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Turner Road Industrial Building

Transportation Impact
Analysis

Salem, Oregon

Date:

Revised April 26, 2022

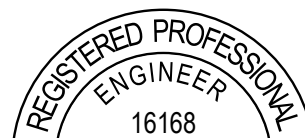
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Executive Summary	3
Project Description	5
Introduction	5
Location Description	5
Transit	7
Site Trips	9
Trip Generation	9
Trip Distribution	9
Traffic Volumes	12
Existing Conditions	12
Background Year 2023 Conditions	12
Buildout Year 2023 Conditions	12
Safety Analysis	16
Crash History Review	16
Sight Distance Analysis	18
Warrant Analysis	21
Operational Analysis	23
Intersection Capacity Analysis	23
Analysis Assumptions	23
Performance Standards	23
Delay & Capacity Analysis	24
Queuing Analysis	25
Conclusions	27

List of Appendices

- Appendix A – Site Information
- Appendix B – Volumes
- Appendix C – Safety
- Appendix D – Operations

List of Figures

Figure 1: Project Location	6
Figure 2: Vicinity Map	8
Figure 3: Trip Distribution & Assignment	11
Figure 4: Existing Conditions	13



Figure 5: Background Year 2023 Conditions	14
Figure 6: Buildout Year 2023 Conditions	15
Figure 7: Site Access #1 (North Driveway) Looking North	19
Figure 8: Site Access #1 (North Driveway) Looking South	19
Figure 9: Site Access #2 (South Driveway) Looking North	20
Figure 10: Site Access #2 (South Driveway) Looking South	20

List of Tables

Table 1: Vicinity Roadway Descriptions	6
Table 2: Study Intersection Descriptions	7
Table 3: Trip Generation Summary	9
Table 4: Collision Type Summary	16
Table 5: Crash Severity and Rate Summary	17
Table 6: Capacity Analysis Summary	24
Table 7: Queuing Analysis Summary	25



Executive Summary

1. The proposed development is located west of the Turner Road SE & 37th Avenue SE intersection in southeastern Salem, Oregon. The project site is located at Marion County Assessor's Map No. 08 2W 07C Tax Lot 200, encompassing approximately 10.08 acres. The project site is currently vacant land and will be developed to include a 206,975-square-foot building anticipated to be a mix of general industrial (approximately 65 percent) and warehouse (approximately 35 percent) use.
2. The proposed development will take access via two driveways along Turner Road SE, one approximately 450 feet north and one approximately 250 south of the Turner Road SE & 37th Avenue SE intersection. The north access will primarily serve the truck court. The exiting movement will be limited to right turns only to allow for adequate sight distance. The south access will allow all entering and exit movements.
3. The trip generation calculations show that the Turner Road Industrial Building is projected to generate 123 morning peak hour trips, 85 evening peak hour trips, and 708 average weekday trips, and the projected truck generation is 2 morning peak hour trips, 3 evening peak hour, and 78 average daily truck trips.
4. No significant trends or crash patterns were identified at any of the study intersections except for the intersection of Turner Road SE & Airway Drive SE, which was identified as having a high crash rate. Crash patterns show a trend of rear-end collisions in the northbound direction on Turner Road SE, likely associated with vehicles slowing in the travel lane to make a left turn onto Airway Drive SE. According to the City of Salem's TSP, Turner Road SE is planned to be widened to include a three-lane cross-section within 25 years. This improvement would address this collision pattern; therefore, the City of Salem could consider accelerating the implementation of this full improvement or at least widening Turner Road SE at Airway Drive SE to provide a northbound left-turn lane.
5. Adequate sight distance at the proposed site accesses can be attained with the following provisions:
 - For the north driveway, which serves the truck court, access will be limited to right-in/right-out/left-in movements with no left-turn out permitted.
 - For the south driveway, street trees are not recommended along the frontage between the driveways and landscape plantings should be selected so that they can easily be maintained at a height of 30 inches or less. Some minor trimming of the lower tree branches at the south property line is also recommended to ensure the maximum sight line. On-site parking between the two driveways will not be part of the development.
6. The preliminary traffic signal analysis determined that signal warrants are not projected to be met at any of the applicable study intersections under year Buildout Year 2023 Conditions.
7. An evaluation of left-turn lane warrants concluded the following:
 - Under buildout conditions, the forecast demand at the north driveway will not meet the left-turn lane warrant.
 - Under buildout conditions, the forecast demand at the south driveway will meet the left-turn lane warrant threshold during the morning peak period but not during the remainder of the day. Installation of a left-turn lane would require significant off-site construction to widen Turner Road SE, would impact

the drainage on the east side of the street, and would impact the frontage and on-site operations of other existing development on the west side of the street. With the current roadway configuration, it would also be difficult to provide the necessary transition (taper and deceleration zone) without impacting access to other properties. For these reasons, construction of a left-turn lane for the south driveway by this development is not recommended.

- The left-turn lane analysis determined that a northbound left-turn lane should be considered at the intersection of Turner Road SE & Airway Drive SE under existing conditions during the morning and evening peak hour. Given that this is an existing deficiency and not an impact related to the proposed development, no mitigation is recommended for the Turner Road Industrial Building project.
8. Based on the results of the operational and capacity analysis, all study intersections are projected to operate acceptably under forecast conditions, both with and without the addition of project traffic.
 9. No significant increases in queuing were identified as a result of the proposed development.



Project Description

Introduction

The proposed development is located west of the Turner Road SE & 37th Avenue SE intersection in southeastern Salem, Oregon. The project site is located at Marion County Assessor's Map No. 08 2W 07C Tax Lot 200, encompassing approximately 10.08 acres. The project site is currently undeveloped land and will be developed to include a 206,975-square-foot building anticipated to be a mix of general industrial (approximately 65 percent) and warehouse (approximately 35 percent) use.

This report examines the traffic impacts of the proposed development on the transportation system in the vicinity of the project site. Based on correspondence with the City of Salem's Transportation Engineering Staff and ODOT's Engineering Staff, this report conducts safety and capacity/level of service analyses at the following four (4) intersections and the two (2) site access driveways:

1. Turner Road SE & Site Access Driveway #1
2. Turner Road SE & Site Access Driveway #2
3. Turner Road SE & Kuebler Boulevard
4. 36th Avenue SE & Kuebler Boulevard
5. Turner Road SE & Airway Drive SE
6. Turner Road SE/Airport Road SE & Mission Street SE

All supporting data and calculations are included in the appendix of this report.

Location Description

The proposed development is located west of the Turner Road SE & 37th Avenue SE intersection in southeastern Salem, Oregon. The project site is located at Marion County Assessor's Map No. 08 2W 07C Tax Lot 200, encompassing approximately 10.08 acres.

The proposed development will take access via two driveways along Turner Road SE, one approximately 450 feet north and one approximately 250 south of the Turner Road SE & 37th Avenue SE intersection. The north access will primarily serve the truck court. The exiting movement will be limited to right turns only to allow for adequate sight distance. The south access will allow all entering and exit movements.

The project site, outlined in yellow, is shown in Figure 1. The Salem city limits are outlined in red. A site plan is included in Appendix A.



Figure 1: Project Location

Vicinity Streets

The proposed development is expected to impact six (6) roadways near the site. Table 1 describes each of the vicinity roadways. All roadways within the study area are under City of Salem jurisdiction.

Table 1: Vicinity Roadway Descriptions

Street Name	Functional Classification*	Cross-Section	Speed (MPH)	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
Turner Road SE	Minor Arterial Expressway, Statewide Highway Freight Route	2-3 lanes	45 Posted	Partial Both Sides	Prohibited	None
Kuebler Boulevard	Parkway	2-4 lanes	55 Posted	Partial Both Sides	Prohibited	Bike Lanes
36 th Avenue SE	Minor Arterial	2 lanes	45 Posted	None	Prohibited	None
Airway Drive SE	Collector	2 lanes	45 Posted	None	Prohibited	None
Airport Road SE	Minor Arterial	2 lanes	40 Posted	Partial West Side	Prohibited	Bike Lanes
Mission Street	Parkway	2-4 lanes	40 Posted	Continuous Both Sides	Prohibited	Bike Lanes

* Functional Classification based on City of Salem TSP

Study Intersections

Based on coordination with City of Salem staff, six (6) intersections were identified for analysis. A summarized description of the study intersections is provided in Table 2.

Table 2: Study Intersection Descriptions

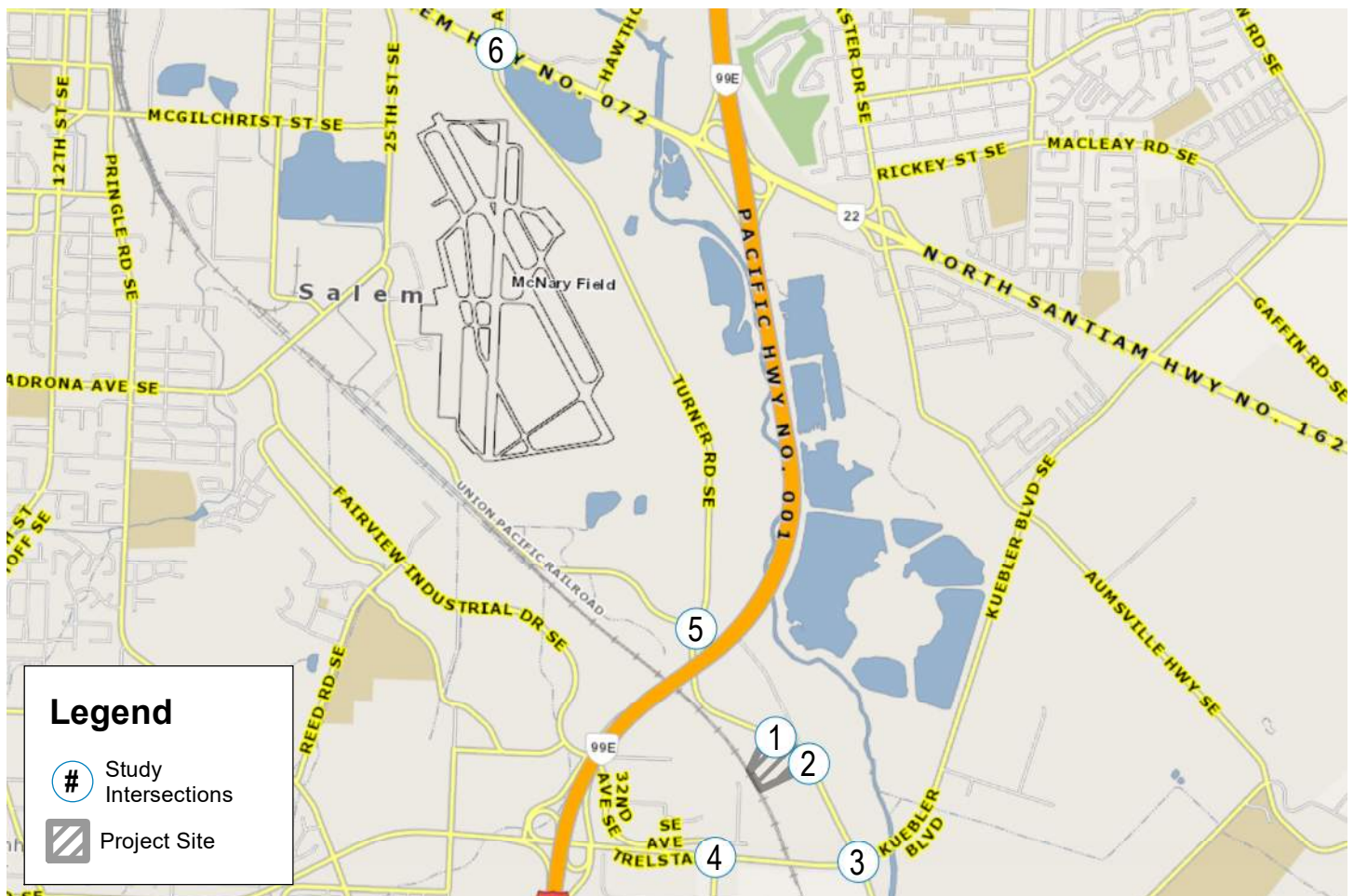
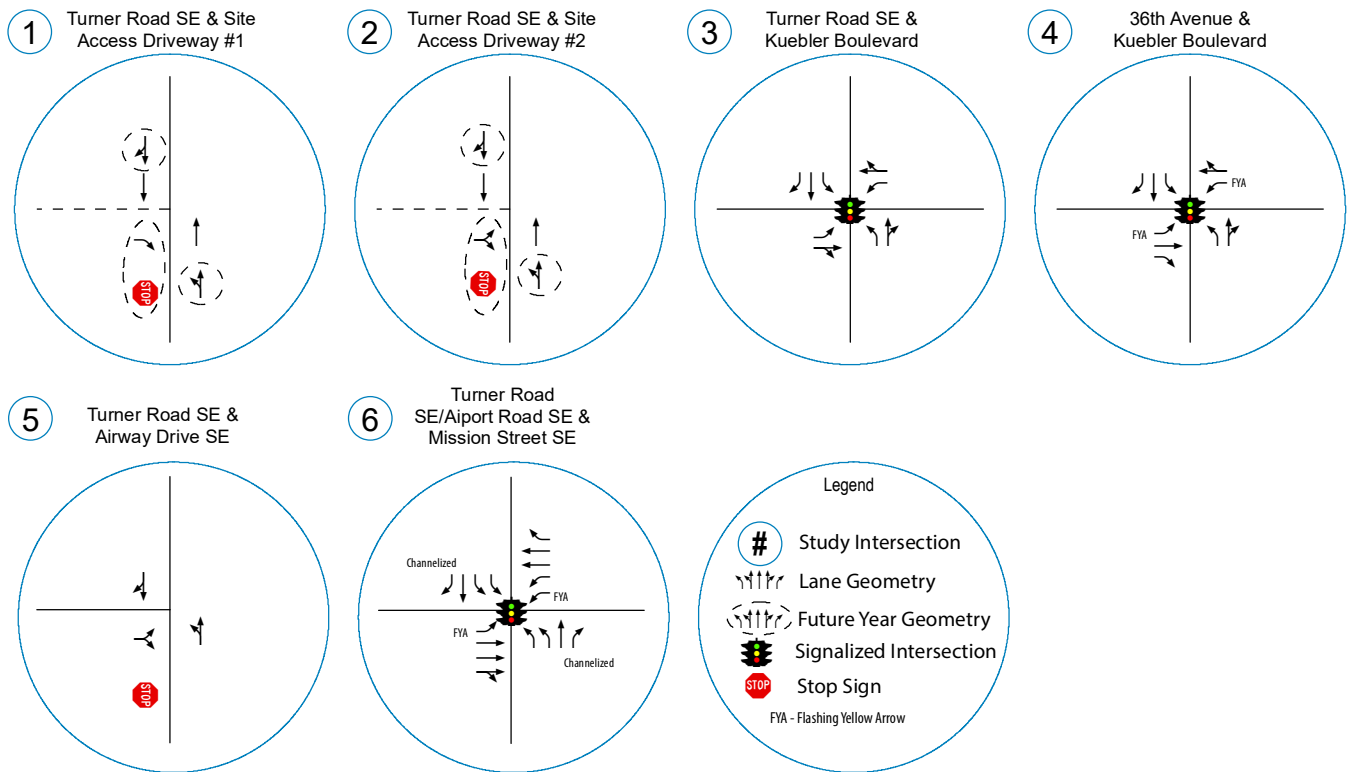
ID	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	Turner Road SE & Site Access Driveway #1	3-Leg	Stop-Controlled	EB Stop-Controlled
2	Turner Road SE & Site Access Driveway #2*	3-Leg	Stop-Controlled	EB Stop-Controlled
3	Turner Road SE & Kuebler Boulevard	4-Leg	Signalized	All Approaches Protected/Permissive Left
4	36 th Avenue SE & Kuebler Boulevard	4-Leg	Signalized	NB/SB Protected Left Turns FYA EB/WB Left
5	Turner Road SE & Airway Drive SE	3-Leg	Stop-Controlled	EB Stop Controlled
6	Turner Road SE/Airport Road SE & Mission Street SE	4-Leg	Signalized	All Approaches Protected Left Turns

* = Intersection will be constructed by the Project.

A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2. Note, the City of Salem has completed the construction of the southbound right-turn lane on Turner Road SE at Kuebler Boulevard. This lane has been assumed in all analysis scenarios.

Transit

The project site is located near one transit line that has stops within a mile walking/biking distance from the site. *Cherriots Route 6: Fairview Industrial* provides service between the Downtown Transit Center and South Salem, with notable stops at the Capitol Building and the Salem Executive Airport. The nearest stop to the site is located at the intersection of Litchfield Place SE & 32nd Avenue. Weekday service is scheduled from approximately 5:30 AM to 9:40 PM with headways of approximately 60 minutes. Saturday service is scheduled from approximately 6:30 AM to 9:40 PM with headways or approximately 60 minutes. No Sunday or holiday service is currently offered on this route.



Site Trips

Trip Generation

To estimate trips that will be generated by the development, trip rates from the *Trip Generation Manual*¹ were used based on the square footage (SF) and land use code 110: *General Light Industrial* and land use code 150: *Warehousing*. Table 3 summarizes the estimated trip generation of the site for the morning and evening peak hours and average weekday.

Table 3: Trip Generation Summary

Land Use	ITE Code	Intensity	AM Peak Hour			PM Peak Hour			ADT
			In	Out	Total	In	Out	Total	
All Vehicles									
General Light Industrial (65%)	110	134,535 SF	80	11	91	7	43	50	556
Warehousing (35%)	150	72,440 SF	25	7	32	10	25	35	152
Total		206,975 SF	105	18	123	17	68	85	708
Trucks									
General Light Industrial (65%)	110	134,535 SF	1	0	1	1	0	1	34
Warehousing (35%)	150	72,440 SF	1	0	1	1	1	2	44
Total		206,975 SF	2	0	2	2	1	3	78

The trip generation calculations show that the Turner Road Industrial Building is projected to generate 123 morning peak hour trips, 85 evening peak hour trips, and 708 average weekday trips, and the projected truck generation is 2 morning peak hour trips, 3 evening peak hour, and 78 average daily truck trips.

Trip Distribution

The directional distribution of site trips was derived from a Mid-Willamette Valley Council of Governments (MWVCOG) Planning Horizon Year 2043 select zone analysis of Traffic Analysis Zone (TAZ) 406, within which the project site resides. The following trip distribution was determined and used for analysis:

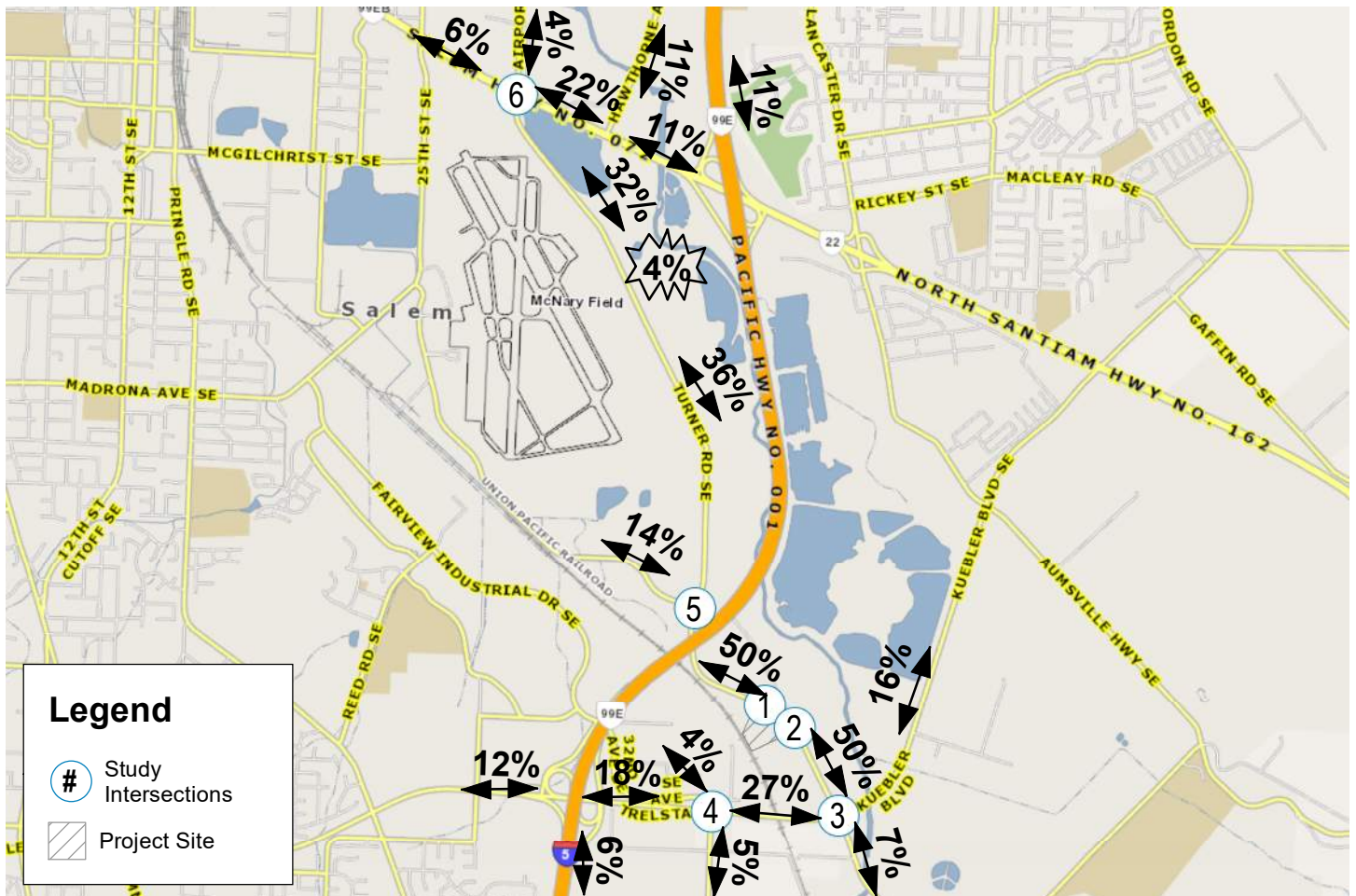
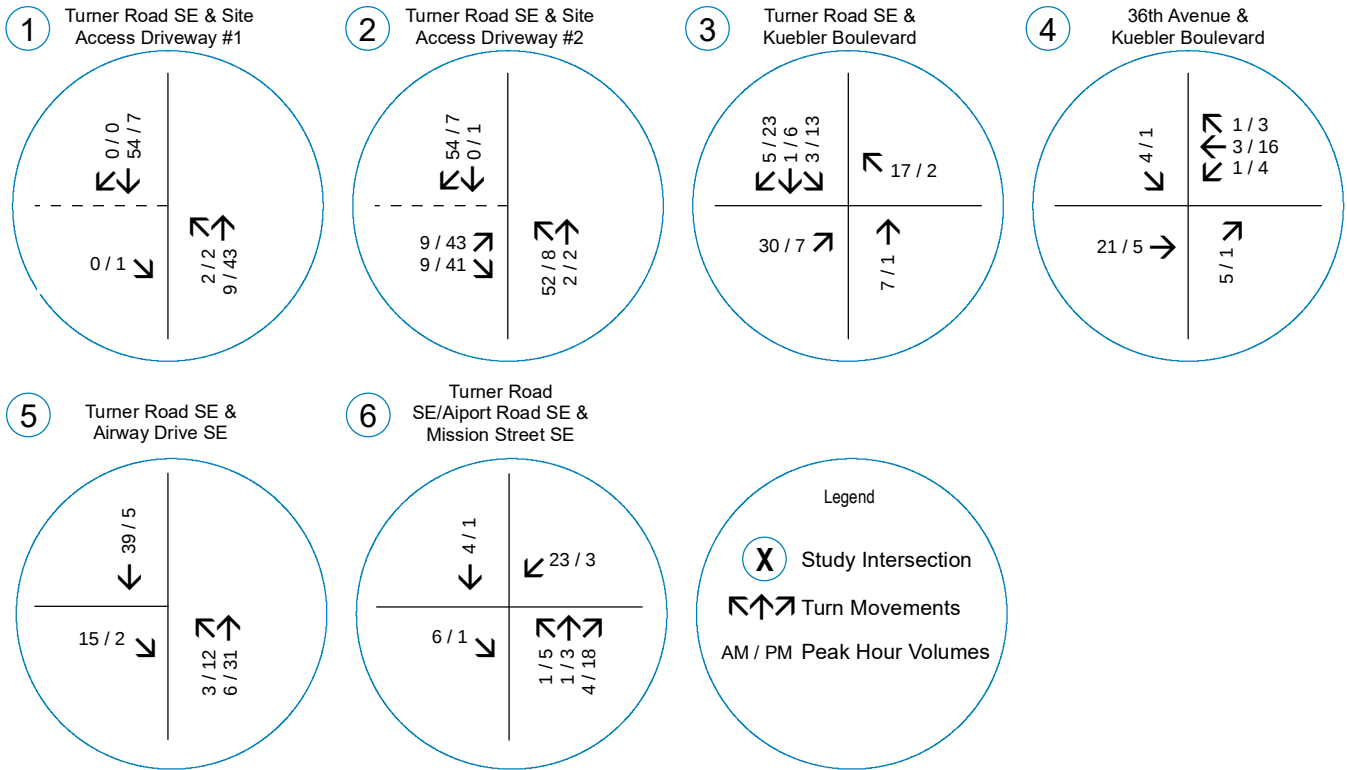
- Approximately 16 percent of trips will travel to/from the east along Kuebler Boulevard via Turner Road SE
- Approximately 14 percent of trips will travel to/from the northwest along Airway Drive SE via Turner Road SE
- Approximately 12 percent of trips will travel to/from the west along Kuebler Boulevard via Turner Road SE

¹ Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

- Approximately 11 percent of trips will travel to/from the north along Interstate 5 via Turner Road SE, Airport Road SE, Mission Street SE, and the I-5 Exit 253 ramps
- Approximately 11 percent of trips will travel to/from the north along Hawthorne Ave SE via Turner Road SE, Airport Road SE, and Mission Street SE
- Approximately 7 percent of trips will travel to/from the south along Turner Road SE
- Approximately 6 percent of trips will travel to/from the northwest along Mission Street SE via Turner Road SE and Airport Road SE
- Approximately 6 percent of trips will travel to/from the south along Interstate 5 via Turner Road SE, Kuebler Boulevard, and the I-5 Exit 252 ramps
- Approximately 5 percent of trips will travel to/from the south along 36th Avenue SE via Turner Road SE and Kuebler Boulevard
- Approximately 4 percent of trips will travel to/from the north along Airport Road SE via Turner Road SE
- Approximately 4 percent of trips will travel to/from the west along 36th Avenue SE via Turner Road SE and Kuebler Boulevard
- Approximately 4 percent of trips will be captured locally due north of the site along Airport Road SE via Turner Road SE

The trip distribution and assignment for the total site trips generated during the morning and evening peak hours are shown in Figure 3.





Traffic Volumes

This section describes the study intersection peak hour traffic volumes under Existing Conditions (year 2021), the Background Year 2023 Conditions volumes, and the Buildout Year 2023 Conditions volumes.

Existing Conditions

The City of Salem Design Standards (Administrative Rule 109-001, Division 6, Section 6.33(f)(3)) requires traffic counts to be less than 2 years old, therefore, new turning movement counts were collected on Thursday, December 9, 2021, and Tuesday, December 14, 2021, at the study area intersections from 7:00 to 9:00 AM and 4:00 to 6:00 PM. Based on conversations with Salem's Assistant City Traffic Engineer, it was reported that Salem's current traffic volumes very near pre-pandemic levels, therefore, no factors were applied to the data for pandemic conditions.

ODOT Commuter Trends were used to develop the appropriate seasonal adjustment factor (SAF) for OR 22 (Mission Street SE). According to the OR 22 East Facility Plan, which was adopted as an amendment to the Oregon Highway Plan, the intersection of Turner Road SE/Airport Road SE & Mission Street SE has an alternative mobility target based on average weekday volumes. Therefore, to seasonally adjust the volumes to an average weekday condition, a factor of 1.0474 was applied to the 2021 traffic counts.

Figure 4 shows the existing conditions traffic volumes at the study intersections during the morning and evening peak hours.

Background Year 2023 Conditions

To provide an analysis of the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. For the general background growth, the annual growth rate is based on MVCOG SKATS traffic model 2017 and 2043 traffic model outputs for study area roadways. Growth rates for the study area roadway segments ranged from 0.54% to 5.00% compound annual growth rate (CAGR). Therefore, for a two-year growth period, the total growth rate ranging from 1.08% to 10.25% were applied to the 2021 Existing Conditions baseline volumes for Buildout Year 2023 Background conditions.

