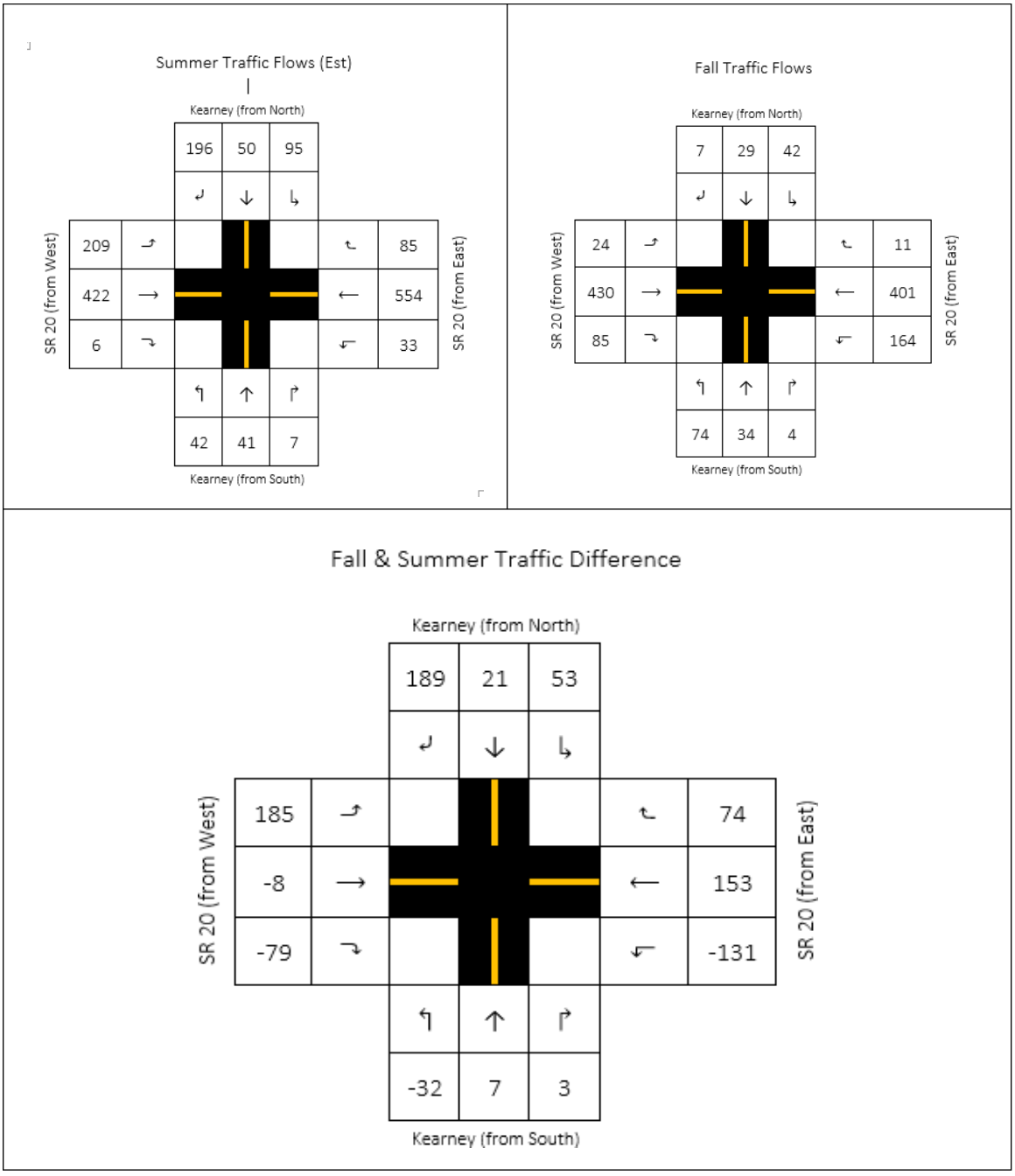
The SR 20/Discovery/Mill intersection carries more vehicle traffic than Kearney by almost 40% in the fall and near 20% during the summer. Based upon traffic counts available the summer traffic volumes are about 16% higher or 278 vehicles during the respective peak hours. The biggest change was on westbound SR 20 through movement that increased over 40% or over 300 vehicles. The peak hour during the summer tourist season was from roughly 4 p.m. to 5 p.m. whereas during the fall it was earlier in mid-afternoon from about 2:45 p.m. to 3:45 p.m.

Traffic during the busier summer months does experience more delay at Discovery/Mill Rd. For the planned roundabouts the calculated change in vehicle delay performance is calculated to be just over 9 second of additional overall intersection vehicle delay. This relates to about 15 seconds of overall intersection delay during the summer versus about 6 seconds during the fall. Notably but not unexpected the peak hour backups for all approaches increase during the summer. For example, westbound SR20 backups are calculated to reach over 900' while only reach about 200' during the fall. Backups in roundabouts are what is called rolling backups. This means vehicles are constantly moving forward but just more slowly. Summer side street delays are still expected to be relatively short with delays around 20 seconds for Discovery Rd and 10 seconds for Mill Rd.

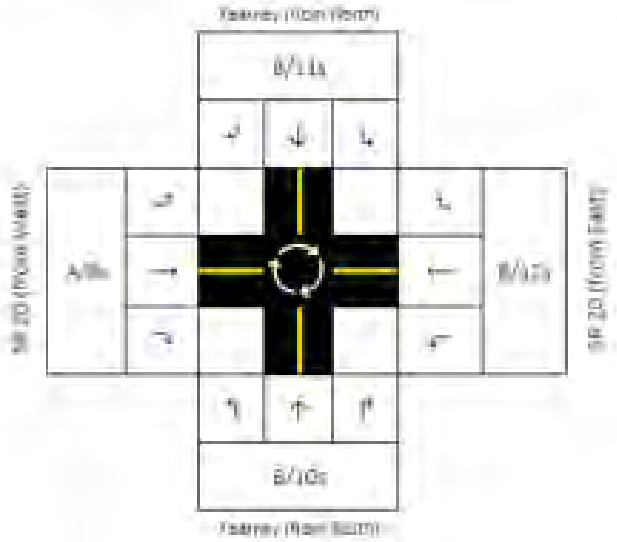
In contrast the traffic signal operates with more delay and backups during the fall and summer than the proposed roundabouts. For the existing traffic signal the calculated change in vehicle delay performance is calculated to be over 10 seconds of additional overall intersection vehicle delay. This relates to about 34 seconds of overall intersection delay during the summer versus about 23 seconds during the fall. Several vehicle movements are expected to experience delays over one minute (eastbound left, westbound left, and all southbound movements. Notably but not unexpected the peak hour backups for all approaches increase during the summer. For example, westbound SR20 backups are calculated to reach almost a ½ mile to Rainier St while only backing up about 800' during the fall.

CONCLUSION

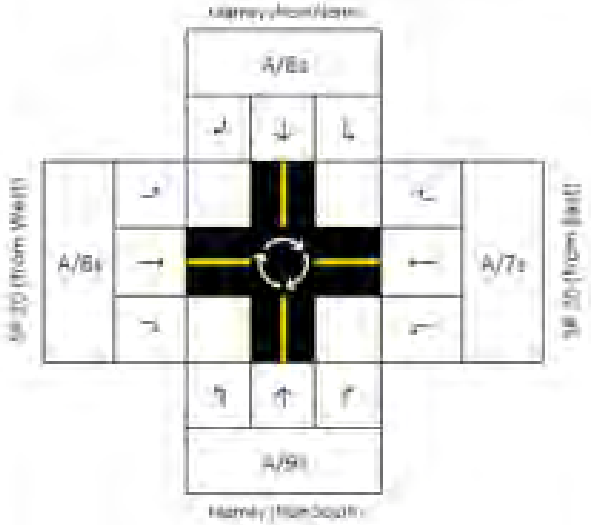
In summary there are seasonal operational differences as expected. The higher volume summer tourist season does induce longer delays and backups at the intersection. However, as the ICE concluded the roundabout is expected to operate better than a traffic signal during the peak and off-peak seasons in Port Townsend.


Summer Traffic Flows (Est)
Kearney (from North)
196
50
95
209
85
422
554
6
33
42
41
7
Kearney (from South)
SR 20 (from West)
SR 20 (from East)
Fall Traffic Flows
Kearney (from North)
7
29
42
24
11
430
401
85
164
74
34
4
Kearney (from South)
SR 20 (from West)
SR 20 (from East)
Fall & Summer Traffic Difference
Kearney (from North)
189
21
53
185
74
-8
153
-79
-131
-32
7
3
Kearney (from South)
SR 20 (from West)
SR 20 (from East)

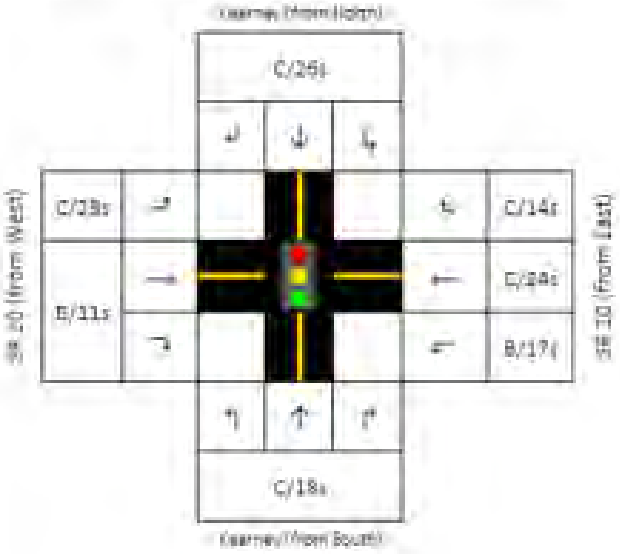
Summer Roundabout Operations (LOS/Delay)



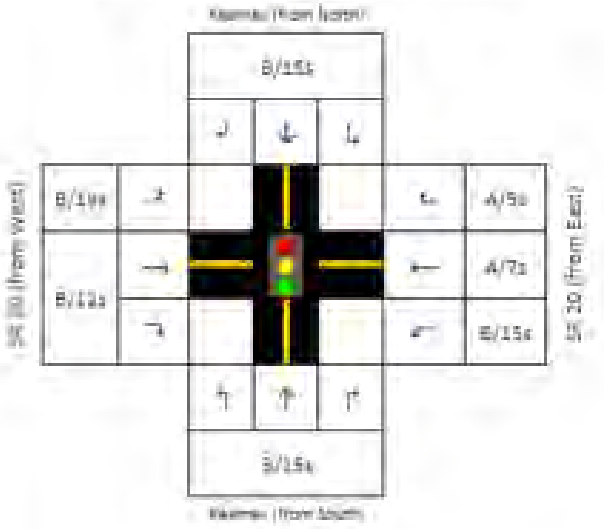
Fall Roundabout Operations (LOS/Delay)



