EXHIBIT A.

TECHNICAL MEMORANDUM

DATE: July 23rd, 2026

TO: Kelly O'Neill Jr. | City of Sandy

FROM: Kevin Chewuk and Reah Flisakowski | DKS Associates

SUBJECT: City of Sandy – 362nd Drive and Dubarko Road Intersection Improvement Evaluation 22071-000-022

This memorandum summarizes an intersection improvement evaluation conducted at the 362nd Drive and Dubarko Road intersection in Sandy, Oregon. This study identifies the most appropriate transportation improvements, with the following sections providing a summary of the expected intersection performance and recommendations.

EXISTING 2026 TRANSPORTATION CONDITIONS

This section provides documentation of existing transportation conditions at the 362nd Drive and Dubarko Road intersection (see Figure 1), including an inventory of the existing transportation network and a safety evaluation and operational analysis. For the purposes of the transportation analysis, the year 2026 was used as the baseline for existing conditions. Supporting details are provided in the appendix.

TRANSPORTATION FACILITIES

362nd Drive provides a key north to south roadway connection on the west side of Sandy, connecting US 26 with Highway 211, while Dubarko Road provides a key east to west roadway connection on the south side of Sandy, connecting 362nd Drive with Highway 211 and Langensand Road. These segments are Minor Arterials under City of Sandy jurisdiction (see Table 1) and currently maintain a two to three-lane cross-section (i.e., one through lane in each direction, with a left-turn lane on 362nd Drive at the Dubarko Road intersection.)

362nd Drive has a posted speed of 35 miles per hour at the Dubarko Road intersection, with an existing annual average daily traffic (AADT) volume of 11,000, of which four percent are trucks. Dubarko Road has an AADT volume of 950 at the 362nd Drive intersection, of which three percent are trucks. 362nd Drive slopes downhill approaching Dubarko Road from the north and south and similarly, Dubarko Road slopes downhill approaching 362nd Drive from the east.

TABLE 1: EXISTING ROADWAY CHARACTERISTICS

ROADWAY (SEGMENT LOCATION)	CLASSIFICATION*	AADT/ TRUCK %	LANES	POSTED SPEED	PEDESTRIAN FACILITY	BIKE FACILITY
362ND DRIVE (AT DUBARKO ROAD INTERSECTION)	Minor Arterial	11,100 / 4%	3	35 mph	Sidewalk on east side / None **	Bike lanes / None ***
DUBARKO ROAD (AT 362ND DRIVE INTERSECTION)	Minor Arterial	950 / 3%	2	25 mph	Sidewalk on both sides	None

* Source: City of Sandy Transportation System Plan, May 2023.

** A sidewalk is available on the east side of 362nd Drive north of Dubarko Road; no facilities are available south of Dubarko Road.

*** Bikes lanes are available north of Dubarko Road only.

FIGURE 1: STUDY INTERSECTION

SAFETY ANALYSIS

The most recent five years of available collision data at the 362nd Drive and Dubarko Road intersection was obtained from ODOT and used to evaluate the collision history[1]. There were three crashes recorded at the intersection over the five-year period (see **Error! Reference source not found.**), with two of the crashes resulting in an injury. There were no crashes involving people walking or biking at the intersection.

The collision types that occurred were angle, turning, and fixed object, and show "no yield" or "driver inattention" as the cited cause.

TABLE 2: SUMMARY OF COLLISIONS

INTERSECTION	TOTAL COLLISIONS	COLLISION TYPE				COLLISION SEVERITY		
		ANGLE	TURNING	REAR	FIXED	FATAL	INJURY	PDO*
362ND DRIVE / DUBARKO ROAD	**3**	1	1	0	1	0	2	1

Source: ODOT Crash Analysis and Reporting Unit. Reported collision data from 2019 to 2023.

* PDO = Property Damage Only

Crash rates provide an additional perspective on intersection safety and identify locations where people have a higher risk of being involved in a crash. Crash frequencies (the number of crashes in a period of time) tend to increase with higher vehicle traffic. With more exposure to vehicles, there are more opportunities for crashes to occur. Crash rates consider the number of crashes relative to the traffic volume at the intersection and are expressed in units of crashes per million entering vehicles.

The crash rate (crashes per million entering vehicles) for the 362nd Drive and Dubarko Road intersection was calculated and evaluated using the critical crash rate method from the Highway Safety Manual. The critical crash rate method compares an intersection's crash history to that of other similar intersections, adjusting for volume at the intersection. Where an intersection's crash rate is greater than the critical crash rate, it is an indication that a problem might exist, and that further study is warranted.

As shown in Table 3, the crash rate calculated is well below this threshold, indicating the frequency of collisions is typical for the volume of traffic served.

[1] ODOT reported collisions for January 1, 2019, through December 31, 2023.

TABLE 3: COLLISION ANALYSIS AT 362ND DRIVE AND DUBARKO ROAD

INTERSECTION	TOTAL COLLISIONS	OBSERVED CRASH RATE (PER MEV)	CRITICAL CRASH RATE (PER MEV)	OVER CRITICAL CRASH RATE
362ND DRIVE / DUBARKO ROAD	**3**	0.14	0.29	No

EXISTING YEAR CAPACITY ANALYSIS

This section will summarize the existing year intersection operations at the 362nd Drive and Dubarko Road intersection using Highway Capacity Manual (HCM) 6th edition methodology.

EXISTING MOTOR VEHICLE VOLUMES

Traffic operations were analyzed using the estimated 30th highest annual hour traffic volume (30 HV) consistent with methodology outlined in the Oregon Department of Transportation *Analysis Procedure Manual (APM)*. Based on analysis of Automatic Traffic Recorder (ATR) data the seasonal peak occurs on a weekday afternoon in July[2]. Traffic counts were collected in December during the weekday morning peak period (7:00 a.m. to 9:00 a.m.) and evening peak period (4:00 p.m. to 6:00 p.m.) and the individual peak hours[3] were utilized and adjusted to reflect this seasonal peak[4]. The raw traffic counts are included in the Appendix.

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 picture of intersection operations. Agencies often incorporate these performance measures into their mobility standards. Descriptions are given below:

- **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 hours travel demand. LOS D and E are progressively worse operation conditions. LOS F represents conditions where average vehicle delay has become excessive, and demand has exceeded capacity.
- **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 1.00 (generally above 0.70), congestion noticeably increases, and

[2] Based on ATR data along US 26 in Gresham (26-003).

[3] The weekday a.m. peak hour started at 7:40 a.m. and p.m. peak hour started at 4:30 p.m. at the 362nd Drive and Dubarko Road intersection.

[4] The most recent five years of July and December data from ATR 26-003 (2019, 2021-2024) was utilized to develop a calculated seasonal factor of 1.08 for the weekday period.

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.

Jurisdictional Mobility Targets

The City of Sandy operating standards require that a level of service "D" or better be maintained for any signalized intersection and unsignalized intersections with stop control on the minor approach, and a volume-to-capacity ratio of less than or equal to 0.90 on each intersection approach at roundabouts.

Existing Intersection Operations

Motor vehicle conditions were evaluated during the weekday a.m. and p.m. peak hours using the *Highway Capacity Manual, 6th Edition* (HCM)[5] methodologies. Synchro reports can be found in the appendix.

As shown in Table 4, the 362nd Drive and Dubarko Road intersection meets the current mobility target during the weekday a.m. and p.m. peak hours, operating with a LOS C or better and with a v/c of 0.26 or less.

TABLE 4: 2026 INTERSECTION OPERATIONS AT 362ND DRIVE AND DUBARKO ROAD

INTERSECTION	TRAFFIC CONTROL	MOBILITY TARGET	WEEKDAY A.M. PEAK HOUR (30 HV)			WEEKDAY P.M. PEAK HOUR (30 HV)		
			LOS	DELAY	V/C	LOS	DELAY	V/C
362ND DRIVE / DUBARKO ROAD	Two-Way Stop Control	LOS D	B	13	0.20	C	17	0.26

Note: Intersection operations are reported for the worst minor street movement.

FUTURE TRANSPORTATION CONDITIONS

This section summarizes future year conditions and identifies how the 362nd Drive and Dubarko Road intersection will function in the future. Included is a summary of future travel estimates, intersection operational performance, and recommended intersection configurations.

PLANNING HORIZON AND SCENARIOS

The planning horizon selected for analysis is the year 2040, which represents the horizon year for the Sandy Transportation System Plan (TSP). Future 2040 traffic forecasts were prepared for two alternatives, one of which includes no changes to the existing intersection and one that includes a new west leg at the intersection with the planned extension of Dubarko Road from 362nd Drive to

[5] Highway Capacity Manual, 6th Edition, Transportation Research Board, 2016.

Champion Way (Sandy TSP Project D13). The two alternatives shown below include the following assumptions:

- **2040 No-Build (without the Dubarko Road extension) –** Existing traffic volumes plus background traffic growth, with the existing lane configurations.
- **2040 Build (with the Dubarko Road extension) –** Existing traffic volumes plus background traffic growth, with the rerouted traffic associated with the west extension of Dubarko Road from 362nd Drive. The new Dubarko Road west leg of the intersection is assumed to have separate left and through/right-turn lanes and 362nd Drive is assumed to include an exclusive left turn lane for the new northbound left-turn movement and an exclusive right turn lane for the new southbound right-turn movement (see **Error! Reference source not found.** later in this document). An evaluation of different lane configurations for the 362nd Drive approaches to Dubarko Road and for the Dubarko Road approaches to 362nd Drive is provided later in this document.

FUTURE MOTOR VEHICLE VOLUMES

The motor vehicle volumes for 2040 consist of the existing traffic volumes and background traffic growth. Background traffic volume growth for the a.m. and p.m. peak hours through 2040 was estimated by applying an average growth factor based on the 2020 and 2040 traffic volumes at the 362nd Drive and Industrial Way (south) intersection[6] from the Sandy TSP. The growth was incrementally applied to the 2026 count data collected at 362nd Drive and Dubarko Road to the future forecast year of 2040 both without and with the west extension of Dubarko Road.

FORECASTED 2040 INTERSECTION OPERATIONS

Table 5 shows the forecasted 2040 intersection operations at the 362nd Drive and Dubarko Road intersection, both without and with the west extension of Dubarko Road. As shown, the intersection is expected to continue to meet current mobility targets during the peak hours through 2040 without the Dubarko Road extension.

The Dubarko Road westward extension from 362nd Drive will introduce a new west leg and turn movements at the 362nd Drive and Dubarko Road intersection (see **Error! Reference source not found.** later in this document). This includes new eastbound left, through and right, westbound through, northbound left and southbound right-turn movements, which are expected to draw trips and cause some drivers to re-route from nearby intersections. Additional vehicle trips at the intersection are also expected to be generated by future development on the vacant parcels surrounding the Dubarko Road westward extension. Likewise, the intersection is forecasted to see a significant increase in delay after the Dubarko Road extension and operate with a LOS "F" for the Dubarko Road approach and no longer meet the mobility target as it did without the extension in

[6] No traffic count data was available for the 362nd Drive and Dubarko Road intersection in the Sandy TSP. The forecasted growth was instead based on data on the adjacent intersection to the north at the 362nd Drive and Industrial Way (south) intersection. The derived growth increment was applied to the 2026 count data collected at 362nd Drive and Dubarko Road and used to forecast the 2040 volumes.

both the a.m. and p.m. peak hours. The Sandy TSP includes a planned project that would add capacity to the 362nd Drive and Dubarko Road intersection (Sandy TSP Project ID D2). This planned project would mitigate the forecasted substandard LOS, although it is currently not funded.

A summary of alternatives considered to mitigate the impact at this intersection is provided later in this document. Detailed intersection operations calculation worksheets are included in the Appendix.

TABLE 5: 2040 INTERSECTION OPERATIONS AT 362ND DRIVE AND DUBARKO ROAD

362ND DRIVE / DUBARKO ROAD	TRAFFIC CONTROL	MOBILITY TARGET	2040 A.M. PEAK HOUR			2040 P.M. PEAK HOUR		
			LOS	DELAY	V/C	LOS	DELAY	V/C
2040 NO-BUILD (WITHOUT THE DUBARKO ROAD EXTENSION)	Two-Way Stop Control	LOS D	B	15	0.26	D	32	0.54
2040 BUILD (WITH THE DUBARKO ROAD EXTENSION)	Two-Way Stop Control	LOS D	**E**	40	0.08	**F**	170	0.45

Note: Intersection operations are reported for the worst minor street movement.

ALTERNATIVE EVALUATION

Preliminary improvement options were evaluated at the 362nd Drive and Dubarko Road intersection. The design alternatives were focused at the intersection as well as what would be required along the approaching segment, and were based in accordance with the Sandy TSP. The alternatives were evaluated based on the following screening measures, with a score of 2 given to an alternative that meets or fully addresses the criterion, 1 given to an alternative that somewhat addresses the criterion, and 0 given to an alternative that does not meet or negatively impacts the criterion:

- Operations – meet the mobility standard for the intersection.
- Pedestrian/Bicycle – enhance connectivity and access for pedestrians and bicyclists.
- Right-of-Way – limit right-of-way and other property impacts.
- Expected Cost – limit the overall project costs.
- Safety – improve safety for all users.

INTERSECTION CONFIGURATION AND CONTROL EVALUATION

The recommended configuration and control for the 362nd Drive and Dubarko Road intersection was developed based on the identified needs at the intersection. Intersection geometries and control type supported by warrant analysis are covered in this section.

TURN LANE EVALUATION

A turn lane evaluation was assessed for the uncontrolled 362nd Drive approaches at the Dubarko Road intersection using the forecasted 2040 traffic volumes with the Dubarko Road extension.