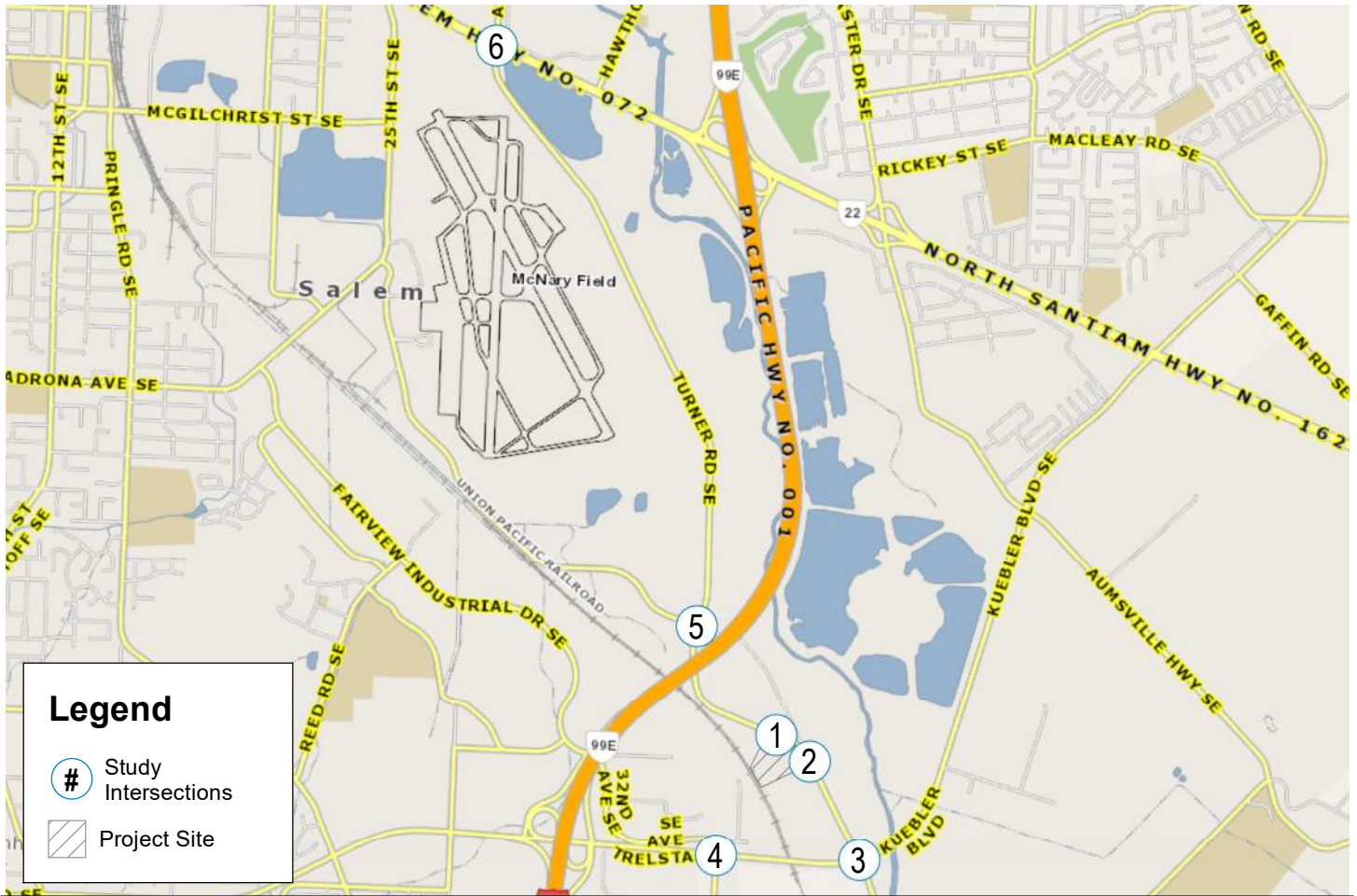
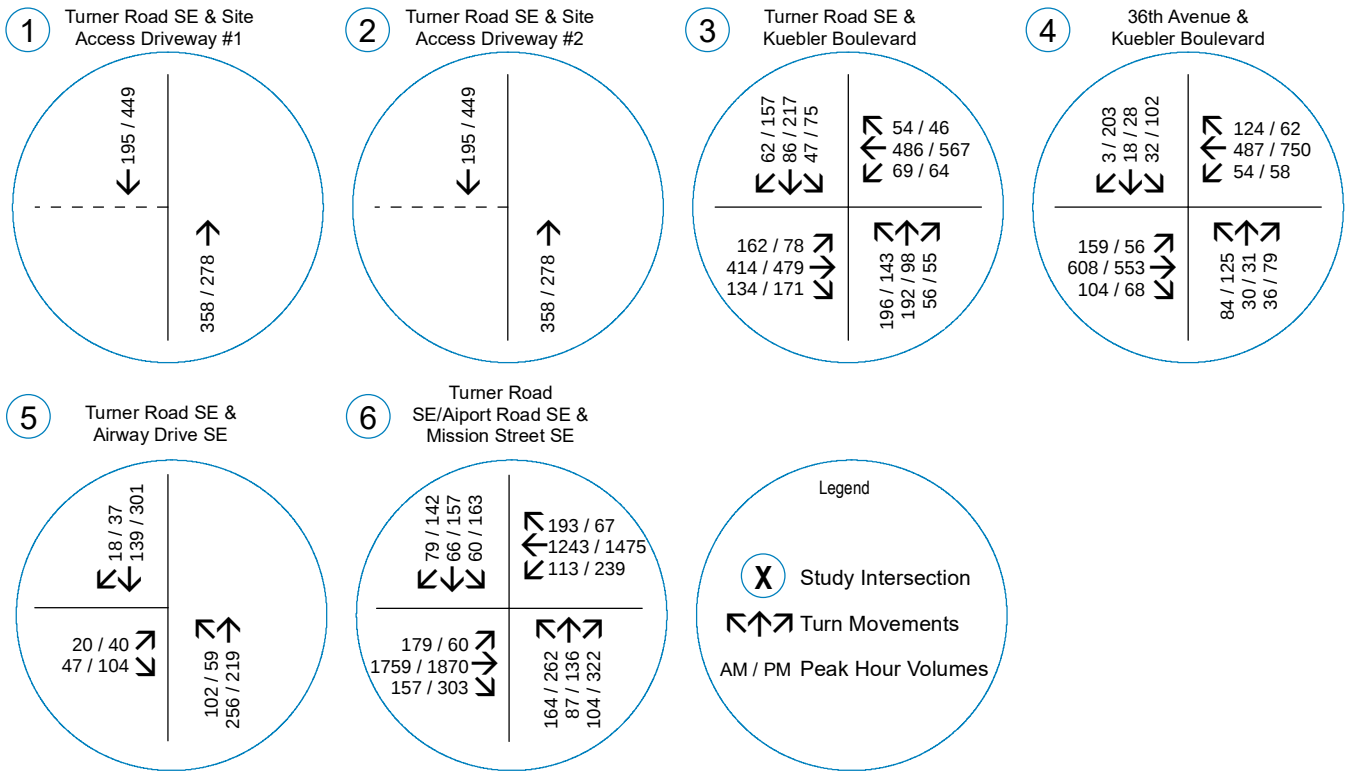
Additional traffic volume from a nearby development is included in the Year 2023 Background conditions. Traffic volumes were derived from the *Costco TIA* (prepared by Kittelson & Associates). These volumes were included in the Background Year 2023 Conditions.

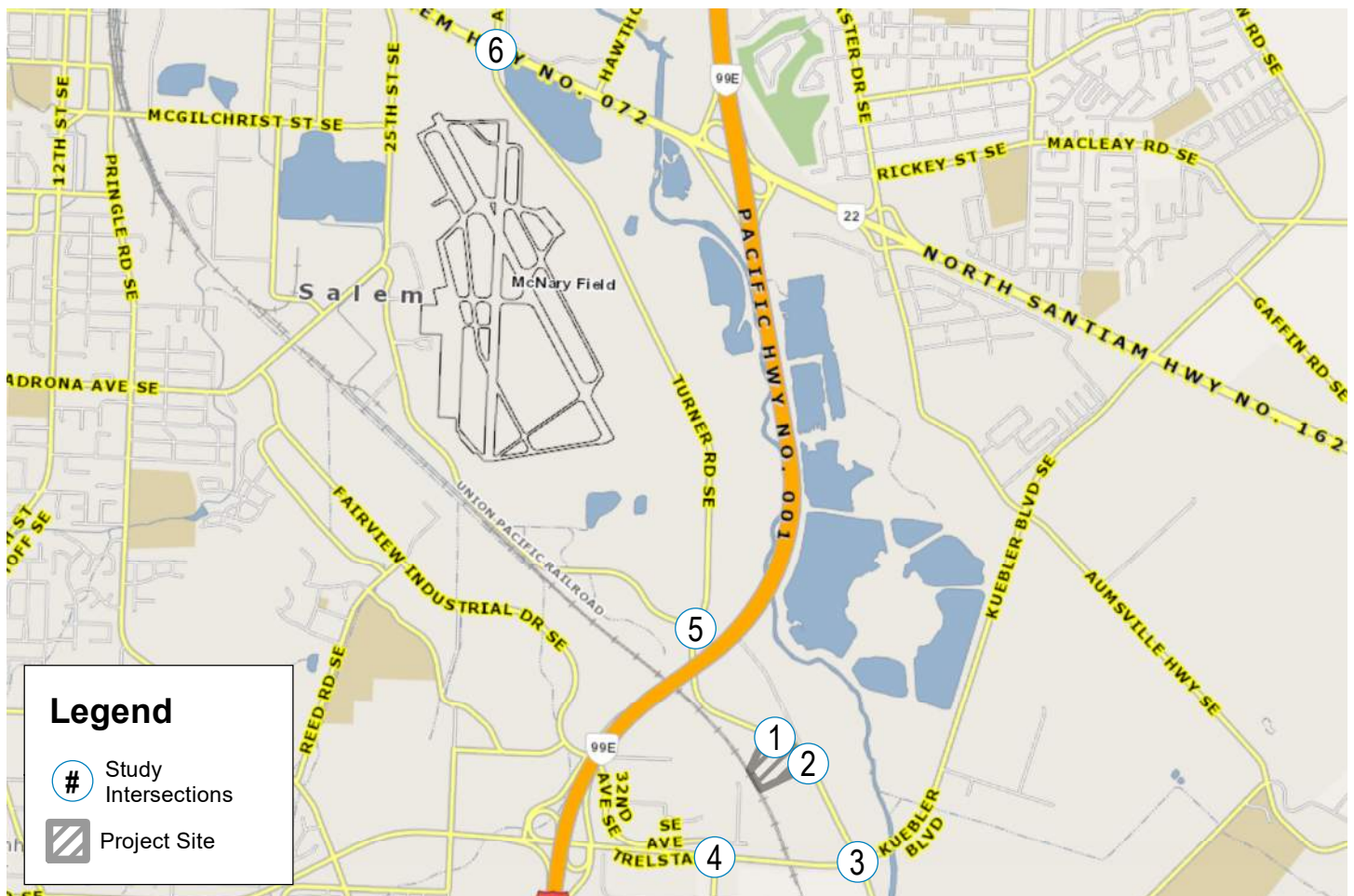
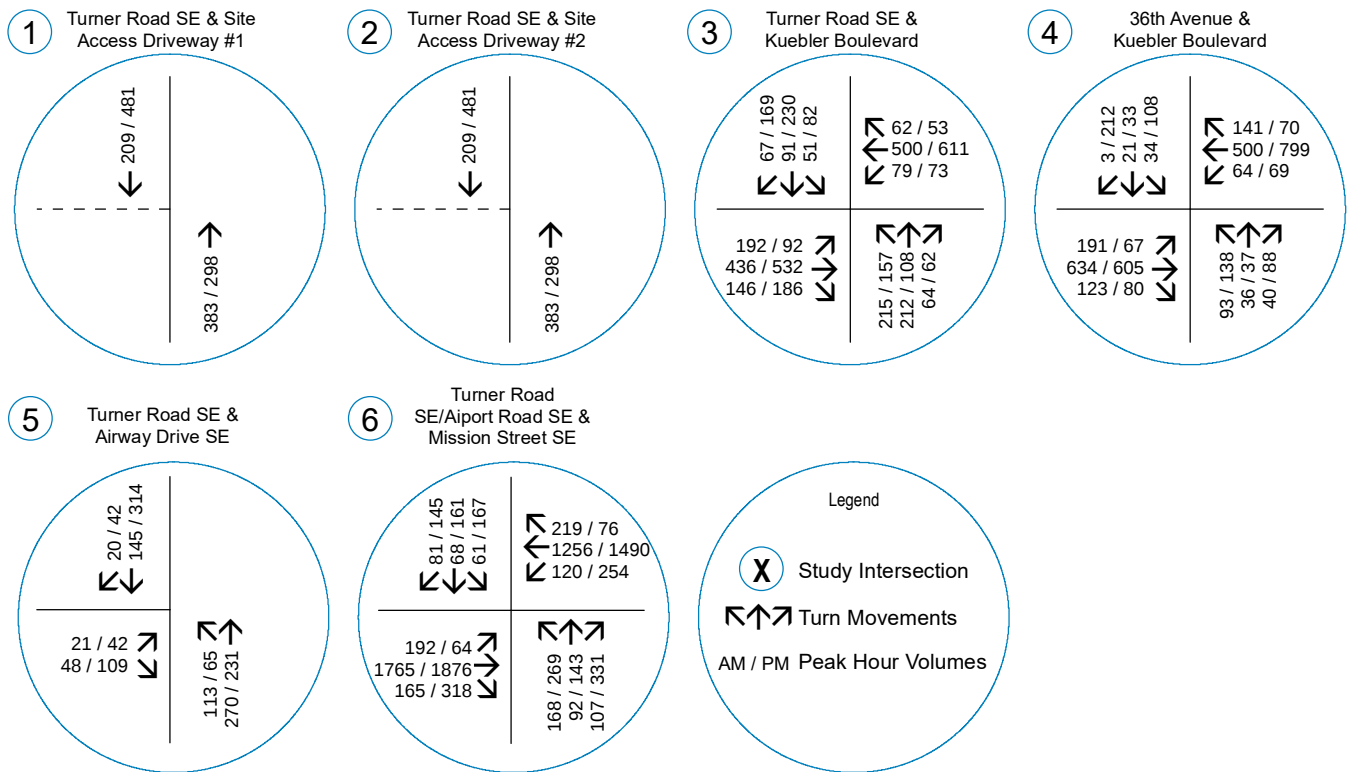
Figure 5 displays the Year 2023 Background volumes during the morning and evening peak hours.

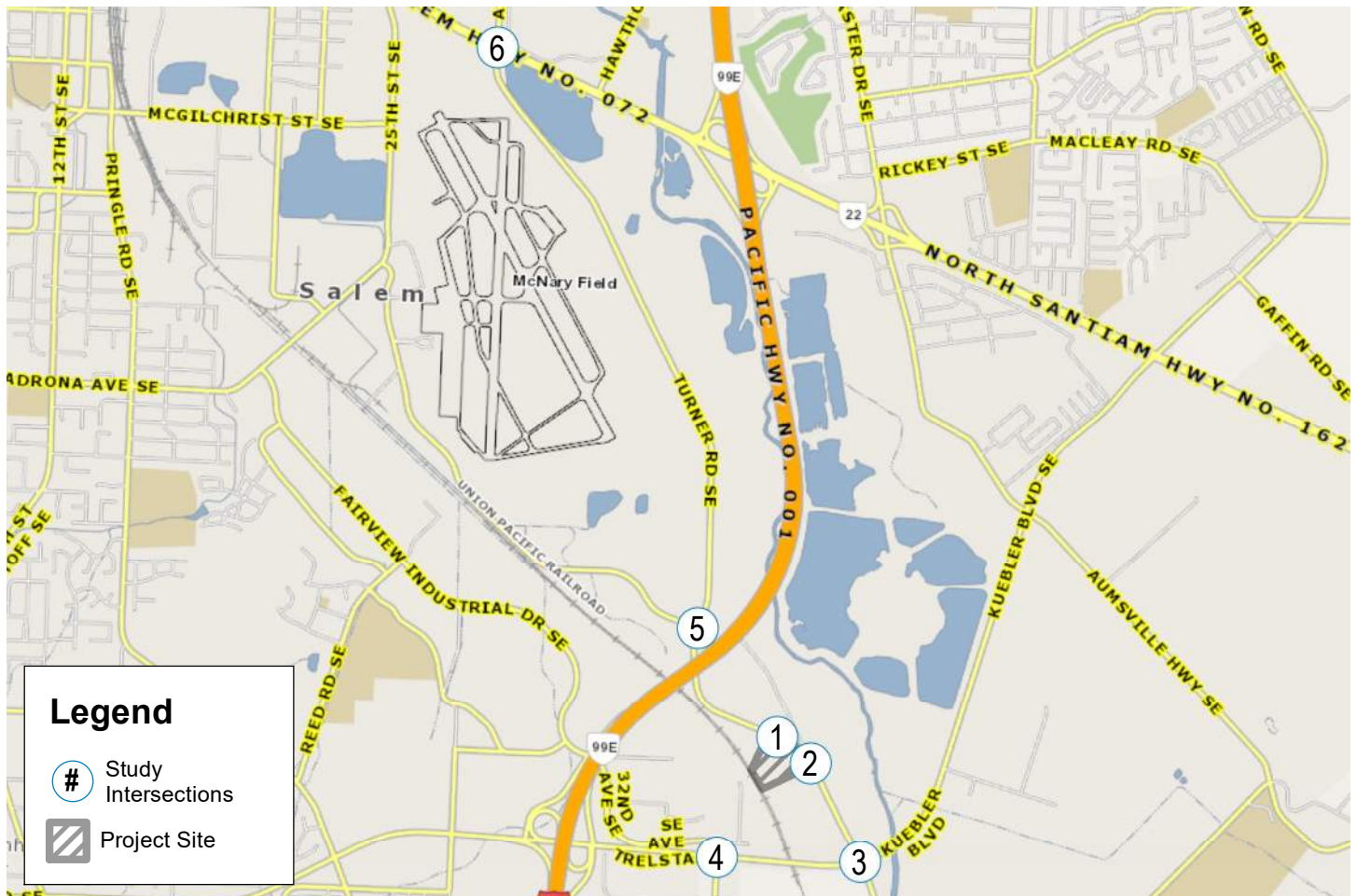
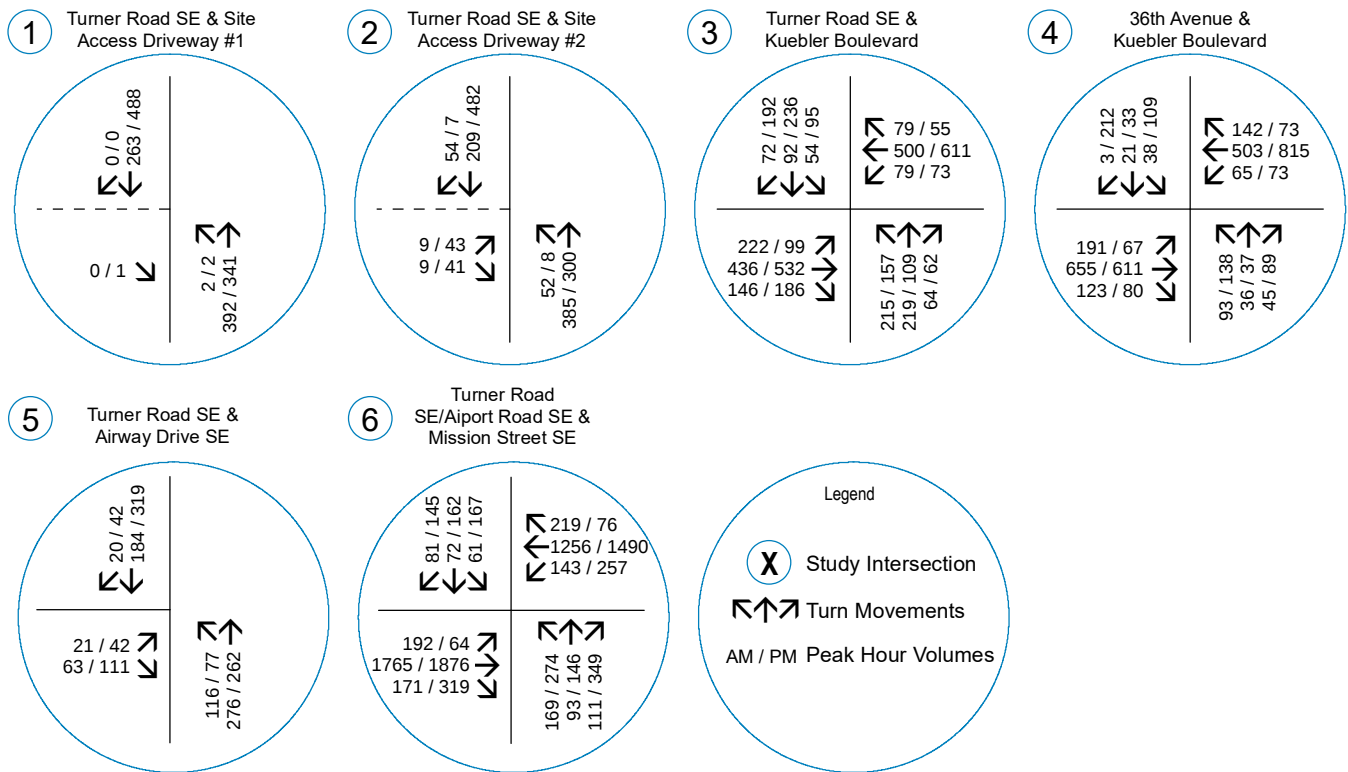
Buildout Year 2023 Conditions

Peak hour trips to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the Year 2023 Background volumes to obtain the expected the Year 2023 Buildout conditions.

Figure 6 displays the Year 2023 Buildout volumes, which include the additional site trips projected to be generated by the proposed development.







Safety Analysis

Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2015 through December 2019) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the collision, and includes five categories:

- *PDO* – Property Damage Only
- *Injury C* – Possible Injury
- *Injury B* – Suspected Minor Injury
- *Injury A* – Suspected Serious Injury
- *Fatality*

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the annual average daily traffic (AADT) at the intersection. Crash rates over 1.00 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

Table 4 provides a summary of crash types while Table 5 summarizes crash severities and rates for each of the study intersections. Detailed crash data is provided in the appendix to this report.

Table 4: Collision Type Summary

Intersection		Collision Type					Total Crashes
		Rear-End	Turning	Angle	Sideswipe	Fixed Object	
3	Turner Road SE & Kuebler Boulevard	17	11	4	0	0	32
4	36 th Avenue SE & Kuebler Boulevard	9	8	1	0	1	19
5	Turner Road SE & Airway Drive SE	15	4	0	1	2	22
6	Turner Road SE/Airport Road SE & Mission Street SE	11	8	0	0	0	19

Table 5: Crash Severity and Rate Summary

Intersection	Severity					Total Crashes	Peak Hour Volume	Crash Rate
	PDO	C	B	A	Fatal			
3 Turner Road SE & Kuebler Boulevard	12	16	4	0	0	32	2,408	0.728
4 36 th Avenue SE & Kuebler Boulevard	7	9	3	0	0	19	2,367	0.440
5 Turner Road SE & Airway Drive SE	8	12	1	1	0	22	854	<u>1.41</u>
6 Turner Road SE/Airport Road SE & Mission Street SE	7	11	1	0	0	19	5,648	0.184

Table Notes: Bold indicates intersection exceeds collision rate threshold.

One collision at the intersection of Turner Road SE & Airway Drive SE was classified as Injury A – Suspected Serious Injury. The collision occurred when the driver of a northbound passenger vehicle making a left turn struck a southbound passenger vehicle. The driver of the striking vehicle is reported to have not yielded the right-of-way to the other passenger vehicle due to inattention. The driver of the striking vehicle sustained an injury consistent with an *Injury A* classification, the driver of the struck vehicle sustained injuries consistent with an *Injury C* – Possible Injury classification. The collision occurred under clear, dry, daytime conditions.

All study area intersections are currently operating within safety standards, with the exception of the intersection of Turner Road SE & Airway Drive SE was identified as having a crash rate of 1.41 CMEV during the five-year study period, exceeding a CMEV of 1.00, indicative of a safety concern. 15 of the 22 collisions (68%), were classified as rear-end collisions. 14 of the 15 (93%) rear-end collisions involved northbound vehicles, most likely due to the absence of a left-turn lane and a posted speed of 45 mph.

According to the City of Salem’s TSP, Turner Road SE is planned to be improved to Minor Arterial standards, which includes widening to include two travel lanes and the addition of a center turn lane or turn pockets. This project is listed as a low-priority project, meaning that construction will be needed within 25-years. This improvement would address the rear-end collisions; therefore, the City of Salem should consider accelerating the implementation this full improvement or at least widening Turner Road SE at Airway Drive SE to provide a northbound left-turn lane.

All other intersections are anticipated to continue operating safely under year Buildout Year 2023 Conditions.

Sight Distance Analysis

A sight distance analysis was conducted at the site access driveways located on Turner Road SE. To evaluate the sight distance available at these intersections, intersection sight distance (ISD) was measured and recommended by the current AASHTO manual². According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

A field investigation was conducted on Tuesday afternoon, November 14th, 2021, to measure sight distance for this location. Figure 7 and Figure 8 display sight distance viewpoints from the future northern site access driveway for the northbound and southbound approaches, respectively. Figure 9 and Figure 10 display sight distance viewpoints from the future southern site access driveway for the northbound and southbound approaches, respectively.

Based on speed data obtained on December 8th, 2021, the 85th percentile speed along Turner Road SE north of 37th Avenue SE was measured to be 48 mph. Therefore, the recommended ISD is 530 feet for a left-turn movement and 460 feet for a right-turn movement, and the required stopping sight distance (SSD) is 400 feet for passenger vehicles. The recommended ISD is 745 feet for a right turn movement and 815 feet for a left-turn movement, and the required SSD is 400 feet for trucks.

Turner Road SE & Site Access Driveway #1

At the north driveway, which serves the truck court, the sight distance looking to the north currently exceeds the recommended ISD for a right-turn movement. For a left-turn movement, adequate sight lines must be available looking both north and south of the driveway. While ISD may be acceptable to the north, the curvature of the roadway along the site frontage will affect the visibility of approaching vehicles, thus a clear sight line of 815 feet cannot be attained. Therefore, the north driveway, access will be limited to right-in/right-out/left-in movements with no left-turn out permitted.

Turner Road SE & Site Access Driveway #2

At the south driveway, which serves the employee and visitor parking, the sight lines to the south exceed the recommended ISD with some trimming of the lower tree branches at the property line but drivers must look across the planter strip to see vehicles approaching from the north. To provide adequate sight distance, street trees are not recommended, and landscape plantings should be selected so that they can easily be maintained at a height of 30 inches or less. On-site parking between the two driveways should not be part of the development. With these provisions, the driveway will have adequate sight lines for the recommended ISD for passenger vehicles turning both left and right out of the driveway.

² American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Edition, 2018.



Figure 7: Site Access #1 (North Driveway) Looking North



Figure 8: Site Access #1 (North Driveway) Looking South



Figure 9: Site Access #2 (South Driveway) Looking North



Figure 10: Site Access #2 (South Driveway) Looking South

Warrant Analysis

Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for all of the unsignalized intersections to determine whether the installation of a new traffic signal will be warranted at the intersections by the project buildout year 2023. Based on the preliminary analysis, traffic signal warrants are not projected to be met for any of the unsignalized study intersections. Accordingly, no signalization of the unsignalized study intersections is necessary or recommended.

Left-Turn Lane Warrants

A left-turn refuge is primarily a safety consideration for the major street, removing left-turning vehicles from the through traffic stream. Warrants were based on the methodology outlined in the National Cooperative Highway Research Program (NCHRP) Report Number 457³. This methodology when a left-turn lane should be considered based on the number of left-turning vehicles, the number of travel lanes, the number of advancing and opposing vehicles, and the roadway travel speed.

Detailed evaluations for each study intersection are included in the technical appendix to this report. Left-turn lane warrants were conducted at all intersections that are not anticipated to be operating as a traffic signal. in Year 2023 and will serve a significant traffic volume. The findings of the evaluation are discussed below.

Turner Road SE & Site Access Driveway #1

Under buildout conditions, the forecast demand at the south driveway will meet the left-turn lane warrant threshold during the morning peak period but not during the remainder of the day. Installation of a left-turn lane would require significant off-site construction to widen Turner Road SE, would impact the drainage on the east side of the street, and would impact the frontage and site operations of other existing development on the west side of the street. With the current roadway configuration, it would also be difficult to provide the necessary transition (taper and deceleration zone) without impacting access to other properties. For these reasons, construction of a left-turn lane for the south driveway by this development is not recommended.

Turner Road SE & Site Access Driveway #2

Under buildout conditions, the forecast demand at the north driveway will not meet the left-turn lane warrant.

Turner Road SE & Airway Drive SE

The left-turn lane analysis determined that a northbound left-turn refuge is projected to be met at the intersection of Turner Road SE & Airway Drive SE under existing conditions as well as all future conditions during the morning and evening peak hour. The northbound left-turn movement is estimated at 129 vehicles during the AM peak hour and 81 vehicles during the PM peak hour of the year 2023 buildout condition including 3 morning peak hour trips (2%) and 8 evening peak hour trips (10%) generated by the proposed development.

As stated in the *Crash History Review*, Turner Road SE is planned to be widened to include two travel lanes and a left turn lane or turn pockets within 25 years. Given that a left-turn lane is warranted under existing conditions and the absence of a left-turn lane is most likely causing a majority of rear-end collisions at the intersection, the

³ Bonneson, James A. and Michael D. Fontaine, *NCHRP Report 457: An Engineering Study Guide for Evaluating Intersection Improvements*, Transportation Research Board, 2001.

City of Salem could consider accelerating the implementation this full improvement or at least widening Turner Road SE at Airway Drive SE to provide a northbound left-turn lane.

The need for a left-turn lane is an existing safety deficiency and not an impact related to the proposed development; therefore, installation of a northbound left-turn lane should not be required as mitigation for the Turner Road Industrial Building project.



Operational Analysis

Intersection Capacity Analysis

An operational analysis was conducted for each study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)⁴. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little, or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

Analysis Assumptions

City of Salem Administrative Rules Section 6.33 establish the analysis assumption that “ideal saturation flow rates greater than 1,800 vehicles per hour of green per lane should not be used unless a separate flow rate analysis has been completed.” This flow rate was applied to all intersections in the study area except for the highway intersection of Turner Road SE/Airport Road SE & Mission Street SE. Since this intersection is under ODOT jurisdiction, a flow rate of 1,900 vehicles per hour per lane was used, which is consistent with the OR 22 East Facility Plan.

Based on conversations with ODOT staff, a project to install adaptive signal timing on the corridor which includes the intersection of Turner Road SE/Airport Road SE & Mission Street SE has started. This project will optimize traffic flow along the given corridor. For analysis of Background Year 2023 and Buildout Year 2023, the cycle and splits were optimized to reflect these future improvements.

Performance Standards

City of Salem

Per the City of Salem’s *Transportation System Plan Policy 2.5 Capacity Efficient Design and Level of Service (LOS) Standards 2. Peak Travel Periods*, the following performance standards are required by study area intersections:

- c. The City shall allow its existing streets and intersections to function at LOS E (where traffic volumes generally are approaching or at 100 percent of the street’s effective capacity) during the morning and evening peak travel hours. However, traffic impacts created by new development, as identified in a traffic impact analysis, must be mitigated to maintain peak hour LOS D or better.

ODOT

According to the OR 22 East Facility Plan, the intersection of Turner Road SE/Airport Road SE & Mission Street SE has an alternative mobility target based on average weekday volumes and a peak hour factor = 1.0. The adopted mobility target for that condition is a v/c ratio at or below 0.90.

⁴ Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.

Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 6 for the morning and evening peak hours. Detailed worksheets are included in Appendix D

Table 6: Capacity Analysis Summary

Intersection & Condition	AM Peak Hour			PM Peak Hour		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
1. Turner Road SE & Site Access Driveway #1						
2023 Buildout Conditions	<0.01	A	8	<0.01	B	12
2. Turner Road SE & Site Access Driveway #2						
2023 Buildout Conditions	0.05	B	14	0.23	C	17
3. Turner Road SE & Kuebler Boulevard						
2021 Existing Conditions	0.70	C	31	0.67	C	29
2023 Background Conditions	0.76	C	34	0.74	C	31
2023 Buildout Conditions	0.81	D	35	0.75	C	31
4. 36th Avenue & Kuebler Boulevard						
2021 Existing Conditions	0.58	B	16	0.72	C	32
2023 Background Conditions	0.62	B	18	0.78	D	36
2023 Buildout Conditions	0.62	B	18	0.80	D	37
5. Turner Road SE & Airway Drive SE						
2021 Existing Conditions	0.13	B	12	0.31	B	15
2023 Background Conditions	0.14	B	12	0.33	C	15
2023 Buildout Conditions	0.17	B	13	0.35	C	16
6. Turner Road SE/Airport Road SE & Mission Street						
2021 Existing Conditions	0.62	C	22	0.79	C	32
2023 Background Conditions	0.63	C	23	0.80	C	34
2023 Buildout Conditions	0.64	C	23	0.81	D	35

Table Notes: **BOLDED** text indicates that the intersection exceeds the performance standards.

All of the study area intersections are projected to operate at Level of Service D or better under all analysis scenarios. Based on the results of the operational and capacity analysis, all study intersections are projected to operate acceptably or not further degrade operations under Background Year 2023 conditions, both with and without the addition of project traffic.