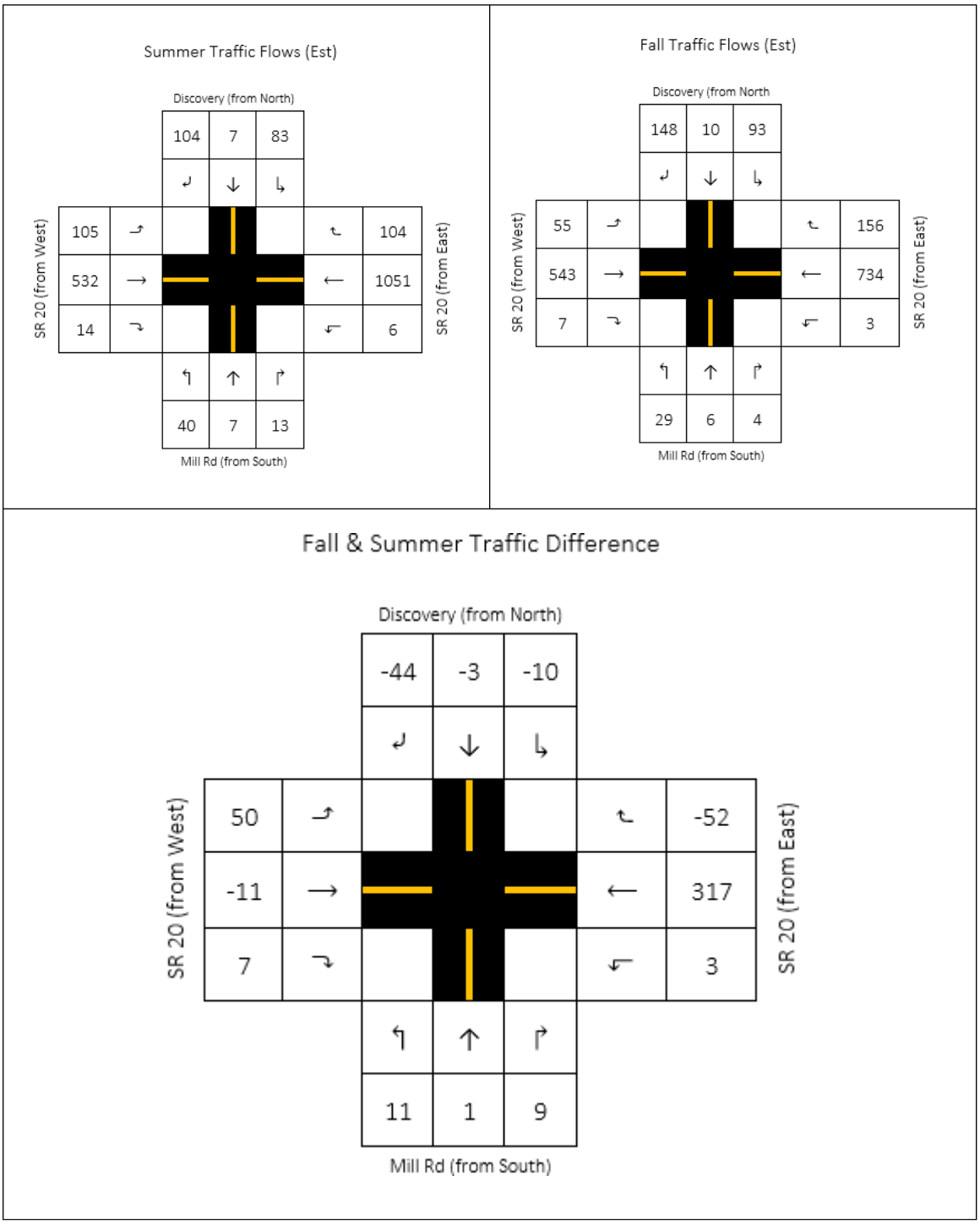
Summer Traffic Signal Operations (LOS/Delay)

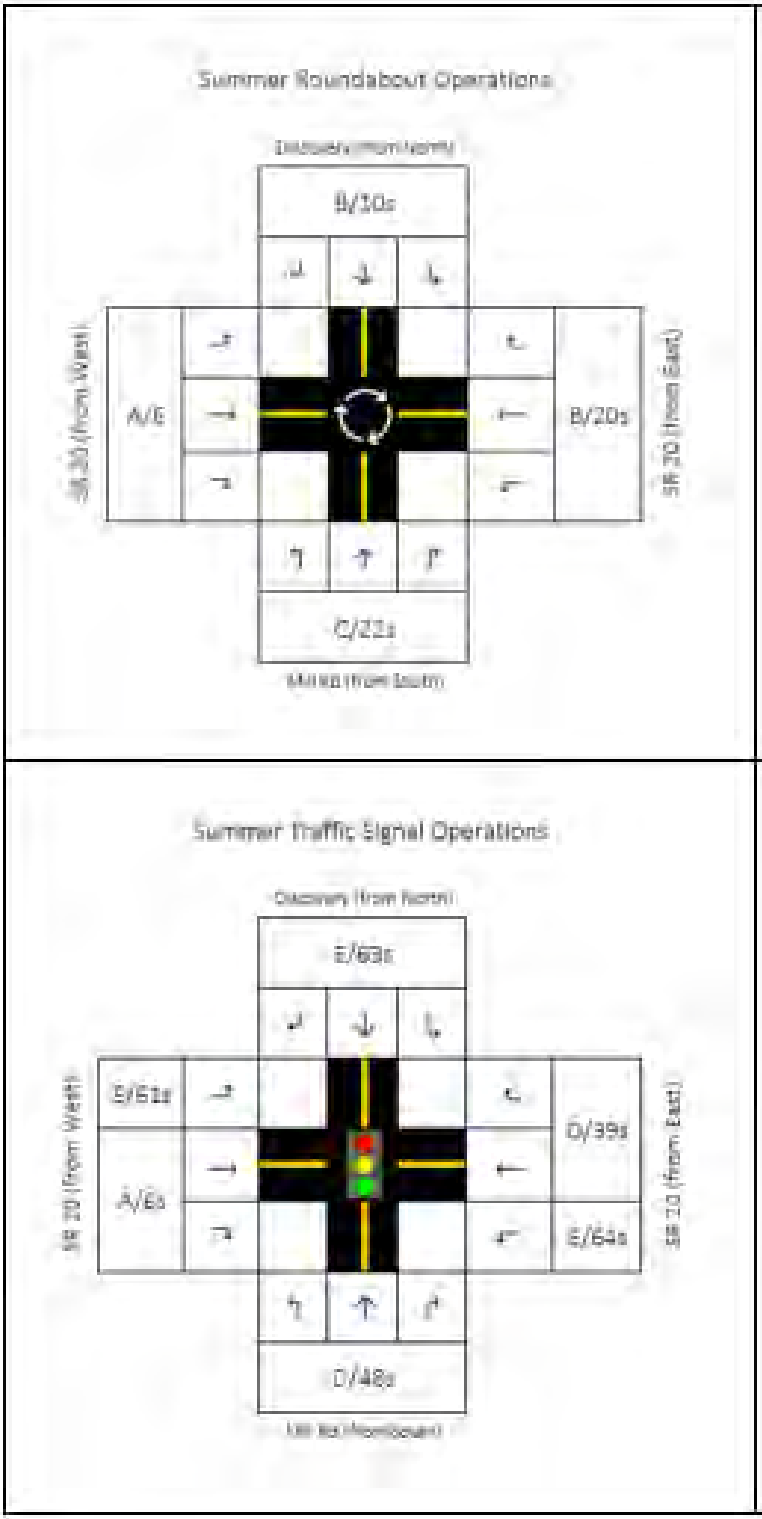


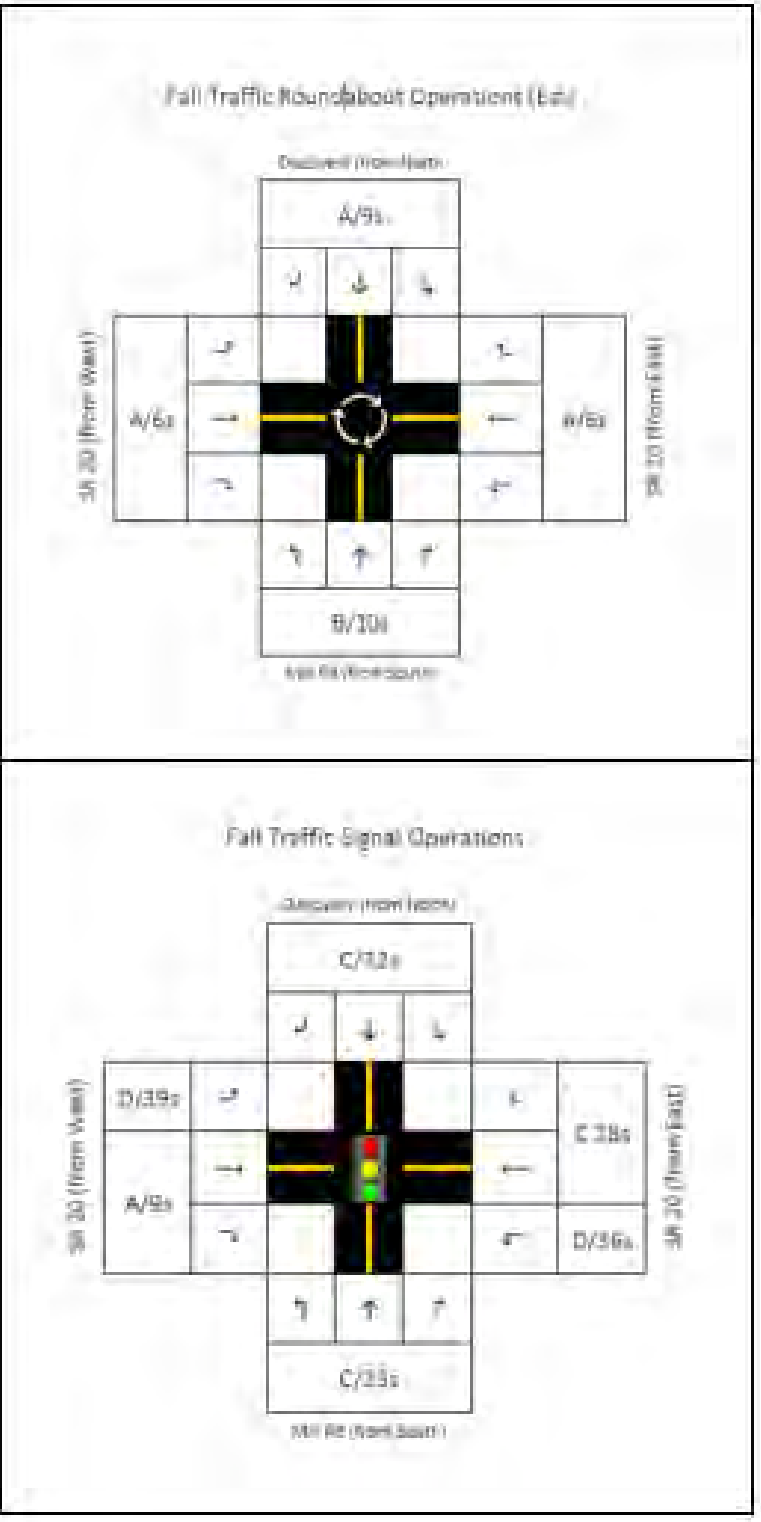
Fall Traffic Signal Operations (LOS/Delay)



APPENDIX B – SR20 AT MILLS/DISCOVERY




Summer Roundabout Operations
B/10s
A/E
B/20s
C/22s


Fall Traffic Roundabout Operations (Est.)
A/9s
A/6s
B/10s

Summer Traffic Signal Operations
E/63s
E/61s
A/Es
D/39s
E/64s
D/48s

Fall Traffic Signal Operations
C/12s
D/39s
A/9s
C 38s
D/36s
C/33s

HCM 6th Signalized Intersection Summary
3: SR 20 & Kearney St

2019 PM Existing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	430	85	164	401	11	74	34	4	42	29	7
Future Volume (veh/h)	24	430	85	164	401	11	74	34	4	42	29	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1772	1701	1800	1772	1772	1758	1758	1758	1758	1758	1688
Adj Flow Rate, veh/h	24	430	85	164	401	11	74	34	4	42	29	7
Peak Hour 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
Percent Heavy Veh, %	0	2	2	0	2	2	3	3	3	3	3	3
Cap, veh/h	87	560	111	262	872	698	298	63	7	255	90	19
Arrive On Green	0.05	0.39	0.39	0.15	0.49	0.47	0.13	0.13	0.11	0.13	0.13	0.11
Sat Flow, veh/h	1714	1437	284	1714	1772	1502	1017	467	55	787	671	144
Grp Volume(v), veh/h	24	0	515	164	401	11	112	0	0	78	0	0
Grp Sat Flow(s),veh/h/ln	1714	0	1721	1714	1772	1502	1538	0	0	1601	0	0
Q Serve(g_s), s	0.5	0.0	9.7	3.3	5.5	0.1	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	9.7	3.3	5.5	0.1	2.4	0.0	0.0	1.5	0.0	0.0
Prop In Lane	1.00		0.17	1.00		1.00	0.66		0.04	0.54		0.09
Lane Grp Cap(c), veh/h	87	0	671	262	872	698	368	0	0	364	0	0
V/C Ratio(X)	0.28	0.00	0.77	0.63	0.46	0.02	0.30	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	784	0	1111	784	1144	929	841	0	0	848	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.0	0.0	9.9	14.7	6.2	5.4	14.9	0.0	0.0	14.6	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	1.9	2.5	0.4	0.0	0.5	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.9	1.2	1.3	0.0	0.8	0.0	0.0	0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	0.0	11.8	17.2	6.6	5.4	15.4	0.0	0.0	14.9	0.0	0.0
LnGrp LOS	B	A	B	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h		539			576			112			78	
Approach Delay, s/veh		12.1			9.6			15.4			14.9	
Approach LOS		B			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	22.3		9.0	9.7	18.5		9.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	23.0		16.0	16.0	23.0		16.0				
Max Q Clear Time (g_c+I1), s	2.5	7.5		4.4	5.3	11.7		3.5				
Green Ext Time (p_c), s	0.0	1.5		0.3	0.4	1.8		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Intersection: 3: SR 20 & Kearney St