The analysis found that a northbound left-turn lane on 362nd Drive would be warranted during both the a.m. and p.m. peak hours, and a northbound right-turn lane on 362nd Drive is warranted based on the p.m. peak hour volume only. The currently forecasted southbound right-turn volume is not high enough to warrant a separate turn lane at the intersection, although the demand for this turn movement could potentially be higher depending on the future development that occurs on the parcels surrounding the Dubarko Road westward extension. However, given that 362nd Drive slopes downhill approaching Dubarko Road from the north, a southbound right-turn lane on 362nd Drive is recommended to provide a space for turning vehicles to decelerate without impeding downhill through traffic.

Calculations are in the Appendix.

PRELIMINARY SIGNAL WARRANT ANALYSIS

A signal warrant analysis for the 362nd Drive and Dubarko Road intersection was analyzed following the Manual on Uniform Traffic Control Devices (MUTCD) Warrants[7]. The warrants were evaluated using the forecasted 2040 traffic volumes with the Dubarko Road extension. The number of lanes used in the warrant analysis for Dubarko Road was based on the proposed future geometry, which included separate left and through/right turn lanes on the approach, and therefore right turn discounts were applied to warrant volumes[8]. The result was none of the forecasted right turn volume was included in the warrant analysis for the Dubarko Road approach.

The results of the warrant analysis are shown in Table 6, with the intersection not projected to meet the peak hour (Warrant #3) and crash experience (Warrant #7) warrant. More details on warrant analysis can be found in the Appendix.

TABLE 6: 362ND DRIVE AND DUBARKO ROAD INTERSECTION SIGNAL WARRANT ANALYSIS

WARRANT	WARRANT MET?	
	2040 A.M. PEAK HOUR	2040 P.M. PEAK HOUR
WARRANT 3: PEAK HOUR	No	No
WARRANT 7: CRASH EXPERIENCE	No	No

[7] Manual on Uniform Traffic Control Devices, 2009 Edition, Chapter 4C. Based on Warrants #3 and #7.

[8] Right turn discount based on 85 percent of the unsignalized right lane capacity.

ALL-WAY STOP CONTROL REVIEW

The installation of any stop sign must meet the Manual on Uniform Traffic Control Devices (MUTCD) standards[9]. Research has shown that the installation of stop signs, while reducing roadway speeds immediately adjacent to the stop sign, has no effect on overall neighborhood speed limit compliance, and unwarranted stop signs tend to have a lower driver compliance rate.

Based on the criteria from the MUTCD for installing stop signs and findings related to the 362nd Drive and Dubarko Road intersection, the all-way stop criteria is not met, and therefore all-way stop control is not recommended.

INTERSECTION CONTROL EVALUATION

The 362nd Drive and Dubarko Road intersection was identified as exceeding the mobility target by 2040 with the Dubarko Road extension. This planned extension will form a new west leg at the intersection, and the new approach is assumed to have separate left and through/right-turn lanes. Based on the turn lane evaluation, 362nd Drive is assumed to include an exclusive left turn lane for the new northbound left-turn movement and an exclusive right turn lane for the new southbound right-turn movement.

The following improvement options were analyzed at the 362nd Drive and Dubarko Road intersection using the forecasted 2040 traffic volumes with the Dubarko Road extension.

- **Two-way Stop** – the existing control at the intersection is maintained, with stop control on the Dubarko Road approaches. A new northbound right-turn and westbound left-turn lane will be tested. The new Dubarko Road west leg of the intersection is assumed to have separate left and through/right-turn lanes and 362nd Drive is assumed to include an exclusive left turn lane for the new northbound left-turn movement and an exclusive right turn lane for the new southbound right-turn movement.
- **Roundabout** – the intersection will be controlled with a single-lane roundabout.
- **Traffic signal** - the intersection will be controlled with a traffic signal. The preliminary traffic signal warrant was not met under the forecasted 2040 scenarios, so this potential improvement option would not be warranted until beyond 2040.

TRAFFIC OPERATIONS

As shown in Table 7**Error! Reference source not found.**, only the roundabout and traffic signal would be expected to allow for the intersection to meet the mobility target through 2040 during the peak hours. Under the roundabout option the intersection is forecasted to operate with a LOS "B" and v/c of 0.68 or better through 2040, which is slightly better than the forecasted operations under the traffic signal option.

[9] Manual on Uniform Traffic Control Devices, 11th Edition, Federal Highway Administration, December 2025.

The two-way stop control option was further evaluated with a different configuration for the northbound 362nd Drive approach to Dubarko Road and for the westbound Dubarko Road approach to 362nd Drive to see if it allows the current mobility target to be met through 2040 without changes to the existing traffic control at the intersection. The analysis (shown in Table 7) initially assumed the current configuration with a shared through/right turn lane on the northbound 362nd Drive approach to Dubarko Road, and instead a configuration that includes a separate right turn lane was assumed, to include a left turn lane, through lane, and right turn lane. The analysis shows that this configuration provides a little benefit to the northbound approach to the intersection (i.e., the v/c decreases up to 3 percent when compared to the condition without the right-turn lane), although it will be expected to continue to operate with LOS "E" or LOS "F" in 2040 for the uncontrolled eastbound Dubarko Road approach which does not benefit from this potential right-turn lane.

Another test was done for the shared left/through/right turn lane initially assumed on the westbound Dubarko Road approach to 362nd Drive, with a configuration that instead includes a separate left turn lane, to include a left turn lane, and shared through/right turn lane. The analysis shows that this configuration provides some benefit to the westbound approach to the intersection (i.e., the v/c decreases up to 40 percent when compared to the condition without the left-turn lane), although it will be expected to continue to operate with LOS "E" or LOS "F" in 2040 for the uncontrolled eastbound Dubarko Road approach which does not benefit from this potential left-turn lane.

TABLE 7: 362ND DRIVE AND DUBARKO ROAD INTERSECTION CONTROL OPTIONS (2040)

INTERSECTION CONTROL	MOBILITY TARGET	2040 AM PEAK HOUR			2040 PM PEAK HOUR		
		LOS	DELAY	V/C	LOS	DELAY	V/C
TWO-WAY STOP CONTROL (EXISTING CONFIGURATION) *	LOS D	**E**	40	0.08	**F**	170	0.45
TWO-WAY STOP CONTROL, WITH NORTHBOUND RIGHT-TURN LANE *		**E**	40	0.08	**F**	170	0.45
TWO-WAY STOP CONTROL, WITH WESTBOUND LEFT-TURN LANE *		**E**	40	0.08	**F**	170	0.45
ROUNDABOUT	0.90 V/C	A	7	0.43	B	11	0.68
TRAFFIC SIGNAL	LOS D	A	10	0.54	B	12	0.72

Note: Intersection operations are reported for the entire intersection at traffic signals, and for the worst turn movement at roundabouts and two-way stop control intersections.
* The new Dubarko Road west leg of the intersection is assumed to have separate left and through/right-turn lanes and 362nd Drive is assumed to include an exclusive left turn lane for the new northbound left-turn movement and an exclusive right turn lane for the new southbound right-turn movement.

PEDESTRIAN AND BICYCLE

The design for both the signal and roundabout alternatives can include pedestrian crossings on all approaches and accommodate cyclists through the intersection. The roundabout alternative will

also include splitter islands and reverse curves approaching the roundabout to lower speeds through the intersection and enhance the safety of pedestrian crossings, while the traffic signal option will include controlled pedestrian crossings for each movement.

The two-way stop control alternative will result in uncontrolled traffic flow along 362nd Drive, which could lead to higher travel speeds through the Dubarko Road intersection and make the pedestrian crossings more challenging. The need for new pedestrian crossings was evaluated with the uncontrolled traffic flow along 362nd Drive to understand the recommended treatment at the potential pedestrian crossings. The crossing treatment evaluation was performed following guidance procedures in the National Cooperative Highway Research Program (NCHRP) Report 562 Pedestrian Crossing Analysis workbook. The analysis suggests that the 362nd Drive crossing should include a crosswalk and pedestrian refuge island given the posted speed and traffic volume at this location. Stopping sight distance requirements will need to be met at this crossing, which is around 300 feet and close to the curve along 362nd Drive to the south.

Outside of the immediate intersection, people walking and biking will be served by the existing sidewalks on Dubarko Road and on the east side of 362nd Drive north of Dubarko Road, and the existing bike lanes on 362nd Drive north of Dubarko Road.

RIGHT OF WAY AND PROPERTY IMPACTS

The traffic signal alternative assumes exclusive left turn and shared through and right-turn lanes on 362nd Drive to Dubarko Road, and the Dubarko Road approaches to 362nd Drive are assumed to include separate left-turn and a shared through and right turn lanes. All turn lanes will need to be designed to accommodate the 2040 p.m. peak hour 95th percentile queues to allow for adequate deceleration before vehicles reach the back of queue. The right-of-way needs associated with the traffic signal alternative are driven by the design guidance for 362nd Drive, the curb returns, and the area required for the placement of signal equipment. The additional right-of-way required for this is expected to be minimal and is assumed to require only acquisition costs without the full taking of properties or removal of existing businesses and structures.

The roundabout alternative assumes single-lane entries and exits on all approaches, with a WB-67 design vehicle. The posted speed along the segment of 362nd Drive at Dubarko Road is 35 mph and is sloped downhill as it approaches from the north and south, which will also require special design considerations such as longer splitter islands or reversing curves approaching the roundabout to transition the roadside environment from higher to lower speeds approaching the roundabout intersection. With the existing development to the east of the intersection preventing any shift in the roadway alignment in that direction, the roundabout must shift entirely to the west. This would impact the adjacent parcels and would require right-of-way acquisition to allow for the construction of the roundabout and associated approaches.

CONCEPTUAL CONSTRUCTION COSTS

Conceptual cost estimates were prepared for the improvement alternatives using planning-level quantities and unit prices based on similar work for other projects. The estimates provided include

the assumed traffic control and associated work to the approaches and do not include the costs associated with acquisition of right-of-way or project design. As shown in Table 8, the traffic signal alternative would have an estimated construction cost of $2.0 million which is more than $3.5 million below the estimated construction cost of the single-lane roundabout at $5.5 million.

The costs associated with new signal equipment and the new pavement for the widened approaches will have the greatest impact on the signal costs. The roundabout costs are most influenced by the diameter of the intersection, splitter islands and new pavement on the realigned approaches.

OPERATING COSTS

Construction and right-of-way costs are one-time costs at the time of construction. Assumed costs for on-going operations and maintenance are summarized below. A traffic signal is estimated to have an expected total operating cost of about $100,000 through 2040, which is about $25,000 more than the roundabout at $75,000 (see Table 8).

- **Traffic Signal**
  - Signal retiming - $5,000 every 3 years
  - Lighting - $3,000 annually
  - Signal Maintenance – $4,000 annually
    - Expected total operating cost through 2040: $100,000.
- **Roundabout**
  - Lighting - $3,000 annually
  - Roundabout landscaping - $2,000 annually
    - Expected total operating cost through 2040: $75,000.

TABLE 8: PRELIMINARY COST ESTIMATES FOR IMPROVEMENT OPTIONS (2026 COSTS)

IMPROVEMENT OPTION	CONSTRUCTION COST	TOTAL OPERATING COSTS (THROUGH 2040)	TOTAL ESTIMATED COST (THROUGH 2040)
TRAFFIC SIGNAL	$2,000,000	$100,000	$2,100,000
ROUNDABOUT	$5,500,000	$75,000	$5,575,000

Note: The estimates provided include the assumed traffic control and associated work to the approaches and do not include the costs associated with acquisition of right-of-way or project design.

SAFETY

One approach to consider the safety enhancement of constructing a new traffic control pattern is by determining the Benefit Cost Ratio (B/C Ratio) of a solution by estimating the ratio of the total economic safety benefits compared to the cost of construction. As shown in Table 9, both the traffic

signal and roundabout improvement options have a B/C ratio below 1.0, suggesting they are not cost-effective solutions. Although this analysis assumes only the collision reduction benefit associated with three collisions that occurred over the 5-year period at the intersection. Below is a summary of the safety benefits that each alternative would be expected to provide at the intersection.

TABLE 9: BENEFIT COST RATIO RATIOS OF IMPROVEMENT OPTIONS

IMPROVEMENT OPTION	CRASH TYPES REDUCED	CRASH TYPES INCREASED	ANNUAL ECONOMIC COLLISION REDUCTION SAVINGS	PLANNING LEVEL COST	B/C RATIO
TRAFFIC SIGNAL	Angle	Rear End	$12,000	$2,000,000	0.07
ROUNDABOUT	All Types	-	$31,000	$5,500,000	0.07

TRAFFIC SIGNAL

The conversion of a stop-controlled approach into a signalized intersection in an urban area can reduce angle crashes by up to 67 percent but will typically increase rear-end crashes by up to 143 percent[10]. This increase in rear-end collision potential is caused by the introduction of the red light to the approaches where there had previously been no traffic control. However, the signal provides vehicles on the minor streets dedicated green time to advance through the intersection without taking risky gaps in traffic, reducing the number of angle collisions. For pedestrians, bicyclists and other vulnerable roadway users, the crossings at the intersection are also safer with controlled pedestrian phases on all approaches where the traffic is stopped at the red light.

ROUNDABOUT

The conversion of a stop-controlled approach into a single-lane roundabout in an urban area can reduce all crashes at the intersection by as much as 72 percent[11]. Many of the crash types resulting in severe or fatal crashes, such as head-on and angle crashes, are significantly reduced by orienting traffic flows in one single direction and reducing the number of potential conflict points. Because of the geometry of the roundabout, vehicles speeds are reduced while circulating the intersection. The splitter islands provide pedestrian refuge which means that the largest crossing width for a pedestrian or bicyclists at the single-lane roundabout is one vehicle travel lane.