Queuing Analysis

An analysis of projected queuing was conducted for the study intersection. To determine the expected queuing which may form at critical study area movements, a Synchro/SimTraffic simulation was conducted and 95th percentile queue lengths were reported. The 95th percentile queue is a statistical measurement that indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95th percentile queue length may theoretically never be met or observed in the field. Reported queue lengths were rounded to the nearest 25 feet or the approximate length of one vehicle.

A comparison of the queues under year 2023 background and buildout conditions is presented in Table 7. Detailed reports are provided in Appendix D.

Table 7: Queuing Analysis Summary

Intersection	Movement	Effective Storage (ft)	95 th Percentile Queue (ft) (AM/PM)	
			Background Year 2023	Buildout Year 2023
1. Turner Road SE & Site Access Driveway #1	EBLR	100	-	0/25
	NBL	470	-	0/25
2. Turner Road SE & Site Access Driveway #2	EBLR	100	-	50/75
	NBL	205	-	75/50
3. Turner Road SE & Kuebler Boulevard	EBL	260	250/275	275/250
	WBL	240	225/150	200/225
	NBL	250+	375/200	375/200
	SBL	300	100/250	100/325
	SBR	150	125/300	100/325
4. 36 th Avenue & Kuebler Boulevard	EBL	325	200/175	200/125
	WBL	200	225/300	175/300
	NBL	160	175/200	175/200
	SBL	140	100/150	75/175
	SBR	130	25/200	25/225
5. Turner Road SE & Airway Drive SE	EBLR	1,880	75/100	75/75
	NB	1,075	75/75	100/75
6. Turner Road SE/ Airport Road SE & Mission Street	EBL	350	350/350	375/300
	WBL	350	150/300	200/325
	NBL	175	150/275	200/300
	NBR	<2,000	125/525	100/600
	SBL	300	50/325	125/300
	SBR	200	0/275	0/275

Table Notes: **BOLDED** text indicates queue length exceeding storage capacity by more than 10 feet.

All three signalized intersections will have 95th percentile queues that are expected to exceed the available storage lane; however, only minor changes are anticipated between the year 2023 background and buildout conditions. Changes in queue lengths between different scenarios are largely within statistical error and rounding error, for instance, some queue lengths are shown to become shorter with the addition of project traffic passing through the intersection. Based on the results of the queuing analysis, the proposed project is not expected to significantly change queuing at the study intersections compared with conditions without the project.



Conclusions

Key findings from this analysis include:

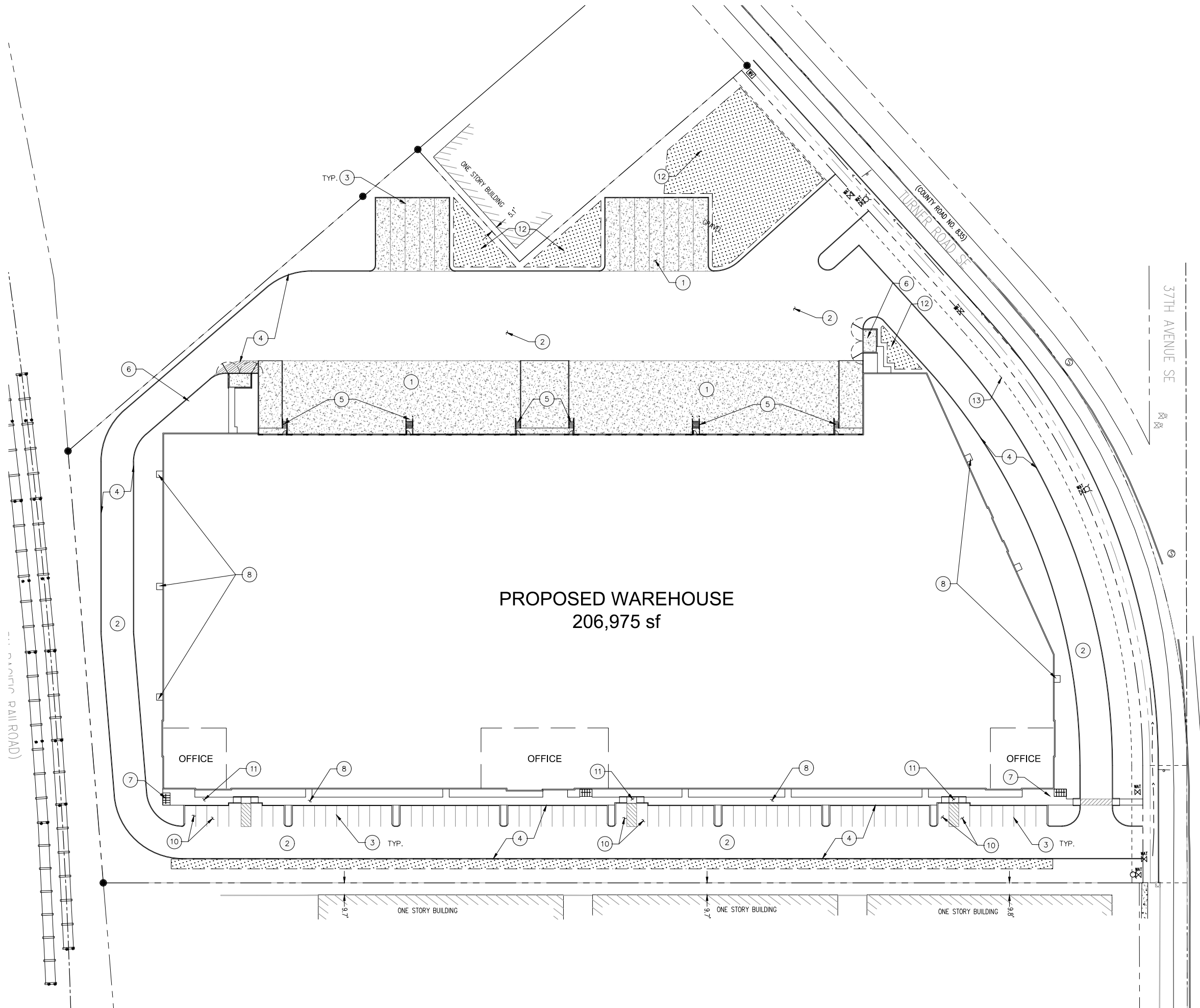
- No significant trends or crash patterns were identified at any of the study intersections except for the intersection of Turner Road SE & Airway Drive SE, which was identified as having a high crash rate. Crash patterns show a trend of rear-end collisions in the northbound direction on Turner Road SE, likely associated with vehicles slowing in the travel lane to make a left turn onto Airway Drive SE. According to the City of Salem's TSP, Turner Road SE is planned to be widened to include a three-lane cross-section within 25 years. This improvement would address this collision pattern; therefore, the City of Salem could consider accelerating the implementation of this full improvement or at least widening Turner Road SE at Airway Drive SE to provide a northbound left-turn lane.
- Adequate sight distance at the proposed site accesses can be attained with the following provisions:
 - For the north driveway, which serves the truck court, access will be limited to right-in/right-out/left-in movements with no left-turn out permitted.
 - For the south driveway, street trees are not recommended along the frontage between the driveways and landscape plantings should be selected so that they can easily be maintained at a height of 30 inches or less. Some minor trimming of the lower tree branches at the south property line is also recommended to ensure the maximum sight line. On-site parking between the two driveways will not be part of the development.
- The preliminary traffic signal analysis determined that signal warrants are not projected to be met at any of the applicable study intersections under year Buildout Year 2023 Conditions.
- An evaluation of left-turn lane warrants concluded the following:
 - Under buildout conditions, the forecast demand at the north driveway will not meet the left-turn lane warrant.
 - Under buildout conditions, the forecast demand at the south driveway will meet the left-turn lane warrant threshold during the morning peak period but not during the remainder of the day. Installation of a left-turn lane would require significant off-site construction to widen Turner Road SE, would impact the drainage on the east side of the street, and would impact the frontage and site operations of other existing development on the west side of the street. With the current roadway configuration, it would also be difficult to provide the necessary transition (taper and deceleration zone) without impacting access to other properties. For these reasons, construction of a left-turn lane for the south driveway by this development is not recommended.
 - The left-turn lane analysis determined that a northbound left-turn lane should be considered at the intersection of Turner Road SE & Airway Drive SE under existing conditions during the morning and evening peak hour. Given that this is an existing deficiency and not an impact related to the proposed development, no mitigation is recommended for the Turner Road Industrial Building project.
- Based on the results of the operational and capacity analysis, all study intersections are projected to operate acceptably under forecast conditions, both with and without the addition of project traffic.
- No significant increases in queuing were identified as a result of the proposed development.

Appendix A – Site Information

Site Plan

Trip Generation Calculations





- SHEET NOTES**
1. SEE ARCHITECTURAL PLANS FOR ADDITIONAL SITE INFORMATION.
 2. THE CONTRACTOR SHALL HAVE A FULL SET OF THE CURRENT APPROVED CONSTRUCTION DOCUMENTS INCLUDING ADDENDA ON THE PROJECT SITE AT ALL TIMES.
 3. THE CONTRACTOR SHALL KEEP THE ENGINEER AND JURISDICTION INFORMED OF CONSTRUCTION PROGRESS TO FACILITATE SITE OBSERVATIONS AT REQUIRED INTERVALS. 24-HOUR NOTICE IS REQUIRED.

- (X) CONSTRUCTION NOTES**
1. INSTALL CONCRETE TRUCK DRIVING SURFACE
 2. INSTALL ASPHALT SURFACING
 3. INSTALL STRIPING. SEE ARCHITECTURAL PLANS.
 4. INSTALL CURB
 5. INSTALL STAIRS. SEE ARCHITECTURAL PLANS.
 6. INSTALL TRASH ENCLOSURE. SEE ARCHITECTURAL PLANS.
 7. INSTALL BICYCLE PARKING. SEE ARCHITECTURAL PLANS.
 8. INSTALL SIDEWALK
 9. INSTALL DESIGN BUILD WALL
 10. INSTALL ADA PARKING
 11. INSTALL ADA CURB RAMP
 12. INSTALL STORMWATER PLANTER
 13. WATER LINE EASEMENT (15 FT WIDE)

LEGEND

PROPERTY LINE

CONCRETE SURFACING

GRAPHIC SCALE

(IN FEET)

1 inch = 40 feet



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TURNER ROAD
SALEM, OR

SHEET TITLE
SITE PLAN

DATE: 02/11/22
DRAWN: KPM
CHECKED: CNH
REVISIONS:

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SHEET NUMBER

C1.0

JOB NUMBER: A21166.10



TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use: General Light Industrial

Land Use Code: 110

Land Use Subcategory: All Sites

Setting/Location: General Urban/Suburban

Variable: 1000 SF GFA

Trip Type: Vehicle

Formula Type: Equation

Variable Quantity: 134.535

AM PEAK HOUR

Trip Rate: $=0.65 * (\$X2) + 3.81$

	Enter	Exit	Total
Directional Split	88%	12%	
Trip Ends	80	11	91

PM PEAK HOUR

Trip Rate: $=\text{EXP}(0.72 * \text{LN}(\$X2) + 0.38)$

	Enter	Exit	Total
Directional Split	14%	86%	
Trip Ends	7	43	50

WEEKDAY

Trip Rate: $=3.76 * (\$X2) + 50.47$

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	278	278	556

SATURDAY

Trip Rate: #N/A

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	#N/A	#N/A	#N/A



TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use: General Light Industrial

Land Use Code: 110

Land Use Subcategory: All Sites

Setting/Location: General Urban/Suburban

Variable: 1000 SF GFA

Trip Type: Truck

Formula Type: Rate

Variable Quantity: 134.535

AM PEAK HOUR

Trip Rate: 0.01

	Enter	Exit	Total
Directional Split	60%	40%	
Trip Ends	1	0	1

PM PEAK HOUR

Trip Rate: 0.01

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1	0	1

WEEKDAY

Trip Rate: 0.25

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	17	17	34

SATURDAY

Trip Rate: 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	NA	NA	NA



TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use: Warehousing

Land Use Code: 150

Land Use Subcategory: All Sites

Setting/Location: General Urban/Suburban

Variable: 1000 SF GFA

Trip Type: Vehicle

Formula Type: Equation

Variable Quantity: 72.44

AM PEAK HOUR

Trip Rate: $=0.12*($X15)+23.62$

	Enter	Exit	Total
Directional Split	77%	23%	
Trip Ends	25	7	32

PM PEAK HOUR

Trip Rate: $=0.12*($X15)+26.48$

	Enter	Exit	Total
Directional Split	28%	72%	
Trip Ends	10	25	35

WEEKDAY

Trip Rate: $=1.58*($X15)+38.29$

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	76	76	152

SATURDAY

Trip Rate: #N/A

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	#N/A	#N/A	#N/A



TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use: Warehousing

Land Use Code: 150

Land Use Subcategory: All Sites

Setting/Location: General Urban/Suburban

Variable: 1000 SF GFA

Trip Type: Truck

Formula Type: Rate

Variable Quantity: 72.44

AM PEAK HOUR

Trip Rate: 0.02

	Enter	Exit	Total
Directional Split	52%	48%	
Trip Ends	1	0	1

PM PEAK HOUR

Trip Rate: 0.03

	Enter	Exit	Total
Directional Split	52%	48%	
Trip Ends	1	1	2

WEEKDAY

Trip Rate: 0.6

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	22	22	44

SATURDAY

Trip Rate: 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	NA	NA	NA

Appendix B – Volumes

Traffic Counts

In-Process Trips





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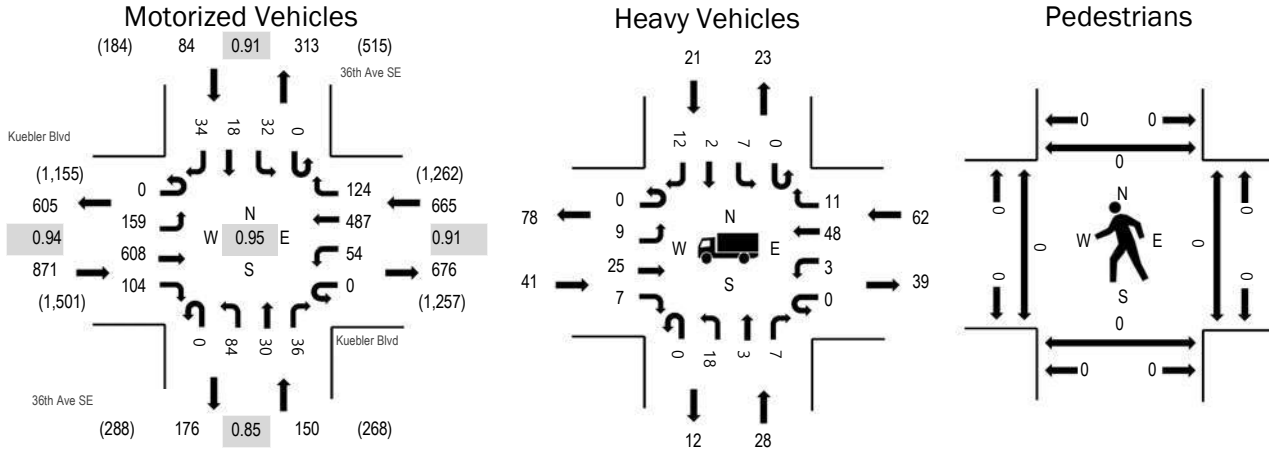
Location: 1 36th Ave SE & Kuebler Blvd AM

Date: Tuesday, December 14, 2021

Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:35 AM - 07:50 AM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.7%	0.94
WB	9.3%	0.91
NB	18.7%	0.85
SB	25.0%	0.91
All	8.6%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	Kuebler Blvd Eastbound				Kuebler Blvd Westbound				36th Ave SE Northbound				36th Ave SE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	10	49	8	0	13	32	6	0	4	1	5	0	2	0	5	135	1,709
7:05 AM	0	7	50	5	0	5	33	6	0	4	2	5	0	5	2	2	126	1,725
7:10 AM	0	6	38	3	0	6	31	10	0	6	2	2	0	5	1	0	110	1,736
7:15 AM	0	9	54	9	0	6	31	9	0	6	0	4	0	1	1	1	131	1,770
7:20 AM	0	14	55	12	0	5	43	6	0	12	4	3	0	2	0	3	159	1,733
7:25 AM	0	16	54	9	0	3	47	7	0	12	1	2	0	0	2	2	155	1,698
7:30 AM	0	14	43	11	0	4	42	10	0	4	2	0	0	2	1	4	137	1,662
7:35 AM	0	15	61	8	0	4	27	8	0	8	0	5	0	7	3	2	148	1,640
7:40 AM	0	9	65	3	0	10	38	11	0	6	1	3	0	2	1	6	155	1,596
7:45 AM	0	11	49	11	0	7	47	17	0	5	4	4	0	2	2	2	161	1,563
7:50 AM	0	22	50	9	0	3	32	13	0	4	7	0	0	4	3	1	148	1,525
7:55 AM	0	12	45	7	0	3	42	8	0	8	5	5	0	4	2	3	144	1,503
8:00 AM	0	13	49	15	0	3	46	12	0	6	1	1	0	2	2	1	151	1,506
8:05 AM	0	12	45	5	0	2	47	7	0	6	1	5	0	2	1	4	137	
8:10 AM	0	12	38	5	0	4	45	16	0	7	4	4	0	4	0	5	144	
8:15 AM	0	5	26	4	0	2	29	6	0	5	1	4	0	7	2	3	94	
8:20 AM	0	9	33	12	0	1	37	9	0	8	4	3	0	1	1	6	124	
8:25 AM	0	7	35	3	0	3	49	8	0	2	2	1	0	4	2	3	119	
8:30 AM	0	5	34	2	0	3	43	9	0	7	0	1	0	6	1	4	115	
8:35 AM	0	9	30	2	0	2	36	6	0	5	2	3	0	2	2	5	104	
8:40 AM	0	7	57	2	0	1	37	9	0	2	0	2	0	3	0	2	122	
8:45 AM	0	2	42	3	0	2	50	4	0	4	2	5	0	1	0	8	123	
8:50 AM	0	5	42	5	0	6	42	12	0	2	2	2	0	6	1	1	126	
8:55 AM	0	9	60	4	0	1	35	13	0	6	5	7	0	3	2	2	147	
Count Total	0	240	1,104	157	0	99	941	222	0	139	53	76	0	77	32	75	3,215	
Peak Hour	0	159	608	104	0	54	487	124	0	84	30	36	0	32	18	34	1,770	

Location: 1 36th Ave SE & Kuebler Blvd AM

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	1	1	1	4	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	5	1	2	8	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	2	3	1	1	7	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	3	3	6	0	12	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	3	5	8	3	19	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	1	4	7	2	14	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	3	2	8	0	13	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	3	4	3	1	11	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	4	2	7	2	15	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	1	0	2	1	4	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	9	1	2	0	12	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	4	4	6	3	17	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	1	1	2	0	4	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	2	1	5	4	12	8:05 AM	1	0	0	0	1	8:05 AM	0	0	0	0	0
8:10 AM	7	1	6	5	19	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	4	6	3	2	15	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	4	3	7	2	16	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	4	0	5	3	12	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	1	7	2	10	8:30 AM	1	0	0	0	1	8:30 AM	0	0	0	0	0
8:35 AM	5	2	3	3	13	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	3	0	3	0	6	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	3	1	5	2	11	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	3	0	4	4	11	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	10	5	2	3	20	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	80	55	104	46	285	Count Total	2	0	0	0	2	Count Total	0	0	0	0	0
Peak Hour	41	28	62	21	152	Peak Hour	1	0	0	0	1	Peak Hour	0	0	0	0	0



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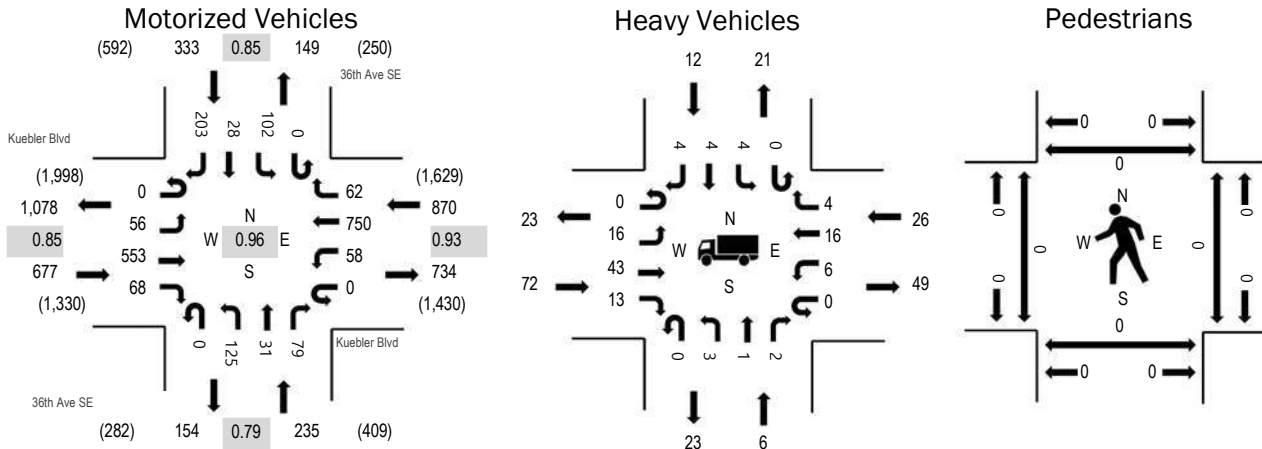
Location: 1 36th Ave SE & Kuebler Blvd PM

Date: Tuesday, December 14, 2021

Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:35 PM - 04:50 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	10.6%	0.85
WB	3.0%	0.93
NB	2.6%	0.79
SB	3.6%	0.85
All	5.5%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	Kuebler Blvd Eastbound				Kuebler Blvd Westbound				36th Ave SE Northbound				36th Ave SE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	8	54	9	0	4	61	5	0	7	2	1	0	4	2	6	163	2,069
4:05 PM	0	3	42	4	0	5	58	6	0	10	0	10	0	9	7	20	174	2,074
4:10 PM	0	3	27	5	0	2	57	1	0	12	2	5	0	12	9	20	155	2,093
4:15 PM	0	8	62	3	0	3	70	13	0	10	2	7	0	6	2	14	200	2,115
4:20 PM	0	5	50	8	0	6	70	2	0	9	2	2	0	7	0	11	172	2,075
4:25 PM	0	8	56	4	0	5	59	5	0	7	4	6	0	3	4	13	174	2,082
4:30 PM	0	4	36	6	0	4	53	3	0	13	2	6	0	10	2	15	154	2,071
4:35 PM	0	5	53	9	0	1	61	2	0	13	1	9	0	10	2	22	188	2,076
4:40 PM	0	3	42	9	0	8	55	7	0	10	3	7	0	8	4	30	186	2,035
4:45 PM	0	5	46	6	0	5	66	6	0	9	1	6	0	10	2	12	174	1,998
4:50 PM	0	5	41	4	0	6	64	5	0	10	2	3	0	4	0	15	159	1,962
4:55 PM	0	5	53	2	0	5	56	6	0	11	4	5	0	8	2	13	170	1,923
5:00 PM	0	1	39	8	0	3	51	3	0	14	5	7	0	14	4	19	168	1,891
5:05 PM	0	2	31	7	0	9	65	7	0	15	4	13	0	14	5	21	193	
5:10 PM	0	5	44	2	0	3	80	3	0	4	1	8	0	8	1	18	177	
5:15 PM	0	5	31	6	0	2	51	5	0	13	5	9	0	12	2	19	160	
5:20 PM	0	6	51	9	0	2	65	3	0	8	2	7	0	5	3	18	179	
5:25 PM	0	2	43	5	0	3	76	5	0	6	2	8	0	6	0	7	163	
5:30 PM	0	4	45	2	0	2	53	2	0	13	1	6	0	7	2	22	159	
5:35 PM	0	2	56	5	0	3	55	4	0	6	1	1	0	3	2	9	147	
5:40 PM	0	2	53	4	0	4	61	1	0	1	1	1	0	9	1	11	149	
5:45 PM	0	1	54	3	0	3	48	0	0	11	2	5	0	2	2	7	138	
5:50 PM	0	0	48	3	0	4	45	3	0	4	0	5	0	5	2	1	120	
5:55 PM	0	4	52	2	0	5	48	7	0	3	1	3	0	5	0	8	138	
Count Total	0	96	1,109	125	0	97	1,428	104	0	219	50	140	0	181	60	351	3,960	
Peak Hour	0	56	553	68	0	58	750	62	0	125	31	79	0	102	28	203	2,115	

Location: 1 36th Ave SE & Kuebler Blvd PM

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	11	1	0	2	14	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	2	3	5	2	12	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	3	0	2	4	9	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	7	1	6	0	14	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	5	2	3	0	10	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	9	0	2	1	12	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	7	0	0	0	7	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	5	1	3	0	9	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	10	1	4	1	16	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	7	0	1	2	10	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	6	0	0	2	8	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	5	1	3	1	10	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	7	0	2	1	10	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	2	0	2	3	7	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	2	0	0	1	3	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	4	1	0	1	6	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	3	0	1	1	5	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	3	0	0	1	4	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	1	0	2	1	4	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	3	0	2	3	8	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	3	1	4	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	1	0	2	0	3	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	2	0	2	2	6	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	4	1	1	0	6	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	109	12	46	30	197	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	72	6	26	12	116	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

Location: 3 Turner Rd SE & Airway Dr SE AM



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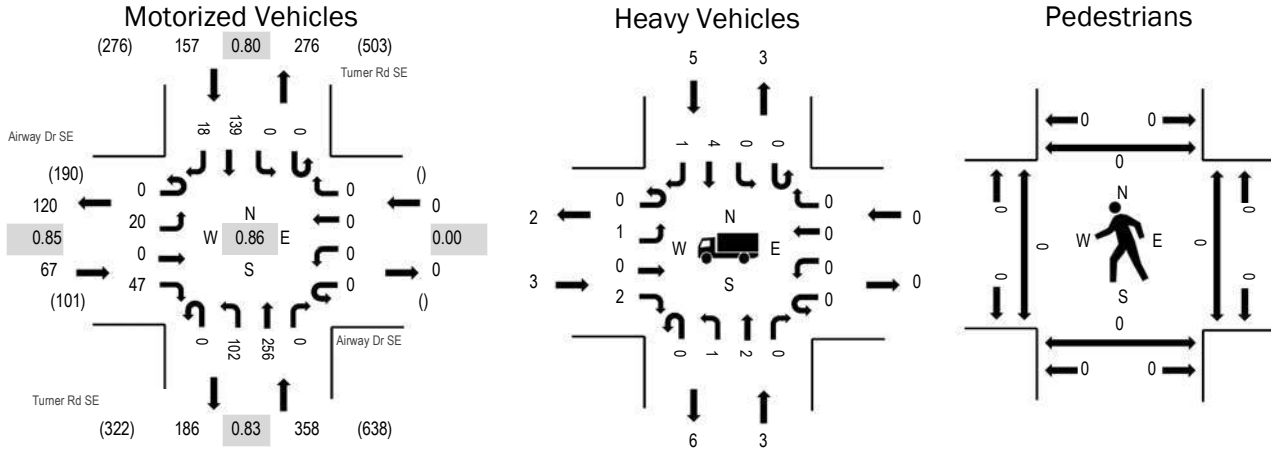
Location: 3 Turner Rd SE & Airway Dr SE AM

Date: Wednesday, December 8, 2021

Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 07:40 AM - 07:55 AM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.5%	0.85
WB	0.0%	0.00
NB	0.8%	0.83
SB	3.2%	0.80
All	1.9%	0.86

Traffic Counts - Motorized Vehicles

Interval Start Time	Airway Dr SE Eastbound				Airway Dr SE Westbound				Turner Rd SE Northbound				Turner Rd SE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	2	0	0	0	0	0	1	23	0	0	0	9	2	37	536
7:05 AM	0	0	0	4	0	0	0	0	0	7	15	0	0	0	7	1	34	541
7:10 AM	0	0	0	0	0	0	0	0	0	11	16	0	0	0	9	0	36	552
7:15 AM	0	0	0	2	0	0	0	0	0	7	16	0	0	0	7	1	33	553
7:20 AM	0	0	0	1	0	0	0	0	0	4	18	0	0	0	12	0	35	566
7:25 AM	0	1	0	3	0	0	0	0	0	5	16	0	0	0	5	0	30	578
7:30 AM	0	2	0	3	0	0	0	0	0	5	30	0	0	0	16	1	57	582
7:35 AM	0	0	0	5	0	0	0	0	0	13	20	0	0	0	8	1	47	571
7:40 AM	0	0	0	5	0	0	0	0	0	10	21	0	0	0	22	1	59	559
7:45 AM	0	3	0	5	0	0	0	0	0	16	22	0	0	0	9	2	57	533
7:50 AM	0	0	0	6	0	0	0	0	0	11	21	0	0	0	15	0	53	520
7:55 AM	0	3	0	0	0	0	0	0	0	9	29	0	0	0	16	1	58	506
8:00 AM	0	2	0	1	0	0	0	0	0	5	22	0	0	0	9	3	42	479
8:05 AM	0	1	0	3	0	0	0	0	0	8	24	0	0	0	7	2	45	
8:10 AM	0	4	0	5	0	0	0	0	0	11	9	0	0	0	8	0	37	
8:15 AM	0	1	0	3	0	0	0	0	0	3	25	0	0	0	9	5	46	
8:20 AM	0	2	0	6	0	0	0	0	0	5	20	0	0	0	14	0	47	
8:25 AM	0	2	0	5	0	0	0	0	0	6	13	0	0	0	6	2	34	
8:30 AM	0	3	0	3	0	0	0	0	0	5	21	0	0	0	14	0	46	
8:35 AM	0	2	0	6	0	0	0	0	0	4	14	0	0	0	9	0	35	
8:40 AM	0	0	0	1	0	0	0	0	0	3	18	0	0	0	9	2	33	
8:45 AM	0	0	0	2	0	0	0	0	0	5	25	0	0	0	11	1	44	
8:50 AM	0	2	0	1	0	0	0	0	0	6	20	0	0	0	9	1	39	
8:55 AM	0	0	0	1	0	0	0	0	0	3	17	0	0	0	9	1	31	
Count Total	0	28	0	73	0	0	0	0	0	163	475	0	0	0	249	27	1,015	
Peak Hour	0	20	0	47	0	0	0	0	0	102	256	0	0	0	139	18	582	

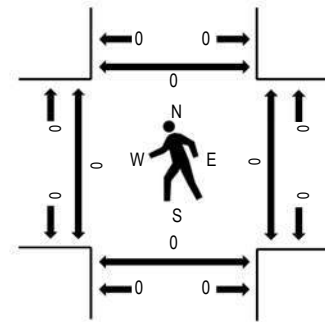
Location: 3 Turner Rd SE & Airway Dr SE AM

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	0	1	2	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	2	0	0	2	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	1	0	0	0	1	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	2	0	0	2	7:20 AM	0	1	0	0	1	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	0	1	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	1	1	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	1	0	1	2	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	1	1	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	1	1	0	0	2	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	1	0	0	1	2	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	1	0	0	1	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	1	0	0	1	2	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	1	2	0	1	4	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	1	0	0	1	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	1	1	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	2	0	1	3	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	1	0	2	3	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	5	15	0	11	31	Count Total	0	1	0	0	1	Count Total	0	0	0	0	0
Peak Hour	3	3	0	5	11	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0



