EXHIBIT PC-2: SUPPLEMENTAL TRANSPORTATION SUBMITTALS

KITTELSON & ASSOCIATES

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MEMORANDUM

Date: April 14, 2021

Project #: 26336.001

To: Erich Lais, PE
City of West Linn
22500 Salamo Road
West Linn, OR 97068

From: Marc Butorac, PE, PTOE, PMP and Miranda Barrus EIT

Project: West Linn Athey Creek Middle School Relocation Transportation Impact Study

Subject: Transportation Impact Study Review

Per the City of West Linn's request, we have reviewed the transportation impact study for the proposed West Linn Athey Creek Middle School relocation prepared by DKS Associates on October 21, 2020. The proposed middle school relocation is planned on the vacant City parcel adjacent to Willamette Falls Drive and Dollar Street near Fields Bridge Park. This new site is approximately three miles southeast of its current location. The vacant City parcel is zoned as Low Density Residential – Single-Family Residential Detached (R-10). The middle school is allowed in this zone as a conditional use.

Based on our review, we determined that the analysis and conclusions identified generally comply with the City of West Linn's traffic impact analysis requirements. Concurrently, we identified the following items to be addressed prior to the study being accepted.

A. ***Existing Conditions***
   a. Planned Projects – The City of West Linn has been preparing the conceptual design for upgrading Willamette Falls Drive over the past year. It would be helpful to show these long-term improvements as part of the site plan and off-site improvement plans to ensure both alignment and to avoid any unnecessary throwaway improvements. Attached is the latest concept plan which was shared with the school's consultants. We would suggest that the school develop half-street improvements along the Willamette Falls Drive frontage consistent with the attached concept plan.
   b. Existing Traffic Volumes –
      i. State the identified peak hours used in the analysis and how those hours align with the anticipated Athey Creek start and stop times.
      ii. Confirm that the measured in vs. out volumes at Athey Creek Middle School (outlined in Table 6) are correctly summarized. There is a higher volume exiting than entering during the AM peak hour. ITE rates and studies at other middle schools suggest these numbers should be reversed. Also, provide additional

detail regarding this measured demand such as the data collection date, the summarized peak hours (in relation to school start and stop times), number of buses, and other available details.

c. Figure 2 – Correct Willamette Falls Drive/Ostman Road volume bubble to reflect all-way stop traffic control.
d. Safety Analysis – Provide a Critical Crash rate assessment of the study intersections following the analysis methodology presented in ODOT's *SPR 667 Assessment of Statewide Intersection Safety Performance*.

B. ***School Relocation***

a. The final trip generation estimate in Table 6 suggests that a relocated larger middle school will generate significantly fewer trips than the measured demand at the existing Athey Creek Middle School. While it is reasonable to assume the new school site will experience a larger increase in walking/biking trips, a more conservative and likely mode shift will involve a reduction in bus ridership (with busing no longer provided within the walking/biking radius), not a reduction in parent drop-off/pick-up trips. In light of these comments, please provide additional justification for the trip generation methodology or calculate a new rate using the measured demand at the existing Athey Creek Middle School and more conservative mode split assumptions.
b. Vehicle Trip Distribution – Provide additional justification and detail that more clearly illustrates the trip distribution and assignment of the school trips.
c. Figure 5 – Correct Willamette Falls Drive/Ostman Road volume bubble to reflect all-way stop traffic control; include Dollar Street site access volume bubble.
d. Figure 6 – Correct Willamette Falls Drive/Ostman Road volume bubble to reflect all-way stop traffic control; include volume bubbles for Brandon Place extension and Dollar Street site accesses.
e. Provide an additional figure summarizing the Net New Trips to clarify what traffic is ultimately added/removed from the study area (summation of Figures 5 and 6).

C. ***Future Conditions***

a. Figure 7 – Correct Willamette Falls Drive/Ostman Road volume bubble to reflect all-way stop traffic control.
b. Local Traffic Reroute – It does not appear that any existing local traffic was assumed to reroute to the new Brandon Place extension between Dollar Street and Willamette Falls Drive. Please clarify or update the analysis to reflect a likely rerouting of existing local traffic.
c. Figure 8 – Correct Willamette Falls Drive/Ostman Road volume bubble to reflect all-way stop traffic control; include volume bubbles for Brandon Place extension and Dollar Street site accesses; verify volume balancing on Willamette Falls Drive between Brandon Place Extension and Fields Bridge Park.
d. Table 9 – Include Dollar Street site access operations.
e. Clarify in the report that the City has verified that there are no in-process developments in the study area.

D. ***Site Review***
   a. Frontage Improvements – Incorporate the Willamette Falls Drive Concept Plan roadway cross-section into the site plan and identify all necessary offsite and frontage improvements to be consistent with this plan.
   b. Provide discussion on the adequacy of the primary parking lot and staff parking lot to fully accommodate parent and bus drop-off/pick-up activity.

E. ***Safe Routes to School*** – The study is recommending that the developer provide sidewalk infill and crossing improvements at locations not immediately adjacent to the school. Please clarify which specific off-site sidewalk and crossing improvements the applicant is proposing in conjunction with the development.

We would recommend that the City request an updated analysis via a study addendum responding to the items identified above and have the applicant submit the addendum back to the City for further review and comment.

If you have any further questions or need clarifications, please feel free to contact us at 503-228-5230.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Marc Butorac, P.E., P.T.O.E., PMP
Principal Engineer

Miranda Barrus, EIT
Engineering Associate

Attachments: West Linn Arterial Roadway Preliminary Design Draft 30% Plans – December 2020

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June 22, 2021

Gary Walvante, Chair
West Linn Planning Commission
22500 Salamo Rd.
West Linn, OR 97068

Athey Creek Middle School
(CUP-21-02/DR-21-04/WRG-21-02/MISC-21-04/VAR-21-01/VAR-21-06/LLA-21-02)

Dear Chair Walvante,

3J Consulting represents West Linn-Wilsonville School District (the District) in matters related to the Athey Creek Middle School Conditional Use Permit Application. This letter has been prepared to respond to a letter submitted into the record by Wade M. Clarke, PE on June 13, 2021 regarding the proposed lighted athletic field setback dimensions.

Mr. Clarke's letter argues for additional setbacks for the athletic field and cites CDC Chapter 60.070(B) which states that *the site size and dimensions provide adequate area for aesthetic design treatment to mitigate any possible adverse effect from the use on surrounding properties and uses.* The District has given special consideration in designing the site to mitigate the potential adverse effect of the proposed school on the surrounding properties and uses. The identified impacts and proposed mitigation treatments have been detailed in response to Chapter 60.070(B) on page 85 of the applicant's narrative.

Mr. Clarke's letter states that the required zoning setback of 15 feet is not applicable or adequate. The proposed setback for the athletic field is 30 feet 6 inches, and the proposed setback to the bleachers is 27 feet 10 inches. Mr. Clarke references other fields in the area to suggest that the proposed setback is too small. However, distance is not the sole method to mitigate impacts and depending on topography, landscaping and facility features, may not offer much mitigation at all. The design of this site incorporates several aesthetic design elements in addition to the horizontal setback distance to provide mitigation for the athletic fields. These measures include a significant grade change from Dollar Street which provides a vertical buffer from Dollar Street, enhanced landscaping along the boundary perimeter which, when considered with the grade change, will offer a comparable woodland effect when viewed from the adjacent homes, and the use of MUSCO TLC for LED stadium lighting which has been designed to reduce light trespass. Included within the original application packet submitted to the City is a noise study, as well as a Photometric Plan showing lighting levels across the site. The Photometric Plan indicates that the site and field lighting will have no more adverse effect than the required street lighting on Dollar Street.

We trust that these responses will assist as you consider the application in relation to the City's applicable approval criteria. We look forward to presenting this project to the Planning Commission and will be ready to answer any questions related to the project on July 7, 2021.

Sincerely,

Mercedes Serra
Senior Planner
3J Consulting, Inc.

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MEMORANDUM

DATE: June 22, 2021

TO: Gary Walvante, Chair City of West Linn Planning Commission
City of West Linn Planning Commission

FROM: Scott Mansur, P.E., PTOE | DKS Associates
Jenna Bogert, P.E. | DKS Associates

SUBJECT: West Linn Wilsonville Athey Creek Middle School at Dollar Street P20079-000
DKS Response to V-Naught Review Comments

DKS RESPONSES TO V-NAUGHT REVIEW COMMENTS

The goal of this memorandum is to document DKS' responses to V-Naught's review comments on the transportation impact study[1] for the West Linn-Wilsonville Athey Creek Middle School at Dollar Street project. The original comment letter, dated November 18th, 2020, is attached to this memorandum. Based on some of the comments included as well as comments provided by the City of West Linn, DKS has prepared an update to the Traffic Impact Analysis (TIA), which has been submitted to the City of West Linn.

The identified study area appears to adequately cover the primary intersections that could reasonably be tied to the development of the school site. Effects of the proposed development may also impact the intersections of 19th St/Blankenship Rd, 19th St/Dollar St, 19th St/Willamette Falls Dr, and Willamette Falls Dr/Dollar St. Each of these streets appear to be collector-type streets with at least one uncontrolled approach. Inclusion of these intersections would help inform the City of West Linn if additional traffic controls are necessary to maintain adequate and safe operations in the future condition.

DKS coordinated the study intersections that were included in Traffic Impact Analysis study with City of West Linn staff. The City of West Linn was in agreement with the selected study intersections and the expected transportation impact. Furthermore, DKS considered the intersections identified by V-Naught and the future traffic added by the proposed relocated school is not expected to impact these intersections (no traffic is added to controlled critical movements).

The traffic counts for the study area appear to be limited to one morning and one afternoon turning movement count, all collected on the same day, for each of the study intersections. There is some risk that, by using only one day of counts, extenuating circumstances could have impacted traffic volumes on this day. To diminish this risk, it may be prudent to corroborate the turning movement counts with 24-hour hour hose counts collected over multiple days (typically Tuesday through Thursday) and averaged.

The traffic counts were collected in 2019 consistent with typical transportation impact study guidelines prior to the COVID-19 pandemic. This approach is consistent with what is customary throughout the industry. Our traffic count vendor that collects the counts monitors the area as traffic counts are being collected to assure crashes, construction, events, incidents, etc. do not affect the counts. No issues were identified when the traffic counts were collected. Due to COVID-19 impacts and the effects on traffic

[1] WLWV Athey Creek Middle School Relocation Transportation Impact Study, DKS Associates, October 21, 2020.

volumes, additional traffic counts would have resulted in lower traffic volumes, therefore additional counts were not collected.

The data supplied in Table 6 of the TIS appear to miss trips being taken from other driveways and/or combined trips with the primary school immediately adjacent to the existing middle school site. If actual volume counts were used from the existing school, this information is missing from the traffic data appendix.

The trips shown in Table 6 have been re-reviewed and confirmed for accuracy. The driveway count data sheets are now accessible in Appendix A in the updated TIA (dated June 2021). The driveway counts were collected at driveways only providing access to the existing Athey Creek Middle School and do not include Stafford Primary School trips.

The reason for the higher number of trips OUT than IN is due to the bands, clubs, and teacher meetings that begin at 8 am (general school starts at 9:15 a.m. pre-COVID). Parents drop off those students just prior to 8 am and, based on the driveway counts, appear to remain on campus up until the start of school, leaving campus between 8:55 - 9:15 AM. This is likely the cause of the higher number of trips OUT than IN during the 8:15 am - 9:15 am peak hour. Based on research, there were no special events the day of the count collection that might have influenced the traffic counts that morning. Text clarifying this has been added to the updated TIA (dated June 2021).

As mentioned in the review of the Study Area evaluation, it may be advisable to include a safety evaluation of the four nearby collector intersections with at least one uncontrolled approach (mentioned previously) to verify no existing collision patterns are occurring. Additional traffic attracted to those intersections due to the development could increase risk of similar collisions. Such an analysis would help inform decisions for the City to implement countermeasures proactively in anticipation of increased traffic volumes.

Crash data from 2014 – 2018 was pulled for preliminary evaluation at the four previously listed study intersections. A total of three crashes have occurred at the four intersections (2 property damage only and 1 possible injury crashes) in the last five years of available crash data (2014 – 2018). Based on the additional crash data, no safety concerns were identified.

The report claims a 1-mile radius around the school as the walking boundary but does not show how the conclusion that 250 students live within this boundary is reached. It also does not specify if this 1-mile radius boundary is a true radius or a 1-mile walkshed which is a much more reasonable walking boundary.

The estimate of 250 students walking and biking to the relocated middle school at Dollar Street was developed in coordination with School District staff based on an initial estimate of students located within the exclusive Athey Creek enrollment zone, which contains over 250 students (data provided by the School District shows 288 students). This data is based on 2018 – 2019 enrollment data and was the basis of the 250 walk/bike assumption for the modal split data. Further explanation is provided on Pages 13 – 15 of the updated TIA (dated June 2021).

Finally, it would be advisable to review the Rosemont Ridge middle school walk/bike trips from 2018-2019 school year. The walk boundary for Rosemont Ridge is about twice the size in area as the proposed walk boundary for the proposed Athey Creek site with fewer major boundaries, but it could still offer valuable comparisons for modal splits.

The West Linn-Wilsonville School District does not have access to this type of modal data for Rosemont Ridge Middle School.

It would be helpful to see a geographic representation of where the students of the school are living, assume how many from each region will choose to drive, and make assumptions about which route those trips will take to reach the school. The report lacks details on how these percentages were developed, but they may still be a fair representation.

The trip distribution for Figure 6 (proposed middle school) was based on future enrollment forecast maps from the School District showing the number of student residences per WLWV middle school enrollment zones. We used these student enrollment counts and locations to estimate the distribution of vehicle trips for both the existing MS and future MS. Further explanation has been provided on Pages 18 - 19 in the updated TIA (dated June 2021).

The key element of the redevelopment proposal that will impact trip redistribution in the study area is the creation of a new link connecting Dollar Street as a new through street. This will likely result in at least some existing through drivers (not destined for the school) to use Dollar St to bypass the all-way stop at Willamette Falls Dr/Ostman Rd which appears to be the primary traffic constraint within the study area. That aspect appears to have been neglected and deserves some attention to gage the implications for Dollar St, including the safety for students who must cross Dollar St to access the school. The effort would help inform decisions whether or not additional traffic control devices are necessary on Dollar St once it connects to the west segment of Willamette Falls Dr.

After consulting with City of West Linn staff and the City's traffic consultant, DKS analyzed the impacts of rerouting a portion of the northbound and southbound Ostman Road trips to Brandon Place based on the proximity of residential land uses located near Dollar Street and Brandon Place that originate from or are destined for Willamette Falls Drive.

Based on our rerouting discussion with City staff and Kittelson, a small number of trips were rerouted to Brandon Place including the modal split assumptions for Sensitivity Analysis #2. With the rerouting of trips, the Willamette Falls Drive at Ostman Road intersection is significantly improved (-15 seconds of delay), allowing the intersection to meet the City LOS D standard, which is an improvement from the Future 2023 No Build scenario. Full discussion of the Brandon Place reroute and the operational findings are provided in the updated TIA (dated June 2021). It should be noted that the majority of these rerouted trips are traveling to/from the residential uses along Dollar Street with the remaining portion traveling to/from other neighborhood streets. The rerouted trips associated with the residential land uses along Dollar Street already utilize Dollar Street prior to the Brandon Place extension, and therefore do not increase the vehicle traffic on Dollar Street.

The removal of all trips from the old school site seems to underestimate the total number of vehicle trips. The old middle school site will function as a high school with doors set to open simultaneously with the relocated middle school. Furthermore, the report does not seem to adjust for current trips that are combined with the primary school immediately adjacent to the existing middle school site. It is unclear from the TIS report how many of those combined trips will remain as vehicle trips, now to two school sites, or will result in a mode change for the student attending the proposed middle school site.

The high school that is to take over the existing Athey Creek Middle School building will be an expansion of the School District's Arts & Technology High School (current campus located in Wilsonville). Because this is an option high school for the entire West Linn-Wilsonville School District, the students will be traveling from all areas of the Cities of Wilsonville and West Linn. There will be no assigned boundary for this new option high school when it opens. This high school will have a smaller enrollment than a standard middle school or high school. Additionally, the high school and middle school start times will be staggered by approximately 45 minutes, so the peak school traffic volumes will not overlap. The time difference is orchestrated to allow the middle schools and high schools to utilize many of the same school buses without mixing middle school and high school students.

The driveway counts were collected at driveways providing direct access to the existing Athey Creek Middle School and, by virtue of timing, do not include material numbers of Stafford Primary School trips.

Primary schools start at 7:50 AM and middle schools start at 9:15 AM. The driveway count data sheets are now accessible in Appendix A in the updated TIA (dated June 2021).

The input assumptions seem to come only from the assumed number of bus trips given by the school district and do not seem to match the student residency data provided by the school district.

See Pages 13 -15 of the updated TIA (dated June 2021).

Provide discussion on the adequacy of the primary parking lot and staff parking lot to fully accommodate parent and bus drop-off/pick-up activity.

A discussion regarding the parent and bus loading activity has been added to the updated TIA (dated June 2021).

Including a worst-case scenario where there are fewer than 5% bike/walk trips would help inform local stakeholders of the true range of traffic impacts that can be reasonably expected by the opening of this school.

Based on the proximity of the school to the adjacent neighborhoods and coordination with the City and the City's traffic consultant, DKS believes that the 100 walk/bike assumption (Sensitivity Analysis #2) is a reasonable worst-case assessment of walking/biking trips.

Furthermore, the sensitivity analyses did not seem to add the majority of the additional vehicle trips in the direction of the associated assumed mode change trips. Most of the ped/bike trips would be coming from east of the middle school, therefore, the additional vehicle trips assumed in the sensitivity analyses should have been coded to and from that direction as well. This is a significant change in the assumptions as it may show that Willamette Falls Dr and Ostman is further exacerbated by the school site related traffic flows. Or, otherwise it might show results indicating that additional traffic control changes may be necessary at other intersections within and surrounding the study area. It seems prudent to start with assumptions similar to those listed under the sensitivity analysis scenario #2 for opening day, design remedies for the traffic impacts associated with this scenario and take actions in order to achieve the optimum number of walk/bike trips each peak period.

The project trip distribution was determined based on the student enrollment zone data as a best assessment of the distribution of project vehicle trips. With the sensitivity analysis and the reduction of walking and biking trips, the vehicle trip distribution of project trips as assumed in the TIA would still be appropriate. The project trip distribution showed 55% of the vehicle trips heading to the east.

The traffic study is based on full buildout of the school boundary for a total of 850 students (current enrollment is 684). The majority of land to the east is already developed so much of the future student growth will likely occur west of the school.

The intersection that would be most affected by rerouting of trips to the east would be Dollar St./Ostman Rd. As shown in Table 12 in the June 2019 TIA, Dollar St./Ostman Rd. operates at LOS A (City standard is LOS D) and would not be impacted by rerouting of additional trips.

It appears that City representatives have accepted the safety and traffic calming benefits of the all-way stop control in exchange for congestion and delay during the peak hours. However, the traffic impact study for the middle school site shows that Willamette Falls Dr and Ostman Rd will no longer meet the City standards for level of service (LOS) during the midday peak hours, even under the assumption that there will be 250 bike/walk trips. The results of the sensitivity analysis scenario #2 show further degradation in vehicle level of service at this specific intersection to LOS F and may not describe the worst case scenario in regard to the number of assumed bike/walk trips. There appears to be little description in the

transportation impact study for remedies to the increase in vehicle congestion and resulting noise and emissions.

The traffic congestion at the Willamette Falls Drive/Ostman Road intersection is due to local traffic as well as regional cut-through traffic. If capacity is increased at the intersection, the City of West Linn is concerned it will encourage more regional trips diverting onto Willamette Falls Drive from I-205 and other facilities. The school district will pay System Development Charges (SDCs) to the city when the middle school is approved. The City Council determines prioritization and funding of street improvements. The School District looks forward to partnering with the City regarding these improvements.

Additionally, DKS has analyzed the impacts of rerouting a portion of the northbound and southbound Ostman Road trips to Brandon Place resulting in improved operations at the Willamette Falls Drive/Ostman Road intersection. The rerouting of trips at the intersection allows it to meet the City LOS D standard, which is an improvement from the Future 2023 No Build scenario. Full discussion of the Brandon Place reroute and the operational findings are provided in the updated TIA (dated June 2021).

The frontage improvements for Dollar St do not mention bicycle facilities. Although this street is classified as a local street, it appears to function as a collector type street for the subdivision to the north as is indicated by the double solid yellow centerline and absence of other roadway connectivity. Additionally, the extension of Brandon Pl will provide a link to Willamette Falls Dr, potentially attracting through trips during periods of congestion. Bicycle facilities on Dollar St would make this a viable alternative cycling route to the proposed new school site, potentially helping the school meet its mode split goals.

Once the middle school is built, Dollar Street will continue to operate as a local street (low daily volumes and posted speed of 20 mph), and therefore will be required to meet City standards for local street cross section. Based on the low estimated volumes and posted speeds, bike lanes are not proposed. However, a separated bicycle path will be provided along the school frontage on Willamette Falls Drive as part of the school project providing the necessary bicycle linkage to the school.

The report shows that City code requires a minimum of 112 bicycle parking spaces but the proposal only shows 100 bicycle parking spaces being provided. The TIS should detail the assumptions around how the 100 proposed bicycle stalls meet the requirements from the City.

The number of classrooms in Table 14 was an older version of the school classroom programming. The finalized classroom count is 25 classrooms, not 28 classrooms. This makes the required bicycle parking count 100 stalls and has been changed in the updated TIA (dated June 2021).

It appears that the north side of the site does not provide ample access to the school which may reduce the number of bike/walk trips. There appears to be a missed opportunity to connect the school site with the neighborhood cluster to the southwest near Epperly Way which may increase bike/walk trips.

Accessibility to the north side of the middle school will be provided via direct sidewalk linkages promoting walking and biking to the school. Sidewalks, the posted 20 mph speed zone, and urban upgrades including lighting and safe pedestrian crossings will provide the necessary assurance to parents and students that walking and biking will be safe. DKS also conducted a Safe Routes to School assessment to recommend safe walking and biking routes for students.

Improving the pedestrian connection to Epperly Way (Arbor Cove neighborhood) was repeatedly discouraged by the neighborhood as there was concern from the neighbors that parents would use this subdivision as a pick up/drop off area resulting in increased traffic in Arbor Cove. The School District is not currently contemplating improvement to the informal path in response to neighborhood feedback.

It appears that the peak hour factor was not input based on the traffic volume data that was collected. The value that was input for the peak hour in the TIS results in a reduced delay experienced by the drivers using the system.

The peak hour factors (PHFs) were changed to the PHFs that were based on the traffic volume data that was collected and have been updated in the revised TIA. The operational findings did not change.

Furthermore, it appears that the conflicting number of lanes input into the model may not adequately account for both the bike lane (where it exists) and the pedestrian crossing at each intersection. The existing, and proposed increase in, bike and walk trips will certainly add delay to each intersection in the study area. That does not seem to be captured by the results shown in the TIS.

The number of pedestrian and bicycle conflicts at intersections were updated in the Synchro models to capture the increase of pedestrian and bicycle activity at the study intersections (100 walk and bike trips). The operational findings did not change.

Finally, it is unclear if the model was one comprehensive system wide model encompassing the entire study area or simply a look at each individual intersection within the study area. One comprehensive model complete with simulation results may provide a clearer picture of the traffic impacts of the proposed school site.

The Synchro model in the TIA is based on the Highway Capacity Manual's most recent published methodology for unsignalized intersection analysis (6th Edition) and was provided for the entire study area. This approach is consistent with custom and industry standards. Consistent with City Code requirements, the TIA provides LOS calculations for the study area intersections. No microsimulation was conducted as part of the TIA transportation analysis.

The pedestrian network identified in the report shows a lack of safe and comfortable routes by which students will be expected to travel. The recommendations could go further to help achieve the desired results and it would be useful to show an entire network built for the walking boundary with specific routes identified. As shown, the walking boundary and identified safe routes to school leave much of the area students stranded or otherwise unable to connect to the identified safe routes.

The safe routes shown in Figure 10 in the TIA represent the safest and most comfortable routes available for students from all areas of the adjacent neighborhoods within the identified walking boundary (see Figure 10, dotted gray line). Locations where a Safe Route is currently missing sidewalk or crosses an intersection, DKS recommends filling the sidewalk gap and installing marked, signed crosswalks. For example, sidewalk gaps on Ostman Road are recommended to be filled so that students walking along the Safe Routes identified (solid orange line) are not stranded without safe pedestrian facilities. The purple circles on Figure 10 show locations where a marked, signed crosswalk is recommended to bring attention to students crossing intersections. Page 31 – 32 of the 2020 TIA discuss 6 locations where enhanced/improved crossings are recommended along the identified Safe Routes. Recommendations include marked crosswalks, ADA compliant curb ramps, and potential RRFBs.

The TIS may consider the number of trips created by the proposed tolling on the I-205

The I-205 tolling project is still in the early planning stages and a toll will not be implemented for at least a few more years. Once a tolling price has been decided upon and impacts have been determined, improvements to mitigate traffic on local agency streets will be coordinated with ODOT. Based on discussions with City of West Linn staff, it will be the responsibility of the ODOT tolling project to mitigate traffic impacts to city streets, therefore, the school district will not be required to mitigate any impacts due to tolling at this time.

Finally, street lighting is an important part of pedestrian and cyclist safety. The TIS recommendations should include street lighting improvements for the entire walking boundary.

The school district is providing street lighting along the project frontage to Willamette Falls Drive, Brandon Place, and Dollar Streets including the key intersections of Willamette Falls Drive/Brandon Place and Brandon Place/Dollar Street.

Please let us know if you have any questions or comments.

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MEMORANDUM

DATE: June 22, 2021

TO: Gary Walvante, Chair City of West Linn Planning Commission
City of West Linn Planning Commission

FROM: Scott Mansur, P.E., PTOE | DKS Associates
Jenna Bogert, P.E. | DKS Associates

SUBJECT: West Linn Wilsonville Athey Creek Middle School at Dollar Street P20079-000
DKS Response to Kittelson Review Comments

DKS RESPONSES TO KITTELSON REVIEW COMMENTS

The goal of this memorandum is to document DKS' responses to Kittelson's review comments on the transportation impact study[1] for the West Linn-Wilsonville Athey Creek Middle School at Dollar Street project. The original comment letter, dated April 8, 2021, is attached to this memorandum. Based on some of the comments included as well as comments provided by the City of West Linn, DKS has prepared an update to the Traffic Impact Analysis (TIA), which has been submitted to the City of West Linn.

The City of West Linn has been preparing the conceptual design for upgrading Willamette Falls Drive over the past year. It would be helpful to show these long-term improvements as part of the site plan and off-site improvement plans to ensure both alignment and to avoid any unnecessary throwaway improvements. We would suggest that the school develop half-street improvements along the Willamette Falls Drive frontage consistent with the attached concept plan.

The School District plans to provide half-street improvements on Willamette Falls Drive consistent with these concept plans (i.e., a separated, multi-use path along the school property frontage). However, because the plans are still in draft form, the City has requested that they not be published in the TIA or on the School District's design plans for the new middle school. The School District design will be consistent with the City's desires and the design plans will be reviewed and approved by the City prior to construction.

State the identified peak hours used in the analysis and how those hours align with the anticipated Athey Creek start and stop times.

The peak hours that were analyzed for this study were 8:00 am to 9:00 am and 3:10 pm to 4:10 pm; traffic counts were collected from 8 am – 10 am and 3 pm – 5 pm. The peak hours analyzed were based on the peak traffic volumes near the proposed site on Dollar Street. The middle school (pre-COVID) begins at 9:15 am and releases at 3:45 pm and this is the anticipated start and end times of the relocated school. This information has been added to the updated TIA (dated June 2021).

[1] WLWV Athey Creek Middle School Relocation Transportation Impact Study, DKS Associates, October 21, 2020.

Confirm that the measured in vs. out volumes at Athey Creek Middle School (outlined in Table 6) are correctly summarized. There is a higher volume exiting than entering during the AM peak hour. ITE rates and studies at other middle schools suggest these numbers should be reversed. Also, provide additional detail regarding this measured demand such as the data collection date, the summarized peak hours (in relation to school start and stop times), number of buses, and other available details.

Yes, the trip generation counts in Table 6 are confirmed as accurate. The driveway count data sheets are now accessible in Appendix A in the updated TIA (dated June 2021). Driveway counts were collected from 8 am – 10 am and 3 pm – 5 pm on May 16th, 2019.

Even though school beings at 9:15 am, there are bands, clubs, and teacher meetings that begin at 8 am. Parents drop off those students just prior to 8 am and, based on the driveway counts, appear to remain on campus up until the start of school, leaving campus between 8:55 - 9:15 AM. This is likely the cause of the higher number of trips OUT than IN during the 8:15 am - 9:15 am peak hour. Based on research, there were no special events the day of the count collection that might have influenced the traffic counts that morning. Text clarifying this has been added to the updated TIA (dated June 2021).

Figures 2, 5, 6, and 7 – Correct Willamette Falls Drive/Ostman Road volume bubble to reflect all-way stop traffic control. Provide an additional figure summarizing the Net New Trips to clarify what traffic is ultimately added/removed from the study area (summation of Figures 5 and 6).

Existing figures have been corrected for the updated TIA (dated June 2021).

Safety Analysis – Provide a Critical Crash rate assessment of the study intersections following the analysis methodology presented in ODOT's SPR 667 Assessment of Statewide Intersection Safety Performance.

The crash rates have been calculated and added to the updated TIA (dated June 2021).

- *Willamette Falls Drive/Fields Bridge Park = 0.060 calculated crash rate*
- *Willamette Falls Drive/Ostman Road= 0.181 calculated crash rate*

The final trip generation estimate in Table 6 suggests that a relocated larger middle school will generate significantly fewer trips than the measured demand at the existing Athey Creek Middle School. While it is reasonable to assume the new school site will experience a larger increase in walking/biking trips, a more conservative and likely mode shift will involve a reduction in bus ridership (with busing no longer provided within the walking/biking radius), not a reduction in parent drop-off/pick-up trips. In light of these comments, please provide additional justification for the trip generation methodology or calculate a new rate using the measured demand at the existing Athey Creek Middle School and more conservative mode split assumptions.

The mode split assumptions were developed in coordination with School District staff and their anticipated operations of the relocated school site. Pages 23-25 of the report contains a sensitivity analysis, where we have assumed less walking/biking trips and more driving trips than what is originally proposed in Table 6. The Sensitivity Analysis #2 assumptions equate to trip rates of 0.59 AM Peak and 0.43 Midday Peak, which are both higher than the current trip generation rates at Athey Creek MS (0.46 AM peak and 0.34 PM peak). The sensitivity analysis shows that even if these higher vehicle trip rates are assumed, then the operations analysis overall results do not differ from the original results (Table 9).

Vehicle Trip Distribution – Provide additional justification and detail that more clearly illustrates the trip distribution and assignment of the school trips.

The trip distribution for both Figure 5 and Figure 6 were based on future enrollment forecast maps from the School District showing the number of student residences per WLWV middle school enrollment

zones. We used these student enrollment counts and locations to estimate the distribution of vehicle trips for both the existing MS and future MS. Additional text on this methodology has been included in the updated TIA (dated June 2021).

Local Traffic Reroute – It does not appear that any existing local traffic was assumed to reroute to the new Brandon Place extension between Dollar Street and Willamette Falls Drive. Please clarify or update the analysis to reflect a likely rerouting of existing local traffic.

DKS agrees with Kittelson that rerouting a portion of the northbound and southbound Ostman Road trips to Brandon Place based on the proximity of residential land uses located near Dollar Street and Brandon Place that originate from or are destined for Willamette Falls Drive.

Based on our rerouting discussion with City staff and Kittelson, a small portion of trips was rerouted to Brandon Place. With the rerouting of trips, the Willamette Falls Drive at Ostman Road intersection is significantly improved (-15 seconds of delay), allowing the intersection to meet the City LOS D standard. Full discussion of the Brandon Place reroute and the operational findings are provided in the updated TIA (dated June 2021). The majority of these rerouted trips are from residential uses along Dollar Street and therefore, are not increasing the existing traffic volumes on Dollar Street.

Clarify in the report that the City has verified that there are no in-process developments in the study area.

There are no approved, in-process developments in the study area. This has been noted in the updated TIA (dated June 2021).

Incorporate the Willamette Falls Drive Concept Plan roadway cross-section into the site plan and identify all necessary offsite and frontage improvements to be consistent with this plan.

See DKS response to previous comment regarding the Willamette Falls Drive Concept Plan.

Provide discussion on the adequacy of the primary parking lot and staff parking lot to fully accommodate parent and bus drop-off/pick-up activity.

A discussion regarding the parent and bus loading activity has been added to the updated TIA (dated June 2021).

The study is recommending that the developer provide sidewalk infill and crossing improvements at locations not immediately adjacent to the school in the Safe Routes to School (SRTS) discussion. Please clarify which specific off-site sidewalk and crossing improvements the applicant is proposing in conjunction with the development.

The School District will be responsible for the improvements directly adjacent to the property frontage. However, the implementation plan for the remaining Safe Routes to School (SRTS) sidewalk infill and crossing improvement needs listed in the TIA will be determined through a partnered effort by the School District and City of West Linn. Further discussion is needed between the School District and City, with final confirmation by West Linn City Council

WEST LINN ATHEY CREEK MIDDLE SCHOOL RELOCATION

TRANSPORTATION IMPACT STUDY

JUNE 22, 2021

PREPARED FOR:

West Linn-Wilsonville School District

PREPARED FOR WEST LINN-WILSONVILLE SCHOOL DISTRICT

Remo Douglas, Office of Capital Construction

PREPARED BY DKS ASSOCIATES

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Jenna Bogert, P.E.

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INTRODUCTION

The purpose of this transportation evaluation is to determine the transportation impacts of the proposed relocation of Athey Creek Middle School from the current location north of Borland Road to the proposed site approximately three miles southeast along Willamette Falls Drive near Dollar Street. The new school will be approximately 109,000 square feet with an estimated future student population of 850. It is anticipated that the school will be completed and open for the 2023-2024 school year. Table 1 provides more details regarding the study area and characteristics of the proposed project.

TABLE 1: STUDY AREA AND PROPOSED PROJECT CHARACTERISTICS

STUDY AREA	
NUMBER OF STUDY INTERSECTIONS	Four
ANALYSIS PERIODS	Weekday AM (8:00 to 10:00) and Midday (3:00 to 5:00) peak hours
PROPOSED DEVELOPMENT	
SIZE AND LAND USE	850 student middle school Currently Vacant 21 Acre Lot
PROJECT TRIPS	279 AM Peak Hour Trips (152 in, 127 out) 211 Midday Peak Hour Trips (98 in, 113 out)
VEHICLE ACCESS POINTS	Access to the school will be provided via a new extension road, Brandon Place. One full access driveway will connect to the Brandon Place extension, and an entrance for busses and staff only will be included off of Dollar Street.
OTHER TRANSPORTATION FACILITIES	
PEDESTRIAN AND BICYCLE FACILITIES	There is an existing multi-use path on the south side of Willamette Falls Drive.
TRANSIT FACILITIES	The nearest bus stops are located approximately 500 feet north of Dollar Street on Ostman Road, on the northwest corner of Willamette Falls Drive/Ostman Road, and approximately 1,000 feet east of Ostman Road on Willamette Falls Drive for Route 154-Willamette/Clackamas Heights.

EXISTING CONDITIONS

This section discusses the conditions of the existing site including the study area, existing traffic volumes, and traffic operations.

STUDY AREA

Athey Creek Middle School has a 684-student population[1] and is located just north of I-205 off SW Borland Road in Clackamas County. The proposed location for the relocated Athey Creek Middle School is approximately three miles southeast of the existing location in the City of West Linn. The existing school location and driveways, proposed relocation site, and study intersections are shown in Figure 1. The area where the relocated middle school is proposed is currently zoned as low-density residential (R-10) which allows for schools as a conditional use.

The following sections present the existing characteristics of the study area for the proposed relocation including the bicycle and pedestrian facilities, the public transportation services provided in the study area, and a summary of the roadway network. Additionally, any City projects that are currently planned near the proposed school relocation are discussed.

FIGURE 1: STUDY AREA

[1] Student enrollment was 684 in March 2019 when the traffic counts were collected.

ROADWAY NETWORK

Key roadways near the proposed school site include Willamette Falls Drive, Ostman Road, and Dollar Street. The jurisdiction, functional classifications, and characteristics of each of the study area roadways are listed in Table 2.

TABLE 2: STUDY AREA ROADWAY CHARACTERISTICS

ROADWAY	FUNCTIONAL CLASSIFICATION	JURISDICTION	LANES	POSTED SPEED	SIDEWALKS	BIKE FACILITIES
WILLAMETTE FALLS DRIVE	Minor Arterial	West Linn	2	30	Partial [a]	Partial [a]
OSTMAN ROAD	Collector	West Linn	2	25	Partial [b]	No
DOLLAR STREET	Local	West Linn	2	25	Yes	Partial [c]

[a] There are sidewalks and a bicycle lane along the north side of Willamette Falls Drive for approximately 1,350 feet west of Ostman Road to the marked pedestrian crossing. A shared-use path is provided along the south side of Willamette Falls Drive between the marked pedestrian crossing and the Tualatin River Bridge.
[b] Sidewalk currently exists on most of the east side of Ostman and along a some stretches on the west side.
[c] There is an unmarked 6-foot lane along the north side of Dollar Street.

BICYCLE AND PEDESTRIAN FACILITIES

The site for the proposed relocated middle school is substantially more accessible by walking and biking since it is adjacent to an existing neighborhood within the City of West Linn as compared to the current Athey Creek Middle School location that is in rural Clackamas County. There is a multi-use path that connects Fields Bridge Park to Willamette Falls Drive at Epperly Way. There are sidewalks and bicycle lanes along the north side of Willamette Falls Drive from Ostman Road to Epperly Way, where there is a marked crosswalk with signage connecting to the multi-use path. West of this crossing there are no sidewalks or bicycle lanes along Willamette Falls Drive. Ostman Road and Dollar Street do not have marked bicycle lanes; however, Dollar Street has a large, paved shoulder. There are sidewalks along the north side of Dollar Street while there are partial sidewalks along Ostman Road.

PUBLIC TRANSIT SERVICE

TriMet provides public transportation services between West Linn's Willamette neighborhood and Clackamas Heights via Oregon City Transit Center, traveling along Willamette Falls Drive, Abernethy, and Holcomb on route 154-Willamette/Clackamas Heights. Currently, the closest bus stops to the proposed school site are located approximately 500 feet north of Dollar Street on Ostman Road, on the northwest corner of the Willamette Falls Drive/Ostman Road intersection, and approximately 1,000 feet east of Ostman Road on Willamette Falls Drive.

PLANNED PROJECTS

The 2016 City of West Linn Transportation System Plan (TSP) lists the following capital projects that impact the key roadways near the proposed school site.[2]

- Willamette Falls Drive/Ostman Road: Widen Willamette Falls Drive with center median 500' on each side of intersection to allow for two-stage left turn from Ostman Road. Install all-way stop-control when warranted. (Project M4-Low Priority)

It should be noted that an all-way stop-control was installed at the intersection in 2016. The two-way center turn lane has not been installed.

EXISTING TRAFFIC VOLUMES

Traffic counts were collected for the AM peak period (8:00 am – 10:00 am) and Midday peak period (3:00 pm – 5:00 pm) on a Thursday when school was in session.[3] These peak periods were selected for traffic count collection in order to capture the start and end of school.

The traffic volumes were collected during the spring of 2019 (prior to the COVID-19 pandemic that has impacted traffic volumes). In order to analyze the study intersections for the 2020 existing conditions, the 2019 traffic volumes were grown by an annual rate of 1.15% for one year. The average annual growth rate was estimated from the Metro Travel Demand Model. The 2020 traffic volumes used in the existing conditions analysis are shown in Figure 2. The detailed two-hour traffic counts are included in Appendix A.

[2] West Linn Transportation System Plan., March 28, 2016.

[3] Traffic counts were collected on May 16, 2019, by All Traffic Data.

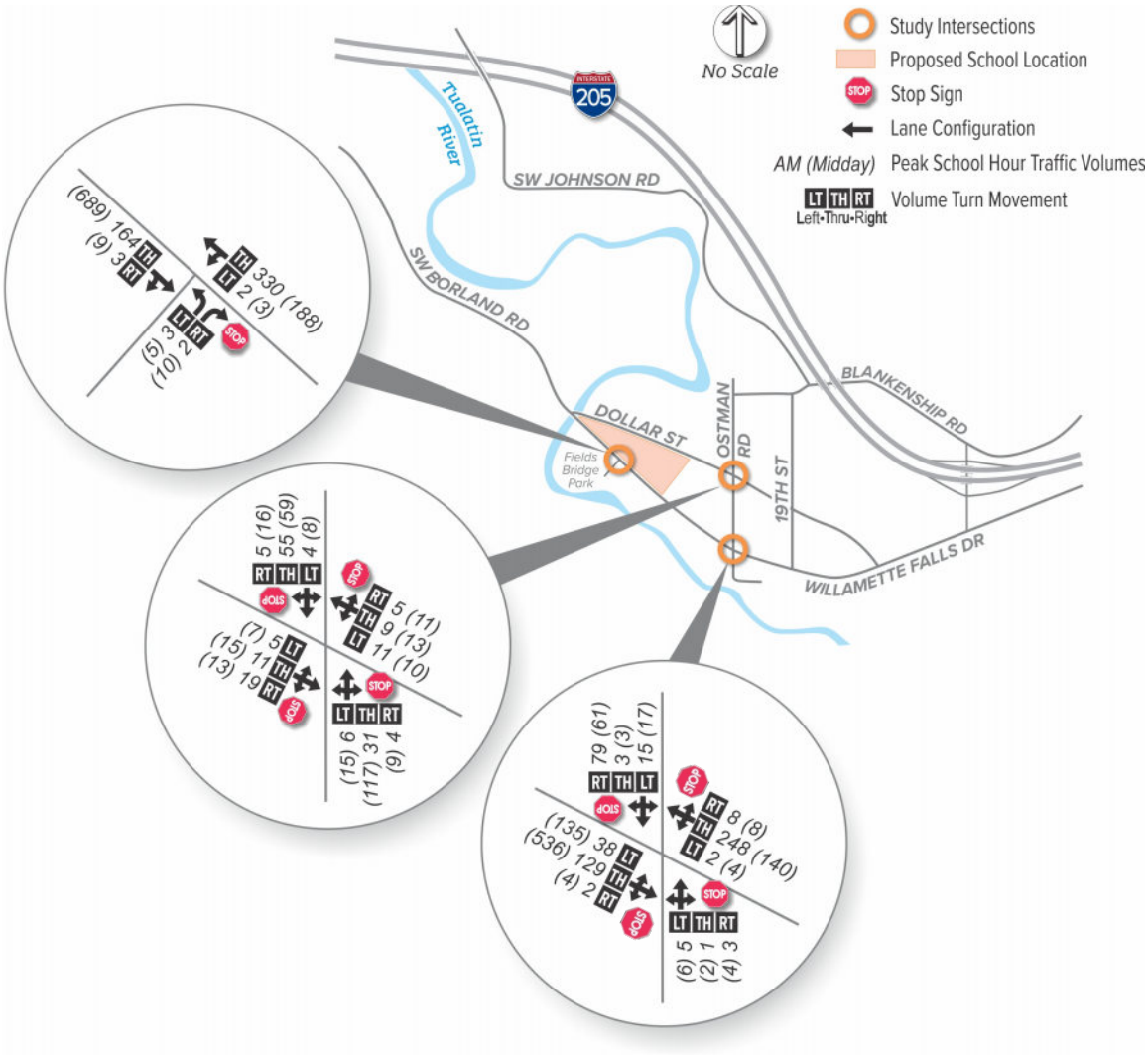


FIGURE 2: 2020 EXISTING TRAFFIC VOLUMES, LANE GEOMETRIES, AND TRAFFIC CONTROL

EXISTING TRAFFIC OPERATIONS

An analysis of the 2020 existing intersection operations was performed for the study intersections to determine the current operating conditions of the study area transportation network. Intersection operations were analyzed for the AM and Midday peak hours, which is when project and study area traffic volumes are expected to be the highest due to typical work, school, and commuter trends.