EVALUATION SUMMARY

A summary of the alternative evaluation is provided in Table 10. The traffic signal ranked the highest of the alternatives, followed by the roundabout alternative and were the only alternatives

[10] CMF ID: 323 and CMF ID: 324, Federal Highway Administration, CMFClearinghouse.org.

[11] CMF ID: 206, Federal Highway Administration, CMFClearinghouse.org.

that did not result in a fatal flaw for any of the criteria. The traffic signal fully addressed the respective criterion in three of the measures (i.e., operations, pedestrian/bicycle, and expected cost) and partially addressed the criterion in the remaining two measures (i.e., right-of-way impact and safety). However, the preliminary traffic signal warrant was not met under the forecasted 2040 scenarios, so this potential improvement option would not be warranted until beyond 2040.

The roundabout would result in more significant right-of-way impacts and a higher expected construction cost compared to the traffic signal alternative. However, the roundabout fully addressed the respective criterion in three of the measures (i.e., operations, pedestrian/bicycle, and safety). It is also the alternative that allows for the intersection to operate with the lowest forecasted LOS and v/c ratio through 2040.

The two-way stop alternative results in a fatal flaw for the operations criterion, as shown in Table 10, and would be expected to result in significant delays for people at the intersection. This alternative will require the provision of a crosswalk and pedestrian refuge island on 362nd Drive at the Dubarko Road crossing.

TABLE 10: IMPROVEMENT OPTION EVALUATION SUMMARY

IMPROVEMENT OPTION	OPERATIONS	PEDESTRIAN /BICYCLE	RIGHT-OF-WAY IMPACT	EXPECTED COST	SAFETY	OVERALL RANK
TWO-WAY STOP CONTROL	FF	○	●	●	○	FF
TRAFFIC SIGNAL	●	●	◒	●	◒	1
ROUNDABOUT	●	●	○	◒	●	2

Notes: ● = Option meets or fully addresses the criterion; ◒ = Option somewhat addresses the criterion; ○ = Option does not meet or negatively impacts the criterion; FF= Option results in a fatal flaw for the criterion.

INTERSECTION RECOMMENDATIONS

Overall, the 362nd Drive and Dubarko Road intersection was identified as exceeding the mobility target by 2040 once Dubarko Road is extended westward to connect with Champion Way (Sandy TSP Project D13). Without this project, the intersection is forecasted to meet the mobility target through 2040 with the existing two-way stop control. The traffic signal was the highest-ranking improvement alternative, but the preliminary traffic signal warrant was not met under the forecasted 2040 scenarios, so this potential improvement option would not be warranted until beyond 2040. Likewise, the roundabout would also alleviate the forecasted substandard operating condition at the intersection, but it would have more significant right-of-way impacts and a higher expected construction cost compared to the traffic signal alternative.

Therefore, it is recommended that the two-way stop control be maintained until Dubarko Road is extended westward and/or until new development occurs to the west of the 362nd Drive and

Dubarko Road intersection. At that time, a traffic signal should be installed, and the traffic signal warrants should be reevaluated to determine if the intersection meets the installation requirements. The signal should function as a pedestrian hybrid beacon until converted to a full traffic signal once the warrants are met. If new sidewalks are provided on the west side of 362nd Drive before the planned Dubarko Road extension and/or traffic signal installation occurs, then an interim pedestrian crossing improvement should be provided to include a crosswalk and pedestrian refuge island on 362nd Drive at the Dubarko Road intersection based on the pedestrian crossing analysis.

The downhill slopes approaching the intersection could make it prone to slippery driving conditions during the winter season, especially as drivers attempt to stop. The potential challenging conditions for drivers would be expected to occur for any type of traffic control installed at the intersection, including a traffic signal or roundabout. Some options that have been implemented to help detect, warn drivers, or control snow and ice in other areas are summarized below. These could be implemented at the intersection to help alleviate some of the challenges for drivers during the winter season.

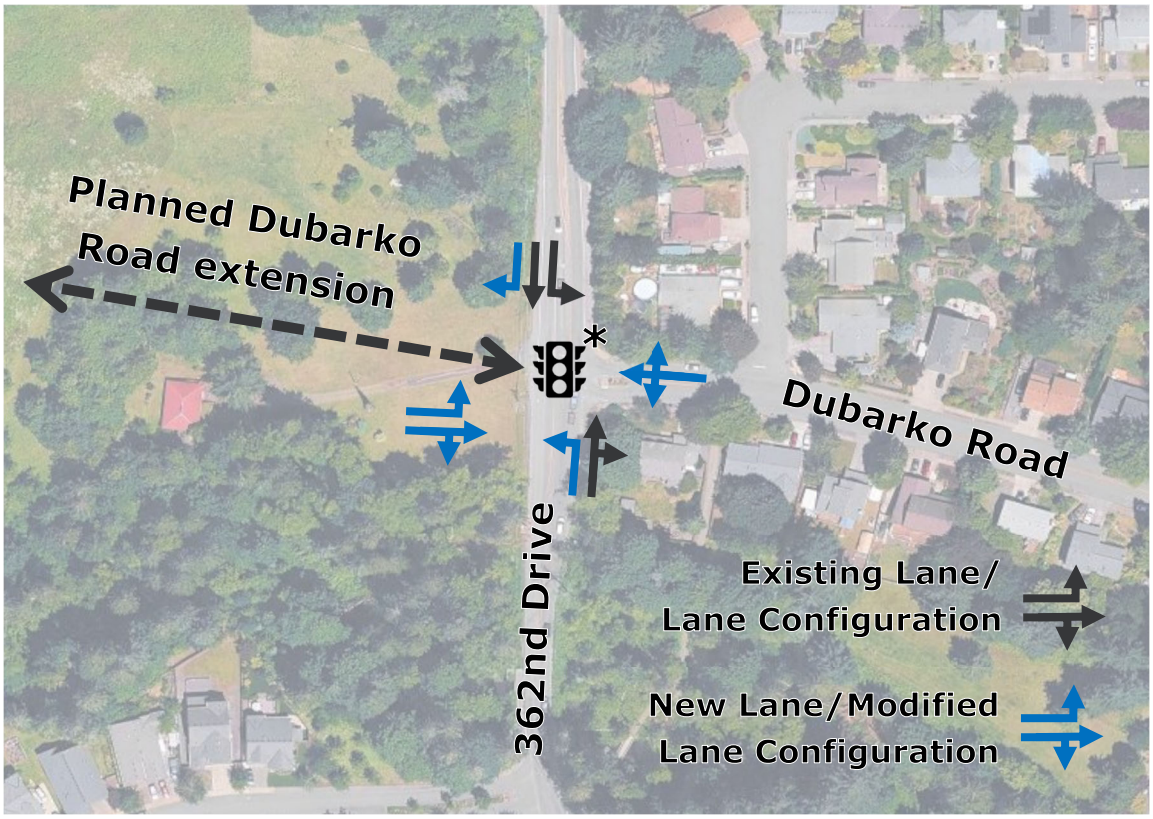
- **Icy road warning system:** Icy road warning systems detect when conditions are favorable for ice to form on approaching roadways and then activate LED-enhanced warning alerts that are programmed to flash during icy conditions, prompting drivers to slow down and take caution.
- **"Rest in Red" technology for traffic signals:** Traffic signals with "rest in red" technology can display red lights in all directions, turning green only when sensors detect an approaching vehicle. This system is designed to curb speeding by triggering a red light if a driver is speeding over a set limit, however, it could potentially be applied in a similar way by using the detected vehicle speeds on the downhill slopes approaching the intersection during icy conditions. If the speed is over a limit to stop safely given the conditions, it could trigger a red light on the conflicting approaches. This system requires installation of smart detection technology and upgraded signal controllers.
- **Heated pavement:** Heated pavement for roadways uses embedded electric cables, hydronic tubing, or conductive concrete to maintain surface temperatures above freezing, automatically melting snow and ice to enhance safety. These systems are primarily used for critical infrastructure but come with high installation and operational costs.

SUMMARY OF INTERSECTION RECOMMENDATIONS

A summary of the recommendations at the 362nd Drive and Dubarko Road intersection are provided below and shown in Figure 2. These recommended improvements should be provided once Dubarko Road is extended westward and/or once new development occurs to the west of the 362nd Drive and Dubarko Road intersection.

- Provide a traffic signal.
  - Re-evaluate traffic signal warrants to determine when the intersection meets the installation requirements.
  - The signal should function as a pedestrian hybrid beacon until converted to a full traffic signal once the warrants are met.
  - Install transverse rumble strips or other measures on the northbound lane of 362nd Drive at the curve south of the intersection with Dubarko Road to help alert drivers to the upcoming intersection.
  - If new sidewalks are provided on the west side of 362nd Drive before the recommended traffic signal installation occurs, then an interim pedestrian crossing improvement should be provided to include a crosswalk and pedestrian refuge island on 362nd Drive at the Dubarko Road intersection.
    - Stopping sight distance requirements will need to be met at this crossing, which is around 300 feet and close to the curve along 362nd Drive to the south.
- Provide separate left and through/right-turn lanes on the new Dubarko Road west leg of the intersection.
- Provide an exclusive left turn lane for the new northbound left-turn movement to Dubarko Road.
- Provide an exclusive right turn lane for the new southbound right-turn movement to Dubarko Road.
- Provide an exclusive left turn lane for the westbound left-turn movement from Dubarko Road to 362nd Drive.

FIGURE 2: SUMMARY OF 362ND DRIVE AND DUBARKO ROAD INTERSECTION RECOMMENDATIONS



Notes: * The signal should function as a pedestrian hybrid beacon until converted to a full traffic signal once the traffic signal warrant requirements are met.

Install transverse rumble strips or other measures on the northbound lane of 362nd Drive at the curve south of the intersection with Dubarko Road to help alert drivers to the upcoming intersection.

If new sidewalks are provided on the west side of 362nd Drive before the recommended traffic signal installation occurs, then an interim pedestrian crossing improvement should be provided to include a crosswalk and pedestrian refuge island on 362nd Drive at the

APPENDIX

CONTENTS

SECTION 1: COLLISION ANALYSIS

General & Site Information	
Agency/Company:	DKS Associates
Date:	3/20/2026
Project Name:	Sandy Intersection Control Evaluation

Intersection Crash Data

Intersection	Intersection Type	Year					Total
		2019	2020	2021	2022	2023	
SE 362nd Dr--Dubarko Rd	Urban 3ST	1	1	0	1	0	3

Intersection Population Type Crash Rate

Average Crash Rate per intersection type

Intersection Pop. Type	Sum of Crashes	Sum of 5-year MEV	Avg Crash Rate for Ref Pop.	INT in Pop
Urban 3ST	3	22	0.1364	1

Critical Rate Calculation

Intersection	AADT Entering Intersection	5-year MEV	Crash Total	Intersection Population Type	Intersection Crash Rate	Reference Population Crash Rate	Critical Rate	Over Critical
SE 362nd Dr--Dubarko Rd	12,050	22.0	3	Urban 3ST	0.14	APM Exhibit 4-1	0.29	Under

Study Intersection	Total Collisions	Observed Crash Rate (per MEV)	Critical Crash Rate (per MEV)	Over Critical Crash Rate
SE 362nd Dr--Dubarko Rd	**3**	0.14	0.29	No

SECTION 2: VOLUME DATA

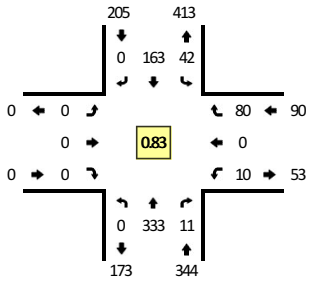
Type of peak hour being reported: Intersection Peak

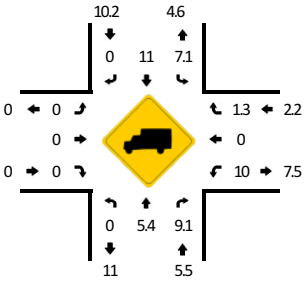
Method for determining peak hour: Total Entering Volume

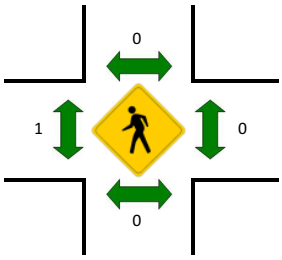
LOCATION: SE 362nd Dr -- Dubarko Rd
CITY/STATE: Sandy, OR

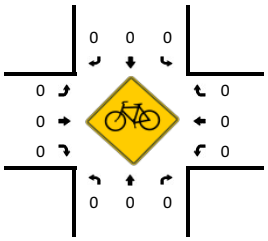
QC JOB #: 17379101
DATE: Tue, Dec 16 2025

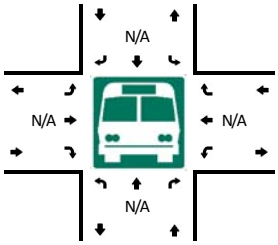
Peak-Hour: 7:40 AM -- 8:40 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