Peak 15-Minutes: 04:05 PM - 04:20 PM



Interval Start Time	Airway Dr SE Eastbound				Airway Dr SE Westbound				Turner Rd SE Northbound				Turner Rd SE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	1	4	0	12	0	0	0	0	0	2	15	0	0	0	17	6	57	748
4:05 PM	0	4	0	9	0	0	0	0	0	8	29	0	0	0	33	9	92	763
4:10 PM	0	1	0	8	0	0	0	0	0	6	23	0	0	0	21	1	60	741
4:15 PM	0	2	0	11	0	0	0	0	0	7	19	0	0	0	23	4	66	751
4:20 PM	0	7	0	4	0	0	0	0	0	5	20	0	0	0	18	0	54	732
4:25 PM	0	3	0	5	0	0	0	0	0	4	15	0	0	0	24	2	53	726
4:30 PM	0	6	0	8	0	0	0	0	0	4	16	0	0	0	15	4	53	729
4:35 PM	0	6	0	4	0	0	0	0	0	2	18	0	0	0	27	2	59	735
4:40 PM	0	4	0	11	0	0	0	0	0	6	15	0	0	0	28	5	69	737
4:45 PM	0	0	0	13	0	0	0	0	0	4	15	0	0	0	26	4	62	715
4:50 PM	0	4	0	12	0	0	0	0	0	5	14	0	0	0	26	3	64	701
4:55 PM	0	1	0	12	0	0	0	0	0	4	17	0	0	0	23	2	59	690
5:00 PM	0	2	0	10	0	0	0	0	0	4	18	0	0	0	37	1	72	678
5:05 PM	0	5	0	12	0	0	0	0	0	3	10	0	0	0	32	8	70	
5:10 PM	0	3	0	12	0	0	0	0	0	8	16	0	0	0	27	4	70	
5:15 PM	0	3	0	7	0	0	0	0	0	3	12	0	0	0	16	6	47	
5:20 PM	0	3	0	7	0	0	0	0	0	5	13	0	0	0	15	5	48	
5:25 PM	0	2	0	9	0	0	0	0	0	3	12	0	0	0	25	5	56	
5:30 PM	0	6	0	9	0	0	0	0	0	3	14	0	0	0	25	2	59	
5:35 PM	0	4	0	13	0	0	0	0	0	3	15	0	0	0	21	5	61	
5:40 PM	0	1	0	7	0	0	0	0	0	3	15	0	0	0	18	3	47	
5:45 PM	0	1	0	4	0	0	0	0	0	6	17	0	0	0	18	2	48	
5:50 PM	0	3	0	5	0	0	0	0	0	5	14	0	0	0	19	7	53	
5:55 PM	0	3	0	3	0	0	0	0	0	3	16	0	0	0	19	3	47	
Count Total	1	78	0	207	0	0	0	0	0	106	388	0	0	0	553	93	1,426	
Peak Hour	0	40	0	107	0	0	0	0	0	59	219	0	0	0	301	37	763	

Location: 3 Turner Rd SE & Airway Dr SE PM

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	2	2	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	1	0	0	0	1	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	2	1	0	0	3	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	1	0	0	1	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	1	0	0	1	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	1	1	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	1	0	0	1	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	1	0	0	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	1	1	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	1	0	1	2	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	1	0	0	0	1	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	1	0	0	0	1
Count Total	4	6	0	6	16	Count Total	0	0	0	0	0	Count Total	1	0	0	0	1
Peak Hour	3	4	0	3	10	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

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Location: 4 Turner Rd SE & Mission St SE AM

Date: Wednesday, December 8, 2021

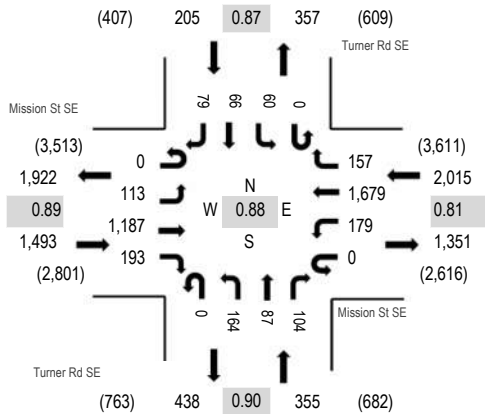
Study Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes in Study Peak Hour:

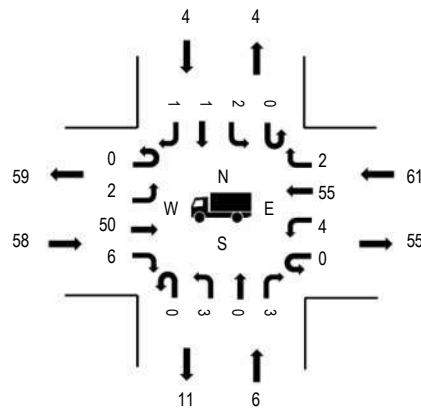
07:40 AM - 07:55 AM

Study Peak Hour (for all study intersections)

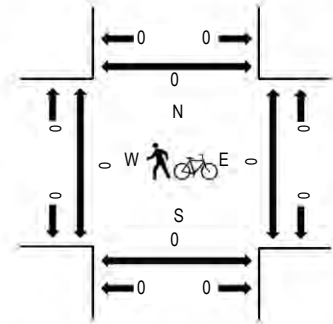
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	3.9%	0.89
WB	3.0%	0.81
NB	1.7%	0.90
SB	2.0%	0.87
All	3.2%	0.88

Traffic Counts - Motorized Vehicles

Interval Start Time	Mission St SE Eastbound				Mission St SE Westbound				Turner Rd SE Northbound				Turner Rd SE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	6	75	7	0	9	74	10	0	7	6	5	0	2	4	3	208	3,703
7:05 AM	0	2	84	6	0	5	102	13	0	14	6	4	0	7	5	5	253	3,851
7:10 AM	0	4	85	6	0	7	106	5	0	12	2	6	0	4	3	3	243	3,920
7:15 AM	0	4	105	7	0	4	137	11	0	9	5	4	0	4	10	4	304	3,938
7:20 AM	0	3	103	9	0	7	103	16	0	9	5	9	0	6	2	6	278	4,007
7:25 AM	0	10	75	16	0	5	150	15	0	13	6	5	0	5	5	2	307	4,035
7:30 AM	0	7	91	10	0	8	117	10	0	9	5	4	0	7	4	4	276	4,068
7:35 AM	0	6	82	13	0	11	148	8	0	18	12	12	0	5	7	5	327	4,068
7:40 AM	0	8	105	25	0	15	152	9	0	17	11	7	0	7	4	10	370	4,047
7:45 AM	0	7	95	17	0	17	188	18	0	10	7	5	0	1	6	4	375	3,988
7:50 AM	0	7	120	20	0	20	178	19	0	9	9	9	0	5	4	6	406	3,941
7:55 AM	0	16	95	19	0	12	159	9	0	18	6	3	0	6	5	8	356	3,830
8:00 AM	0	11	95	11	0	25	134	22	0	18	8	13	0	5	9	5	356	3,798
8:05 AM	0	11	92	18	0	14	124	17	0	16	5	8	0	6	3	8	322	
8:10 AM	0	9	75	9	0	10	100	5	0	13	7	10	0	3	10	10	261	
8:15 AM	0	7	120	20	0	18	154	15	0	7	5	8	0	4	7	8	373	
8:20 AM	0	8	112	15	0	8	103	8	0	15	6	16	0	6	5	4	306	
8:25 AM	0	16	105	16	0	21	122	17	0	14	6	9	0	5	2	7	340	
8:30 AM	0	6	92	18	0	7	94	11	0	9	4	18	0	4	8	5	276	
8:35 AM	0	3	99	12	0	14	130	6	0	10	7	8	0	1	8	8	306	
8:40 AM	0	5	93	17	1	10	98	11	0	18	15	14	0	10	9	10	311	
8:45 AM	0	4	92	15	0	17	146	8	0	16	3	6	0	6	4	11	328	
8:50 AM	0	5	88	16	0	13	102	7	0	20	8	13	0	8	4	11	295	
8:55 AM	0	4	115	17	0	14	120	8	0	16	8	7	0	2	5	8	324	
Count Total	0	169	2,293	339	1	291	3,041	278	0	317	162	203	0	119	133	155	7,501	
Peak Hour	0	113	1,187	193	0	179	1,679	157	0	164	87	104	0	60	66	79	4,068	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	3	1	3	0	7	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	5	1	4	2	12	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	3	2	4	0	9	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	4	0	8	1	13	7:15 AM	0	0	0	0	0	7:15 AM	0	1	0	0	1
7:20 AM	3	0	2	0	5	7:20 AM	0	0	0	0	0	7:20 AM	0	0	1	1	2
7:25 AM	5	2	6	0	13	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	4	1	2	0	7	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	3	0	8	1	12	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	3	1	5	1	10	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	5	0	3	0	8	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	4	0	7	1	12	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	3	0	6	0	9	7:55 AM	1	0	0	0	1	7:55 AM	0	0	0	0	0
8:00 AM	4	2	9	0	15	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	6	0	5	0	11	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	6	1	5	0	12	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	8	0	4	0	12	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	5	1	1	0	7	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	7	0	6	1	14	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	1	1	5	1	8	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	3	0	7	0	10	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	8	0	3	1	12	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	6	1	5	0	12	8:45 AM	0	0	0	0	0	8:45 AM	0	0	1	0	1
8:50 AM	4	1	5	0	10	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	6	1	6	0	13	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	109	16	119	9	253	Count Total	1	0	0	0	1	Count Total	0	1	2	1	4
Peak Hour	58	6	61	4	129	Peak Hour	1	0	0	0	1	Peak Hour	0	0	0	0	0



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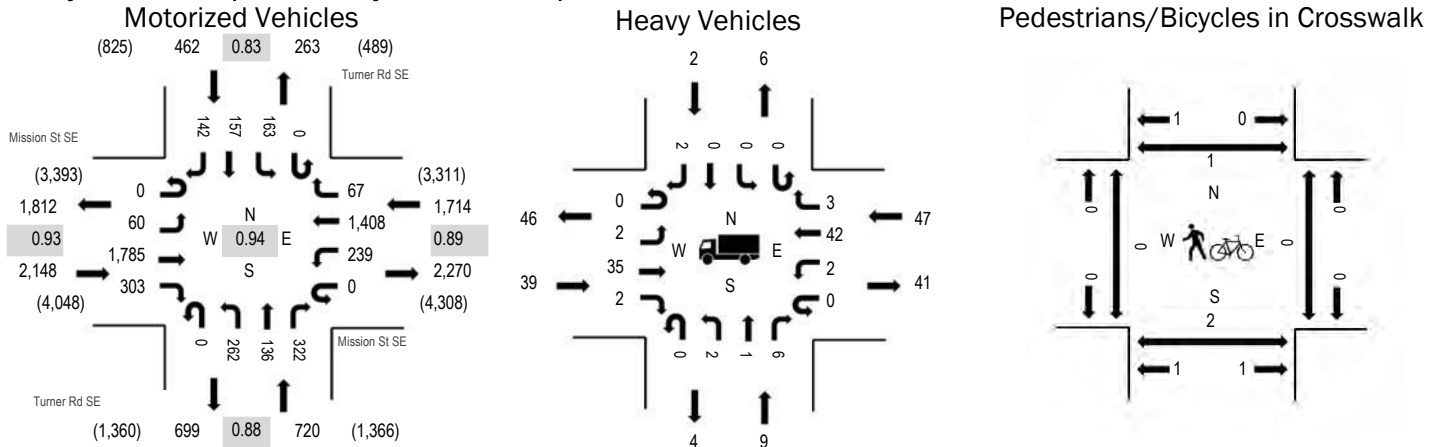
Location: 4 Turner Rd SE & Mission St SE PM

Date: Wednesday, December 8, 2021

Study Peak Hour: 04:00 PM - 05:00 PM

Peak 15-Minutes in Study Peak Hour: 04:05 PM - 04:20 PM

Study Peak Hour (for all study intersections)



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.8%	0.93
WB	2.7%	0.89
NB	1.3%	0.88
SB	0.4%	0.83
All	1.9%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	Mission St SE Eastbound				Mission St SE Westbound				Turner Rd SE Northbound				Turner Rd SE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	1	123	33	0	35	140	9	0	16	5	25	0	14	11	16	428	5,044
4:05 PM	0	2	157	27	0	21	130	8	0	24	13	31	0	14	12	18	457	5,012
4:10 PM	0	9	166	21	0	17	111	10	0	30	9	31	0	21	9	7	441	5,007
4:15 PM	0	8	155	30	0	15	134	4	0	23	14	30	0	9	14	14	450	4,966
4:20 PM	0	8	130	25	0	13	134	6	0	26	14	14	0	11	16	9	406	4,937
4:25 PM	0	4	147	20	0	19	105	2	0	21	17	23	0	13	9	15	395	4,955
4:30 PM	0	4	132	24	0	26	126	4	0	14	8	22	0	21	17	18	416	4,941
4:35 PM	0	5	129	24	0	20	92	3	0	21	9	31	0	16	14	9	373	4,901
4:40 PM	0	7	160	25	0	28	135	5	0	24	14	30	0	14	17	13	472	4,884
4:45 PM	0	7	163	24	0	13	107	7	0	24	11	30	0	9	9	8	412	4,764
4:50 PM	0	3	172	19	0	12	98	5	0	25	13	28	0	15	15	8	413	4,692
4:55 PM	0	2	151	31	0	20	96	4	0	14	9	27	0	6	14	7	381	4,590
5:00 PM	0	1	136	20	0	17	101	5	0	27	16	29	0	22	11	11	396	4,506
5:05 PM	0	4	153	24	0	20	111	7	0	23	15	40	0	18	20	17	452	
5:10 PM	0	7	145	22	0	32	108	9	0	18	7	24	0	8	12	8	400	
5:15 PM	0	9	160	28	0	21	132	7	0	13	7	15	0	14	12	3	421	
5:20 PM	0	2	171	17	0	29	125	4	0	14	7	24	0	12	13	6	424	
5:25 PM	0	2	139	17	0	25	107	3	0	21	12	26	0	8	15	6	381	
5:30 PM	0	5	141	23	0	23	97	3	0	13	12	22	0	12	18	7	376	
5:35 PM	0	4	109	18	0	23	106	4	0	26	13	26	0	7	10	10	356	
5:40 PM	0	6	119	23	0	20	91	7	0	20	4	31	0	13	13	5	352	
5:45 PM	0	2	120	22	0	28	105	1	0	14	5	26	0	8	6	3	340	
5:50 PM	0	2	97	19	0	19	87	6	0	21	12	24	0	5	13	6	311	
5:55 PM	0	2	113	18	0	8	101	5	0	14	9	16	0	5	2	4	297	
Count Total	0	106	3,388	554	0	504	2,679	128	0	486	255	625	0	295	302	228	9,550	
Peak Hour	0	60	1,785	303	0	239	1,408	67	0	262	136	322	0	163	157	142	5,044	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	2	3	8	1	14	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	2	1	7	0	10	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	6	0	7	0	13	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	1	1
4:15 PM	5	0	2	0	7	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	1	0	3	0	4	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	6	0	4	0	10	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	5	0	5	1	11	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	4	1	1	0	6	4:35 PM	0	0	0	0	0	4:35 PM	0	1	0	0	1
4:40 PM	1	2	2	0	5	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	6	1	2	0	9	4:45 PM	0	0	0	0	0	4:45 PM	0	1	0	0	1
4:50 PM	0	1	2	0	3	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	1	0	4	0	5	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	3	0	4	1	8	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	2	2	6	0	10	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	1	1
5:10 PM	2	0	2	0	4	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	3	0	5	0	8	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	1	1
5:20 PM	2	0	5	0	7	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	2	0	0	0	2	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	2	0	3	0	5	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	1	1
5:35 PM	2	0	2	0	4	5:35 PM	0	0	0	0	0	5:35 PM	0	2	0	0	2
5:40 PM	2	0	2	1	5	5:40 PM	0	0	0	0	0	5:40 PM	0	0	1	1	2
5:45 PM	2	1	2	0	5	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	2	1	1	0	4	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	2	0	2	0	4	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	65	13	81	4	163	Count Total	0	0	0	0	0	Count Total	0	4	1	5	10
Peak Hour	39	9	47	2	97	Peak Hour	0	0	0	0	0	Peak Hour	0	2	0	1	3

All Traffic Data Services, LLC
alltrafficdata.net

Site Code: 1
Date Start: 08-Dec-21
Date End: 08-Dec-21
Turner Rd SE N-O 37th Ave SE

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 9999	Total	Pace Speed	Number in Pace
12/08/21	0	0	0	0	0	1	1	1	0	0	0	0	0	3	34-43	2
01:00	0	0	0	0	0	2	3	6	0	1	0	0	0	12	41-50	9
02:00	0	0	0	0	1	1	1	2	0	2	0	0	0	7	39-48	3
03:00	0	0	0	0	0	1	4	8	1	0	0	0	0	14	41-50	12
04:00	0	0	1	0	0	2	17	12	4	2	0	0	0	38	41-50	29
05:00	0	0	0	1	5	14	35	31	17	1	0	0	1	105	41-50	66
06:00	0	0	0	1	4	25	61	78	13	3	0	0	0	185	41-50	139
07:00	3	0	0	4	27	72	120	114	17	4	0	0	0	361	41-50	234
08:00	2	0	0	3	10	50	149	91	10	3	0	0	0	318	41-50	240
09:00	9	0	0	2	25	70	91	64	11	1	0	0	0	273	36-45	161
10:00	14	2	2	4	18	69	101	57	4	1	0	0	0	272	36-45	170
11:00	6	0	2	4	17	99	120	34	1	0	0	0	0	283	36-45	219
12 PM	5	0	0	1	4	78	128	42	2	0	0	0	0	260	36-45	206
13:00	7	0	0	1	9	77	109	58	3	0	0	0	0	264	36-45	186
14:00	14	0	0	2	8	56	111	71	9	1	0	0	0	272	41-50	182
15:00	12	2	0	9	24	80	118	47	6	0	0	0	1	299	36-45	198
16:00	11	0	0	6	17	73	98	51	4	0	1	0	0	261	36-45	171
17:00	11	0	1	5	5	62	81	37	9	0	0	0	0	211	36-45	143
18:00	4	0	0	2	3	29	67	64	8	0	0	0	0	177	41-50	131
19:00	4	0	0	1	5	9	34	35	8	3	0	0	0	99	41-50	69
20:00	2	0	0	0	3	7	28	19	3	0	0	0	0	62	41-50	47
21:00	0	0	0	0	1	16	26	22	4	3	0	0	0	72	41-50	48
22:00	0	0	0	0	1	2	7	9	3	0	0	0	0	22	41-50	16
23:00	0	0	0	0	1	3	4	2	2	1	0	0	0	13	36-45	7
Total	104	4	6	46	188	898	1514	955	139	26	1	0	2	3883		
Percent	2.7%	0.1%	0.2%	1.2%	4.8%	23.1%	39.0%	24.6%	3.6%	0.7%	0.0%	0.0%	0.1%	417.5%		
AM Peak	10:00	10:00	10:00	07:00	07:00	11:00	08:00	07:00	05:00	07:00			05:00	07:00		
Vol.	14	2	2	4	27	99	149	114	17	4			1	361		
PM Peak	14:00	15:00	17:00	15:00	15:00	15:00	12:00	14:00	14:00	19:00	16:00		15:00	15:00		
Vol.	14	2	1	9	24	80	128	71	9	3	1		1	299		
Grand Total	104	4	6	46	188	898	1514	955	139	26	1	0	2	3883		
Percent	2.7%	0.1%	0.2%	1.2%	4.8%	23.1%	39.0%	24.6%	3.6%	0.7%	0.0%	0.0%	0.1%			

15th Percentile : 36 MPH
50th Percentile : 42 MPH
85th Percentile : 47 MPH
95th Percentile : 49 MPH

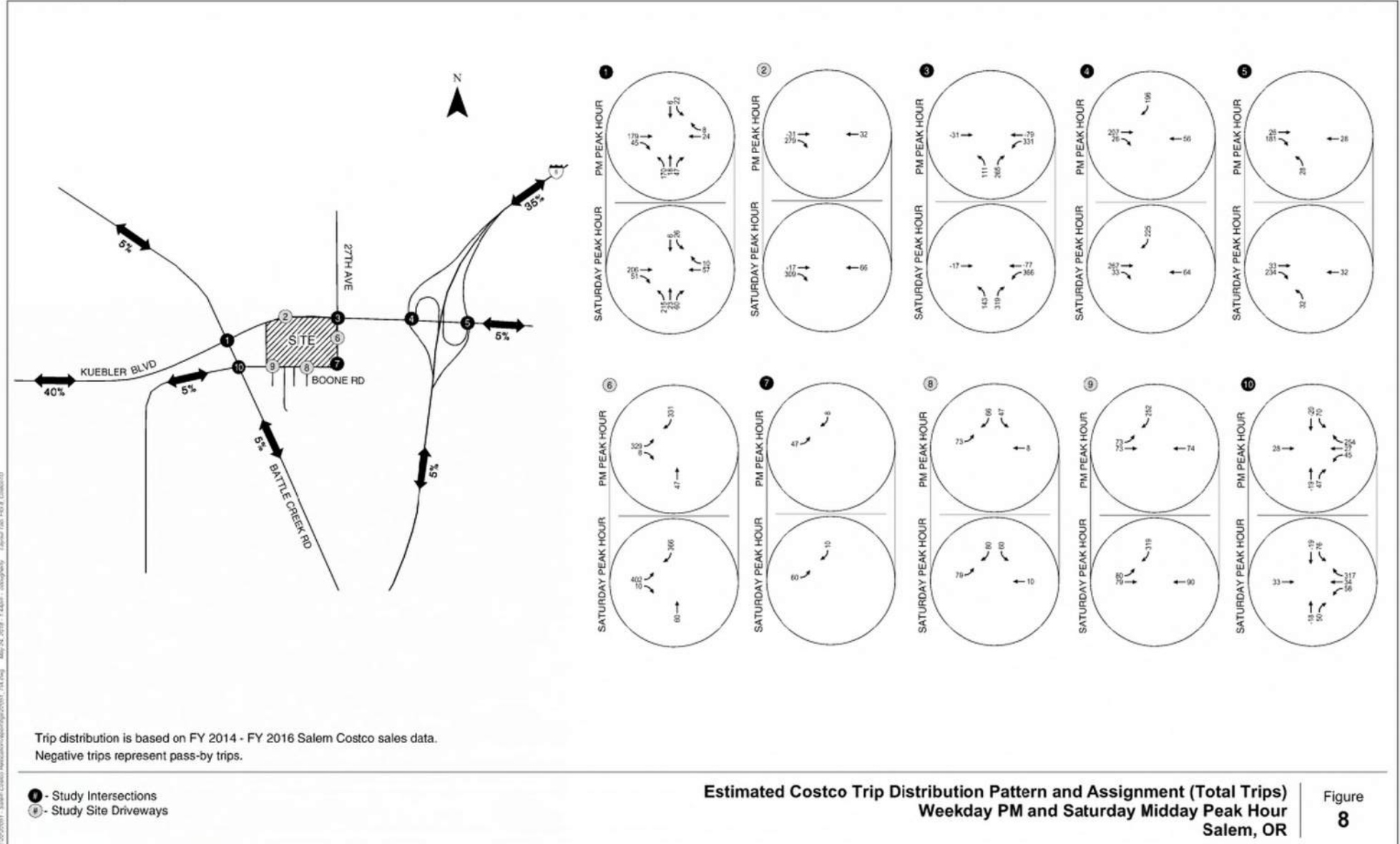
Statistics 10 MPH Pace Speed : 41-50 MPH
 Number in Pace : 2469
 Percent in Pace : 63.6%
Number of Vehicles > 55 MPH : 29
Percent of Vehicles > 55 MPH : 0.7%
Mean Speed(Average) : 42 MPH

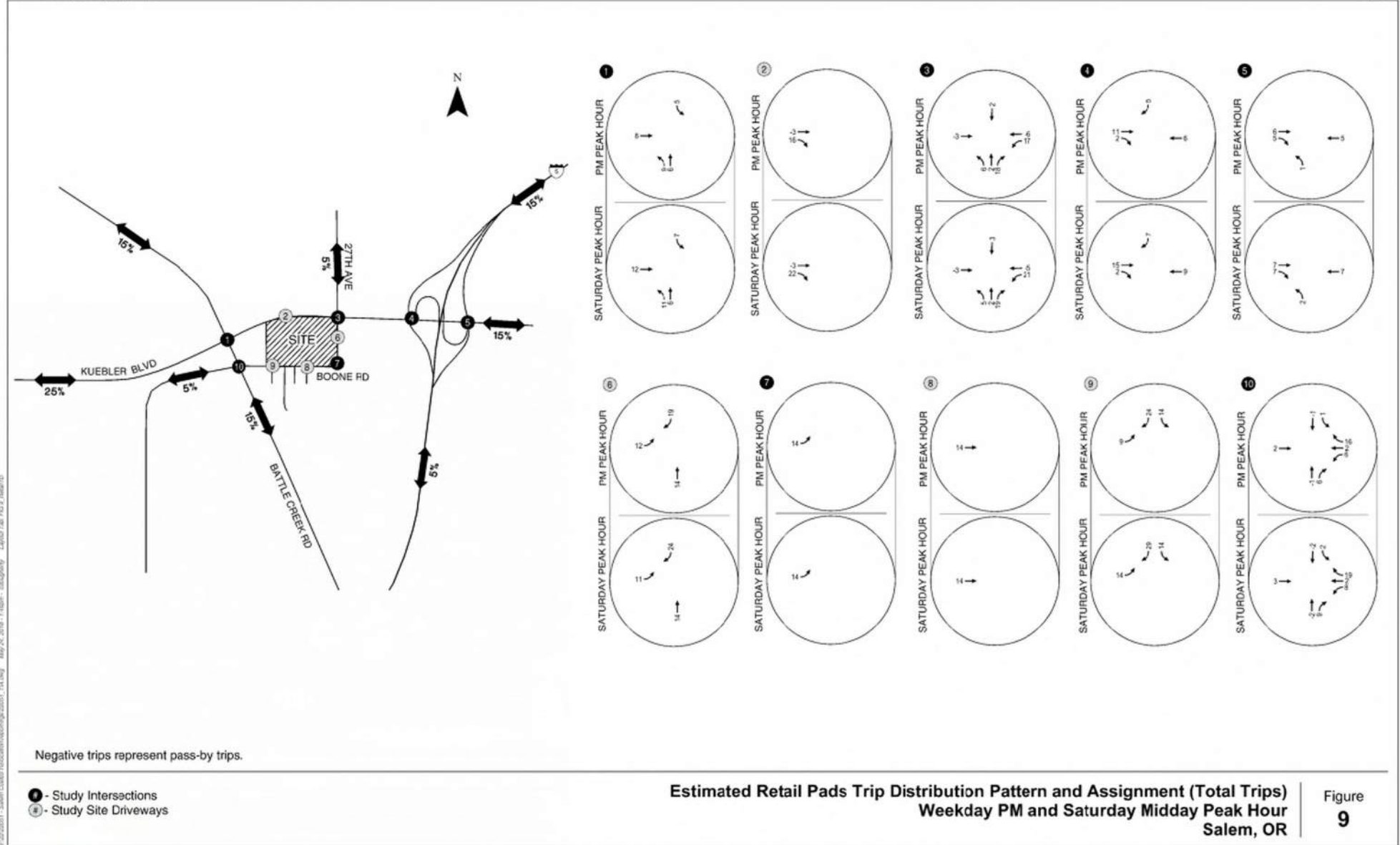
Page 2

Turner Rd SE N-O 37th Ave SE

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 9999	Total	Pace Speed	Number in Pace
12/08/21	0	0	0	0	2	2	1	4	3	0	0	0	0	12	45-54	7
01:00	0	0	0	0	0	3	3	8	6	0	0	0	0	20	46-55	14
02:00	0	0	0	0	0	3	1	5	0	1	0	0	0	10	41-50	6
03:00	1	0	0	0	2	3	2	0	0	0	0	0	0	8	36-45	5
04:00	0	0	0	2	0	4	10	9	2	0	0	0	0	27	41-50	19
05:00	1	0	0	1	1	8	16	17	2	0	0	0	0	46	41-50	33
06:00	0	1	2	1	2	20	36	19	6	1	0	0	0	88	36-45	56
07:00	2	0	0	1	9	25	53	48	20	1	0	0	0	159	41-50	101
08:00	6	0	1	0	12	29	51	44	13	1	0	1	0	158	41-50	95
09:00	8	0	1	1	9	44	63	40	15	3	0	0	0	184	36-45	107
10:00	6	3	4	5	18	64	82	45	8	1	1	0	0	237	36-45	146
11:00	6	2	0	4	14	61	82	53	7	1	0	1	0	231	36-45	143
12 PM	3	1	0	9	19	80	89	81	19	0	0	0	0	301	41-50	170
13:00	5	1	0	10	17	79	95	92	15	1	0	0	0	315	41-50	187
14:00	5	0	7	8	20	60	111	119	28	2	0	0	0	360	41-50	230
15:00	9	0	2	1	19	75	142	123	26	2	0	0	0	399	41-50	265
16:00	24	5	12	20	26	53	139	100	18	4	0	0	0	401	41-50	239
17:00	9	0	1	8	31	118	145	63	8	2	0	0	0	385	36-45	263
18:00	4	0	0	2	15	48	93	55	9	0	0	0	0	226	41-50	148
19:00	2	0	1	3	9	21	54	40	4	1	0	0	0	135	41-50	94
20:00	1	0	0	0	4	8	45	39	7	1	0	0	0	105	41-50	84
21:00	1	0	0	1	3	16	26	21	2	1	0	0	0	71	41-50	47
22:00	0	0	0	0	1	10	14	11	5	1	0	0	0	42	39-48	25
23:00	0	0	0	0	2	0	2	5	3	0	0	0	0	12	44-53	8
Total	93	13	31	77	235	834	1355	1041	226	24	1	2	0	3932		
Percent	2.4%	0.3%	0.8%	2.0%	6.0%	21.2%	34.5%	26.5%	5.7%	0.6%	0.0%	0.1%	0.0%	407.9%		
AM Peak	09:00	10:00	10:00	10:00	10:00	10:00	10:00	11:00	07:00	09:00	10:00	08:00		10:00		
Vol.	8	3	4	5	18	64	82	53	20	3	1	1		237		
PM Peak	16:00	16:00	16:00	16:00	17:00	17:00	17:00	15:00	14:00	16:00				16:00		
Vol.	24	5	12	20	31	118	145	123	28	4				401		
Grand Total	93	13	31	77	235	834	1355	1041	226	24	1	2	0	3932		
Percent	2.4%	0.3%	0.8%	2.0%	6.0%	21.2%	34.5%	26.5%	5.7%	0.6%	0.0%	0.1%	0.0%			

Statistics	10 MPH Pace Speed :	41-50 MPH
	Number in Pace :	2396
	Percent in Pace :	60.9%
	Number of Vehicles > 55 MPH :	27
	Percent of Vehicles > 55 MPH :	0.7%
	Mean Speed(Average) :	42 MPH

Figure
8



Appendix C – Safety

Crash History Data

Left-Turn Lane Warrant Analysis

Preliminary Signal Warrant Analysis



CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
1 - 5 of 32 Crash records shown.