The peak hours that were analyzed for this study were 8:00 am to 9:00 am (AM peak hour) and 3:10 pm to 4:10 pm (Midday peak hour); traffic counts were collected from 8 am – 10 am and 3 pm – 5 pm. The peak hours analyzed were based on the peak traffic volumes near the proposed site on Dollar Street. The middle school (pre-COVID) begins at 9:15 am and releases at 3:45 pm and this is the anticipated start and end times of the relocated school.

Three existing study intersections were identified for data collection and analysis:

- Willamette Falls Drive/Fields Bridge Park
- Willamette Falls Drive/Ostman Road
- Dollar Street/Ostman Road

INTERSECTION PERFORMANCE MEASURES

Level of service (LOS) ratings and volume-to-capacity (v/c) ratios are two commonly used performance measures that provide a good representation of intersection operations. In addition, they are often incorporated into agency mobility standards.

- Level of service (LOS): A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.

- Volume-to-capacity (v/c) ratio: A decimal representation (typically between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 0.95, congestion increases, and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays.

The study intersections are required to meet the City of West Linn standard for an unsignalized intersections to operate at or below LOS D.[4]

INTERSECTION ANALYSIS

The existing traffic operations at the study intersections were evaluated for each peak hour using HCM 6th Edition Highway Capacity Manual methodology for unsignalized intersections.[5]

The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are listed in Table 3. The HCM reports are provided in Appendix D. For further explanation on how the LOS is determined, please refer to Appendix C.

As shown, all study intersections meet the operating standard (LOS D) for the existing conditions.

[4] Comprehensive Plan, Goal 12, Page T-8, West Linn, Updated July 2017.

[5] Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

TABLE 3: EXISTING 2020 STUDY INTERSECTION OPERATIONS

INTERSECTION	CITY OPERATING STANDARD	AM PEAK			MIDDAY PEAK		
		V/C	DELAY	LOS	V/C	DELAY	LOS
TWO-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/FIELDS BRIDGE PARK	LOS D	0.01	11.7	A/B	0.05	15.8	A/C
ALL-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/OSTMAN RD	LOS D	0.34	9.6	A/A	0.90	33.4	D/B
DOLLAR ST/OSTMAN RD	LOS D	0.10	7.9	A/A	0.19	8.6	A/A

v/c = Volume-to-Capacity Ratio of Worst Movement
Delay = Critical Movement Approach Delay (sec)
LOS = Level of Service of Major Street/Minor Street

SAFETY ANALYSIS

The most recent five years (2014-2018) of available crash data for the study area was obtained from the ODOT crash database and used to evaluate the safety conditions near the proposed middle school site. Between 2014 and 2018, a total of 11 collisions occurred on the streets near the project site (Willamette Falls Drive, Ostman Road, and Dollar Street were evaluated). All crash data is provided in Appendix J and a map of the 11 crashes are shown in Figure 3.

The severity of the crashes in the study area were predominantly either property damage only (5 crashes, 45%) or possible injury (5 crashes, 45%). One minor injury crash occurred on Willamette Falls Drive at the pedestrian crosswalk (located west of Epperly Drive). This accident was categorized as rear-end and was likely due to pedestrian activity in the crosswalk, which caused vehicles to suddenly stop on Willamette Falls Drive.

Between 2013 and 2017, the most common crash type along the corridor was rear-end crashes (10 crashes, 90%) and seven of those rear-end crashes occurred near the pedestrian crosswalk on Willamette Falls Drive west of Epperly Street. The City intends to relocate this pedestrian crosswalk to the intersection of Epperly Street.

The crash rates at the study intersections were calculated following the Oregon Department of Transportation (ODOT) guidelines[6] and are shown in Table 4. The calculated crash rates are based on the number of crashes and number of entering vehicles per day. The crash rates are then compared to the 90th percentile crash rate for similar intersection types. If the calculated crash rate is higher than the 90th percentile, then the intersection should be flagged for further investigation.

[6] Assessment of Statewide Intersection Safety Performance (SPR 667), Oregon Department of Transportation, June 2011.

TABLE 4: CRASH RATES (2014 – 2018)

INTERSECTION	NUMBER OF CRASHES	DAILY TOTAL ENTERING VEHICLES	CRASH RATE	90TH PERCENTILE CRASH RATE FOR OREGON
TWO-WAY STOP CONTROLLED				
WILLAMETTE FALLS DR/FIELDS BRIDGE PARK	1	8,940	0.061	0.293
ALL-WAY STOP CONTROLLED				
WILLAMETTE FALLS DR/OSTMAN RD	3	9,090	0.181	0.408
DOLLAR ST/OSTMAN RD	0	-	-	-

FIGURE 3: 2014–2018 COLLISION

SCHOOL RELOCATION

This section presents the methods and assumptions used in estimating the trip generation and trip distribution associated with the relocated middle school. This includes considerations for mode split, enrollment zones, site access, and traffic pattern adjustments after the school is relocated.

STUDENT ENROLLMENT ZONES

Based on discussion with West Linn-Wilsonville School District staff, the enrollment of the Athey Creek Middle School was 684 students (when traffic counts were collected in 2019) and it is anticipated that the new, relocated middle school will have capacity for 850 students. The West Linn-Wilsonville School District enrollment zone map identifies which schools students can attend based on their residence location.[7] There are four zones that are assigned to Athey Creek Middle School: exclusive Athey Creek zone, Athey Creek/Meridian zone, Rosemont, and Athey Creek/Rosemont zone. It is assumed that these zones will remain the same after the school relocates. Athey Creek Middle School is currently located within the split Athey Creek/Meridian zone, while the new site will be located at the edge of the exclusive Athey Creek enrollment zone.

Figure 4 shows the estimated percentages of students of the total enrollment for the relocated Athey Creek Middle School that would come from the three enrollment zones. The percentages are based on the school districts 2018 – 2028 enrollment forecasts and review of actual attendance at Athey Creek Middle School from 2018-2019. As shown, the relocated Athey Creek Middle School would have the following breakdown per enrollment zone:

- The exclusive Athey Creek zone would generate approximately 40% of students.
- The Athey Creek/Meridian Creek Zone would generate 30% of the students.
- The Rosemont Zone would generate 10% of the students.
- The Athey Creek/Rosemont would generate 10% of the students.
- Lastly, 10% of students will be from out of district or other enrollment zones.

A matrix showing the number of enrolled students per enrollment zone is provided in Appendix B.

[7] District Maps–School Locator. https://www.wlwv.k12.or.us/Page/195, Accessed May 26, 2020.

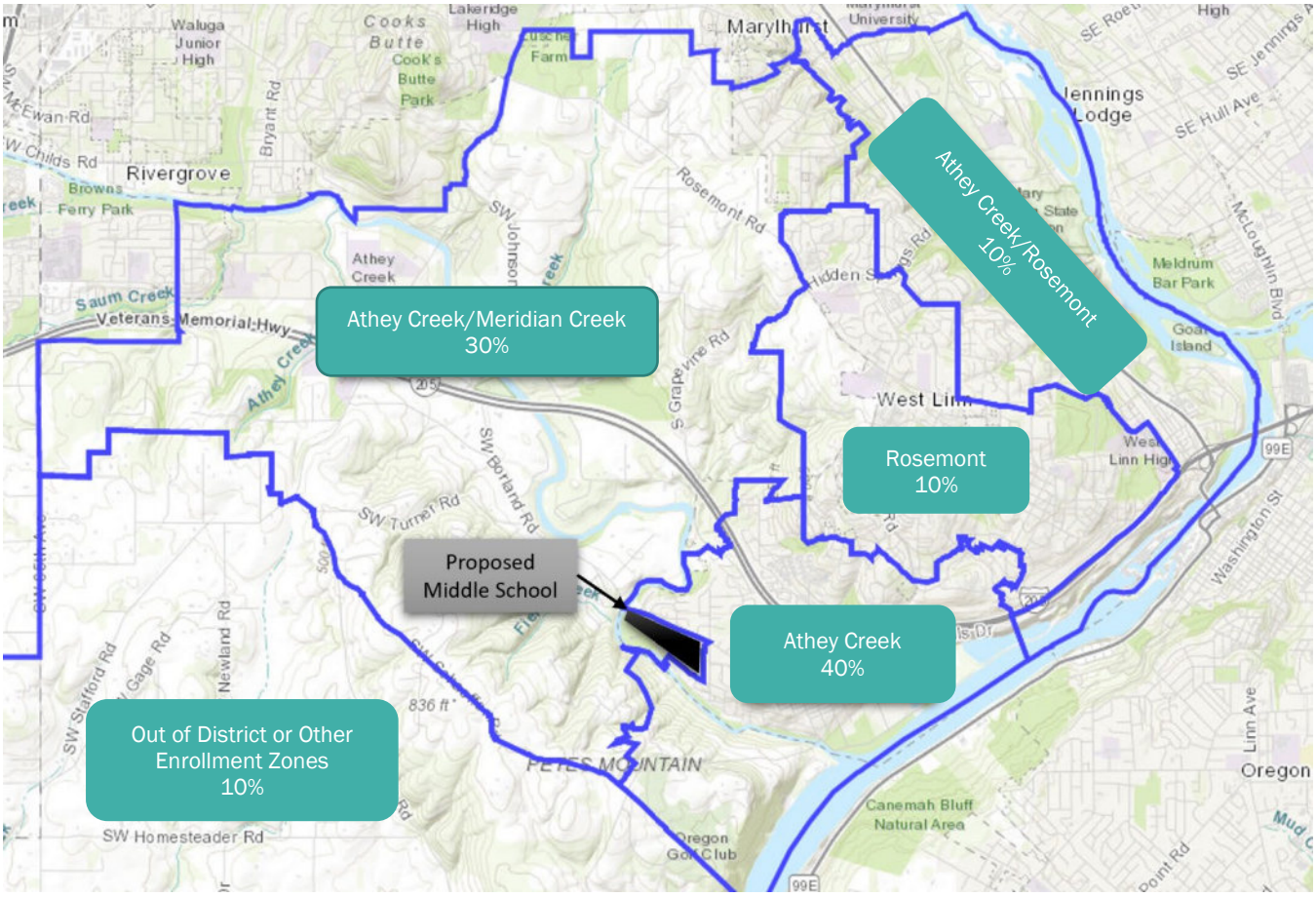


FIGURE 4: APPROXIMATE PROPORTIONS OF TOTAL ENROLLMENT

TRIP GENERATION OVERVIEW

This project is unique because the proposed project is to relocate an existing school. There will not be an additional middle school in the City and therefore, the relocated Athey Creek Middle School will not double the existing amount of middle school trips on the existing roadway system; the relocation will redistribute existing trips on the City and County transportation network. Another unique element of this project is that the middle school relocation is expected to have an impact on the mode split for trips to and from school (more walking and biking trips due to the neighborhood proximity). The following steps were conducted to determine the trip generation impact of relocating the middle school:

- Determine mode split and trip generation of the relocated middle school (850 students).
- Add vehicle trips for an 850-student relocated middle school to the study area.
- Remove vehicle trips for a 684-student Athey Creek Middle School from the study area.

MODAL SPLIT

The modal split for the existing Athey Creek Middle School was provided by the School District and is shown in Table 5. As shown, 72% of Athey Creek Middle School students take the bus to/from

school and 28% are driven to/from school. Essentially 0% of the Athey Creek Middle School students walk or bike to school.

TABLE 5: EXISTING ESTIMATED MODAL SPLIT

TIME OF DAY	DRIVE	BUS	WALK/BIKE
AM PEAK	29%	71%	0%
MIDDAY PEAK	27%	73%	0%
AVERAGE	28%	72%	0%

The West Linn School District staff estimate that approximately 450 students (about 53% of total students) will be bused to the relocated middle school on 12 school buses. The number students being bused from each school zone was estimated using enrollment information (Figure 4) from the School District as well as engineering judgement.

The remaining students would walk, bike, or be driven. For purposes of modal split estimates, it was assumed that the walking boundary for the new school location would be all students located within the Athey Creek enrollment zone, which contains over 250 students (data provided by the School District shows 288 students) based on 2018 – 2019 enrollment data and is pictured in Figure 4.

Table 6 shows the anticipated modal split for each enrollment zone for the proposed relocated middle school. As shown, it is estimated that 250 (29%) of students will walk or bike to school, 450 (53%) students will take the bus, and 150 (18%) students will be driven.

TABLE 6: FUTURE PROPOSED MODAL SPLIT

SCHOOL ZONE	DRIVE	BUS	WALK/BIKE	TOTAL
ATHEY CREEK	30	60	250	340
ATHEY CREEK/MERIDIAN	30	225	0	255
ATHEY CREEK/ROSEMONT	15	70	0	85
ROSEMONT	15	70	0	85
OTHER AREAS	60	25	0	85
TOTAL NUMBER OF STUDENTS	**150**	**450**	**250**	**850**
TOTAL PERCENTAGE	**18%**	**53%**	**29%**	**100%**

TRIP GENERATION RATES COMPARISON

Trip generation is the method used to estimate the number of vehicles a development adds to site driveways and the adjacent roadway network during a specified period (e.g., the AM or Midday peak hour). Table 7 shows three sets of trip generation rates for middle schools.

- The first set of trip generation rates shown is the international average rate found in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition.[8] The ITE trip generation rates include vehicle trips associated with the entire development, which includes both students and staff.
- The second set is the existing Athey Creek trip generation, which was calculated based on driveway counts that were collected in the spring of 2019 when school was in session. These traffic counts included trips for students and staff. The driveway counts were collected at driveways providing direct access to the existing Athey Creek Middle School and, by virtue of timing, do not include material numbers of Stafford Primary School trips.
- The third set of trip generation rates are the proposed rates for the relocated Athey Creek Middle School. These trip rates were estimated using the modal split information presented in the previous section. The process is discussed on the following page.

TABLE 7: VEHICLE TRIP GENERATION COMPARISON

SOURCE	LAND USE	NUMBER OF STUDENTS	AM PEAK TRIP RATE	AM PEAK TRIPS			MIDDAY PEAK TRIP RATE	MIDDAY PEAK TRIPS		
				IN	OUT	TOTAL		IN	OUT	TOTAL
ITE TRIP GENERATION MANUAL	Middle School (ITE Code 522)	684	0.67 trips per student	253	207	460	0.33 trips per student	103	120	223
COLLECTED TRAFFIC DATA	Athey Creek MS (existing)	684	0.46 trips per student	128	191	319	0.34 trips per student	56	180	236
-	Relocated Athey Creek MS (proposed)	850	0.30 trips per student	140	115	255	0.22 trips per student	86	101	187

[8] Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, 2017.

Over 70% of students currently take the bus to Athey Creek Middle School because it is outside of the exclusive Athey Creek enrollment zone and is not in a walkable location (see Table 5). Therefore, it is expected to have a lower vehicle trip generation rate than a typical middle school, which is reflected in Table 6 (0.67 trips per student vs. 0.46 trips per student).

For the relocated middle school, the estimated future number of students being driven to school (18% from Table 6) is lower than the existing modal split at Athey Creek Middle School (28% from Table 5). This would indicate that the new middle school will have a lower vehicle trip generation rate than the existing Athey Creek Middle School. This is a percentage change of 35%, which was applied to the existing Athey Creek Middle School trip generation rates (0.46 AM peak and 0.34 Midday peak) to determine the proposed relocated middle school trip generation rates (0.30 trips per student and 0.22 trips per student).

FINAL TRIP GENERATION

The final trip generation is shown in Table 8 and is estimated to generate 279 trips (152 in, 127 out) during the AM peak hour and 211 trips (98 in, 113 out) during the Midday peak hour. These trips account for both staff, student, and bus trips. This trip generation includes the 12 school buses that will be used to transport students to and from the relocated middle school, resulting in a total 24 school bus trips in each peak hour. It should be noted that the number of trips out (152 trips) during the AM peak hour is higher than the number of trips in (127 trips) based on the driveway counts. This is due to the bands, clubs, and teacher meetings that begin at 8 a.m. (general school starts at 9:15 a.m. pre-COVID). Parents drop off those students just prior to 8 am and remain on campus up until the start of school, leaving campus between 8:55 - 9:15 AM. This is likely the cause of the higher number of trips OUT than IN during the AM peak hour. Based on research, there were no special events the day of the count collection that might have influenced the traffic counts that morning.

The split of vehicle trips in and out of the site were based on the ITE percentages, 55% in and 45% out during the AM peak hour and 46% in and 54% out during the Midday peak hour.

TABLE 8: PROJECT TRIP GENERATION SUMMARY (VEHICLE AND SCHOOL BUS TRIPS)

TYPE OF TRIP	NUMBER OF STUDENTS	AM PEAK TRIP RATE	AM PEAK			MIDDAY PEAK TRIP RATE	MIDDAY PEAK		
			IN	*OUT*	*TOTAL*		*IN*	*OUT*	*TOTAL*
VEHICLE	850	0.30 trips per student	140	115	255	0.22 trips per student	86	101	187
SCHOOL BUS	-	-	12	12	24	-	12	12	24
	TOTAL TRIPS	**-**	**152**	**127**	**279**	**-**	**98**	**113**	**211**

VEHICLE TRIP DISTRIBUTION

Vehicle trip distribution provides an estimation of where vehicles would be coming from and going to. It is given as a percentage at key gateways to the study area and is used to route project trips through the study intersections.

TRIP ADDITION – RELOCATED MIDDLE SCHOOL

For vehicle trip distribution, we have assumed that the majority (40%) of vehicle trips are being generated by the out-of-district/other enrollment zones and that 20% of vehicle trips are being generated by students living in the Athey Creek/Meridian enrollment zone and 20% by the Athey Creek enrollment zone. The remaining vehicle trip distribution is coming from the Rosemont enrollment zone (10%) and the Athey Creek/Rosemont enrollment zones (10%).

This results in the following trip distribution for the project site: 40% of vehicle trips will travel to/from the site via Willamette Falls Drive east, 45% will come from the west of the Tualatin River, and the remaining 15% will come from the neighborhoods just to the east of Ostman Road or from the north side of I-205. These vehicle trip distribution percentages are shown in Figure 5. This trip distribution was based heavily on the school district enrollment data (shown in Figure 4) as well as the Metro Regional Travel Demand Model and existing traffic count data.

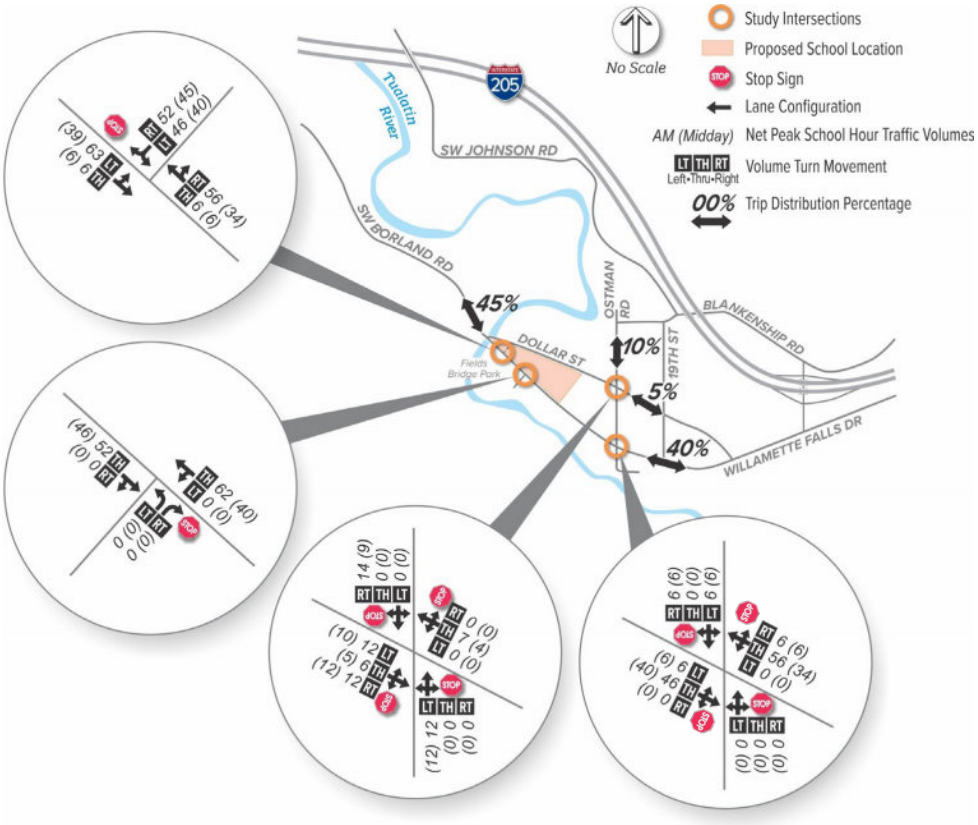


FIGURE 5: RELOCATED MIDDLE SCHOOL TRIP DISTRIBUTION AND PROJECT TRIP ADDITION

TRIP REMOVAL – EXISTING ATHEY CREEK MIDDLE SCHOOL

The vehicle trips that were removed from the study area at the study intersections for the existing Athey Creek Middle School is shown in Figure 6. This distribution for the removal of existing Athey Creek Middle School trips was calculated using the same process for the addition of the relocated Middle School at Dollar Street.

This resulted in an estimated 35% of vehicle trips from the existing Athey Creek Middle School traveling through the study area near the location of the future middle school. These trips will be removed from the network as they are now accounted for in the new middle school trip generation. This trip distribution was based heavily on the school district enrollment data (shown in Figure 4) as well as the Metro Regional Travel Demand Model and existing traffic count data.

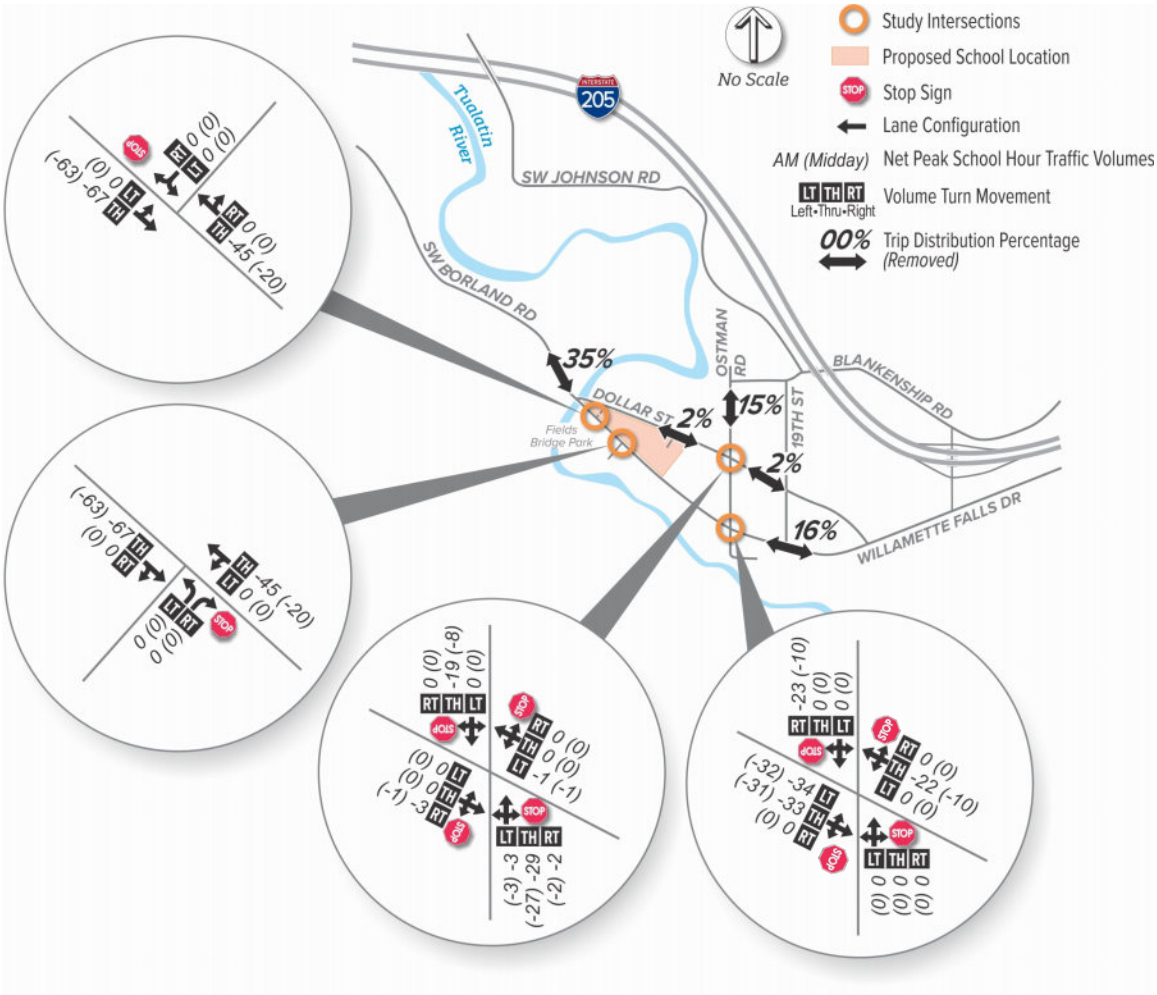


FIGURE 6: EXISTING ATHEY CREEK TRIP DISTRIBUTION AND PROJECT TRIP REMOVAL

The project trips shown in Figure 5 were added to 2023 No Build traffic volumes (described in the next section) and the project trips shown in Figure 6 were removed from the 2023 No Build traffic volumes. The resulting volumes are the 2023 Build volumes, which are presented in the next section.

FUTURE CONDITIONS

This section contains an analysis for the AM and Midday peak hours under future conditions as well as a site plan evaluation for the middle school relocation.

FUTURE 2023 TRAFFIC VOLUMES

The anticipated year of completion and occupancy for the relocated middle school is 2023. The future 2023 No Build traffic volumes were forecasted using future growth estimates from the Metro Future Travel Demand Model (average annual rate of 1.15%). The 2023 No Build scenario only includes the background traffic growth and assumes Athey Creek Middle School remains at its current location. Additionally, no approved in-process developments were identified in the vicinity of the proposed project.

The 2023 Build scenario includes the background traffic growth and project trips modifications as previously discussed. Figure 7 and Figure 8 on the following pages show the peak hour traffic volumes for the 2023 No Build and 2023 Build scenarios, respectively.

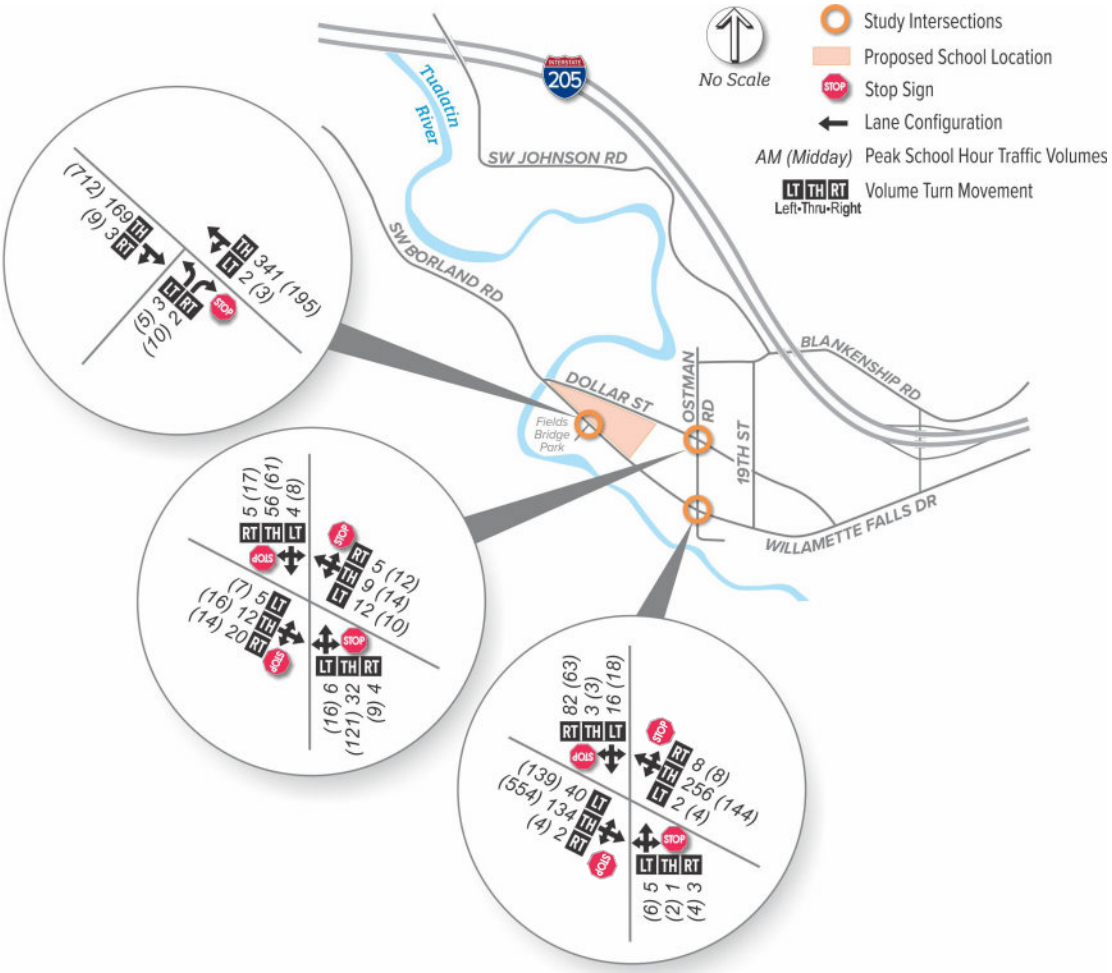


FIGURE 7: 2023 NO BUILD PEAK HOUR TRAFFIC VOLUMES

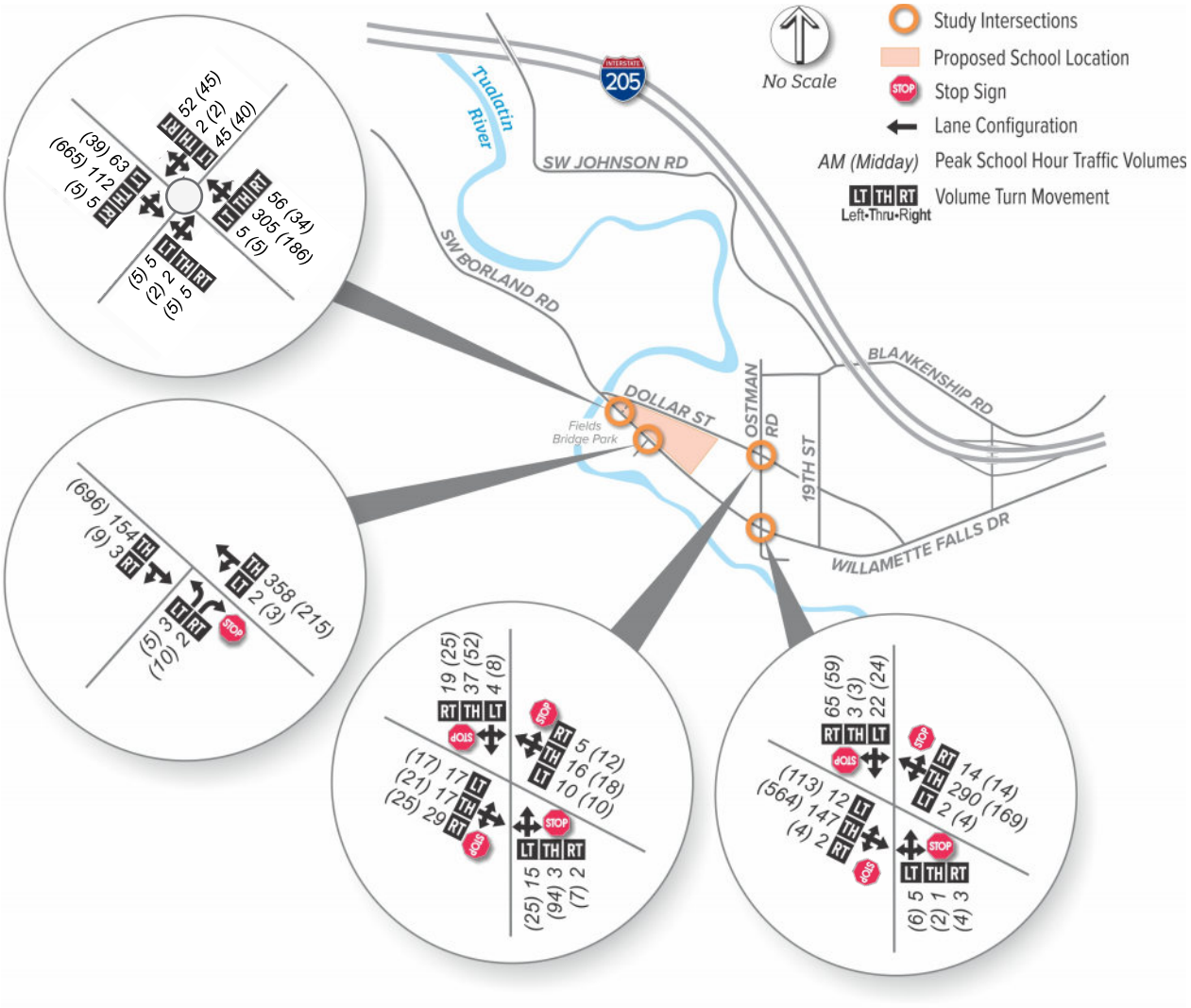


FIGURE 8: 2023 BUILD PEAK HOUR TRAFFIC VOLUMES

FUTURE 2023 TRAFFIC OPERATIONS

Future 2023 operating conditions were analyzed based on the 2023 No Build and 2023 Build traffic volumes. Table 9 shows the intersection operations for the study intersections in the AM and Midday peak hour for the 2023 No Build scenario. As shown, the Willamette Falls Drive/Ostman Road intersection fails to meet operating standard (LOS D) in the Midday peak hour. The HCM reports can be found in Appendix E.

TABLE 9: 2023 NO BUILD INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD	AM PEAK			MIDDAY PEAK		
		V/C	DELAY	LOS	V/C	DELAY	LOS
TWO-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/FIELDS BRIDGE PARK	LOS D	0.01	11.9	A/B	0.05	16.3	A/C
ALL-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/OSTMAN RD	LOS D	0.35	9.8	A/A	0.93	**38.9**	**E/B**
DOLLAR ST/OSTMAN RD	LOS D	0.10	7.9	A/A	0.20	8.6	A/A

v/c = Volume-to-Capacity Ratio of Worst Movement
Delay = Critical Movement Approach Delay (sec)
LOS = Level of Service of Major Street/Minor Street
Bold & Highlighted: The intersection fails to meet the City's operating standard.

PROPOSED PROJECT CHANGES

Based on the proposed site plan and discussions with the City of West Linn, access to the relocated middle school will be provided via a public road extension of Brandon Place from Dollar Street to Willamette Falls Drive. At the new intersection of Willamette Falls Drive and Brandon Place, a roundabout has been assumed.

Table 10 on the following page shows the intersection operations for the study intersections in the AM and Midday peak hour for the 2023 Build scenario. The HCM reports can be found in Appendix F.

The proposed site driveway (that serves staff and buses only) on Dollar Street was also analyzed under the 2023 Build scenario as well (not pictured to the right). The operations for this intersection are also reported in the following table.

TABLE 10: 2023 BUILD INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD	AM PEAK			MIDDAY PEAK		
		V/C	DELAY	LOS	V/C	DELAY	LOS
TWO-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/FIELDS BRIDGE PARK	LOS D	0.01	11.8	A/B	0.05	16.1	A/C
DOLLAR STREET/STAFF & BUS DRIVEWAY	LOS D	0.02	9.2	A/A	0.04	9.4	A/A
ROUNDABOUT							
WILLAMETTE FALLS DR/BRANDON PLACE EXTENSION	LOS D	0.32	5.1	A	0.62	8.5	A
ALL-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/OSTMAN RD	LOS D	0.40	10.2	B/A	0.92	**37.0**	**E/B**
DOLLAR ST/OSTMAN RD	LOS D	0.07	7.9	A/A	0.18	8.6	A/A

v/c = Volume-to-Capacity Ratio of Worst Movement
Delay = Critical Movement Approach Delay (sec) [For roundabouts, the average delay for the intersection is reported]
LOS = Level of Service of Major Street/Minor Street [For roundabouts, the LOS for the intersection is reported]
Bold & Highlighted: The intersection fails to meet the City's operating standard.

As shown, the Willamette Falls Drive/Ostman Road intersection fails to meet operating standard (LOS D) in the Midday peak hour.

As part of the 2023 Build analysis, the number of pedestrian and bicycle crossings at the study intersections were increased to represent the walk and bike trips that would occur on a typical school day.

SENSITIVITY ANALYSIS

As requested by the School District, a Sensitivity Analysis was conducted which evaluated the intersection operations under two alternate modal split assumptions. After closer inspection of the walking boundary for the proposed middle school, it was determined that physical barriers such as the Tualatin River and I-205 would reduce the number of students that would be expected to walk or bike to school in the Athey Creek enrollment zone.

The alternate modal split assumptions are shown in Table 11 below. Sensitivity Analysis #1 assumed that 200 students would walk or bike to school (50 less than the current assumption). Subsequently, the number of students driven to school would increase, increasing the vehicle trip generation. Sensitivity Analysis #2 assumed that 100 students would walk or bike to school. The trip distribution for the Sensitivity Analysis was the same distribution shown in Figure 5.

TABLE 11: SENSITIVITY ANALYSIS PROPOSED MODAL SPLIT

	CURRENT ASSUMPTION			SENSITIVITY ANALYSIS #1			SENSITIVITY ANALYSIS #2		
MODE OF TRAVEL	DRIVE	BUS	WALK/ BIKE	DRIVE	BUS	WALK/ BIKE	DRIVE	BUS	WALK/ BIKE
NUMBER OF STUDENTS	150	450	250	200	450	200	300	450	100
TOTAL PERCENTAGE	**18%**	**53%**	**29%**	**24%**	**53%**	**24%**	**35%**	**53%**	**12%**

Table 12 shows the intersection operations for the study intersections in the AM and Midday peak hour for the 2023 Build scenario. The HCM reports can be found in Appendix G and Appendix H. As shown, the Willamette Falls Drive/Ostman Road intersection fails to meet operating standard (LOS D) in the Midday peak hour.

TABLE 12: 2023 BUILD INTERSECTION OPERATIONS (SENSITIVITY ANALYSIS #1)

INTERSECTION	OPERATING STANDARD	AM PEAK			MIDDAY PEAK		
		V/C	DELAY	LOS	V/C	DELAY	LOS
TWO-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/FIELDS BRIDGE PARK	LOS D	0.01	12.0	A/B	0.05	16.3	A/C
ROUNDABOUT							
WILLAMETTE FALLS DR/BRANDON PLACE EXTENSION	LOS D	0.33	5.3	A	0.63	8.8	A
ALL-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/OSTMAN RD	LOS D	0.42	10.5	B/A	0.94	**40.3**	**E/B**
DOLLAR ST/OSTMAN RD	LOS D	0.07	7.9	A/A	0.18	8.7	A/A

v/c = Volume-to-Capacity Ratio of Worst Movement
Delay = Critical Movement Approach Delay (sec) [For roundabouts, the average delay for the intersection is reported]
LOS = Level of Service of Major Street/Minor Street [For roundabouts, the LOS for the intersection is reported]

Bold & Highlighted: The intersection fails to meet the City's operating standard.

Table 13 shows the intersection operations for the study intersections in the AM and Midday peak hour for the Sensitivity Analysis #2. As shown, the Willamette Falls Drive/Ostman Road intersection fail to meet operating standard (LOS D) in the Midday peak hour.

TABLE 13: 2023 BUILD INTERSECTION OPERATIONS (SENSITIVITY ANALYSIS #2)

INTERSECTION	OPERATING STANDARD	AM PEAK			MIDDAY PEAK		
		V/C	DELAY	LOS	V/C	DELAY	LOS
TWO-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/FIELDS BRIDGE PARK	LOS D	0.01	12.7	A/B	0.05	16.9	A/C
ROUNDABOUT							
WILLAMETTE FALLS DR/BRANDON PLACE EXTENSION	LOS D	0.38	5.9	A	0.68	9.6	A
ALL-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/OSTMAN RD	LOS D	0.47	11.4	A/B	0.98	**49.4**	**E/B**
DOLLAR ST/OSTMAN RD	LOS D	0.07	7.9	A/A	0.18	8.7	A/A

v/c = Volume-to-Capacity Ratio of Worst Movement
Delay = Critical Movement Approach Delay (sec) **[For roundabouts, the average delay for the intersection is reported]**
LOS = Level of Service of Major Street/Minor Street **[For roundabouts, the LOS for the intersection is reported]**

Bold & Highlighted: The intersection fails to meet the City's operating standard.

As shown, the Willamette Falls Drive/Ostman Road intersection continues to fail to meet standards under both of the Sensitivity Analysis scenarios. However, the other study intersections are expected to continue to meet the City's operating standards.

QUEUING AT THE ROUNDABOUT

Vehicle queuing analysis was performed at the proposed roundabout for the AM and Midday peak hour based on the Sensitivity Analysis #2 to determine the 95th percentile queues. The 95th percentile queue is the queue length for a given intersection movement that has only a 5% chance of being exceeded during the peak traffic hour.

The 95th percentile queues at the Willamette Falls Drive/Brandon Place Extension intersection were estimated using SIDRA software and the reports can be found in Appendix G. The results are shown in Table 14.

TABLE 14: 95TH PERCENTILE QUEUES (SENSITIVITY ANALYSIS #2)

APPROACH	AM PEAK HOUR QUEUE	MIDDAY PEAK HOUR QUEUE
EASTBOUND (WILLAMETTE FALLS DR)	25 feet	175 feet
WESTBOUND (WILLAMETTE FALL DR)	50 feet	25 feet
SOUTHBOUND (BRANDON PLACE EXT)	25 feet	25 feet
NORTHBOUND (PARK DRIVEWAY)	0 feet	0 feet

As shown in the table, the longest estimated 95th percentile queue at the intersection is the eastbound movement during the midday peak hour (175 feet or 7 vehicles). This queue will extend onto the Tualatin River bridge. It should be noted that the Midday peak hour for this analysis is 3:10pm – 4:10pm.

BRANDON PLACE – LOCAL TRAFFIC REROUTE

Because the Brandon Place extension between Dollar Street and Willamette Falls Drive provides a new neighborhood connection to Willamette Falls Drive, local vehicle traffic will reroute from Ostman Road to the parallel Brandon Place extension. The impacts to the two Willamette Falls Drive intersections (at Dollar Street and at Brandon Place) have been analyzed for the Midday peak hour and documented in this section.

Based on discussions with City staff and direction from the City's traffic consultant, an estimated 35 vehicle trips were assumed to reroute to Brandon Place from Ostman Road during the Midday peak hour, with 15 of those trips being added to Dollar Street. The rerouted vehicle volumes were approximated based on the number of nearby residences and the 2023 No Build volumes (shown in Figure 7). The operations were rerun under Sensitivity Analysis #2 Midday peak hour for the Willamette Falls Drive/Ostman Road intersection and the Willamette Falls Drive. The results are shown in Table 15. For a map of the rerouted volumes and the operations results, refer to Appendix I.