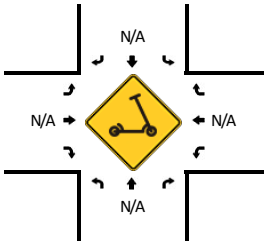












5-Min Count Period Beginning At	SE 362nd Dr (Northbound)				SE 362nd Dr (Southbound)				Dubarko Rd (Eastbound)				Dubarko Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	17	4	0	3	8	0	0	0	0	0	0	1	0	10	0	43	
7:05 AM	0	16	3	0	2	6	0	0	0	0	0	0	1	0	5	0	33	
7:10 AM	0	20	2	0	0	4	0	0	0	0	0	0	2	0	6	0	34	
7:15 AM	0	23	0	0	0	12	0	0	0	0	0	0	2	0	7	0	44	
7:20 AM	0	35	3	0	0	3	0	0	0	0	0	0	0	0	11	0	52	
7:25 AM	0	28	2	0	2	7	0	0	0	0	0	0	1	0	6	0	46	
7:30 AM	0	30	2	0	3	13	0	0	0	0	0	0	2	0	3	0	53	
7:35 AM	0	26	1	0	2	6	0	0	0	0	0	0	0	0	7	0	42	
7:40 AM	0	39	1	0	0	14	0	0	0	0	0	0	1	0	4	0	59	
7:45 AM	0	40	2	0	4	13	0	0	0	0	0	0	0	0	10	0	69	
7:50 AM	0	39	4	0	2	5	0	0	0	0	0	0	0	0	6	0	56	
7:55 AM	0	32	1	0	3	15	0	0	0	0	0	0	1	0	15	0	67	598
8:00 AM	0	30	0	0	3	12	0	0	0	0	0	0	1	0	6	0	52	607
8:05 AM	0	21	0	0	7	17	0	0	0	0	0	0	1	0	5	0	51	625
8:10 AM	0	18	0	0	7	18	0	0	0	0	0	0	1	0	3	0	47	638
8:15 AM	0	20	1	0	5	10	0	0	0	0	0	0	0	0	4	0	40	634
8:20 AM	0	25	1	0	2	15	0	0	0	0	0	0	0	0	5	0	48	630
8:25 AM	0	23	0	0	3	10	0	0	0	0	0	0	3	0	5	0	44	628
8:30 AM	0	22	0	0	1	25	0	0	0	0	0	0	1	0	7	0	56	631
8:35 AM	0	24	1	0	5	9	0	0	0	0	0	0	1	0	10	0	50	639
8:40 AM	0	25	0	0	4	9	0	0	0	0	0	0	0	0	3	0	41	621
8:45 AM	0	32	1	0	2	14	0	0	0	0	0	0	0	0	4	0	53	605
8:50 AM	0	27	2	0	6	10	0	0	0	0	0	0	1	0	9	0	55	604
8:55 AM	0	35	2	0	5	5	0	0	0	0	0	0	3	0	4	0	54	591

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	444	28	0	36	132	0	0	0	0	0	0	4	0	124	0	768
Heavy Trucks	0	12	0		4	12	0		0	0	0		0	0	4		32
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

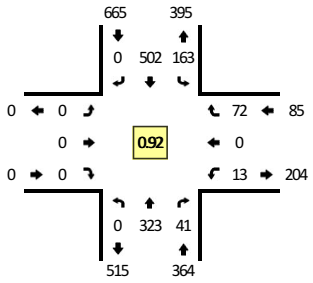
Report generated on 12/22/2025 1:34 PM

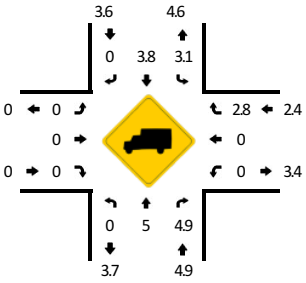
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

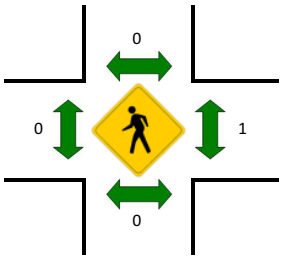
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

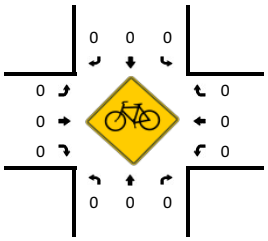
LOCATION: SE 362nd Dr -- Dubarko Rd | **QC JOB #:** 17379102
CITY/STATE: Sandy, OR | **DATE:** Tue, Dec 16 2025

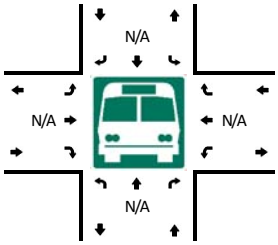
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

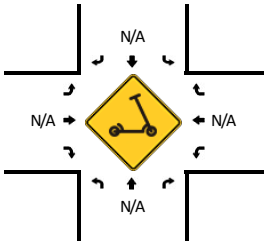












5-Min Count Period Beginning At	SE 362nd Dr (Northbound)				SE 362nd Dr (Southbound)				Dubarko Rd (Eastbound)				Dubarko Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	16	4	0	14	39	0	0	0	0	0	0	0	0	5	0	78	
4:05 PM	0	24	3	0	15	46	0	0	0	0	0	0	0	0	8	0	96	
4:10 PM	0	24	3	0	10	44	0	0	0	0	0	0	1	0	6	0	88	
4:15 PM	0	30	0	0	11	35	0	0	0	0	0	0	0	0	4	0	80	
4:20 PM	0	20	1	0	12	52	0	0	0	0	0	0	2	0	7	0	94	
4:25 PM	0	19	2	0	15	48	0	0	0	0	0	0	4	0	9	0	97	
4:30 PM	0	25	1	0	17	41	0	0	0	0	0	0	2	0	6	0	92	
4:35 PM	0	29	3	0	13	46	0	0	0	0	0	0	2	0	5	0	98	
4:40 PM	0	31	1	0	18	48	0	0	0	0	0	0	2	0	6	0	106	
4:45 PM	0	36	5	0	12	41	0	0	0	0	0	0	2	0	4	0	100	
4:50 PM	0	24	10	0	12	33	0	0	0	0	0	0	0	0	3	0	82	
4:55 PM	0	15	2	0	10	36	0	0	0	0	0	0	0	0	9	0	72	1083
5:00 PM	0	22	1	0	17	36	0	0	0	0	0	0	0	0	14	0	90	1095
5:05 PM	0	35	1	0	6	42	0	0	0	0	0	0	2	0	4	0	90	1089
5:10 PM	0	25	4	0	18	39	0	0	0	0	0	0	3	0	8	0	97	1098
5:15 PM	0	22	7	0	10	52	0	0	0	0	0	0	0	0	4	0	95	1113
5:20 PM	0	25	3	0	12	48	0	0	0	0	0	0	0	0	4	0	92	1111
5:25 PM	0	34	3	0	18	40	0	0	0	0	0	0	0	0	5	0	100	1114
5:30 PM	0	11	6	0	15	54	0	0	0	0	0	0	1	0	4	0	91	1113
5:35 PM	0	25	3	0	11	44	0	0	0	0	0	0	1	0	6	0	90	1105
5:40 PM	0	19	10	0	14	38	0	0	0	0	0	0	0	0	8	0	89	1088
5:45 PM	0	22	8	0	13	33	0	0	0	0	0	0	1	0	5	0	82	1070
5:50 PM	0	24	2	0	6	29	0	0	0	0	0	0	2	0	9	0	72	1060
5:55 PM	0	23	2	0	11	32	0	0	0	0	0	0	0	0	2	0	70	1058

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	384	36	0	172	540	0	0	0	0	0	0	24	0	60	0	1216
Heavy Trucks	0	44	4		4	12	0		0	0	0		0	0	4		68
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/22/2025 1:34 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

SECTION 3: SIGNAL WARRANT ANALYSIS

TRAFFIC SIGNAL WARRANT ANALYSIS

PROJECT LOCATION/CHARACTERISTICS

Major Street: SE 362nd Dr

Minor Street: Dubarko Rd

Number of lanes on each approach of Major Street: 1
Number of lanes on each approach of Minor Street: 1

85th percentile speed of major-street traffic ≥ 40 mph ☒

-or-

In built-up area of an isolated community of < 10,000 pop. ☐, then use Rural Requirements

Analysis Scenario (Year): Year 2040

Date of Analysis: 3/25/2026

SUMMARY OF RESULTS

WARRANT 3: Peak Hour	☐ YES	☒ NO
WARRANT 7: Crash Experience	☐ YES	☒ NO

Other Outstanding Issues

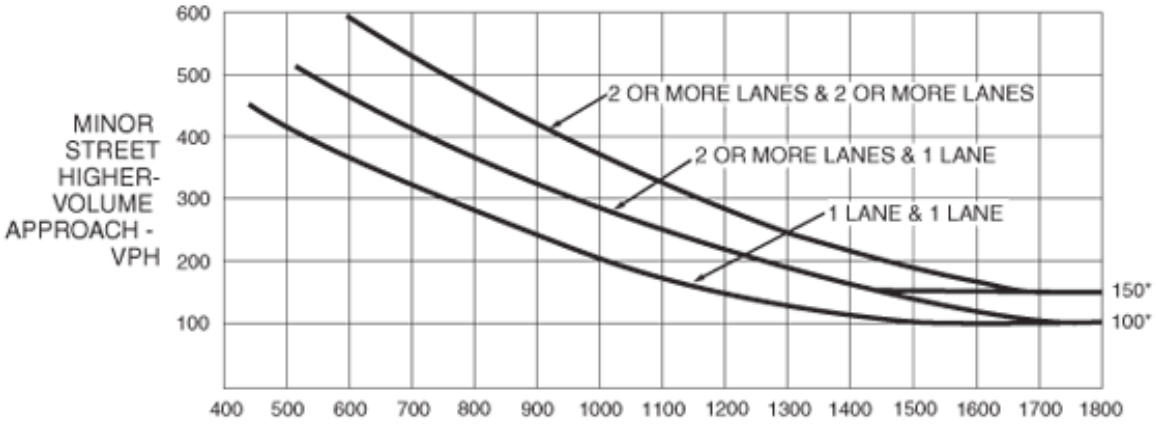
Warrant 3: Peak Hour

SATISFIED ☐ YES ☒ NO

Warrant 3 Worksheet	Approach Lanes		Peak Hour Volumes	
	1	2 or more	AM Peak	PM Peak
Time Period (Hour)			7am-8am	4pm-5pm
Major Street (Both Approaches)	X		890	1400
Minor Street (Highest Approach)	X		10	20

REQUIREMENT	**FULFILLED**
The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; AND	Yes ☒ No ☐
The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; AND	Yes ☐ No ☒
The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches, OR	Yes ☒ No ☐
The plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach for 1 hour of an average day falls above the applicable curve.	Yes ☐ No ☒

Figure 4C-3. Warrant 3, Peak Hour



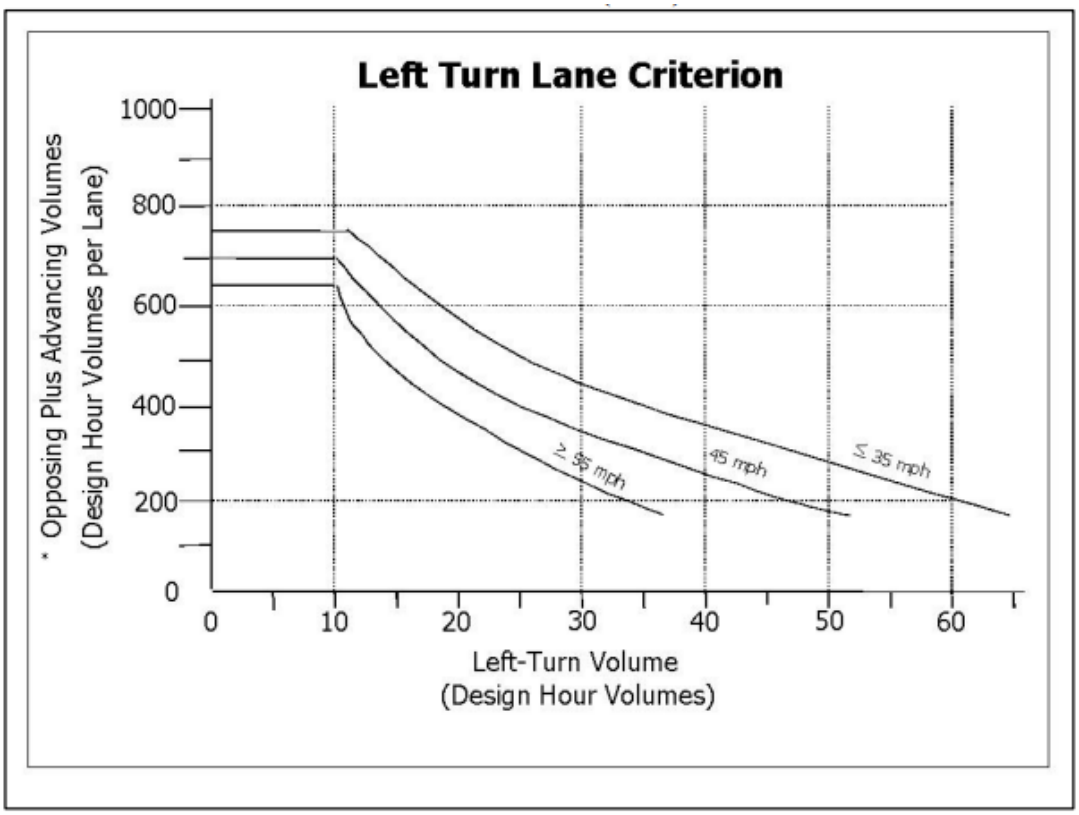
*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Warrant 7: Crash Experience