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	TR	L	T	R	LTR	LTR
Maximum Queue (ft)	100	289	114	226	24	106	70
Average Queue (ft)	33	179	76	111	5	53	33
95th Queue (ft)	102	318	124	223	24	98	70
Link Distance (ft)		5524		8228		4036	4220
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	125		90		180		
Storage Blk Time (%)	0	17	6	7			
Queuing Penalty (veh)	0	4	25	12			

HCM 6th Signalized Intersection Summary
3: SR 20 & Kearney St

2019 PM Summer

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	209	422	6	33	554	85	42	41	7	95	50	196
Future Volume (veh/h)	209	422	6	33	554	85	42	41	7	95	50	196
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1772	1701	1800	1772	1772	1758	1758	1758	1758	1758	1688
Adj Flow Rate, veh/h	209	422	6	33	554	85	42	41	7	95	50	196
Peak Hour 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
Percent Heavy Veh, %	0	2	2	0	2	2	3	3	3	3	3	3
Cap, veh/h	287	856	12	76	653	529	212	182	26	167	79	230
Arrive On Green	0.17	0.49	0.49	0.04	0.37	0.35	0.27	0.27	0.25	0.27	0.27	0.25
Sat Flow, veh/h	1714	1743	25	1714	1772	1502	470	682	97	341	296	861
Grp Volume(v), veh/h	209	0	428	33	554	85	90	0	0	341	0	0
Grp Sat Flow(s),veh/h/ln	1714	0	1767	1714	1772	1502	1249	0	0	1499	0	0
Q Serve(g_s), s	7.0	0.0	9.9	1.1	17.5	2.4	0.0	0.0	0.0	10.3	0.0	0.0
Cycle Q Clear(g_c), s	7.0	0.0	9.9	1.1	17.5	2.4	2.6	0.0	0.0	13.1	0.0	0.0
Prop In Lane	1.00		0.01	1.00		1.00	0.47		0.08	0.28		0.57
Lane Grp Cap(c), veh/h	287	0	868	76	653	529	421	0	0	476	0	0
V/C Ratio(X)	0.73	0.00	0.49	0.43	0.85	0.16	0.21	0.00	0.00	0.72	0.00	0.00
Avail Cap(c_a), veh/h	479	0	868	479	844	691	437	0	0	494	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.0	0.0	10.4	28.3	17.7	13.5	17.3	0.0	0.0	21.3	0.0	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.4	3.8	6.5	0.1	0.3	0.0	0.0	4.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	3.3	0.5	7.5	0.7	1.0	0.0	0.0	5.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	10.8	32.2	24.2	13.7	17.5	0.0	0.0	26.1	0.0	0.0
LnGrp LOS	C	A	B	C	C	B	B	A	A	C	A	A
Approach Vol, veh/h		637			672			90			341	
Approach Delay, s/veh		16.3			23.2			17.5			26.1	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.2	26.4		20.3	6.7	33.9		20.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	28.0		16.0	16.0	28.0		16.0				
Max Q Clear Time (g_c+I1), s	9.0	19.5		4.6	3.1	11.9		15.1				
Green Ext Time (p_c), s	0.4	1.9		0.2	0.0	1.6		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		21.0
HCM 6th LOS		C

Intersection: 3: SR 20 & Kearney St

Movement	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	TR	L	T	R	LTR	LTR
Maximum Queue (ft)	147	229	97	413	175	87	250
Average Queue (ft)	111	118	34	240	71	45	148
95th Queue (ft)	168	224	91	397	190	89	260
Link Distance (ft)		5524		8228		4036	4220
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	125		90		180		
Storage Blk Time (%)	6	3	0	33	0		
Queuing Penalty (veh)	27	7	0	39	0		

MOVEMENT SUMMARY

Site: [SR 20/Kearney St Single Lane 2019 Summer Afternoon Peak (3:45 to 3:45pm) - from 2016 (Site Folder: General)]

SR 20/Kearney St
Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Kearney St														
3	L2	42	0.0	42	0.0	0.131	10.8	LOS B	0.7	19.0	0.71	0.76	0.71	29.5
8	T1	41	3.0	41	3.0	0.131	7.4	LOS A	0.7	19.0	0.71	0.76	0.71	29.6
18	R2	7	1.0	7	1.0	0.131	7.5	LOS A	0.7	19.0	0.71	0.76	0.71	29.2
Approach		90	1.4	90	1.4	0.131	9.0	LOS A	0.7	19.0	0.71	0.76	0.71	29.5
East: SR 20														
1	L2	33	0.0	33	0.0	0.662	12.0	LOS B	6.4	162.9	0.72	0.76	0.80	30.5
6	T1	554	2.0	554	2.0	0.662	8.6	LOS A	6.4	162.9	0.72	0.76	0.80	34.0
16	R2	85	2.0	85	2.0	0.662	8.4	LOS A	6.4	162.9	0.72	0.76	0.80	27.6
Approach		672	1.9	672	1.9	0.662	8.7	LOS A	6.4	162.9	0.72	0.76	0.80	32.9
North: Kearney St														
7	L2	95	0.0	95	0.0	0.461	10.3	LOS B	3.4	85.7	0.81	0.89	0.88	27.1
4	T1	50	3.0	50	3.0	0.461	7.1	LOS A	3.4	85.7	0.81	0.89	0.88	24.9
14	R2	196	0.0	196	0.0	0.461	7.3	LOS A	3.4	85.7	0.81	0.89	0.88	26.9
Approach		341	0.4	341	0.4	0.461	8.1	LOS A	3.4	85.7	0.81	0.89	0.88	26.6
West: SR 20														
5	L2	209	0.0	209	0.0	0.578	9.9	LOS A	4.8	120.8	0.57	0.64	0.57	28.2
2	T1	422	2.0	422	2.0	0.578	6.4	LOS A	4.8	120.8	0.57	0.64	0.57	34.1
12	R2	6	0.0	6	0.0	0.578	6.2	LOS A	4.8	120.8	0.57	0.64	0.57	30.1
Approach		637	1.3	637	1.3	0.578	7.6	LOS A	4.8	120.8	0.57	0.64	0.57	31.9
All Vehicles		1740	1.4	1740	1.4	0.662	8.2	LOS A	6.4	162.9	0.68	0.74	0.73	30.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: G:\Davis\ICE_Studies\OlympicRegion\SR020_DiscoveryBay_KeraneySt\analysisfiles\SR 20 & Kearney St ICE.sip9

MOVEMENT SUMMARY

Site: [SR 20/Kearney St Single Lane 2019 Fall Afternoon Peak (2:45 to 3:30 pm) (Site Folder: General)]

SR 20/Kearney St
Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Kearney St														
3	L2	74	0.0	74	0.0	0.130	9.1	LOS A	0.7	17.4	0.58	0.70	0.58	29.9
8	T1	34	3.0	34	3.0	0.130	5.7	LOS A	0.7	17.4	0.58	0.70	0.58	30.0
18	R2	4	1.0	4	1.0	0.130	5.8	LOS A	0.7	17.4	0.58	0.70	0.58	29.5
Approach		112	0.9	112	0.9	0.130	8.0	LOS A	0.7	17.4	0.58	0.70	0.58	29.9
East: SR 20														
1	L2	164	0.0	164	0.0	0.499	9.5	LOS A	3.7	92.8	0.44	0.59	0.44	30.9
6	T1	401	2.0	401	2.0	0.499	6.0	LOS A	3.7	92.8	0.44	0.59	0.44	34.5
16	R2	11	2.0	11	2.0	0.499	5.8	LOS A	3.7	92.8	0.44	0.59	0.44	27.9
Approach		576	1.4	576	1.4	0.499	7.0	LOS A	3.7	92.8	0.44	0.59	0.44	33.3
North: Kearney St														
7	L2	42	0.0	42	0.0	0.101	8.8	LOS A	0.5	13.6	0.64	0.69	0.64	27.4
4	T1	29	3.0	29	3.0	0.101	5.5	LOS A	0.5	13.6	0.64	0.69	0.64	25.2
14	R2	7	0.0	7	0.0	0.101	5.8	LOS A	0.5	13.6	0.64	0.69	0.64	27.1
Approach		78	1.1	78	1.1	0.101	7.3	LOS A	0.5	13.6	0.64	0.69	0.64	26.5
West: SR 20														
5	L2	24	0.0	24	0.0	0.503	10.2	LOS B	3.4	86.7	0.54	0.63	0.54	28.5
2	T1	430	2.0	430	2.0	0.503	6.7	LOS A	3.4	86.7	0.54	0.63	0.54	34.6
12	R2	85	0.0	85	0.0	0.503	6.5	LOS A	3.4	86.7	0.54	0.63	0.54	30.5
Approach		539	1.6	539	1.6	0.503	6.8	LOS A	3.4	86.7	0.54	0.63	0.54	33.6
All Vehicles		1305	1.4	1305	1.4	0.503	7.0	LOS A	3.7	92.8	0.51	0.62	0.51	32.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: G:\Davis\ICE_Studies\OlympicRegion\SR020_DiscoveryBay_KeraneySt\analysisfiles\SR 20 & Kearney St ICE.sip9

APPENDIX D – MILLS OPERATIONAL WORKSHEETS

HCM 6th Signalized Intersection Summary
3: Mill Road/Discovery Road & SR 20 2019 PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	543	7	3	734	156	29	6	4	93	10	180
Future Volume (veh/h)	55	543	7	3	734	156	29	6	4	93	10	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1786	1715	1800	1772	1701	1715	1786	1786	1786	1786	1715
Adj Flow Rate, veh/h	55	543	7	3	734	156	29	6	4	93	10	180
Peak Hour 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
Percent Heavy Veh, %	0	1	1	0	2	2	1	1	1	1	1	1
Cap, veh/h	93	1042	13	29	787	167	246	48	24	161	28	214
Arrive On Green	0.05	0.59	0.59	0.02	0.56	0.54	0.22	0.22	0.21	0.22	0.22	0.21
Sat Flow, veh/h	1714	1759	23	1714	1417	301	711	215	106	421	126	956
Grp Volume(v), veh/h	55	0	550	3	0	890	39	0	0	283	0	0
Grp Sat Flow(s),veh/h/ln	1714	0	1782	1714	0	1718	1031	0	0	1504	0	0
Q Serve(g_s), s	2.3	0.0	13.1	0.1	0.0	34.4	0.0	0.0	0.0	10.7	0.0	0.0
Cycle Q Clear(g_c), s	2.3	0.0	13.1	0.1	0.0	34.4	1.8	0.0	0.0	12.9	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.18	0.74		0.10	0.33		0.64
Lane Grp Cap(c), veh/h	93	0	1056	29	0	954	318	0	0	402	0	0
V/C Ratio(X)	0.59	0.00	0.52	0.10	0.00	0.93	0.12	0.00	0.00	0.70	0.00	0.00
Avail Cap(c_a), veh/h	406	0	1091	406	0	1052	335	0	0	422	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.2	0.0	8.6	34.8	0.0	14.8	22.3	0.0	0.0	26.9	0.0	0.0
Incr Delay (d2), s/veh	5.9	0.0	0.4	1.5	0.0	13.7	0.2	0.0	0.0	4.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	3.9	0.1	0.0	13.9	0.5	0.0	0.0	5.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.1	0.0	9.0	36.3	0.0	28.5	22.5	0.0	0.0	31.9	0.0	0.0
LnGrp LOS	D	A	A	D	A	C	C	A	A	C	A	A
Approach Vol, veh/h		605			893			39			283	
Approach Delay, s/veh		11.8			28.5			22.5			31.9	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	43.9		20.0	5.2	46.6		20.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	43.0		16.0	16.0	43.0		16.0				
Max Q Clear Time (g_c+I1), s	4.3	36.4		3.8	2.1	15.1		14.9				
Green Ext Time (p_c), s	0.1	2.6		0.1	0.0	2.3		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		23.3	
HCM 6th LOS		C	

Intersection: 3: Mill Road/Discovery Road & SR 20

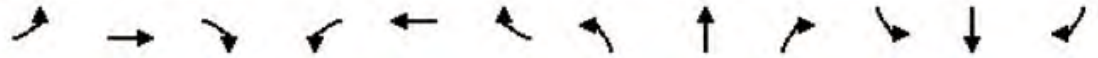
Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	93	202	18	802	62	224
Average Queue (ft)	40	101	3	529	29	135
95th Queue (ft)	86	200	15	869	64	238
Link Distance (ft)		5524		8228	4036	4232
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100		100			
Storage Blk Time (%)	1	5		40		
Queuing Penalty (veh)	7	3		1		