TABLE 15: BRANDON PLACE – LOCAL TRAFFIC REROUTE OPERATIONS

INTERSECTION	OPERATING STANDARD	NO REROUTE			REROUTE		
		V/C	DELAY	LOS	V/C	DELAY	LOS
ROUNDABOUT							
WILLAMETTE FALLS DR/ BRANDON PLACE EXT.	LOS D	0.68	9.6	A	0.68	9.6	A
ALL-WAY STOP CONTROLLED							
WILLAMETTE FALLS DR/ OSTMAN RD	LOS D	0.98	**49.4**	**E/B**	0.90	34.4	D/B

v/c = Volume-to-Capacity Ratio of Worst Movement
Delay = Critical Movement Approach Delay (sec) **[For roundabouts, the average delay for the intersection is reported]**
LOS = Level of Service of Major Street/Minor Street **[For roundabouts, the LOS for the intersection is reported]**

Bold & Highlighted: The intersection fails to meet the City's operating standard.

As shown, the operations at the proposed roundabout remain unchanged even with an increase in 35 vehicle trips. However, the delay for the eastbound approach on Willamette Falls Drive at Ostman Road is significantly improved (-15 seconds of delay), allowing the intersection to meet the City LOS D standard.

WILLAMETTE FALLS DRIVE/OSTMAN ROAD INTERSECTION

As shown in the previous subsections, the Willamette Falls Drive/Ostman Road intersection fails to meet the operating standard under all of the future scenarios, including the Sensitivity Analysis. Based on discussions with City staff,[9] the all-way stop control (installed in 2016) at this intersection provides multi-faceted benefits.

- Reduces crash risk associated with sight distance limitations for the southbound approach.
- Reduces side-street delay and allows for improved mobility on the local street system when volumes on Willamette Falls Drive are high (e.g., during I-205 traffic events).
- Discourages drivers from using Willamette Falls Drive as a diversion route when there are traffic events on I-205.

Because of these benefits and the infeasibility of a traffic signal (due to right-of-way constraints), there is currently no desire to change the traffic control at Willamette Falls Drive/Ostman Road. Additionally, if capacity is increased at the intersection, the City of West Linn is concerned it will encourage more regional trips diverting onto Willamette Falls Drive from I-205 and other facilities. The School District will pay System Development Charges (SDCs) to the City of West Linn when the middle school is approved. That money can be used by the City to improve the intersection in the future if the city decides improvements are desired.

As discussed in the prior section, the Brandon Place reroute that was requested by the City's traffic consultant would divert traffic to the Brandon Place/Willamette Falls Drive intersection. The rerouting of traffic reduced the delay allowing the intersection to meet the City's LOS D standard.

To help quantify the impacts to delay at the Willamette Falls Drive/Ostman Road intersection, the following graph was created to show the delays for the various analysis scenarios that were presented in this report.

[9] Meeting with School District and City staff on August 6th, 2020.

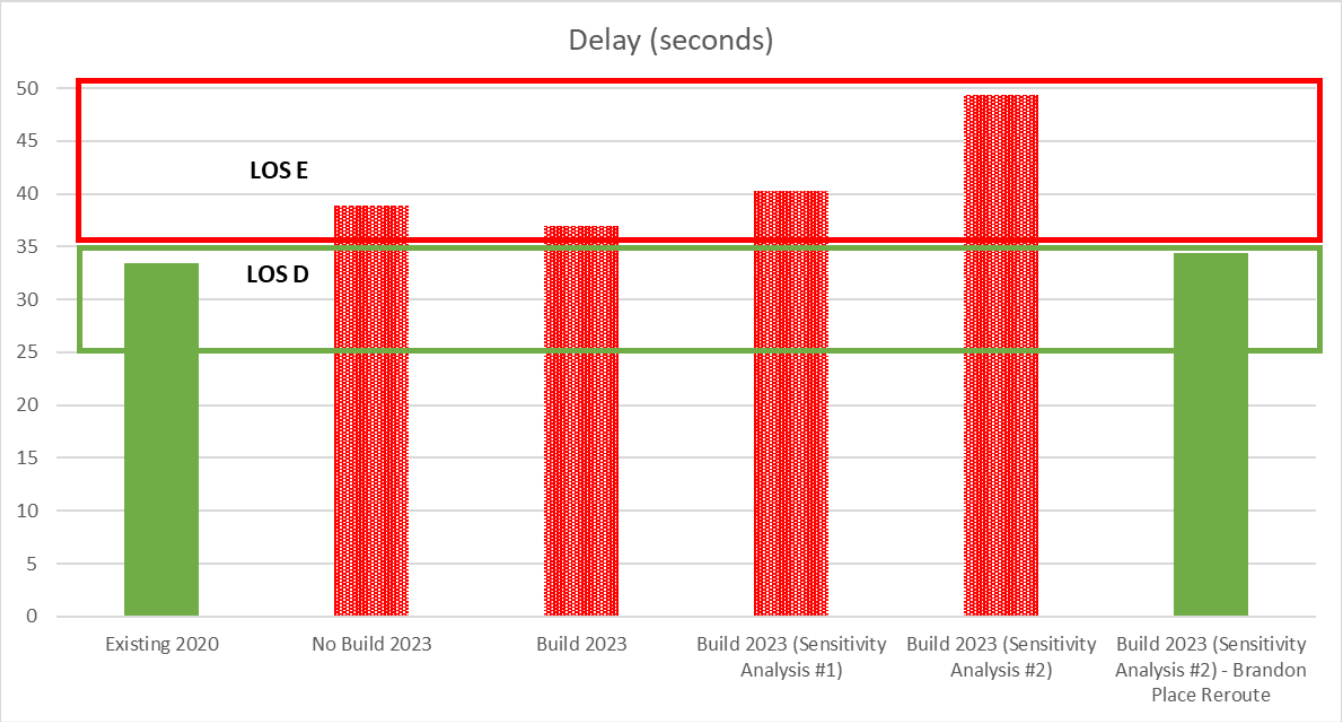


FIGURE 9: DELAY AT WILLAMETTE FALLS DRIVE/OSTMAN ROAD INTERSECTION

SITE REVIEW

The proposed site plan for relocated middle school is provided in the Appendix K. The following sections summarize the requirements that will be applicable for site plan submittals to the City of West Linn.

Access to the relocated middle school is provided via a public road extension of Brandon Place from Dollar Street to Willamette Falls Drive (see Figure 10) and via a full access driveway on Dollar Street, which will be for staff and school buses only.

The intersection of the Brandon Place extension with Willamette Falls Drive will align with the existing park driveway near the Tualatin River bridge. This intersection of Brandon Place/Willamette Falls Drive is currently proposed to be a roundabout.

The intersection of Brandon Place and Dollar Street will be realigned to become a three-leg intersection (north, south, and east legs). The west leg of the intersection is proposed to become a private driveway with the implementation of the relocated middle school.

FIGURE 10: BRANDON PLACE EXTENSION CONCEPT

SIGHT DISTANCE

With a posted speed of 25 miles per hour, the sight distance requirement along Dollar Street is 280 feet for turning left from a stopped approach and 240 feet for vehicles turning right from a stopped approach. Preliminary sight distance was evaluated at the proposed staff and bus driveway location on Dollar Street. The driveway was found to be sufficient to meet the stated requirements. Prior to occupancy, sight distance at any new or modified access points will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon.

It should be noted that the intersection of Willamette Falls Drive/Brandon Place is assumed to be a roundabout and therefore, sight distance requirements for a typical stopped approach would not apply there.

ACCESS SPACING

The required spacing between a driveway and a street intersection on an arterial road (Willamette Falls Drive) is 500 feet from centerline to centerline per the City's TSP.[10] This requirement is met for the proposed extension of Brandon Place at Willamette Falls Drive, which will align with the

[10] West Linn Transportation System Plan, March 28, 2016, Table 15.

existing park access near the Tualatin River bridge. The nearest driveway to this intersection is the driveway to Fields Bridge Park, which is approximately 700 feet away.

There is no required spacing between two accesses on a local residential road (Dollar Street). There is, however, a requirement of 35 feet between driveways and street intersections.[11] Because the Brandon Place extension on Dollar Street is proposed to be aligned with Brandon Place, this driveway meets access spacing requirements. The eastern driveway on Dollar Street is located approximately 200 feet to the west of Fields Drive and therefore, also meets the City's spacing requirements.

FRONTAGE IMPROVEMENTS

It is required that half-street improvements be built along the project site frontage on Willamette Falls Drive and Dollar Street.

Half-street frontage improvements to Willamette Falls Drive should be consistent for a minor arterial. This includes upgraded facilities for vehicles, bicycles, and pedestrians as indicated in the City TSP roadway standards.[12] Per the TSP, minor arterial roadways are required to have two 12-foot travel lanes, a 7-foot cycle track on both sides, and a minimum of 6-foot sidewalks on both sides. Optional cross sections include a 14-foot center turn lane, 5-foot planter strips on both sides, and 10- to 12-foot sidewalks on either side.

Half-street frontage improvements to Dollar Street should be consistent for a local street. This includes upgraded facilities for vehicles, bicycles and pedestrians as indicated in the City TSP roadway standards.[13] Per the TSP, local streets are required to have two 10-foot travel lanes and a minimum of 6-foot sidewalks on both sides. Additionally, the City will require 6-foot landscape strips and 8-foot-wide on-street parking along the project frontage.

The extension of Brandon Place from Dollar Street to Willamette Falls Drive through the project site is required to meet the City's roadway standards for a local street as well. The anticipated cross section will include two 10-foot travel lanes, 7-foot parking on one side (straight segment only), 6-foot wide landscape strips, and 6-foot wide sidewalks. This local street extension will provide one of two accesses to the school site.

OFF-STREET PARKING

The proposed project is required to comply with the City code for the number of vehicular parking stalls and bicycle parking spaces that are provided on site.[14] Table 16 lists the vehicular and bicycle

[11] West Linn Transportation System Plan, March 28, 2016, Table 15.

[12] West Linn Transportation System Plan, March 28, 2016, Exhibit 6 and Table 27.

[13] West Linn Transportation System Plan, March 28, 2016, Exhibit 9 and Table 30.

[14] West Linn Community Development Code, Section 46.090, updated October 2019.

parking requirements for the project site. The parking requirements are based on the building use, number of staff, and square footage of the building.

TABLE 16: VEHICLE AND BICYCLE PARKING REQUIREMENTS

LAND USE	NUMBER OF STAFF/SIZE[A] /CLASSROOMS	SPACES REQUIRED BY CODE			
		VEHICLE MINIMUM	VEHICLE MAXIMUM	ACCESSIBLE PARKING MINIMUM	BICYCLE MINIMUM
MIDDLE SCHOOL/JUNIOR HIGH SCHOOL	75 Staff 111 KSF 25 Classrooms	186	205	6	100
Proposed Parking Stalls		**186 vehicle stalls**			**100 stalls**

[A] KSF= 1,000 square feet

The City code requires a minimum of 1 vehicle parking space per employee, plus 1 vehicle parking space for each 1,000 square feet of floor area. As shown above, 186 vehicular stalls are needed to meet the minimum Code requirements for the project. Of the 186 vehicular stalls, 6 are required to be accessible spaces and 8 spaces designated for carpool/vanpool. The maximum number of parking stalls is 205 stalls according to the rates provided in the City Code.

The current site plan proposes 186 total vehicle parking stalls, meeting the City's requirement.

The City code requires a minimum of 4 bicycle parking spaces per classroom in a middle school. A minimum of 100 bicycle parking spaces are required at the project site to meet the Code requirements and 50% of the spaces must be covered. The bicycle parking spaces should be located within 50 feet from the primary building entrance, as measured along a direct pedestrian access route. It is recommended that all future site plans show the minimum required number of bicycle parking stalls.

ON-STREET PARKING

On-street parking will be added to the south side of Dollar Street along the school site frontage as part of the recommended half-street improvements. Approximately 43 to 54 parking spaces are expected to be added to Dollar Street and 8 to 12 on the straight portion of the Brandon Place extension.

ON-SITE CIRCULATION

The on-site circulation has been designed strategically to separate parent drop-off traffic from staff and bus drop-off traffic, which increases safety and minimizes off-site traffic impacts.

Parent Loading

Parent pick-up and drop-off will occur in the west parking lot, which is primarily for parent and visitor parking and is accessed via the Brandon Place public street extension. Based queuing rates and the number of students for the proposed middle school, the parent drop-off/pick-up line is estimated to be between 500 feet to 600 feet (20 to 24 vehicles) at its peak. The driveway to the western parking lot widens to 30 feet wide along the student loading area to allow for the continuous forward flow of passenger vehicles for the purpose of loading and unloading passengers. The queue storage on-site for parent loading exceeds 600 feet, therefore, the queues are not expected to extend back onto the Brandon Place extension.

School Bus Loading

The school bus loading will occur in the east parking lot, which is for staff parking and is accessed via Dollar Street. The school will have 12 school buses to drop-off and pick-up students daily. Based on the site plan, there is approximately 600 feet of curb space for school bus loading, which is sufficient space for the 12 school buses assuming 50 feet of queue length per school bus.

SAFE ROUTES TO SCHOOL

Safe Routes to School are safe walking and biking routes to and from schools. They are typically characterized by marked pedestrian crossings, sidewalks, and bike lanes, flashing beacons, and other enhancements. Safe Routes to School aim to make it safe, convenient, and fun for children to walk and bicycle to and from schools. The goal is to improve safety while increasing health and physical activity.

The school walk zone, or walking boundary, is typically a subset of the enrollment zone. School walking boundaries may be defined by State or Local policy, but if not, a general rule of thumb is that the walking boundary is 1/2 mile or 1-mile out from an elementary school, sometimes farther for middle and high schools. Walk zones defined by policy typically indicate the area within which students are NOT provided with bus service.

Ideally, the walking boundary would be represented by a circular area with the school located at the center, but rarely is the walk zone an exact circle. A child's route to school should have a minimal number of busy street crossings or require crossing bodies of water or other barriers. Some students will live too far away from the school to reasonably be expected to walk, and they are typically provided with bus service.

As discussed in the *School Relocation* section, the School District estimated to have approximately 250 students walk or bike to school based on proximity to adjacent neighborhoods. For the proposed middle school location, the walking boundary is assumed to be approximately 1-mile around the school. As stated earlier, it is not an exact circle, however, due to physical barriers such as the Tualatin River and I-205. For purposes of this study, the majority of the students living within the walking boundary are assumed to walk or bike to school.

Based on the existing street network and infrastructure, we do not recommend that Johnson Road (north of 19th Street) be included in 1-mile walking boundary as there are no existing sidewalks or pathways for safe pedestrian or bicycle travel along it, and right of way constraints make sidewalk infill prohibitively expensive.

SAFETY PERFORMANCE

Under the existing conditions on Willamette Falls Drive, most crashes from the last five years of data (2014 – 2018) were rear-end collisions due to pedestrian activity at the pedestrian crossing west of Epperly Street. Because of this, any future school crossing of Willamette Falls Drive should be considered carefully and pedestrian crossing enhancements and advanced warning devices should be installed to increase driver awareness. This is discussed in the *Recommended Improvements to Safe Routes to School Section*.

FIELD VISIT

A field visit to the proposed project site and study area was completed on May 27th, 2020. Key locations within the walking boundary were observed to determine the need for pedestrian improvements. Figure 11 supplies a visual representation of where the existing, proposed, and recommended improvements are located. Not shown on the figure are bicycle facilities. There are no existing bike lanes on Willamette Falls Drive or Dollar Street, both of which front the project site.

RECOMMENDED IMPROVEMENTS TO SAFE ROUTES TO SCHOOL

Recommendations for improved connectivity and continuity of pedestrian and bicycle facilities within the walking boundary were based on an evaluation of the existing infrastructure and safety performance. The location of the recommended improvements can be found in Figure 11 and are discussed in the following sections.

The School District will be responsible for the improvements directly adjacent to the property frontage. However, the implementation plan for the remaining Safe Routes to School (SRTS) sidewalk infill and crossing improvement needs listed here will be determined through a partnered effort by the School District and City of West Linn. Further discussion is needed between the School District and City, with final confirmation by West Linn City Council

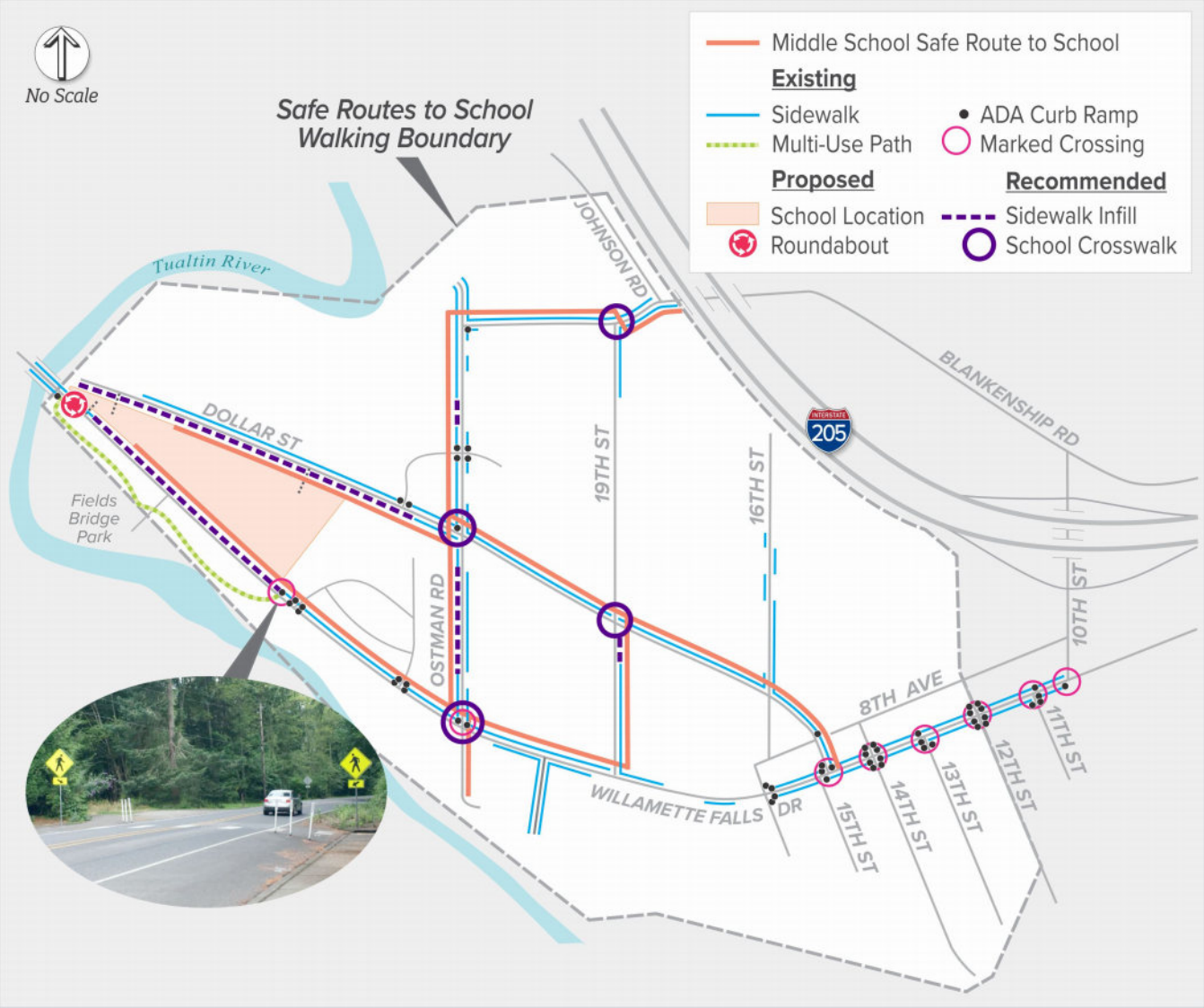


FIGURE 11: SCHOOL SAFE ROUTES TO SCHOOL AND WALKING BOUNDARY

SIDEWALK INFILL

Students within the walking boundary would not be provided bus transportation to school. As such, it is recommended that sidewalk infill (i.e., new sidewalk) be installed where gaps have been identified in Figure 11. These gaps in sidewalk connectivity are located along the proposed safe routes to the middle school. Proposed safe routes are located on Dollar Street, Ostman Road, 19th Street, Willamette Falls Drive, and Blankenship Road. Some of the sidewalk infill are located along the site frontage and are anticipated to be built as part of the frontage improvements. However, for the remining segments, sidewalk infill is recommended to be completed with asphalt rather than concrete sidewalks to reduce costs while still providing for school safety.

MARKED CROSSING IMPROVEMENTS

Enhancements to key crossing locations are also being recommended to supplement the sidewalk infill previously discussed. The proposed crossing improvements are shown in Figure 11 and include the following:

- **Dollar Street/Ostman Road:** It is recommended to install a marked crossing on the north leg and west leg with ADA improvements on the southwest corner.

- **Dollar Street/19th Street:** It is recommended to install a marked crossing on the north leg and east leg with ADA improvements on the northwest, northeast, and southeast corners.


- **Blankenship Road/19th Street:** It is recommended to install a marked crossing on the north leg with ADA improvements on the northeast corner.


- **Willamette Falls Drive/Ostman Road:** It is recommended to install a marked school crossing on the west leg of the intersection.

- **Enhanced Crossing on Willamette Falls Drive/Dollar Street:** Because this intersection is located on a recommended Safe Route to School, it is recommended that the installation of an enhanced pedestrian crossing treatment, such as an RRFB, be considered. The current layout of Willamette Falls Drive at the Dollar Street intersection is a three-lane cross section with parking. However, this section of roadway is currently under construction and the final Safe Route to School plan should be refined once the construction of Willamette Falls Drive is completed.

- **Mid-Block Crossing on Willamette Falls Drive:** As stated earlier in the report, the City plans to relocate this mid-block crossing to the intersection of Epperly Street in the future. It is recommended that the existing crosswalk be thoroughly reviewed and coordinated with the City for safety improvements or relocated to a safer crossing location.

School Speed Zone: It is also recommended that a school speed zone of 20 mph be considered along Willamette Falls Drive and Dollar Street adjacent to the relocated middle school, as well as on the Brandon Place extension. The reduced vehicle speeds will improve safety for students using Willamette Falls Drive to access the school.

SUMMARY OF PROJECT IMPACTS

The key findings of this transportation impact study are discussed below.

INTERSECTION OPERATIONS

- For the No Build and Build scenarios, the study intersections continue to meet operating standards during the AM and Midday peak periods with the exception of the Willamette Falls Drive/Ostman Road intersection. There is no recommendation for capacity or operations improvements at the intersection per the request of the City. The rerouting of trips to the new Brandon Place/Willamette Falls Drive connection would divert neighborhood traffic allowing the intersection to operate at level of service D.

FRONTAGE IMPROVEMENTS

- It is recommended that half-street improvements be made along the project site frontage on Willamette Falls Drive that include cycle tracks and sidewalks.
- It is recommended that half-street improvements be made along the project site frontage on Dollar Street that include sidewalks and on-street parking.

PARKING

- The current site plan proposes 186 total parking stalls on-site, meeting the City's requirement.
- Approximately 43 to 54 parking off-site parking spaces are expected to be added to Dollar Street and 8 to 12 parking stalls are expected to be added on the straight portion of the Brandon Place extension.
- The site is required to provide 100 bicycle parking stalls.

SAFE ROUTES TO SCHOOL

- It is recommended that sidewalk infill is installed on Dollar Street, Ostman Road, 19th Street, and Willamette Falls Drive as shown in Figure 11.
- Additionally, it is recommended that marked crossings and ADA ramps be installed at five different intersections:
    - Dollar Street/Ostman Road intersection
    - Dollar Street/19th Street intersection
    - Blankenship Road/19th Street intersection
    - Willamette Falls Drive/Ostman Road intersection
- It is recommended that an enhanced pedestrian crossing be considered on the east leg of the Willamette Falls Drive/Dollar Street intersection once the current reconstruction of Willamette Falls Drive is complete.
- It is recommended that the existing crosswalk west of Epperly Street be thoroughly reviewed and coordinated with the City for safety improvements or relocated to a safer crossing location.
- It is also recommended that a school speed zone be considered along Willamette Falls Drive, Dollar Street, and the Brandon Place extension.

APPENDIX

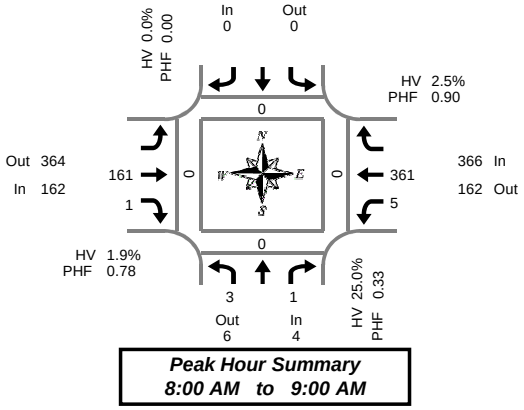
CONTENTS

APPENDIX A.

TRAFFIC COUNT DATA

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
8:00 AM to 9:00 AM

Fields Bridge Park & Willamette Falls Dr

Thursday, May 16, 2019
8:00 AM to 10:00 AM

5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
8:00 AM	0		0	0				0	18	0	0	1	39		0	58	0	0	0	0
8:05 AM	1		0	0				0	17	0	0	1	27		0	46	0	0	0	0
8:10 AM	0		0	0				0	17	0	0	1	29		0	47	0	0	0	0
8:15 AM	1		1	0				0	12	0	0	0	21		0	35	0	0	0	0
8:20 AM	0		0	0				0	8	0	0	0	27		0	35	0	0	0	0
8:25 AM	0		0	0				0	16	0	0	0	29		0	45	0	0	0	0
8:30 AM	0		0	0				0	5	0	0	1	30		0	36	0	0	0	0
8:35 AM	0		0	0				0	14	0	0	0	35		0	49	0	0	0	0
8:40 AM	1		0	0				0	15	0	0	0	36		0	52	0	0	0	0
8:45 AM	0		0	0				0	6	0	0	0	31		0	37	0	0	0	0
8:50 AM	0		0	0				0	13	1	0	0	24		0	38	0	0	0	0
8:55 AM	0		0	0				0	20	0	0	1	33		0	54	0	0	0	0
9:00 AM	0		0	0				0	16	1	0	0	21		0	38	0	0	0	0
9:05 AM	1		0	0				0	17	0	0	0	23		0	41	0	0	0	0
9:10 AM	0		1	0				0	20	1	0	0	16		0	38	0	0	0	0
9:15 AM	0		0	0				0	8	0	0	1	23		0	32	0	0	0	0
9:20 AM	0		0	0				0	12	0	0	0	19		0	31	0	0	0	0
9:25 AM	0		0	0				0	15	1	0	0	17		0	33	0	0	0	0
9:30 AM	0		1	0				0	11	2	0	0	10		0	24	0	0	0	0
9:35 AM	0		1	0				0	9	0	0	0	9		0	19	0	0	0	0
9:40 AM	0		0	0				0	10	0	0	0	16		0	26	0	0	0	0
9:45 AM	0		1	0				0	12	0	0	0	11		1	24	0	0	0	0
9:50 AM	1		0	0				0	7	0	0	0	15		0	23	0	0	0	0
9:55 AM	0		0	0				0	13	0	0	0	8		0	21	0	0	0	0
Total Survey	5		5	0				0	311	6	0	6	549		1	882	0	0	0	0

15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
8:00 AM	1		0	0				0	52	0	0	3	95		0	151	0	0	0	0
8:15 AM	1		1	0				0	36	0	0	0	77		0	115	0	0	0	0
8:30 AM	1		0	0				0	34	0	0	1	101		0	137	0	0	0	0
8:45 AM	0		0	0				0	39	1	0	1	88		0	129	0	0	0	0
9:00 AM	1		1	0				0	53	2	0	0	60		0	117	0	0	0	0
9:15 AM	0		0	0				0	35	1	0	1	59		0	96	0	0	0	0
9:30 AM	0		2	0				0	30	2	0	0	35		0	69	0	0	0	0
9:45 AM	1		1	0				0	32	0	0	0	34		1	68	0	0	0	0
Total Survey	5		5	0				0	311	6	0	6	549		1	882	0	0	0	0

Peak Hour Summary
8:00 AM to 9:00 AM

By Approach	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	4	6	10	0	0	0	0	0	162	364	526	0	366	162	528	0	532	0	0	0	0
%HV	25.0%				0.0%				1.9%				2.5%				2.4%				
PHF	0.33				0.00				0.78				0.90				0.88				

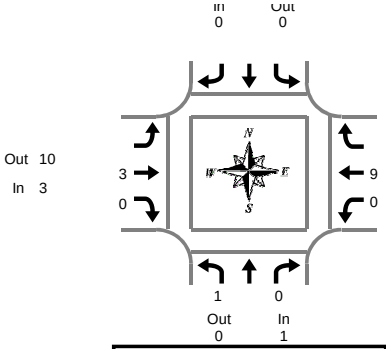
By Movement	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	3		1	4				0		161	1	162	5	361		366	532
%HV	33.3%	NA	0.0%	25.0%	NA	NA	NA	0.0%	NA	1.9%	0.0%	1.9%	0.0%	2.5%	NA	2.5%	2.4%
PHF	0.38		0.25	0.33				0.00		0.77	0.25	0.78	0.42	0.88		0.90	0.88

Rolling Hour Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
8:00 AM	3		1	0				0	161	1	0	5	361		0	532	0	0	0	0
8:15 AM	3		2	0				0	162	3	0	2	326		0	498	0	0	0	0
8:30 AM	2		1	0				0	161	4	0	3	308		0	479	0	0	0	0
8:45 AM	1		3	0				0	157	6	0	2	242		0	411	0	0	0	0
9:00 AM	2		4	0				0	150	5	0	1	188		1	350	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Fields Bridge Park & Willamette Falls Dr

Thursday, May 16, 2019
8:00 AM to 10:00 AM

Peak Hour Summary
8:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L		R	Total				Total	T	R	Total		L	T		Total	
8:00 AM	0		0	0				0	1	0	1		0	0		0	1
8:05 AM	0		0	0				0	0	0	0		0	0		0	0
8:10 AM	0		0	0				0	0	0	0		0	0		0	0
8:15 AM	1		0	1				0	0	0	0		0	0		0	1
8:20 AM	0		0	0				0	1	0	1		0	1		1	2
8:25 AM	0		0	0				0	0	0	0		0	0		0	0
8:30 AM	0		0	0				0	0	0	0		0	0		0	0
8:35 AM	0		0	0				0	0	0	0		0	0		0	0
8:40 AM	0		0	0				0	1	0	1		0	1		1	2
8:45 AM	0		0	0				0	0	0	0		0	3		3	3
8:50 AM	0		0	0				0	0	0	0		0	3		3	3
8:55 AM	0		0	0				0	0	0	0		0	1		1	1
9:00 AM	0		0	0				0	0	0	0		0	1		1	1
9:05 AM	0		0	0				0	0	0	0		0	1		1	1
9:10 AM	0		0	0				0	0	0	0		0	0		0	0
9:15 AM	0		0	0				0	0	0	0		0	0		0	0
9:20 AM	0		0	0				0	0	0	0		0	0		0	0
9:25 AM	0		0	0				0	1	0	1		0	0		0	1
9:30 AM	0		0	0				0	0	1	1		0	0		0	1
9:35 AM	0		1	1				0	1	0	1		0	0		0	2
9:40 AM	0		0	0				0	0	0	0		0	1		1	1
9:45 AM	0		0	0				0	0	0	0		0	0		0	0
9:50 AM	0		0	0				0	0	0	0		0	0		0	0
9:55 AM	0		0	0				0	1	0	1		0	0		0	1
Total Survey	1		1	2				0	6	1	7		0	12		12	21

Heavy Vehicle 15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L		R	Total				Total	T	R	Total		L	T		Total	
8:00 AM	0		0	0				0	1	0	1		0	0		0	1
8:15 AM	1		0	1				0	1	0	1		0	1		1	3
8:30 AM	0		0	0				0	1	0	1		0	1		1	2
8:45 AM	0		0	0				0	0	0	0		0	7		7	7
9:00 AM	0		0	0				0	0	0	0		0	2		2	2
9:15 AM	0		0	0				0	1	0	1		0	0		0	1
9:30 AM	0		1	1				0	1	1	2		0	1		1	4
9:45 AM	0		0	0				0	1	0	1		0	0		0	1
Total Survey	1		1	2				0	6	1	7		0	12		12	21

Heavy Vehicle Peak Hour Summary
8:00 AM to 9:00 AM

By Approach	Northbound Fields Bridge Park			Southbound Fields Bridge Park			Eastbound Willamette Falls Dr			Westbound Willamette Falls Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	0	0	0	3	10	13	9	3	12	13
PHF	0.25			0.00			0.75			0.32			0.41

By Movement	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
	L		R	Total				Total	T	R	Total		L	T		Total	
Volume	1		0	1				0	3	0	3		0	9		9	13
PHF	0.25		0.00	0.25				0.00	0.75	0.00	0.75		0.00	0.32		0.32	0.41

Heavy Vehicle Rolling Hour Summary
8:00 AM to 10:00 AM

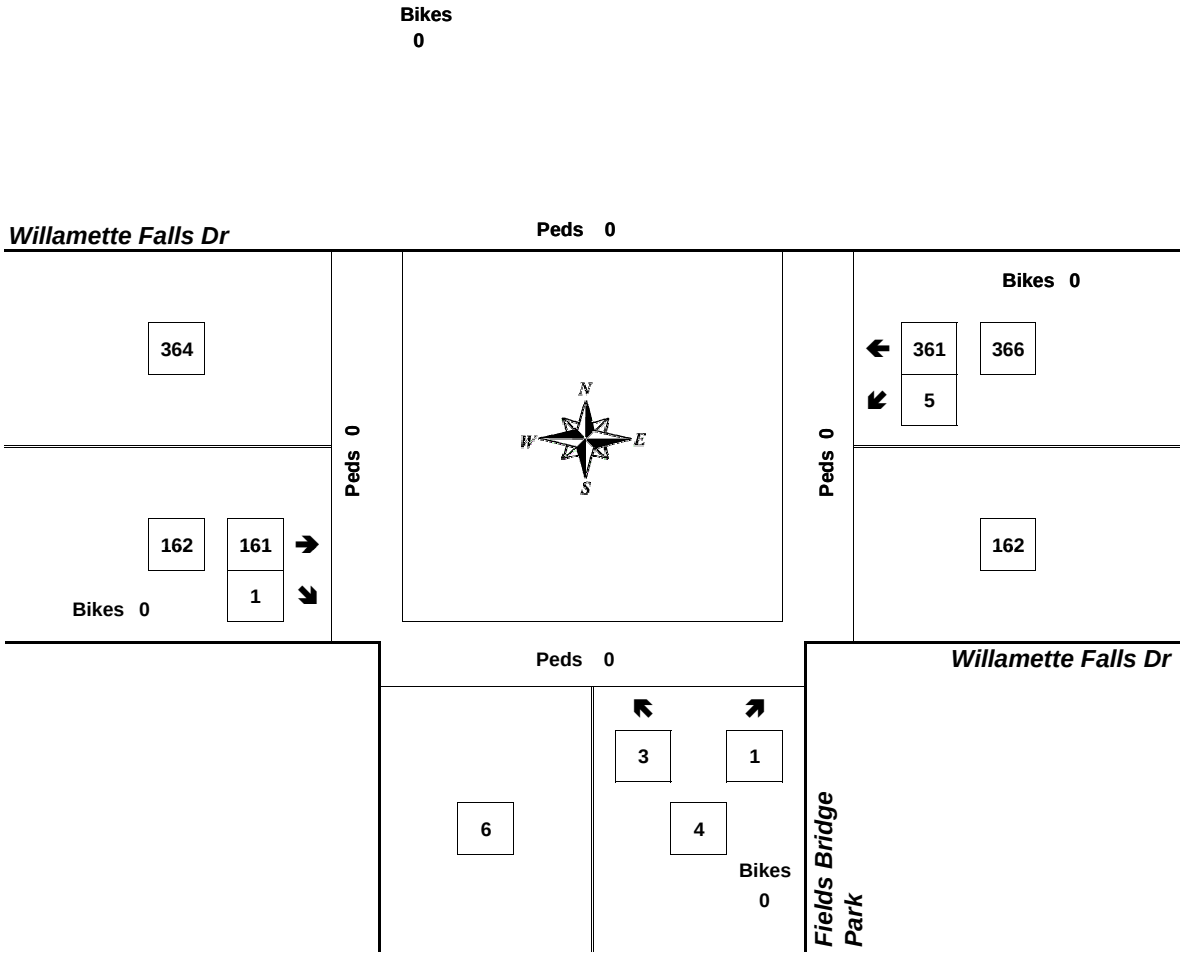
Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L		R	Total				Total	T	R	Total		L	T		Total	
8:00 AM	1		0	1				0	3	0	3		0	9		9	13
8:15 AM	1		0	1				0	2	0	2		0	11		11	14
8:30 AM	0		0	0				0	2	0	2		0	10		10	12
8:45 AM	0		1	1				0	2	1	3		0	10		10	14
9:00 AM	0		1	1				0	3	1	4		0	3		3	8

Peak Hour Summary

Clay Carney
(503) 833-2740

Fields Bridge Park & Willamette Falls Dr

8:00 AM to 9:00 AM
Thursday, May 16, 2019

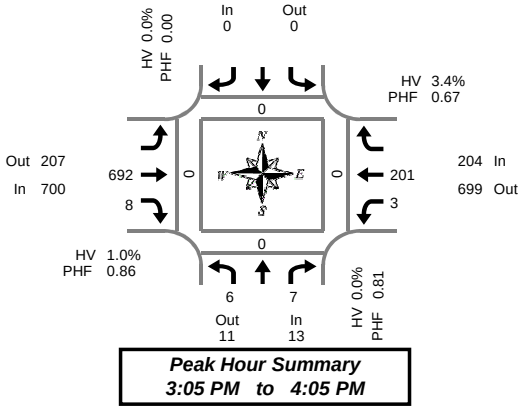


Approach	PHF	HV%	Volume
EB	0.78	1.9%	162
WB	0.90	2.5%	366
NB	0.33	25.0%	4
SB	0.00	0.0%	0
Intersection	0.88	2.4%	532

Count Period: 8:00 AM to 10:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Fields Bridge Park & Willamette Falls Dr

Thursday, May 16, 2019
3:00 PM to 5:00 PM

5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
3:00 PM	0		0	0				0	44	1	2	0	15		0	60	0	0	0	0
3:05 PM	0		0	0				0	53	0	0	0	5		0	58	0	0	0	0
3:10 PM	0		2	2				0	50	1	0	1	14		0	68	0	0	0	0
3:15 PM	1		0	0				0	62	0	0	1	14		0	78	0	0	0	0
3:20 PM	1		0	0				0	55	1	0	1	20		0	78	0	0	0	0
3:25 PM	0		0	0				0	61	2	0	0	20		0	83	0	0	0	0
3:30 PM	0		1	0				0	52	0	0	0	16		0	69	0	0	0	0
3:35 PM	3		0	0				0	46	1	0	0	30		0	80	0	0	0	0
3:40 PM	0		0	0				0	53	2	0	0	19		0	74	0	0	0	0
3:45 PM	0		1	0				0	57	1	0	0	27		0	86	0	0	0	0
3:50 PM	0		1	0				0	59	0	0	0	12		0	72	0	0	0	0
3:55 PM	0		2	0				0	77	0	0	0	10		0	89	0	0	0	0
4:00 PM	1		0	0				0	67	0	1	0	14		0	82	0	0	0	0
4:05 PM	0		0	0				0	43	0	0	0	7		0	50	0	0	0	0
4:10 PM	0		1	0				0	62	0	0	1	11		0	75	0	0	0	0
4:15 PM	1		1	0				0	54	3	0	0	13		0	72	0	0	0	0
4:20 PM	0		1	0				0	62	2	0	0	11		0	76	0	0	0	0
4:25 PM	0		2	0				0	49	0	0	2	16		0	69	0	0	0	0
4:30 PM	0		0	0				0	60	0	0	1	9		0	70	0	0	0	0
4:35 PM	1		1	0				0	40	3	0	1	15		0	61	0	0	0	0
4:40 PM	0		0	0				0	56	0	0	0	19		0	75	0	0	0	0
4:45 PM	0		1	0				0	51	1	0	2	13		0	68	0	0	0	0
4:50 PM	0		2	0				0	65	2	0	2	14		0	85	0	0	0	0
4:55 PM	1		1	0				0	53	1	0	3	13		0	72	0	0	0	0
Total Survey	9		17	2				0	1,331	21	3	15	357		0	1,750	0	0	0	0

15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
3:00 PM	0		2	2				0	147	2	2	1	34		0	186	0	0	0	0
3:15 PM	2		0	0				0	178	3	0	2	54		0	239	0	0	0	0
3:30 PM	3		1	0				0	151	3	0	0	65		0	223	0	0	0	0
3:45 PM	0		4	0				0	193	1	0	0	49		0	247	0	0	0	0
4:00 PM	1		1	0				0	172	0	1	1	32		0	207	0	0	0	0
4:15 PM	1		4	0				0	165	5	0	2	40		0	217	0	0	0	0
4:30 PM	1		1	0				0	156	3	0	2	43		0	206	0	0	0	0
4:45 PM	1		4	0				0	169	4	0	7	40		0	225	0	0	0	0
Total Survey	9		17	2				0	1,331	21	3	15	357		0	1,750	0	0	0	0

Peak Hour Summary
3:05 PM to 4:05 PM

By Approach	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	13	11	24	2	0	0	0	0	700	207	907	1	204	699	903	0	917	0	0	0	0
%HV	0.0%				0.0%				1.0%				3.4%				1.5%				
PHF	0.81				0.00				0.86				0.67				0.93				

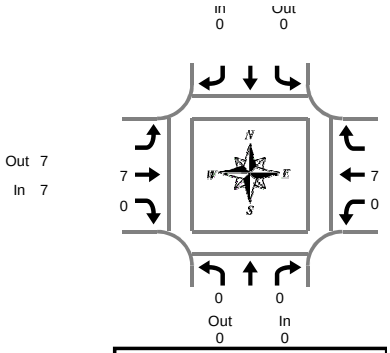
By Movement	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	6		7	13				0		692	8	700	3	201		204	917
%HV	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	NA	1.0%	0.0%	1.0%	0.0%	3.5%	NA	3.4%	1.5%
PHF	0.50		0.44	0.81				0.00		0.85	0.50	0.86	0.25	0.66		0.67	0.93

Rolling Hour Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes	T	R	Bikes	L	T		Bikes		North	South	East	West
3:00 PM	5		7	2				0	669	9	2	3	202		0	895	0	0	0	0
3:15 PM	6		6	0				0	694	7	1	3	200		0	916	0	0	0	0
3:30 PM	5		10	0				0	681	9	1	3	186		0	894	0	0	0	0
3:45 PM	3		10	0				0	686	9	1	5	164		0	877	0	0	0	0
4:00 PM	4		10	0				0	662	12	1	12	155		0	855	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Fields Bridge Park & Willamette Falls Dr

Thursday, May 16, 2019
3:00 PM to 5:00 PM

Peak Hour Summary
3:05 PM to 4:05 PM

Heavy Vehicle 5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L		R	Total				Total	T	R	Total		L	T		Total	
3:00 PM	0		0	0				0	0	0	0		0	0		0	0
3:05 PM	0		0	0				0	0	0	0		0	0		0	0
3:10 PM	0		0	0				0	0	0	0		0	0		0	0
3:15 PM	0		0	0				0	0	0	0		0	1		1	1
3:20 PM	0		0	0				0	0	0	0		0	0		0	0
3:25 PM	0		0	0				0	1	0	1		0	1		1	2
3:30 PM	0		0	0				0	0	0	0		0	0		0	0
3:35 PM	0		0	0				0	0	0	0		0	1		1	1
3:40 PM	0		0	0				0	1	0	1		0	3		3	4
3:45 PM	0		0	0				0	0	0	0		0	1		1	1
3:50 PM	0		0	0				0	3	0	3		0	0		0	3
3:55 PM	0		0	0				0	1	0	1		0	0		0	1
4:00 PM	0		0	0				0	1	0	1		0	0		0	1
4:05 PM	0		0	0				0	8	0	8		0	0		0	8
4:10 PM	0		0	0				0	3	0	3		0	0		0	3
4:15 PM	1		0	1				0	0	1	1		0	0		0	2
4:20 PM	0		0	0				0	0	0	0		0	1		1	1
4:25 PM	0		0	0				0	1	0	1		0	1		1	2
4:30 PM	0		0	0				0	2	0	2		0	2		2	4
4:35 PM	0		0	0				0	1	0	1		0	0		0	1
4:40 PM	0		0	0				0	0	0	0		0	0		0	0
4:45 PM	0		0	0				0	0	0	0		0	0		0	0
4:50 PM	0		0	0				0	0	0	0		0	0		0	0
4:55 PM	0		0	0				0	0	0	0		0	0		0	0
Total Survey	1		0	1				0	22	1	23		0	11		11	35