100% SATISFIED ☐ YES ☒ NO

REQUIREMENTS	WARRANT	FULFILLED
ONE WARRANT SATISFIED	Warrant 1: 56% Eight-Hour Vehicular Volume (Conditions A and B); OR Warrant 4: 80 % Pedestrian Volume	Yes ☐ No ☒
Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; AND		Yes ☐ No ☒
5 or more accidents susceptible to correction by traffic signal control occurring within a 12-month period and involving injury or property damage exceeding the applicable requirements for a reportable accident.		Yes ☐ No ☒

SECTION 4: TURN LANE EVALUATION

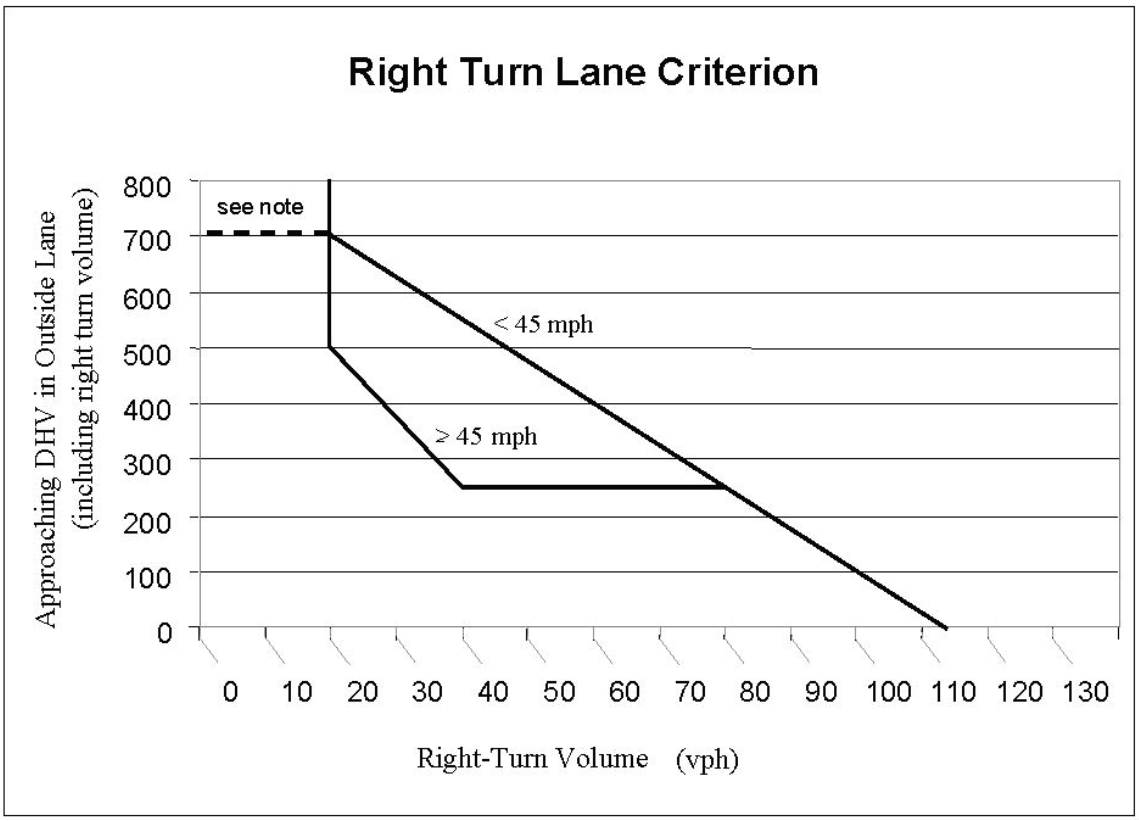


*(Advancing Volume/Number of Advancing Through Lanes) + (Opposing Volume/Number of Opposing Through Lanes)

Opposing left turns are not counted as opposing volumes

Left Turn Lane Criterion

SE 362nd Dr/ Dubarko Rd	Posted Speed	Advancing plus Opposing Volume	Left Turn Volume	Warrant Met
Northbound Left-Turn	35 mph			
2040 AM Peak Hour with Dubarko extension		825	20	Yes
2040 PM Peak Hour with Dubarko extension		1,200	10	Yes



Right Turn Lane Criterion

SE 362nd Dr/ Dubarko Rd	Approaching Volume (outside lane)	Right Turn Volume	Major Street Speed	Warrant Met
Southbound Right-Turn				
AM Peak Hour	450	15	35 mph	No
PM Peak Hour	800	5	35 mph	No
Northbound Right-Turn				
AM Peak Hour	455	10	35 mph	No
PM Peak Hour	590	50	35 mph	Yes

SECTION 5: PEDESTRIAN CROSSING EVALUATION

GUIDELINES FOR PEDESTRIAN CROSSING TREATMENTS

Version 1.2, revised 9/27/21

This spreadsheet reflects recommendations of TCRP Report 112/NCHRP Report 562 (Improving Pedestrian Safety at Unsignalized Intersections) and FHWA Report HRT-04-100 (Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations) along with Portland Bureau of Transportation practices. It is based on the TTI spreadsheet and adapted for PBOT use. Revisions are tracked in last tab.

Key

Green fields are required and must be completed.
Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).

Analyst and Site Information			
Analyst	DKS	Major Street	362nd Drive
Analysis Date	March 20, 2026	Minor Street or Location	Dubarko Road
Data Date	March 1, 2026	Analysis Hour/Scenario	2040 p.m. peak hour with Dubarko Road extension

Step 1: Select worksheet.			
Posted or statutory speed limit and 85% speed on the major street	Posted speed (mph)	*1a-1*	35
	85% speed if available (mph)	*1a-2*	
Is the population of the surrounding area <10,000? (enter *YES* or *NO*)		*1b*	NO
Primary lanes per direction:	◉ One lane per direction ○ Two or more lanes in one direction	*1c*	1
Median type:	○ None ◉ TWLTL or painted median ○ Raised median ○ One-way street	*1d*	2
Is crossing on a SRTS route or adjacent to a school, care facility, or other similar use?		*1e*	NO

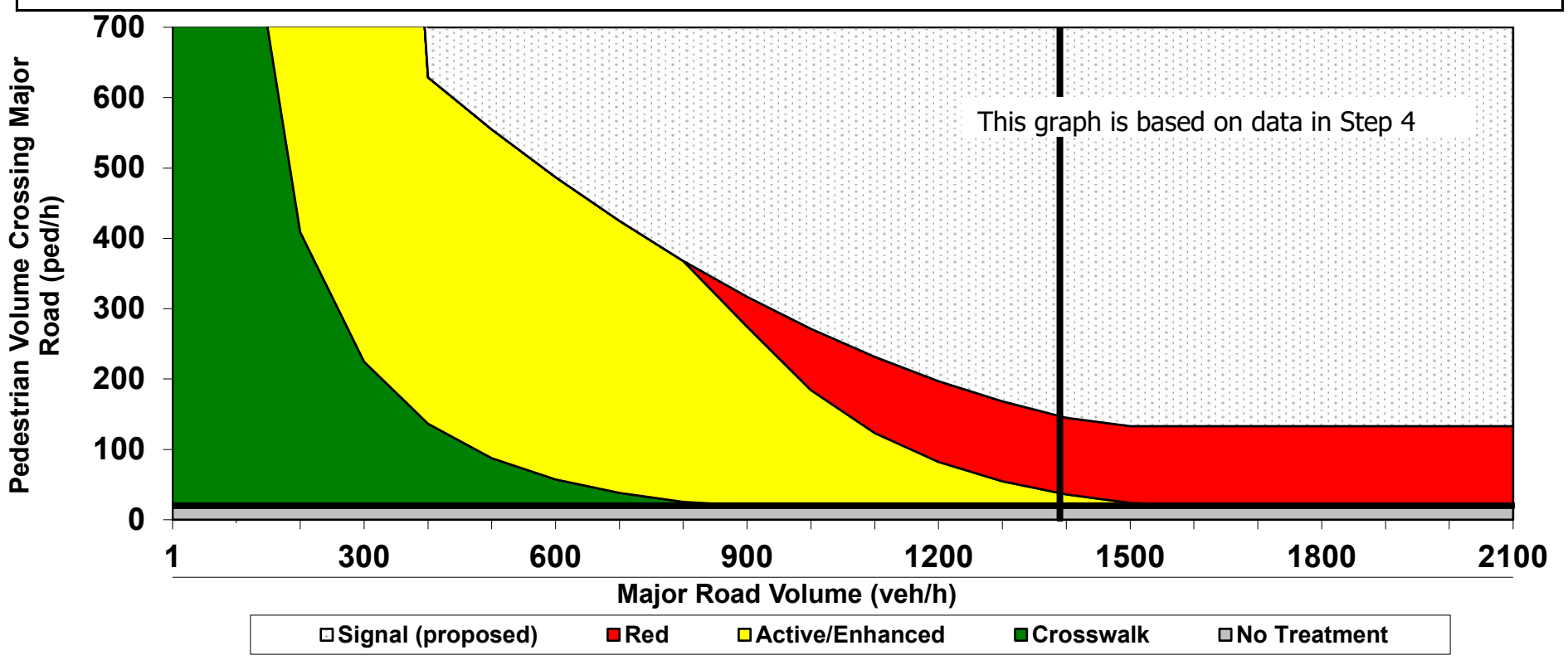
Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a traffic control device?			
If bicycle crossings are a goal of the crossing improvement, estimate peak-hour bicycles crossing as pedestrians:		*2a-1*	5
Peak-hour pedestrian volume (ped/h), V_p		*2a-2*	15
Effective Peak-hour pedestrian volume including bicycles operating as pedestrians (ped/h), $V_{p\text{-}eff}$		*2a*	20

Step 3: Does the crossing meet the peak-hour pedestrian warrant for a traffic signal or PHB?					
Major road volume, by direction (if available) during peak hour (veh/h), $V_{maj\text{-}s}$	Dir1/Dir2	590	800	*3a*	1,390
Full pedestrian crossing distance, from curb to curb (ft)				*3a-2*	50
[Calculated automatically] Preliminary (before min. threshold) peak hour pedestrian volume to meet warrant				*3b*	147
[Calculated automatically] Minimum required peak hour pedestrian volume to meet traffic signal warrant, PHB warrant				*3c*	147 20
Is 15th percentile crossing speed of pedestrians less than 3.5 ft/s? (enter ***YES*** or ***NO***)				*3d*	NO
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s, then reduce *3c* by up to 50%.	% reduction for 3c (up to 50%)			*3e*	
	Reduced value for 3c signal warrant			*3f*	147

Step 4: Estimate pedestrian delay.		
Crossing distance from curb to median refuge, if present (ft)		
Effective Pedestrian crossing distance, curb to curb or refuge (ft), L	*4a*	50
Pedestrian walking speed (ft/s), S_p (suggested speed = 3.5 ft/s)	*4b*	3.5
Pedestrian start-up time and end clearance time (s), t_s (suggested start-up time = 3 sec)	*4c*	3
[Calculated automatically] Critical gap required for crossing pedestrian (s), t_c	*4d*	17
Major road peak-hr volume, total both directions OR portion being crossed if raised median island is present (vph), $V_{maj\text{-}d}$	*4e*	1,390
Major road flow rate (veh/s), v	*4f*	0.39
Average pedestrian delay (s/person), d_p	*4g*	2151
Total pedestrian delay (h), D_p The value in 4h is the calculated estimated delay for all pedestrians crossing the major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.	*4h*	12.0
	4i	

Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.		
Expected motorist compliance at pedestrian crossings in region: enter HIGH or LOW for compliance	*5a*	high

NCHRP 562 Category:	2005 FHWA Report:	PBOT SOP:	Signal Warrant:
Active or Enhanced	**Enhancements Probably Needed**	**Refuge island(s) or In-street crossing sign(s)**	**PHB warrant is met but may not be necessary**



This PBOT Ped crossing analysis tool is based on the original TTI spreadsheet and provides recommendations on crossing treatments to consider at unsignalized intersections; in all cases, engineering judgment should be used in selecting a specific treatment. This tool does not apply to school crossings. In addition to the results provided by this worksheet, users should consider whether a treatment could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex geometrics, or nearby traffic signals.