Network Summary

Network wide Queuing Penalty: 11

HCM 6th Signalized Intersection Summary
3: Mill Road/Discovery Road & SR 20

Summer 2019 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	532	14	6	1051	104	40	7	13	83	7	104
Future Volume (veh/h)	105	532	14	6	1051	104	40	7	13	83	7	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1800	1786	1715	1800	1772	1701	1715	1786	1786	1786	1786	1715
Adj Flow Rate, veh/h	105	532	14	6	1051	104	40	7	13	83	7	104
Peak Hour 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
Percent Heavy Veh, %	0	1	1	0	2	2	1	1	1	1	1	1
Cap, veh/h	143	1294	34	24	1075	106	145	28	34	128	14	116
Arrive On Green	0.08	0.75	0.75	0.01	0.68	0.67	0.14	0.14	0.13	0.14	0.14	0.13
Sat Flow, veh/h	1714	1732	46	1714	1587	157	682	199	243	615	100	826
Grp Volume(v), veh/h	105	0	546	6	0	1155	60	0	0	194	0	0
Grp Sat Flow(s),veh/h/ln	1714	0	1778	1714	0	1744	1124	0	0	1541	0	0
Q Serve(g_s), s	7.3	0.0	13.6	0.4	0.0	76.8	0.0	0.0	0.0	9.2	0.0	0.0
Cycle Q Clear(g_c), s	7.3	0.0	13.6	0.4	0.0	76.8	5.7	0.0	0.0	14.9	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.09	0.67		0.22	0.43		0.54
Lane Grp Cap(c), veh/h	143	0	1328	24	0	1182	207	0	0	258	0	0
V/C Ratio(X)	0.73	0.00	0.41	0.25	0.00	0.98	0.29	0.00	0.00	0.75	0.00	0.00
Avail Cap(c_a), veh/h	240	0	1328	240	0	1206	207	0	0	258	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	54.3	0.0	5.6	59.2	0.0	18.7	47.2	0.0	0.0	51.4	0.0	0.0
Incr Delay (d2), s/veh	7.1	0.0	0.2	5.1	0.0	20.4	0.8	0.0	0.0	11.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	4.2	0.2	0.0	32.6	1.7	0.0	0.0	6.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.4	0.0	5.8	64.3	0.0	39.2	48.0	0.0	0.0	63.0	0.0	0.0
LnGrp LOS	E	A	A	E	A	D	D	A	A	E	A	A
Approach Vol, veh/h		651			1161			60			194	
Approach Delay, s/veh		14.8			39.3			48.0			63.0	
Approach LOS		B			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.1	86.3		21.0	5.7	94.7		21.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	83.0		16.0	16.0	83.0		16.0				
Max Q Clear Time (g_c+I1), s	9.3	78.8		7.7	2.4	15.6		16.9				
Green Ext Time (p_c), s	0.1	2.5		0.1	0.0	2.4		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	34.1	
HCM 6th LOS	C	

Intersection: 3: Mill Road/Discovery Road & SR 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	120	199	43	1960	105	261
Average Queue (ft)	76	97	8	1236	52	157
95th Queue (ft)	131	184	42	2256	105	262
Link Distance (ft)		5524		8228	4036	4232
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100		100			
Storage Blk Time (%)	12	3		33		
Queuing Penalty (veh)	67	4		2		

Network Summary

Network wide Queuing Penalty: 73

MOVEMENT SUMMARY

Site: [SR 20/Discovery Rd Single Lane Fall 2019 PM (Site Folder: General)]

SR 20/Discovery Rd/Mill Rd
Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Mill Rd														
3	L2	29	10.0	29	10.0	0.054	10.8	LOS B	0.3	7.6	0.65	0.71	0.65	29.4
8	T1	6	1.0	6	1.0	0.054	6.0	LOS A	0.3	7.6	0.65	0.71	0.65	29.8
18	R2	4	1.0	4	1.0	0.054	6.2	LOS A	0.3	7.6	0.65	0.71	0.65	29.2
Approach		39	7.7	39	7.7	0.054	9.6	LOS A	0.3	7.6	0.65	0.71	0.65	29.5
East: SR 20														
1	L2	3	0.0	3	0.0	0.720	10.1	LOS B	7.8	197.9	0.52	0.51	0.52	31.7
6	T1	734	2.0	734	2.0	0.720	5.7	LOS A	7.8	197.9	0.52	0.51	0.52	35.3
16	R2	156	2.0	156	2.0	0.720	5.5	LOS A	7.8	197.9	0.52	0.51	0.52	28.3
Approach		893	2.0	893	2.0	0.720	5.6	LOS A	7.8	197.9	0.52	0.51	0.52	33.8
North: Discovery Rd														
7	L2	93	2.0	93	2.0	0.412	11.3	LOS B	2.9	73.6	0.83	0.90	0.88	27.2
4	T1	10	1.0	10	1.0	0.412	7.0	LOS A	2.9	73.6	0.83	0.90	0.88	25.0
14	R2	180	2.0	180	2.0	0.412	7.6	LOS A	2.9	73.6	0.83	0.90	0.88	26.8
Approach		283	2.0	283	2.0	0.412	8.8	LOS A	2.9	73.6	0.83	0.90	0.88	26.8
West: SR 20														
5	L2	55	0.0	55	0.0	0.498	9.8	LOS A	4.1	102.4	0.43	0.51	0.43	29.3
2	T1	543	1.0	543	1.0	0.498	5.3	LOS A	4.1	102.4	0.43	0.51	0.43	35.4
12	R2	7	29.0	7	29.0	0.498	5.9	LOS A	4.1	102.4	0.43	0.51	0.43	30.8
Approach		605	1.2	605	1.2	0.498	5.7	LOS A	4.1	102.4	0.43	0.51	0.43	34.7
All Vehicles		1820	1.9	1820	1.9	0.720	6.2	LOS A	7.8	197.9	0.54	0.58	0.55	32.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [SR 20/Discovery Rd Single Lane Summer 2019 PM - from 2016 (Site Folder: General)]

SR 20/Discovery Rd/Mill Rd
Site Category: -
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Mill Rd														
3	L2	41	10.0	41	10.0	0.087	11.2	LOS B	0.5	12.5	0.68	0.74	0.68	29.4
8	T1	7	1.0	7	1.0	0.087	6.3	LOS A	0.5	12.5	0.68	0.74	0.68	29.8
18	R2	13	1.0	13	1.0	0.087	6.5	LOS A	0.5	12.5	0.68	0.74	0.68	29.2
Approach		61	7.0	61	7.0	0.087	9.6	LOS A	0.5	12.5	0.68	0.74	0.68	29.4
East: SR 20														
1	L2	6	0.0	6	0.0	0.984	24.1	LOS E	37.2	944.0	1.00	0.92	1.43	26.9
6	T1	1051	2.0	1051	2.0	0.984	19.8	LOS E	37.2	944.0	1.00	0.92	1.43	29.5
16	R2	104	2.0	104	2.0	0.984	19.6	LOS E	37.2	944.0	1.00	0.92	1.43	24.4
Approach		1161	2.0	1161	2.0	0.984	19.8	LOS B	37.2	944.0	1.00	0.92	1.43	28.9
North: Discovery Rd														
7	L2	83	2.0	83	2.0	0.576	24.6	LOS C	5.3	134.8	1.00	1.16	1.30	23.3
4	T1	7	1.0	7	1.0	0.576	20.3	LOS C	5.3	134.8	1.00	1.16	1.30	21.7
14	R2	104	2.0	104	2.0	0.576	20.9	LOS C	5.3	134.8	1.00	1.16	1.30	23.0
Approach		194	2.0	194	2.0	0.576	22.4	LOS C	5.3	134.8	1.00	1.16	1.30	23.1
West: SR 20														
5	L2	105	0.0	105	0.0	0.534	9.7	LOS A	4.8	120.4	0.44	0.52	0.44	29.2
2	T1	532	1.0	532	1.0	0.534	5.3	LOS A	4.8	120.4	0.44	0.52	0.44	35.2
12	R2	14	29.0	14	29.0	0.534	5.9	LOS A	4.8	120.4	0.44	0.52	0.44	30.6
Approach		651	1.4	651	1.4	0.534	6.0	LOS A	4.8	120.4	0.44	0.52	0.44	34.0
All Vehicles		2067	2.0	2067	2.0	0.984	15.4	LOS B	37.2	944.0	0.82	0.81	1.09	29.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX E – 2016 TRAFFIC COUNT ADJUSTMENT WORKSHEETS

SR 20	Kearney											
Count Date	2016	8/16/2016										
Peak Hour	4 p.m. to 5 p.m.											
Base Year	2019											
Future Year	2040											
Growth Estimate	0.70%											
Approach	Kearney (From North)			SR 20 (from East and Ferry Terminal)			Kearney (From South)			SR 20 (From west and Mills)		
Traffic Movement	Left	Thru	Right	Left	Thur	Right	Left	Thru	Right	Left	Thru	Right
Totals	93	49	192	32	543	83	41	35	6	205	413	6
Growth (2019 Base Year)	95	50	196	33	554	85	42	36	6	209	422	6
Growth (2040 Future Year)	109	57	224	37	634	97	48	41	7	239	482	7
SR 20	Mills											
Count Date	2016	7/26/2016										
Peak Hour	4 p.m. to 5 p.m.											
Base Year	2019											
Future Year	2040											
Growth Estimate	0.70%											
Approach	Discovery (From North)			SR 20 (from East/Port			Mill Rd (From South)			SR 20 (from West)		
Traffic Movement	Left	Thru	Right	Left	Thur	Right	Left	Thru	Right	Left	Thru	Right
Totals	81	7	102	6	1029	102	39	6	11	103	521	14
Growth (2019 Base Year)	83	7	104	6	1051	104	40	6	11	105	532	14
Growth (2040 Future Year)	95	8	119	7	1202	119	46	7	13	120	609	16
Truck Percent	2.5%	0.0%	3.8%	16.7%	0.6%	0.0%	10.3%	0.0%	0.0%	3.9%	1.0%	38.5%

APPENDIX F – 2016 TRAFFIC COUNTS

Washington State
Department of Transportation
Olympic Region - Traffic Office

Signals Counts

SR: 020

Milepost: 12.01

Location: KEARNEY WAY

Date: 8/18/2016

Count ID: 9889

Speed Study	Mech. Count	Manual Count	Other	Owner
☐	☐		☐	Signals

Comments

Washington State
Department of Transportation
Olympic Region - Traffic Office

TRAFFIC DATA COLLECTION

WORK ORDER REQUEST

Count ID:	9889		
Request Date:	7/18/2016	Date Needed By:	10/3/2016
Requested By:	KEN BURT		
Charge Code:	QO-8913-02-Q216		

State Route:	020
Milepost(s):	12.01
Location:	KEARNEY WAY

Data Needed:

Speed Study	Tube Count	Manual Count	OtherType
☐	☐		☐

Comments:

Counted By:		Count Date:	8/18/2016
HERRERA,V		To Requestor:	8/22/2016
		Completed Date:	8/22/2016

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: 04-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81816 AM
Site Code : 02081816
Start Date : 8/18/2016
Page No : 1

Groups Printed- Cars - Trucks - Peds

Startline																						
06:00AM	1	1	0	6	8	0	18	1	0	19	0	0	0	0	0	5	21	0	0	26	53
06:15AM	3	1	0	4	8	0	9	1	1	11	0	0	0	0	0	7	15	0	0	22	41
06:30AM	1	3	0	13	17	0	9	1	0	10	0	0	0	0	0	5	17	1	0	23	50
06:45 AM	3	0	0	9	12	0	12	0	0	12	0	0	0	0	0	20	26	0	0		
Total	8	5	0	32	451	0	48	3	1	52	0	0	0	0	0	37	79	1	0	1 it	-2
07:00AM	10	1	0	16	27	1	15	1	1	18	1	5	0	0	6	7	27	1	0	351	86
07:15AM	2	3	1	16	22	1	12	2	0	15	0	1	0	0	1	12	37	0	0	49,	87
07:30AM	1	1	0	14	16	0	25	0	1	26	0	3	0	0	3	11	36	0	0		
07:45AM	9	3	0	22	34	1	62	0	0	63	1	2	0	1	4	25	56	0	0		
Total	22	8	1	68	99	3	114	3	2	122	2	11-	0	1	14	55	156	1	0	212	447
08:00AM	11	8	0	26	45j	2	20	2	0	24	2	2	0	1	5	13	78	0	0	91	165
08:15 AM	6	6	2	35	491	1	44	2	0	47	4	3	0	0	7	29	97	2	0	128	231
08:30 AM	11	3	3	20	37	2	26	5	0	33	5	3	0	0	8	26	94	0	1	121	199
08:45 AM	12	5	2	23	42	3	27	1	0	31	5	6	2	0	13	25	91	3	0	119	205
Total	40	22	7	104	173	8	117	10	0	135	16	14	2	1	33	93	360	5	1	459	800
09:00 AM	17	6	3	25	51	4	41	4	0	49	4	0	0	1	5	41	93	3	1	138	243
09:15 AM	21	8	4	33	66	4	104	5	6	119	6	6	0	0	12	36	102	1	0	139	336
09:30AM	18	10	3	31	62	0	47	10	4	61	6	1	0	0	7	33	89	0	0	122	252
			6	30	59	3	70	8	1	82	7	3	0	1	11	43	105	1	0	149	301
09:4 1		-;	16	119	238	11	262	27	11	311	23	10	0-	2	35	153	389	5-	1	548	1132
Grand Total	1139	69	24	323	555	22	541	43	14	620	41	35	2	4	82	338	984	12	2	1336	2593
Approch %	25	12.4	4.3	58.2		3.5	87.3	6.9	2.3		50	42.7	2.4	4.9		25.3	73.7	0.9	0.1		
Total%	5.4	2.7	0.9	12.5	21.	0.8	20.9	1.7	0.5	23.9	1.6	1.3	0.1	0.2	3.2	13	37.9	0.5	0.1	51.5	
Cars	133	69	23	317	542	22	514	41	14	591	41	34	2	4	81	329	966	12	2	13091	2523
% Cars	95.7	100	95.8	98.1	97.7	100	95	95.3	100	95.3	100	97.1	100	100	98.8	97.3	98.2	100	100	98	97.3