Heavy Vehicle 15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L		R	Total				Total	T	R	Total		L	T		Total	
3:00 PM	0		0	0				0	0	0	0		0	0		0	0
3:15 PM	0		0	0				0	1	0	1		0	2		2	3
3:30 PM	0		0	0				0	1	0	1		0	4		4	5
3:45 PM	0		0	0				0	4	0	4		0	1		1	5
4:00 PM	0		0	0				0	12	0	12		0	0		0	12
4:15 PM	1		0	1				0	1	1	2		0	2		2	5
4:30 PM	0		0	0				0	3	0	3		0	2		2	5
4:45 PM	0		0	0				0	0	0	0		0	0		0	0
Total Survey	1		0	1				0	22	1	23		0	11		11	35

Heavy Vehicle Peak Hour Summary
3:05 PM to 4:05 PM

By Approach	Northbound Fields Bridge Park			Southbound Fields Bridge Park			Eastbound Willamette Falls Dr			Westbound Willamette Falls Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	7	7	14	7	7	14	14
PHF	0.00			0.00			0.35			0.35			0.44

By Movement	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
	L		R	Total				Total	T	R	Total		L	T		Total	
Volume	0		0	0				0	7	0	7		0	7		7	14
PHF	0.00		0.00	0.00				0.00	0.35	0.00	0.35		0.00	0.35		0.35	0.44

Heavy Vehicle Rolling Hour Summary
3:00 PM to 5:00 PM

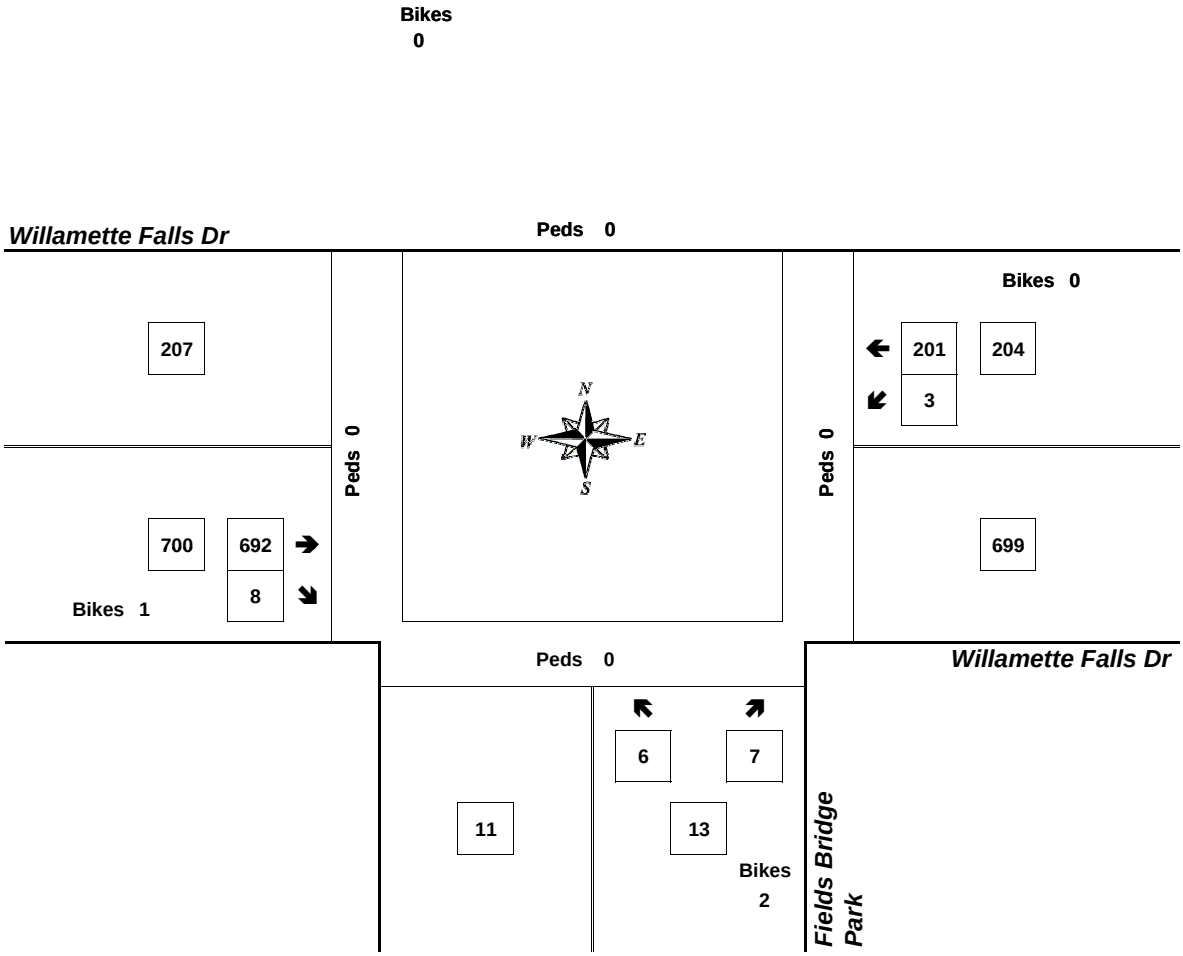
Interval Start Time	Northbound Fields Bridge Park				Southbound Fields Bridge Park				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L		R	Total				Total	T	R	Total		L	T		Total	
3:00 PM	0		0	0				0	6	0	6		0	7		7	13
3:15 PM	0		0	0				0	18	0	18		0	7		7	25
3:30 PM	1		0	1				0	18	1	19		0	7		7	27
3:45 PM	1		0	1				0	20	1	21		0	5		5	27
4:00 PM	1		0	1				0	16	1	17		0	4		4	22

Peak Hour Summary

Clay Carney
(503) 833-2740

Fields Bridge Park & Willamette Falls Dr

3:05 PM to 4:05 PM
Thursday, May 16, 2019

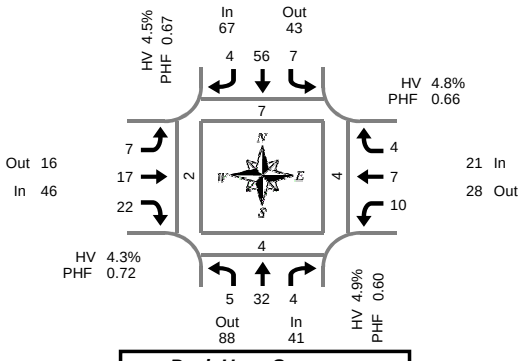


Approach	PHF	HV%	Volume
EB	0.86	1.0%	700
WB	0.67	3.4%	204
NB	0.81	0.0%	13
SB	0.00	0.0%	0
Intersection	0.93	1.5%	917

Count Period: 3:00 PM to 5:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
8:00 AM to 9:00 AM

Ostman Rd & Dollar St

Thursday, May 16, 2019
8:00 AM to 10:00 AM

5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
8:00 AM	4	6	0	0	0	2	0	0	0	4	3	0	1	0	2	0	22	2	0	0	0
8:05 AM	0	4	0	0	1	2	1	0	0	2	1	0	0	2	0	0	13	0	1	0	0
8:10 AM	0	2	1	0	2	7	0	0	2	2	2	0	0	1	0	0	19	1	0	1	2
8:15 AM	0	4	1	0	1	8	0	0	1	1	1	0	0	0	0	0	17	0	0	0	0
8:20 AM	0	1	0	0	0	6	1	0	0	0	1	0	1	0	0	0	10	0	0	0	0
8:25 AM	0	2	0	0	1	1	0	0	0	0	0	0	1	0	1	0	6	2	0	0	0
8:30 AM	0	1	0	0	1	2	1	0	3	0	2	0	1	0	1	0	12	0	0	0	0
8:35 AM	0	4	1	0	0	6	0	0	0	4	2	0	1	1	0	0	19	0	0	0	0
8:40 AM	1	3	0	0	0	4	0	0	1	1	1	0	0	0	0	0	11	1	0	0	0
8:45 AM	0	2	1	0	0	8	1	0	0	2	0	0	2	0	0	0	16	0	3	3	0
8:50 AM	0	0	0	0	0	5	0	0	0	0	2	0	3	1	0	0	11	1	0	0	0
8:55 AM	0	3	0	0	1	5	0	0	0	1	7	0	0	2	0	0	19	0	0	0	0
9:00 AM	1	0	0	0	0	5	1	0	0	0	0	0	1	2	1	0	11	1	0	0	1
9:05 AM	1	8	1	0	0	1	1	0	0	1	3	0	0	2	1	0	19	0	0	0	0
9:10 AM	3	3	0	0	0	3	0	0	0	1	0	0	1	1	1	0	13	0	0	0	0
9:15 AM	1	4	0	0	0	2	1	0	0	1	0	0	0	1	0	0	10	0	0	0	0
9:20 AM	1	1	0	0	0	3	0	0	1	1	2	0	1	0	0	0	10	2	0	0	0
9:25 AM	0	1	0	0	0	0	0	0	1	2	1	0	0	0	1	0	6	0	0	0	0
9:30 AM	2	5	0	0	0	1	1	0	0	0	0	0	0	0	0	0	9	0	0	0	0
9:35 AM	1	2	0	0	1	2	0	0	0	2	1	0	0	0	1	0	10	0	0	0	0
9:40 AM	1	0	1	0	1	3	0	0	1	2	0	0	0	1	0	0	10	0	0	1	0
9:45 AM	2	1	0	0	0	1	1	0	0	2	1	0	0	0	0	0	8	0	0	0	0
9:50 AM	1	2	0	0	0	1	0	0	2	0	1	0	0	1	1	0	9	0	0	0	1
9:55 AM	1	1	0	0	1	1	0	0	3	1	1	0	0	1	0	0	10	0	0	0	0
Total Survey	20	60	6	0	10	79	9	0	15	30	32	0	13	16	10	0	300	10	4	5	4

15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
8:00 AM	4	12	1	0	3	11	1	0	2	8	6	0	1	3	2	0	54	3	1	1	2
8:15 AM	0	7	1	0	2	15	1	0	1	1	2	0	2	0	1	0	33	2	0	0	0
8:30 AM	1	8	1	0	1	12	1	0	4	5	5	0	2	1	1	0	42	1	0	0	0
8:45 AM	0	5	1	0	1	18	1	0	0	3	9	0	5	3	0	0	46	1	3	3	0
9:00 AM	5	11	1	0	0	9	2	0	0	2	3	0	2	5	3	0	43	1	0	0	1
9:15 AM	2	6	0	0	0	5	1	0	2	4	3	0	1	1	1	0	26	2	0	0	0
9:30 AM	4	7	1	0	2	6	1	0	1	4	1	0	0	1	1	0	29	0	0	1	0
9:45 AM	4	4	0	0	1	3	1	0	5	3	3	0	0	2	1	0	27	0	0	0	1
Total Survey	20	60	6	0	10	79	9	0	15	30	32	0	13	16	10	0	300	10	4	5	4

Peak Hour Summary
8:00 AM to 9:00 AM

By Approach	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	41	88	129	0	67	43	110	0	46	16	62	0	21	28	49	0	175	7	4	4	2
%HV	4.9%				4.5%				4.3%				4.8%				4.6%				
PHF	0.60				0.67				0.72				0.66				0.81				

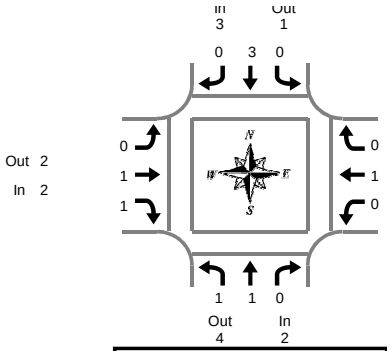
By Movement	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	5	32	4	41	7	56	4	67	7	17	22	46	10	7	4	21	175
%HV	20.0%	3.1%	0.0%	4.9%	0.0%	5.4%	0.0%	4.5%	0.0%	5.9%	4.5%	4.3%	0.0%	14.3%	0.0%	4.8%	4.6%
PHF	0.31	0.67	0.50	0.60	0.44	0.67	0.50	0.67	0.44	0.53	0.61	0.72	0.50	0.58	0.50	0.66	0.81

Rolling Hour Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
8:00 AM	5	32	4	0	7	56	4	0	7	17	22	0	10	7	4	0	175	7	4	4	2
8:15 AM	6	31	4	0	4	54	5	0	5	11	19	0	11	9	5	0	164	5	3	3	1
8:30 AM	8	30	3	0	2	44	5	0	6	14	20	0	10	10	5	0	157	5	3	3	1
8:45 AM	11	29	3	0	3	38	5	0	3	13	16	0	8	10	5	0	144	4	3	4	1
9:00 AM	15	28	2	0	3	23	5	0	8	13	10	0	3	9	6	0	125	3	0	1	2

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Ostman Rd & Dollar St

Thursday, May 16, 2019
8:00 AM to 10:00 AM

Peak Hour Summary
8:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
8:00 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
8:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:55 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
9:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:40 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
9:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
9:55 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Survey	2	2	0	4	0	4	0	4	0	2	1	3	0	1	1	2	13

Heavy Vehicle 15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
8:00 AM	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
8:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
8:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	3
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
9:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	1	3
Total Survey	2	2	0	4	0	4	0	4	0	2	1	3	0	1	1	2	13

Heavy Vehicle Peak Hour Summary
8:00 AM to 9:00 AM

By Approach	Northbound Ostman Rd			Southbound Ostman Rd			Eastbound Dollar St			Westbound Dollar St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	4	6	3	1	4	2	2	4	1	1	2	8
PHF	0.50			0.38			0.50			0.25			0.67

By Movement	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	1	0	2	0	3	0	3	0	1	1	2	0	1	0	1	8
PHF	0.25	0.25	0.00	0.50	0.00	0.38	0.00	0.38	0.00	0.25	0.25	0.50	0.00	0.25	0.00	0.25	0.67

Heavy Vehicle Rolling Hour Summary
8:00 AM to 10:00 AM

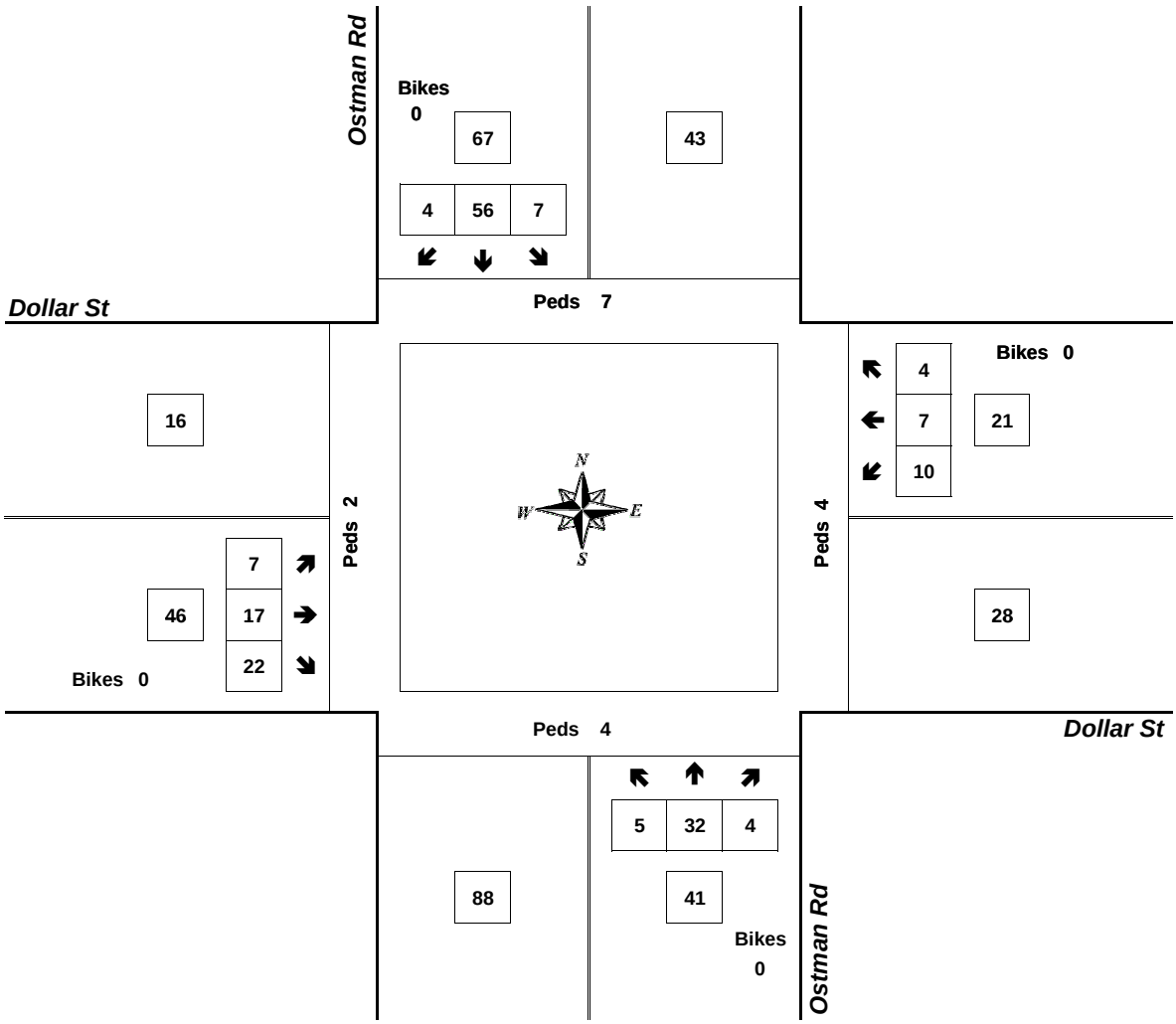
Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
8:00 AM	1	1	0	2	0	3	0	3	0	1	1	2	0	1	0	1	8
8:15 AM	0	1	0	1	0	3	0	3	0	0	1	1	0	1	0	1	6
8:30 AM	0	1	0	1	0	2	0	2	0	0	1	1	0	1	0	1	5
8:45 AM	1	0	0	1	0	2	0	2	0	0	1	1	0	1	0	1	5
9:00 AM	1	1	0	2	0	1	0	1	0	1	0	1	0	0	1	1	5

Peak Hour Summary

Clay Carney
(503) 833-2740

Ostman Rd & Dollar St

8:00 AM to 9:00 AM
Thursday, May 16, 2019

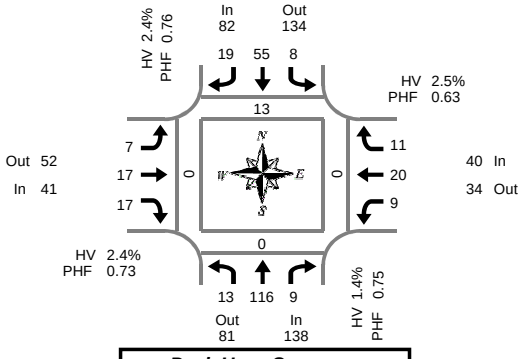


Approach	PHF	HV%	Volume
EB	0.72	4.3%	46
WB	0.66	4.8%	21
NB	0.60	4.9%	41
SB	0.67	4.5%	67
Intersection	0.81	4.6%	175

Count Period: 8:00 AM to 10:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
3:10 PM to 4:10 PM

Ostman Rd & Dollar St

Thursday, May 16, 2019
3:00 PM to 5:00 PM

5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	1	7	1	0	1	4	4	0	1	4	1	0	0	5	0	0	29	0	1	0	0
3:05 PM	0	7	2	0	1	1	0	0	2	6	1	0	0	4	1	0	25	0	0	0	0
3:10 PM	2	13	1	0	1	4	2	0	0	3	1	0	0	2	1	0	30	0	0	0	0
3:15 PM	2	6	2	0	1	4	0	0	1	0	3	0	0	2	0	0	21	0	0	0	0
3:20 PM	0	12	0	0	0	1	2	0	1	3	2	0	1	3	0	1	25	0	0	0	0
3:25 PM	1	8	0	0	1	7	1	0	0	1	0	0	1	3	2	0	25	2	0	0	0
3:30 PM	0	8	1	0	1	3	3	0	1	0	1	0	1	4	1	0	24	1	0	0	0
3:35 PM	3	5	0	0	0	8	2	0	1	2	2	0	1	2	0	0	26	2	0	0	0
3:40 PM	3	7	0	0	1	7	1	0	0	3	1	0	2	1	0	0	26	0	0	0	0
3:45 PM	0	6	2	0	1	5	2	0	1	1	3	0	0	1	1	0	23	3	0	0	0
3:50 PM	0	9	1	0	0	2	0	0	0	1	2	0	1	0	0	0	16	4	0	0	0
3:55 PM	1	12	0	0	0	4	2	0	0	3	0	0	0	0	0	0	22	0	0	0	0
4:00 PM	0	12	2	0	1	4	2	0	1	0	1	0	0	1	6	0	30	0	0	0	0
4:05 PM	1	18	0	1	1	6	2	0	1	0	1	0	2	1	0	0	33	1	0	0	0
4:10 PM	1	10	1	0	2	2	0	0	0	2	0	0	0	1	0	0	19	0	0	0	0
4:15 PM	3	5	2	0	0	4	1	0	0	0	2	0	0	0	1	0	18	1	0	1	0
4:20 PM	2	11	0	0	0	6	0	0	1	1	0	0	1	0	2	0	24	0	0	0	0
4:25 PM	1	13	0	0	1	7	1	0	1	2	0	0	2	2	0	0	30	0	0	0	0
4:30 PM	1	9	1	0	0	2	0	0	1	0	0	0	0	1	0	0	15	5	2	1	0
4:35 PM	1	11	2	0	1	1	1	0	1	0	1	0	0	1	0	0	20	1	0	0	0
4:40 PM	2	7	1	0	0	1	3	0	1	0	2	0	0	0	1	0	18	1	0	0	0
4:45 PM	1	6	2	0	0	2	4	0	0	2	1	0	0	1	1	0	20	1	0	0	0
4:50 PM	1	8	0	0	1	6	0	0	1	0	2	0	0	2	1	0	22	0	0	0	0
4:55 PM	0	13	1	0	0	6	1	0	3	2	1	0	1	2	1	0	31	0	0	0	0
Total Survey	27	223	22	1	15	97	34	0	19	36	28	0	13	39	19	1	572	22	3	2	0

15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	3	27	4	0	3	9	6	0	3	13	3	0	0	11	2	0	84	0	1	0	0
3:15 PM	3	26	2	0	2	12	3	0	2	4	5	0	2	8	2	1	71	2	0	0	0
3:30 PM	6	20	1	0	2	18	6	0	2	5	4	0	4	7	1	0	76	3	0	0	0
3:45 PM	1	27	3	0	1	11	4	0	1	5	5	0	1	1	1	0	61	7	0	0	0
4:00 PM	2	40	3	1	4	12	4	0	2	2	2	0	2	3	6	0	82	1	0	0	0
4:15 PM	6	29	2	0	1	17	2	0	2	3	2	0	3	2	3	0	72	1	0	1	0
4:30 PM	4	27	4	0	1	4	4	0	3	0	3	0	0	2	1	0	53	7	2	1	0
4:45 PM	2	27	3	0	1	14	5	0	4	4	4	0	1	5	3	0	73	1	0	0	0
Total Survey	27	223	22	1	15	97	34	0	19	36	28	0	13	39	19	1	572	22	3	2	0

Peak Hour Summary
3:10 PM to 4:10 PM

By Approach	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	138	81	219	1	82	134	216	0	41	52	93	0	40	34	74	1	301	13	0	0	0
%HV	1.4%				2.4%				2.4%				2.5%				2.0%				
PHF	0.75				0.76				0.73				0.63				0.89				

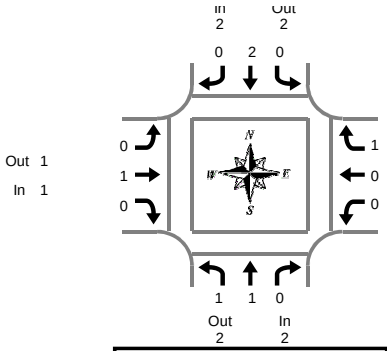
By Movement	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	13	116	9	138	8	55	19	82	7	17	17	41	9	20	11	40	301
%HV	7.7%	0.9%	0.0%	1.4%	0.0%	3.6%	0.0%	2.4%	0.0%	5.9%	0.0%	2.4%	0.0%	0.0%	9.1%	2.5%	2.0%
PHF	0.54	0.69	0.75	0.75	1.00	0.69	0.79	0.76	0.88	0.71	0.71	0.73	0.56	0.50	0.46	0.63	0.89

Rolling Hour Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	13	100	10	0	8	50	19	0	8	27	17	0	7	27	6	1	292	12	1	0	0
3:15 PM	12	113	9	1	9	53	17	0	7	16	16	0	9	19	10	1	290	13	0	0	0
3:30 PM	15	116	9	1	8	58	16	0	7	15	13	0	10	13	11	0	291	12	0	1	0
3:45 PM	13	123	12	1	7	44	14	0	8	10	12	0	6	8	11	0	268	16	2	2	0
4:00 PM	14	123	12	1	7	47	15	0	11	9	11	0	6	12	13	0	280	10	2	2	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Ostman Rd & Dollar St

Thursday, May 16, 2019
3:00 PM to 5:00 PM

Peak Hour Summary
3:10 PM to 4:10 PM

Heavy Vehicle 5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:10 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
3:35 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:40 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:50 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	1	0	1	2	0	0	0	0	0	0	1	1	0	0	0	0	3
4:20 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	3	4	1	8	0	3	0	3	0	2	1	3	0	0	1	1	15

Heavy Vehicle 15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	1	0	0	1	0	1	0	1	0	1	0	1	0	0	1	1	4
3:45 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
4:15 PM	1	0	1	2	0	1	0	1	0	1	1	2	0	0	0	0	5
4:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	3	4	1	8	0	3	0	3	0	2	1	3	0	0	1	1	15

Heavy Vehicle Peak Hour Summary
3:10 PM to 4:10 PM

By Approach	Northbound Ostman Rd			Southbound Ostman Rd			Eastbound Dollar St			Westbound Dollar St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	2	4	2	2	4	1	1	2	1	1	2	6
PHF	0.50			0.50			0.25			0.25			0.38

By Movement	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	1	0	2	0	2	0	2	0	1	0	1	0	0	1	1	6
PHF	0.25	0.25	0.00	0.50	0.00	0.50	0.00	0.50	0.00	0.25	0.00	0.25	0.00	0.00	0.25	0.25	0.38

Heavy Vehicle Rolling Hour Summary
3:00 PM to 5:00 PM

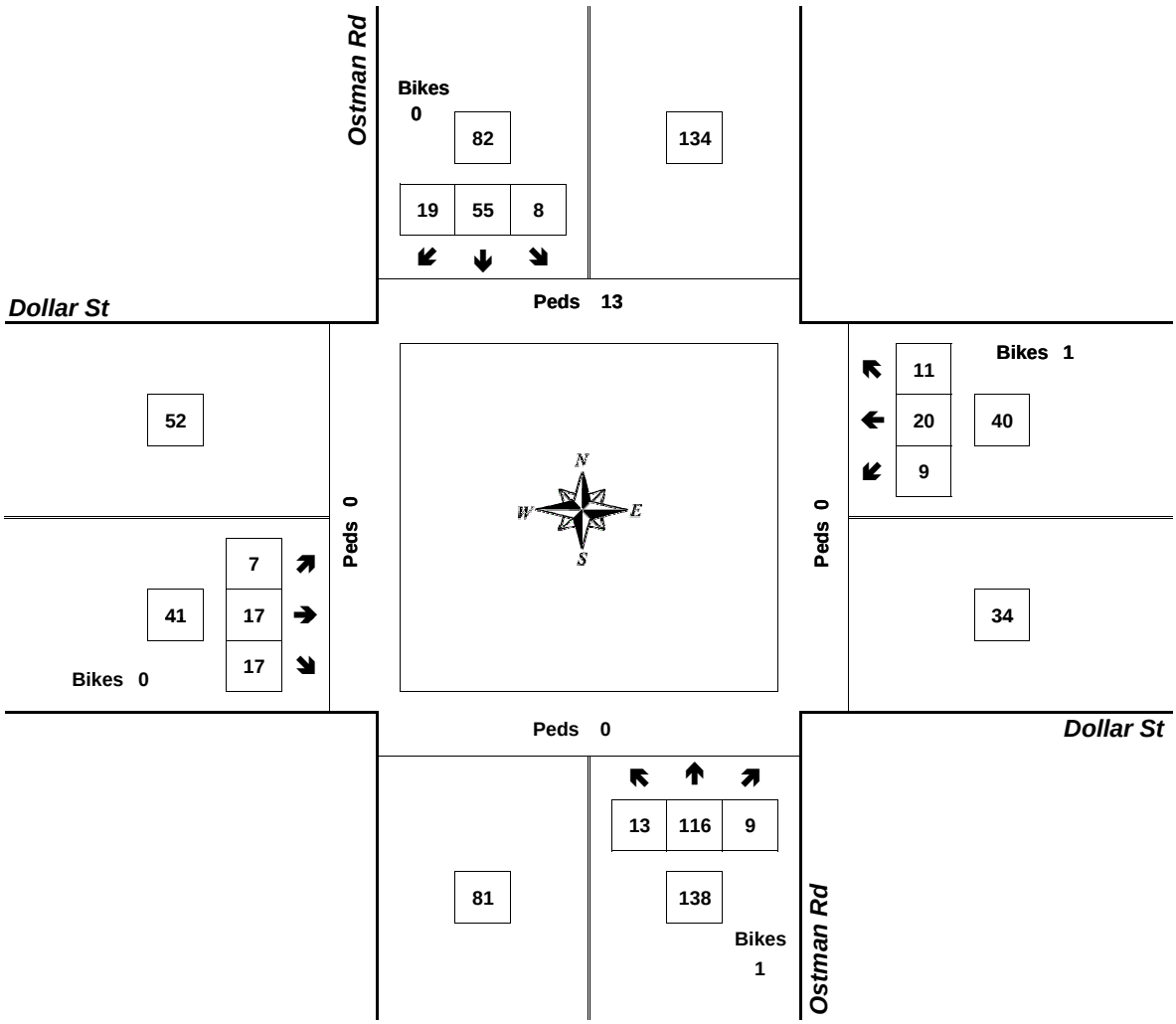
Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Dollar St				Westbound Dollar St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	1	1	0	2	0	2	0	2	0	1	0	1	0	0	1	1	6
3:15 PM	1	4	0	5	0	1	0	1	0	1	0	1	0	0	1	1	8
3:30 PM	2	4	1	7	0	2	0	2	0	2	1	3	0	0	1	1	13
3:45 PM	2	4	1	7	0	1	0	1	0	1	1	2	0	0	0	0	10
4:00 PM	2	3	1	6	0	1	0	1	0	1	1	2	0	0	0	0	9

Peak Hour Summary

Clay Carney
(503) 833-2740

Ostman Rd & Dollar St

3:10 PM to 4:10 PM
Thursday, May 16, 2019

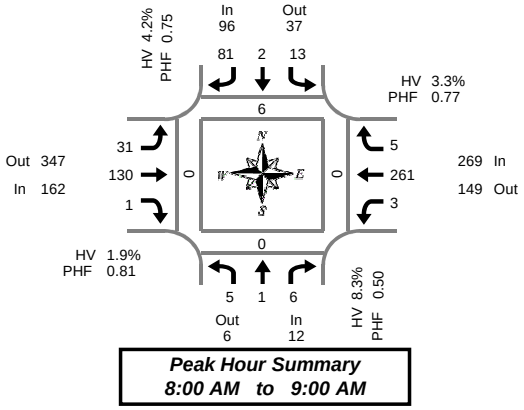


Approach	PHF	HV%	Volume
EB	0.73	2.4%	41
WB	0.63	2.5%	40
NB	0.75	1.4%	138
SB	0.76	2.4%	82
Intersection	0.89	2.0%	301

Count Period: 3:00 PM to 5:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
8:00 AM to 9:00 AM

Ostman Rd & Willamette Falls Dr

Thursday, May 16, 2019
8:00 AM to 10:00 AM

5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
8:00 AM	0	1	0	0	0	0	8	0	5	7	0	0	0	26	0	0	47	1	0	0	0
8:05 AM	0	0	2	0	1	0	3	0	4	13	0	0	1	23	0	0	47	1	0	0	0
8:10 AM	0	0	2	0	1	0	9	0	2	18	0	0	0	16	0	0	48	0	0	0	0
8:15 AM	0	0	2	0	1	1	9	0	2	10	1	0	0	22	1	0	49	1	0	0	0
8:20 AM	0	0	0	0	4	0	7	0	2	7	0	0	0	18	0	0	38	0	0	0	0
8:25 AM	1	0	0	0	1	0	2	0	2	12	0	0	1	21	0	0	40	0	0	0	0
8:30 AM	0	0	0	0	0	1	4	0	1	8	0	0	1	26	1	0	42	1	0	0	0
8:35 AM	0	0	0	0	0	0	9	0	6	7	0	0	0	28	0	0	50	1	0	0	0
8:40 AM	1	0	0	0	2	0	5	0	3	13	0	0	0	30	1	0	55	0	0	0	0
8:45 AM	1	0	0	0	1	0	9	0	1	7	0	0	0	19	1	0	39	0	0	0	0
8:50 AM	2	0	0	0	1	0	9	0	1	9	0	0	0	18	0	0	40	0	0	0	0
8:55 AM	0	0	0	0	1	0	7	0	2	19	0	0	0	14	1	0	44	1	0	0	0
9:00 AM	0	0	1	0	3	0	9	0	4	12	0	0	0	14	1	0	44	0	0	0	0
9:05 AM	0	0	0	0	0	0	5	0	7	8	1	0	0	17	0	0	38	0	0	0	0
9:10 AM	0	0	0	0	1	1	3	0	7	16	0	0	0	18	2	0	48	1	0	0	0
9:15 AM	1	0	0	0	0	0	3	0	3	6	0	0	0	15	0	0	28	0	0	0	0
9:20 AM	0	0	0	0	0	0	5	0	2	9	1	0	0	18	2	0	37	0	0	0	0
9:25 AM	0	0	0	0	0	0	0	0	4	12	0	0	0	13	1	0	30	0	0	0	0
9:30 AM	0	0	1	0	0	0	2	0	6	3	1	0	0	3	1	0	17	0	0	0	0
9:35 AM	0	1	0	0	0	0	2	0	1	10	0	0	1	10	0	0	25	0	0	0	0
9:40 AM	1	0	0	0	0	0	3	0	0	8	0	0	0	11	0	1	23	0	0	0	0
9:45 AM	0	0	0	0	0	0	3	0	4	11	0	0	0	13	2	0	33	0	0	0	0
9:50 AM	0	0	0	0	0	0	2	0	2	10	0	0	0	5	0	0	19	0	0	0	0
9:55 AM	0	0	0	0	0	0	2	0	1	9	0	0	0	7	1	0	20	0	0	0	0
Total Survey	7	2	8	0	17	3	120	0	72	244	4	0	4	405	15	1	901	7	0	0	0

15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
8:00 AM	0	1	4	0	2	0	20	0	11	38	0	0	1	65	0	0	142	2	0	0	0
8:15 AM	1	0	2	0	6	1	18	0	6	29	1	0	1	61	1	0	127	1	0	0	0
8:30 AM	1	0	0	0	2	1	18	0	10	28	0	0	1	84	2	0	147	2	0	0	0
8:45 AM	3	0	0	0	3	0	25	0	4	35	0	0	0	51	2	0	123	1	0	0	0
9:00 AM	0	0	1	0	4	1	17	0	18	36	1	0	0	49	3	0	130	1	0	0	0
9:15 AM	1	0	0	0	0	0	8	0	9	27	1	0	0	46	3	0	95	0	0	0	0
9:30 AM	1	1	1	0	0	0	7	0	7	21	1	0	1	24	1	1	65	0	0	0	0
9:45 AM	0	0	0	0	0	0	7	0	7	30	0	0	0	25	3	0	72	0	0	0	0
Total Survey	7	2	8	0	17	3	120	0	72	244	4	0	4	405	15	1	901	7	0	0	0

Peak Hour Summary
8:00 AM to 9:00 AM

By Approach	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	12	6	18	0	96	37	133	0	162	347	509	0	269	149	418	0	539	6	0	0	0
%HV	8.3%				4.2%				1.9%				3.3%				3.2%				
PHF	0.50				0.75				0.81				0.77				0.92				

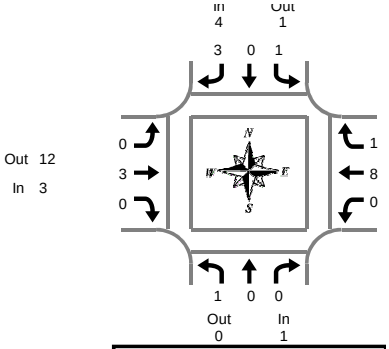
By Movement	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	5	1	6	12	13	2	81	96	31	130	1	162	3	261	5	269	539
%HV	20.0%	0.0%	0.0%	8.3%	7.7%	0.0%	3.7%	4.2%	0.0%	2.3%	0.0%	1.9%	0.0%	3.1%	20.0%	3.3%	3.2%
PHF	0.31	0.25	0.25	0.50	0.54	0.50	0.81	0.75	0.70	0.79	0.25	0.81	0.38	0.78	0.63	0.77	0.92

Rolling Hour Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
8:00 AM	5	1	6	0	13	2	81	0	31	130	1	0	3	261	5	0	539	6	0	0	0
8:15 AM	5	0	3	0	15	3	78	0	38	128	2	0	2	245	8	0	527	5	0	0	0
8:30 AM	5	0	1	0	9	2	68	0	41	126	2	0	1	230	10	0	495	4	0	0	0
8:45 AM	5	1	2	0	7	1	57	0	38	119	3	0	1	170	9	1	413	2	0	0	0
9:00 AM	2	1	2	0	4	1	39	0	41	114	3	0	1	144	10	1	362	1	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Ostman Rd & Willamette Falls Dr

Thursday, May 16, 2019
8:00 AM to 10:00 AM

Peak Hour Summary
8:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	1	2	0	0	0	0	0	1	0	1	3
8:20 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:40 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
8:45 AM	1	0	0	1	0	0	1	1	0	0	0	0	0	3	0	3	5
8:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
8:55 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
9:10 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:20 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
9:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
9:35 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
9:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:55 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Survey	1	1	0	2	2	0	3	5	1	6	1	8	0	9	1	10	25

Heavy Vehicle 15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	1	2	0	2	0	2	0	1	0	1	5
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	2	3
8:45 AM	1	0	0	1	0	0	2	2	0	0	0	0	0	6	0	6	9
9:00 AM	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	3
9:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
9:30 AM	0	1	0	1	0	0	0	0	0	1	1	2	0	0	0	0	3
9:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total Survey	1	1	0	2	2	0	3	5	1	6	1	8	0	9	1	10	25

Heavy Vehicle Peak Hour Summary
8:00 AM to 9:00 AM

By Approach	Northbound Ostman Rd			Southbound Ostman Rd			Eastbound Willamette Falls Dr			Westbound Willamette Falls Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	4	1	5	3	12	15	9	4	13	17
PHF	0.25			0.50			0.38			0.32			0.43

By Movement	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	0	1	1	0	3	4	0	3	0	3	0	8	1	9	17
PHF	0.25	0.00	0.00	0.25	0.25	0.00	0.38	0.50	0.00	0.38	0.00	0.38	0.00	0.29	0.25	0.32	0.43

Heavy Vehicle Rolling Hour Summary
8:00 AM to 10:00 AM

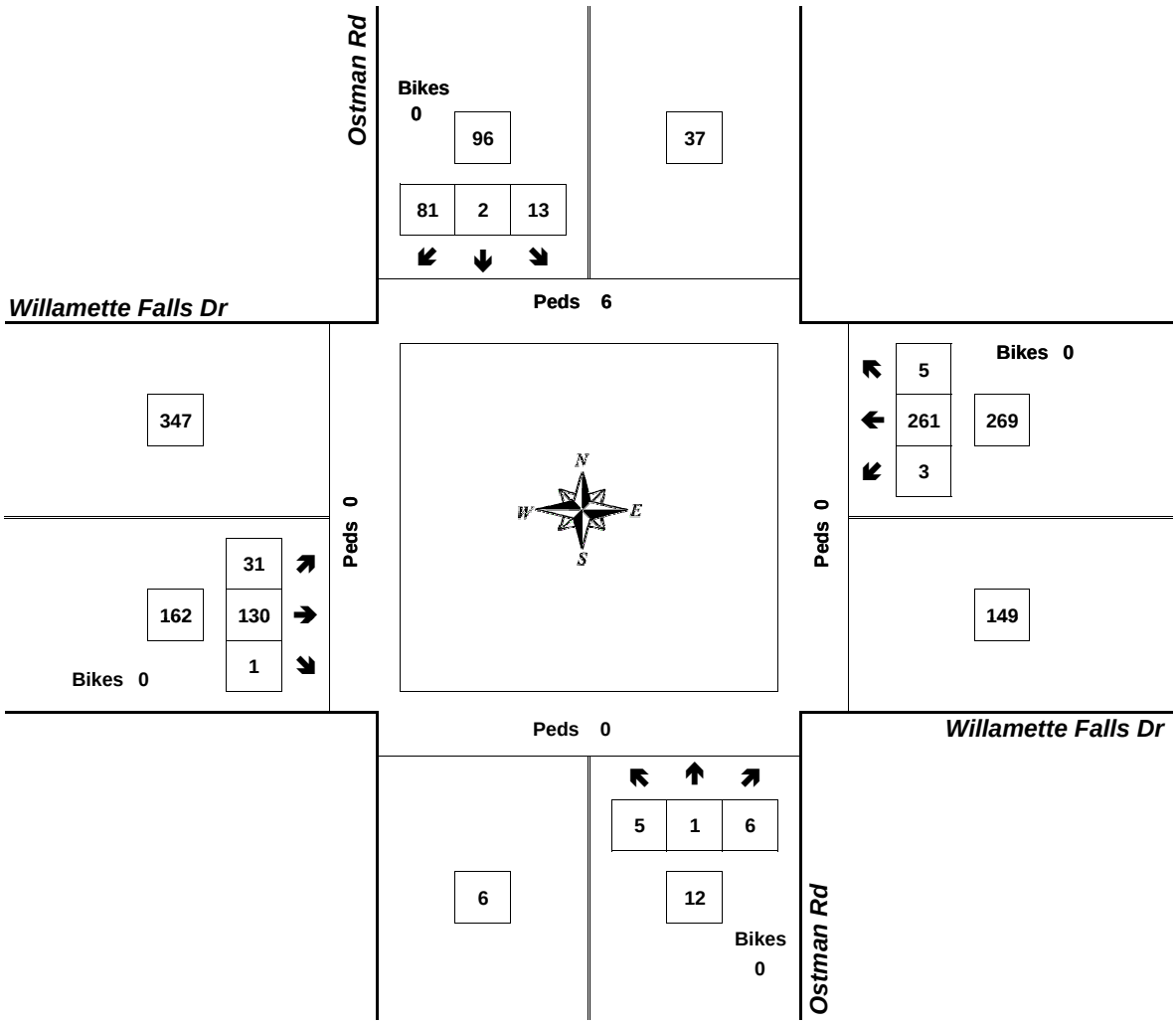
Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
8:00 AM	1	0	0	1	1	0	3	4	0	3	0	3	0	8	1	9	17
8:15 AM	1	0	0	1	2	0	3	5	0	4	0	4	0	9	1	10	20
8:30 AM	1	0	0	1	1	0	2	3	0	3	0	3	0	8	1	9	16
8:45 AM	1	1	0	2	1	0	2	3	0	3	1	4	0	7	0	7	16
9:00 AM	0	1	0	1	1	0	0	1	1	3	1	5	0	1	0	1	8