SECTION 6: EXISTING YEAR CAPACITY ANALYSIS

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	85	360	10	45	175
Future Vol, veh/h	10	85	360	10	45	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	10	1	5	9	7	11
Mvmt Flow	12	102	434	12	54	211

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	759	440	0	0	446	0
Stage 1	440	-	-	-	-	-
Stage 2	319	-	-	-	-	-
Critical Hdwy	6.5	6.21	-	-	4.17	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.309	-	-	2.263	-
Pot Cap-1 Maneuver	363	619	-	-	1088	-
Stage 1	633	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	345	619	-	-	1088	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	601	-	-	-	-	-
Stage 2	719	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.9	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	1088	-
HCM Lane V/C Ratio	-	-	0.2	0.05	-
HCM Ctrl Dly (s/v)	-	-	12.9	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q (veh)	-	-	0.7	0.2	-

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	80	350	45	175	540
Future Vol, veh/h	15	80	350	45	175	540
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	3	5	5	3	4
Mvmt Flow	16	87	380	49	190	587

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1373	406	0	0	430	0
Stage 1	406	-	-	-	-	-
Stage 2	967	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	162	643	-	-	1124	-
Stage 1	677	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	134	642	-	-	1123	-
Mov Cap-2 Maneuver	134	-	-	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	372	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	17	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	402	1123	-
HCM Lane V/C Ratio	-	-	0.257	0.169	-
HCM Ctrl Dly (s/v)	-	-	17	8.9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q (veh)	-	-	1	0.6	-

SECTION 7: 2040 NO-BUILD (WITHOUT THE DUBARKO ROAD EXTENSION) CAPACITY ANALYSIS

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	110	435	10	85	360
Future Vol, veh/h	10	110	435	10	85	360
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	1	5	9	7	11
Mvmt Flow	11	122	483	11	94	400

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1077	489	0	0	494	0
Stage 1	489	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.5	6.21	-	-	4.17	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.309	-	-	2.263	-
Pot Cap-1 Maneuver	234	581	-	-	1044	-
Stage 1	600	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	213	581	-	-	1044	-
Mov Cap-2 Maneuver	213	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	14.6	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	508	1044	-
HCM Lane V/C Ratio	-	-	0.262	0.09	-
HCM Ctrl Dly (s/v)	-	-	14.6	8.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q (veh)	-	-	1	0.3	-

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	120	535	50	200	615
Future Vol, veh/h	15	120	535	50	200	615
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	125	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	3	5	5	3	4
Mvmt Flow	16	130	582	54	217	668

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1712	610	0	0	637	0
Stage 1	610	-	-	-	-	-
Stage 2	1102	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	101	493	-	-	942	-
Stage 1	546	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	78	493	-	-	941	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	419	-	-	-	-	-
Stage 2	321	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	26.6	0	2.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	310	941	-
HCM Lane V/C Ratio	-	-	0.473	0.231	-
HCM Ctrl Dly (s/v)	-	-	26.6	10	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q (veh)	-	-	2.4	0.9	-

SECTION 8: 2040 BUILD (WITH THE DUBARKO ROAD EXTENSION) CAPACITY ANALYSIS

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	10	10	10	15	110	20	435	10	85	360	15
Future Vol, veh/h	5	10	10	10	15	110	20	435	10	85	360	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	10	2	1	2	5	9	7	11	2
Mvmt Flow	6	11	11	11	17	122	22	483	11	94	400	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1199	1135	409	1141	1138	489	417	0	0	494	0	0
Stage 1	597	597	-	533	533	-	-	-	-	-	-	-
Stage 2	602	538	-	608	605	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.2	6.52	6.21	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.2	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.2	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.59	4.018	3.309	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	162	202	642	171	201	581	1142	-	-	1044	-	-
Stage 1	490	491	-	516	525	-	-	-	-	-	-	-
Stage 2	486	522	-	469	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	109	180	642	147	179	581	1142	-	-	1044	-	-
Mov Cap-2 Maneuver	109	180	-	147	179	-	-	-	-	-	-	-
Stage 1	481	447	-	506	515	-	-	-	-	-	-	-
Stage 2	364	512	-	409	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	23.1	19.5	0.4	1.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	109	281	396	1044	-	-
HCM Lane V/C Ratio	0.019	-	-	0.051	0.079	0.379	0.09	-	-
HCM Ctrl Dly (s/v)	8.2	-	-	39.8	18.9	19.5	8.8	-	-
HCM Lane LOS	A	-	-	E	C	C	A	-	-
HCM 95th %tile Q (veh)	0.1	-	-	0.2	0.3	1.7	0.3	-	-

Intersection	
Int Delay, s/veh	12

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	15	20	20	10	115	10	530	50	190	605	5
Future Vol, veh/h	15	15	20	20	10	115	10	530	50	190	605	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	3	2	5	5	3	4	2
Mvmt Flow	16	16	22	22	11	125	11	576	54	207	658	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1768	1728	661	1720	1703	604	663	0	0	631	0	0
Stage 1	1075	1075	-	626	626	-	-	-	-	-	-	-
Stage 2	693	653	-	1094	1077	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.23	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.327	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	65	88	462	71	92	496	926	-	-	947	-	-
Stage 1	266	296	-	475	477	-	-	-	-	-	-	-
Stage 2	434	464	-	262	295	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	36	68	462	46	71	496	926	-	-	946	-	-
Mov Cap-2 Maneuver	36	68	-	46	71	-	-	-	-	-	-	-
Stage 1	263	231	-	469	471	-	-	-	-	-	-	-
Stage 2	313	458	-	181	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	80.9	90.1	0.2	2.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	36	133	180	946	-	-
HCM Lane V/C Ratio	0.012	-	-	0.453	0.286	0.876	0.218	-	-
HCM Ctrl Dly (s/v)	8.9	-	-	170.4	42.6	90.1	9.9	-	-
HCM Lane LOS	A	-	-	F	E	F	A	-	-
HCM 95th %tile Q (veh)	0	-	-	1.5	1.1	6.4	0.8	-	-

SECTION 9: 2040 INTERSECTION CONTROL EVALUATION CAPACITY ANALYSIS

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	10	10	10	15	110	20	435	10	85	360	15
Future Vol, veh/h	5	10	10	10	15	110	20	435	10	85	360	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	10	2	1	2	5	9	7	11	2
Mvmt Flow	6	11	11	11	17	122	22	483	11	94	400	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1199	1135	409	1141	1138	489	417	0	0	494	0	0
Stage 1	597	597	-	533	533	-	-	-	-	-	-	-
Stage 2	602	538	-	608	605	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.2	6.52	6.21	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.2	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.2	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.59	4.018	3.309	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	162	202	642	171	201	581	1142	-	-	1044	-	-
Stage 1	490	491	-	516	525	-	-	-	-	-	-	-
Stage 2	486	522	-	469	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	109	180	642	147	179	581	1142	-	-	1044	-	-
Mov Cap-2 Maneuver	109	180	-	147	179	-	-	-	-	-	-	-
Stage 1	481	447	-	506	515	-	-	-	-	-	-	-
Stage 2	364	512	-	409	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	23.1	19.5	0.4	1.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	109	281	396	1044	-	-
HCM Lane V/C Ratio	0.019	-	-	0.051	0.079	0.379	0.09	-	-
HCM Ctrl Dly (s/v)	8.2	-	-	39.8	18.9	19.5	8.8	-	-
HCM Lane LOS	A	-	-	E	C	C	A	-	-
HCM 95th %tile Q (veh)	0.1	-	-	0.2	0.3	1.7	0.3	-	-

Intersection	
Int Delay, s/veh	12

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	15	20	20	10	115	10	530	50	190	605	5
Future Vol, veh/h	15	15	20	20	10	115	10	530	50	190	605	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	3	2	5	5	3	4	2
Mvmt Flow	16	16	22	22	11	125	11	576	54	207	658	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1768	1728	661	1720	1703	604	663	0	0	631	0	0
Stage 1	1075	1075	-	626	626	-	-	-	-	-	-	-
Stage 2	693	653	-	1094	1077	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.23	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.327	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	65	88	462	71	92	496	926	-	-	947	-	-
Stage 1	266	296	-	475	477	-	-	-	-	-	-	-
Stage 2	434	464	-	262	295	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	36	68	462	46	71	496	926	-	-	946	-	-
Mov Cap-2 Maneuver	36	68	-	46	71	-	-	-	-	-	-	-
Stage 1	263	231	-	469	471	-	-	-	-	-	-	-
Stage 2	313	458	-	181	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	80.9	90.1	0.2	2.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	36	133	180	946	-	-
HCM Lane V/C Ratio	0.012	-	-	0.453	0.286	0.876	0.218	-	-
HCM Ctrl Dly (s/v)	8.9	-	-	170.4	42.6	90.1	9.9	-	-
HCM Lane LOS	A	-	-	F	E	F	A	-	-
HCM 95th %tile Q (veh)	0	-	-	1.5	1.1	6.4	0.8	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	10	10	10	15	110	20	435	10	85	360	15
Future Vol, veh/h	5	10	10	10	15	110	20	435	10	85	360	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	100	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	10	2	1	2	5	9	7	11	2
Mvmt Flow	6	11	11	11	17	122	22	483	11	94	400	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1199	1135	409	1135	1132	483	417	0	0	494	0	0
Stage 1	597	597	-	527	527	-	-	-	-	-	-	-
Stage 2	602	538	-	608	605	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.2	6.52	6.21	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.2	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.2	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.59	4.018	3.309	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	162	202	642	173	203	586	1142	-	-	1044	-	-
Stage 1	490	491	-	520	528	-	-	-	-	-	-	-
Stage 2	486	522	-	469	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	110	180	642	149	181	586	1142	-	-	1044	-	-
Mov Cap-2 Maneuver	110	180	-	149	181	-	-	-	-	-	-	-
Stage 1	481	447	-	510	518	-	-	-	-	-	-	-
Stage 2	365	512	-	409	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	23	19.3	0.4	1.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	110	281	400	1044	-	-
HCM Lane V/C Ratio	0.019	-	-	0.051	0.079	0.375	0.09	-	-
HCM Ctrl Dly (s/v)	8.2	-	-	39.5	18.9	19.3	8.8	-	-
HCM Lane LOS	A	-	-	E	C	C	A	-	-
HCM 95th %tile Q (veh)	0.1	-	-	0.2	0.3	1.7	0.3	-	-

Intersection	
Int Delay, s/veh	11.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	15	20	20	10	115	10	530	50	190	605	5
Future Vol, veh/h	15	15	20	20	10	115	10	530	50	190	605	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	100	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	3	2	5	5	3	4	2
Mvmt Flow	16	16	22	22	11	125	11	576	54	207	658	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1768	1728	661	1693	1676	577	663	0	0	631	0	0
Stage 1	1075	1075	-	599	599	-	-	-	-	-	-	-
Stage 2	693	653	-	1094	1077	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.23	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.327	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	65	88	462	74	95	514	926	-	-	947	-	-
Stage 1	266	296	-	492	490	-	-	-	-	-	-	-
Stage 2	434	464	-	262	295	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	36	68	462	48	73	514	926	-	-	946	-	-
Mov Cap-2 Maneuver	36	68	-	48	73	-	-	-	-	-	-	-
Stage 1	263	231	-	486	484	-	-	-	-	-	-	-
Stage 2	317	458	-	181	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	80.9	81.4	0.2	2.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	36	133	187	946	-	-
HCM Lane V/C Ratio	0.012	-	-	0.453	0.286	0.843	0.218	-	-
HCM Ctrl Dly (s/v)	8.9	-	-	170.4	42.6	81.4	9.9	-	-
HCM Lane LOS	A	-	-	F	E	F	A	-	-
HCM 95th %tile Q (veh)	0	-	-	1.5	1.1	6.1	0.8	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	10	10	10	15	110	20	435	10	85	360	15
Future Vol, veh/h	5	10	10	10	15	110	20	435	10	85	360	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	10	2	1	2	5	9	7	11	2
Mvmt Flow	6	11	11	11	17	122	22	483	11	94	400	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1199	1135	409	1141	1138	489	417	0	0	494	0	0
Stage 1	597	597	-	533	533	-	-	-	-	-	-	-
Stage 2	602	538	-	608	605	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.2	6.52	6.21	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.2	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.2	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.59	4.018	3.309	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	162	202	642	171	201	581	1142	-	-	1044	-	-
Stage 1	490	491	-	516	525	-	-	-	-	-	-	-
Stage 2	486	522	-	469	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	109	180	642	147	179	581	1142	-	-	1044	-	-
Mov Cap-2 Maneuver	109	180	-	147	179	-	-	-	-	-	-	-
Stage 1	481	447	-	506	515	-	-	-	-	-	-	-
Stage 2	364	512	-	409	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	23.1	17.3	0.4	1.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	109	281	147	458	1044	-	-
HCM Lane V/C Ratio	0.019	-	-	0.051	0.079	0.076	0.303	0.09	-	-
HCM Ctrl Dly (s/v)	8.2	-	-	39.8	18.9	31.5	16.2	8.8	-	-
HCM Lane LOS	A	-	-	E	C	D	C	A	-	-
HCM 95th %tile Q (veh)	0.1	-	-	0.2	0.3	0.2	1.3	0.3	-	-

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	15	20	20	10	115	10	530	50	190	605	5
Future Vol, veh/h	15	15	20	20	10	115	10	530	50	190	605	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	3	2	5	5	3	4	2
Mvmt Flow	16	16	22	22	11	125	11	576	54	207	658	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1768	1728	661	1720	1703	604	663	0	0	631	0	0
Stage 1	1075	1075	-	626	626	-	-	-	-	-	-	-
Stage 2	693	653	-	1094	1077	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.23	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.327	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	65	88	462	71	92	496	926	-	-	947	-	-
Stage 1	266	296	-	475	477	-	-	-	-	-	-	-
Stage 2	434	464	-	262	295	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	36	68	462	46	71	496	926	-	-	946	-	-
Mov Cap-2 Maneuver	36	68	-	46	71	-	-	-	-	-	-	-
Stage 1	263	231	-	469	471	-	-	-	-	-	-	-
Stage 2	313	458	-	181	230	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	80.9	39	0.2	2.3
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	926	-	-	36	133	46	335	946	-	-
HCM Lane V/C Ratio	0.012	-	-	0.453	0.286	0.473	0.406	0.218	-	-
HCM Ctrl Dly (s/v)	8.9	-	-	170.4	42.6	139.9	22.9	9.9	-	-
HCM Lane LOS	A	-	-	F	E	F	C	A	-	-
HCM 95th %tile Q (veh)	0	-	-	1.5	1.1	1.7	1.9	0.8	-	-