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81816 AM
Site Code : 02081816
Start Date : 8/18/2016
Page No : 2

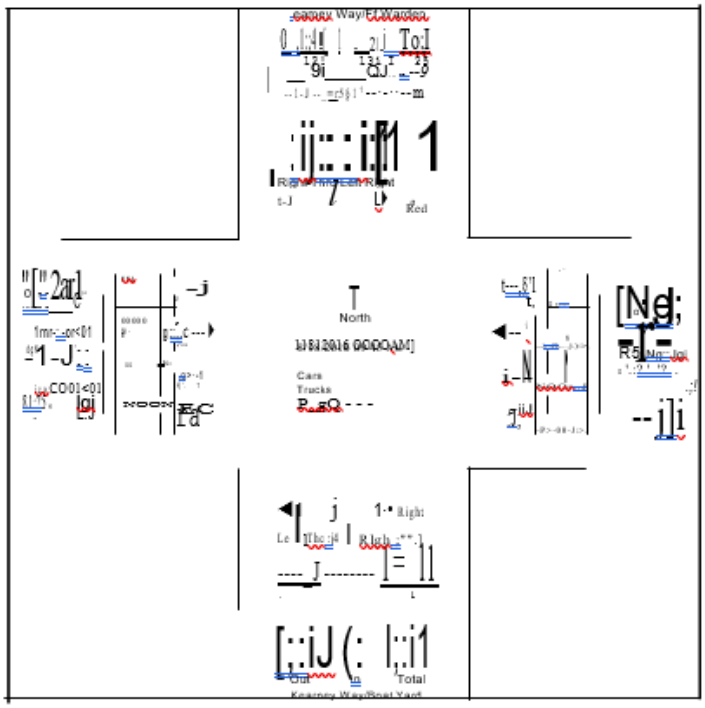
Groups Printed- Cars -Trucks - Peds

	Kearney Way/Ft Warden From North					SR 20/to Ferry From East					Kearney Way/Boat Yard From South					SR 20/Chimacum From West					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Trucks	6	0	1	6	13	0	27	2	0	29	0	1	0	0	1	9	18	0	0	27	70
% Trucks	4.3	0	4.2	1.9	2.3	0	5	4.7	0	4.7	0	2.9	0	0	1.2	2.7	1.8	0	0	2	2.7
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81816 AM
Site Code : 02081816
Start Date : 8/18/2016
Page No :3



OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81816 AM
Site Code : 02081816
Start Date : 8/18/2016
Page No :4

Start-Ti	-L:	;;r:::rp:otal				- eftjT;:f	;;:lAppTot,J::				:fJ;;t1,y:::oral					LflT::lr:::App:ln;Toral					
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:00 AM																					
09:00 AM!	17	6	3	25	51	4	41	4	0	49	4	0	0	1	5	41	93	3	1	138	243
09:15 AM	21	8	4	33	66	4	104	5	6	119	6	6	0	0	12	36	102	1	0	139	336
09:30AM	18	10	3	31	62	0	47	10	4	61	6	1	0	0	7	33	89	0	0	122	252
09:45 AM	13	10	6	30	59	3	70	8	1	82	7	3	0	1	11	43	105	1	0	149	301
Total Volume	69	34	16	119	238	11	262	27	11	311	23	10	0	2	35	153	389	5	1	548	1132
%App. Total	2	14.:3	6.7	50	....	3._5	84,2	8 }	:3,5		65.7	28.6	... 0	5J		27.9	71	0.9	Q.2	-+-	
PHF	.821	.850	.667	.902	.902	.688	.630	.675	.458	.653	.821	.417	.000	.500	.729	.890	.926	.417	.250	.919	.842
Cars	65	34	15	118	232	11	251	25	11	298	23	10	0	2	35	150	381	5	1	537	1102
% Cars	94.2	100	93.8	99.2	97.5	100	95.8	92.6	100	95.8	100	100	0	100	100	98.0	97.9	100	100	98.0	97.3
Trucks	4	0	1	1	6	0	11	2	0	13	0	0	0	0	0	3	8	0	0	11	30
% Trucks	5.8	0	6.3	0.8	2.5	0	4.2	7.4	0	4.2	0	0	0	0	0	2.0	2.1	0	0	2.0	2.7
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81816 AM
Site Code : 02081816
Start Date : 8/18/2016
Page No : 5

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81716 MID
Site Code : 02081716
Start Date : 8/17/2016
Page No : 1

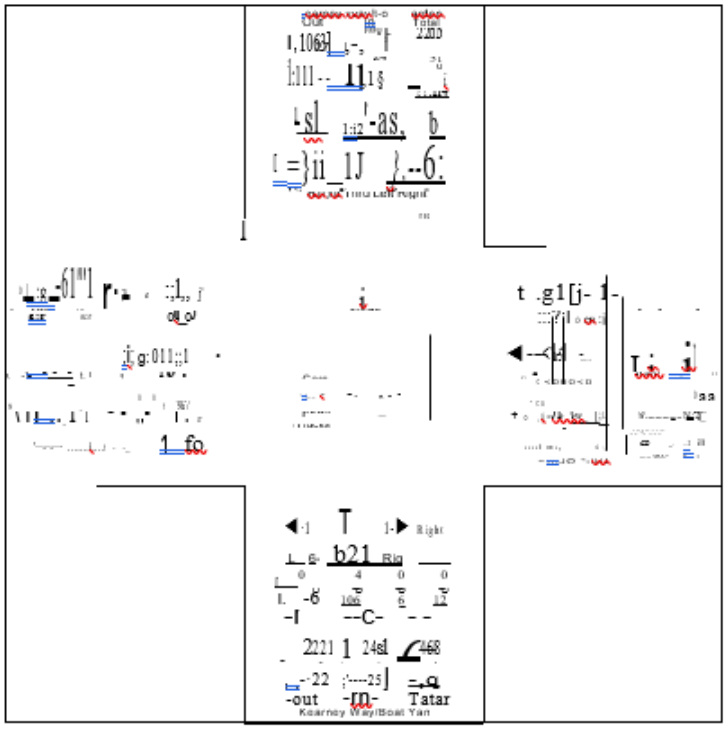
Groups Printed- Cars - Trucks - Peds

	Kearney Way/Fort Warden From North					SR 20/to Ferry From East					Kearney Way/Boat Yard From South					SR 20/Chimacum From West					
	Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			Left	Thru	Right			
10:00 AM	16	7	1	38	62	2	76	12	3	93	4	7	0	3	14	43	107	2	1	153	322
10:15 AM	20	3	2	39	64	5	105	8	5	123	4	11	0	0	15	32	82	6	1	121	323
10:30 AM	14	6	5	29	54	3	72	13	3	91	16	8	0	0	24	35	74	2	0	111	280
10:45 AM	23	6	0	40	69	3	107	16	4	130	7	7	2	1	17	45	138	0	0	183	399
totalT	73	22	8	146	249	13	360	49	15	437	31	33	2	4	70	155	401	10	2	568	1324
11:00 AM	17	6	7	28	58	4	102	9	4	119	4	2	0	1	7	41	98	0	0	139	323
11:15 AM	17	7	9	42	75	3	123	6	3	135	11	7	0	0	18	60	119	1	0	180	408
11:30 AM	29	8	1	60	98	1	93	7	14	115	14	9	1	0	24	52	107	4	0	163	400
11:45 AM	19	5	6	45	75	3	131	8	3	145	6	4	0	0	10	49	163	4	1	217	447
totalT	82	26	23	175	306	11	449	30	24	514	35	22	1	1	59	202	487	9	1	699	1578
12:00 PM	27	17	2	51	97	4	112	18	6	140	8	9	0	0	17	63	162	2	0	227	481
12:15 PM	19	12	3	38	72	7	130	14	8	159	5	7	1	1	14	79	135	0	4	218	463
12:30 PM	25	6	3	21	55	4	104	5	5	118	8	4	0	0	12	45	138	0	0	183	368
12:45 PM	15	17	8	32	72	4	71	11	3	94	2	4	0	5	11	52	108	1	0	161	338
Total	86	52	16	142	296	19	422	48	22	511	23	24	1	6	54	239	543	3	4	789	1650
01:00 PM	28	10	6	52	96	3	130	13	3	149	15	3	0	0	18	49	138	3	0	190	453
01:15PM	24	5	3	31	63	4	164	10	1	179	9	10	1	1	21	52	140	7	3	202	465
01:30 PM	20	9	1	44	74	3	77	18	1	99	11	8	1	0	20	49	126	2	0	177	370
01:45 PM	26	10	2	42	80	3	167	15	1	186	2	6	0	0	8	55	136	3	0	194	468
Total	98	34	12	169	313	13	538	56	6	613	37	27	2	1	67	205	540	15	3	763	1756
GrandTotal	339	134	59	632	1164	56	1769	183	67	2075	126	106	6	12	250	801	1971	37	10	2819	6308
Apprch %	29.1	11.5	5.1	54.3		2.7	85.3	8.8	3.2		50.4	42.4	2.4	4.8		28.4	69.9	1.3	0.4		
Total%	5.4	2.1	0.9	10	18.5	0.9	28	2.9	1.1	32.9	2	1.7	0.1	0.2	4	12.7	31.2	0.6	0.2	44.7	
Cars	331	132	58	61	1140	53	1699	177	65	1994	126	102	6	12	246	784	1942	37	10	2773	6153
% Cars	97.6	98.5	98.3	97.9	97.9	94.6	96	96.7	97	96.1	100	96.2	100	100	98.4	97.9	98.5	100	100	98.4	97.5

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81716 MID
Site Code : 02081716
Start Date : 8/17/2016
Page No : 3



OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81716 MID
Site Code : 02081716
Start Date : 8/17/2016
Page No : 4

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 11:30 AM

11:30 AM	29	8	1	60	98	1	93	7	14	115	14	9	1	0	24	52	107	4	0	163	400
11:45AM	19	5	6	45	75	3	131	8	3	145	6	4	0	0	10	49	163	4	1	217	447
12:00PM	27	17	2	51	97	4	112	18	6	140	8	9	0	0	17	63	162	2	0	227	481
12:15PM	19	12	3	3	72	7	130	1	8	159	5	7	1	1	14	79	135	0	4	218	463
Total Volume	94	42	12	194	342	15	466	47	31	559	33	29	2	1	65	243	567	10	5	825	1791
% App Total	48.5	21.6	6.2			3.2	83.4	10.1	5.5		50.8	44.6	3.1	1.5		29.5	68.7	1.2	0.6		
PHF	.810	.618	.500	.808	.872	.536	.889	.653	.554	.879	.589	.806	.500	.250	.677	.769	.870	.625	.313	.909	.931
Cars	92	41	12	193	338	13	446	44	31	534	33	29	2	1	65	241	557	10	5	813	1750
% Cars	97.9	97.6	100	99.5	98.8	86.7	95.7	93.6	100	95.5	100	100	100	100	100	99.2	98.2	100	100	98.5	97.7
Trucks	2	1	0	1	4	2	20	3	0	25	0	0	0	0	0	2	10	0	0	12	41
% Trucks	2.1	2.4	0	0.5	1.2	13.3	4.3	6.4	0	4.5	0	0	0	0	0	0.8	1.8	0	0	1.5	2.3
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: 04-2816
Counted By: VickiHerrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81716 MID
Site Code : 02081716
Start Date : 8/17/2016
Page No : 5