Peak Hour Summary

Clay Carney
(503) 833-2740

Ostman Rd & Willamette Falls Dr

8:00 AM to 9:00 AM
Thursday, May 16, 2019

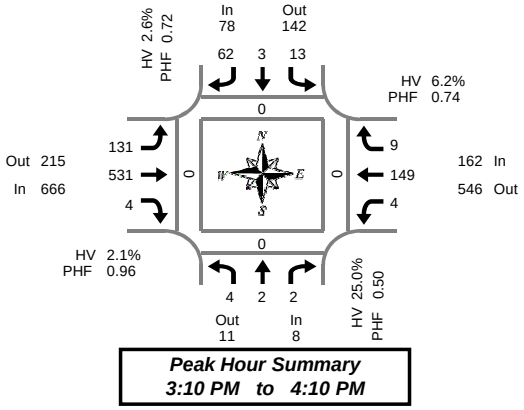


Approach	PHF	HV%	Volume
EB	0.81	1.9%	162
WB	0.77	3.3%	269
NB	0.50	8.3%	12
SB	0.75	4.2%	96
Intersection	0.92	3.2%	539

Count Period: 8:00 AM to 10:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
3:10 PM to 4:10 PM

Ostman Rd & Willamette Falls Dr

Thursday, May 16, 2019
3:00 PM to 5:00 PM

5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	1	0	0	0	3	0	3	0	8	35	0	0	0	9	2	0	61	0	0	0	0
3:05 PM	0	0	2	0	1	1	1	0	9	42	0	0	0	10	1	0	67	0	0	0	0
3:10 PM	0	0	0	0	2	0	5	0	15	39	0	2	0	8	0	0	69	0	0	0	0
3:15 PM	1	0	0	0	2	0	3	0	10	49	0	0	0	12	1	0	78	0	0	0	0
3:20 PM	0	0	0	0	0	0	4	0	8	46	0	0	1	17	0	0	76	0	0	0	0
3:25 PM	0	0	0	0	0	0	7	0	9	50	0	0	0	12	1	0	79	0	0	0	0
3:30 PM	0	0	0	0	1	0	6	0	7	44	0	0	1	18	1	0	78	0	0	0	0
3:35 PM	0	0	0	0	2	1	8	0	9	41	0	0	0	19	1	0	81	0	0	0	0
3:40 PM	1	0	1	0	0	0	9	0	9	47	1	0	0	15	0	0	83	0	0	0	0
3:45 PM	0	0	0	0	2	0	5	0	9	47	0	0	1	15	1	0	80	0	0	0	0
3:50 PM	1	0	0	0	0	0	5	0	7	49	2	0	0	5	1	0	70	0	0	0	0
3:55 PM	1	1	0	0	0	2	3	0	14	45	0	0	1	10	1	0	78	0	0	0	0
4:00 PM	0	0	0	0	1	0	3	0	19	36	0	1	0	13	0	0	72	0	0	0	0
4:05 PM	0	1	1	0	3	0	4	0	15	38	1	0	0	5	2	0	70	0	0	0	0
4:10 PM	1	0	0	0	3	0	5	0	12	39	0	0	0	8	0	0	68	0	0	0	0
4:15 PM	1	0	1	0	0	0	3	0	9	50	0	0	1	13	0	0	78	0	0	0	0
4:20 PM	0	0	0	0	1	0	5	0	15	42	0	0	0	7	0	0	70	1	0	0	0
4:25 PM	1	0	1	0	4	0	4	0	8	52	0	0	0	10	1	0	81	0	0	0	0
4:30 PM	1	0	0	0	0	1	1	0	17	42	0	0	1	13	1	0	77	0	0	0	0
4:35 PM	1	0	0	0	0	0	4	0	11	43	0	0	0	9	0	0	68	0	0	0	0
4:40 PM	0	0	0	0	0	0	3	0	7	51	0	0	0	11	3	0	75	0	0	0	0
4:45 PM	0	0	1	0	0	0	3	0	10	51	0	0	0	17	1	0	83	0	0	0	0
4:50 PM	0	0	1	0	3	0	5	0	11	46	1	0	0	14	1	0	82	0	0	0	0
4:55 PM	0	0	0	0	0	1	6	0	16	44	0	0	0	8	1	0	76	0	0	0	0
Total Survey	10	2	8	0	28	6	105	0	264	1,068	5	3	6	278	20	0	1,800	1	0	0	0

15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	1	0	2	0	6	1	9	0	32	116	0	2	0	27	3	0	197	0	0	0	0
3:15 PM	1	0	0	0	2	0	14	0	27	145	0	0	1	41	2	0	233	0	0	0	0
3:30 PM	1	0	1	0	3	1	23	0	25	132	1	0	1	52	2	0	242	0	0	0	0
3:45 PM	2	1	0	0	2	2	13	0	30	141	2	0	2	30	3	0	228	0	0	0	0
4:00 PM	1	1	1	0	7	0	12	0	46	113	1	1	0	26	2	0	210	0	0	0	0
4:15 PM	2	0	2	0	5	0	12	0	32	144	0	0	1	30	1	0	229	1	0	0	0
4:30 PM	2	0	0	0	0	1	8	0	35	136	0	0	1	33	4	0	220	0	0	0	0
4:45 PM	0	0	2	0	3	1	14	0	37	141	1	0	0	39	3	0	241	0	0	0	0
Total Survey	10	2	8	0	28	6	105	0	264	1,068	5	3	6	278	20	0	1,800	1	0	0	0

Peak Hour Summary
3:10 PM to 4:10 PM

By Approach	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	8	11	19	0	78	142	220	0	666	215	881	3	162	546	708	0	914	0	0	0	0
%HV	25.0%				2.6%				2.1%				6.2%				3.1%				
PHF	0.50				0.72				0.96				0.74				0.94				

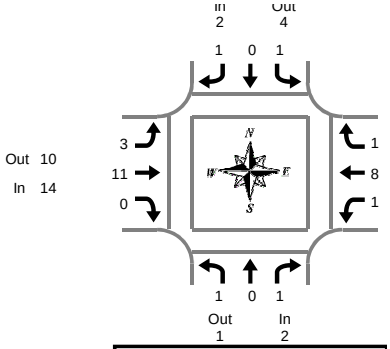
By Movement	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	4	2	2	8	13	3	62	78	131	531	4	666	4	149	9	162	914
%HV	25.0%	0.0%	50.0%	25.0%	7.7%	0.0%	1.6%	2.6%	2.3%	2.1%	0.0%	2.1%	25.0%	5.4%	11.1%	6.2%	3.1%
PHF	0.50	0.25	0.50	0.50	0.81	0.38	0.67	0.72	0.68	0.92	0.33	0.96	0.50	0.72	0.75	0.74	0.94

Rolling Hour Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	5	1	3	0	13	4	59	0	114	534	3	2	4	150	10	0	900	0	0	0	0
3:15 PM	5	2	2	0	14	3	62	0	128	531	4	1	4	149	9	0	913	0	0	0	0
3:30 PM	6	2	4	0	17	3	60	0	133	530	4	1	4	138	8	0	909	1	0	0	0
3:45 PM	7	2	3	0	14	3	45	0	143	534	3	1	4	119	10	0	887	1	0	0	0
4:00 PM	5	1	5	0	15	2	46	0	150	534	2	1	2	128	10	0	900	1	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Ostman Rd & Willamette Falls Dr

Thursday, May 16, 2019
3:00 PM to 5:00 PM

Peak Hour Summary
3:10 PM to 4:10 PM

Heavy Vehicle 5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:10 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
3:20 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
3:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
3:35 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	2	3
3:40 PM	1	0	1	2	0	0	1	1	0	1	0	1	0	1	0	1	5
3:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
3:50 PM	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	2
3:55 PM	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	1	3
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05 PM	0	0	0	0	0	0	0	0	1	4	0	5	0	0	1	1	6
4:10 PM	1	0	0	1	1	0	0	1	3	3	0	6	0	0	0	0	8
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:20 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
4:25 PM	1	0	0	1	0	0	0	0	0	1	0	1	0	3	1	4	6
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:35 PM	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	0	3
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	3	0	1	4	4	0	1	5	7	19	0	26	1	11	2	14	49

Heavy Vehicle 15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
3:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
3:30 PM	1	0	1	2	0	0	1	1	1	1	0	2	0	4	0	4	9
3:45 PM	0	0	0	0	0	0	0	0	1	4	0	5	1	0	0	1	6
4:00 PM	1	0	0	1	1	0	0	1	4	7	0	11	0	0	1	1	14
4:15 PM	1	0	0	1	1	0	0	1	0	2	0	2	0	3	1	4	8
4:30 PM	0	0	0	0	0	0	0	0	1	3	0	4	0	0	0	0	4
4:45 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Total Survey	3	0	1	4	4	0	1	5	7	19	0	26	1	11	2	14	49

Heavy Vehicle Peak Hour Summary
3:10 PM to 4:10 PM

By Approach	Northbound Ostman Rd			Southbound Ostman Rd			Eastbound Willamette Falls Dr			Westbound Willamette Falls Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	1	3	2	4	6	14	10	24	10	13	23	28
PHF	0.25			0.50			0.50			0.63			0.78

By Movement	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	1	2	1	0	1	2	3	11	0	14	1	8	1	10	28
PHF	0.25	0.00	0.25	0.25	0.25	0.00	0.25	0.50	0.75	0.46	0.00	0.50	0.25	0.50	0.25	0.63	0.78

Heavy Vehicle Rolling Hour Summary
3:00 PM to 5:00 PM

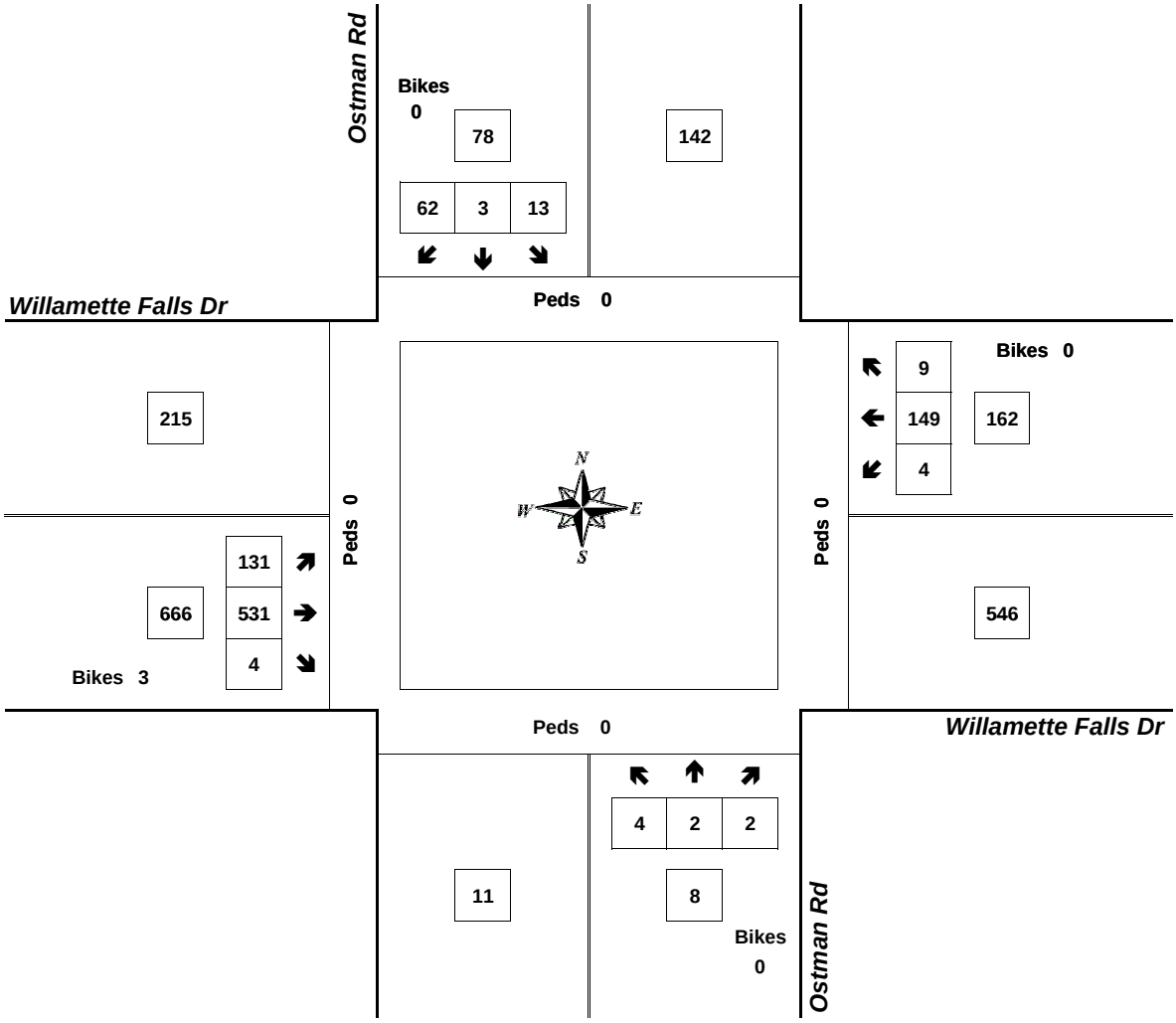
Interval Start Time	Northbound Ostman Rd				Southbound Ostman Rd				Eastbound Willamette Falls Dr				Westbound Willamette Falls Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	1	0	1	2	1	0	1	2	2	7	0	9	1	8	0	9	22
3:15 PM	2	0	1	3	1	0	1	2	6	14	0	20	1	7	1	9	34
3:30 PM	3	0	1	4	2	0	1	3	6	14	0	20	1	7	2	10	37
3:45 PM	2	0	0	2	2	0	0	2	6	16	0	22	1	3	2	6	32
4:00 PM	2	0	0	2	3	0	0	3	5	12	0	17	0	3	2	5	27

Peak Hour Summary

Clay Carney
(503) 833-2740

Ostman Rd & Willamette Falls Dr

3:10 PM to 4:10 PM
Thursday, May 16, 2019

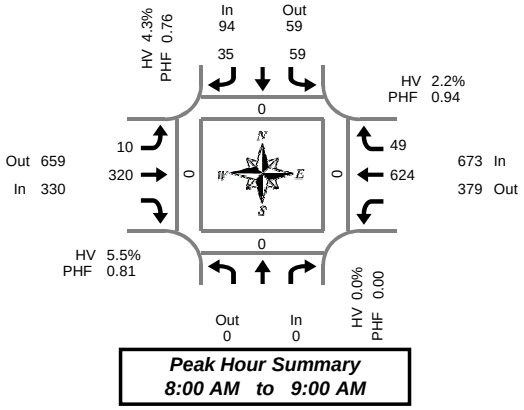


Approach	PHF	HV%	Volume
EB	0.96	2.1%	666
WB	0.74	6.2%	162
NB	0.50	25.0%	8
SB	0.72	2.6%	78
Intersection	0.94	3.1%	914

Count Period: 3:00 PM to 5:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
8:00 AM to 9:00 AM

School Access & SW Borland Rd

Thursday, May 16, 2019
8:00 AM to 10:00 AM

5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
8:00 AM				0	9		0	0	0	27		0		62	6	0	104	0	0	0	0
8:05 AM				0	6		3	0	0	37		0		53	1	0	100	0	0	0	0
8:10 AM				0	2		3	0	1	37		0		44	5	0	92	0	0	0	0
8:15 AM				0	5		3	0	0	12		0		43	3	0	66	0	0	0	0
8:20 AM				0	3		1	0	0	24		0		52	5	0	85	0	0	0	0
8:25 AM				0	5		1	0	0	25		0		61	5	0	97	0	0	0	0
8:30 AM				0	4		2	0	2	37		0		53	3	0	101	0	0	0	0
8:35 AM				0	3		3	0	2	32		0		46	3	0	89	0	0	0	0
8:40 AM				0	5		6	0	2	16		0		54	4	0	87	0	0	0	0
8:45 AM				0	6		4	0	0	27		0		67	4	0	108	0	0	0	0
8:50 AM				0	6		4	0	1	19		0		47	3	0	80	0	0	0	0
8:55 AM				0	5		5	0	2	27		0		42	7	0	88	0	0	0	0
9:00 AM				0	13		0	0	0	27		0		34	5	0	79	0	0	0	0
9:05 AM				0	7		2	0	1	12		0		49	2	0	73	0	0	0	0
9:10 AM				0	14		5	0	1	18		0		41	2	0	81	0	0	0	0
9:15 AM				0	4		0	0	0	19		0		34	0	0	57	0	0	0	0
9:20 AM				0	6		1	0	0	18		0		35	0	0	60	0	0	0	0
9:25 AM				0	3		2	0	0	21		0		50	0	0	76	0	0	0	0
9:30 AM				0	0		0	0	0	21		0		36	0	0	57	0	0	0	0
9:35 AM				0	1		1	0	0	28		0		29	0	0	59	0	0	0	0
9:40 AM				0	0		0	0	1	21		0		27	0	0	49	1	0	0	0
9:45 AM				0	0		0	0	0	24		0		33	0	0	57	0	0	0	0
9:50 AM				0	3		0	0	1	17		0		22	1	0	44	0	0	0	0
9:55 AM				0	2		0	0	0	32		0		20	1	0	55	0	0	0	0
Total Survey				0	112		46	0	14	578		0		1,034	60	0	1,844	1	0	0	0

15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
8:00 AM				0	17		6	0	1	101		0		159	12	0	296	0	0	0	0
8:15 AM				0	13		5	0	0	61		0		156	13	0	248	0	0	0	0
8:30 AM				0	12		11	0	6	85		0		153	10	0	277	0	0	0	0
8:45 AM				0	17		13	0	3	73		0		156	14	0	276	0	0	0	0
9:00 AM				0	34		7	0	2	57		0		124	9	0	233	0	0	0	0
9:15 AM				0	13		3	0	0	58		0		119	0	0	193	0	0	0	0
9:30 AM				0	1		1	0	1	70		0		92	0	0	165	1	0	0	0
9:45 AM				0	5		0	0	1	73		0		75	2	0	156	0	0	0	0
Total Survey				0	112		46	0	14	578		0		1,034	60	0	1,844	1	0	0	0

Peak Hour Summary
8:00 AM to 9:00 AM

By Approach	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	0	0	0	0	94	59	153	0	330	659	989	0	673	379	1,052	0	1,097	0	0	0	0
%HV	0.0%				4.3%				5.5%				2.2%				3.4%				
PHF	0.00				0.76				0.81				0.94				0.93				

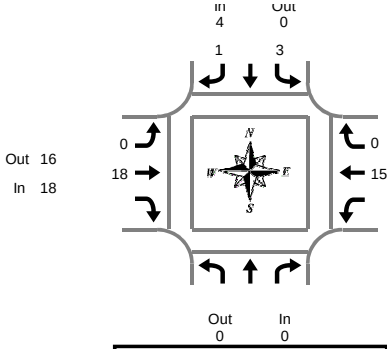
By Movement	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	59		35	94	10	320		330		624	49	673	1,097
%HV	NA	NA	NA	0.0%	5.1%	NA	2.9%	4.3%	0.0%	5.6%	NA	5.5%	NA	2.4%	0.0%	2.2%	3.4%
PHF				0.00	0.87		0.63	0.76	0.42	0.79		0.81		0.93	0.88	0.94	0.93

Rolling Hour Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
8:00 AM				0	59		35	0	10	320		0		624	49	0	1,097	0	0	0	0
8:15 AM				0	76		36	0	11	276		0		589	46	0	1,034	0	0	0	0
8:30 AM				0	76		34	0	11	273		0		552	33	0	979	0	0	0	0
8:45 AM				0	65		24	0	6	258		0		491	23	0	867	1	0	0	0
9:00 AM				0	53		11	0	4	258		0		410	11	0	747	1	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



School Access & SW Borland Rd

Thursday, May 16, 2019
8:00 AM to 10:00 AM

Peak Hour Summary
8:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total
				Total	L	R	Total		T		Total		T	R	Total	
8:00 AM				0	0	0	0	0	1		1		2	0	2	3
8:05 AM				0	0	0	0	0	2		2		1	0	1	3
8:10 AM				0	0	0	0	0	0		0		0	0	0	0
8:15 AM				0	0	0	0	0	0		0		0	0	0	0
8:20 AM				0	0	0	0	0	2		2		0	0	0	2
8:25 AM				0	0	0	0	0	2		2		2	0	2	4
8:30 AM				0	0	0	0	0	4		4		2	0	2	6
8:35 AM				0	0	0	0	0	2		2		2	0	2	4
8:40 AM				0	0	1	1	0	0		0		0	0	0	1
8:45 AM				0	0	0	0	0	3		3		4	0	4	7
8:50 AM				0	0	0	0	0	0		0		2	0	2	2
8:55 AM				0	3	0	3	0	2		2		0	0	0	5
9:00 AM				0	8	0	8	0	3		3		1	0	1	12
9:05 AM				0	1	0	1	0	0		0		0	0	0	1
9:10 AM				0	2	0	2	0	1		1		3	0	3	6
9:15 AM				0	1	0	1	0	1		1		0	0	0	2
9:20 AM				0	2	1	3	0	0		0		2	0	2	5
9:25 AM				0	0	0	0	0	0		0		1	0	1	1
9:30 AM				0	0	0	0	0	1		1		1	0	1	2
9:35 AM				0	0	0	0	0	3		3		0	0	0	3
9:40 AM				0	0	0	0	0	1		1		0	0	0	1
9:45 AM				0	0	0	0	0	0		0		1	0	1	1
9:50 AM				0	0	0	0	0	0		0		1	0	1	1
9:55 AM				0	2	0	2	0	2		2		0	0	0	4
Total Survey				0	19	2	21	0	30		30		25	0	25	76

Heavy Vehicle 15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total
				Total	L	R	Total		T		Total		T	R	Total	
8:00 AM				0	0	0	0	0	3		3		3	0	3	6
8:15 AM				0	0	0	0	0	4		4		2	0	2	6
8:30 AM				0	0	1	1	0	6		6		4	0	4	11
8:45 AM				0	3	0	3	0	5		5		6	0	6	14
9:00 AM				0	11	0	11	0	4		4		4	0	4	19
9:15 AM				0	3	1	4	0	1		1		3	0	3	8
9:30 AM				0	0	0	0	0	5		5		1	0	1	6
9:45 AM				0	2	0	2	0	2		2		2	0	2	6
Total Survey				0	19	2	21	0	30		30		25	0	25	76

Heavy Vehicle Peak Hour Summary
8:00 AM to 9:00 AM

By Approach	Northbound School Access			Southbound School Access			Eastbound SW Borland Rd			Westbound SW Borland Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	4	0	4	18	16	34	15	21	36	37
PHF	0.00			0.33			0.56			0.63			0.66

By Movement	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	3		1	4	0	18		18		15	0	15	37
PHF				0.00	0.25		0.25	0.33	0.00	0.56		0.56		0.63	0.00	0.63	0.66

Heavy Vehicle Rolling Hour Summary
8:00 AM to 10:00 AM

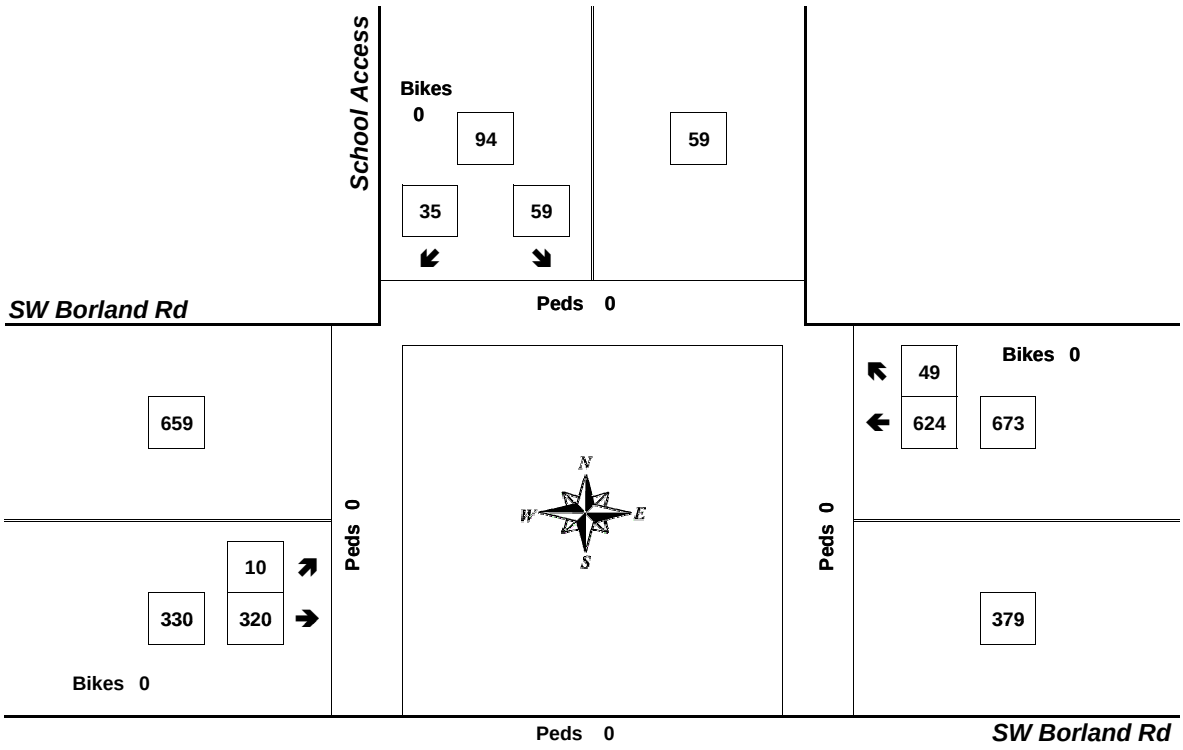
Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
8:00 AM				0	3		1	4	0	18		18		15	0	15	37
8:15 AM				0	14		1	15	0	19		19		16	0	16	50
8:30 AM				0	17		2	19	0	16		16		17	0	17	52
8:45 AM				0	17		1	18	0	15		15		14	0	14	47
9:00 AM				0	16		1	17	0	12		12		10	0	10	39

Peak Hour Summary

Clay Carney
(503) 833-2740

School Access & SW Borland Rd

8:00 AM to 9:00 AM
Thursday, May 16, 2019



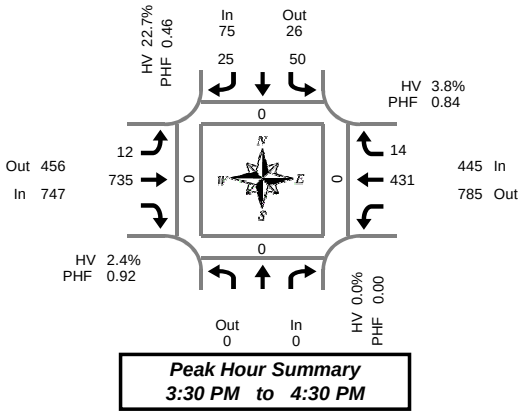
Bikes
0

Approach	PHF	HV%	Volume
EB	0.81	5.5%	330
WB	0.94	2.2%	673
NB	0.00	0.0%	0
SB	0.76	4.3%	94
Intersection	0.93	3.4%	1,097

Count Period: 8:00 AM to 10:00 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
3:30 PM to 4:30 PM

School Access & SW Borland Rd

Thursday, May 16, 2019
3:00 PM to 5:00 PM

5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
3:00 PM				0	2		0	0	0	54		0		31	0	0	87	0	0	0	0
3:05 PM				0	0		0	0	1	58		0		36	1	0	96	0	0	0	0
3:10 PM				0	0		0	0	0	62		0		27	2	0	91	0	0	0	0
3:15 PM				0	0		1	0	0	42		0		23	0	0	66	0	0	0	0
3:20 PM				0	2		1	0	0	47		0		19	1	0	70	0	0	0	0
3:25 PM				0	2		0	0	0	41		0		16	3	0	62	0	0	0	0
3:30 PM				0	0		1	0	0	58		0		42	3	0	104	0	0	0	0
3:35 PM				0	2		0	0	2	63		0		42	1	0	110	0	0	0	0
3:40 PM				0	0		1	0	3	61		0		42	3	0	110	0	0	0	0
3:45 PM				0	6		7	0	2	64		0		31	1	0	111	0	0	0	0
3:50 PM				0	9		8	0	2	70		0		38	2	0	129	0	0	0	0
3:55 PM				0	10		1	0	2	53		0		39	0	0	105	0	0	0	0
4:00 PM				0	10		2	0	0	69		0		27	2	0	110	0	0	0	0
4:05 PM				0	2		2	0	0	41		0		38	0	0	83	0	0	0	0
4:10 PM				0	0		0	0	0	71		0		27	0	0	98	0	0	0	0
4:15 PM				0	7		0	0	0	56		0		29	0	0	92	0	0	0	0
4:20 PM				0	2		2	0	1	52		0		36	0	0	93	0	0	0	0
4:25 PM				0	2		1	0	0	77		0		40	2	0	122	0	0	0	0
4:30 PM				0	2		0	0	0	65		0		25	1	0	93	0	0	0	0
4:35 PM				0	6		2	0	1	59		0		29	2	0	99	0	0	0	0
4:40 PM				0	2		0	0	1	66		0		34	5	0	108	0	0	0	0
4:45 PM				0	3		5	0	5	58		0		33	8	0	112	0	0	0	0
4:50 PM				0	4		0	0	1	84		0		35	5	0	129	0	0	0	0
4:55 PM				0	3		1	0	0	63		0		35	1	0	103	0	0	0	0
Total Survey				0	76		35	0	21	1,434		0		774	43	0	2,383	0	0	0	0

15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
3:00 PM				0	2		0	0	1	174		0		94	3	0	274	0	0	0	0
3:15 PM				0	4		2	0	0	130		0		58	4	0	198	0	0	0	0
3:30 PM				0	2		2	0	5	182		0		126	7	0	324	0	0	0	0
3:45 PM				0	25		16	0	6	187		0		108	3	0	345	0	0	0	0
4:00 PM				0	12		4	0	0	181		0		92	2	0	291	0	0	0	0
4:15 PM				0	11		3	0	1	185		0		105	2	0	307	0	0	0	0
4:30 PM				0	10		2	0	2	190		0		88	8	0	300	0	0	0	0
4:45 PM				0	10		6	0	6	205		0		103	14	0	344	0	0	0	0
Total Survey				0	76		35	0	21	1,434		0		774	43	0	2,383	0	0	0	0

Peak Hour Summary
3:30 PM to 4:30 PM

By Approach	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	0	0	0	0	75	26	101	0	747	456	1,203	0	445	785	1,230	0	1,267	0	0	0	0
%HV		0.0%				22.7%				2.4%				3.8%			4.1%				
PHF		0.00				0.46				0.92				0.84			0.91				

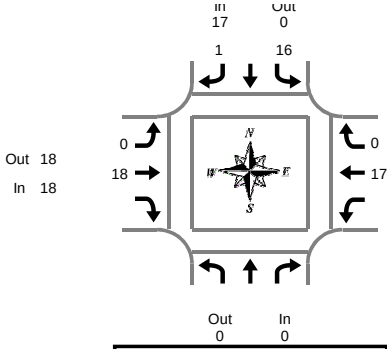
By Movement	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	50		25	75	12	735		747		431	14	445	1,267
%HV	NA	NA	NA	0.0%	32.0%	NA	4.0%	22.7%	0.0%	2.4%	NA	2.4%	NA	3.9%	0.0%	3.8%	4.1%
PHF				0.00	0.43		0.39	0.46	0.43	0.94		0.92		0.86	0.50	0.84	0.91

Rolling Hour Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
3:00 PM				0	33		20	0	12	673		0		386	17	0	1,141	0	0	0	0
3:15 PM				0	43		24	0	11	680		0		384	16	0	1,158	0	0	0	0
3:30 PM				0	50		25	0	12	735		0		431	14	0	1,267	0	0	0	0
3:45 PM				0	58		25	0	9	743		0		393	15	0	1,243	0	0	0	0
4:00 PM				0	43		15	0	9	761		0		388	26	0	1,242	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



School Access & SW Borland Rd

Thursday, May 16, 2019
3:00 PM to 5:00 PM

Peak Hour Summary
3:30 PM to 4:30 PM

Heavy Vehicle 5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
3:00 PM				0	0		0	0	0	0		0		1	0	1	1
3:05 PM				0	0		0	0	0	1		1		0	0	0	1
3:10 PM				0	0		0	0	0	1		1		0	0	0	1
3:15 PM				0	0		0	0	0	0		0		0	0	0	0
3:20 PM				0	0		0	0	0	1		1		0	0	0	1
3:25 PM				0	0		0	0	0	1		1		0	0	0	1
3:30 PM				0	0		0	0	0	2		2		2	0	2	4
3:35 PM				0	0		0	0	0	3		3		1	0	1	4
3:40 PM				0	0		0	0	0	1		1		5	0	5	6
3:45 PM				0	1		0	1	0	0		0		0	0	0	1
3:50 PM				0	0		1	1	0	0		0		2	0	2	3
3:55 PM				0	8		0	8	0	1		1		2	0	2	11
4:00 PM				0	7		0	7	0	2		2		2	0	2	11
4:05 PM				0	0		0	0	0	3		3		0	0	0	3
4:10 PM				0	0		0	0	0	2		2		0	0	0	2
4:15 PM				0	0		0	0	0	0		0		1	0	1	1
4:20 PM				0	0		0	0	0	2		2		1	0	1	3
4:25 PM				0	0		0	0	0	2		2		1	0	1	3
4:30 PM				0	0		0	0	0	1		1		1	0	1	2
4:35 PM				0	0		0	0	0	0		0		0	0	0	0
4:40 PM				0	0		0	0	0	1		1		0	0	0	1
4:45 PM				0	0		0	0	0	1		1		0	0	0	1
4:50 PM				0	0		0	0	0	0		0		0	0	0	0
4:55 PM				0	0		0	0	0	0		0		1	0	1	1
Total Survey				0	16		1	17	0	25		25		20	0	20	62

Heavy Vehicle 15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
3:00 PM				0	0		0	0	0	2		2		1	0	1	3
3:15 PM				0	0		0	0	0	2		2		0	0	0	2
3:30 PM				0	0		0	0	0	6		6		8	0	8	14
3:45 PM				0	9		1	10	0	1		1		4	0	4	15
4:00 PM				0	7		0	7	0	7		7		2	0	2	16
4:15 PM				0	0		0	0	0	4		4		3	0	3	7
4:30 PM				0	0		0	0	0	2		2		1	0	1	3
4:45 PM				0	0		0	0	0	1		1		1	0	1	2
Total Survey				0	16		1	17	0	25		25		20	0	20	62

Heavy Vehicle Peak Hour Summary
3:30 PM to 4:30 PM

By Approach	Northbound School Access			Southbound School Access			Eastbound SW Borland Rd			Westbound SW Borland Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	17	0	17	18	18	36	17	34	51	52
PHF	0.00			0.27			0.64			0.53			0.52

By Movement	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	16		1	17	0	18		18		17	0	17	52
PHF				0.00	0.27		0.25	0.27	0.00	0.64		0.64		0.53	0.00	0.53	0.52

Heavy Vehicle Rolling Hour Summary
3:00 PM to 5:00 PM

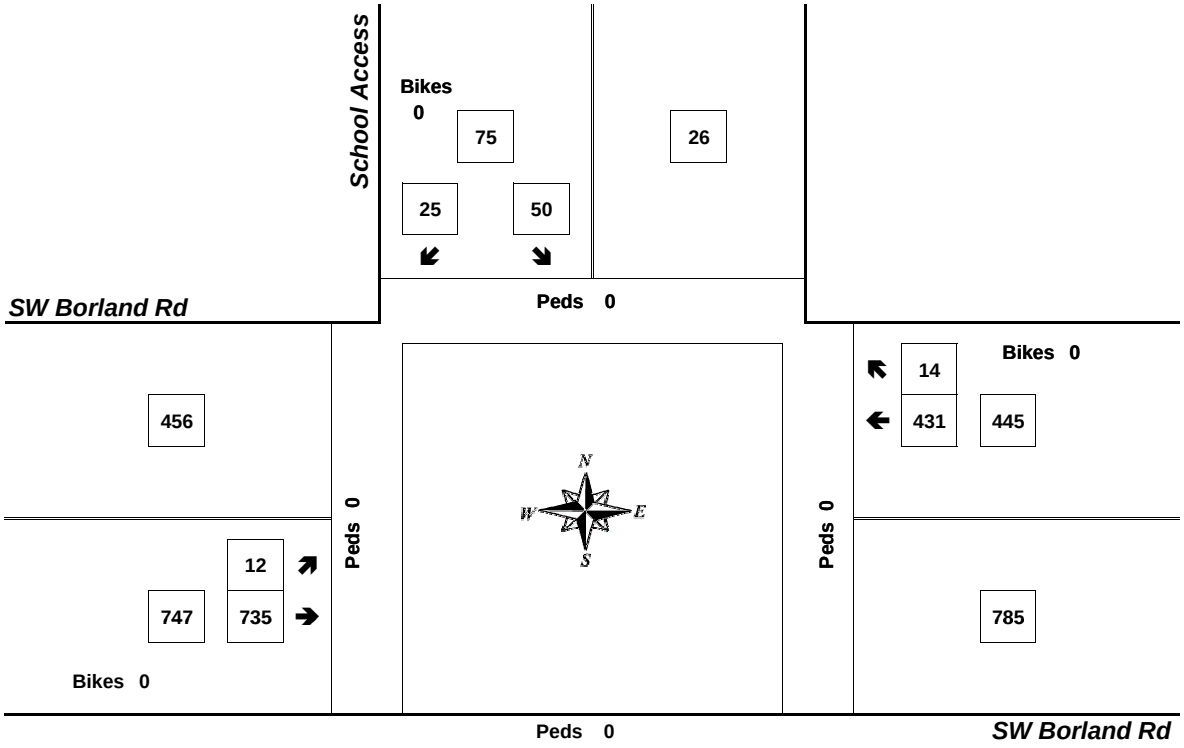
Interval Start Time	Northbound School Access				Southbound School Access				Eastbound SW Borland Rd				Westbound SW Borland Rd				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
3:00 PM				0	9		1	10	0	11		11		13	0	13	34
3:15 PM				0	16		1	17	0	16		16		14	0	14	47
3:30 PM				0	16		1	17	0	18		18		17	0	17	52
3:45 PM				0	16		1	17	0	14		14		10	0	10	41
4:00 PM				0	7		0	7	0	14		14		7	0	7	28

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

School Access & SW Borland Rd

3:30 PM to 4:30 PM
Thursday, May 16, 2019



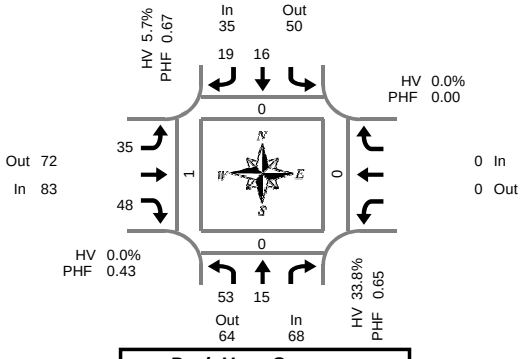
Bikes 0

Approach	PHF	HV%	Volume
EB	0.92	2.4%	747
WB	0.84	3.8%	445
NB	0.00	0.0%	0
SB	0.46	22.7%	75
Intersection	0.91	4.1%	1,267

Count Period: 3:00 PM to 5:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
8:20 AM to 9:20 AM

School Rd & Access Driveway

Thursday, May 16, 2019
8:00 AM to 10:00 AM

5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
8:00 AM	4	0		0	0	1	0	1		0	0				0	6	0	0	0	0
8:05 AM	6	1		0	0	0	0	1		0	0				0	8	0	0	0	0
8:10 AM	3	1		0	0	1	0	0		0	0				0	5	0	0	0	0
8:15 AM	4	0		0	1	0	1	0		0	0				0	5	0	0	0	0
8:20 AM	4	2		0	0	0	0	1		0	0				0	7	0	0	0	0
8:25 AM	5	0		0	0	0	0	1		1	0				0	7	0	0	0	0
8:30 AM	3	1		0	1	0	0	0		1	0				0	6	0	0	0	0
8:35 AM	3	1		0	0	2	0	2		2	0				0	10	0	0	0	0
8:40 AM	4	1		0	1	2	0	1		2	0				0	11	0	0	0	0
8:45 AM	3	1		0	2	3	0	2		7	0				0	18	0	0	0	0
8:50 AM	8	0		0	1	1	0	3		3	0				0	16	0	0	0	0
8:55 AM	6	6		0	4	2	0	5		12	0				0	35	0	0	0	1
9:00 AM	4	2		0	2	1	0	11		12	0				0	32	0	0	0	0
9:05 AM	4	1		0	1	3	0	3		5	0				0	17	0	0	0	0
9:10 AM	6	0		0	2	3	0	3		2	0				0	16	0	0	0	0
9:15 AM	3	0		0	2	2	0	3		1	0				0	11	0	0	0	0
9:20 AM	0	2		0	0	0	0	1		1	0				0	4	0	0	0	0
9:25 AM	0	3		0	0	1	0	1		0	0				0	5	0	0	0	0
9:30 AM	2	0		0	2	1	0	2		0	0				0	7	0	0	0	0
9:35 AM	0	2		0	0	0	0	0		0	0				0	2	0	0	0	0
9:40 AM	0	1		0	0	0	0	0		0	0				0	1	0	0	0	0
9:45 AM	1	0		0	2	0	0	0		0	0				0	3	0	0	0	1
9:50 AM	1	1		0	0	0	0	0		0	0				0	2	0	0	0	1
9:55 AM	0	3		0	0	0	0	0		1	0				0	4	0	0	0	0
Total Survey	74	29		0	21	23	1	41		50	0				0	238	0	0	0	3

15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
8:00 AM	13	2		0	0	2	0	2		0	0				0	19	0	0	0	0
8:15 AM	13	2		0	1	0	1	2		1	0				0	19	0	0	0	0
8:30 AM	10	3		0	2	4	0	3		5	0				0	27	0	0	0	0
8:45 AM	17	7		0	7	6	0	10		22	0				0	69	0	0	0	1
9:00 AM	14	3		0	5	7	0	17		19	0				0	65	0	0	0	0
9:15 AM	3	5		0	2	3	0	5		2	0				0	20	0	0	0	0
9:30 AM	2	3		0	2	1	0	2		0	0				0	10	0	0	0	0
9:45 AM	2	4		0	2	0	0	0		1	0				0	9	0	0	0	2
Total Survey	74	29		0	21	23	1	41		50	0				0	238	0	0	0	3

Peak Hour Summary
8:20 AM to 9:20 AM

By Approach	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	68	64	132	0	35	50	85	0	83	72	155	0	0	0	0	0	186	0	0	0	1
%HV	33.8%				5.7%				0.0%				0.0%				13.4%				
PHF	0.65				0.67				0.43				0.00				0.55				