MOVEMENT SUMMARY

Site: [2 (2)] SE 362nd Dr--Dubarko Rd_AMpeak_w/ext

(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: SE 362nd Dr															
3	L2	All MCs	22	2.0	22	2.0	0.432	7.1	LOS A	2.8	71.7	0.38	0.18	0.38	31.8
8	T1	All MCs	472	5.0	472	5.0	0.432	7.4	LOS A	2.8	71.7	0.38	0.18	0.38	32.4
18	R2	All MCs	11	9.0	11	9.0	0.432	7.7	LOS A	2.8	71.7	0.38	0.18	0.38	32.0
Approach			506	5.0	506	5.0	0.432	7.4	LOS A	2.8	71.7	0.38	0.18	0.38	32.3
East: Dubarko Rd															
1	L2	All MCs	11	10.0	11	10.0	0.177	7.7	LOS A	0.7	18.8	0.57	0.46	0.57	31.9
6	T1	All MCs	17	2.0	17	2.0	0.177	6.4	LOS A	0.7	18.8	0.57	0.46	0.57	32.8
16	R2	All MCs	111	1.0	111	1.0	0.177	6.3	LOS A	0.7	18.8	0.57	0.46	0.57	32.5
Approach			139	1.8	139	1.8	0.177	6.4	LOS A	0.7	18.8	0.57	0.46	0.57	32.5
North: SE 362nd Dr															
7	L2	All MCs	89	7.0	89	7.0	0.419	6.7	LOS A	2.6	71.3	0.25	0.09	0.25	31.6
4	T1	All MCs	394	11.0	394	11.0	0.419	7.0	LOS A	2.6	71.3	0.25	0.09	0.25	32.2
14	R2	All MCs	17	2.0	17	2.0	0.419	6.3	LOS A	2.6	71.3	0.25	0.09	0.25	32.1
Approach			500	10.0	500	10.0	0.419	6.9	LOS A	2.6	71.3	0.25	0.09	0.25	32.0
West: Dubarko Rd Ext															
5	L2	All MCs	6	2.0	6	2.0	0.036	5.0	LOS A	0.1	3.5	0.53	0.42	0.53	32.5
2	T1	All MCs	11	2.0	11	2.0	0.036	5.0	LOS A	0.1	3.5	0.53	0.42	0.53	33.1
12	R2	All MCs	11	2.0	11	2.0	0.036	5.0	LOS A	0.1	3.5	0.53	0.42	0.53	32.9
Approach			28	2.0	28	2.0	0.036	5.0	LOS A	0.1	3.5	0.53	0.42	0.53	32.9
All Vehicles			1172	6.7	1172	6.7	0.432	7.0	LOS A	2.8	71.7	0.35	0.18	0.35	32.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

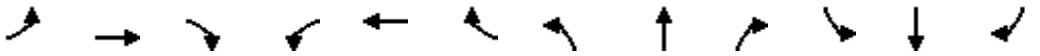
Site: [2] SE 362nd Dr--Dubarko Rd_PMpeak_w/ext (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: SE 362nd Dr															
3	L2	All MCs	11	2.0	11	2.0	0.632	12.0	LOS B	7.2	188.0	0.70	0.55	0.94	29.8
8	T1	All MCs	576	5.0	576	5.0	0.632	12.3	LOS B	7.2	188.0	0.70	0.55	0.94	30.3
18	R2	All MCs	54	5.0	54	5.0	0.632	12.3	LOS B	7.2	188.0	0.70	0.55	0.94	30.0
Approach			641	4.9	641	4.9	0.632	12.3	LOS B	7.2	188.0	0.70	0.55	0.94	30.2
East: Dubarko Rd															
1	L2	All MCs	22	0.0	22	0.0	0.227	7.4	LOS A	0.9	24.0	0.62	0.54	0.62	31.4
6	T1	All MCs	11	2.0	11	2.0	0.227	7.7	LOS A	0.9	24.0	0.62	0.54	0.62	32.0
16	R2	All MCs	125	3.0	125	3.0	0.227	7.9	LOS A	0.9	24.0	0.62	0.54	0.62	31.7
Approach			158	2.5	158	2.5	0.227	7.8	LOS A	0.9	24.0	0.62	0.54	0.62	31.7
North: SE 362nd Dr															
7	L2	All MCs	207	3.0	207	3.0	0.683	10.4	LOS B	7.9	204.1	0.39	0.13	0.39	30.1
4	T1	All MCs	658	4.0	658	4.0	0.683	10.5	LOS B	7.9	204.1	0.39	0.13	0.39	30.6
14	R2	All MCs	5	2.0	5	2.0	0.683	10.4	LOS B	7.9	204.1	0.39	0.13	0.39	30.4
Approach			870	3.8	870	3.8	0.683	10.5	LOS B	7.9	204.1	0.39	0.13	0.39	30.5
West: Dubarko Rd Ext															
5	L2	All MCs	16	2.0	16	2.0	0.105	8.2	LOS A	0.4	9.7	0.65	0.63	0.65	30.9
2	T1	All MCs	16	2.0	16	2.0	0.105	8.2	LOS A	0.4	9.7	0.65	0.63	0.65	31.4
12	R2	All MCs	22	2.0	22	2.0	0.105	8.2	LOS A	0.4	9.7	0.65	0.63	0.65	31.2
Approach			54	2.0	54	2.0	0.105	8.2	LOS A	0.4	9.7	0.65	0.63	0.65	31.2
All Vehicles			1723	4.0	1723	4.0	0.683	10.9	LOS B	7.9	204.1	0.54	0.34	0.63	30.5

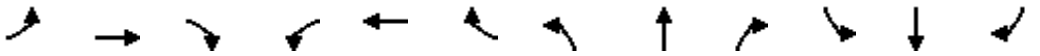
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result 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.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	10	10	15	110	20	435	10	85	360	15
Future Volume (veh/h)	5	10	10	10	15	110	20	435	10	85	360	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1723	1723	1614	1723	1736	1723	1682	1627	1654	1600	1723
Adj Flow Rate, veh/h	6	11	11	11	17	122	22	483	11	94	400	17
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	10	2	1	2	5	9	7	11	2
Cap, veh/h	189	98	98	292	23	162	618	937	21	563	929	39
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.02	0.57	0.55	0.06	0.61	0.59
Sat Flow, veh/h	1250	790	790	1302	182	1306	1641	1638	37	1576	1523	65
Grp Volume(v), veh/h	6	0	22	11	0	139	22	0	494	94	0	417
Grp Sat Flow(s),veh/h/ln	1250	0	1580	1302	0	1488	1641	0	1675	1576	0	1588
Q Serve(g_s), s	0.2	0.0	0.6	0.4	0.0	4.4	0.3	0.0	8.8	1.2	0.0	6.8
Cycle Q Clear(g_c), s	4.6	0.0	0.6	1.0	0.0	4.4	0.3	0.0	8.8	1.2	0.0	6.8
Prop In Lane	1.00		0.50	1.00		0.88	1.00		0.02	1.00		0.04
Lane Grp Cap(c), veh/h	189	0	196	292	0	184	618	0	958	563	0	969
V/C Ratio(X)	0.03	0.00	0.11	0.04	0.00	0.75	0.04	0.00	0.52	0.17	0.00	0.43
Avail Cap(c_a), veh/h	570	0	678	689	0	638	885	0	958	760	0	969
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.0	0.0	19.1	19.5	0.0	20.7	4.8	0.0	6.4	4.8	0.0	5.1
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.0	0.0	4.6	0.0	0.0	2.0	0.1	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.1	0.0	1.6	0.1	0.0	2.6	0.2	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.0	0.0	19.2	19.5	0.0	25.4	4.8	0.0	8.3	4.9	0.0	6.5
LnGrp LOS	C		B	B		C	A		A	A		A
Approach Vol, veh/h		28			150			516			511	
Approach Delay, s/veh		20.1			24.9			8.2			6.2	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	32.0		10.1	5.0	33.9		10.1				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	9.0	27.0		21.0	9.0	27.0		21.0				
Max Q Clear Time (g_c+I1), s	3.2	0.0		6.6	2.3	0.0		3.0				
Green Ext Time (p_c), s	0.1	0.0		0.0	0.0	0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			9.7									
HCM 6th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	15	20	20	10	115	10	530	50	190	605	5
Future Volume (veh/h)	15	15	20	20	10	115	10	530	50	190	605	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1723	1723	1750	1723	1709	1723	1682	1682	1709	1695	1723
Adj Flow Rate, veh/h	16	16	22	22	11	125	11	576	54	207	658	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	3	2	5	5	3	4	2
Cap, veh/h	196	87	120	294	16	180	437	824	77	480	1047	8
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.01	0.54	0.52	0.09	0.62	0.60
Sat Flow, veh/h	1253	657	903	1391	120	1359	1641	1514	142	1628	1680	13
Grp Volume(v), veh/h	16	0	38	22	0	136	11	0	630	207	0	663
Grp Sat Flow(s),veh/h/ln	1253	0	1560	1391	0	1478	1641	0	1656	1628	0	1693
Q Serve(g_s), s	0.6	0.0	1.1	0.7	0.0	4.5	0.2	0.0	14.4	2.6	0.0	12.5
Cycle Q Clear(g_c), s	5.2	0.0	1.1	1.8	0.0	4.5	0.2	0.0	14.4	2.6	0.0	12.5
Prop In Lane	1.00		0.58	1.00		0.92	1.00		0.09	1.00		0.01
Lane Grp Cap(c), veh/h	196	0	207	294	0	196	437	0	901	480	0	1055
V/C Ratio(X)	0.08	0.00	0.18	0.07	0.00	0.69	0.03	0.00	0.70	0.43	0.00	0.63
Avail Cap(c_a), veh/h	541	0	637	678	0	603	705	0	901	618	0	1055
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	19.8	20.7	0.0	21.3	6.3	0.0	8.7	7.1	0.0	6.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.1	0.0	3.3	0.0	0.0	4.5	0.5	0.0	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.4	0.2	0.0	1.6	0.0	0.0	4.8	0.5	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.9	0.0	20.2	20.7	0.0	24.6	6.3	0.0	13.2	7.5	0.0	8.9
LnGrp LOS	C		C	C		C	A		B	A		A
Approach Vol, veh/h		54			158			641			870	
Approach Delay, s/veh		21.3			24.0			13.0			8.5	
Approach LOS		C			C			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	32.0		10.8	4.6	36.0		10.8				
Change Period (Y+Rc), s	4.0	5.0		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	9.0	27.0		21.0	9.0	27.0		21.0				
Max Q Clear Time (g_c+I1), s	4.6	0.0		7.2	2.2	0.0		3.8				
Green Ext Time (p_c), s	0.3	0.0		0.0	0.0	0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			12.0									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

SECTION 10: CAPACITY ANALYSIS (HCM) RESULTS

ID	Software/Method	Intersection	Control Type	Mobility Target	LOS	Delay	V/C Ratio	Over Target	Critical Movement	Scenario
2	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/B	9/13	0.12/0.20	FALSE	SB/WB	2026 AM Peak
4	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/C	9/17	0.35/0.26	FALSE	SB/WB	2026 PM Peak
12	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/B	9/13	0.15/0.19	FALSE	SB/WB	2030 AM Peak
14	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/C	9/19	0.36/0.31	FALSE	SB/WB	2030 PM Peak
22	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/B	9/15	0.24/0.26	FALSE	SB/WB	2040 AM Peak
24	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/D	10/32	0.39/0.54	FALSE	SB/WB	2040 PM Peak
32	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/E	9/40	0.25/0.08	TRUE	SB/EB	2040 AM Peak with planned extensions
34	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/F	10/170	0.39/0.45	TRUE	SB/EB	2040 PM Peak with planned extensions
35	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/E	9/40	0.25/0.08	TRUE	SB/EB	2040 AM Peak with planned extensions, NB RT Lane
36	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/F	10/170	0.39/0.45	TRUE	SB/EB	2040 PM Peak with planned extensions, NB RT Lane
37	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/E	9/40	0.25/0.08	TRUE	SB/EB	2040 AM Peak with planned extensions, WB LT Lane
38	Synchro HCM 6th Stop Control	362nd Dr & Dubarko Rd	TWSC	LOS D	A/F	10/170	0.39/0.45	TRUE	SB/EB	2040 PM Peak with planned extensions, WB LT Lane
39	Synchro HCM 6th Signal	362nd Dr & Dubarko Rd	Signal	LOS D	A	10	0.54	FALSE	N/A	2040 AM Peak with planned extensions, Traffic Signal
40	Synchro HCM 6th Signal	362nd Dr & Dubarko Rd	Signal	LOS D	B	12	0.72	FALSE	N/A	2040 PM Peak with planned extensions, Traffic Signal