SER#	S	D	M	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE													
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	OWNER	FROM	P#	TYPE	INJ	G	E	LICNS	LOC	ERROR	ACT	EVENT	CAUSE
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	SVRTY	V#	TYPE	TO										
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY														
01804	N	N	N				05/09/2017	14	KUEBLER BLVD SE	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE	9	STRGHT										29
NONE							TU	0	TURNER RD SE	UN		TRF SIGNAL	N	UNK	REAR	N/A		UN-UN									000		00
N							2P			06	0		N	DAY	PDO	PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK		000		00
N							44 53 5.23	-122 58 47.21																					
																02	NONE	9	STOP								011		00
																N/A		UN-UN		01	DRVR	NONE	00	Unk	UNK		000		00
																PSNGR	CAR												
04888	N	N	N				12/19/2018	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE	0	STRGHT									27, 29	
NONE							WE	0	TURNER RD SE	UN		TRF SIGNAL	N	WET	REAR	PRVTE		UN-UN									000		00
N							5A			06	0		N	DLIT	INJ	PSNGR	CAR			01	DRVR	INJC	47	M	OR-Y	OR<25	016,026	038	27, 29
N							44 53 5.23	-122 58 47.21																					
																02	NONE	0	STOP								011		00
																PRVTE		UN-UN		01	DRVR	INJC	39	M	OR-Y	OR<25	000		00
																PSNGR	CAR												
02285	N	N	N				06/02/2016	16	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT									29	
NONE							TH	0	TURNER RD SE	N		TRF SIGNAL	N	DRY	REAR	N/A		N -S									000		00
N							6A			06	0		N	DAY	PDO	PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK		000		00
N							44 53 5.23	-122 58 47.21																					
																02	NONE	9	STOP								011		00
																N/A		N -S		01	DRVR	NONE	00	Unk	UNK		000		00
																PSNGR	CAR												
02805	N	N	N				07/24/2019	16	TURNER RD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT									29	
NONE							WE	0	KUEBLER BLVD SE	N		TRF SIGNAL	N	DRY	REAR	N/A		N -S									000		00
N							11A			06	0		N	DAY	PDO	PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK		000		00
N							44 53 5.23	-122 58 47.21																					
																02	NONE	9	STOP								011		00
																N/A		N -S		01	DRVR	NONE	00	Unk	UNK		000		00
																PSNGR	CAR												
03137	N	N	N				08/19/2015	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT									27, 29	
NONE							WE	0	TURNER RD SE	E		TRF SIGNAL	N	DRY	REAR	PRVTE		E -W									000		00
N							4P			06	0		N	DAY	INJ	PSNGR	CAR			01	DRVR	NONE	46	F	OR-Y	OR<25	016,026	038	27, 29
N							44 53 5.23	-122 58 47.21																					
																02	NONE	0	STOP								011		00
																PRVTE		E -W		01	DRVR	INJC	42	M	OR-Y	OR<25	000		00
																PSNGR	CAR												

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CITY OF SALEM, MARION COUNTY

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
10 - 13 of 32 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	MOVE	A	S																		
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	INT-REL	TRLR	QTY																			
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	TRAFFIC	OWNERS	FROM																			
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	OFFRD	WTHR	CRASH	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	PED	ERROR	ACT	EVENT	CAUSE		
02929	N	N	N	N	N	N	08/03/2015	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	1	STRGHT												
STATE							MO	0	TURNER RD SE	W		TRF SIGNAL	N	DRY	REAR	PRVTE		W -E										000		00	
N							7A			06	0		N	DAY	INJ	SEMI TOW				01	DRVR	NONE	33	F	OR-Y		043,026	000		07	
N							44 53 5.23	-122 58 47.21																							
																02	NONE	0	STOP									011		00	
																PRVTE		W -E									000	000		00	
																PSNGR	CAR			01	DRVR	INJC	62	F	OR-Y		000			00	
04160	N	N	N	N	N	N	10/28/2015	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT												
NONE							WE	0	TURNER RD SE	W		TRF SIGNAL	N	DRY	REAR	PRVTE		W -E										000		00	
N							12P			06	0		N	DAY	INJ	PSNGR	CAR			01	DRVR	NONE	00	M	OR-Y		026	000		07	
N							44 53 5.23	-122 58 47.21																							
																02	NONE	0	STOP									011		00	
																PRVTE		W -E									000	000		00	
																PSNGR	CAR			01	DRVR	INJC	45	F	OR-Y		000			00	
01310	N	N	N	N	N	N	04/06/2015	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT												
NONE							MO	0	TURNER RD SE	W		TRF SIGNAL	N	DRY	REAR	PRVTE		W -E										000		00	
N							3P			06	0		N	DAY	PDO	PSNGR	CAR			01	DRVR	NONE	00	F	UNK		026	000		29	
N							44 53 5.23	-122 58 47.21																							
																02	NONE	0	STOP									011		00	
																PRVTE		W -E									000	000		00	
																PSNGR	CAR			01	DRVR	NONE	17	F	OTH-Y		000	000		00	
04978	N	N	N	N	N	N	11/10/2016	14	KUEBLER BLVD SE	INTER	CROSS	N	N	FOG	S-1STOP	01	NONE	1	STRGHT										013		07,29
CITY							TH	0	TURNER RD SE	W		TRF SIGNAL	N	DRY	REAR	PRVTE		W -E										000		00	
N							5P			06	0		N	DLIT	INJ	TRUCK				01	DRVR	NONE	24	M	OR-Y		043,026	000		07,29	
N							44 53 5.23	-122 58 47.21																							
																02	NONE	0	STOP									011	013		00
																PRVTE		W -E									000	000		00	
																OTH	BUS			01	DRVR	NONE	56	M	OR-Y		000				
																03	NONE	0	STOP									022	013		00
																PRVTE		W -E									000	000		00	
																PSNGR	CAR			01	DRVR	NONE	31	F	OR-Y		000				
																04	NONE	0	STOP									022		00	
																PRVTE		W -E									000	000		00	
																MTRCYCLE				01	DRVR	INJB	47	M	OR-Y		000			00	

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
14 - 17 of 32 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	PRTC	INJ	A	S	PED	ERROR	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	DIRECT	(MEDIAN)	TRAF-	RNDBT	SURF	COLL	TLR QTY	FROM			G	E	LICNS	LOC							
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	LOCN	LEGS	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
UNLOC?	D	C	S	V	L	K	LAT	LR		(#LANES)																			
04184	N	N	N				10/05/2017	14 KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT											
NONE							TH	0	TURNER RD SE	W			TRF SIGNAL	N	DRY	REAR	PRVTE	W -E								000	00		
N							10A		06	0		N	DAY	INJ		SEMI TOW			01	DRVR	NONE	00	M	UNK	UNK	026	000	29	
N							44 53 5.23	-122 58 47.21								02	NONE	0	STOP										
																PRVTE	W -E								011	00			
																PSNGR	CAR		01	DRVR	INJC	20	F	OR-Y	OR<25	000	000	00	
00802	N	N	N				03/08/2018	14 KUEBLER BLVD SE	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE	0	STRGHT											
NONE							TH	0	TURNER RD SE	W			TRF SIGNAL	N	WET	REAR	PRVTE	W -E								000	00		
N							1P		06	0		N	DAY	INJ		PSNGR	CAR			01	DRVR	NONE	19	M	OR-Y	OR<25	026	000	29
N							44 53 5.23	-122 58 47.21								02	NONE	0	STOP										
																PRVTE	W -E								011	00			
																PSNGR	CAR		01	DRVR	INJC	28	M	OR-Y	OR<25	000	000	00	
																02	NONE	0	STOP										
																PRVTE	W -E								011	00			
																PSNGR	CAR		02	PSNG	INJC	29	F		000	000	00		
00210	N	N	N				N N 01/18/2019	14 KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT											
CITY							FR	0	TURNER RD SE	W			TRF SIGNAL	N	DRY	REAR	N/A	W -E								000	00		
N							9A		06	0		N	DAY	PDO		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	UNK	000	000	00
N							44 53 5.26	-122 58 47.22								02	NONE	9	STOP										
																N/A	W -E								011	00			
																SEMI TOW			01	DRVR	NONE	00	Unk	UNK	UNK	000	000	00	
00321	N	N	N				01/27/2019	14 KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT											
NONE							SU	0	TURNER RD SE	W			TRF SIGNAL	N	DRY	REAR	N/A	W -E								000	00		
N							10A		06	0		N	DAY	PDO		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	UNK	000	000	00
N							44 53 5.23	-122 58 47.21								02	NONE	9	STOP										
																N/A	W -E								011	00			
																PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	UNK	000	000	00	
03715	N	N	N				09/23/2019	14 KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9	STRGHT											
NONE							MO	0	TURNER RD SE	W			TRF SIGNAL	N	DRY	REAR	N/A	W -E								000	00		
N							9A		06	0		N	DAY	PDO		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	UNK	000	000	00
N							44 53 5.24	-122 58 47.24																					

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
18 - 22 of 32 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	PRTC	INJ	A	S	PED	ERROR	ACT	EVENT	CAUSE	
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	DIRECT	(#LANES)	TRAF-	RNDBT	SURF	COLL	OWNER	FROM			G	E	LICNS					
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC		
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS																	
															02 NONE N/A PSNGR	9 CAR	STOP W -E		01	DRVR	NONE	00	Unk UNK	000	011 000	00 00
02343	N	N	N				06/24/2015	14	KUEBLER BLVD SE	INTER	CROSS	N		CLR	0-1 L-TURN	01	NONE	0	STRGHT						02	
NONE							WE	0	TURNER RD SE	CN			TRF SIGNAL	N	DRY	TURN	PRVTE		S -N					000	00	
N							4P		04	0		N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	53	M	OR-Y	000	
N							44 53 5.23	-122 58 47.21															OR<25	000	00	
															02 NONE PRVTE PSNGR	0 CAR	TURN-L N -E		01	DRVR	INJC	34	M	OR-Y	000	
																							028,004	000	00 02	
04547	N	N	N	N			N N 11/17/2015	14	KUEBLER BLVD SE	INTER	CROSS	N		RAIN	ANGL-OTH	01	NONE	0	STRGHT						04	
CITY							TU	0	TURNER RD SE	CN			TRF SIGNAL	N	WET	ANGL	PRVTE		E -W					000	00	
N							9A		01	0		N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	49	F	OR-Y	000	
N							44 53 5.23	-122 58 47.21															OR<25	000	00	
															02 NONE PRVTE PSNGR	0 CAR	STRGHT N -S		01	DRVR	INJC	60	M	OR-Y	000	
																							020	000	00 04	
05669	N	N	N	N			N N 12/21/2016	14	KUEBLER BLVD SE	INTER	CROSS	N		FOG	0-1 L-TURN	01	NONE	0	STRGHT						02	
CITY							WE	0	TURNER RD SE	CN			TRF SIGNAL	N	DRY	TURN	PRVTE		E -W					000	00	
N							5P		02	0		N	DLIT	INJ		PSNGR	CAR		01	DRVR	NONE	26	F	OR-Y	000	
N							44 53 5.23	-122 58 47.21															OR<25	000	00	
															02 NONE PRVTE PSNGR	0 CAR	TURN-L W -N		01	DRVR	INJC	51	F	OR-Y	000	
																							028,004	000	00 02	
03236	N	N	N	N			N N 08/10/2017	14	KUEBLER BLVD SE	INTER	CROSS	N		CLR	ANGL-OTH	01	NONE	0	STRGHT						04	
CITY							TH	0	TURNER RD SE	CN			TRF SIGNAL	N	DRY	ANGL	PRVTE		W -E					000	00	
N							9P		03	0		N	DLIT	INJ		PSNGR	CAR		01	DRVR	INJC	20	M	OR-Y	000	
N							44 53 5.23	-122 58 47.21															OR<25	000	00	
															01 NONE PRVTE PSNGR	0 CAR	STRGHT W -E		02	PSNG	INJC	24	M		000	00 00
															02 NONE PRVTE PSNGR	0 CAR	STRGHT N -S		01	DRVR	NONE	19	M	OR-Y	000	
																							020	000	00 04	

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
23 - 26 of 32 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE		
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	DIRECT	(MEDIAN)	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	G	E	LICNS	LOC					
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	CONTL	DRWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES		
UNLOC?	D	C	S	V	L	K	LAT	LRS	LOCTN	(#LANES)															
03384	N	N	N	N	N	08/20/2017	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE	0	STRGHT								
CITY					SU		0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	W -E						000	00		
N					8P				03	0		N	DAY	INJ	PSNGR CAR		01	DRVR	INJC	27	F	OR-Y	04		
N					44 53 5.23	-122 58 47.21															020	000	00		
															01 NONE	0	STRGHT						00		
															PRVTE	W -E						000	00		
															PSNGR CAR		02	PSNG	INJC	08	F		000	00	
															02 NONE	0	TURN-L						00		
															PRVTE	N -E						000	00		
															PSNGR CAR		01	DRVR	INJC	52	F	OR-Y	00		
																					000	000	00		
04208	N	N	N	N	N	10/07/2017	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLD	0-1 L-TURN	01 NONE	0	STRGHT						053	02	
CITY					SA		0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	N -S						000	00		
N					9P				01	0		N	DLIT	INJ	PSNGR CAR		01	DRVR	INJB	45	F	OR-Y	00		
N					44 53 5.23	-122 58 47.21															000	000	00		
															01 NONE	0	STRGHT						00		
															PRVTE	N -S						000	00		
															PSNGR CAR		02	PSNG	INJB	12	F		000	00	
															02 NONE	0	TURN-L						00		
															PRVTE	S -W						000	053	00	
															PSNGR CAR		01	DRVR	INJC	17	M	OR-Y	028,004	02	
																					028,004	000	00		
05384	N	N	N	N	N	12/12/2017	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	0-1 L-TURN	01 NONE	0	TURN-L							02	
CITY					TU		0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	W -N						000	00		
N					4P				02	0		N	DAY	INJ	PSNGR CAR		01	DRVR	INJC	68	M	OR-Y	02		
N					44 53 5.23	-122 58 47.21															028,004	000	00		
															02 NONE	0	STRGHT						00		
															PRVTE	E -W						000	00		
															PSNGR CAR		01	DRVR	NONE	65	M	OR-Y	000	00	
02310	N	N	N	N	N	06/28/2018	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	0-1 L-TURN	01 NONE	0	TURN-L						001	27,02	
CITY					TH		0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	S -W						000	00		
N					4P				01	0		N	DAY	INJ	PSNGR CAR		01	DRVR	NONE	35	F	OR-Y	016,028,004	038	27,02
N					44 53 5.23	-122 58 47.21																000	000	001	00
															02 NONE	0	STRGHT						000	00	
															PRVTE	N -S						000	000	00	
															MTRCYCLE		01	DRVR	INJB	55	M	OR-Y	000	00	

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
27 - 30 of 32 Crash records shown.

SER#	P	S	D	M	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE			
INVEST	E	A	U	I	C	O	DAY			DIST	FIRST STREET	DIRECT	(MEDIAN)	TRAFFIC	RNDBT	SURF	COLL	TRLR QTY	FROM										
RD DPT	E	L	G	N	H	R	TIME			FROM	SECOND STREET	DIRECT	LEGS	CONTRL				OWNER	FROM										
UNLOC?	D	C	S	V	L	K	LAT			LONG	LRS	LOCTN	(#LANES)		DRVWY	LIGHT	SVRTY	V# TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC			
03687	N	N	N	N	N	N	09/30/2018			14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLD	0-1 L-TURN	01 NONE	0	TURN-L						02			
CITY							SU			0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	W -N						000	00			
N							2P					02	0		N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	18	M	OR-Y	028,004	000	02
N							44 53 5.23			-122 58 47.21																			
																		02 NONE	1	STRGHT						000	00		
																		PRVTE	E -W						000	000	00		
																		PSNGR CAR		01	DRVR	INJC	41	F	OR-Y	000	000	00	
																		02 NONE	1	STRGHT						000	000	00	
																		PRVTE	E -W						000	000	00		
																		PSNGR CAR		02	PSNG	INJC	11	M		000	000	00	
01435	N	N	N				04/27/2018			14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE	9	STRGHT						04			
NONE							FR			0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	ANGL	N/A	E -W						000	00			
N							11A					02	0		N	DAY	PDO	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
N							44 53 5.23			-122 58 47.21																			
																		02 NONE	9	STRGHT						000	00		
																		N/A	S -N						000	000	00		
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
01910	N	N	N				06/01/2018			14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	0-1 L-TURN	01 NONE	9	STRGHT						02			
NONE							FR			0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	TURN	N/A	E -W						000	00			
N							6P					02	0		N	DAY	PDO	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
N							44 53 5.25			-122 58 47.23																			
																		02 NONE	9	TURN-L						000	00		
																		N/A	W -N						000	000	00		
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
03548	N	N	N				09/18/2018			14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	0-1 L-TURN	01 NONE	9	STRGHT						27,02			
CITY							TU			0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	TURN	N/A	E -W						000	00			
N							2P					02	0		N	DAY	PDO	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
N							44 53 5.23			-122 58 47.21																			
																		02 NONE	9	TURN-L						000	00		
																		N/A	W -N						000	000	00		
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
03445	N	N	N				09/07/2019			14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	0-1 L-TURN	01 NONE	0	TURN-L						087	02		
CITY							SA			0	TURNER RD SE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	E -S						000	087	00		
N							11P					03	0		N	DLIT	INJ	PSNGR CAR		01	DRVR	NONE	16	M	OR-Y	028,004	000	02	
N							44 53 5.23			-122 58 47.22																			

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
31 - 32 of 32 Crash records shown.

SER#	S	D	M																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
36TH AVE at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
1 - 3 of 19 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE												
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY			A	S									
RD DPT	E	L	G	N	H	R	FROM	SECOND STREET	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM		PRTC	INJ	G	E	LICNS	PED					
UNLOC?	D	C	S	V	L	K	LONG	LRS	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO		P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
03237	N	N	N				06/27/2016	14	KUEBLER BLVD SE	INTER	CROSS	N	S-1STOP	01 NONE	9	STRGHT										29	
NONE							MO	0	36TH AVE SE	UN		DRY	REAR	N/A	UN-UN										000	00	
N							1P		06	0	N	DAY	PDO	PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000	00	
N							44 53 5.32	-122 59 19.34																			
														02 NONE	9	STOP								011	00		
														N/A	UN-UN	01	DRVR	NONE	00	Unk	UNK		000	000	00		
														PSNGR CAR													
04190	N	N	N				10/03/2017	14	KUEBLER BLVD SE	INTER	CROSS	N	S-1STOP	01 NONE	0	STRGHT								013	29		
NO RPT							TU	0	36TH AVE SE	UN		DRY	REAR	PRVTE	UN-UN									000	00		
N							4P		06	0	N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	54	F	OR-Y		026	000	29	
N							44 53 5.32	-122 59 19.34																			
														01 NONE	0	STRGHT								000	00		
														PRVTE	UN-UN	02	PSNG	INJB	12	M			000	000	00		
														PSNGR CAR													
														02 NONE	0	STOP								011	013	00	
														PRVTE	UN-UN	01	DRVR	NONE	46	M	OR-Y		000	022	00		
														PSNGR CAR													
														03 NONE	0	STOP								011	00		
														PRVTE	UN-UN	01	DRVR	NONE	62	F	OR-Y		000	000	00		
														PSNGR CAR													
01474	N	N	N				05/01/2018	14	KUEBLER BLVD SE	INTER	CROSS	N	S-1STOP	01 NONE	0	STRGHT									07		
NO RPT							TU	0	36TH AVE SE	UN		DRY	REAR	PRVTE	UN-UN									000	00		
N							10A		06	0	N	DAY	INJ	PSNGR CAR			01	DRVR	INJC	30	F	OR-Y		043,026	000	07	
N							44 53 5.32	-122 59 19.34																			
														01 NONE	0	STRGHT								000	00		
														PRVTE	UN-UN	02	PSNG	INJC	33	M			000	000	00		
														PSNGR CAR													
														02 NONE	0	STOP								011	00		
														PRVTE	UN-UN	01	DRVR	INJC	43	F	OR-Y		000	000	00		
														PSNGR CAR													
03447	N	Y	N				N N 08/12/2016	16	KUEBLER BLVD SE	INTER	CROSS	N	ANGL-STP	01 NONE	0	TURN-R									08		
CITY							FR	0	36TH AVE SE	N		DRY	TURN	PRVTE	E -N									000	00		
N							1A		06	0	N	DLIT	INJ	PSNGR CAR			01	DRVR	NONE	21	F	OR-Y		001,026	000	08	
N							44 53 5.32	-122 59 19.34																			

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
36TH AVE at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
4 - 9 of 19 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	MOVE	PRTC	INJ	A	S	PED	ERROR	ACT	EVENT	CAUSE											
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	INT-REL	TRLR	QTY																				
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	TRAFFIC	OWNER	FROM																				
UNLOC?	D	C	S	V	L	K	LAT	LONG	LR	LOC	(#LANES)	CONTR	DRWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
											02	NONE	0					STOP													
											PRVTE	N	-S																		
											PSNGR	CAR							01	DRVR	INJC	58	F	OR-Y		000	011	000	00		
02470	N	N	N				07/01/2015	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0											27,07		
NONE							WE	0	36TH AVE SE	E			TRF SIGNAL	N	DRY	REAR		PRVTE		E	-W						000	00			
N							6A			06	0		N	DAY	INJ			PSNGR	CAR			01	DRVR	NONE	62	M	OR-Y		016,026	038	27,07
N							44 53 5.32	-122 59 19.34																							
																		02	NONE	0											
																			PRVTE	E	-W							011	00		
																		PSNGR	CAR		01	DRVR	INJC	21	F	OR-Y		000	000	00	
03007	N	N	N				07/25/2017	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0											29		
NONE							TU	0	36TH AVE SE	E			TRF SIGNAL	N	DRY	REAR		PRVTE		E	-W						000	00			
N							4P			06	0		N	DAY	INJ			PSNGR	CAR			01	DRVR	NONE	19	M	OR-Y		026	000	29
N							44 53 5.32	-122 59 19.34																							
																		02	NONE	0											
																			PRVTE	E	-W							011	00		
																		PSNGR	CAR		01	DRVR	INJC	19	M	OR-Y		000	000	00	
00825	N	N	N				03/10/2018	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0											29		
NO RPT							SA	0	36TH AVE SE	E			TRF SIGNAL	N	DRY	REAR		PRVTE		E	-W						000	00			
N							8A			06	0		N	DAY	INJ			PSNGR	CAR			01	DRVR	NONE	68	M	OR-Y		026	000	29
N							44 53 5.32	-122 59 19.34																							
																		02	NONE	0											
																			PRVTE	E	-W							011	00		
																		PSNGR	CAR		01	DRVR	INJC	37	F	OR-Y		000	000	00	
03193	N	N	N	N	N	N	08/22/2019	17	KUEBLER BLVD SE	INTER	3-LEG	N	Y	CLR	FIX OBJ	01	NONE	9										079	21,08		
CITY							TH	0	36TH AVE SE	S			TRF SIGNAL	N	DRY	FIX		N/A		E	-S						000	00			
N							1P			05	0		N	DAY	PDO			FARM	TRCTR				01	DRVR	NONE	00	Unk	UNK	000	000	00
N							44 53 5.33	-122 59 19.37																							
01634	N	N	N				05/06/2015	14	KUEBLER BLVD SE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0											07		
NONE							WE	0	36TH AVE SE	W			TRF SIGNAL	N	DRY	REAR		PRVTE		W	-E						000	00			
N							8A			06	0		N	DAY	INJ			PSNGR	CAR			01	DRVR	NONE	28	F	OR-Y		026	000	07
N							44 53 5.32	-122 59 19.34																							
																		02	NONE	0											
																			PRVTE	W	-E							011	00		
																		PSNGR	CAR		01	DRVR	INJC	62	M	OR-Y		000	000	00	

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
36TH AVE at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
10 - 13 of 19 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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01507	N	N	N				04/18/2017	14	KUEBLER BLVD SE	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE	0	STRGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
36TH AVE at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
14 - 17 of 19 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE					
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	DIRECT	(MEDIAN)	TRAFFIC	RNDBT	SURF	COLL	OWNER	FROM	G	E	LICNS	LOC								
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	LOCTN	LEGS	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
UNLOC?	D	C	S	V	L	K	LAT	LRS		(#LANES)																		
02559	N	N	N				06/27/2017	14	KUEBLER BLVD SE	CROSS	N		CLR	0-1 L-TURN	01	NONE	0	TURN-L										
CITY							TU	0	36TH AVE SE		TRF SIGNAL	N	DRY	TURN		PRVTE	W -N											
N							10A		02	0		N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	59	M	OR-Y		028,004	000	02
N							44 53 5.32	-122 59 19.34																				
00388	N	N	N				01/31/2017	14	KUEBLER BLVD SE	CROSS	N		CLR	0-1 L-TURN	01	NONE	9	TURN-L										
NO RPT							TU	0	36TH AVE SE		TRF SIGNAL	N	DRY	TURN		N/A	E -S											
N							8A		03	0		N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							44 53 5.32	-122 59 19.34																				
04979	N	N	N				12/26/2018	14	KUEBLER BLVD SE	CROSS	N		RAIN	ANGL-OTH	01	NONE	0	STRGHT										
CITY							WE	0	36TH AVE SE		TRF SIGNAL	N	WET	ANGL		PRVTE	S -N											
N							9P		02	0		N	DLIT	INJ		PSNGR	CAR		01	DRVR	INJC	62	M	OR-Y		000	000	00
N							44 53 5.32	-122 59 19.34																				
04085	N	N	N				10/18/2019	14	KUEBLER BLVD SE	CROSS	N		RAIN	ANGL-OTH	01	NONE	0	TURN-R										
CITY							FR	0	36TH AVE SE		TRF SIGNAL	N	WET	TURN		PRVTE	N -W											
N							5P		01	0		N	DUSK	INJ		PSNGR	CAR		01	DRVR	INJC	62	F	OR-Y		028	000	02
N							44 53 5.33	-122 59 19.34																				

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
36TH AVE at KUEBLER BLVD, City of Salem, Marion County, 01/01/2015 to 12/31/2019
18 - 19 of 19 Crash records shown.

SER#	S	D	M																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</
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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at AIRWAY DR, City of Salem, Marion County, 01/01/2015 to 12/31/2019
1 - 4 of 22 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE			A	S								
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	DIRECT	(MEDIAN)	TRAF-	RNDBT	SURF	COLL	OWNER	FROM			G	E	LICNS	PED						
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	LOCTN	LEGS	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
03062	N	N	N	N	N	07/22/2016	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE	0	STRGHT									013,004	07
CITY						FR	0	TURNER RD SE	N		STOP SIGN	N	DRY	REAR	PRVTE	N -S										000		00
N						2P			06	0		N	DAY	INJ	PSNGR	CAR		01	DRVR	INJC	54	F	OR-Y		043,026	000		07
N						44 53 41.51	-122 59 25.09																					
															01	NONE	0	STRGHT								000		00
															PRVTE	N -S									000		00	
															PSNGR	CAR		02	PSNG	INJC	54	F		000	000		00	
															02	NONE	0	STOP							011	013	00	
															PRVTE	N -S		01	DRVR	NONE	19	M	OR-Y	000	022	00		
															PSNGR	CAR											00	
															02	NONE	0	STOP							011	013	00	
															PRVTE	N -S		02	PSNG	INJC	11	F		000	000	00		
															PSNGR	CAR											00	
															02	NONE	0	STOP							011	013	00	
															PRVTE	N -S		03	PSNG	INJC	06	F		000	000	00		
															PSNGR	CAR											00	
															03	NONE	0	STOP							011	004	00	
															PRVTE	N -S		01	DRVR	NONE	43	M	OR-Y	000	000	00		
															PSNGR	CAR											00	
03523	Y	N	N	N	N	08/28/2017	16	AIRWAY DR SE	INTER	3-LEG	N	Y	SMOK	FIX OBJ	01	NONE	9	TURN-L							079	01,08		
CITY						MO	0	TURNER RD SE	N		STOP SIGN	N	DRY	FIX	N/A	S -W									000		00	
N						7P			06	0		N	DAY	PDO	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000		00	
N						44 53 41.51	-122 59 25.09																					
00747	Y	N	N	N	N	02/27/2019	16	AIRWAY DR SE	INTER	3-LEG	N	N	SNOW	0-STRGHT	01	NONE	9	STRGHT									01	
STATE						WE	0	TURNER RD SE	N		STOP SIGN	N	SNO	SS-M	N/A	S -N									000		00	
N						7A			06	0		N	DAY	PDO	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000		00	
N						44 53 41.54	-122 59 25.11																					
															02	NONE	9	STRGHT							000		00	
															N/A	N -S		01	DRVR	NONE	00	Unk	UNK	000	000		00	
															PSNGR	CAR											00	
01725	N	N	N	N	N	05/06/2019	16	AIRWAY DR SE	INTER	3-LEG	N	Y	CLR	FIX OBJ	01	NONE	0	STRGHT							079,092,010	26		
NO RPT						MO	0	TURNER RD SE	E		STOP SIGN	N	DRY	FIX	PRVTE	S -N								007	079,010	00		
N						12P			05	0		N	DAY	INJ	TRUCK			01	DRVR	INJB	52	M	OR-Y	081	000	092	26	
N						44 53 41.54	-122 59 25.1																					

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at AIRWAY DR, City of Salem, Marion County, 01/01/2015 to 12/31/2019
5 - 7 of 22 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	MOVE	A	S	P	T	I	G	E	L	P	E	R	R	A	C	E						
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	OWNER	FROM	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	SVRTY	V#	TYPE	TO													
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY																	
00005	N	N	N				01/02/2015	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT											013	07	
NO RPT							FR	0	TURNER RD SE	S		STOP SIGN	N	DRY	REAR	PRVTE		S -N											000	00		
N							4P			06	0		N	DAY	INJ	PSNGR	CAR				01	DRVR	NONE	36	M	OR-Y	0R<25	026	000		07	
N							44 53 41.51	-122 59 25.09																								
																02	NONE	0	STOP	S -N									012	013	00	
																PRVTE	CAR				01	DRVR	INJC	31	M	OR-Y	0R<25	000	022	000	00	
																02	NONE	0	STOP	S -N									012	013	00	
																PRVTE	CAR				02	PSNG	INJC	33	F			000	000	000	00	
																02	NONE	0	STOP	S -N									012	013	00	
																PSNGR	CAR				03	PSNG	INJC	06	F			000	000	000	00	
																03	NONE	0	STRGHT	N -S									000	000	00	
																PSNGR	CAR				01	DRVR	INJC	52	M	OR-Y	0R<25	000	000	000	00	
03649	N	N	N				09/23/2015	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT													29
NO RPT							WE	0	TURNER RD SE	S		STOP SIGN	N	DRY	REAR	PRVTE		S -N												000	00	
N							12P			06	0		N	DAY	PDO	PSNGR	CAR				01	DRVR	NONE	49	F	OR-Y	0R<25	026	000		29	
N							44 53 41.51	-122 59 25.09																								
																02	NONE	0	STOP	S -N										012	000	00
																PRVTE	CAR				01	DRVR	NONE	81	M	OR-Y	UNK	000	000	000	00	
02002	N	N	N	N			N 05/13/2016	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT													32, 27, 29
CITY							FR	0	TURNER RD SE	S		STOP SIGN	N	DRY	REAR	PRVTE		S -N												000	00	
N							2P			06	0		N	DAY	INJ	PSNGR	CAR				01	DRVR	NONE	20	M	OR-Y	0R<25	052, 016, 026	038		32, 27, 29	
N							44 53 41.51	-122 59 25.09																								
																02	NONE	0	STOP	S -N										012	000	00
																PRVTE	CAR				01	DRVR	INJC	35	M	OR-Y	0R<25	000	000	000	00	
00246	N	N	N	N			N 01/18/2017	16	AIRWAY DR SE	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE	0	STRGHT													07
CITY							WE	0	TURNER RD SE	S		STOP SIGN	N	WET	REAR	PRVTE		S -N												000	00	
N							12P			06	0		N	DAY	INJ	PSNGR	CAR				01	DRVR	NONE	77	F	OR-Y	0R<25	043, 026	000		07	
N							44 53 41.51	-122 59 25.09																								