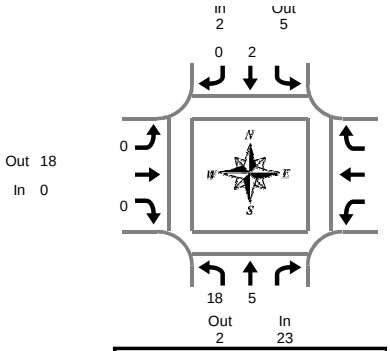
By Movement	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Total
	L	T		Total	T	R	Total	L		R	Total				Total		
Volume	53	15		68	16	19	35	35		48	83				0		186
%HV	34.0%	33.3%	NA	33.8%	12.5%	0.0%	5.7%	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%		13.4%
PHF	0.74	0.42		0.65	0.57	0.59	0.67	0.46		0.41	0.43				0.00		0.55

Rolling Hour Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
8:00 AM	53	14		0	10	12	1	17		28	0				0	134	0	0	0	1
8:15 AM	54	15		0	15	17	1	32		47	0				0	180	0	0	0	1
8:30 AM	44	18		0	16	20	0	35		48	0				0	181	0	0	0	1
8:45 AM	36	18		0	16	17	0	34		43	0				0	164	0	0	0	1
9:00 AM	21	15		0	11	11	0	24		22	0				0	104	0	0	0	2

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



School Rd & Access Driveway

Thursday, May 16, 2019
8:00 AM to 10:00 AM

Peak Hour Summary
8:20 AM to 9:20 AM

Heavy Vehicle 5-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
8:00 AM	0	0		0	0	0	0		0		0	0				0	0
8:05 AM	0	0		0	0	0	0		0		0	0				0	0
8:10 AM	0	0		0	0	0	0		0		0	0				0	0
8:15 AM	0	0		0	0	0	0		0		0	0				0	0
8:20 AM	0	1		1	0	0	0		0		0	0				0	1
8:25 AM	0	0		0	0	0	0		0		0	0				0	0
8:30 AM	0	0		0	0	0	0		0		0	0				0	0
8:35 AM	0	0		0	0	0	0		0		0	0				0	0
8:40 AM	0	0		0	0	0	0		0		0	0				0	0
8:45 AM	1	0		1	0	0	0		0		0	0				0	1
8:50 AM	8	0		8	0	0	0		0		0	0				0	8
8:55 AM	5	4		9	0	0	0		0		0	0				0	9
9:00 AM	2	0		2	0	0	0		0		0	0				0	2
9:05 AM	1	0		1	0	0	0		0		0	0				0	1
9:10 AM	0	0		0	1	0	1		0		0	0				0	1
9:15 AM	1	0		1	1	0	1		0		0	0				0	2
9:20 AM	0	0		0	0	0	0		0		0	0				0	0
9:25 AM	0	0		0	0	0	0		0		0	0				0	0
9:30 AM	1	0		1	0	0	0		0		0	0				0	1
9:35 AM	0	0		0	0	0	0		0		0	0				0	0
9:40 AM	0	0		0	0	0	0		0		0	0				0	0
9:45 AM	0	0		0	0	0	0		0		0	0				0	0
9:50 AM	0	0		0	0	0	0		0		0	0				0	0
9:55 AM	0	1		1	0	0	0		0		0	0				0	1
Total Survey	19	6		25	2	0	2		0		0	0				0	27

Heavy Vehicle 15-Minute Interval Summary
8:00 AM to 10:00 AM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
8:00 AM	0	0		0	0	0	0		0		0	0				0	0
8:15 AM	0	1		1	0	0	0		0		0	0				0	1
8:30 AM	0	0		0	0	0	0		0		0	0				0	0
8:45 AM	14	4		18	0	0	0		0		0	0				0	18
9:00 AM	3	0		3	1	0	1		0		0	0				0	4
9:15 AM	1	0		1	1	0	1		0		0	0				0	2
9:30 AM	1	0		1	0	0	0		0		0	0				0	1
9:45 AM	0	1		1	0	0	0		0		0	0				0	1
Total Survey	19	6		25	2	0	2		0		0	0				0	27

Heavy Vehicle Peak Hour Summary
8:20 AM to 9:20 AM

By Approach	Northbound School Rd			Southbound School Rd			Eastbound Access Driveway			Westbound Access Driveway			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	23	2	25	2	5	7	0	18	18	0	0	0	25
PHF	0.30			0.25			0.00			0.00			0.33

By Movement	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Total
	L	T		Total	T	R	Total		L		R	Total				Total	
Volume	18	5		23	2	0	2		0		0	0				0	25
PHF	0.30	0.31		0.30	0.25	0.00	0.25		0.00		0.00	0.00				0.00	0.33

Heavy Vehicle Rolling Hour Summary
8:00 AM to 10:00 AM

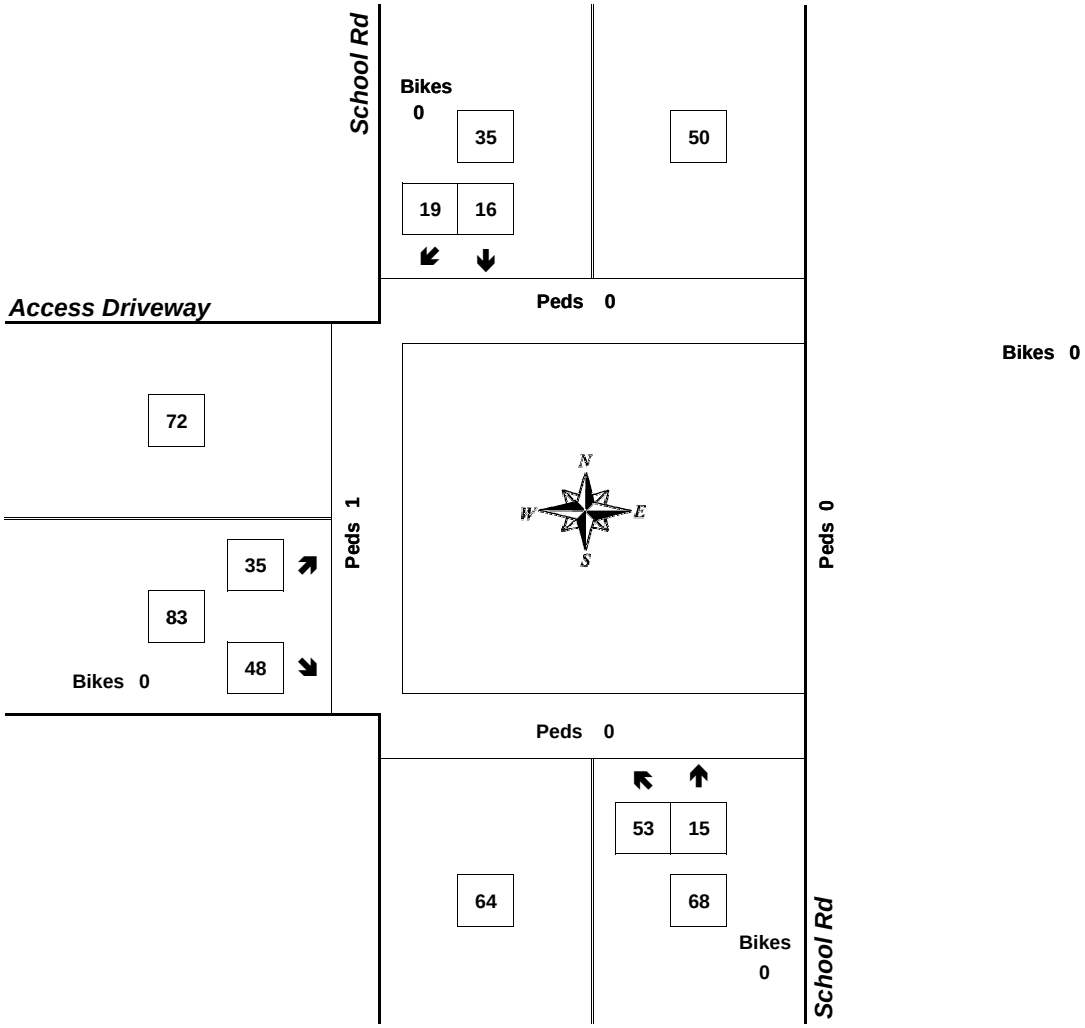
Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
8:00 AM	14	5		19	0	0	0		0		0	0				0	19
8:15 AM	17	5		22	1	0	1		0		0	0				0	23
8:30 AM	18	4		22	2	0	2		0		0	0				0	24
8:45 AM	19	4		23	2	0	2		0		0	0				0	25
9:00 AM	5	1		6	2	0	2		0		0	0				0	8

Peak Hour Summary

Clay Carney
(503) 833-2740

School Rd & Access Driveway

8:20 AM to 9:20 AM
Thursday, May 16, 2019

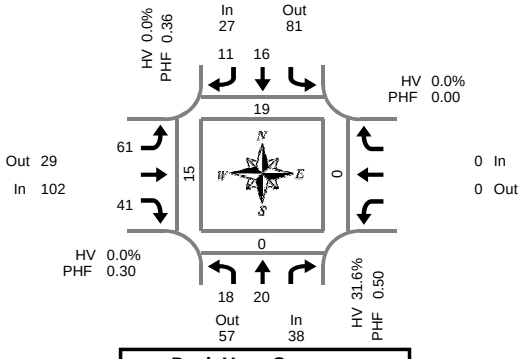


Approach	PHF	HV%	Volume
EB	0.43	0.0%	83
WB	0.00	0.0%	0
NB	0.65	33.8%	68
SB	0.67	5.7%	35
Intersection	0.55	13.4%	186

Count Period: 8:00 AM to 10:00 AM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
3:10 PM to 4:10 PM

School Rd & Access Driveway

Thursday, May 16, 2019
3:00 PM to 5:00 PM

5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R		Bikes	L		R	Bikes				Bikes		North	South	East	West
3:00 PM	1	2		0	0	0		0	2		0	0				0	5	0	0	0	0
3:05 PM	3	0		0	0	0		0	0		0	0				0	3	0	0	0	0
3:10 PM	1	2		0	1	0		0	1		0	0				0	5	0	0	0	0
3:15 PM	1	1		0	1	0		0	0		0	0				0	3	0	0	0	0
3:20 PM	0	0		0	0	0		0	0		0	0				0	0	0	0	0	0
3:25 PM	0	2		0	0	0		0	0		1	0				0	3	0	0	0	5
3:30 PM	1	1		0	3	0		0	2		2	0				0	9	1	0	0	4
3:35 PM	2	3		0	3	7		0	1		0	0				0	16	0	0	0	2
3:40 PM	3	2		0	2	4		0	0		1	0				0	12	0	0	0	1
3:45 PM	5	4		0	3	0		0	16		11	0				0	39	11	0	0	0
3:50 PM	2	3		0	1	0		0	33		13	0				0	52	5	0	0	0
3:55 PM	1	1		0	1	0		0	5		8	0				0	16	0	0	0	1
4:00 PM	1	1		0	0	0		0	3		2	0				0	7	2	0	0	2
4:05 PM	1	0		0	1	0		0	0		3	0				0	5	0	0	0	0
4:10 PM	0	0		0	0	0		0	1		0	0				0	1	0	0	0	0
4:15 PM	1	0		0	0	1		0	2		0	0				0	4	0	0	0	1
4:20 PM	0	0		0	0	0		0	0		0	0				0	0	0	0	0	0
4:25 PM	1	0		0	3	0		0	2		0	1				0	6	0	0	0	0
4:30 PM	2	0		0	0	1		0	1		1	0				0	5	0	0	0	0
4:35 PM	0	0		0	2	0		0	2		0	0				0	4	0	0	0	0
4:40 PM	0	0		0	0	3		0	3		0	0				0	6	0	0	0	0
4:45 PM	0	0		0	1	2		0	0		0	0				0	3	0	0	0	0
4:50 PM	3	0		0	0	1		0	0		1	0				0	5	0	0	0	0
4:55 PM	2	2		0	2	0		0	0		1	0				0	7	0	0	0	1
Total Survey	31	24		0	24	19		0	74		44	1				0	216	19	0	0	17

15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R		Bikes	L		R	Bikes				Bikes		North	South	East	West
3:00 PM	5	4		0	1	0		0	3		0	0				0	13	0	0	0	0
3:15 PM	1	3		0	1	0		0	0		1	0				0	6	0	0	0	5
3:30 PM	6	6		0	8	11		0	3		3	0				0	37	1	0	0	7
3:45 PM	8	8		0	5	0		0	54		32	0				0	107	16	0	0	1
4:00 PM	2	1		0	1	0		0	4		5	0				0	13	2	0	0	2
4:15 PM	2	0		0	3	1		0	4		0	1				0	10	0	0	0	1
4:30 PM	2	0		0	2	4		0	6		1	0				0	15	0	0	0	0
4:45 PM	5	2		0	3	3		0	0		2	0				0	15	0	0	0	1
Total Survey	31	24		0	24	19		0	74		44	1				0	216	19	0	0	17

Peak Hour Summary
3:10 PM to 4:10 PM

By Approach	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	38	57	95	0	27	81	108	0	102	29	131	0	0	0	0	0	167
%HV	31.6%				0.0%				0.0%				0.0%				7.2%
PHF	0.50				0.36				0.30				0.00				0.39

Pedestrians Crosswalk			
North	South	East	West
19	0	0	15

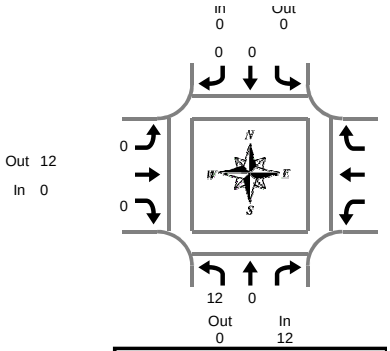
By Movement	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Total
	L	T		Total	T	R		Total	L		R	Total				Total	
Volume	18	20		38	16	11		27	61		41	102				0	167
%HV	66.7%	0.0%	NA	31.6%	NA	0.0%	0.0%	0.0%	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	7.2%
PHF	0.45	0.56		0.50		0.50	0.25	0.36	0.28		0.32	0.30				0.00	0.39

Rolling Hour Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes	T	R		Bikes	L		R	Bikes				Bikes		North	South	East	West
3:00 PM	20	21		0	15	11		0	60		36	0				0	163	17	0	0	13
3:15 PM	17	18		0	15	11		0	61		41	0				0	163	19	0	0	15
3:30 PM	18	15		0	17	12		0	65		40	1				0	167	19	0	0	11
3:45 PM	14	9		0	11	5		0	68		38	1				0	145	18	0	0	4
4:00 PM	11	3		0	9	8		0	14		8	1				0	53	2	0	0	4

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



School Rd & Access Driveway

Thursday, May 16, 2019
3:00 PM to 5:00 PM

Peak Hour Summary
3:10 PM to 4:10 PM

Heavy Vehicle 5-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
3:00 PM	0	0		0	0	0	0		1		0	1				0	1
3:05 PM	2	0		2	0	0	0		0		0	0				0	2
3:10 PM	1	0		1	0	0	0		0		0	0				0	1
3:15 PM	1	0		1	0	0	0		0		0	0				0	1
3:20 PM	0	0		0	0	0	0		0		0	0				0	0
3:25 PM	0	0		0	0	0	0		0		0	0				0	0
3:30 PM	0	0		0	0	0	0		0		0	0				0	0
3:35 PM	0	0		0	0	0	0		0		0	0				0	0
3:40 PM	3	0		3	0	0	0		0		0	0				0	3
3:45 PM	5	0		5	0	0	0		0		0	0				0	5
3:50 PM	2	0		2	0	0	0		0		0	0				0	2
3:55 PM	0	0		0	0	0	0		0		0	0				0	0
4:00 PM	0	0		0	0	0	0		0		0	0				0	0
4:05 PM	0	0		0	0	0	0		0		0	0				0	0
4:10 PM	0	0		0	0	0	0		0		0	0				0	0
4:15 PM	0	0		0	0	0	0		0		0	0				0	0
4:20 PM	0	0		0	0	0	0		0		0	0				0	0
4:25 PM	0	0		0	0	0	0		0		0	0				0	0
4:30 PM	0	0		0	0	0	0		0		0	0				0	0
4:35 PM	0	0		0	0	0	0		0		0	0				0	0
4:40 PM	0	0		0	0	0	0		0		0	0				0	0
4:45 PM	0	0		0	0	0	0		0		0	0				0	0
4:50 PM	2	0		2	0	0	0		0		0	0				0	2
4:55 PM	1	0		1	0	0	0		0		0	0				0	1
Total Survey	17	0		17	0	0	0		1		0	1				0	18

Heavy Vehicle 15-Minute Interval Summary
3:00 PM to 5:00 PM

Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
3:00 PM	3	0		3	0	0	0		1		0	1				0	4
3:15 PM	1	0		1	0	0	0		0		0	0				0	1
3:30 PM	3	0		3	0	0	0		0		0	0				0	3
3:45 PM	7	0		7	0	0	0		0		0	0				0	7
4:00 PM	0	0		0	0	0	0		0		0	0				0	0
4:15 PM	0	0		0	0	0	0		0		0	0				0	0
4:30 PM	0	0		0	0	0	0		0		0	0				0	0
4:45 PM	3	0		3	0	0	0		0		0	0				0	3
Total Survey	17	0		17	0	0	0		1		0	1				0	18

Heavy Vehicle Peak Hour Summary
3:10 PM to 4:10 PM

By Approach	Northbound School Rd			Southbound School Rd			Eastbound Access Driveway			Westbound Access Driveway			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	12	0	12	0	0	0	0	12	12	0	0	0	12
PHF	0.30			0.00			0.00			0.00			0.30

By Movement	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Total
	L	T		Total	T	R	Total		L		R	Total				Total	
Volume	12	0		12	0	0	0		0		0	0				0	12
PHF	0.30	0.00		0.30	0.00	0.00	0.00		0.00		0.00	0.00				0.00	0.30

Heavy Vehicle Rolling Hour Summary
3:00 PM to 5:00 PM

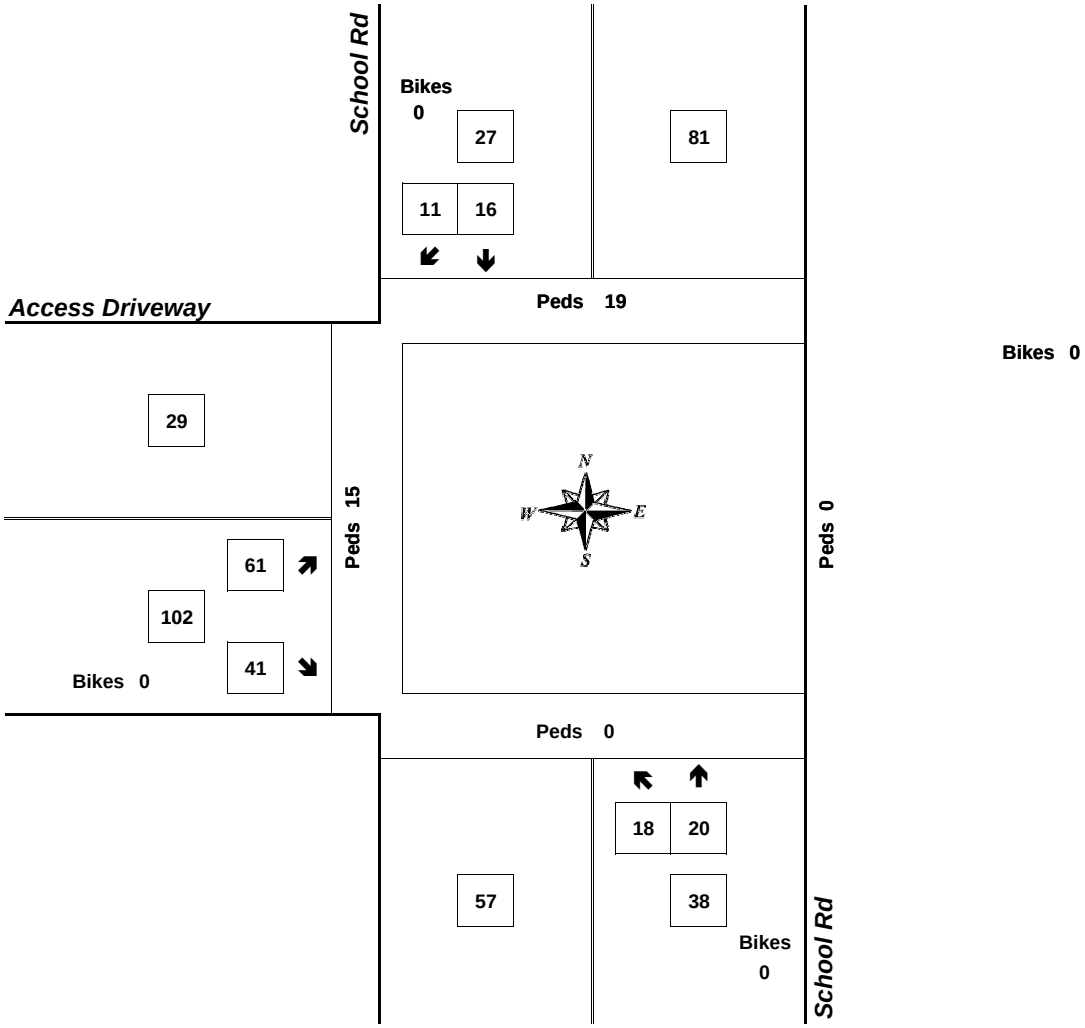
Interval Start Time	Northbound School Rd				Southbound School Rd				Eastbound Access Driveway				Westbound Access Driveway				Interval Total
	L	T		Total	T	R	Total		L		R	Total				Total	
3:00 PM	14	0		14	0	0	0		1		0	1				0	15
3:15 PM	11	0		11	0	0	0		0		0	0				0	11
3:30 PM	10	0		10	0	0	0		0		0	0				0	10
3:45 PM	7	0		7	0	0	0		0		0	0				0	7
4:00 PM	3	0		3	0	0	0		0		0	0				0	3

Peak Hour Summary

Clay Carney
(503) 833-2740

School Rd & Access Driveway

3:10 PM to 4:10 PM
Thursday, May 16, 2019



Approach	PHF	HV%	Volume
EB	0.30	0.0%	102
WB	0.00	0.0%	0
NB	0.50	31.6%	38
SB	0.36	0.0%	27
Intersection	0.39	7.2%	167

Count Period: 3:00 PM to 5:00 PM

APPENDIX B.

MIDDLE SCHOOL ENROLLMENT MATRIX

Figure 28 – 2018-2019 Middle School Enrollment Patterns
Residence-Attendance Matrix

Attendance Area	Residence Count	Athey Creek MS	Inza Wood MS	Meridian Creek MS	Rosemont Ridge MS	Three Rivers Charter	Non-Residence Attendance Total	Transfer Out Rates
Athey Creek MS	317	288	0	2	13	14	29	9.1%
Inza Wood MS	559	7	475	66	1	10	84	15.0%
Meridian Creek MS	357	17	38	294	2	6	63	17.6%
Rosemont Ridge MS	556	72	0	2	461	21	95	17.1%
Athey Creek - Rosemont Ridge Choice	329	72	0	0	249	8	329	100.0%
Meridian Creek - Athey Creek Choice	242	207	0	21	8	6	242	100.0%
6-8 Subtotals	2,360	663	513	385	734	65	--	--
Out of District	96	39	19	29	9	0	--	--
6-8 Totals	2,456	702	532	414	743	65	--	--
Attending Non-Resident Total	938	414	57	120	282	65	--	--
Transfer In Rates	39.7%	62.4%	11.1%	31.2%	38.4%	--	--	--

All values based on the 10/01/2018 Student Information System.

Residence counts are based on current attendance area boundaries, as of the 2018-19 school year.

APPENDIX C.

LOS DESCRIPTION

TRAFFIC LEVELS OF SERVICE

Analysis of traffic volumes is useful in understanding the general nature of traffic in an area, but by itself indicates neither the ability of the street network to carry additional traffic nor the quality of service afforded by the street facilities. For this, the concept of level of service has been developed to subjectively describe traffic performance. Level of service can be measured at intersections and along key roadway segments.

Levels of service categories are similar to report card ratings for traffic performance. Intersections are typically the controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is generally diminished in their vicinities. Levels of Service A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. Level of service D and E are progressively worse peak hour operating conditions and F conditions represent where demand exceeds the capacity of an intersection. Most urban communities set level of service D as the minimum acceptable level of service for peak hour operation and plan for level of service C or better for all other times of the day. The Highway Capacity Manual provides level of service calculation methodology for both intersections and arterials[1]. The following two sections provide interpretations of the analysis approaches.

[1] *2000 Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2000, Chapter 16 and 17.

UNSIGNALIZED INTERSECTIONS (Two-Way Stop Controlled)

Unsignalized intersection level of service is reported for the major street and minor street (generally, left turn movements). The method assesses available and critical gaps in the traffic stream which make it possible for side street traffic to enter the main street flow. The 2010 Highway Capacity Manual describes the detailed methodology. It is not unusual for an intersection to experience level of service E or F conditions for the minor street left turn movement. It should be understood that, often, a poor level of service is experienced by only a few vehicles and the intersection as a whole operates acceptably.

Unsignalized intersection levels of service are described in the following table.

Level-of-Service Criteria: Automobile Mode

Control Delay (s/vehicle)	**LOS by Volume-to-Capacity Ratio**	
	***v/c* ≤ 1.0**	***v/c* > 1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole

SIGNALIZED INTERSECTIONS

For signalized intersections, level of service is evaluated based upon average vehicle delay experienced by vehicles entering an intersection. Control delay (or signal delay) includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In previous versions of this chapter of the HCM (1994 and earlier), delay included only stopped delay. As delay increases, the level of service decreases. Calculations for signalized and unsignalized intersections are different due to the variation in traffic control. The 2000 Highway Capacity Manual provides the basis for these calculations.

Level of Service	Delay (secs.)	Description
A	<10.00	**Free Flow/Insignificant Delays:** No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Most vehicles do not stop at all. Progression is extremely favorable and most vehicles arrive during the green phase.
B	10.1-20.0	**Stable Operation/Minimal Delays:** An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles. This level generally occurs with good progression, short cycle lengths, or both.
C	20.1-35.0	**Stable Operation/Acceptable Delays:** Major approach phases fully utilized. Most drivers feel somewhat restricted. Higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, and the number of vehicles stopping is significant.
D	35.1-55.0	**Approaching Unstable/Tolerable Delays:** The influence of congestion becomes more noticeable. Drivers may have to wait through more than one red signal indication. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. The proportion of vehicles not stopping declines, and individual cycle failures are noticeable.
E	55.1-80.0	**Unstable Operation/Significant Delays:** Volumes at or near capacity. Vehicles may wait though several signal cycles. Long queues form upstream from intersection. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are a frequent occurrence.
F	>80.0	**Forced Flow/Excessive Delays:** Represents jammed conditions. Queues may block upstream intersections. This level occurs when arrival flow rates exceed intersection capacity, and is considered to be unacceptable to most drivers. Poor progression, long cycle lengths, and v/c ratios approaching 1.0 may contribute to these high delay levels.

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington D.C.

APPENDIX D.

HCM REPORT – EXISTING CONDITIONS

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	164	3	2	330	3	2
Future Vol, veh/h	164	3	2	330	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	0	0	3	33	0
Mvmt Flow	186	3	2	375	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	189	0	567	188
Stage 1	-	-	-	-	188	-
Stage 2	-	-	-	-	379	-
Critical Hdwy	-	-	4.1	-	6.73	6.2
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	-	-	2.2	-	3.797	3.3
Pot Cap-1 Maneuver	-	-	1397	-	436	859
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	629	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1397	-	435	859
Mov Cap-2 Maneuver	-	-	-	-	435	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	628	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	542	-	-	1397	-
HCM Lane V/C Ratio	0.01	-	-	0.002	-
HCM Control Delay (s)	11.7	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	129	2	2	248	8	5	1	3	15	3	79
Future Vol, veh/h	38	129	2	2	248	8	5	1	3	15	3	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	3	0	0	4	12	20	0	0	13	0	4
Mvmt Flow	41	140	2	2	270	9	5	1	3	16	3	86
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	9.6	8.5	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	56%	22%	1%	15%
Vol Thru, %	11%	76%	96%	3%
Vol Right, %	33%	1%	3%	81%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	169	258	97
LT Vol	5	38	2	15
Through Vol	1	129	248	3
RT Vol	3	2	8	79
Lane Flow Rate	10	184	280	105
Geometry Grp	1	1	1	1
Degree of Util (X)	0.014	0.23	0.34	0.138
Departure Headway (Hd)	5.332	4.514	4.363	4.707
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	670	795	824	761
Service Time	3.377	2.541	2.387	2.74
HCM Lane V/C Ratio	0.015	0.231	0.34	0.138
HCM Control Delay	8.5	8.9	9.6	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.9	1.5	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	11	19	11	9	5	6	31	4	4	55	5
Future Vol, veh/h	5	11	19	11	9	5	6	31	4	4	55	5
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	5	0	11	0	0	3	0	0	6	0
Mvmt Flow	6	14	23	14	11	6	7	38	5	5	68	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.1	7.4	7.5	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	15%	14%	44%	7%	0%
Vol Thru, %	76%	31%	36%	93%	0%
Vol Right, %	10%	54%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	41	35	25	59	5
LT Vol	6	5	11	4	0
Through Vol	31	11	9	55	0
RT Vol	4	19	5	0	5
Lane Flow Rate	51	43	31	73	6
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.058	0.046	0.035	0.095	0.007
Departure Headway (Hd)	4.158	3.846	4.122	4.688	4.055
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	854	915	855	763	879
Service Time	2.216	1.939	2.214	2.427	1.794
HCM Lane V/C Ratio	0.06	0.047	0.036	0.096	0.007
HCM Control Delay	7.5	7.1	7.4	7.9	6.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0.3	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	689	9	3	188	5	10
Future Vol, veh/h	689	9	3	188	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	11	0	4	20	0
Mvmt Flow	741	10	3	202	5	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	751	0	954	746
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.2	-	3.68	3.3
Pot Cap-1 Maneuver	-	-	868	-	266	417
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	786	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	868	-	265	417
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	783	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	350	-	-	868	-
HCM Lane V/C Ratio	0.046	-	-	0.004	-
HCM Control Delay (s)	15.8	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	27.2
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	135	536	4	4	140	8	6	2	4	17	3	61
Future Vol, veh/h	135	536	4	4	140	8	6	2	4	17	3	61
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	5	3	0	25	5	25	50	0	25	12	0	2
Mvmt Flow	144	570	4	4	149	9	6	2	4	18	3	65
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	33.4	10.1	10.1	9.7
HCM LOS	D	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	20%	3%	21%
Vol Thru, %	17%	79%	92%	4%
Vol Right, %	33%	1%	5%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	675	152	81
LT Vol	6	135	4	17
Through Vol	2	536	140	3
RT Vol	4	4	8	61
Lane Flow Rate	13	718	162	86
Geometry Grp	1	1	1	1
Degree of Util (X)	0.025	0.899	0.241	0.137
Departure Headway (Hd)	6.962	4.509	5.362	5.721
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	517	804	665	620
Service Time	4.962	2.556	3.433	3.813
HCM Lane V/C Ratio	0.025	0.893	0.244	0.139
HCM Control Delay	10.1	33.4	10.1	9.7
HCM Lane LOS	B	D	B	A
HCM 95th-tile Q	0.1	12.1	0.9	0.5

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	15	13	10	13	11	15	117	9	8	59	16
Future Vol, veh/h	7	15	13	10	13	11	15	117	9	8	59	16
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	13	8	0	0	9	13	3	11	0	3	0
Mvmt Flow	8	17	15	11	15	12	17	131	10	9	66	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.6	7.6	8.6	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	11%	20%	29%	12%	0%
Vol Thru, %	83%	43%	38%	88%	0%
Vol Right, %	6%	37%	32%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	35	34	67	16
LT Vol	15	7	10	8	0
Through Vol	117	15	13	59	0
RT Vol	9	13	11	0	16
Lane Flow Rate	158	39	38	75	18
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.194	0.048	0.047	0.1	0.02
Departure Headway (Hd)	4.41	4.35	4.399	4.778	4.068
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	803	828	819	742	867
Service Time	2.493	2.352	2.401	2.564	1.852
HCM Lane V/C Ratio	0.197	0.047	0.046	0.101	0.021
HCM Control Delay	8.6	7.6	7.6	8.1	6.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0.2	0.1	0.3	0.1

APPENDIX E.

HCM REPORT – NO BUILD CONDITIONS

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	169	3	2	341	3	2
Future Vol, veh/h	169	3	2	341	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	0	0	3	33	0
Mvmt Flow	192	3	2	388	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	195	0	586	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	392	-
Critical Hdwy	-	-	4.1	-	6.73	6.2
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	-	-	2.2	-	3.797	3.3
Pot Cap-1 Maneuver	-	-	1390	-	425	853
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	620	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1390	-	424	853
Mov Cap-2 Maneuver	-	-	-	-	424	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	619	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	531	-	-	1390	-
HCM Lane V/C Ratio	0.011	-	-	0.002	-
HCM Control Delay (s)	11.9	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	134	2	2	256	8	5	1	3	16	3	82
Future Vol, veh/h	40	134	2	2	256	8	5	1	3	16	3	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	3	0	0	4	12	20	0	0	13	0	4
Mvmt Flow	43	146	2	2	278	9	5	1	3	17	3	89
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	9.8	8.5	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	56%	23%	1%	16%
Vol Thru, %	11%	76%	96%	3%
Vol Right, %	33%	1%	3%	81%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	176	266	101
LT Vol	5	40	2	16
Through Vol	1	134	256	3
RT Vol	3	2	8	82
Lane Flow Rate	10	191	289	110
Geometry Grp	1	1	1	1
Degree of Util (X)	0.015	0.241	0.352	0.145
Departure Headway (Hd)	5.381	4.54	4.387	4.748
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	663	790	821	754
Service Time	3.428	2.569	2.413	2.784
HCM Lane V/C Ratio	0.015	0.242	0.352	0.146
HCM Control Delay	8.5	9	9.8	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.9	1.6	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	12	20	12	9	5	6	32	4	4	56	5
Future Vol, veh/h	5	12	20	12	9	5	6	32	4	4	56	5
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	5	0	11	0	0	3	0	0	6	0
Mvmt Flow	6	15	25	15	11	6	7	40	5	5	69	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.2	7.4	7.5	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	14%	14%	46%	7%	0%
Vol Thru, %	76%	32%	35%	93%	0%
Vol Right, %	10%	54%	19%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	42	37	26	60	5
LT Vol	6	5	12	4	0
Through Vol	32	12	9	56	0
RT Vol	4	20	5	0	5
Lane Flow Rate	52	46	32	74	6
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.06	0.049	0.037	0.097	0.007
Departure Headway (Hd)	4.169	3.852	4.137	4.698	4.065
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	852	913	851	761	877
Service Time	2.229	1.948	2.234	2.438	1.805
HCM Lane V/C Ratio	0.061	0.05	0.038	0.097	0.007
HCM Control Delay	7.5	7.2	7.4	7.9	6.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.1	0.3	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	712	9	3	195	5	10
Future Vol, veh/h	712	9	3	195	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	11	0	4	20	0
Mvmt Flow	766	10	3	210	5	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	776	0	987	771
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	216	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.2	-	3.68	3.3
Pot Cap-1 Maneuver	-	-	849	-	254	403
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	779	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	849	-	253	403
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	776	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	336	-	-	849	-
HCM Lane V/C Ratio	0.048	-	-	0.004	-
HCM Control Delay (s)	16.3	-	-	9.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	31.3
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	139	554	4	4	144	8	6	2	4	18	3	63
Future Vol, veh/h	139	554	4	4	144	8	6	2	4	18	3	63
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	5	3	0	25	5	25	50	0	25	12	0	2
Mvmt Flow	148	589	4	4	153	9	6	2	4	19	3	67
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	38.9	10.3	10.2	9.9
HCM LOS	E	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	20%	3%	21%
Vol Thru, %	17%	79%	92%	4%
Vol Right, %	33%	1%	5%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	697	156	84
LT Vol	6	139	4	18
Through Vol	2	554	144	3
RT Vol	4	4	8	63
Lane Flow Rate	13	741	166	89
Geometry Grp	1	1	1	1
Degree of Util (X)	0.025	0.933	0.249	0.146
Departure Headway (Hd)	7.049	4.528	5.403	5.888
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	511	793	659	613
Service Time	5.052	2.581	3.486	3.888
HCM Lane V/C Ratio	0.025	0.934	0.252	0.145
HCM Control Delay	10.2	38.9	10.3	9.9
HCM Lane LOS	B	E	B	A
HCM 95th-tile Q	0.1	13.6	1	0.5

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	16	14	10	14	12	16	121	9	8	61	17
Future Vol, veh/h	7	16	14	10	14	12	16	121	9	8	61	17
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	13	8	0	0	9	13	3	11	0	3	0
Mvmt Flow	8	18	16	11	16	13	18	136	10	9	69	19
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.6	7.6	8.6	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	11%	19%	28%	12%	0%
Vol Thru, %	83%	43%	39%	88%	0%
Vol Right, %	6%	38%	33%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	146	37	36	69	17
LT Vol	16	7	10	8	0
Through Vol	121	16	14	61	0
RT Vol	9	14	12	0	17
Lane Flow Rate	164	42	40	78	19
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.202	0.05	0.05	0.103	0.022
Departure Headway (Hd)	4.422	4.371	4.415	4.787	4.079
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	801	824	815	740	864
Service Time	2.509	2.373	2.417	2.577	1.868
HCM Lane V/C Ratio	0.205	0.051	0.049	0.105	0.022
HCM Control Delay	8.6	7.6	7.6	8.1	7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.8	0.2	0.2	0.3	0.1

APPENDIX F.