Intersection ID and Name	use dropdown Control Type		1 EBL	3 EBT	4 EBR	5 WBL	6 WBT	7 WBR	8 NBL	9 NBT	10 NBR	11 SBL	12 SBT	13 SBR	14	Outputs	NB	SB	EB	WB
2: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		2: 362nd Dr & Dubarko Rd V/C	0.26	0.12	0.00	0.20
		Lane Configurations					1		0		1	0	1	1		2: 362nd Dr & Dubarko Rd Delay	0.00	8.50	0.00	12.90
		Mvmt Flow	0	0	0	12	0	102	0	434	12	54	211	0		2: 362nd Dr & Dubarko Rd LOS	A	A	A	B
		Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	2.3			
		Major V/C								0.26	0.26	0.05	0.12							
		Minor (or AWSC) V/C					0.20													
		Movement		WBL	WBR	NBT	NBR	SBL	SBT											
		Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0						
		HCM Lane V/C Ratio		-	-	0.20	0.05	-	0.00	0.00	0.00	0.00	0.00	0.00						
		HCM Ctrl Dly (s/v)		-	-	12.9	8.5	-	0.0	0.0	0.0	0.0	0.0	0.0						
		HCM Lane LOS		-	-	B	A	-	0	0	0	0	0	0						
4: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		4: 362nd Dr & Dubarko Rd V/C	0.25	0.35	0.00	0.26
		Lane Configurations					1		0		1	0	1	1		4: 362nd Dr & Dubarko Rd Delay	0.00	8.90	0.00	17.00
		Mvmt Flow	0	0	0	16	0	87	0	380	49	190	587	0		4: 362nd Dr & Dubarko Rd LOS	A	A	A	C
		Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	2.6			
		Major V/C								0.25	0.25	0.17	0.35							
		Minor (or AWSC) V/C					0.26													
		Movement		WBL	WBR	NBT	NBR	SBL	SBT											
		Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0						
		HCM Lane V/C Ratio		-	-	0.26	0.17	-	0.00	0.00	0.00	0.00	0.00	0.00						
		HCM Ctrl Dly (s/v)		-	-	17.0	8.9	-	0.0	0.0	0.0	0.0	0.0	0.0						
		HCM Lane LOS		-	-	C	A	-	0	0	0	0	0	0						
12: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		12: 362nd Dr & Dubarko Rd V/C	0.25	0.15	0.00	0.19
		Lane Configurations					1		0		1	0	1	1		12: 362nd Dr & Dubarko Rd Delay	0.00	8.50	0.00	12.80
		Mvmt Flow	0	0	0	11	0	100	0	422	11	61	256	0		12: 362nd Dr & Dubarko Rd LOS	A	A	A	B
		Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	2.2			
		Major V/C								0.25	0.25	0.06	0.15							
		Minor (or AWSC) V/C					0.19													
		Movement		WBL	WBR	NBT	NBR	SBL	SBT											
		Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0						
		HCM Lane V/C Ratio		-	-	0.19	0.06	-	0.00	0.00	0.00	0.00	0.00	0.00						
		HCM Ctrl Dly (s/v)		-	-	12.8	8.5	-	0.0	0.0	0.0	0.0	0.0	0.0						
		HCM Lane LOS		-	-	B	A	-	0	0	0	0	0	0						
14: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		14: 362nd Dr & Dubarko Rd V/C	0.29	0.36	0.00	0.31
		Lane Configurations					1		0		1	0	1	1		14: 362nd Dr & Dubarko Rd Delay	0.00	9.10	0.00	18.80
		Mvmt Flow	0	0	0	16	0	98	0	440	49	196	609	0		14: 362nd Dr & Dubarko Rd LOS	A	A	A	C
		Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	2.8			
		Major V/C								0.29	0.29	0.18	0.36							
		Minor (or AWSC) V/C					0.31													
		Movement		WBL	WBR	NBT	NBR	SBL	SBT											
		Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0						
		HCM Lane V/C Ratio		-	-	0.31	0.18	-	0.00	0.00	0.00	0.00	0.00	0.00						
		HCM Ctrl Dly (s/v)		-	-	18.8	9.1	-	0.0	0.0	0.0	0.0	0.0	0.0						
		HCM Lane LOS		-	-	C	A	-	0	0	0	0	0	0						
22: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		22: 362nd Dr & Dubarko Rd V/C	0.29	0.24	0.00	0.26
		Lane Configurations					1		0		1	0	1	1		22: 362nd Dr & Dubarko Rd Delay	0.00	8.80	0.00	14.60
		Mvmt Flow	0	0	0	11	0	122	0	483	11	94	400	0		22: 362nd Dr & Dubarko Rd LOS	A	A	A	B
		Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R						
		Major V/C								0.29	0.29	0.09	0.24							
		Minor (or AWSC) V/C					0.26													
		Movement		WBL	WBR	NBT	NBR	SBL	SBT											
		Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0						
		HCM Lane V/C Ratio		-	-	0.26	0.09	-	0.00	0.00	0.00	0.00	0.00	0.00						
		HCM Ctrl Dly (s/v)		-	-	14.6	8.8	-	0.0	0.0	0.0	0.0	0.0	0.0						
		HCM Lane LOS		-	-	B	A	-	0	0	0	0	0	0						
24: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		24: 362nd Dr & Dubarko Rd V/C	0.37	0.39	0.00	0.54
		Lane Configurations					1		0		1	0	1	1		24: 362nd Dr & Dubarko Rd Delay	0.00	10.00	0.00	32.20
		Mvmt Flow	0	0	0	22	0	130	0	582	54	217	668	0		24: 362nd Dr & Dubarko Rd LOS	A	A	A	D
		Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	4.2			
		Major V/C								0.37	0.37	0.23	0.39							
		Minor (or AWSC) V/C					0.54													
		Movement		WBL	WBR	NBT	NBR	SBL	SBT											
		Minor Lane/Major Mvmt		NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0						
		HCM Lane V/C Ratio		-	-	0.54	0.23	-	0.00	0.00	0.00	0.00	0.00	0.00						
		HCM Ctrl Dly (s/v)		-	-	32.2	10.0	-	0.0	0.0	0.0	0.0	0.0	0.0						
		HCM Lane LOS		-	-	D	A	-	0	0	0	0	0	0						
32: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		32: 362nd Dr & Dubarko Rd V/C	0.29	0.25	0.08	0.38
		Lane Configurations	1	1	0	0	1	0	1	1	0	1	1	0		32: 362nd Dr & Dubarko Rd Delay	8.20	8.80	39.80	19.50
		Mvmt Flow	6	11	11	11	17	122	22	483	11	94	400	17		32: 362nd Dr & Dubarko Rd LOS	A	A	E	C
		Major V/C Lanes	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	3.8			
		Major V/C		0.01	0.01		0.08	0.08	0.02	0.29	0.29	0.09	0.25	0.25						
		Minor (or AWSC) V/C	0.05	0.08		0.38														
		Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
		Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR	0	0							
		HCM Lane V/C Ratio	0.02	-	-	0.05	0.08	0.38	0.09	-	-	0.00	0.00							
		HCM Ctrl Dly (s/v)	8.2	-	-	39.8	18.9	19.5	8.8	-	-	0.0	0.0							
		HCM Lane LOS	A	-	-	E	C	C	A	-	-	0	0							
34: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		34: 362nd Dr & Dubarko Rd V/C	0.37	0.39	0.45	0.88
		Lane Configurations	1	1	0	0	1	0	1	1	0	1	1	0		34: 362nd Dr & Dubarko Rd Delay	8.90	9.90	170.40	90.10
		Mvmt Flow	16	16	22	22	11	125	11	576	54	207	658	5		34: 362nd Dr & Dubarko Rd LOS	A	A	F	F
		Major V/C Lanes	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	12			
		Major V/C		0.02	0.02		0.08	0.08	0.01	0.37	0.37	0.22	0.39	0.39						
		Minor (or AWSC) V/C	0.45	0.29		0.88														
		Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
		Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR	0	0							
		HCM Lane V/C Ratio	0.01	-	-	0.45	0.29	0.88	0.22	-	-	0.00	0.00							
		HCM Ctrl Dly (s/v)	8.9	-	-	170.4	42.6	90.1	9.9	-	-	0.0	0.0							
		HCM Lane LOS	A	-	-	F	E	F	A	-	-	0	0							
35: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		35: 362nd Dr & Dubarko Rd V/C	0.28	0.25	0.08	0.38
		Lane Configurations	1	1	0	0	1	0	1	1	1	1	1	0		35: 362nd Dr & Dubarko Rd Delay	8.20	8.80	39.50	19.30
		Mvmt Flow	6	11	11	11	17	122	22	483	11	94	400	17		35: 362nd Dr & Dubarko Rd LOS	A	A	E	C
		Major V/C Lanes	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	3.8			
		Major V/C		0.01	0.01		0.08	0.08	0.02	0.28	0.28	0.09	0.25	0.25						
		Minor (or AWSC) V/C	0.05	0.08		0.38														
		Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
		Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR	0	0							
		HCM Lane V/C Ratio	0.02	-	-	0.05	0.08	0.38	0.09	-	-	0.00	0.00							
		HCM Ctrl Dly (s/v)	8.2	-	-	39.5	18.9	19.3	8.8	-	-	0.0	0.0							
		HCM Lane LOS	A	-	-	E	C	C	A	-	-	0	0							
36: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		36: 362nd Dr & Dubarko Rd V/C	0.34	0.39	0.45	0.84
		Lane Configurations	1	1	0	0	1	0	1	1	1	1	1	0		36: 362nd Dr & Dubarko Rd Delay	8.90	9.90	170.40	81.40
		Mvmt Flow	16	16	22	22	11	125	11	576	54	207	658	5		36: 362nd Dr & Dubarko Rd LOS	A	A	F	F
		Major V/C Lanes	L	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	11.2			
		Major V/C		0.02	0.02		0.08	0.08	0.01	0.34	0.34	0.22	0.39	0.39						
		Minor (or AWSC) V/C	0.45	0.29		0.84														
		Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
		Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR	0	0							
		HCM Lane V/C Ratio	0.01	-	-	0.45	0.29	0.84	0.22	-	-	0.00	0.00							
		HCM Ctrl Dly (s/v)	8.9	-	-	170.4	42.6	81.4	9.9	-	-	0.0	0.0							
		HCM Lane LOS	A	-	-	F	E	F	A	-	-	0	0							
37: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		37: 362nd Dr & Dubarko Rd V/C	0.29	0.25	0.08	0.30
		Lane Configurations	1	1	0	1	1	0	1	1	0	1	1	0		37: 362nd Dr & Dubarko Rd Delay	8.20	8.80	39.80	31.50
		Mvmt Flow	6	11	11	11	17	122	22	483	11	94	400	17		37: 362nd Dr & Dubarko Rd LOS	A	A	E	D
		Major V/C Lanes	L	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	3.5			
		Major V/C		0.01	0.01		0.08	0.08	0.02	0.29	0.29	0.09	0.25	0.25						
		Minor (or AWSC) V/C	0.05	0.08		0.08	0.30													
		Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
		Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR	0							
		HCM Lane V/C Ratio	0.02	-	-	0.05	0.08	0.08	0.30	0.09	-	-	0.00							
		HCM Ctrl Dly (s/v)	8.2	-	-	39.8	18.9	31.5	16.2	8.8	-	-	0.0							
		HCM Lane LOS	A	-	-	E	C	D	C	A	-	-	0							
38: 362nd Dr & Dubarko Rd	TWSC	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		38: 362nd Dr & Dubarko Rd V/C	0.37	0.39	0.45	0.47
		Lane Configurations	1	1	0	1	1	0	1	1	0	1	1	0		38: 362nd Dr & Dubarko Rd Delay	8.90	9.90	170.40	139.90
		Mvmt Flow	16	16	22	22	11	125	11	576	54	207	658	5		38: 362nd Dr & Dubarko Rd LOS	A	A	F	F
		Major V/C Lanes	L	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R		Int Delay, s/veh	7.4			
		Major V/C		0.02	0.02		0.08	0.08	0.01	0.37	0.37	0.22	0.39	0.39						
		Minor (or AWSC) V/C	0.45	0.29		0.47	0.41													
		Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
		Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR	0							
		HCM Lane V/C Ratio	0.01	-	-	0.45	0.29	0.47	0.41	0.22	-	-	0.00							
		HCM Ctrl Dly (s/v)	8.9	-	-	170.4	42.6	139.9	22.9	9.9	-	-	0.0							
		HCM Lane LOS	A	-	-	F	E	F	C	A	-	-	0							

		1	3	4	5	6	7	8	9	10	11	12	13	14	Critical Flow Calculator						Overlap Critical Flow Calculator													
Intersection ID and Name		**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**		**WBL/EBT**	**EBL/WBT**	**NBL/SBT**	**SBL/NBT**	**V/S E/W**	**V/S N/S**		**NBR OV**	**NB OV V/S**	**SBR OV**	**SB OV V/S**	**EBR OV**	**EB OV V/S**	**WBR OV**	**WB OV V/S**	**V/S Overlap**		**Intersection V/C**	**HCM Control Delay, s/veh**	**HCM LOS**
39: 362nd Dr & Dubarko Rd	Grp Volume(v), veh/h	6	0	22	11	0	139	22	0	494	94	0	417	Protected	0.02	0.10	0.28	0.35			Right Turn Overlap	No	0.00	No	0.00	No	0.00	No	0.00	0.00				
	Grp Sat Flow(s),veh/h/	1250	0	1580	1302	0	1488	1641	0	1675	1576	0	1588	Permitted or Split	0.01	0.09	0.26	0.29			Right Turn Approach Phasing	Protected	0.06	Protected	0.06	Permitted	0.00	Permitted	0.00	No OV				
	V/S	0.00	0.00	0.01	0.01	0.00	0.09	0.01	0.00	0.29	0.06	0.00	0.26	selected phasing	0.01	0.09	0.28	0.35	0.09	0.35	Overlap Approach Phasing	Permitted	0.09	Permitted	0.09	Protected	0.29	Protected	0.29	N/A		**0.54**	**10**	**A**
40: 362nd Dr & Dubarko Rd	Grp Volume(v), veh/h	16	0	38	22	0	136	11	0	630	207	0	663	Protected	0.04	0.10	0.40	0.51			Right Turn Overlap	No	0.00	No	0.00	No	0.00	No	0.00	0.00				
	Grp Sat Flow(s),veh/h/	1253	0	1560	1391	0	1478	1641	0	1656	1628	0	1693	Permitted or Split	0.02	0.09	0.39	0.38			Right Turn Approach Phasing	Protected	0.13	Protected	0.13	Permitted	0.00	Permitted	0.00	No OV				
	V/S	0.01	0.00	0.02	0.02	0.00	0.09	0.01	0.00	0.38	0.13	0.00	0.39	selected phasing	0.02	0.09	0.40	0.51	0.09	0.51	Overlap Approach Phasing	Permitted	0.09	Permitted	0.09	Protected	0.39	Protected	0.39	N/A		**0.72**	**12**	**B**