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at AIRWAY DR, City of Salem, Marion County, 01/01/2015 to 12/31/2019
8 - 11 of 22 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	PRTC	INJ	A	S	PED	ERROR	ACT	EVENT	CAUSE		
INVEST	E	A	U	I	C	O DAY	DIST	FIRST STREET	(MEDIAN)	TRAFFIC	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC				
RD DPT	E	L	G	N	H	R TIME	FROM	SECOND STREET	LEGS	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO										
UNLOC?	D	C	S	V	L	K LAT	LONG	LRS	(#LANES)																	
														02 NONE 0	STOP S -N											
														PRVTE PSNGR CAR			01	DRVR	INJC	70	F	OR-Y OR<25	000	012 000	00 00	
00530	N	N	N	N	N	02/11/2017	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01 NONE 0	STRGHT								29		
CITY						SA	0	TURNER RD SE	S			STOP SIGN	N	DRY	REAR	PRVTE	S -N						000	00		
N						12P			06	0		N	DAY	INJ	PSNGR CAR			01	DRVR	INJC	31	F	OR-Y OR<25	026	000	29
N						44 53 41.51 -122 59 25.09									02 NONE 0	STOP S -N							012 000	00 00		
															PRVTE PSNGR CAR			01	DRVR	NONE	70	F	OR-Y OR<25	000	000	00 00
05413	N	N	N	N	N	12/13/2017	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01 NONE 9	STRGHT								07		
CITY						WE	0	TURNER RD SE	S			STOP SIGN	N	DRY	REAR	N/A	S -N						000	00		
N						12P			06	0		N	DAY	PDO	PSNGR CAR			01	DRVR	NONE	00	Unk UNK UNK	000	000	00	
N						44 53 41.51 -122 59 25.09									02 NONE 9	STOP S -N							012 000	00 00		
															N/A PSNGR CAR			01	DRVR	NONE	00	Unk UNK UNK	000	000	00 00	
01782	N	N	N	N	N	05/24/2018	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01 NONE 0	STRGHT								29		
NONE						TH	0	TURNER RD SE	S			STOP SIGN	N	DRY	REAR	PRVTE	S -N						000	00		
N						5P			06	0		N	DAY	INJ	PSNGR CAR			01	DRVR	INJC	52	F	OR-Y OR<25	026	000	29
N						44 53 41.51 -122 59 25.09									02 NONE 0	STOP S -N							012 000	00 00		
															PRVTE PSNGR CAR			01	DRVR	INJC	43	M	OR-Y OR<25	000	000	00 00
00483	N	N	N	N	N	02/11/2018	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01 NONE 0	STRGHT								40, 29		
NONE						SU	0	TURNER RD SE	S			STOP SIGN	N	DRY	REAR	PRVTE	S -N						000	00		
N						4P			06	0		N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	20	F	OR-Y OR<25	026	026	40, 29
N						44 53 41.51 -122 59 25.09									02 NONE 0	STOP S -N							011 000	00 00		
															PRVTE PSNGR CAR			01	DRVR	INJC	50	M	OR-Y OR<25	000	000	00 00
															02 NONE 0	STOP S -N							011 000	00 00		
															PRVTE PSNGR CAR			02	PSNG	INJC	46	F		000	000	00 00

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at AIRWAY DR, City of Salem, Marion County, 01/01/2015 to 12/31/2019
12 - 15 of 22 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE					
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	DIRECT	(MEDIAN)	TRAFFIC	RNDBT	SURF	COLL	OWNER	FROM	G	E	LICNS	LOC								
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	TRAFFIC																	
UNLOC?	D	C	S	V	L	K	LAT	LRS	LOCTN	(#LANES)	CONTR	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
															02	NONE	0	STOP								011		00
															PRVTE	S -N									000	000		00
															PSNGR	CAR		03	PSNG	INJC	13	F						00
															02	NONE	0	STOP								011		00
															PRVTE	S -N									000	000		00
															PSNGR	CAR		04	PSNG	INJC	16	F						00
00764	N	N	N	N	N	03/05/2018	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1TURN	01	NONE	9	STRGHT								079		07
CITY						MO	0	TURNER RD SE	S		STOP SIGN	N	DRY	REAR	N/A	S -N									000		00	
N						11A			06	0		N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000		00
N						44 53 41.51 -122 59 25.09																						
															02	NONE	9	TURN-L								000		00
															N/A	S -W									000	000		00
															PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000				00
00854	N	N	N	N	N	03/08/2019	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT								013		27,07
CITY						FR	0	TURNER RD SE	S		STOP SIGN	N	DRY	REAR	PRVTE	S -N									000		00	
N						5P			06	0		N	DUSK	INJ		PSNGR	CAR		01	DRVR	NONE	36	M	OR-Y	016,043,026	038	27,07	
N						44 53 41.52 -122 59 25.1																						
															02	NONE	0	STOP								012	013	00
															PRVTE	S -N									000	022		00
															PSNGR	CAR		01	DRVR	INJC	18	M	OR-Y					00
															03	NONE	0	STOP								012		00
															PRVTE	S -N									000	000		00
															PSNGR	CAR		01	DRVR	INJC	23	M	OR-Y					00
															03	NONE	0	STOP								012		00
															PRVTE	S -N									000	000		00
															PSNGR	CAR		02	PSNG	INJC	24	M						00
															03	NONE	0	STOP								012		00
															PRVTE	S -N									000	000		00
															PSNGR	CAR		03	PSNG	INJC	36	F						00
00690	N	N	N	N	N	02/22/2019	16	AIRWAY DR SE	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE	9	STRGHT										29
NONE						FR	0	TURNER RD SE	S		STOP SIGN	N	WET	REAR	N/A	S -N									000		00	
N						5P			06	0		N	DUSK	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000		00
N						44 53 41.52 -122 59 25.13																						
															02	NONE	9	STOP								012		00
															N/A	S -N									000	000		00
															PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000				00

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at AIRWAY DR, City of Salem, Marion County, 01/01/2015 to 12/31/2019
16 - 20 of 22 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE											
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	(MEDIAN)	TRLR QTY	FROM	G	E	LICNS	LOC														
RD DPT	E	L	G	N	H	R	FROM	SECOND STREET	LEGS	OWNER	TO																		
UNLOC?	D	C	S	V	L	K	LONG	LRS	TRAFFIC	TYPE	TO																		
00277	N	N	N	N	N	N	01/20/2017	16	AIRWAY DR SE	INTER	3-LEG	N	NONE	0	STRGHT			02											
CITY							FR	0	TURNER RD SE	CN			PRVTE	N -S			000	00											
N							3P			01	0		PSNGR CAR		01	DRVR	INJC	62 F	OR-Y		000	000	00						
N							44 53 41.51	-122 59 25.09										OR<25											
													02 NONE	0	TURN-L														
													PRVTE		S -W														
													PSNGR CAR			01	DRVR	INJC	49 M	OR-Y		028,004	000						
02427	N	N	N	N	N	N	06/19/2017	16	AIRWAY DR SE	INTER	3-LEG	N	NONE	9	STRGHT			29											
NONE							MO	0	TURNER RD SE	CN			N/A	S -N			000	00											
N							1P			02	0		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000						
N							44 53 41.51	-122 59 25.09											UNK										
													02 NONE	9	TURN-L														
													N/A		S -W														
													PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000					
00347	N	N	N	N	N	N	01/30/2018	16	AIRWAY DR SE	INTER	3-LEG	N	NONE	0	TURN-L			02											
CITY							TU	0	TURNER RD SE	CN			PRVTE	S -W			000	00											
N							12P			01	0		PSNGR CAR		01	DRVR	NONE	46 M	OR-Y		028,004	000							
N							44 53 41.51	-122 59 25.09											OR<25										
													02 NONE	0	STRGHT														
													PRVTE		N -S														
													PSNGR CAR			01	DRVR	INJC	62 M	OR-Y		000	000						
01096	N	N	N	N	N	N	04/03/2018	16	AIRWAY DR SE	INTER	3-LEG	N	NONE	0	TURN-L			02											
NONE							TU	0	TURNER RD SE	CN			PRVTE	S -W			000	00											
N							12P			01	0		PSNGR CAR		01	DRVR	NONE	21 M	OR-Y		028,004	000							
N							44 53 41.51	-122 59 25.1											OR<25										
													02 NONE	0	STRGHT														
													PRVTE		N -S														
													PSNGR CAR			01	DRVR	INJC	19 F	OR-Y		000	000						
04328	N	N	N	N	N	N	11/13/2018	16	AIRWAY DR SE	INTER	3-LEG	N	NONE	0	TURN-L			087	27,02										
CITY							TU	0	TURNER RD SE	CN			PRVTE	S -W			000	087	00										
N							10A			01	0		PSNGR CAR		01	DRVR	INJA	75 F	OR-Y		016,028,004	038							
N							44 53 41.51	-122 59 25.09											OR<25										
													02 NONE	0	STRGHT														
													PRVTE		N -S														
													PSNGR CAR			01	DRVR	INJC	66 M	SUSP		000	000						

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at AIRWAY DR, City of Salem, Marion County, 01/01/2015 to 12/31/2019
21 - 22 of 22 Crash records shown.

SER#	S	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	LOC				
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	CONTL	DRVMY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTRY	E	X	RES	LOC		
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)																
01034	N	N	N	N	N	N	03/20/2019	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT								27,29	
CITY							WE	0	TURNER RD SE	CN		STOP SIGN	N	DRY	REAR		PRVTE	S -N							000	00	
N							3P			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	81	M	OR-Y	016,026	038	27,29
N							44 53 41.55 -122 59 25.1																				
																02	NONE 0	STOP									
																PRVTE	S -N								012	00	
																PSNGR CAR		01	DRVR	INJC	32	F	OR-Y	000	000	00	
05242	N	N	N				12/27/2019	16	AIRWAY DR SE	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 9	STRGHT								29	
NO RPT							FR	0	TURNER RD SE	CN		STOP SIGN	N	DRY	REAR		N/A	S -N								000	00
N							12P			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
N							44 53 41.52 -122 59 25.11																				
																02	NONE 9	STOP									
																N/A	S -N								012	00	
																PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at MISSION ST, City of Salem, Marion County, 01/01/2015 to 12/31/2019
1 - 4 of 19 Crash records shown.

SER#	P	S	D	M	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	RD CHAR	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE							
INVEST	E	A	U	I	C	O	DAY			DIST	FIRST STREET	(MEDIAN)	DIRECT	TRAF-	RNDBT	SURF	COLL	OWNER	FROM														
RD DPT	E	L	G	N	H	R	TIME			FROM	SECOND STREET	LEGS	LOCTN	CONTL		LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC						
UNLOC?	D	C	S	V	L	K	LAT			LONG	LRS	(#LANES)			DRVWY																		
00405	N	N	N				02/05/2015			16	MISSION ST SE		INTER	CROSS	N	RAIN	S-1STOP	01	NONE	0	STRGHT										07		
NONE							TH			0	TURNER RD SE		NE			WET	REAR		PRVTE	SW-NE									000		00		
N							2P						09	2		DAY	INJ		PSNGR	CAR		01	DRVR	NONE	25	F	OR-Y		026	000		07	
N							44 55 12.63			-123 0 14.13																							
																		02	NONE	0	STOP									011		00	
																		PRVTE	SW-NE		01	DRVR	INJC	41	M	OR-Y			000	000		00	
																		PSNGR	CAR														
00213	N	N	N				01/19/2018			12	MISSION ST SE		INTER	CROSS	N	CLR	S-1STOP	01	NONE	0	STRGHT									013		29	
NONE							FR				TURNER RD SE		E			DRY	REAR		PRVTE	E -W									000		00		
N							8A						06	0		DAY	INJ		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		026	000		29	
N							44 55 12.52			-123 0 13.79	007200100S00																						
																		02	NONE	0	STOP									011	013		00
																		PRVTE	E -W		01	DRVR	NONE	00	F	OR-Y			000	022		00	
																		03	NONE	0	STOP									011			00
																		PSNGR	CAR		01	DRVR	INJC	57	M	OR-Y			000	000		00	
03410	Y	N	N	N			N N 09/11/2018			12	MISSION ST SE		INTER	CROSS	N	RAIN	ANGL-STP	01	NONE	9	TURN-R										08,01		
CITY							TU				TURNER RD SE		S			WET	TURN		N/A	W -S									000		00		
N							4P						06	2		DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00	
N							44 55 12.53			-123 0 13.79	007200100S00																						
																		02	NONE	9	STOP									012		00	
																		N/A	S -N		01	DRVR	NONE	00	Unk	UNK		000	000		00		
																		PSNGR	CAR														
05041	N	N	N				11/06/2016			16	MISSION ST SE		INTER	CROSS	N	CLR	S-1STOP	01	NONE	9	STRGHT										29		
NONE							SU			0	TURNER RD SE		S			DRY	REAR		N/A	S -N									000		00		
N							9P						06	0		DARK	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00	
N							44 55 12.52			-123 0 13.79																							
																		02	NONE	9	STOP									011			00
																		N/A	S -N		01	DRVR	NONE	00	Unk	UNK		000	000		00		
																		PSNGR	CAR														
01005	N	N	N				03/25/2018			16	MISSION ST SE		INTER	CROSS	N	CLR	S-1STOP	01	NONE	9	STRGHT										29		
NO RPT							SU			0	TURNER RD SE		S			DRY	REAR		N/A	S -N									000		00		
N							10A						06	2		DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00	
N							44 55 12.53			-123 0 13.79																							

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at MISSION ST, City of Salem, Marion County, 01/01/2015 to 12/31/2019
5 - 8 of 19 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	PRTC	INJ	A	S	PED	ERROR	ACT	EVENT	CAUSE			
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	DIRECT	(MEDIAN)	TRAFFIC	RNDBT	SURF	COLL	OWNER	FROM			G	E	LICNS							
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	CONTL	DRWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
UNLOC?	D	C	S	V	L	K	LAT	LRS	LOCTN	(#LANES)																		
															02 NONE N/A PSNGR	9 CAR	STOP S - N		01	DRVR	NONE	00	Unk	UNK		000	011 000	00 00
04629	N	N	N				12/04/2018	16	MISSION ST SE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE	9	STRGHT								29		
NONE							TU	0	TURNER RD SE	S				TRF SIGNAL	N	DRY	REAR	N/A	S - N						000	00		
N							12P		06	2		N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
N							44 55 12.52	-123 0 13.79																				
															02 NONE N/A PSNGR	9 CAR	STOP S - N		01	DRVR	NONE	00	Unk	UNK		000	012 000	00 00
00829	Y	N	Y	N	N		03/05/2019	16	MISSION ST SE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE	0	STRGHT								07, 01		
CITY							TU	0	TURNER RD SE	S				TRF SIGNAL	N	DRY	REAR	PRVTE	S - N						000	00		
N							2P		06	2		N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	31	M	OR-Y		043,047,026	000	07, 01
N							44 55 12.52	-123 0 13.79																				
															02 NONE PRVTE PSNGR	0 CAR	STOP S - N		01	DRVR	INJC	53	M	OR-Y		000	011 000	00 00
															02 NONE PRVTE PSNGR	0 CAR	STOP S - N		02	PSNG	INJC	50	F		000	011 000	00 00	
01264	N	N	N				03/27/2016	14	MISSION ST SE	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE	0	STRGHT								29		
NO RPT							SU		TURNER RD SE	W				TRF SIGNAL	N	WET	REAR	PRVTE	W -E						000	00		
N							6P		06	2		N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	28	M	OR-Y		026	000	29
N							44 55 12.52	-123 0 13.79	007200100S00																			
															02 NONE PRVTE PSNGR	0 CAR	STOP W -E		01	DRVR	INJC	77	F	OR-Y		000	011 000	00 00
00891	N	N	N				03/07/2017	12	MISSION ST SE	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE	0	STRGHT								29		
NONE							TU		TURNER RD SE	W				TRF SIGNAL	N	WET	REAR	PRVTE	W -E						000	00		
N							1P		06	2		N	DAY	INJ		PSNGR	CAR		01	DRVR	NONE	00	M	OR-Y		026	000	29
N							44 55 12.52	-123 0 13.79	007200100S00																			
															02 NONE PRVTE PSNGR	0 CAR	STOP W -E		01	DRVR	INJC	48	F	OR-Y		000	011 000	00 00

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at MISSION ST, City of Salem, Marion County, 01/01/2015 to 12/31/2019
9 - 12 of 19 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	PRTC	INJ	A	S	PED	ERROR	ACT	EVENT	CAUSE	
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	DIRECT	(#LANES)	TRAF-CONTL	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC			
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	LOCTN							TO										
UNLOC?	D	C	S	V	L	K	LAT	LRS				DRVWY	LIGHT	SVRTY	V# TYPE											
															02 NONE 0	STOP W -E										
															PRVTE PSNGR CAR		02	PSNG	INJC	68	F		000	011 000	00 00	
04540	N	N	N				10/25/2017	14	MISSION ST SE	CROSS	N	N	UNK	S-1STOP	01 NONE 9	STRGHT									29	
NONE							WE		TURNER RD SE						N/A	W -E							000	00	00	
N							1P					N	DAY	PDO	TRUCK			01	DRVR	NONE	00	Unk	UNK	000	000	00
N							44 55 12.52 -123 0 13.79		007200100S00	06	0											UNK				
															02 NONE 9	STOP W -E								011 000	00 00	
															N/A PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
00078	N	N	N				01/09/2018	14	MISSION ST SE	CROSS	N	N	RAIN	S-1STOP	01 NONE 0	STRGHT									29	
NONE							TU		TURNER RD SE						PRVTE	W -E							000	00	00	
N							6P					N	DLIT	INJ	PSNGR CAR			01	DRVR	NONE	55	M	OR-Y	026	000	29
N							44 55 12.52 -123 0 13.79		007200100S00	06	2											OR<25				
															02 NONE 0	STOP W -E								011 000	00 00	
															PRVTE PSNGR CAR		01	DRVR	INJC	48	F	OR-Y	000	000	00	
															02 NONE 0	STOP W -E								011 000	00 00	
															PRVTE PSNGR CAR		02	PSNG	INJC	11	M		000	000	00	
															02 NONE 0	STOP W -E								011 000	00 00	
															PRVTE PSNGR CAR		03	PSNG	INJC	09	F		000	000	00	
02179	N	N	N				06/18/2018	14	MISSION ST SE	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT								013	27, 29	
NO RPT							MO		TURNER RD SE						PRVTE	W -E							000	00	00	
N							5P					N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	64	F	OR-Y	016, 026	038	27, 29
N							44 55 12.52 -123 0 13.79		007200100S00	06	0											OR<25				
															02 NONE 0	STOP W -E								011 013 022	00 00	
															PRVTE PSNGR CAR		01	DRVR	INJC	26	F	OR-Y	000			
															03 NONE 0	STOP W -E								011 000	00 00	
															PRVTE PSNGR CAR		01	DRVR	NONE	64	M	OR-Y	000	000	00	

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CITY OF SALEM, MARION COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
TURNER RD at MISSION ST, City of Salem, Marion County, 01/01/2015 to 12/31/2019
13 - 16 of 19 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	PRTC	INJ	A	S	PED	ERROR	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	(MEDIAN)	TRAF-	RNDBT	SURF	COLL	TRLR QTY	FROM			G	E	LICNS	LOC							
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	LEGS	CONTL	DRWY	LIGHT	SVRTY	OWNER	TO			E	X	RES								
UNLOC?	D	C	S	V	L	K	LAT	LRS	(#LANES)					V#	TYPE													
03211	N	N	N				08/24/2015	14	MISSION ST SE	CROSS	N	CLR	S-OTHER	01	NONE	0	TURN-L							07				
NONE							MO		TURNER RD SE		CN		TRF SIGNAL	N	DRY	TURN	PRVTE						000	00				
N							2P				01	2		N	DAY	PDO	PSNGR CAR			01	DRVR	NONE	36	M	OR-Y	042	000	07
N							44 55 12.52 -123 0 13.79		007200100S00											OR<25								
														02	NONE	0	TURN-L							000	00			
														PRVTE		S -W				01	DRVR	NONE	42	F	OTH-Y	000	000	00
														PSNGR CAR						N-RES								
03335	N	N	N	N			N 08/06/2016	12	MISSION ST SE	CROSS	N	CLR	ANGL-OTH	01	NONE	0	STRGHT							40,04				
CITY							SA		TURNER RD SE		CN		TRF SIGNAL	N	DRY	TURN	PRVTE						000	00				
N							8P				04	2		N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	66	M	OR-Y	020	026	40,04
N							44 55 12.52 -123 0 13.79		007200100S00											OR<25								
														02	NONE	0	TURN-L							000	00			
														PRVTE		S -W				01	DRVR	NONE	47	F	OR-Y	000	000	00
														PSNGR CAR						OR<25								
														02	NONE	0	TURN-L							000	00			
														PRVTE		S -W				02	PSNG	INJC	47	F		000	000	00
														PSNGR CAR														
01903	N	N	N	N			N 05/16/2017	12	MISSION ST SE	CROSS	N	CLD	0-1 L-TURN	01	NONE	0	STRGHT						013	04				
CITY							TU		TURNER RD SE		CN		TRF SIGNAL	N	DRY	TURN	PRVTE						000	00				
N							5P				04	2		N	DAY	INJ	PSNGR CAR			01	DRVR	INJC	44	M	NONE	020	000	04
N							44 55 12.52 -123 0 13.79		007200100S00											OR<25								
														02	NONE	0	TURN-L							000	013	00		
														PRVTE		N -E				01	DRVR	INJB	65	M	OR-Y	000	022	00
														PSNGR CAR						OR<25								
														03	NONE	0	STOP							012	00			
														PRVTE		E -W				01	DRVR	NONE	20	M	OR-Y	000	000	00
														PSNGR CAR						OR<25								
02829	N	N	N	N			07/15/2017	12	MISSION ST SE	CROSS	N	CLR	0-1 L-TURN	01	NONE	0	TURN-L							04				
NONE							SA		TURNER RD SE		CN		TRF SIGNAL	N	DRY	TURN	PRVTE						000	00				
N							9A				03	2		N	DAY	INJ	PSNGR CAR			01	DRVR	NONE	71	F	OR-Y	097	000	00
N							44 55 12.52 -123 0 13.79		007200100S00											OR<25								
														02	NONE	0	STRGHT							000	00			
														PRVTE		W -E				01	DRVR	INJC	28	F	OR-Y	097	000	00
														PSNGR CAR						OR<25								

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CITY OF SALEM, MARION COUNTY

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PED	ACT	EVENT	CAUSE			
INVEST	E	A	U	I	C	O DAY	DIST	FIRST STREET	(MEDIAN)					TRLR QTY										
RD DPT	E	L	G	N	H	R TIME	FROM	SECOND STREET	LEGS	TRAF -	RNDBT	SURF	COLL	OWNER	FROM									
UNLOC?	D	C	S	V	L	K LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVMY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E X RES	LOC	ERROR			
03369	N	N	N			08/19/2017	12	MISSION ST SE	INTER	CROSS	N	N	CLR	S-1TURN	01 NONE	9	TURN-R							
CITY						SA		TURNER RD SE	CN			TRF SIGNAL	N	DRY	TURN	N/A	W -S					000	00	
N						7P			03	2		N	DAY	PDO		PSNGR CAR		01 DRVR	NONE	00	Unk UNK	000	000	
N						44 55 12.52 -123 0 13.79		007200100S00																
															02 NONE	9	STRGHT W -E		01 DRVR	NONE	00	Unk UNK	000	000
															PSNGR CAR						000	000	00	
02525	Y	N	N	N		07/13/2018	12	MISSION ST SE	INTER	CROSS	N	N	CLR	0-1 L-TURN	01 NONE	0	STRGHT						04,40,01	
CITY						FR		TURNER RD SE	CN			TRF SIGNAL	N	DRY	TURN	PRVTE	W -E					000	00	
N						8P			03	0		N	DAY	INJ		PSNGR CAR		01 DRVR	INJC	53 F	OR-Y OR<25	047,020	026	
N						44 55 12.52 -123 0 13.79		007200100S00																
															02 NONE	0	TURN-L E -S		01 DRVR	INJC	44 M	OR-Y OR<25	000	000
															PRVTE PSNGR CAR						000	000	00	
00709	N	N	N			02/24/2019	12	MISSION ST SE	INTER	CROSS	N	N	RAIN	0-1 L-TURN	01 NONE	0	STRGHT						02	
NONE						SU		TURNER RD SE	CN			TRF SIGNAL	N	WET	TURN	PRVTE	W -E					000	00	
N						5A			03	2		N	DLIT	INJ		PSNGR CAR		01 DRVR	NONE	33 F	OR-Y OR<25	000	000	
N						44 55 12.52 -123 0 13.79		007200100S00																
															02 NONE	0	TURN-L E -S		01 DRVR	INJC	20 M	OR-Y OR<25	028,004	000
															PRVTE PSNGR CAR						000	000	00	

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Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 1. Turner Road SE & Site Access Driveway #1
Date: 4/26/2022
Scenario: 2023 Buildout - AM Peak Hour

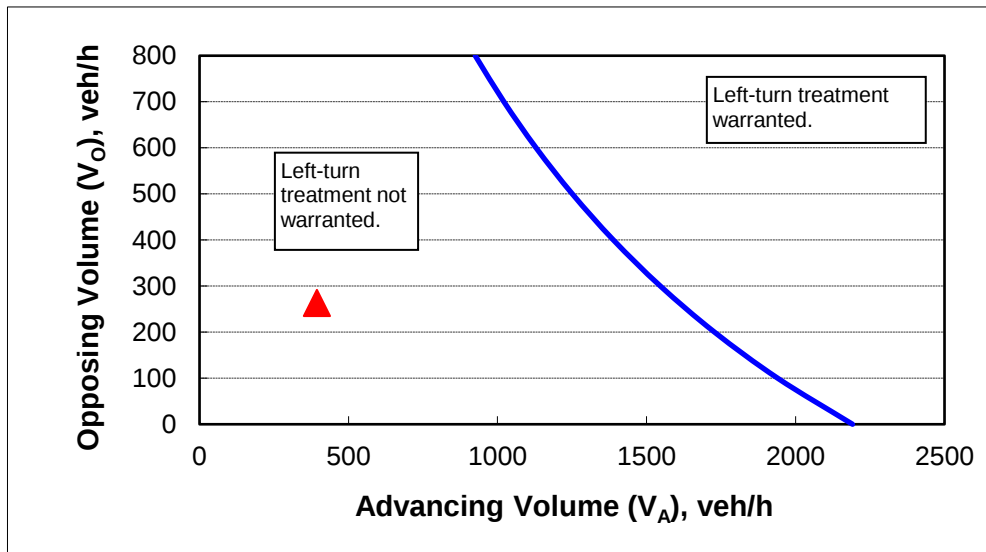
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	0.5%
Advancing volume (V_A), veh/h:	394
Opposing volume (V_O), veh/h:	263

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1611
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 1. Turner Road SE & Site Access Driveway #1
Date: 4/26/2022
Scenario: 2023 Buildout - PM Peak Hour (NB)

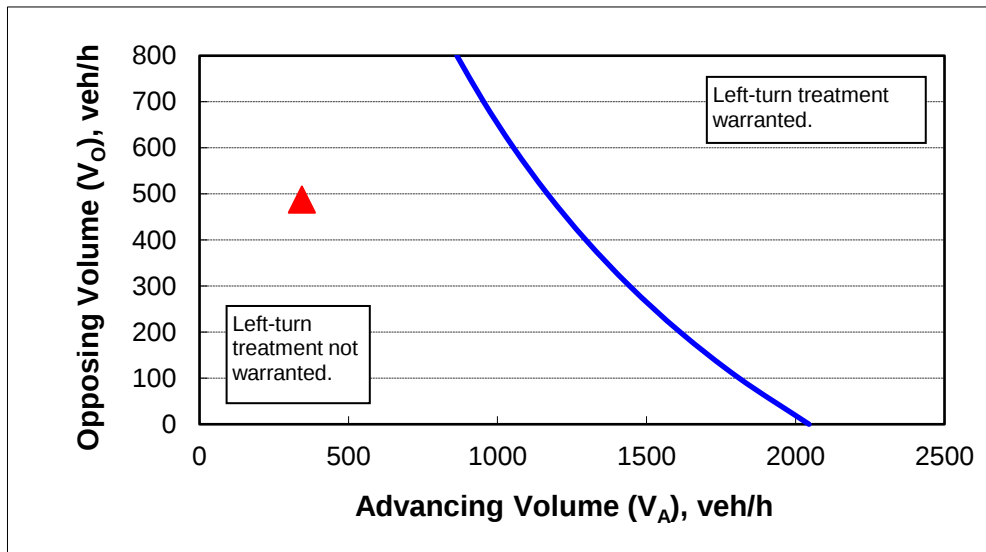
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	0.6%
Advancing volume (V_A), veh/h:	343
Opposing volume (V_O), veh/h:	488

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1182
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 2. Turner Road SE & Site Access Driveway #2
Date: 4/26/2022
Scenario: 2023 Buildout - AM Peak Hour

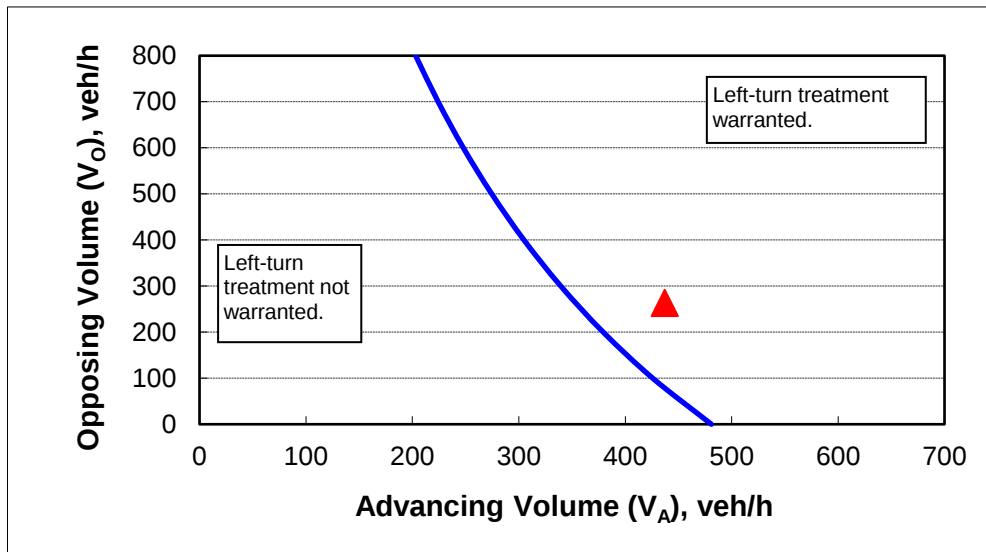
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	11.9%
Advancing volume (V_A), veh/h:	437
Opposing volume (V_O), veh/h:	263