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81616 PM
Site Code : 02081616
Start Date : 8/16/2016
Page No : 1

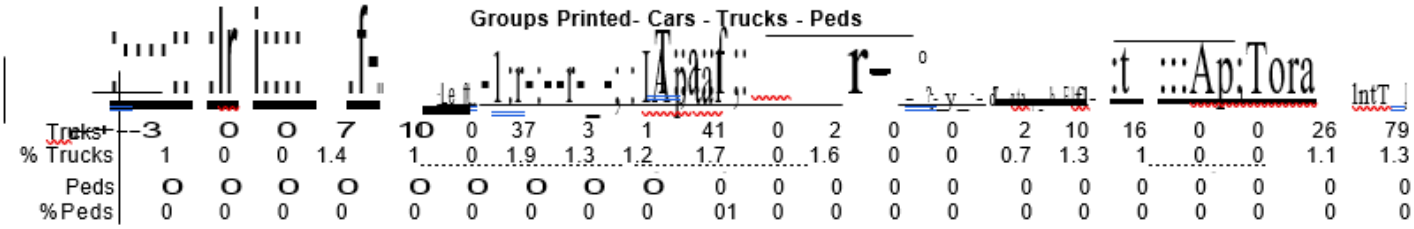
Groups Printed- Cars - Trucks - Peds

	From North					From East					From South					From West					
02:45 PM	19	9	3	37	68	9	111	17	6	143	10	6	1	1	18	43	119	4	1	167	396
---Total	69	36	9	37	151	28	59	65	19	571	-33	18	2	1	-54	189	435	11	1	636	1-12
03:00 PM	27	12	3	41	83	7	112	16	5	140	10	14	1	1	26	48	117	3	0	168	417
03:15 PM	8	13	1	57	79	2	139	14	4	159	5	5	0	1	11	54	98	1	1	154	403
03:30 PM	11	8	4	38	61	5	96	12	6	119	16	9	0	0	25	45	81	2	0	128	333
03:45PM	16	12	4	29	61	6	123	13	3	145	9	9	0	1	19	55	138	2	0	195	420
Total	62	45	12	165	284	20	470	55	18	563	40	37	1	3	81	202	434	8	1	645	1573
04:00PM	24	6	3	38	71	6	148	19	11	184	7	7	0	0	14	69	119	4	0	192	461
04:15 PM	33	7	8	46	94	5	127	10	4	146	6	8	1	1	16	43	107	1	0	151	407
04:30 PM	18	13	5	44	80	3	106	19	9	137	11	5	0	1	17	58	100	1	1	160	394
04:45 PM	18	13	1	45	77	12	145	10	6	173	6	10	1	0	17	60	93	0	0	153	420
Total	93	39	7	173	322	26	526	58	30	640	30	30	2	2	64	230	419	6	1	656	1682
05:00 PM	24	16	3	40	83	12	165	16	9	202	18	12	2	0	32	44	113	2	1	160	477
05:15 PM	13	13	3	34	63	8	132	12	6	158	11	10	0	1	22	34	107	2	0	143	386
05:30PM	15	9	1	37	62	3	96	9	3	111	6	9	0	1	16	38	80	4	0	122	311
05:45 PM	12	4	2	30	48	0	87	21	1	109	5	7	0	1	13	28	75	3	0	106	276
Total	64	42	9	14	256	23	480	58	19	580	46	38	2	3	83	144	375	11	1	531	1450
GrandTotal	288	162	47	516	1013	97	1935	236	86	2354	143	123	7	9	282	765	1663	36	4	24681	6117
Apprch %	28.4	16	4.6	50.9		4.1	82.2	10	3.7		50.7	43.6	2.5	3.2		31	67.4	1.5	0.2		
Total%	4.7	2.6	0.8	8.4	16.6	1.6	31.6	3.9	1.4	38.5	2.3	2	0.1	0.1	4.6	12.5	27.2	0.6	0.1	40.3	
Cars	285	162	47	509	1003	97	1898	233	85	2313	143	121	7	9	280	755	1647	36	4	2442	6038
% Cars	99	100	100	98.6	99	100	98.1	98.7	98.8	98.3	100	98.4	100	100	99.3	98.7	99	100	100	98.9	98.7

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81616 PM
Site Code : 02081616
Start Date : 8/16/2016
Page No :2



Trucks	3	0	0	7	10	0	37	3	1	41	0	2	0	0	2	10	16	0	0	26	79
% Trucks	1	0	0	1.4	1	0	1.9	1.3	1.2	1.7	0	1.6	0	0	0.7	1.3	1	0	0	1.1	1.3
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%Peds	0	0	0	0	0	0	0	0	0	01	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
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Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81616 PM
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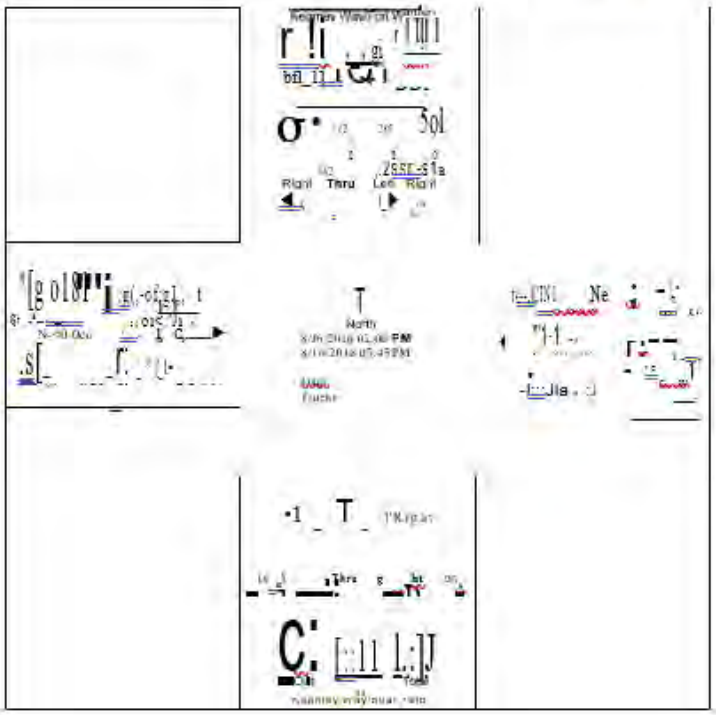


OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: 04-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

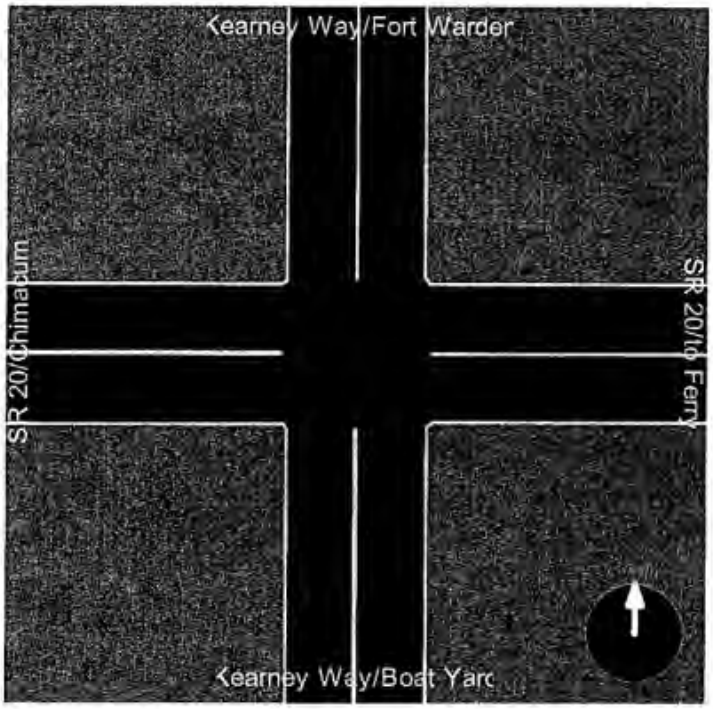
File Name : SR 20 AT KEARNEY WAY 81616PM
Site Code : 02081616
Start Date : 8/16/2016
Page No : 4

	Kearney Way/Fort Warden From North					SR 20/to Ferry From East					Kearney Way/Boat Yard From South					SR 20/Chimacum From West					
Start Time	Left	Thru		App Total		Thru	Right		App Total		Left	Thru	Right		App Total						
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15PM:	33	7	8	46	94	5	127	10	4	146	6	8	1	1	16	43	107	1	0	151	407
04:30 PM	18	13	5	44	80	3	106	19	9	137	11	5	0	1	17	58	100	1	1	160	394
04:45 PM	18	13	1	45	77	12	145	10	6	173	6	10	1	0	17	60	93	0	0	153	420
05:00 PM	24	16	3	40	83	12	165	16	9	202	18	12	2	0	32	44	113	2	1	160	477
Total Volume	93	49	17	175	334	32	543	55	28	658	41	35	4	2	82	205	413	4	2	624	1698
% App Total	27.8	14.7	5.1	52.4		4.9	82.5	8.4	4.3		50	42.7	4.9	2.4		32.9	66.2	0.6	0.3		
PHF	.705	.766	.531	.951	.888	.667	.823	.724	.778	.814	.569	.729	.500	.500	.641	.854	.914	.500	.500	.975	.890
Cars	93	49	17	173	332	32	535	54	28	649	41	35	4	2	82	204	411	4	2	621	1684
% Cars	100	100	100	98.9	99.4	100	98.5	98.2	100	98.6	100	100	100	100	100	99.5	99.5	100	100	99.5	99.2
Trucks	0	0	0	2	2	0	8	1	0	9	0	0	0	0	0	1	2	0	0	3	14
% Trucks	0	0	0	1.1	0.6	0	1.5	1.8	0	1.4	0	0	0	0	0	0.5	0.5	0	0	0.5	0.8
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Kearney Way, MP. 12.01

File Name : SR 20 AT KEARNEY WAY 81616 PM
Site Code : 02081616
Start Date : 8/16/2016
Page No : 5



Washington State
Department of Transportation
Olympic Region - Traffic Office

Signals Counts

SR: 020

Milepost: 9.81

Location: MILL ROAD

Date: 7/28/2016

Count ID: 9878

Speed Study	Mech. Count	Manual Count	Other	Owner
☐	☐		☐	Signals

Comments

TURNING MOVEMENT

7

Washington State
Department of Transportation
Olympic Region - Traffic Office

TRAFFIC DATA COLLECTION

WORK ORDER REQUEST

Count ID:	9878		
Request Date:	7/11/2016	Date Needed By:	8/31/2016
Requested By:	KEN BURT		
Charge Code:	QO-8913 02-Q216		

State Route:	020
Milepost(s):	9.81
Location:	MILL ROAD

Data Needed:

Speed Study	Tube Count	Manual Count	Other Type
☐	☐	III]	☐

Comments:
TURNING MOVEMENT

Counted By:		Count Date:	7/28/2016
HERRERA,V		To Requester:	8/1/2016
		Completed Date:	8/1/2016

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter : D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72816 AM
Site Code : 02072816
Start Date : 7/28/2016
Page No : 1