HCM REPORT – BUILD CONDITIONS

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	154	3	2	358	3	2
Future Vol, veh/h	154	3	2	358	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	0	0	3	33	0
Mvmt Flow	175	3	2	407	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	178	0	588	177
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	411	-
Critical Hdwy	-	-	4.1	-	6.73	6.2
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	-	-	2.2	-	3.797	3.3
Pot Cap-1 Maneuver	-	-	1410	-	424	871
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1410	-	423	871
Mov Cap-2 Maneuver	-	-	-	-	423	-
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	606	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	533	-	-	1410	-
HCM Lane V/C Ratio	0.011	-	-	0.002	-
HCM Control Delay (s)	11.8	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	147	2	2	290	14	5	1	3	22	3	65
Future Vol, veh/h	12	147	2	2	290	14	5	1	3	22	3	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	3	0	0	4	12	20	0	0	13	0	4
Mvmt Flow	13	160	2	2	315	15	5	1	3	24	3	71
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	10.2	8.6	8.7
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	56%	7%	1%	24%
Vol Thru, %	11%	91%	95%	3%
Vol Right, %	33%	1%	5%	72%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	161	306	90
LT Vol	5	12	2	22
Through Vol	1	147	290	3
RT Vol	3	2	14	65
Lane Flow Rate	10	175	333	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.015	0.22	0.401	0.132
Departure Headway (Hd)	5.42	4.526	4.335	4.87
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	659	793	832	735
Service Time	3.467	2.555	2.358	2.909
HCM Lane V/C Ratio	0.015	0.221	0.4	0.133
HCM Control Delay	8.6	8.8	10.2	8.7
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0	0.8	1.9	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	17	29	10	16	5	15	3	2	4	37	19
Future Vol, veh/h	17	17	29	10	16	5	15	3	2	4	37	19
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	5	0	11	0	0	3	0	0	6	0
Mvmt Flow	21	21	36	12	20	6	19	4	2	5	46	23
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.3	7.4	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	75%	27%	32%	10%	0%
Vol Thru, %	15%	27%	52%	90%	0%
Vol Right, %	10%	46%	16%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	63	31	41	19
LT Vol	15	17	10	4	0
Through Vol	3	17	16	37	0
RT Vol	2	29	5	0	19
Lane Flow Rate	25	78	38	51	23
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.03	0.084	0.044	0.067	0.027
Departure Headway (Hd)	4.349	3.875	4.095	4.764	4.116
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	815	912	862	748	864
Service Time	2.422	1.951	2.177	2.517	1.869
HCM Lane V/C Ratio	0.031	0.086	0.044	0.068	0.027
HCM Control Delay	7.6	7.3	7.4	7.9	7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.1	0.2	0.1

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	46	5	33	17	0	17
Future Vol, veh/h	46	5	33	17	0	17
Conflicting Peds, #/hr	0	65	65	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	58	6	41	21	0	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	129	0	229	126
Stage 1	-	-	-	-	126	-
Stage 2	-	-	-	-	103	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1469	-	764	930
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	926	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1389	-	701	880
Mov Cap-2 Maneuver	-	-	-	-	701	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	898	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.1	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	880	-	-	1389	-
HCM Lane V/C Ratio	0.024	-	-	0.03	-
HCM Control Delay (s)	9.2	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

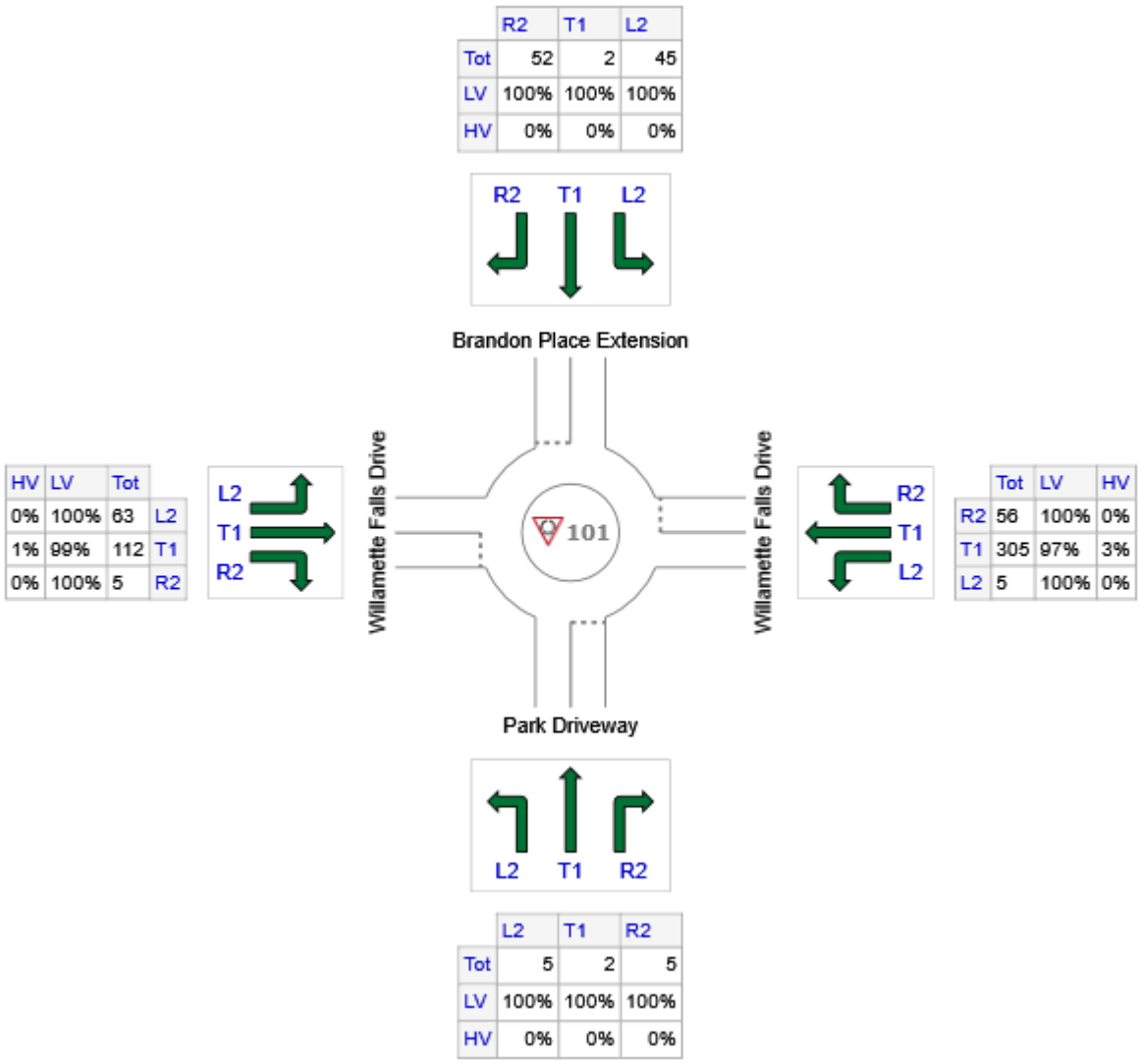
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [Future Build AM Peak]

Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Park Driveway	12	12	0
E: Willamette Falls Drive	366	357	9
N: Brandon Place Extension	99	99	0
W: Willamette Falls Drive	180	179	1
Total	657	647	10

MOVEMENT SUMMARY

Site: 101 [Future Build AM Peak]

Site Category: (None)
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: Park Driveway												
3	L2	5	0.0	0.012	3.4	LOS A	0.0	1.2	0.35	0.19	0.35	19.3
8	T1	2	0.0	0.012	3.4	LOS A	0.0	1.2	0.35	0.19	0.35	19.2
18	R2	5	0.0	0.012	3.4	LOS A	0.0	1.2	0.35	0.19	0.35	19.0
Approach		13	0.0	0.012	3.4	LOS A	0.0	1.2	0.35	0.19	0.35	19.2
East: Willamette Falls Drive												
1	L2	5	0.0	0.316	5.7	LOS A	1.8	45.6	0.26	0.12	0.26	19.1
6	T1	328	3.0	0.316	5.8	LOS A	1.8	45.6	0.26	0.12	0.26	19.1
16	R2	60	0.0	0.316	5.7	LOS A	1.8	45.6	0.26	0.12	0.26	18.9
Approach		394	2.5	0.316	5.8	LOS A	1.8	45.6	0.26	0.12	0.26	19.0
North: Brandon Place Extension												
7	L2	48	0.0	0.110	4.7	LOS A	0.5	11.9	0.46	0.35	0.46	19.0
4	T1	2	0.0	0.110	4.7	LOS A	0.5	11.9	0.46	0.35	0.46	19.0
14	R2	56	0.0	0.110	4.7	LOS A	0.5	11.9	0.46	0.35	0.46	18.8
Approach		106	0.0	0.110	4.7	LOS A	0.5	11.9	0.46	0.35	0.46	18.9
West: Willamette Falls Drive												
5	L2	68	0.0	0.149	4.0	LOS A	0.7	18.1	0.18	0.07	0.18	19.2
2	T1	120	1.0	0.149	4.0	LOS A	0.7	18.1	0.18	0.07	0.18	19.2
12	R2	5	0.0	0.149	4.0	LOS A	0.7	18.1	0.18	0.07	0.18	19.0
Approach		194	0.6	0.149	4.0	LOS A	0.7	18.1	0.18	0.07	0.18	19.2
All Vehicles		706	1.6	0.316	5.1	LOS A	1.8	45.6	0.27	0.14	0.27	19.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

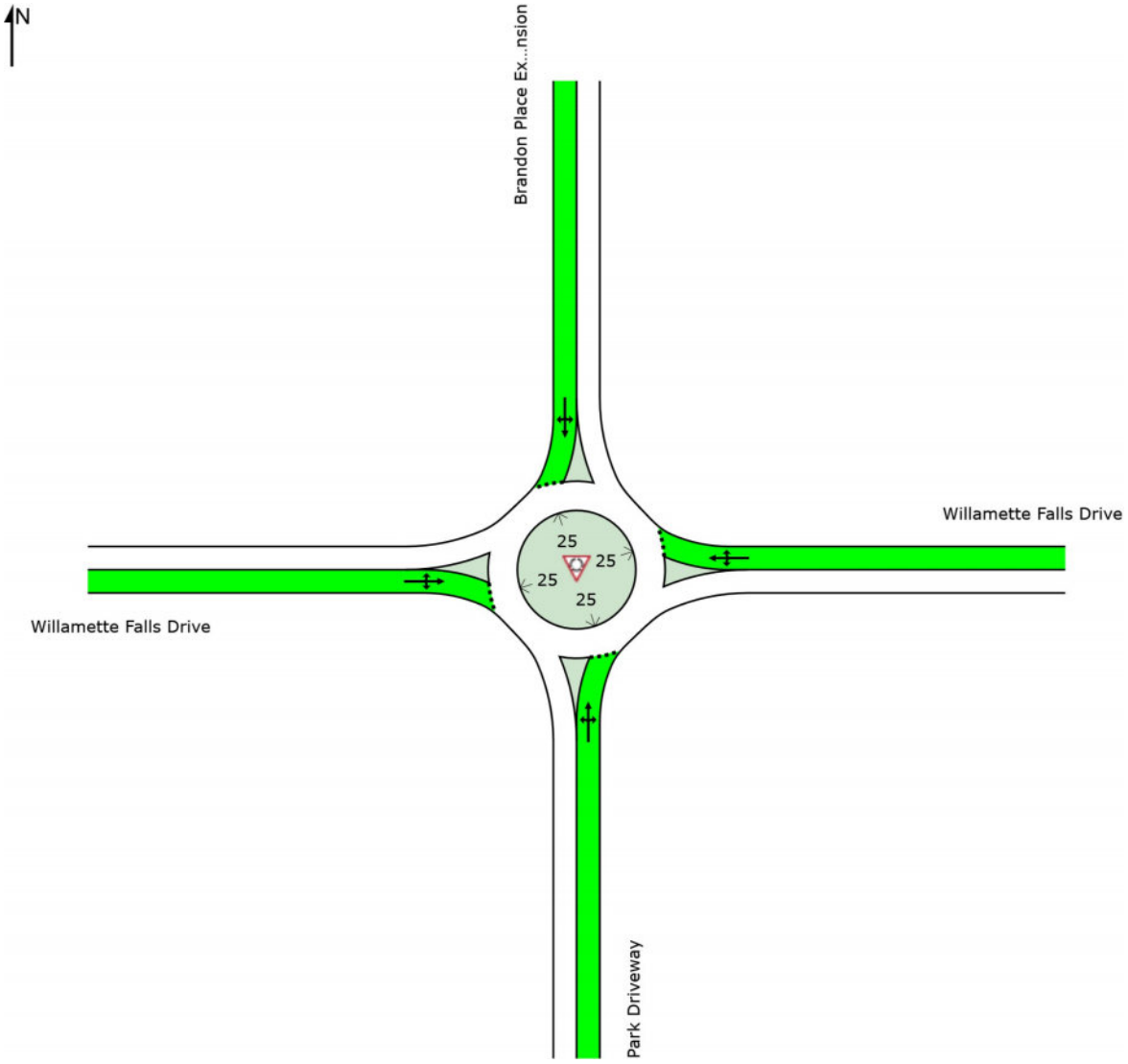
QUEUE DISTANCE (%ILE)

95% Back of Queue Distance per lane (feet)

Site: 101 [Future Build AM Peak]

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Vehicle Queue (%ile)	1	46	12	18	46



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	696	9	3	215	5	10
Future Vol, veh/h	696	9	3	215	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	11	0	4	20	0
Mvmt Flow	748	10	3	231	5	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	758	0	990	753
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	237	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.2	-	3.68	3.3
Pot Cap-1 Maneuver	-	-	862	-	253	413
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	762	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	862	-	252	413
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	759	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	340	-	-	862	-
HCM Lane V/C Ratio	0.047	-	-	0.004	-
HCM Control Delay (s)	16.1	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	29.2
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	113	564	4	4	169	14	6	2	4	24	3	59
Future Vol, veh/h	113	564	4	4	169	14	6	2	4	24	3	59
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	5	3	0	25	5	25	50	0	25	12	0	2
Mvmt Flow	120	600	4	4	180	15	6	2	4	26	3	63
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	37	10.8	10.3	10.1
HCM LOS	E	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	17%	2%	28%
Vol Thru, %	17%	83%	90%	3%
Vol Right, %	33%	1%	7%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	681	187	86
LT Vol	6	113	4	24
Through Vol	2	564	169	3
RT Vol	4	4	14	59
Lane Flow Rate	13	724	199	91
Geometry Grp	1	1	1	1
Degree of Util (X)	0.025	0.92	0.297	0.152
Departure Headway (Hd)	7.106	4.57	5.383	5.982
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	506	790	660	603
Service Time	5.111	2.631	3.474	3.982
HCM Lane V/C Ratio	0.026	0.916	0.302	0.151
HCM Control Delay	10.3	37	10.8	10.1
HCM Lane LOS	B	E	B	B
HCM 95th-tile Q	0.1	12.9	1.2	0.5

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	21	25	10	18	12	25	94	7	8	52	25
Future Vol, veh/h	17	21	25	10	18	12	25	94	7	8	52	25
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	13	8	0	0	9	13	3	11	0	3	0
Mvmt Flow	19	24	28	11	20	13	28	106	8	9	58	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.7	7.7	8.6	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	20%	27%	25%	13%	0%
Vol Thru, %	75%	33%	45%	87%	0%
Vol Right, %	6%	40%	30%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	126	63	40	60	25
LT Vol	25	17	10	8	0
Through Vol	94	21	18	52	0
RT Vol	7	25	12	0	25
Lane Flow Rate	142	71	45	67	28
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.181	0.085	0.055	0.093	0.033
Departure Headway (Hd)	4.608	4.329	4.412	4.953	4.235
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	783	830	813	727	850
Service Time	2.611	2.343	2.428	2.656	1.937
HCM Lane V/C Ratio	0.181	0.086	0.055	0.092	0.033
HCM Control Delay	8.6	7.7	7.7	8.2	7.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0.3	0.2	0.3	0.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	43	5	12	56	5	20
Future Vol, veh/h	43	5	12	56	5	20
Conflicting Peds, #/hr	0	65	65	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	54	6	15	70	6	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	125	0	222	122
Stage 1	-	-	-	-	122	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1474	-	771	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1394	-	722	884
Mov Cap-2 Maneuver	-	-	-	-	722	-
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	919	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	846	-	-	1394	-
HCM Lane V/C Ratio	0.037	-	-	0.011	-
HCM Control Delay (s)	9.4	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

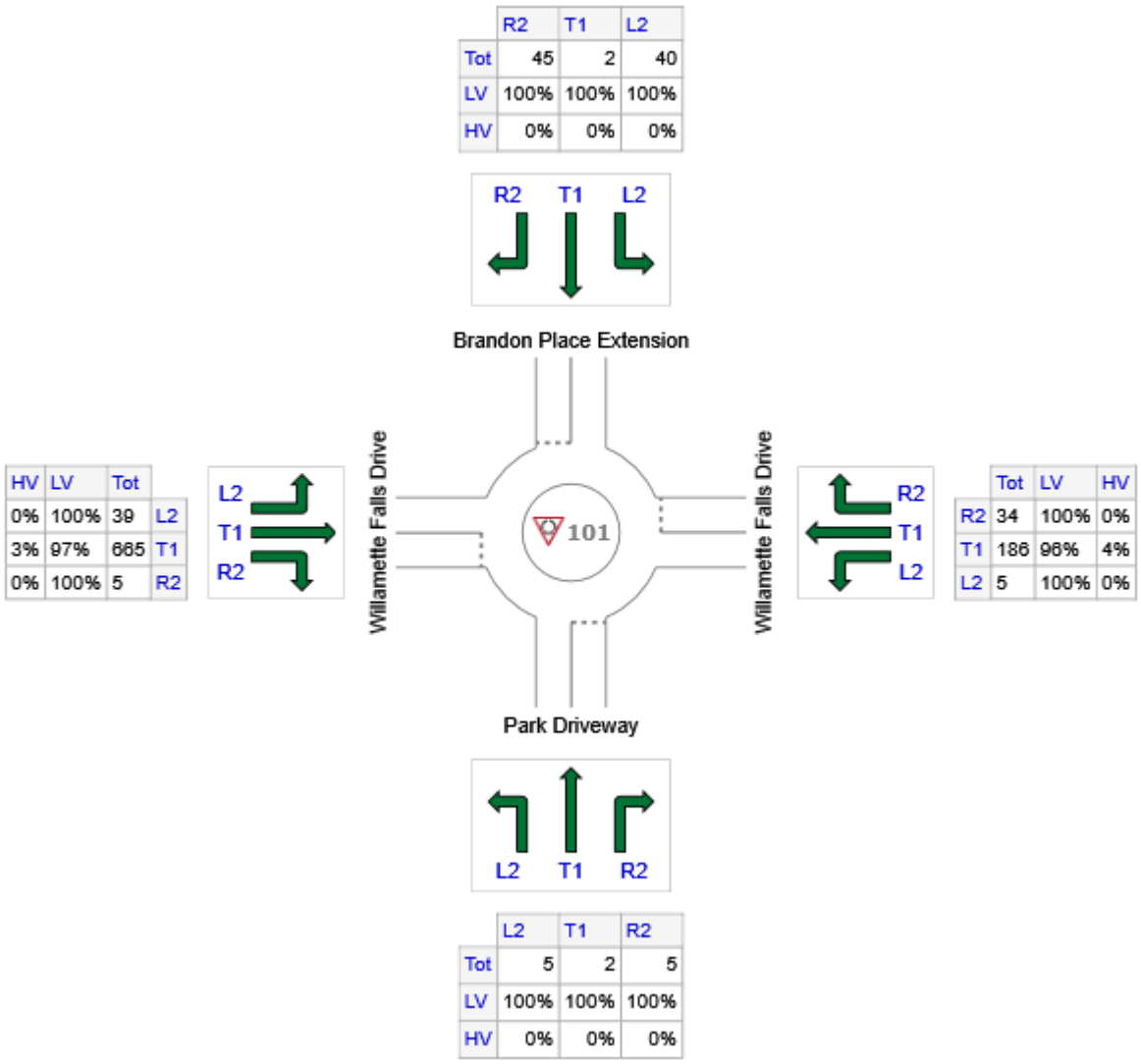
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [Future Build Midday Peak]

Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Park Driveway	12	12	0
E: Willamette Falls Drive	225	218	7
N: Brandon Place Extension	87	87	0
W: Willamette Falls Drive	709	689	20
Total	1033	1006	27

MOVEMENT SUMMARY

Site: 101 [Future Build Midday Peak]

Site Category: (None)
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: Park Driveway												
3	L2	6	0.0	0.023	6.5	LOS A	0.1	2.1	0.62	0.54	0.62	18.8
8	T1	2	0.0	0.023	6.5	LOS A	0.1	2.1	0.62	0.54	0.62	18.7
18	R2	6	0.0	0.023	6.5	LOS A	0.1	2.1	0.62	0.54	0.62	18.6
Approach		13	0.0	0.023	6.5	LOS A	0.1	2.1	0.62	0.54	0.62	18.7
East: Willamette Falls Drive												
1	L2	6	0.0	0.197	4.4	LOS A	1.0	24.9	0.18	0.07	0.18	19.3
6	T1	207	4.0	0.197	4.5	LOS A	1.0	24.9	0.18	0.07	0.18	19.3
16	R2	38	0.0	0.197	4.4	LOS A	1.0	24.9	0.18	0.07	0.18	19.1
Approach		250	3.3	0.197	4.5	LOS A	1.0	24.9	0.18	0.07	0.18	19.2
North: Brandon Place Extension												
7	L2	44	0.0	0.088	4.0	LOS A	0.4	9.6	0.37	0.23	0.37	19.1
4	T1	2	0.0	0.088	4.0	LOS A	0.4	9.6	0.37	0.23	0.37	19.1
14	R2	50	0.0	0.088	4.0	LOS A	0.4	9.6	0.37	0.23	0.37	18.9
Approach		97	0.0	0.088	4.0	LOS A	0.4	9.6	0.37	0.23	0.37	19.0
West: Willamette Falls Drive												
5	L2	43	0.0	0.619	10.3	LOS B	5.8	149.4	0.35	0.15	0.35	18.4
2	T1	739	3.0	0.619	10.4	LOS B	5.8	149.4	0.35	0.15	0.35	18.3
12	R2	6	0.0	0.619	10.3	LOS B	5.8	149.4	0.35	0.15	0.35	18.1
Approach		788	2.8	0.619	10.4	LOS B	5.8	149.4	0.35	0.15	0.35	18.3
All Vehicles		1148	2.7	0.619	8.5	LOS A	5.8	149.4	0.32	0.15	0.32	18.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

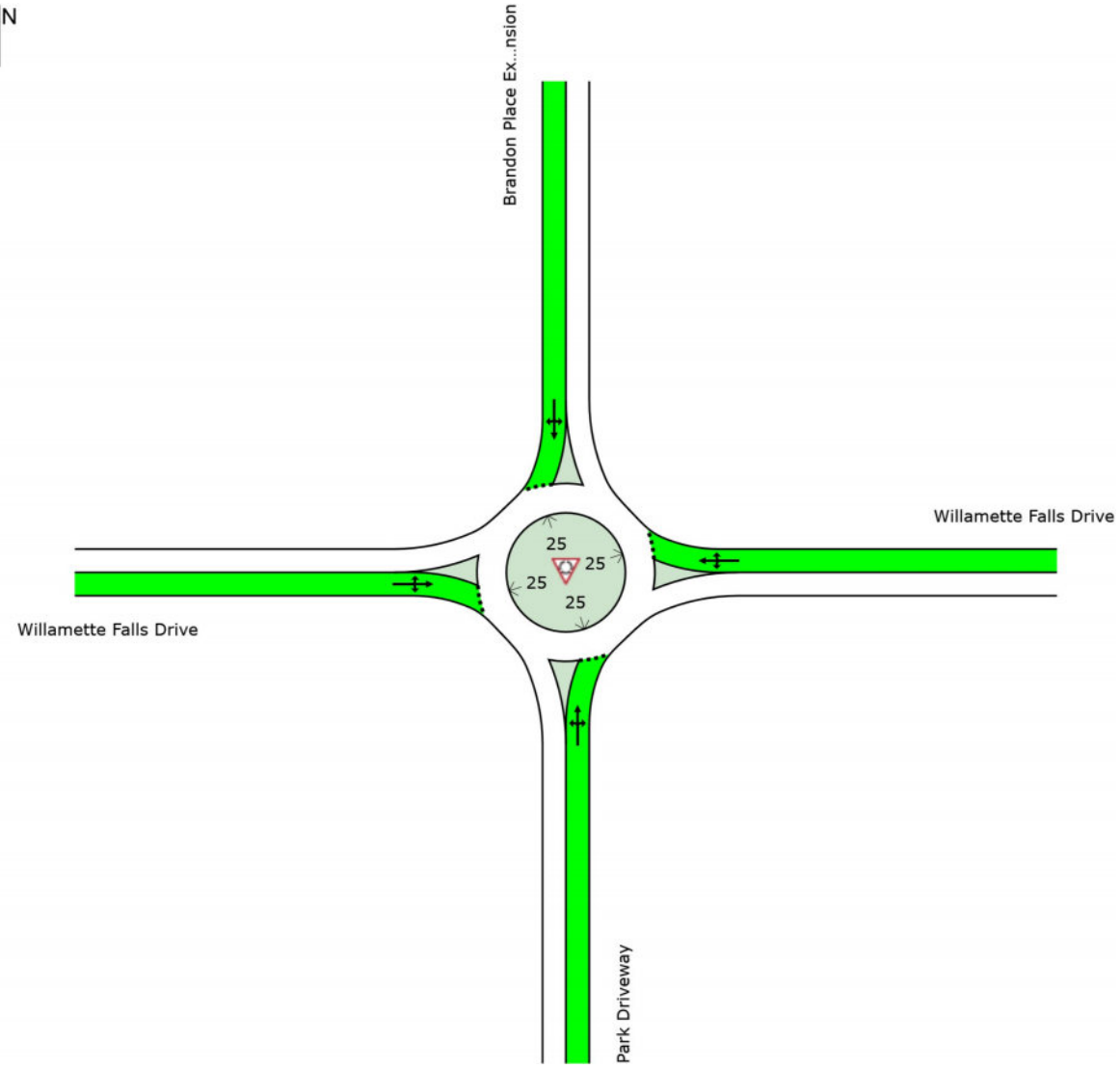
QUEUE DISTANCE (%ILE)

95% Back of Queue Distance per lane (feet)

Site: 101 [Future Build Midday Peak]

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Vehicle Queue (%ile)	2	25	10	149	149



Colour code based on Queue Storage Ratio

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

APPENDIX G.

HCM REPORT – SENSITIVITY ANALYSIS #1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	164	3	2	367	3	2
Future Vol, veh/h	164	3	2	367	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	0	0	3	33	0
Mvmt Flow	186	3	2	417	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	189	0	609	188
Stage 1	-	-	-	-	188	-
Stage 2	-	-	-	-	421	-
Critical Hdwy	-	-	4.1	-	6.73	6.2
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	-	-	2.2	-	3.797	3.3
Pot Cap-1 Maneuver	-	-	1397	-	412	859
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	601	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1397	-	411	859
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	519	-	-	1397	-
HCM Lane V/C Ratio	0.011	-	-	0.002	-
HCM Control Delay (s)	12	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	161	2	2	305	14	5	1	3	22	3	65
Future Vol, veh/h	12	161	2	2	305	14	5	1	3	22	3	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	3	0	0	4	12	20	0	0	13	0	4
Mvmt Flow	13	175	2	2	332	15	5	1	3	24	3	71
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	10.5	8.6	8.8
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	56%	7%	1%	24%
Vol Thru, %	11%	92%	95%	3%
Vol Right, %	33%	1%	4%	72%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	175	321	90
LT Vol	5	12	2	22
Through Vol	1	161	305	3
RT Vol	3	2	14	65
Lane Flow Rate	10	190	349	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.015	0.24	0.422	0.134
Departure Headway (Hd)	5.493	4.545	4.355	4.939
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	649	789	827	724
Service Time	3.545	2.577	2.381	2.981
HCM Lane V/C Ratio	0.015	0.241	0.422	0.135
HCM Control Delay	8.6	9	10.5	8.8
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0	0.9	2.1	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	19	29	10	18	5	15	3	2	4	37	23
Future Vol, veh/h	20	19	29	10	18	5	15	3	2	4	37	23
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	5	0	11	0	0	3	0	0	6	0
Mvmt Flow	25	23	36	12	22	6	19	4	2	5	46	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.4	7.4	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	75%	29%	30%	10%	0%
Vol Thru, %	15%	28%	55%	90%	0%
Vol Right, %	10%	43%	15%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	68	33	41	23
LT Vol	15	20	10	4	0
Through Vol	3	19	18	37	0
RT Vol	2	29	5	0	23
Lane Flow Rate	25	84	41	51	28
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.03	0.091	0.047	0.067	0.033
Departure Headway (Hd)	4.368	3.909	4.11	4.779	4.131
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	810	903	858	745	860
Service Time	2.447	1.99	2.196	2.537	1.889
HCM Lane V/C Ratio	0.031	0.093	0.048	0.068	0.033
HCM Control Delay	7.6	7.4	7.4	7.9	7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.1	0.2	0.1

MOVEMENT SUMMARY

Site: 101 [Future Build AM Peak - Sensitivity #1]

Site Category: (None)
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: Park Driveway												
3	L2	5	0.0	0.012	3.5	LOS A	0.1	1.3	0.38	0.21	0.38	19.2
8	T1	2	0.0	0.012	3.5	LOS A	0.1	1.3	0.38	0.21	0.38	19.2
18	R2	5	0.0	0.012	3.5	LOS A	0.1	1.3	0.38	0.21	0.38	19.0
Approach		13	0.0	0.012	3.5	LOS A	0.1	1.3	0.38	0.21	0.38	19.1
East: Willamette Falls Drive												
1	L2	5	0.0	0.329	6.0	LOS A	1.9	47.9	0.30	0.15	0.30	19.0
6	T1	322	3.0	0.329	6.0	LOS A	1.9	47.9	0.30	0.15	0.30	19.0
16	R2	76	0.0	0.329	6.0	LOS A	1.9	47.9	0.30	0.15	0.30	18.8
Approach		403	2.4	0.329	6.0	LOS A	1.9	47.9	0.30	0.15	0.30	19.0
North: Brandon Place Extension												
7	L2	65	0.0	0.144	5.0	LOS A	0.6	15.9	0.47	0.36	0.47	19.0
4	T1	2	0.0	0.144	5.0	LOS A	0.6	15.9	0.47	0.36	0.47	18.9
14	R2	73	0.0	0.144	5.0	LOS A	0.6	15.9	0.47	0.36	0.47	18.7
Approach		140	0.0	0.144	5.0	LOS A	0.6	15.9	0.47	0.36	0.47	18.9
West: Willamette Falls Drive												
5	L2	86	0.0	0.166	4.2	LOS A	0.8	20.4	0.21	0.09	0.21	19.2
2	T1	120	1.0	0.166	4.2	LOS A	0.8	20.4	0.21	0.09	0.21	19.2
12	R2	5	0.0	0.166	4.2	LOS A	0.8	20.4	0.21	0.09	0.21	19.0
Approach		212	0.6	0.166	4.2	LOS A	0.8	20.4	0.21	0.09	0.21	19.2
All Vehicles		768	1.4	0.329	5.3	LOS A	1.9	47.9	0.31	0.18	0.31	19.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

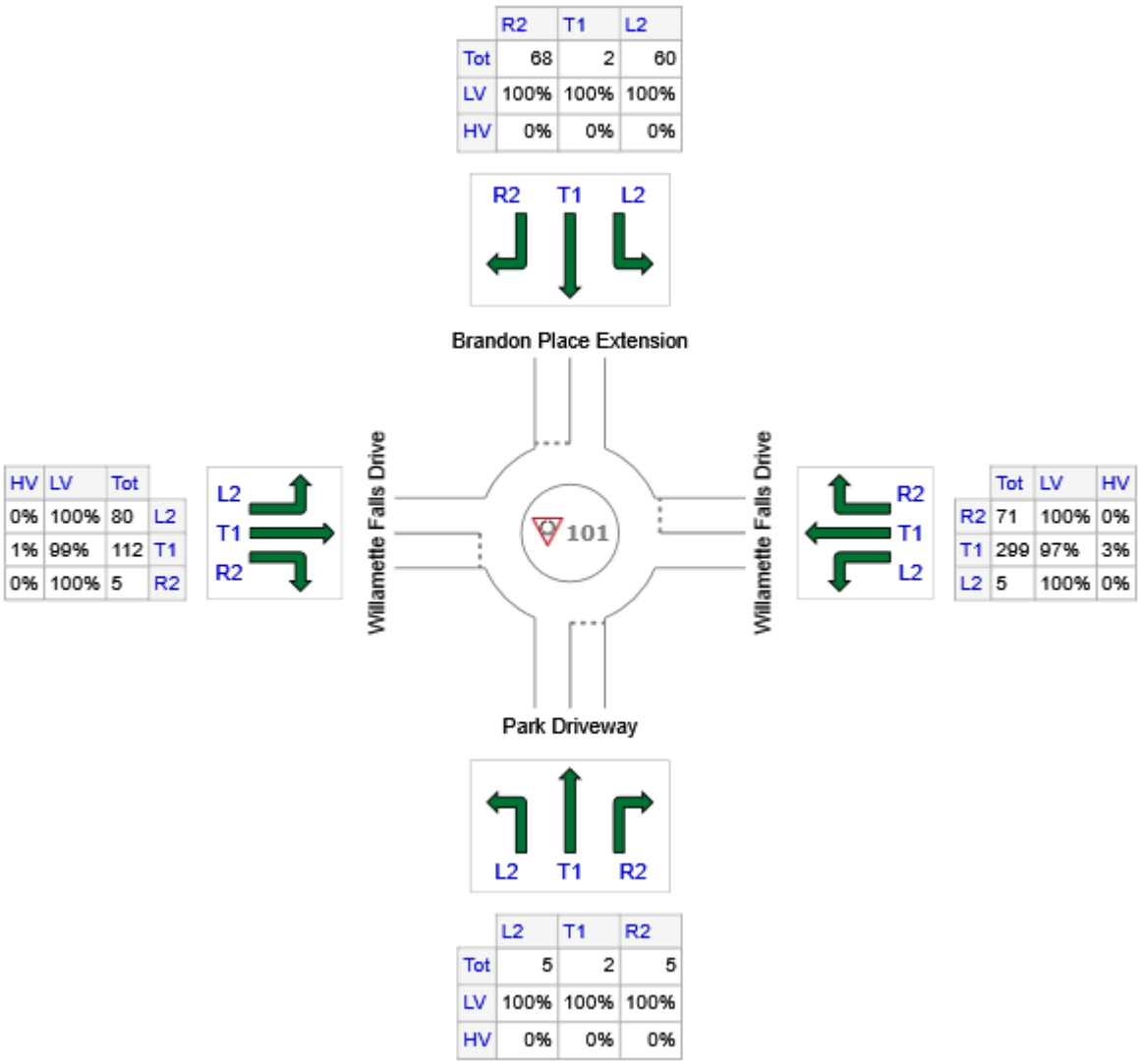
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [Future Build AM Peak - Sensitivity #1]

Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Park Driveway	12	12	0
E: Willamette Falls Drive	375	366	9
N: Brandon Place Extension	130	130	0
W: Willamette Falls Drive	197	196	1
Total	714	704	10

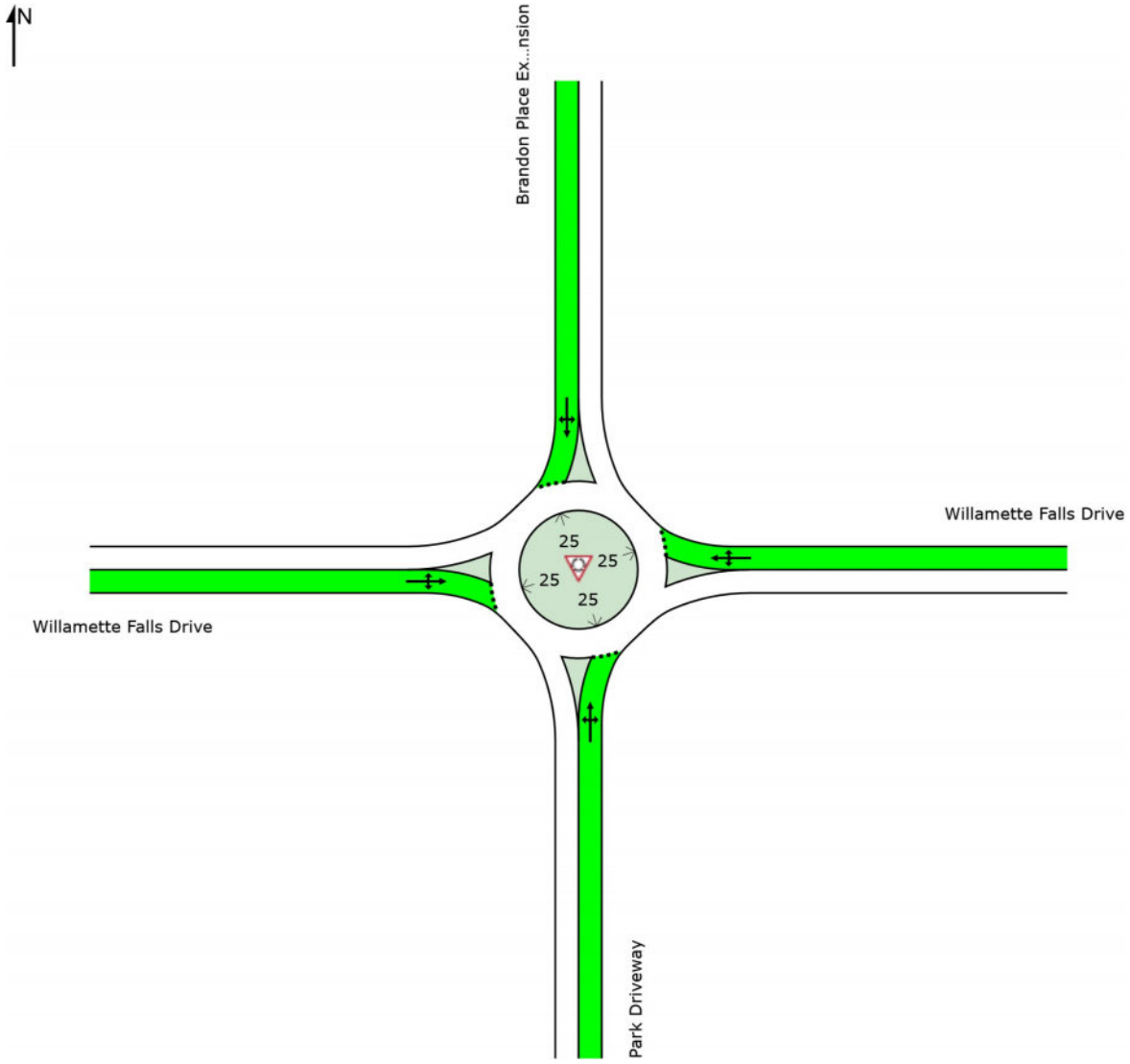
QUEUE DISTANCE (%ILE)

95% Back of Queue Distance per lane (feet)

Site: 101 [Future Build AM Peak - Sensitivity #1]

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Vehicle Queue (%ile)	1	48	16	20	48



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	702	9	3	219	5	10
Future Vol, veh/h	702	9	3	219	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	11	0	4	20	0
Mvmt Flow	755	10	3	235	5	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	765	0	1001	760
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.2	-	3.68	3.3
Pot Cap-1 Maneuver	-	-	857	-	249	409
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	759	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	857	-	248	409
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	756	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	336	-	-	857	-
HCM Lane V/C Ratio	0.048	-	-	0.004	-
HCM Control Delay (s)	16.3	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	31.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	113	576	4	4	179	14	6	2	4	24	3	59
Future Vol, veh/h	113	576	4	4	179	14	6	2	4	24	3	59
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	5	3	0	25	5	25	50	0	25	12	0	2
Mvmt Flow	120	613	4	4	190	15	6	2	4	26	3	63
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	40.3	11	10.4	10.1
HCM LOS	E	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	16%	2%	28%
Vol Thru, %	17%	83%	91%	3%
Vol Right, %	33%	1%	7%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	693	197	86
LT Vol	6	113	4	24
Through Vol	2	576	179	3
RT Vol	4	4	14	59
Lane Flow Rate	13	737	210	91
Geometry Grp	1	1	1	1
Degree of Util (X)	0.025	0.939	0.315	0.153
Departure Headway (Hd)	7.172	4.585	5.403	6.04
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	502	789	658	597
Service Time	5.176	2.649	3.496	4.04
HCM Lane V/C Ratio	0.026	0.934	0.319	0.152
HCM Control Delay	10.4	40.3	11	10.1
HCM Lane LOS	B	E	B	B
HCM 95th-tile Q	0.1	13.8	1.3	0.5

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	22	25	10	19	12	25	94	7	8	52	28
Future Vol, veh/h	20	22	25	10	19	12	25	94	7	8	52	28
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	13	8	0	0	9	13	3	11	0	3	0
Mvmt Flow	22	25	28	11	21	13	28	106	8	9	58	31
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.8	7.7	8.7	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	20%	30%	24%	13%	0%
Vol Thru, %	75%	33%	46%	87%	0%
Vol Right, %	6%	37%	29%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	126	67	41	60	28
LT Vol	25	20	10	8	0
Through Vol	94	22	19	52	0
RT Vol	7	25	12	0	28
Lane Flow Rate	142	75	46	67	31
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.182	0.091	0.057	0.093	0.037
Departure Headway (Hd)	4.629	4.358	4.428	4.956	4.252
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	780	824	811	725	847
Service Time	2.63	2.374	2.445	2.673	1.954
HCM Lane V/C Ratio	0.182	0.091	0.057	0.092	0.037
HCM Control Delay	8.7	7.8	7.7	8.2	7.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0.3	0.2	0.3	0.1

MOVEMENT SUMMARY

Site: 101 [Future Build Midday Peak - Sensitivity #1]

Site Category: (None)
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: Park Driveway												
3	L2	6	0.0	0.024	6.6	LOS A	0.1	2.2	0.62	0.55	0.62	18.7
8	T1	2	0.0	0.024	6.6	LOS A	0.1	2.2	0.62	0.55	0.62	18.7
18	R2	6	0.0	0.024	6.6	LOS A	0.1	2.2	0.62	0.55	0.62	18.5
Approach		13	0.0	0.024	6.6	LOS A	0.1	2.2	0.62	0.55	0.62	18.6
East: Willamette Falls Drive												
1	L2	6	0.0	0.204	4.5	LOS A	1.0	25.8	0.21	0.09	0.21	19.3
6	T1	200	4.0	0.204	4.6	LOS A	1.0	25.8	0.21	0.09	0.21	19.2
16	R2	50	0.0	0.204	4.5	LOS A	1.0	25.8	0.21	0.09	0.21	19.0
Approach		256	3.1	0.204	4.6	LOS A	1.0	25.8	0.21	0.09	0.21	19.2
North: Brandon Place Extension												
7	L2	58	0.0	0.114	4.2	LOS A	0.5	12.7	0.37	0.24	0.37	19.1
4	T1	2	0.0	0.114	4.2	LOS A	0.5	12.7	0.37	0.24	0.37	19.1
14	R2	66	0.0	0.114	4.2	LOS A	0.5	12.7	0.37	0.24	0.37	18.9
Approach		126	0.0	0.114	4.2	LOS A	0.5	12.7	0.37	0.24	0.37	19.0
West: Willamette Falls Drive												
5	L2	56	0.0	0.636	10.8	LOS B	6.1	156.1	0.41	0.20	0.41	18.3
2	T1	738	3.0	0.636	10.9	LOS B	6.1	156.1	0.41	0.20	0.41	18.3
12	R2	6	0.0	0.636	10.8	LOS B	6.1	156.1	0.41	0.20	0.41	18.1
Approach		799	2.8	0.636	10.9	LOS B	6.1	156.1	0.41	0.20	0.41	18.3
All Vehicles		1193	2.5	0.636	8.8	LOS A	6.1	156.1	0.36	0.18	0.36	18.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

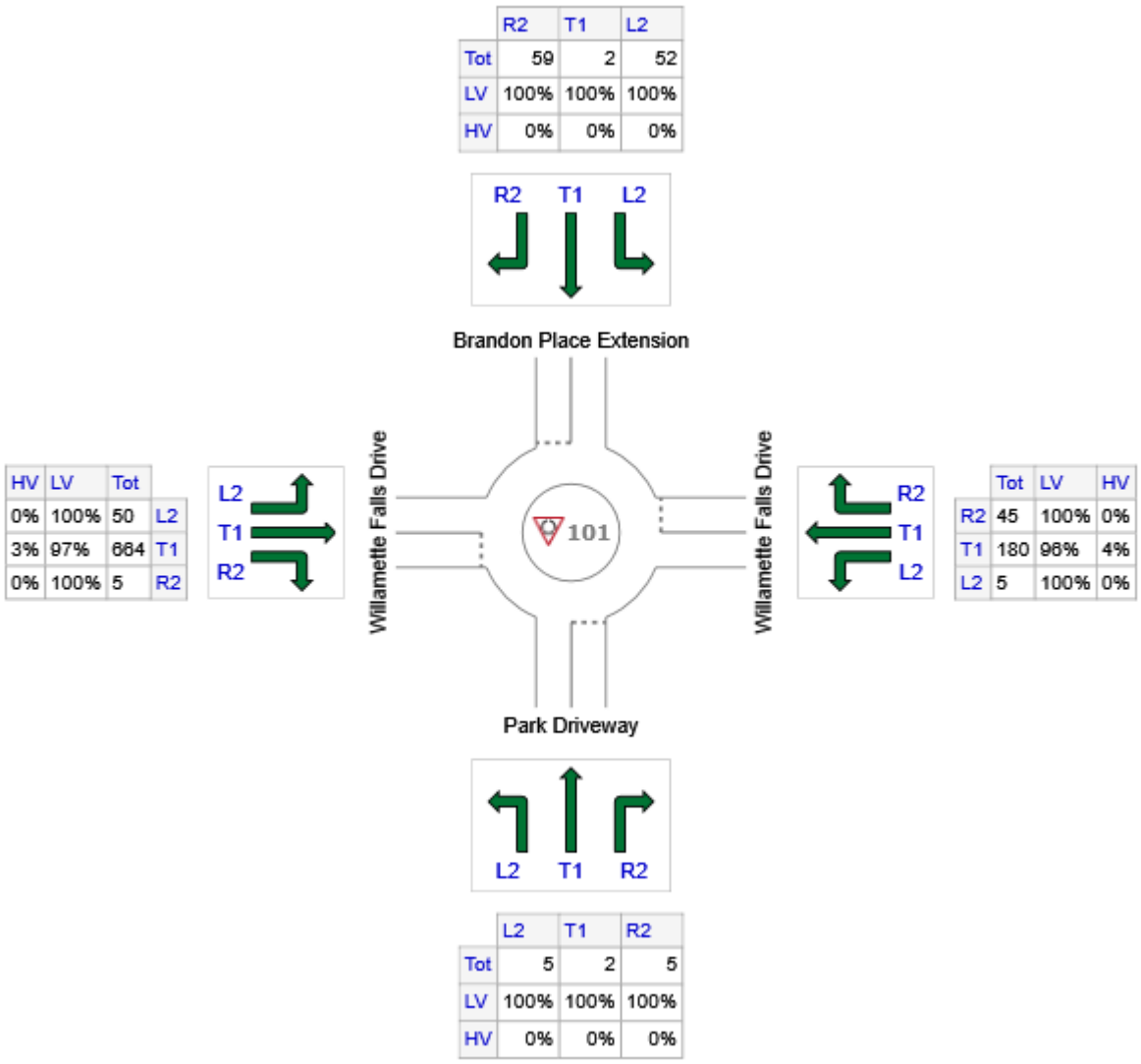
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [Future Build Midday Peak - Sensitivity #1]

Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Park Driveway	12	12	0
E: Willamette Falls Drive	230	223	7
N: Brandon Place Extension	113	113	0
W: Willamette Falls Drive	719	699	20
Total	1074	1047	27

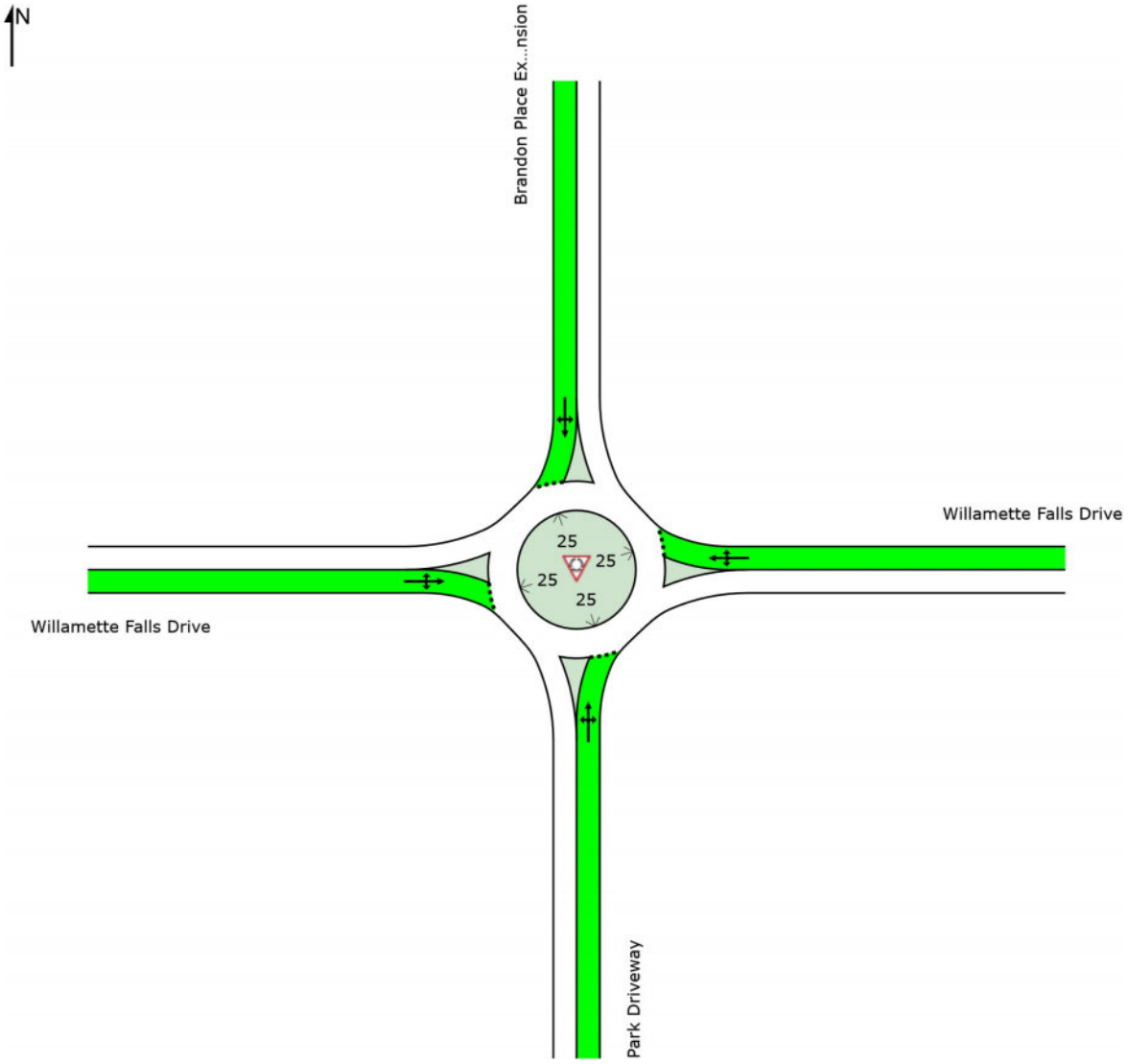
QUEUE DISTANCE (%ILE)

95% Back of Queue Distance per lane (feet)

Site: 101 [Future Build Midday Peak - Sensitivity #1]

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Vehicle Queue (%ile)	2	26	13	156	156



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

APPENDIX H.