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	353
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 2. Turner Road SE & Site Access Driveway #2
Date: 4/26/2022
Scenario: 2023 Buildout - PM Peak Hour

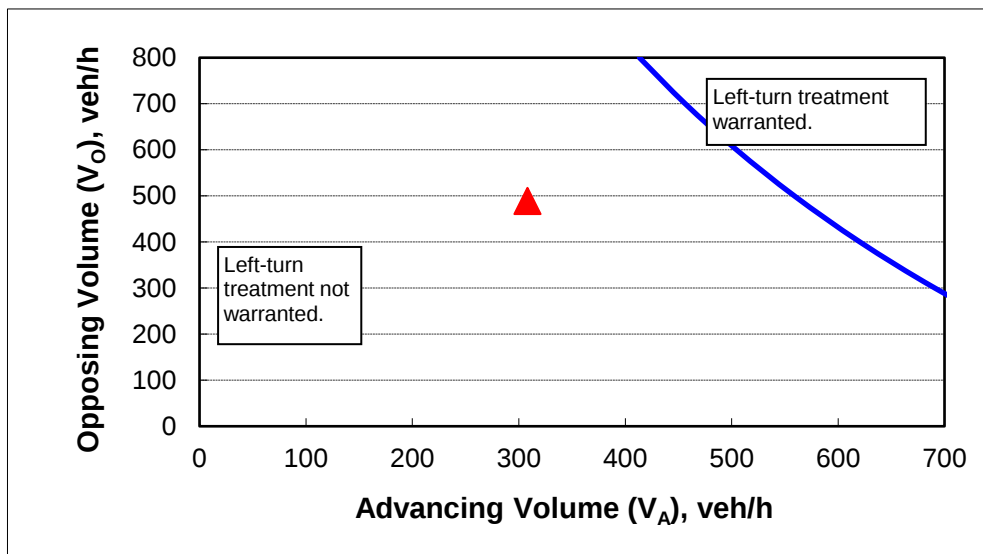
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	2.6%
Advancing volume (V_A), veh/h:	308
Opposing volume (V_O), veh/h:	489

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	565
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 5. Turner Road SE & Airway Drive SE
Date: 4/26/2022
Scenario: 2021 Existing - AM Peak Hour (NB)

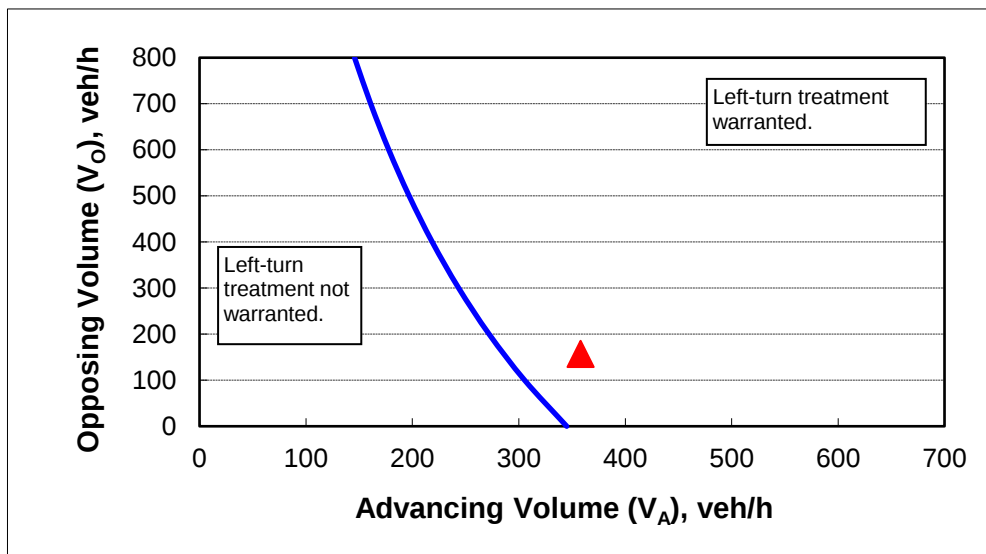
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	28%
Advancing volume (V_A), veh/h:	358
Opposing volume (V_O), veh/h:	157

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	286
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 5. Turner Road SE & Airway Drive SE
Date: 4/26/2022
Scenario: 2021 Background - PM Peak Hour (NB)

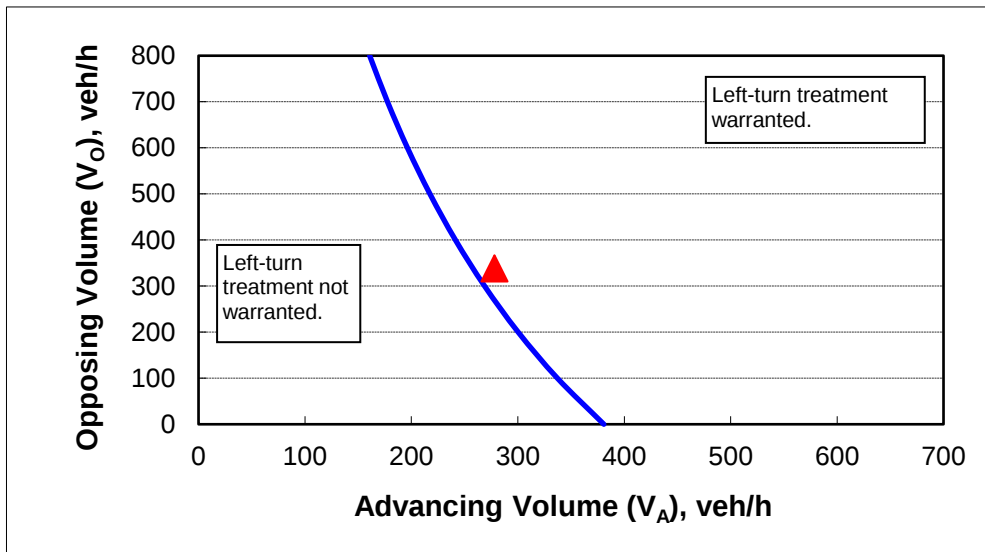
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	21%
Advancing volume (V_A), veh/h:	278
Opposing volume (V_O), veh/h:	338

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	258
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 5. Turner Road SE & Airway Drive SE
Date: 4/26/2022
Scenario: 2023 Buildout - AM Peak Hour (NB)

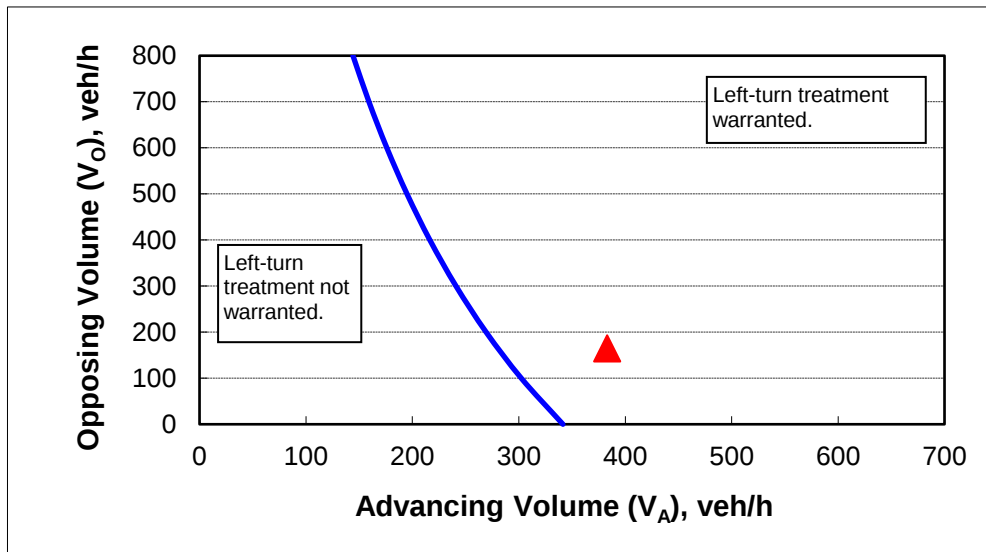
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	30%
Advancing volume (V_A), veh/h:	383
Opposing volume (V_O), veh/h:	165

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	280
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 5. Turner Road SE & Airway Drive SE
Date: 4/26/2022
Scenario: 2023 Background - PM Peak Hour (NB)

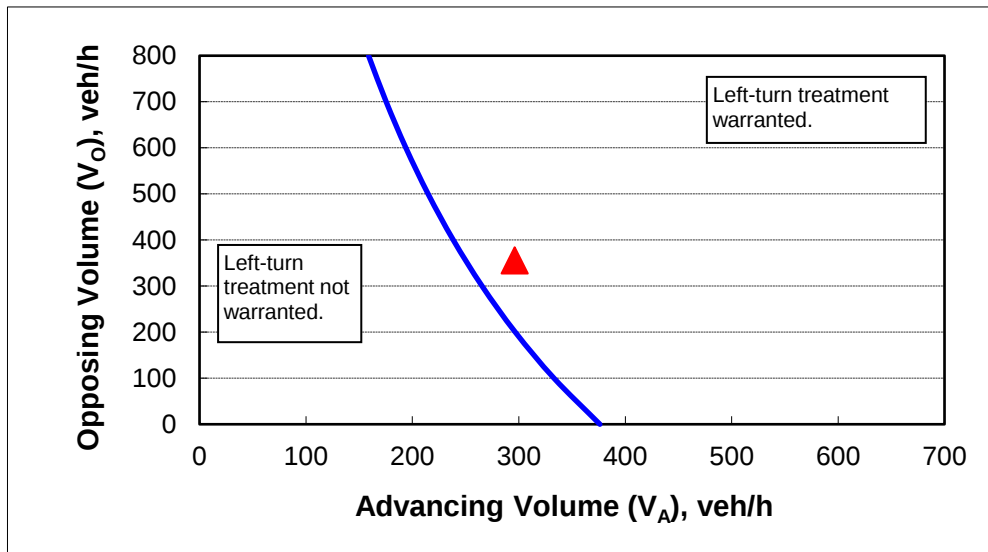
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	22%
Advancing volume (V_A), veh/h:	296
Opposing volume (V_O), veh/h:	356

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	250
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 5. Turner Road SE & Airway Drive SE
Date: 4/26/2022
Scenario: 2023 Buildout - AM Peak Hour (NB)

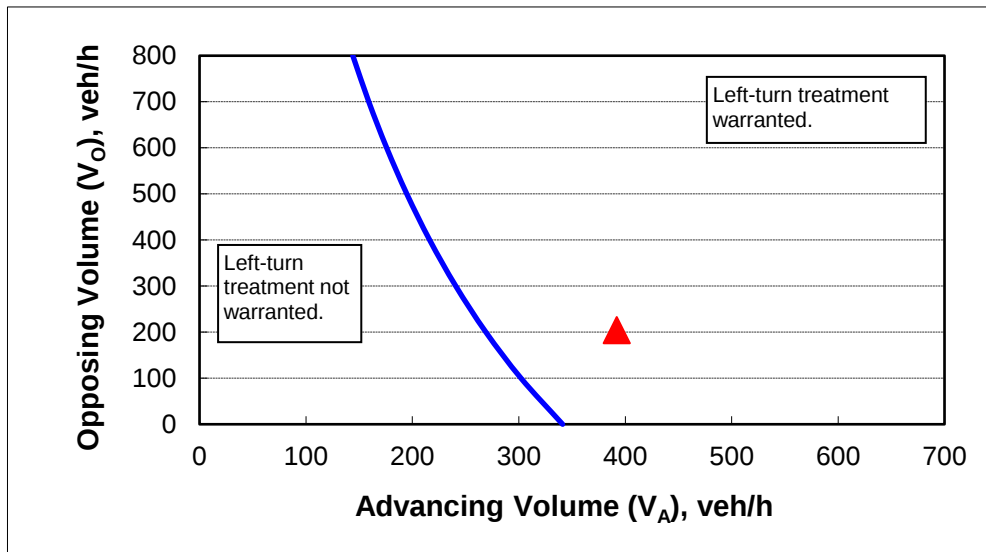
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	30%
Advancing volume (V_A), veh/h:	392
Opposing volume (V_O), veh/h:	204

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	268
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 21199 - Turner Road Industrial
Intersection: 5. Turner Road SE & Airway Drive SE
Date: 4/26/2022
Scenario: 2023 Buildout - PM Peak Hour (NB)

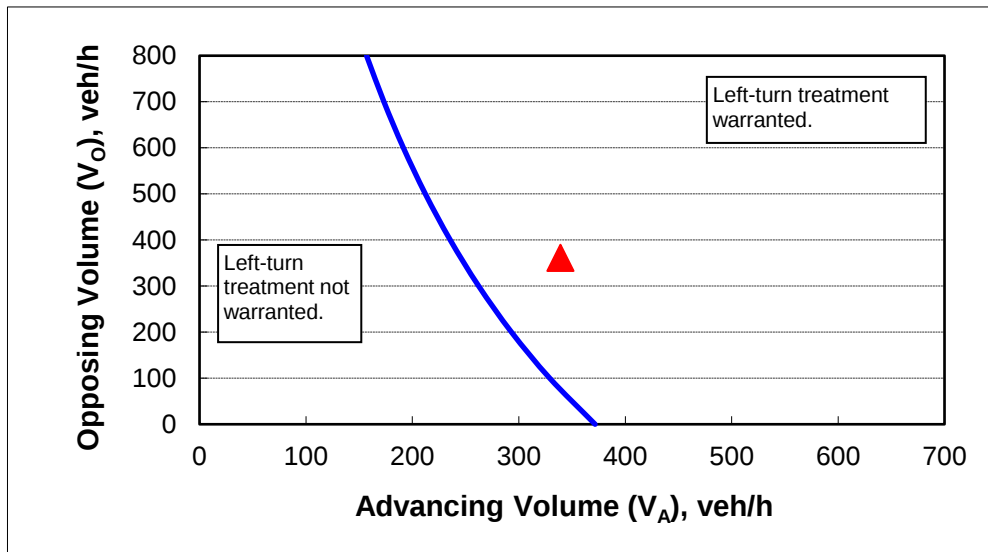
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	48
Percent of left-turns in advancing volume (V_A), %:	23%
Advancing volume (V_A), veh/h:	339
Opposing volume (V_O), veh/h:	361

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	246
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



Preliminary Traffic Signal Warrant Analysis

Project: 21199 - Turner Road Industrial
 Date: 4/26/2022
 Scenario: 2023 Buildout Conditions - PM Peak Hour

Major Street:	Turner Road SE	Minor Street:	Site Access Driveway #1	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak		PM Peak	1	Total
Hour Volumes:	831	Hour Volumes:	1	Rights
			50%	RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
		100%	70%	100%	70%
<u>WARRANT 1, CONDITION A</u>		<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>Major St.</u>	<u>Minor St.</u>				
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	8,310	6,200	
Minor Street*	10	1,850	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	8,310	9,300	
Minor Street*	10	950	No
<i>Combination Warrant</i>			
Major Street	8,310	7,440	
Minor Street*	10	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.



Preliminary Traffic Signal Warrant Analysis

Project: 21199 - Turner Road Industrial
 Date: 4/26/2022
 Scenario: 2023 Buildout Conditions - PM Peak Hour

Major Street:	Turner Road SE	Minor Street:	Site Access Driveway #2
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	797	PM Peak Hour Volumes:	84 41 50%
			Total Rights RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
		100%	70%	100%	70%
<u>WARRANT 1, CONDITION A</u>		<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>Major St.</u>	<u>Minor St.</u>				
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	7,970	6,200	
Minor Street*	640	1,850	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	7,970	9,300	
Minor Street*	640	950	No
<i>Combination Warrant</i>			
Major Street	7,970	7,440	
Minor Street*	640	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.



Preliminary Traffic Signal Warrant Analysis

Project: 21199 - Turner Road Industrial
 Date: 4/26/2022
 Scenario: 2023 Buildout Conditions - PM Peak Hour

Major Street:	Turner Road SE	Minor Street:	Airway Drive SE	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak		PM Peak	153	Total
Hour Volumes:	700	Hour Volumes:	111	Rights
			50%	RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
		100%	70%	100%	70%
<u>WARRANT 1, CONDITION A</u>					
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	7,000	6,200	
Minor Street*	980	1,850	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	7,000	9,300	
Minor Street*	980	950	No
<i>Combination Warrant</i>			
Major Street	7,000	7,440	
Minor Street*	980	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Appendix D – Operations

Definitions

Synchro Reports

Queuing Reports





Level of Service Definitions

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

- *Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.
- *Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.
- *Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.
- *Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.
- *Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.
- *Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



Level of Service Criteria
For Signalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

Level of Service Criteria
For Unsignalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

HCM Signalized Intersection Capacity Analysis

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	414	134	69	486	54	196	192	56	47	86	62
Future Volume (vph)	162	414	134	69	486	54	196	192	56	47	86	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1644	1667		1629	1688		1629	1656		1527	1607	1366
Flt Permitted	0.24	1.00		0.30	1.00		0.51	1.00		0.37	1.00	1.00
Satd. Flow (perm)	420	1667		520	1688		866	1656		588	1607	1366
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	182	465	151	78	546	61	220	216	63	53	97	70
RTOR Reduction (vph)	0	7	0	0	2	0	0	8	0	0	0	53
Lane Group Flow (vph)	182	609	0	78	605	0	220	271	0	53	97	17
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	5%	5%	5%	12%	12%	12%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	80.8	71.9		71.6	66.8		36.3	25.6		23.7	18.0	26.9
Effective Green, g (s)	82.7	73.9		73.6	68.8		37.3	27.6		25.7	20.0	30.9
Actuated g/C Ratio	0.64	0.57		0.57	0.53		0.29	0.21		0.20	0.15	0.24
Clearance Time (s)	6.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	6.0
Vehicle Extension (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	360	947		343	893		332	351		164	247	366
v/s Ratio Prot	c0.04	c0.37		0.01	c0.36		c0.07	c0.16		0.02	0.06	0.00
v/s Ratio Perm	0.28			0.12			0.12			0.05		0.01
v/c Ratio	0.51	0.64		0.23	0.68		0.66	0.77		0.32	0.39	0.05
Uniform Delay, d1	14.9	19.1		14.6	22.5		38.5	48.2		43.6	49.5	38.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	3.4		0.1	4.1		3.8	9.3		0.4	0.4	0.0
Delay (s)	15.3	22.4		14.7	26.6		42.3	57.5		44.0	49.9	38.2
Level of Service	B	C		B	C		D	E		D	D	D
Approach Delay (s)		20.8			25.2			50.8			44.8	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			31.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)			17.0		
Intersection Capacity Utilization			72.2%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	414	134	69	486	54	196	192	56	47	86	62
Future Volume (veh/h)	162	414	134	69	486	54	196	192	56	47	86	62
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	1744	1744	1744	1730	1730	1730	1730	1730	1730	1632	1632	1632
Adj Flow Rate, veh/h	182	465	130	78	546	55	220	216	56	53	97	14
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	4	4	4	5	5	5	5	5	5	12	12	12
Cap, veh/h	425	786	220	421	874	88	317	252	65	152	197	271
Arrive On Green	0.07	0.60	0.58	0.04	0.57	0.55	0.12	0.19	0.19	0.05	0.12	0.12
Sat Flow, veh/h	1661	1311	367	1647	1546	156	1647	1325	343	1554	1632	1383
Grp Volume(v), veh/h	182	0	595	78	0	601	220	0	272	53	97	14
Grp Sat Flow(s),veh/h/ln	1661	0	1678	1647	0	1702	1647	0	1668	1554	1632	1383
Q Serve(g_s), s	5.8	0.0	28.7	2.6	0.0	30.9	15.0	0.0	20.5	3.9	7.2	1.1
Cycle Q Clear(g_c), s	5.8	0.0	28.7	2.6	0.0	30.9	15.0	0.0	20.5	3.9	7.2	1.1
Prop In Lane	1.00		0.22	1.00		0.09	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	425	0	1006	421	0	962	317	0	317	152	197	271
V/C Ratio(X)	0.43	0.00	0.59	0.19	0.00	0.62	0.69	0.00	0.86	0.35	0.49	0.05
Avail Cap(c_a), veh/h	492	0	1006	505	0	962	317	0	372	260	364	413
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)	0.84	0.00	0.84	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.8	0.0	16.3	13.5	0.0	19.1	43.4	0.0	51.0	48.1	53.4	42.4
Incr Delay (d2), s/veh	0.2	0.0	2.1	0.1	0.0	3.1	5.4	0.0	14.2	0.5	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	11.4	1.0	0.0	12.8	6.7	0.0	9.8	1.5	3.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	18.4	13.6	0.0	22.1	48.7	0.0	65.2	48.6	54.1	42.4
LnGrp LOS	B	A	B	B	A	C	D	A	E	D	D	D
Approach Vol, veh/h	777			679			492			164		
Approach Delay, s/veh	17.7			21.2			57.8			51.3		
Approach LOS	B			C			E			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.3	82.0	19.0	19.7	13.8	77.5	10.0	28.7				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	6.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	11.0	56.0	14.0	27.0	13.0	53.0	14.0	27.0				
Max Q Clear Time (g_c+I1), s	4.6	30.7	17.0	9.2	7.8	32.9	5.9	22.5				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.1	0.0	0.9	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay	30.7											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	159	608	104	54	487	124	84	30	36	32	18	3
Future Volume (vph)	159	608	104	54	487	124	84	30	36	32	18	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1629	1714	1457	1569	1601		1437	1389		1368	1440	1224
Flt Permitted	0.32	1.00	1.00	0.34	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	549	1714	1457	564	1601		1437	1389		1368	1440	1224
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	167	640	109	57	513	131	88	32	38	34	19	3
RTOR Reduction (vph)	0	0	34	0	5	0	0	34	0	0	0	3
Lane Group Flow (vph)	167	640	75	57	639	0	88	36	0	34	19	0
Heavy Vehicles (%)	5%	5%	5%	9%	9%	9%	19%	19%	19%	25%	25%	25%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	86.9	81.9	81.9	83.7	80.3		7.7	10.9		4.8	8.0	8.0
Effective Green, g (s)	88.9	83.9	83.9	85.7	82.3		8.7	11.9		5.8	9.0	9.0
Actuated g/C Ratio	0.73	0.69	0.69	0.70	0.67		0.07	0.10		0.05	0.07	0.07
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	453	1178	1001	432	1080		102	135		65	106	90
v/s Ratio Prot	c0.02	0.37		0.00	c0.40		c0.06	0.03		c0.02	c0.01	
v/s Ratio Perm	0.25		0.05	0.09								0.00
v/c Ratio	0.37	0.54	0.07	0.13	0.59		0.86	0.26		0.52	0.18	0.00
Uniform Delay, d1	7.1	9.5	6.3	6.7	10.8		56.1	51.0		56.7	53.0	52.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	1.8	0.1	0.1	2.4		47.1	0.4		3.5	0.3	0.0
Delay (s)	7.3	11.3	6.4	6.7	13.1		103.1	51.4		60.2	53.3	52.3
Level of Service	A	B	A	A	B		F	D		E	D	D
Approach Delay (s)		10.0			12.6			80.2			57.5	
Approach LOS		A			B			F			E	
Intersection Summary												
HCM 2000 Control Delay			18.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			122.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			65.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	608	104	54	487	124	84	30	36	32	18	3
Future Volume (veh/h)	159	608	104	54	487	124	84	30	36	32	18	3
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	1730	1730	1730	1674	1674	1674	1533	1533	1533	1449	1449	1449
Adj Flow Rate, veh/h	167	640	93	57	513	124	88	32	19	34	19	-44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	9	9	9	19	19	19	25	25	25
Cap, veh/h	539	1264	1071	494	927	224	108	53	31	67	49	41
Arrive On Green	0.05	0.73	0.73	0.03	0.71	0.71	0.07	0.06	0.06	0.05	0.03	0.00
Sat Flow, veh/h	1647	1730	1466	1594	1302	315	1460	902	535	1380	1449	1228
Grp Volume(v), veh/h	167	640	93	57	0	637	88	0	51	34	19	-44
Grp Sat Flow(s),veh/h/ln	1647	1730	1466	1594	0	1617	1460	0	1437	1380	1449	1228
Q Serve(g_s), s	3.4	19.3	2.2	1.2	0.0	22.8	7.2	0.0	4.2	2.9	1.6	0.0
Cycle Q Clear(g_c), s	3.4	19.3	2.2	1.2	0.0	22.8	7.2	0.0	4.2	2.9	1.6	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	539	1264	1071	494	0	1152	108	0	84	67	49	41
V/C Ratio(X)	0.31	0.51	0.09	0.12	0.00	0.55	0.82	0.00	0.61	0.50	0.39	-1.06
Avail Cap(c_a), veh/h	539	1264	1071	523	0	1152	108	0	318	124	321	272
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	1.00	1.00	0.74	0.00	0.74	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.8	7.0	4.7	5.8	0.0	8.3	55.7	0.0	56.1	56.6	57.7	0.0
Incr Delay (d2), s/veh	0.1	1.5	0.2	0.0	0.0	1.4	34.8	0.0	2.6	2.1	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	6.9	0.7	0.4	0.0	7.7	3.7	0.0	1.6	1.1	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.0	8.5	4.9	5.8	0.0	9.8	90.5	0.0	58.7	58.7	59.6	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	E	E	E	A
Approach Vol, veh/h		900			694			139			9	
Approach Delay, s/veh		7.8			9.4			78.8			347.6	
Approach LOS		A			A			E			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	93.2	13.0	8.1	10.0	90.9	10.0	11.1				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	5.0	60.0	8.0	26.0	5.0	60.0	10.0	26.0				
Max Q Clear Time (g_c+I1), s	3.2	21.3	9.2	3.6	5.4	24.8	4.9	6.2				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.0	1.1	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			15.9									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 6th TWSC
5: Turner Road SE & Airway Drive SE

04/18/2022

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	47	102	256	139	18
Future Vol, veh/h	20	47	102	256	139	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	5	5	1	1	3	3
Mvmt Flow	23	55	119	298	162	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	709	173	183	0	-	0
Stage 1	173	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	396	863	1398	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	356	863	1398	-	-	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.8	2.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1398	-	606	-	-	
HCM Lane V/C Ratio	0.085	-	0.129	-	-	
HCM Control Delay (s)	7.8	0	11.8	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.4	-	-	

HCM Signalized Intersection Capacity Analysis

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	 		 			 	 	
Traffic Volume (vph)	179	1759	157	113	1243	193	164	87	104	60	66	79
Future Volume (vph)	179	1759	157	113	1243	193	164	87	104	60	66	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	4926		3400	3505	1568	3433	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	4926		3400	3505	1568	3433	1863	1583	3433	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	179	1759	157	113	1243	193	164	87	104	60	66	79
RTOR Reduction (vph)	0	5	0	0	0	73	0	0	0	0	0	0
Lane Group Flow (vph)	179	1911	0	113	1243	120	164	87	104	60	66	79
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	18.2	88.3		9.5	79.6	87.2	13.4	16.2	25.7	7.6	10.4	140.0
Effective Green, g (s)	18.2	89.3		9.5	80.6	87.2	13.4	17.6	25.7	7.6	11.8	140.0
Actuated g/C Ratio	0.13	0.64		0.07	0.58	0.62	0.10	0.13	0.18	0.05	0.08	1.00
Clearance Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.4	4.0	4.0	5.4	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	225	3142		230	2017	976	328	234	290	186	157	1583
v/s Ratio Prot	c0.10	c0.39		0.03	0.35	0.01	c0.05	c0.05	0.02	0.02	0.04	
v/s Ratio Perm						0.07			0.04			0.05
v/c Ratio	0.80	0.61		0.49	0.62	0.12	0.50	0.37	0.36	0.32	0.42	0.05
Uniform Delay, d1	59.1	15.0		62.9	19.5	10.8	60.1	56.1	49.9	63.7	60.9	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.9	0.9		1.2	1.4	0.0	0.9	0.7	0.6	0.7	1.3	0.1
Delay (s)	76.0	15.9		64.1	21.0	10.8	61.0	56.9	50.5	64.5	62.2	0.1
Level of Service	E	B		E	C	B	E	E	D	E	E	A
Approach Delay (s)		21.0			22.8			56.9			38.9	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			25.6				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			65.6%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  			 						 		
Traffic Volume (veh/h)	179	1759	157	113	1243	193	164	87	104	60	66	79	
Future Volume (veh/h)	179	1759	157	113	1243	193	164	87	104	60	66	79	
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	1841	1841	1841	1856	1856	1856	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	179	1759	89	113	1243	178	164	87	32	60	66	0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2	
Cap, veh/h	204	3480	176	170	2269	1048	228	178	214	104	111		
Arrive On Green	0.12	0.71	0.70	0.05	0.64	0.64	0.07	0.10	0.09	0.03	0.06	0.00	
Sat Flow, veh/h	1753	4899	248	3428	3526	1572	3456	1870	1585	3456	1870	1585	
Grp Volume(v), veh/h	179	1202	646	113	1243	178	164	87	32	60	66	0	
Grp Sat Flow(s),veh/h/ln	1753	1675	1796	1714	1763	1572	1728	1870	1585	1728	1870	1585	
Q Serve(g_s), s	14.1	22.7	22.8	4.5	27.2	6.0	6.5	6.2	2.5	2.4	4.8	0.0	
Cycle Q Clear(g_c), s	14.1	22.7	22.8	4.5	27.2	6.0	6.5	6.2	2.5	2.4	4.8	0.0	
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	204	2380	1276	170	2269	1048	228	178	214	104	111		
V/C Ratio(X)	0.88	0.51	0.51	0.66	0.55	0.17	0.72	0.49	0.15	0.57	0.59		
Avail Cap(c_a), veh/h	238	2380	1276	514	2269	1048	494	240	267	518	254		
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	60.9	9.2	9.2	65.4	13.7	8.8	64.1	60.1	53.4	67.0	64.2	0.0	
Incr Delay (d2), s/veh	25.2	0.8	1.4	3.3	1.0	0.4	3.2	1.5	0.2	3.7	3.7	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	7.5	7.3	8.1	2.0	10.0	2.0	2.9	3.0	1.0	1.1	2.4	0.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	86.1	9.9	10.6	68.7	14.7	9.1	67.3	61.6	53.7	70.7	67.9	0.0	
LnGrp LOS	F	A	B	E	B	A	E	E	D	E	E		
Approach Vol, veh/h	2027		1534				283		126				A
Approach Delay, s/veh	16.9		18.0				64.0		69.2				
Approach LOS	B		B				E		E				
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	11.0	103.5	13.2	12.3	20.3	94.1	8.2	17.4					
Change Period (Y+Rc), s	4.0	5.0	4.0	* 5.4	4.0	5.0	4.0	* 5.4					
Max Green Setting (Gmax), s	21.0	63.0	20.0	* 18	19.0	65.0	21.0	* 17					
Max Q Clear Time (g_c+I1), s	6.5	24.8	8.5	6.8	16.1	29.2	4.4	8.2					
Green Ext Time (p_c), s	0.5	28.1	0.7	0.1	0.2	20.4	0.3	0.3					
Intersection Summary													
HCM 6th Ctrl Delay	22.3												
HCM 6th LOS	C												
Notes													
User approved pedestrian interval to be less than phase max green.													
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.													
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.													