Group printed- Cars - Trucks - Peds

	DiscoEvery Ro Sahd/Mary's rame op					SR 201Port Townsend					Mill Road					SR 20/Chimacum						
	Le JTJlr	JF<ig t		App Tr		Le -	Thi [F<ig	[•±. o	App '1'		J. LThr: J	f<ig6j_,,,:,	:81AJOPT04			Le al'rh[ifRig- 1			1:pp			
06:15 AM	3	1	5	1	10	0	29	2	0	31	2	0	0	0	2	3	41	7	0	51	94	
06:30AM	5	4	5	5	19	0	30	1	0	31	2	0	0	0	2	11	66	14	0	91	143	
06:45 AM	16	0	2	2	20	0	30	0	0	30	4	0	0	0	4	6	88	3	1	98	152	
Total	31	6	15	9	61	0	128	5	0	133	11	1	0	0	12	22	247	32	1	302	508	
07:00 **AM**	9	1	6	2	18	0	25	1	0	26	2	0	0	0	2	7	97	5	0	109	155	
07:15AM	14	0	9	5	28	1	33	5	2	41	1	0	1	1	3	9	91	6	1	107	179	
07:30AM	3	0	4	4	**11**	0	29	2	0	31	5	0	1	1	7	8	119	4	2	133	182	
07:45 AM	22	0	13	6	41	0	69	2	0	71	5	0	0	0	5	15	200	5	0	220	337	
Total	48	1	32	17	98	1	156	10	2	169	13	0	2	2	17	39	507	20	3	569	853	
08:00 AM	15	0	18	7	40	0	62	5	2	69	2	0	0	0	2	13	161	4	1	179	290	
08:15AM	20	1	7	22	50	0	63	6	5	74	1	1	0	1	3	21	162	1	2	186	313	
08:30 AM	19	1	13	16	49	2	63	4	4	73	2	1	0	1	4	15	176	5	0	196	322	
08:45 AM	32	1	12	17	62	0	84	12	6	102	2	1	0	4	71	34	185	5	0	224	395	
Total	86	3	50	62	201	2	272	27	17	318	7	3	0	6	f5i	83	684	15	3	785	1320	
09:00 AM	22	2	9	11	44	0	70	11	5	86	4	0	1	1	6	20	168	5	0	193	329	
09: 15 AM	23	2	3	18	46	1	99	16	1	117	3	0	0	1	4	20	152	4	1	177	344	
09:30 AM	25	1	7	9	42	1	144	12	0	157	3	0	0	0	3	18	168	7	1	194	396	
09:45 AM	31	2	11	9	53	4	140	11	7	162	7	2	1	2	12	14	223	7	0	244	471	
Total	101	7	30	47	185	6	453	50	13	-f;°22	17	2	2	4	25	72	711	23-	2	808	1540	
GrandTotal	266	17	127	135	545	9	1009	92	32	1142	48	6	4	12	70	216	2149	90	9	24641	4221	
Apprch %	48.8	3.1	23.3	24.8		0.8	88.4	8.1	2.8		68.6	8.6	5.7	17.1		8.8	87.2	3.7	0.4			
Total%	6.3	0.4	3	3.2	12.9	0.2	23.9	2.2	0.8	27.1	1.1	0.1	0.1	0.3	1.7	5.1	50.9	2.1	0.2	58.4		
- ·cars	257	17	121	130	525	*i*	978	00	32	1105	31	6	4	12	53	19f-201ff		73	·y-	235014041		
% Cars	96.6	100	95.3	96.3	96.3	77.8	96.9	95.7	100	96.8	64.6	100	100	100	75.7	91.2	96.8	81.1	77.8	95.7	95.7	

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72816 AM
Site Code : 02072816
Start Date : 7/28/2016
Page No : 2

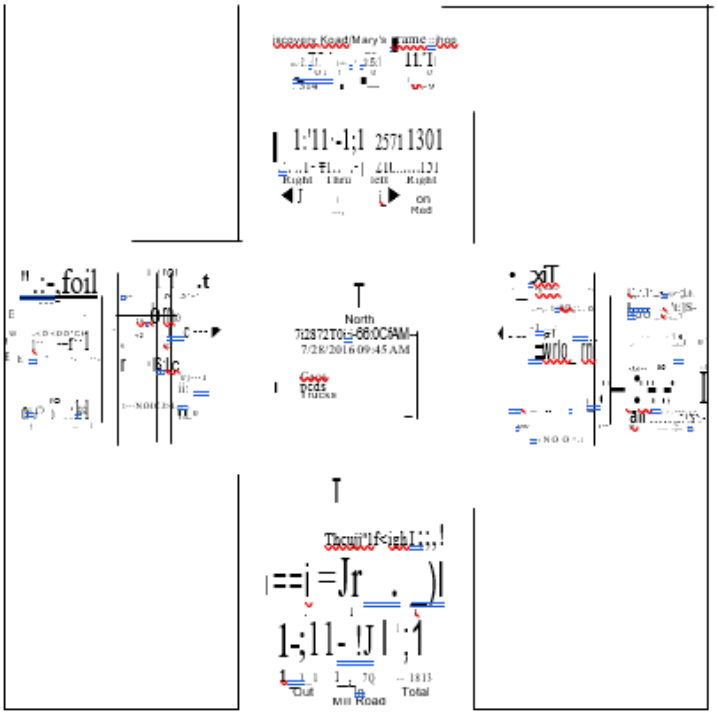
- Groups Printed - Car - Trucks - Peds

	Discovery Road/Mary's Drive					SR 20/Port Townsend					Mill Road					SR 20/Chimacum					Int Total
	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	Left	Thru	Right	U-Turn	Total	
Trucks	9	0	6	5	20	2	31	4	0	37	17	0	0	0	17	19	68	17	2	106	180

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter : D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72816 AM
Site Code : 02072816
Start Date : 7/28/2016
Page No :3



OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

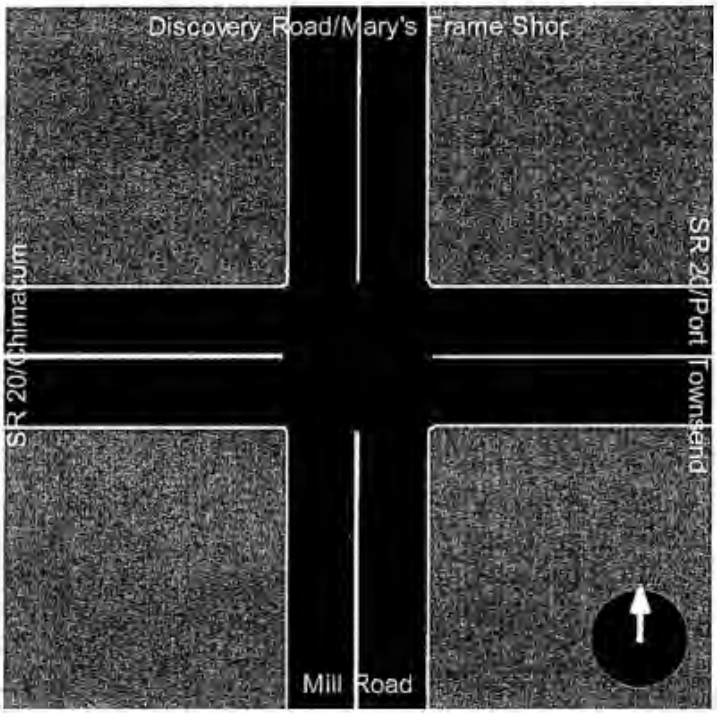
File Name : SR 20 AT MILL ROAD 72816 AM
Site Code : 02072816
Start Date : 7/28/2016
Page No : 4

Start Time	From East											From South				From West					Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 09:00 AM																					
09:00 AM	22	2	9	11	44	0	70	11	5	86	4	0	1	1	6	20	168	5	0	193	329
09:15AM	23	2	3	18	46	1	99	16	1	117	3	0	0	1	4	20	152	4	1	177	344
09:30 AM	25	1	7	9	42	1	144	12	0	157	3	0	0	0	3	18	168	7	1	194	396
09:45AM	31	2	11	9	53	4	140	11	7	162	7	2		1	12	14	223	7	0	244	471
													2								
Total Volume	101	7	30	47	185	6	453	50	13	522	17	2	2	4	25	72	711	23	2	808	1540
%App Total	54	3.8	16.2	25.4		1.1	86.8	9.6	2.5		68	8	8	16		8.9	88	2.8	0.2		
PHF	815	.875	.682	.653	.873	.375	.786	.781	.464	.806	.607	.250	.500	.500	.521	.900	.797	.821	.500	.828	.817
Cars	99	7	27	47	180	4	442	46	13	505	11	2	2	4	19	65	682	16	2	765	1469
% Cars	98.0	100	90.0	100	97.3	66.7	97.6	92.0	100	96.7	64.7	100	100	100	76.0	90.3	95.9	69.6	100	94.7	95.4
Trucks	2	0	3	0	5	2	11	4	0	17	6	0	0	0	6	7	29	7	0	43	71
% Trucks	2.0	0	10.0	0	2.7	33.3	2.4	8.0	0	3.3	35.3	0	0	0	24.0	9.7	4.1	30.4	0	5.3	4.6
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72816 AM
Site Code : 02072816
Start Date : 7/28/2016
Page No : 5



OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72716 MID
Site Code : 02072716
Start Date : 7/27/2016
Page No : 1

Groups Printed Cars - Trucks - Peds

	DiscoFvery Rame N From	Ro Sahd/Mary's ohp ort				SR 20/Port Townsend From East					Mill Road From South					SR 20/Chimacum From West					
Start Time	Left	Thru	Right		App Total	Left	Thru			App Total	Left	Thru	Right		App Total	Left	Thru			Total	Int Total
10:00AM	28	0	6	4	38	0	115	16-	2-	133	-8	--T-6		-0	9	17	128	5	0	150	330
10:15AM	14	2	4	10	30	2	198	24	0	224	3	0	0	0	3	11	120	2	0	133	390
10:30 AM	17	5	10	9	41	1	138	13	2	154	2	0	1	0	3	17	170	2	0	189	387
10:45AM	22	5	20	5	52	3	127	12	1	143	7	4	2	3	16	20	169	5	0	1941'	405
Total	-81--12		40	28	161	6	578	65	5	654[	20	5	3-	-3--	31	65-587		14	0	666	1512
11:00AM	23	3	14	9	49	3	203	6	7	219	7	4	2	2	15	17	158	4	2	181 I	
11:15AM	30	1	13	12	56	1	160	21	6	188	10	4	0	0	14	15	196	5	0	216	474
11:30 AM	14	1	13	11	39	1	156	18	3	178	5	0	0	2	7	22	165	2	0	189	413
11:45AM	30	1	8	11	50	4	178	19	11	2121	6	1	0	1	8	25	213	5	0	243	513
Total	97	6	48	43	194	9	697	64	27	797	28	9	2	5	44	79	732	16	2	829	1864
12:00PM	18	3	7	10	38	3	118	7	3	131	5	0	0	1	61	23	155	0	0	178	
12: 15 PM	29	1	9	7	46	1	182	11	6	200	2	0	1	1	4	21	228	11	0	260	510
12:30 PM	18	0	8	7	33	0	197	15	3	215	4	3	2	3	12	23	141	2	0	166	426
12:45PM	31	3	6	10	50	1	177	21	5	204	10	0	0	0	10	14	152	5	1	172	436
Total	96	7	30	34	167	5	674	54	17	750	21	3	3	5	32	81	676	18	1	776	1725
01:00 PM	27	4	7	12	50	0	166	17	10	193	4	3	0	1	8	33	191	3	0	227	478
01:15 PM	24	1	7	13	45	6	188	13	8	215	6	0	0	3	9	15	174	2	1	192	461
01:30 PM	24	0	15	11	50	0	201	16	8	225	3	1	2	3	9	27	180	6	0	213	497
01:45 PM	36	1	17	8	62	0	206	14	4	224	9	2	3	0	14	18	120	1	1	140	440
----Total	111	6	46	44	207	6	761	6Cf-	-30-	857	22--6-		5	7	40-93--665			12	2	77211876	
GrandTotal	385	31	164	149	729	26	2710	243	79	3058	91	23	13	20	147	318	2660	60	5	3043	6977
Apprch%	52.8	4.3	22.5	20.4		0.9	88.6	7.9	2.6		61.9	15.6	8.8	13.6		10.5	87.4	2	0.2		
Total %	5.5	0.4	2.4	2.1	10.4	0.4	38.8	3.5	1.1	43.8	1.3	0.3	0.2	0.3	2.1	4.6	38.1	0.9	0.1	43.6	
Cars	361	-30	155	146	692	-24	2657	242	79	3002	69	19	11	--19--	118	301	2582	46	4	-293315745	
% Cars	93.8	96.8	94.5	98	94.9	92.3	98	99.6	100	98.2	75.8	82.6	84.6	95	80.3	94.7	97.1	76.7	80	96.4	96.7

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72716 MID
Site Code : 02072716
Start Date : 7/27/2016
Page No : 2