HCM REPORT – SENSITIVITY ANALYSIS #2

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	194	3	2	402	3	2
Future Vol, veh/h	194	3	2	402	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	0	0	3	33	0
Mvmt Flow	220	3	2	457	3	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	223	0	683	222
Stage 1	-	-	-	-	222	-
Stage 2	-	-	-	-	461	-
Critical Hdwy	-	-	4.1	-	6.73	6.2
Critical Hdwy Stg 1	-	-	-	-	5.73	-
Critical Hdwy Stg 2	-	-	-	-	5.73	-
Follow-up Hdwy	-	-	2.2	-	3.797	3.3
Pot Cap-1 Maneuver	-	-	1358	-	371	823
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1358	-	370	823
Mov Cap-2 Maneuver	-	-	-	-	370	-
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	474	-	-	1358	-
HCM Lane V/C Ratio	0.012	-	-	0.002	-
HCM Control Delay (s)	12.7	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	192	2	2	341	14	5	1	3	22	3	65
Future Vol, veh/h	12	192	2	2	341	14	5	1	3	22	3	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	3	0	0	4	12	20	0	0	13	0	4
Mvmt Flow	13	209	2	2	371	15	5	1	3	24	3	71
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.5	11.4	8.8	9
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	56%	6%	1%	24%
Vol Thru, %	11%	93%	96%	3%
Vol Right, %	33%	1%	4%	72%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	206	357	90
LT Vol	5	12	2	22
Through Vol	1	192	341	3
RT Vol	3	2	14	65
Lane Flow Rate	10	224	388	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.015	0.286	0.474	0.139
Departure Headway (Hd)	5.663	4.595	4.401	5.097
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	628	779	819	700
Service Time	3.731	2.634	2.436	3.15
HCM Lane V/C Ratio	0.016	0.288	0.474	0.14
HCM Control Delay	8.8	9.5	11.4	9
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0	1.2	2.6	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	23	29	10	23	5	15	3	2	4	37	32
Future Vol, veh/h	28	23	29	10	23	5	15	3	2	4	37	32
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	0	0	5	0	11	0	0	3	0	0	6	0
Mvmt Flow	35	28	36	12	28	6	19	4	2	5	46	40
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.6	7.5	7.6	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	75%	35%	26%	10%	0%
Vol Thru, %	15%	29%	61%	90%	0%
Vol Right, %	10%	36%	13%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	80	38	41	32
LT Vol	15	28	10	4	0
Through Vol	3	23	23	37	0
RT Vol	2	29	5	0	32
Lane Flow Rate	25	99	47	51	40
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.03	0.109	0.054	0.068	0.046
Departure Headway (Hd)	4.414	3.982	4.144	4.816	4.168
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	799	886	849	737	850
Service Time	2.508	2.071	2.242	2.586	1.937
HCM Lane V/C Ratio	0.031	0.112	0.055	0.069	0.047
HCM Control Delay	7.6	7.6	7.5	7.9	7.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.4	0.2	0.2	0.1

MOVEMENT SUMMARY

Site: 101 [Future Build AM Peak - Sensitivity #2]

Site Category: (None)
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: Park Driveway												
3	L2	5	0.0	0.013	3.8	LOS A	0.1	1.3	0.43	0.26	0.43	19.2
8	T1	2	0.0	0.013	3.8	LOS A	0.1	1.3	0.43	0.26	0.43	19.2
18	R2	5	0.0	0.013	3.8	LOS A	0.1	1.3	0.43	0.26	0.43	19.0
Approach		13	0.0	0.013	3.8	LOS A	0.1	1.3	0.43	0.26	0.43	19.1
East: Willamette Falls Drive												
1	L2	5	0.0	0.375	6.7	LOS A	2.2	56.4	0.38	0.23	0.38	18.9
6	T1	322	3.0	0.375	6.8	LOS A	2.2	56.4	0.38	0.23	0.38	18.9
16	R2	114	0.0	0.375	6.7	LOS A	2.2	56.4	0.38	0.23	0.38	18.7
Approach		441	2.2	0.375	6.8	LOS A	2.2	56.4	0.38	0.23	0.38	18.8
North: Brandon Place Extension												
7	L2	98	0.0	0.215	5.8	LOS A	1.0	25.3	0.50	0.40	0.50	18.8
4	T1	2	0.0	0.215	5.8	LOS A	1.0	25.3	0.50	0.40	0.50	18.8
14	R2	110	0.0	0.215	5.8	LOS A	1.0	25.3	0.50	0.40	0.50	18.6
Approach		210	0.0	0.215	5.8	LOS A	1.0	25.3	0.50	0.40	0.50	18.7
West: Willamette Falls Drive												
5	L2	129	0.0	0.207	4.7	LOS A	1.0	26.2	0.28	0.14	0.28	19.1
2	T1	120	1.0	0.207	4.7	LOS A	1.0	26.2	0.28	0.14	0.28	19.0
12	R2	5	0.0	0.207	4.7	LOS A	1.0	26.2	0.28	0.14	0.28	18.8
Approach		255	0.5	0.207	4.7	LOS A	1.0	26.2	0.28	0.14	0.28	19.0
All Vehicles		918	1.2	0.375	5.9	LOS A	2.2	56.4	0.38	0.25	0.38	18.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INPUT VOLUMES

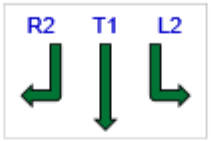
Vehicles and pedestrians per 60 minutes

Site: 101 [Future Build AM Peak - Sensitivity #2]

Site Category: (None)
Roundabout

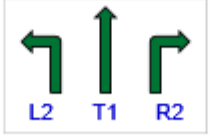
Volume Display Method: Total and %

	R2	T1	L2
Tot	102	2	91
LV	100%	100%	100%
HV	0%	0%	0%



HV	LV	Tot	
0%	100%	120	L2
1%	99%	112	T1
0%	100%	5	R2

	Tot	LV	HV
R2	106	100%	0%
T1	299	97%	3%
L2	5	100%	0%



	L2	T1	R2
Tot	5	2	5
LV	100%	100%	100%
HV	0%	0%	0%

	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Park Driveway	12	12	0
E: Willamette Falls Drive	410	401	9
N: Brandon Place Extension	195	195	0
W: Willamette Falls Drive	237	236	1
Total	854	844	10

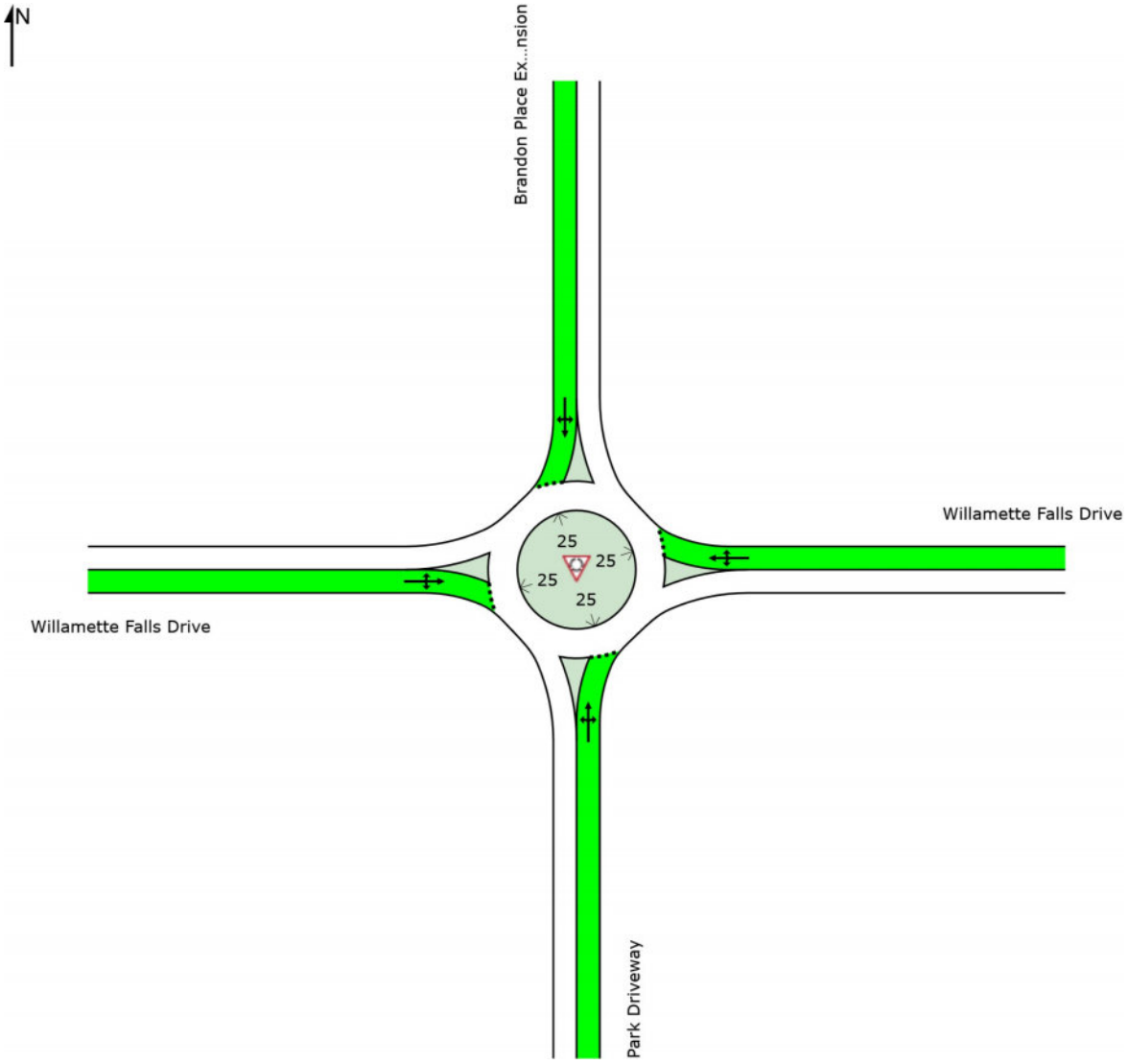
QUEUE DISTANCE (%ILE)

95% Back of Queue Distance per lane (feet)

Site: 101 [Future Build AM Peak - Sensitivity #2]

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Vehicle Queue (%ile)	1	56	25	26	56



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	727	9	3	242	5	10
Future Vol, veh/h	727	9	3	242	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	11	0	4	20	0
Mvmt Flow	782	10	3	260	5	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	792	0	1053	787
Stage 1	-	-	-	-	787	-
Stage 2	-	-	-	-	266	-
Critical Hdwy	-	-	4.1	-	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.2	-	3.68	3.3
Pot Cap-1 Maneuver	-	-	838	-	232	395
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	838	-	231	395
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	319	-	-	838	-
HCM Lane V/C Ratio	0.051	-	-	0.004	-
HCM Control Delay (s)	16.9	-	-	9.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	37.7
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	113	602	4	4	202	14	6	2	4	24	3	59
Future Vol, veh/h	113	602	4	4	202	14	6	2	4	24	3	59
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	5	3	0	25	5	25	50	0	25	12	0	2
Mvmt Flow	120	640	4	4	215	15	6	2	4	26	3	63
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	49.4	11.7	10.5	10.3
HCM LOS	E	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	16%	2%	28%
Vol Thru, %	17%	84%	92%	3%
Vol Right, %	33%	1%	6%	69%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	719	220	86
LT Vol	6	113	4	24
Through Vol	2	602	202	3
RT Vol	4	4	14	59
Lane Flow Rate	13	765	234	91
Geometry Grp	1	1	1	1
Degree of Util (X)	0.026	0.982	0.361	0.157
Departure Headway (Hd)	7.315	4.623	5.551	6.167
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	491	780	653	584
Service Time	5.332	2.7	3.551	4.178
HCM Lane V/C Ratio	0.026	0.981	0.358	0.156
HCM Control Delay	10.5	49.4	11.7	10.3
HCM Lane LOS	B	E	B	B
HCM 95th-tile Q	0.1	16	1.6	0.6

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	25	25	10	22	12	25	94	7	8	52	34
Future Vol, veh/h	27	25	25	10	22	12	25	94	7	8	52	34
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	13	8	0	0	9	13	3	11	0	3	0
Mvmt Flow	30	28	28	11	25	13	28	106	8	9	58	38
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	8	7.8	8.7	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	20%	35%	23%	13%	0%
Vol Thru, %	75%	32%	50%	87%	0%
Vol Right, %	6%	32%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	126	77	44	60	34
LT Vol	25	27	10	8	0
Through Vol	94	25	22	52	0
RT Vol	7	25	12	0	34
Lane Flow Rate	142	87	49	67	38
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.183	0.106	0.061	0.094	0.045
Departure Headway (Hd)	4.66	4.418	4.468	4.998	4.279
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	772	813	803	719	839
Service Time	2.675	2.435	2.486	2.713	1.994
HCM Lane V/C Ratio	0.184	0.107	0.061	0.093	0.045
HCM Control Delay	8.7	8	7.8	8.2	7.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0.4	0.2	0.3	0.1

MOVEMENT SUMMARY

Site: 101 [Future Build Midday Peak - Sensitivity #2]

Site Category: (None)
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: Park Driveway												
3	L2	6	0.0	0.025	7.0	LOS A	0.1	2.3	0.63	0.57	0.63	18.7
8	T1	2	0.0	0.025	7.0	LOS A	0.1	2.3	0.63	0.57	0.63	18.7
18	R2	6	0.0	0.025	7.0	LOS A	0.1	2.3	0.63	0.57	0.63	18.5
Approach		13	0.0	0.025	7.0	LOS A	0.1	2.3	0.63	0.57	0.63	18.6
East: Willamette Falls Drive												
1	L2	6	0.0	0.228	4.9	LOS A	1.2	29.5	0.26	0.13	0.26	19.2
6	T1	199	4.0	0.228	5.0	LOS A	1.2	29.5	0.26	0.13	0.26	19.2
16	R2	74	0.0	0.228	4.9	LOS A	1.2	29.5	0.26	0.13	0.26	19.0
Approach		279	2.9	0.228	5.0	LOS A	1.2	29.5	0.26	0.13	0.26	19.1
North: Brandon Place Extension												
7	L2	87	0.0	0.169	4.8	LOS A	0.8	19.8	0.39	0.26	0.39	19.0
4	T1	2	0.0	0.169	4.8	LOS A	0.8	19.8	0.39	0.26	0.39	19.0
14	R2	98	0.0	0.169	4.8	LOS A	0.8	19.8	0.39	0.26	0.39	18.8
Approach		187	0.0	0.169	4.8	LOS A	0.8	19.8	0.39	0.26	0.39	18.9
West: Willamette Falls Drive												
5	L2	84	0.0	0.678	12.2	LOS B	6.8	174.5	0.53	0.30	0.53	18.0
2	T1	738	3.0	0.678	12.3	LOS B	6.8	174.5	0.53	0.30	0.53	18.0
12	R2	6	0.0	0.678	12.2	LOS B	6.8	174.5	0.53	0.30	0.53	17.9
Approach		828	2.7	0.678	12.3	LOS B	6.8	174.5	0.53	0.30	0.53	18.0
All Vehicles		1307	2.3	0.678	9.6	LOS A	6.8	174.5	0.45	0.26	0.45	18.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

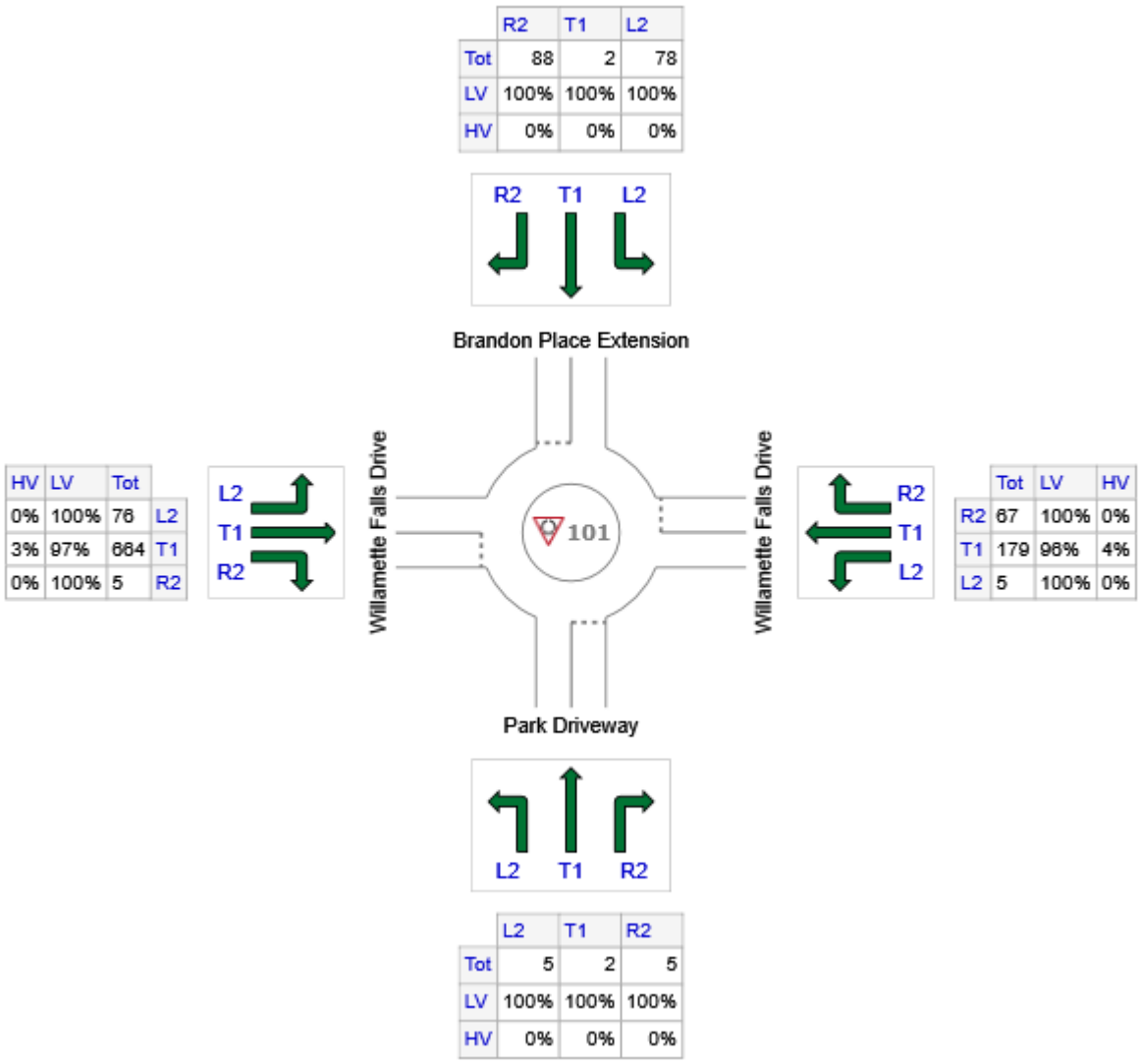
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [Future Build Midday Peak - Sensitivity #2]

Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Park Driveway	12	12	0
E: Willamette Falls Drive	251	244	7
N: Brandon Place Extension	168	168	0
W: Willamette Falls Drive	745	725	20
Total	1176	1149	27

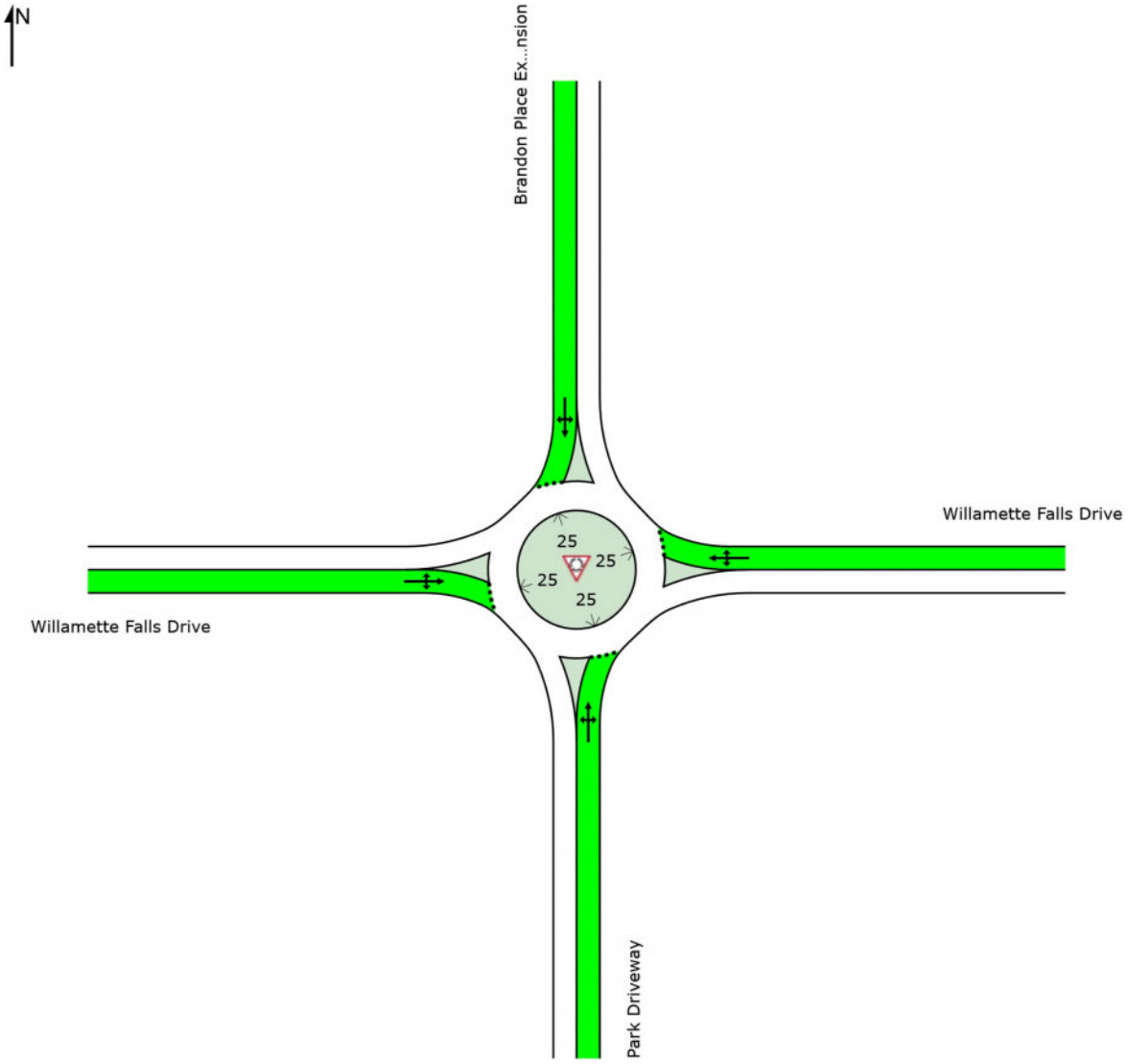
QUEUE DISTANCE (%ILE)

95% Back of Queue Distance per lane (feet)

Site: 101 [Future Build Midday Peak - Sensitivity #2]

Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
Vehicle Queue (%ile)	2	29	20	174	174



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

APPENDIX I.

BRANDON PLACE – LOCAL TRAFFIC REROUTE

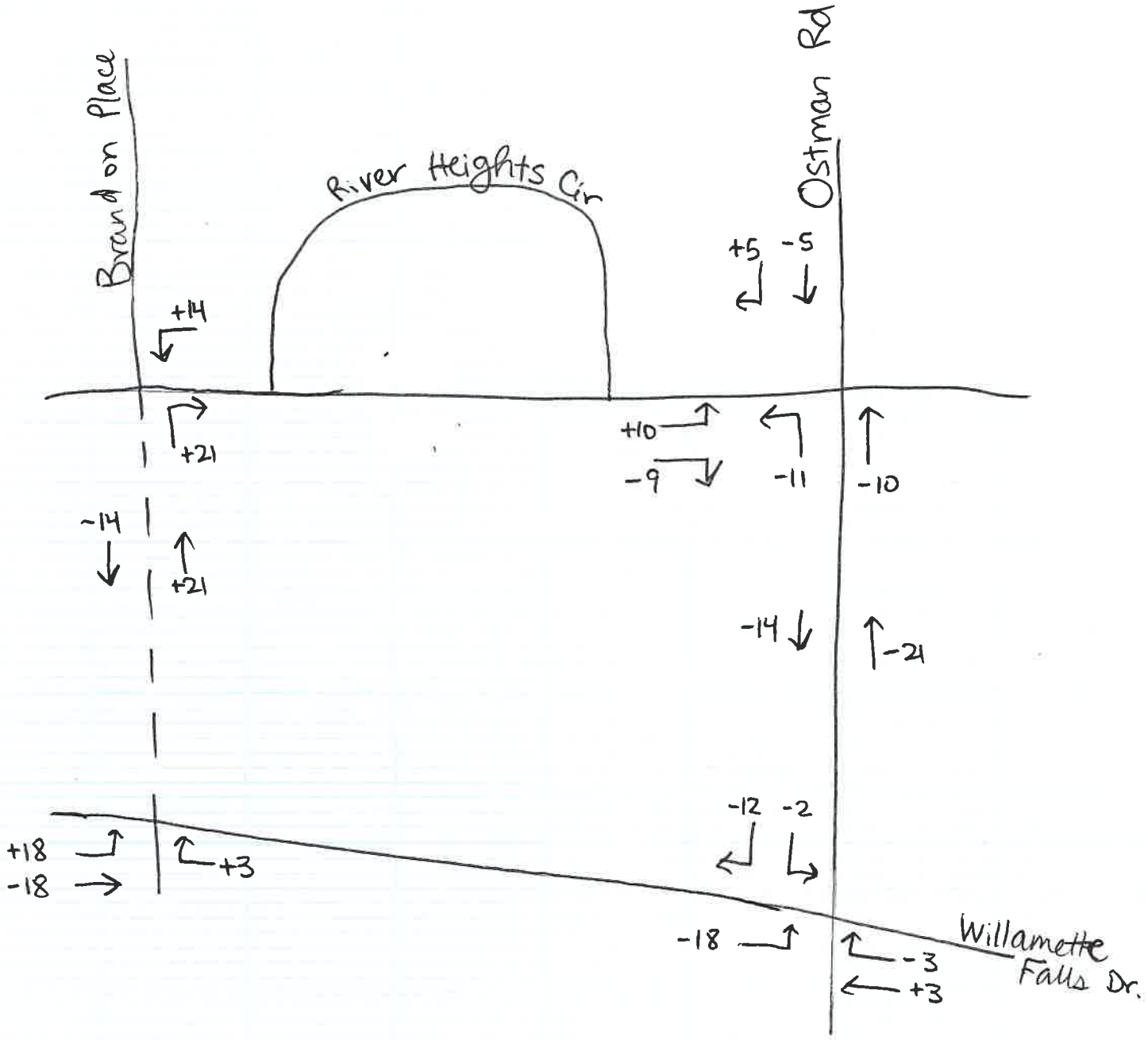
DKS

SUBJECT _____ JOB NO _____

SHEET _____ NO 1 OF 1

MADE BY DKS (JCB) DATE _____ CHECKED BY _____ DATE 06/21/21

2023 Build - Sensitivity Analysis #2
Brandon Place Reroute



Intersection	
Intersection Delay, s/veh	27.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	602	4	4	205	11	6	2	4	22	3	47
Future Vol, veh/h	65	602	4	4	205	11	6	2	4	22	3	47
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	5	3	0	25	5	25	50	0	25	12	0	2
Mvmt Flow	69	640	4	4	218	12	6	2	4	23	3	50
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	34.4	11.3	10.3	9.9
HCM LOS	D	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	10%	2%	31%
Vol Thru, %	17%	90%	93%	4%
Vol Right, %	33%	1%	5%	65%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	671	220	72
LT Vol	6	65	4	22
Through Vol	2	602	205	3
RT Vol	4	4	11	47
Lane Flow Rate	13	714	234	77
Geometry Grp	1	1	1	1
Degree of Util (X)	0.025	0.904	0.347	0.129
Departure Headway (Hd)	7.114	4.558	5.337	6.048
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	506	792	667	597
Service Time	5.119	2.614	3.419	4.048
HCM Lane V/C Ratio	0.026	0.902	0.351	0.129
HCM Control Delay	10.3	34.4	11.3	9.9
HCM Lane LOS	B	D	B	A
HCM 95th-tile Q	0.1	12.2	1.5	0.4

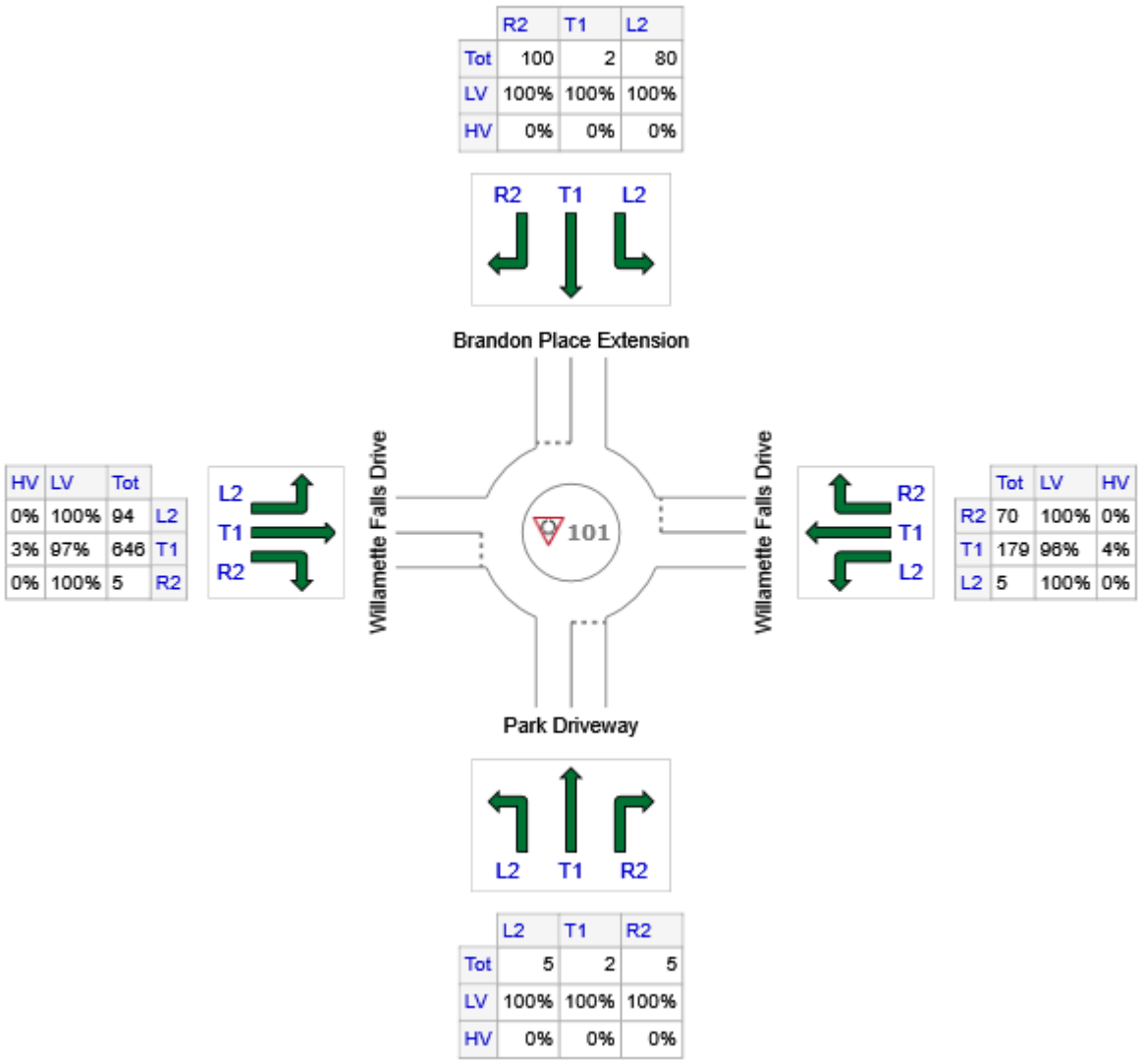
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [Future Build Midday Peak - Sensitivity #2 - BRANDON PLACE REROUTE]

Site Category: (None)
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Park Driveway	12	12	0
E: Willamette Falls Drive	254	247	7
N: Brandon Place Extension	182	182	0
W: Willamette Falls Drive	745	726	19
Total	1193	1166	27

MOVEMENT SUMMARY

Site: 101 [Future Build Midday Peak - Sensitivity #2 - BRANDON PLACE REROUTE]

Site Category: (None)
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: Park Driveway												
3	L2	6	0.0	0.025	7.1	LOS A	0.1	2.3	0.64	0.57	0.64	18.7
8	T1	2	0.0	0.025	7.1	LOS A	0.1	2.3	0.64	0.57	0.64	18.7
18	R2	6	0.0	0.025	7.1	LOS A	0.1	2.3	0.64	0.57	0.64	18.5
Approach		13	0.0	0.025	7.1	LOS A	0.1	2.3	0.64	0.57	0.64	18.6
East: Willamette Falls Drive												
1	L2	6	0.0	0.236	5.0	LOS A	1.2	30.4	0.29	0.16	0.29	19.2
6	T1	199	4.0	0.236	5.1	LOS A	1.2	30.4	0.29	0.16	0.29	19.2
16	R2	78	0.0	0.236	5.0	LOS A	1.2	30.4	0.29	0.16	0.29	19.0
Approach		282	2.8	0.236	5.1	LOS A	1.2	30.4	0.29	0.16	0.29	19.1
North: Brandon Place Extension												
7	L2	89	0.0	0.183	4.9	LOS A	0.9	21.8	0.39	0.26	0.39	19.0
4	T1	2	0.0	0.183	4.9	LOS A	0.9	21.8	0.39	0.26	0.39	19.0
14	R2	111	0.0	0.183	4.9	LOS A	0.9	21.8	0.39	0.26	0.39	18.8
Approach		202	0.0	0.183	4.9	LOS A	0.9	21.8	0.39	0.26	0.39	18.9
West: Willamette Falls Drive												
5	L2	104	0.0	0.679	12.3	LOS B	6.8	174.7	0.54	0.30	0.54	18.0
2	T1	718	3.0	0.679	12.4	LOS B	6.8	174.7	0.54	0.30	0.54	18.0
12	R2	6	0.0	0.679	12.3	LOS B	6.8	174.7	0.54	0.30	0.54	17.8
Approach		828	2.6	0.679	12.4	LOS B	6.8	174.7	0.54	0.30	0.54	18.0
All Vehicles		1326	2.2	0.679	9.6	LOS A	6.8	174.7	0.46	0.27	0.46	18.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX J.

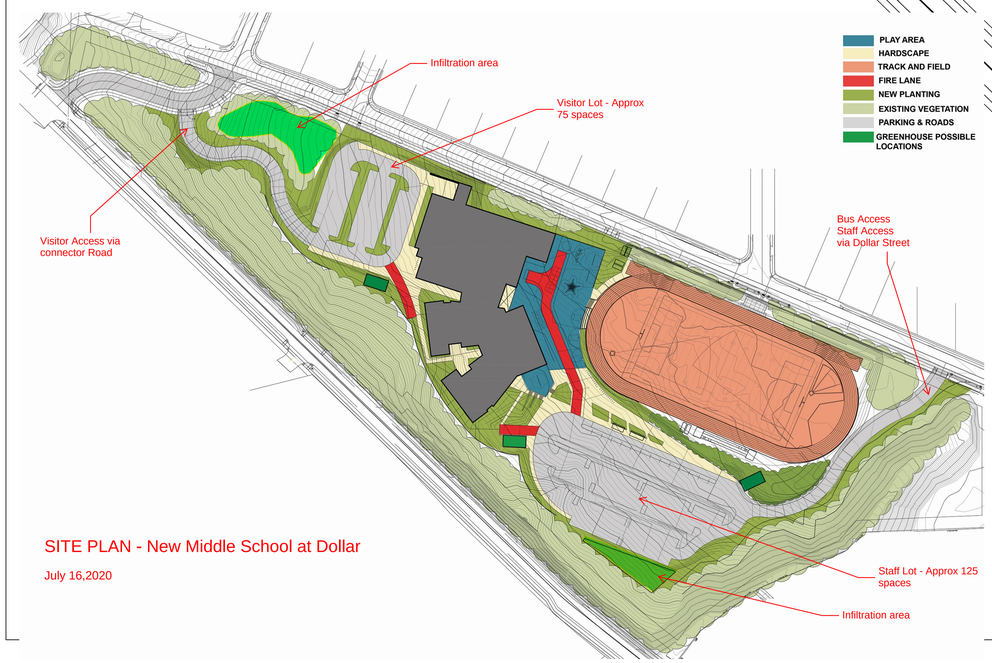
CRASH DATA

Crash ID	Crash Date	Lat	Long	Collision Type	Crash Severity	KABCO	Weather	Road Surface	Light	Crash Event	Crash Cause
1615911	8/11/2015	45.346661	-122.671767	REAR	INJ	B	CLEAR	DRY	DAYLIGHT		FAILED TO AVOID VEHICLE AHEAD
1664747	4/1/2016	45.346544	-122.671567	REAR	INJ	C	CLEAR	DRY	DAYLIGHT	PED INVOLVED	FAILED TO AVOID VEHICLE AHEAD
1740242	7/21/2017	45.346583	-122.671631	REAR	INJ	C	CLEAR	DRY	DAYLIGHT	PED INVOLVED	FAILED TO AVOID VEHICLE AHEAD
1705382	8/5/2016	45.347383	-122.672931	REAR	PDO	O	CLEAR	DRY	DAYLIGHT		FAILED TO AVOID VEHICLE AHEAD
1742193	8/17/2017	45.346583	-122.671633	REAR	INJ	C	CLEAR	DRY	DAYLIGHT		FOLLOW TOO CLOSE
1643136	6/16/2015	45.345814	-122.670233	REAR	PDO	O	CLEAR	DRY	DAYLIGHT	FORCED BY IMPACT	FOLLOW TOO CLOSE
1739094	7/13/2017	45.344317	-122.666969	REAR	INJ	C	CLEAR	DRY	DARK-NO ST LIGHTS		FAILED TO AVOID VEHICLE AHEAD
1763483	10/12/2017	45.344317	-122.666972	REAR	PDO	O	RAIN	WET	DAYLIGHT		FAILED TO AVOID VEHICLE AHEAD
1583758	8/2/2014	45.346525	-122.671531	REAR	INJ	C	CLEAR	DRY	DAYLIGHT	PED INVOLVED	FAILED TO AVOID VEHICLE AHEAD
1689300	1/28/2016	45.344317	-122.666969	SS-O	PDO	O	CLOUDY	WET	DAYLIGHT		IMPROPER OVERTAKE
1756099	6/6/2017	45.348417	-122.674439	REAR	PDO	O	CLEAR	DRY	DAYLIGHT		INATTENTION

APPENDIX K.

SITE PLAN

STORMWATER TREATMENT
CONNECTOR PATH TO WATERFRONT TRAIL
BRANDON PLACE INTERSECTION
BRANDON PLACE EXTENTION
MONUMENT SIGN
STORMWATER SWALE
WEST ENTRY DRIVE W/ 6' WIDE SIDEWALK
RETAINING WALL
EXISTING TREES REMAIN UNDER REVIEW
BOLLARDS
VISITOR PARKING LOT- 71 STALLS
STUDENT DROP OFF-480 LF
BUILDING ENTRANCE
FLAG POLES- 3
BIKE RACKS- 15
PLAY AREA RETAINING WALL- UTILIZE WALL FOR PLAY ELEMENTS
STORAGE
FUTURE CONCESSIONS
BIKE RACKS- 20
PAINTED GAMES
OUTDOOR DINING AND ENTRY PLAZA- CONCRETE
BUILDING ENTRANCE
BIKE RACKS- 4
FIRE AERIAL ACCESS ROUTE- ASPHALT
FIRE ACCESS- CONCRETE
COURTYARD PATH- ASPHALT
COURTYARD SEATING
SOCIAL BENCH SEATING
BIKE RACKS- 11
TERRACED RETAINING WALLS
CTE SPILLOUT AND OUTDOOR SOCIAL SPACE- CONCRETE
STAIRS
RAMP
RAMP TO TRACK- 14' WIDE
OUTDOOR PLAY AREA W/ RUBBER SURFACING
SOCIAL SEATING
STAIR
SOCIAL TERRACES W/ RETAINING WALL
BASKETBALL HOOPS
SLOPED TURF
4' CHAIN LINK FENCE
BLEACHER
DOLLAR STREET IMPROVEMENTS
LAWN- SPECTATOR AREA
MONUMENT SI
DISCUS
LONG JUMP / TRIPLE JUMP
8 LANE TRACK W/ RUBBER SURFACE SHOULDER AND INTERIOR CURB
SYNTHETIC TURF W/ FOOTBALL AND SOCCER STRIPING
JAVELIN
HIGH JUMP
SHOT PUT
FIRE ACCESS- CONCRETE
GREENHOUSE YARD
GREENHOUSE GATHERING SPACE
GREENHOUSE
SHELTER
SLOPED WALK
LAWN- SPECTATOR AREA
STAIR
EAST ENTRY DRIVE W/ 8' WIDE SIDEWALK
RAVINE SETBACK- 25' FROM TOP OF BANK
6' TALL CHAIN LINK FENCE
STAFF PARKING LOT- 114 STALLS
BUS DROP OFF-660LF W/ 12' WIDE SIDEWALK
GRADING EXTENTS
WILLAMETTE FALLS DRIVE IMPROVEMENTS



SITE PLAN - New Middle School at Dollar

July 16,2020