Groups Printed- Cars- Trucks - Peds

	Discovery Road/Mary's Frame Shop From North			SR 20/Port Townsend From East			Mill Road From South			SR 20/Chimacum From West											
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
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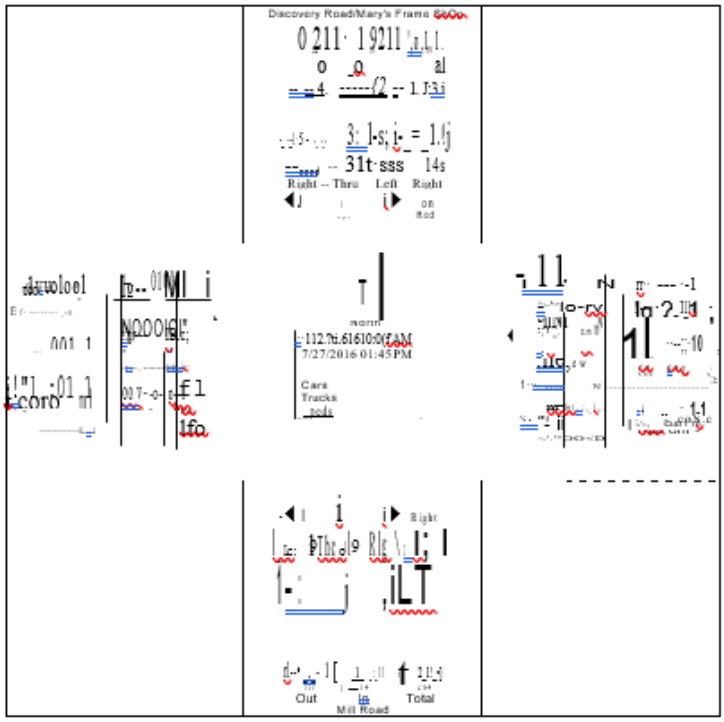
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72716 MID
Site Code : 02072716
Start Date : 7/27/2016
Page No : 3



OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

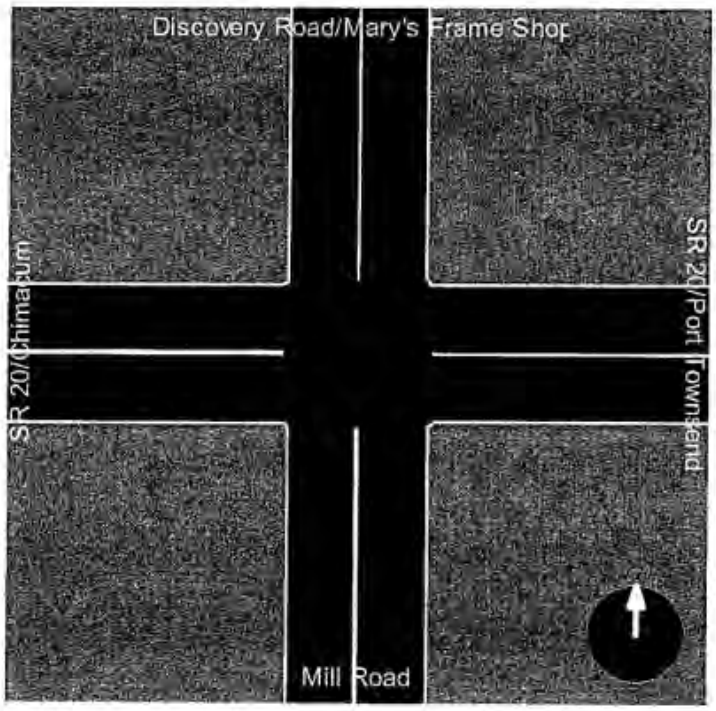
File Name : SR 20 AT MILL ROAD 72716 MID
Site Code : 02072716
Start Date : 7/27/2016
Page No : 4

	Discovery Road/Mary's					SR 20/Port Townsend					.....Mill Road					SR 20/Chimacum					
						From East					From South					From West					
Start Time	Left	Thru	Right		App Total	Left	Thru	Right		App Total	Left	Thru	Right		App Total	Left	Thru	Right		App Total	Int Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	27	4	7	12	50	0	166	17	10	193	4	3	0	1	8	33	191	3	0	227	478
01:15 PM	24	1	7	13	45	6	188	13	8	215	6	0	0	3	9	15	174	2	1	192	461
01:30 PM	24	0	15	11	50	0	201	16	8	225	3	1	2	3	9	27	180	6	0	213	497
01:45 PM	36	1	17	8	62	0	206	14	4	224	9	2	3	0	14	18	120	1	1	140	440
Total Volume	111	6	46	44	207	6	761	60	30	857	22	6	5	7	40	93	665	12	2	772	1876
% App. Total	53.6	2.9	22.2	21.3		0.7	88.8	7	3.5		55	15	12.5	17.5		12	86.1	1.6	0.3		
PHF	.771	.375	.676	.846	.835	.250	.924	.882	.750	.952	.611	.500	.417	.583	.714	.705	.870	.500	.500	.850j	.944
Cars	104	6	45	42	197	6	752	60	30	848	19	6	4	6	35	90	654	11	1	756	1836
% Cars	93.7	100	97.8	95.5	95.2	100	98.8	100	100	98.9	86.4	100	80.0	85.7	87.5	96.8	98.3	91.7	50.0	97.9	97.9
Trucks	7	0	1	2	10	0	9	0	0	9	3	0	1	1	5	3	11	1	1	16	40
% Trucks	6.3	0	2.2	4.5	4.8	0	1.2	0	0	1.1	13.6	0	20.0	14.3	12.5	3.2	1.7	8.3	50.0	2.1	2.1
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
%Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72716 MID
Site Code : 02072716
Start Date : 7/27/2016
Page No : 5



OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72616 PM1
Site Code : 02072616
Start Date : 7/26/2016
Page No : 1

Groups Printed- Cars - Trucks - Peds

	m.co:-.y R:Id/Ma.y's From North					SR 20/Port Tow" "d From East					; R; From South					SR 20/Chlmacum From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
02:00 PM	24	0	6	9	39	0	178	19	3	200	1	2	1	0	4	23	140	2	0	165	408
02:15 PM	15	2	12	9	38	0	160	15	6	181	7	2	0	0	9	17	133	5	0	155	383
02:30 PM	14	0	5	9	28	1	200	10	3	214	3	0	0	2	5	20	165	3	0	188	435
02:45 PM	25	2	9	12	48	0	211	17	2	230	9	0	2	0	11	10	146	5	1	162	451
Total	78	4	32	39	153	1	749	61	14	825	20	4	3	2	29	70	584	15	1	670	1677
03:00 PM	8	0	6	10	24	1	187	7	6	201	11	0	0	1	12	10	131	3	0	144!	381
03:15 PM	19	0	9	9	37	0	164	17	5	186	2	0	0	0	2	21	153	3	0	177	402
03:30 PM	16	1	10	9	36	1	197	19	8	225	8	1	1	4	14	28	112	2	0	142	417
03:45 PM	20	2	17	10	49	0	182	19	6	207	14	1	1	0	16	15	159	6	0	180	452
Total	63	3	42	38	146	2	730	62	25	819	35	2	2	5	44	74	555	14	0	643	1652
04:00 PM	19	1	8	15	43	3	224	16	6	249	5	0	0	4	9	28	149	2	1	180	481
04:15 PM	23	2	12	12	49	0	269	20	9	298	10	0	0	4	14	26	143	6	1	176	537
04:30 PM	16	2	10	13	41	1	253	16	7	277	6	1	3	2	12	22	137	1	0	160	490
04:45 PM	15	2	7	14	38	1	252	15	8	276	4	1	0	1	6	26	129	5	0	160	480
Total	73	7	37	54	171	5	998	67	30	1100	25	2	3	11	41	102	558	14	2	676	1988
05:00 PM	27	1	23	11	62	4	255	21	6	286	19	4	1	0	24	29	112	1	0	142	514
05:15 PM	8	0	15	9	32	1	280	31	3	315	15	6	1	2	24	26	128	3	0	157	528
05:30PM	20	0	21	10	51	0	203	42	5	250	14	3	0	2	19	21	109	2	0	132	452
05:45 PM	11	1	18	10	40	0	211	13	0	224	2	1	0	1	4	20	114	5	0	139	407
Total	66	2	77	40	185	5	949	107	14	1075	50	14	2	5	71	96	463	11	0	570	1901
Grand Total	280	16	188	171	655	13	3426	297	83	3819	130	22	10	23	185	342	2160	54	3	2559	7218
Apprch %	42.7	2.4	28.7	26.1		0.3	89.7	7.8	2.2		70.3	11.9	5.4	12.4		13.4	84.4	2.1	0.1		
Total%	3.9	0.2	2.6	2.4	9.1	0.2	47.5	4.1	1.1	52.9	1.8	0.3	0.1	0.3	2.6	4.7	29.9	0.7	0	35.5	
Cars	271	16	170	167	624	12	3365	295	81	3753	111	21	10	23	165	331	2107	33	3	2474	7016
% Cars	96.8	100	90.4	97.7	95.3	92.3	98.2	99.3	97.6	98.3	85.4	95.5	100	100	89.2	96.8	97.5	61.1	100	96.7	97.2

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72616 PM1
Site Code : 02072616
Start Date : 7/26/2016
Page No : 2

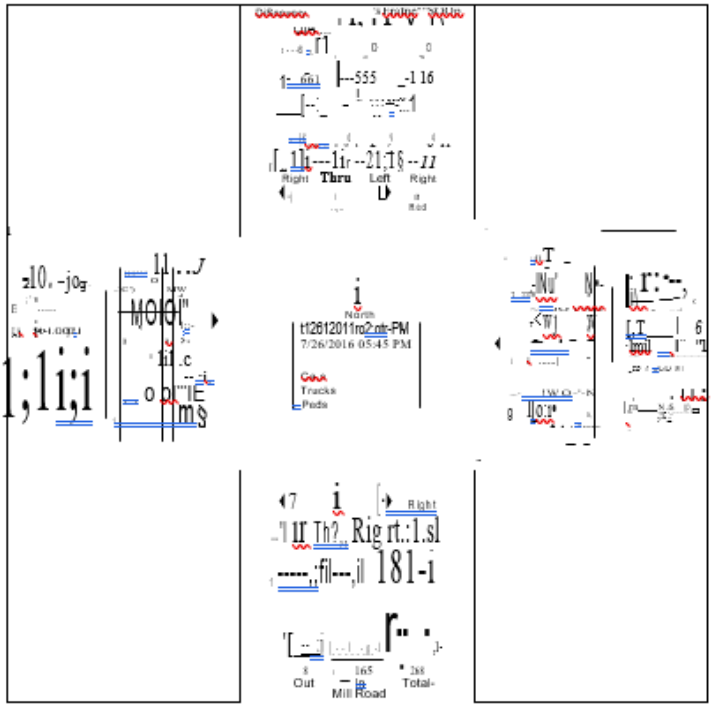
Groups Printed- Cars - Trucks - Peds

	Discovery Road/Mary's Frame Shop From North				SR 20/Port Townsend From East				Mill Road From South				SR 20/Chimacum From West				
Trucks	1																
% Trucks	3.2	0	9.6	2.3	4.7	7.7	1.8	0.7	2.4	1.7	14.6	4.5		0		0	3.3
Peds	0	0	6	0	0	0	0	0	0	0	0	0	0			0	0
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Suri
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72616 PM1
Site Code : 02072616
Start Date : 7/26/2016
Page No : 3



OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72616 PM1
Site Code : 02072616
Start Date : 7/26/2016
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Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:15 PM

	Discovery Road/Mary's Frame Shop From North					SR 20/PortTownsend From East					Mill Road From South					SR 20/Chimacum From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:15 PM	23	2	12	12	49	0	269	20	9	298	10	0	0	4	14	26	143	6	1	176'	537
04:30 PM	16	2	10	13	41	1	253	16	7	277	6	1	3	2	12	22	137	1	0	160	490
04:45 PM	15	2	7	14	38	1	252	15	8	276	4	1	0	1	6	26	129	5	0	160	480
05:00 PM	27	1	23	11	62	4	255	21	6	286	19	4	1	0	24	29	112	1	0	142	514
Total Volume	81	7	52	50	190	6	1029	72	30	1137	39	6	4	7	56	103	521	13	1	638	2021
% App. Total	42.6	3.7	27.4	26.3		0.5	90.5	6.3	2.6		69.6	10.7	7.1	12.5		16.1	81.7	2	0.2		
PHF	.750	.875	.565	.893	.766	.375	.956	.857	.833	.954	.513	.375	.333	.438	.583	.888	.911	.542	.250	.906	.941
Cars	79	7	50	50	186	5	1023	72	30	1130	35	6	4	7	52	99	516	8	1	624	1992
% Cars	97.5	100	96.2	100	97.9	83.3	99.4	100	10_0	99.4	89.7	100	100	100	92.9	96.1	99.0	61.5	100	97.8	98.6
Trucks	2	0	2	0	4	1	6	0	0	7	4	0	0	0	4	4	5	5	0	14	29
% Trucks	2.5	0	3.8	0	2.1	16.7	0.6	0	0	0.6	10.3	0	0	0	7.1	3.9	1.0	38.5	0	2.2	1.4
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OLYMPIC REGION SIGNALS OPERATIONS TURNING MOVEMENT COUNT

Counter: D4-2816
Counted By: Vicki Herrera
Weather: Sun
SR 20 at Mill Road, MP. 9.81

File Name : SR 20 AT MILL ROAD 72616 PM1
Site Code : 02072616
Start Date : 7/26/2016
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