HCM Signalized Intersection Capacity Analysis

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	479	171	64	567	46	143	98	55	75	217	157
Future Volume (vph)	78	479	171	64	567	46	143	98	55	75	217	157
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1660	1679		1693	1762		1693	1686		1710	1800	1530
Flt Permitted	0.27	1.00		0.26	1.00		0.23	1.00		0.63	1.00	1.00
Satd. Flow (perm)	473	1679		460	1762		404	1686		1130	1800	1530
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	80	494	176	66	585	47	147	101	57	77	224	162
RTOR Reduction (vph)	0	7	0	0	2	0	0	17	0	0	0	130
Lane Group Flow (vph)	80	663	0	66	630	0	147	141	0	77	224	32
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	79.4	73.9		77.4	72.9		35.6	25.2		26.6	20.2	25.7
Effective Green, g (s)	79.4	75.9		77.4	74.9		35.6	27.2		26.6	22.2	25.7
Actuated g/C Ratio	0.61	0.58		0.60	0.58		0.27	0.21		0.20	0.17	0.20
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	4.0
Vehicle Extension (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	339	980		316	1015		223	352		259	307	302
v/s Ratio Prot	c0.01	c0.40		0.01	0.36		c0.06	0.08		0.01	c0.12	0.00
v/s Ratio Perm	0.13			0.12			0.12			0.05		0.02
v/c Ratio	0.24	0.68		0.21	0.62		0.66	0.40		0.30	0.73	0.11
Uniform Delay, d1	13.4	18.6		14.2	18.2		38.6	44.4		43.1	51.1	42.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	3.8		0.1	2.9		5.3	0.3		0.2	7.2	0.1
Delay (s)	13.6	22.4		14.3	21.0		43.9	44.6		43.3	58.2	42.8
Level of Service	B	C		B	C		D	D		D	E	D
Approach Delay (s)		21.4			20.4			44.3			50.3	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			30.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			75.1%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	479	171	64	567	46	143	98	55	75	217	157
Future Volume (veh/h)	78	479	171	64	567	46	143	98	55	75	217	157
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	1758	1758	1758	1786	1786	1786	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	80	494	156	66	585	42	147	101	51	77	224	110
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	0	0	0
Cap, veh/h	403	780	246	376	995	71	222	212	107	260	276	260
Arrive On Green	0.03	0.61	0.59	0.03	0.60	0.59	0.09	0.19	0.19	0.05	0.15	0.14
Sat Flow, veh/h	1674	1281	404	1701	1646	118	1701	1119	565	1714	1800	1525
Grp Volume(v), veh/h	80	0	650	66	0	627	147	0	152	77	224	110
Grp Sat Flow(s),veh/h/ln	1674	0	1685	1701	0	1765	1701	0	1684	1714	1800	1525
Q Serve(g_s), s	2.5	0.0	32.1	2.0	0.0	28.4	9.3	0.0	10.4	5.0	15.6	8.4
Cycle Q Clear(g_c), s	2.5	0.0	32.1	2.0	0.0	28.4	9.3	0.0	10.4	5.0	15.6	8.4
Prop In Lane	1.00		0.24	1.00		0.07	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	403	0	1026	376	0	1066	222	0	320	260	276	260
V/C Ratio(X)	0.20	0.00	0.63	0.18	0.00	0.59	0.66	0.00	0.48	0.30	0.81	0.42
Avail Cap(c_a), veh/h	581	0	1026	524	0	1066	270	0	415	371	443	402
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)	0.82	0.00	0.82	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	0.0	16.4	14.1	0.0	15.8	42.5	0.0	46.9	45.0	53.2	48.2
Incr Delay (d2), s/veh	0.1	0.0	2.5	0.1	0.0	2.4	2.5	0.0	0.4	0.2	2.5	0.4
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	0.9	0.0	12.7	0.8	0.0	11.8	4.1	0.0	4.4	2.1	7.3	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.3	0.0	18.8	14.2	0.0	18.2	45.0	0.0	47.3	45.2	55.7	48.6
LnGrp LOS	B	A	B	B	A	B	D	A	D	D	E	D
Approach Vol, veh/h	730			693			299			411		
Approach Delay, s/veh	18.2			17.8			46.2			51.9		
Approach LOS	B			B			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	83.1	15.3	23.9	8.2	82.6	10.5	28.7				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	15.0	50.0	15.0	30.0	18.0	47.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	4.0	34.1	11.3	17.6	4.5	30.4	7.0	12.4				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.3	0.0	0.9	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay	28.5											
HCM 6th LOS	C											

HCM Signalized Intersection Capacity Analysis

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	553	68	58	750	62	125	31	79	102	28	203
Future Volume (vph)	56	553	68	58	750	62	125	31	79	102	28	203
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1541	1622	1378	1660	1727		1660	1559		1644	1731	1471
Flt Permitted	0.21	1.00	1.00	0.37	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	338	1622	1378	639	1727		1660	1559		1644	1731	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	58	576	71	60	781	65	130	32	82	106	29	211
RTOR Reduction (vph)	0	0	23	0	2	0	0	75	0	0	0	195
Lane Group Flow (vph)	58	576	48	60	844	0	130	39	0	106	29	16
Heavy Vehicles (%)	11%	11%	11%	3%	3%	3%	3%	3%	3%	4%	4%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	95.3	90.9	90.9	94.3	90.4		12.6	10.1		12.1	9.6	9.6
Effective Green, g (s)	97.3	92.9	92.9	96.3	92.4		13.6	11.1		13.1	10.6	10.6
Actuated g/C Ratio	0.71	0.67	0.67	0.70	0.67		0.10	0.08		0.09	0.08	0.08
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	285	1091	927	482	1156		163	125		156	132	112
v/s Ratio Prot	c0.01	0.36		0.00	c0.49		c0.08	0.02		c0.06	0.02	
v/s Ratio Perm	0.14		0.03	0.08								0.01
v/c Ratio	0.20	0.53	0.05	0.12	0.73		0.80	0.31		0.68	0.22	0.14
Uniform Delay, d1	11.7	11.4	7.6	7.6	14.7		60.9	59.8		60.4	59.8	59.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	1.8	0.1	0.0	4.1		21.8	0.5		8.9	0.3	0.2
Delay (s)	11.9	13.3	7.7	7.7	18.8		82.6	60.3		69.3	60.1	59.7
Level of Service	B	B	A	A	B		F	E		E	E	E
Approach Delay (s)		12.6			18.1			72.2			62.7	
Approach LOS		B			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			29.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			138.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			76.2%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	553	68	58	750	62	125	31	79	102	28	203
Future Volume (veh/h)	56	553	68	58	750	62	125	31	79	102	28	203
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	1646	1646	1646	1758	1758	1758	1758	1758	1758	1744	1744	1744
Adj Flow Rate, veh/h	58	576	55	60	781	58	130	32	63	106	29	164
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	11	11	11	3	3	3	3	3	3	4	4	4
Cap, veh/h	270	1032	874	437	1002	74	158	43	85	238	228	193
Arrive On Green	0.04	0.63	0.63	0.03	0.62	0.62	0.09	0.08	0.07	0.14	0.13	0.13
Sat Flow, veh/h	1567	1646	1395	1674	1616	120	1674	529	1041	1661	1744	1478
Grp Volume(v), veh/h	58	576	55	60	0	839	130	0	95	106	29	164
Grp Sat Flow(s),veh/h/ln	1567	1646	1395	1674	0	1736	1674	0	1570	1661	1744	1478
Q Serve(g_s), s	1.8	27.7	2.1	1.8	0.0	49.1	10.5	0.0	8.2	8.1	2.0	15.0
Cycle Q Clear(g_c), s	1.8	27.7	2.1	1.8	0.0	49.1	10.5	0.0	8.2	8.1	2.0	15.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.66	1.00		1.00
Lane Grp Cap(c), veh/h	270	1032	874	437	0	1076	158	0	128	238	228	193
V/C Ratio(X)	0.21	0.56	0.06	0.14	0.00	0.78	0.82	0.00	0.74	0.45	0.13	0.85
Avail Cap(c_a), veh/h	322	1032	874	504	0	1076	158	0	307	238	341	289
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	1.00	1.00	0.80	0.00	0.80	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.3	14.8	10.0	11.8	0.0	19.3	61.4	0.0	62.3	54.1	53.0	58.7
Incr Delay (d2), s/veh	0.1	2.2	0.1	0.0	0.0	4.5	27.0	0.0	3.1	0.5	0.1	9.4
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	0.7	10.7	0.7	0.7	0.0	20.3	5.7	0.0	3.4	3.4	0.9	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.5	16.9	10.1	11.9	0.0	23.8	88.4	0.0	65.4	54.6	53.1	68.1
LnGrp LOS	B	B	B	B	A	C	F	A	E	D	D	E
Approach Vol, veh/h	689			899			225			299		
Approach Delay, s/veh	16.5			23.0			78.7			61.8		
Approach LOS	B			C			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	90.5	17.0	22.0	9.5	89.5	23.8	15.3				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	9.0	70.0	12.0	26.0	9.0	70.0	12.0	26.0				
Max Q Clear Time (g_c+I1), s	3.8	29.7	12.5	17.0	3.8	51.1	10.1	10.2				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.1	0.0	1.4	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	32.3											
HCM 6th LOS	C											
Notes												

HCM 6th TWSC
5: Turner Road SE & Airway Drive SE

04/18/2022

Intersection

Int Delay, s/veh 3.4

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 40 107 59 219 301 37

Future Vol, veh/h 40 107 59 219 301 37

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length - - - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 88 88 88 88 88 88

Heavy Vehicles, % 2 2 2 2 1 1

Mvmt Flow 45 122 67 249 342 42

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 746 363 384 0 - 0

Stage 1 363 - - - - -

Stage 2 383 - - - - -

Critical Hdwy 6.42 6.22 4.12 - - -

Critical Hdwy Stg 1 5.42 - - - - -

Critical Hdwy Stg 2 5.42 - - - - -

Follow-up Hdwy 3.518 3.318 2.218 - - -

Pot Cap-1 Maneuver 381 682 1174 - - -

Stage 1 704 - - - - -

Stage 2 689 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 356 682 1174 - - -

Mov Cap-2 Maneuver 356 - - - - -

Stage 1 658 - - - - -

Stage 2 689 - - - - -

Approach EB NB SB

HCM Control Delay, s 14.5 1.8 0

HCM LOS B

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1174 - 546 - -

HCM Lane V/C Ratio 0.057 - 0.306 - -

HCM Control Delay (s) 8.3 0 14.5 - -

HCM Lane LOS A A B - -

HCM 95th %tile Q(veh) 0.2 - 1.3 - -

HCM Signalized Intersection Capacity Analysis

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	 		 			 	 	
Traffic Volume (vph)	60	1870	303	239	1475	67	262	136	322	163	157	142
Future Volume (vph)	60	1870	303	239	1475	67	262	136	322	163	157	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	3.0	4.0	4.0	2.6	4.0	4.0	2.6
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4979		3400	3505	1568	3467	1881	1599	3467	1881	1599
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4979		3400	3505	1568	3467	1881	1599	3467	1881	1599
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	1870	303	239	1475	67	262	136	322	163	157	142
RTOR Reduction (vph)	0	13	0	0	0	21	0	0	0	0	0	0
Lane Group Flow (vph)	60	2160	0	239	1475	46	262	136	322	163	157	142
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	7.9	76.4		13.9	82.4	93.8	15.4	19.9	33.8	11.4	15.9	140.0
Effective Green, g (s)	7.9	77.4		13.9	83.4	95.8	15.4	21.3	36.6	11.4	17.3	140.0
Actuated g/C Ratio	0.06	0.55		0.10	0.60	0.68	0.11	0.15	0.26	0.08	0.12	1.00
Clearance Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.4	4.0	4.0	5.4	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	99	2752		337	2087	1072	381	286	418	282	232	1599
v/s Ratio Prot	0.03	c0.43		0.07	0.42	0.00	c0.08	0.07	c0.08	0.05	0.08	
v/s Ratio Perm						0.03			0.12			0.09
v/c Ratio	0.61	0.78		0.71	0.71	0.04	0.69	0.48	0.77	0.58	0.68	0.09
Uniform Delay, d1	64.5	24.7		61.1	19.8	7.2	60.0	54.2	47.8	62.0	58.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.5	2.3		6.2	2.0	0.0	4.7	0.9	8.2	2.3	6.9	0.1
Delay (s)	73.1	27.1		67.3	21.8	7.2	64.7	55.2	56.0	64.3	65.6	0.1
Level of Service	E	C		E	C	A	E	E	E	E	E	A
Approach Delay (s)		28.3			27.4			59.0			45.0	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			33.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			78.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	1870	303	239	1475	67	262	136	322	163	157	142
Future Volume (veh/h)	60	1870	303	239	1475	67	262	136	322	163	157	142
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	1870	1870	1870	1856	1856	1856	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	60	1870	235	239	1475	52	262	136	250	163	157	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	3	3	3	1	1	1	1	1	1
Cap, veh/h	77	2707	337	290	2221	1100	319	283	391	218	228	
Arrive On Green	0.04	0.59	0.58	0.08	0.63	0.63	0.09	0.15	0.15	0.06	0.12	0.00
Sat Flow, veh/h	1781	4598	573	3428	3526	1572	3483	1885	1598	3483	1885	1598
Grp Volume(v), veh/h	60	1381	724	239	1475	52	262	136	250	163	157	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1767	1714	1763	1572	1742	1885	1598	1742	1885	1598
Q Serve(g_s), s	4.7	39.3	40.1	9.6	37.3	1.4	10.3	9.3	19.6	6.4	11.2	0.0
Cycle Q Clear(g_c), s	4.7	39.3	40.1	9.6	37.3	1.4	10.3	9.3	19.6	6.4	11.2	0.0
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	77	2004	1040	290	2221	1100	319	283	391	218	228	
V/C Ratio(X)	0.78	0.69	0.70	0.82	0.66	0.05	0.82	0.48	0.64	0.75	0.69	
Avail Cap(c_a), veh/h	140	2004	1040	392	2221	1100	572	283	391	572	283	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.3	19.9	20.2	63.1	16.5	6.5	62.5	54.5	47.4	64.5	59.0	0.0
Incr Delay (d2), s/veh	11.9	2.0	3.9	9.0	1.6	0.1	4.0	0.9	3.2	3.8	4.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	14.7	16.2	4.5	13.9	0.5	4.7	4.4	8.0	3.0	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.2	21.9	24.1	72.1	18.1	6.6	66.4	55.4	50.5	68.4	63.3	0.0
LnGrp LOS	E	C	C	E	B	A	E	E	D	E	E	
Approach Vol, veh/h		2165			1766			648			320	A
Approach Delay, s/veh		24.2			25.0			58.0			65.9	
Approach LOS		C			C			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.8	86.4	16.8	20.9	10.0	92.2	12.7	25.0				
Change Period (Y+Rc), s	4.0	5.0	4.0	* 5.4	4.0	5.0	4.0	* 5.4				
Max Green Setting (Gmax), s	16.0	63.0	23.0	* 20	11.0	68.0	23.0	* 20				
Max Q Clear Time (g_c+I1), s	11.6	42.1	12.3	13.2	6.7	39.3	8.4	21.6				
Green Ext Time (p_c), s	0.2	18.6	0.5	0.3	0.0	20.0	0.3	0.0				

Intersection Summary

HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	436	146	79	500	62	215	212	64	51	91	67
Future Volume (vph)	192	436	146	79	500	62	215	212	64	51	91	67
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1644	1666		1629	1686		1629	1655		1527	1607	1366
Flt Permitted	0.21	1.00		0.26	1.00		0.50	1.00		0.30	1.00	1.00
Satd. Flow (perm)	358	1666		452	1686		865	1655		489	1607	1366
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	216	490	164	89	562	70	242	238	72	57	102	75
RTOR Reduction (vph)	0	8	0	0	3	0	0	9	0	0	0	56
Lane Group Flow (vph)	216	646	0	89	629	0	242	301	0	57	102	20
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	5%	5%	5%	12%	12%	12%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	80.0	69.4		69.6	63.7		37.7	26.8		25.1	19.2	29.8
Effective Green, g (s)	81.3	71.4		71.6	65.7		38.7	28.8		27.1	21.2	33.8
Actuated g/C Ratio	0.63	0.55		0.55	0.51		0.30	0.22		0.21	0.16	0.26
Clearance Time (s)	6.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	6.0
Vehicle Extension (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	338	915		311	852		342	366		157	262	397
v/s Ratio Prot	c0.06	0.39		0.02	c0.37		c0.08	c0.18		0.02	0.06	0.00
v/s Ratio Perm	0.34			0.14			0.13			0.06		0.01
v/c Ratio	0.64	0.71		0.29	0.74		0.71	0.82		0.36	0.39	0.05
Uniform Delay, d1	17.5	21.6		16.4	25.4		38.4	48.2		42.7	48.6	36.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.9	4.6		0.2	5.7		5.4	13.3		0.5	0.3	0.0
Delay (s)	20.4	26.2		16.5	31.1		43.8	61.5		43.2	49.0	36.1
Level of Service	C	C		B	C		D	E		D	D	D
Approach Delay (s)		24.7			29.3			53.7			43.4	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			34.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			76.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	436	146	79	500	62	215	212	64	51	91	67
Future Volume (veh/h)	192	436	146	79	500	62	215	212	64	51	91	67
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	1744	1744	1744	1730	1730	1730	1730	1730	1730	1632	1632	1632
Adj Flow Rate, veh/h	216	490	143	89	562	64	242	238	65	57	102	19
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	4	4	4	5	5	5	5	5	5	12	12	12
Cap, veh/h	387	746	218	370	813	93	340	272	74	154	230	316
Arrive On Green	0.08	0.57	0.56	0.05	0.53	0.52	0.12	0.21	0.21	0.05	0.14	0.14
Sat Flow, veh/h	1661	1297	379	1647	1525	174	1647	1308	357	1554	1632	1383
Grp Volume(v), veh/h	216	0	633	89	0	626	242	0	303	57	102	19
Grp Sat Flow(s),veh/h/ln	1661	0	1676	1647	0	1699	1647	0	1665	1554	1632	1383
Q Serve(g_s), s	7.4	0.0	33.7	3.2	0.0	35.5	15.0	0.0	22.9	4.1	7.4	1.4
Cycle Q Clear(g_c), s	7.4	0.0	33.7	3.2	0.0	35.5	15.0	0.0	22.9	4.1	7.4	1.4
Prop In Lane	1.00		0.23	1.00		0.10	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	387	0	963	370	0	906	340	0	346	154	230	316
V/C Ratio(X)	0.56	0.00	0.66	0.24	0.00	0.69	0.71	0.00	0.88	0.37	0.44	0.06
Avail Cap(c_a), veh/h	433	0	963	446	0	906	340	0	372	258	364	430
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)	0.82	0.00	0.82	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	19.1	16.1	0.0	22.5	42.5	0.0	49.9	46.0	51.2	39.2
Incr Delay (d2), s/veh	0.4	0.0	2.9	0.1	0.0	4.3	5.9	0.0	18.2	0.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	13.5	1.2	0.0	15.0	7.3	0.0	11.3	1.6	3.1	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.6	0.0	22.0	16.2	0.0	26.8	48.4	0.0	68.1	46.6	51.7	39.3
LnGrp LOS	B	A	C	B	A	C	D	A	E	D	D	D
Approach Vol, veh/h		849			715			545			178	
Approach Delay, s/veh		21.1			25.5			59.4			48.7	
Approach LOS		C			C			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	78.7	19.0	22.3	15.4	73.3	10.3	31.0				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	6.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	11.0	56.0	14.0	27.0	13.0	53.0	14.0	27.0				
Max Q Clear Time (g_c+I1), s	5.2	35.7	17.0	9.4	9.4	37.5	6.1	24.9				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.1	0.0	1.0	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			33.7									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	634	123	64	500	141	93	36	40	34	21	3
Future Volume (vph)	191	634	123	64	500	141	93	36	40	34	21	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1629	1714	1457	1569	1597		1437	1393		1368	1440	1224
Flt Permitted	0.30	1.00	1.00	0.32	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	517	1714	1457	534	1597		1437	1393		1368	1440	1224
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	201	667	129	67	526	148	98	38	42	36	22	3
RTOR Reduction (vph)	0	0	41	0	6	0	0	38	0	0	0	3
Lane Group Flow (vph)	201	667	88	67	668	0	98	42	0	36	22	0
Heavy Vehicles (%)	5%	5%	5%	9%	9%	9%	19%	19%	19%	25%	25%	25%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	86.3	81.3	81.3	83.3	79.8		8.0	11.4		4.8	8.2	8.2
Effective Green, g (s)	88.3	83.3	83.3	85.3	81.8		9.0	12.4		5.8	9.2	9.2
Actuated g/C Ratio	0.72	0.68	0.68	0.70	0.67		0.07	0.10		0.05	0.08	0.08
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	428	1170	994	411	1070		106	141		65	108	92
v/s Ratio Prot	c0.02	0.39		0.01	c0.42		c0.07	0.03		c0.03	c0.02	
v/s Ratio Perm	0.32		0.06	0.11								0.00
v/c Ratio	0.47	0.57	0.09	0.16	0.62		0.92	0.30		0.55	0.20	0.00
Uniform Delay, d1	8.0	10.1	6.5	7.1	11.4		56.2	50.8		56.8	53.0	52.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	2.0	0.2	0.1	2.8		62.6	0.4		5.7	0.3	0.0
Delay (s)	8.3	12.1	6.7	7.2	14.2		118.8	51.2		62.5	53.3	52.2
Level of Service	A	B	A	A	B		F	D		E	D	D
Approach Delay (s)		10.6			13.5			88.4			58.7	
Approach LOS		B			B			F			E	
Intersection Summary												
HCM 2000 Control Delay			20.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			122.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			70.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	634	123	64	500	141	93	36	40	34	21	3
Future Volume (veh/h)	191	634	123	64	500	141	93	36	40	34	21	3
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	1730	1730	1730	1674	1674	1674	1533	1533	1533	1449	1449	1449
Adj Flow Rate, veh/h	201	667	113	67	526	141	98	38	23	36	22	-44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	9	9	9	19	19	19	25	25	25
Cap, veh/h	512	1253	1062	468	901	242	108	59	36	62	54	46
Arrive On Green	0.05	0.72	0.72	0.03	0.71	0.71	0.07	0.07	0.07	0.04	0.04	0.00
Sat Flow, veh/h	1647	1730	1466	1594	1271	341	1460	894	541	1380	1449	1228
Grp Volume(v), veh/h	201	667	113	67	0	667	98	0	61	36	22	-44
Grp Sat Flow(s),veh/h/ln	1647	1730	1466	1594	0	1612	1460	0	1436	1380	1449	1228
Q Serve(g_s), s	4.2	21.1	2.8	1.4	0.0	25.1	8.1	0.0	5.1	3.1	1.8	0.0
Cycle Q Clear(g_c), s	4.2	21.1	2.8	1.4	0.0	25.1	8.1	0.0	5.1	3.1	1.8	0.0
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	512	1253	1062	468	0	1143	108	0	95	62	54	46
V/C Ratio(X)	0.39	0.53	0.11	0.14	0.00	0.58	0.91	0.00	0.64	0.58	0.41	-0.97
Avail Cap(c_a), veh/h	512	1253	1062	493	0	1143	108	0	318	124	321	272
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	1.00	1.00	0.68	0.00	0.68	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.9	7.5	5.0	6.2	0.0	8.8	56.1	0.0	55.6	57.1	57.4	0.0
Incr Delay (d2), s/veh	0.2	1.6	0.2	0.0	0.0	1.5	57.9	0.0	2.7	3.2	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	7.5	0.8	0.4	0.0	8.4	4.7	0.0	1.9	1.1	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	9.1	5.2	6.2	0.0	10.3	114.0	0.0	58.3	60.3	59.3	0.0
LnGrp LOS	A	A	A	A	A	B	F	A	E	E	E	A
Approach Vol, veh/h		981			734			159			14	
Approach Delay, s/veh		8.5			9.9			92.6			248.2	
Approach LOS		A			A			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	92.4	13.0	8.5	10.0	90.5	9.5	12.0				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	5.0	60.0	8.0	26.0	5.0	60.0	10.0	26.0				
Max Q Clear Time (g_c+I1), s	3.4	23.1	10.1	3.8	6.2	27.1	5.1	7.1				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.0	1.2	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			17.9									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 6th TWSC
5: Turner Road SE & Airway Drive SE

04/18/2022

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	48	113	270	145	20
Future Vol, veh/h	21	48	113	270	145	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	5	5	1	1	3	3
Mvmt Flow	24	56	131	314	169	23
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	757	181	192	0	-	0
Stage 1	181	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	371	854	1388	-	-	-
Stage 1	843	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	329	854	1388	-	-	-
Mov Cap-2 Maneuver	329	-	-	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.3	2.3		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1388	-	575	-	-	
HCM Lane V/C Ratio	0.095	-	0.14	-	-	
HCM Control Delay (s)	7.9	0	12.3	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.5	-	-	

HCM Signalized Intersection Capacity Analysis

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	 		 			 	 	
Traffic Volume (vph)	192	1765	165	120	1256	219	168	92	107	61	68	81
Future Volume (vph)	192	1765	165	120	1256	219	168	92	107	61	68	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	4924		3400	3505	1568	3433	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	4924		3400	3505	1568	3433	1863	1583	3433	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	192	1765	165	120	1256	219	168	92	107	61	68	81
RTOR Reduction (vph)	0	5	0	0	0	79	0	0	0	0	0	0
Lane Group Flow (vph)	192	1925	0	120	1256	140	168	92	107	61	68	81
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	19.7	87.7		9.8	77.8	85.4	13.6	16.5	26.3	7.6	10.5	140.0
Effective Green, g (s)	19.7	88.7		9.8	78.8	85.4	13.6	17.9	26.3	7.6	11.9	140.0
Actuated g/C Ratio	0.14	0.63		0.07	0.56	0.61	0.10	0.13	0.19	0.05	0.09	1.00
Clearance Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.4	4.0	4.0	5.4	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	244	3119		238	1972	956	333	238	297	186	158	1583
v/s Ratio Prot	c0.11	0.39		0.04	c0.36	0.01	c0.05	c0.05	0.03	0.02	0.04	
v/s Ratio Perm						0.08			0.04			0.05
v/c Ratio	0.79	0.62		0.50	0.64	0.15	0.50	0.39	0.36	0.33	0.43	0.05
Uniform Delay, d1	58.1	15.4		62.8	20.9	11.7	60.0	56.0	49.5	63.7	60.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.8	0.9		1.2	1.6	0.1	0.9	0.8	0.5	0.8	1.4	0.1
Delay (s)	72.9	16.4		64.0	22.4	11.7	60.9	56.8	50.1	64.5	62.2	0.1
Level of Service	E	B		E	C	B	E	E	D	E	E	A
Approach Delay (s)		21.5			24.1			56.7			38.9	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			26.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)		16.0			
Intersection Capacity Utilization			66.8%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	1765	165	120	1256	219	168	92	107	61	68	81
Future Volume (veh/h)	192	1765	165	120	1256	219	168	92	107	61	68	81
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	1841	1841	1841	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	192	1765	97	120	1256	204	168	92	35	61	68	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	221	3440	189	178	2227	1029	233	184	222	102	113	
Arrive On Green	0.13	0.71	0.70	0.05	0.63	0.62	0.07	0.10	0.09	0.03	0.06	0.00
Sat Flow, veh/h	1753	4875	268	3428	3526	1572	3456	1870	1585	3456	1870	1585
Grp Volume(v), veh/h	192	1212	650	120	1256	204	168	92	35	61	68	0
Grp Sat Flow(s),veh/h/ln	1753	1675	1793	1714	1763	1572	1728	1870	1585	1728	1870	1585
Q Serve(g_s), s	15.0	23.4	23.5	4.8	28.5	7.2	6.7	6.5	2.7	2.4	5.0	0.0
Cycle Q Clear(g_c), s	15.0	23.4	23.5	4.8	28.5	7.2	6.7	6.5	2.7	2.4	5.0	0.0
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	2364	1265	178	2227	1029	233	184	222	102	113	
V/C Ratio(X)	0.87	0.51	0.51	0.67	0.56	0.20	0.72	0.50	0.16	0.60	0.60	
Avail Cap(c_a), veh/h	313	2364	1265	514	2227	1029	494	374	384	272	254	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	60.0	9.5	9.6	65.2	14.8	9.6	64.0	59.9	52.9	67.1	64.1	0.0
Incr Delay (d2), s/veh	15.0	0.8	1.5	3.3	1.0	0.4	3.2	1.6	0.2	4.1	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	7.5	8.3	2.1	10.6	2.4	3.0	3.1	1.1	1.1	2.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.0	10.3	11.0	68.4	15.8	10.1	67.2	61.4	53.1	71.1	67.8	0.0
LnGrp LOS	E	B	B	E	B	B	E	E	D	E	E	
Approach Vol, veh/h		2054			1580			295			129	A
Approach Delay, s/veh		16.6			19.1			63.7			69.4	
Approach LOS		B			B			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	102.8	13.4	12.5	21.7	92.4	8.2	17.8				
Change Period (Y+Rc), s	4.0	5.0	4.0	* 5.4	4.0	5.0	4.0	* 5.4				
Max Green Setting (Gmax), s	21.0	63.0	20.0	* 18	25.0	59.0	11.0	* 27				
Max Q Clear Time (g_c+I1), s	6.8	25.5	8.7	7.0	17.0	30.5	4.4	8.5				
Green Ext Time (p_c), s	0.5	27.9	0.8	0.1	0.6	18.1	0.1	0.5				

Intersection Summary

HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	532	186	73	611	53	157	108	62	82	230	169
Future Volume (vph)	92	532	186	73	611	53	157	108	62	82	230	169
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1660	1680		1693	1761		1693	1684		1710	1800	1530
Flt Permitted	0.22	1.00		0.20	1.00		0.20	1.00		0.57	1.00	1.00
Satd. Flow (perm)	392	1680		365	1761		354	1684		1026	1800	1530
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	95	548	192	75	630	55	162	111	64	85	237	174
RTOR Reduction (vph)	0	7	0	0	2	0	0	17	0	0	0	131
Lane Group Flow (vph)	95	733	0	75	683	0	162	158	0	85	237	43
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	78.9	72.6		76.1	71.2		36.5	24.9		27.8	20.2	26.5
Effective Green, g (s)	78.9	74.6		76.1	73.2		36.5	26.9		27.8	22.2	26.5
Actuated g/C Ratio	0.61	0.57		0.59	0.56		0.28	0.21		0.21	0.17	0.20
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	4.0
Vehicle Extension (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	299	964		263	991		226	348		259	307	311
v/s Ratio Prot	c0.02	c0.44		0.01	0.39		c0.07	0.09		0.02	c0.13	0.01
v/s Ratio Perm	0.18			0.16			0.13			0.05		0.02
v/c Ratio	0.32	0.76		0.29	0.69		0.72	0.46		0.33	0.77	0.14
Uniform Delay, d1	15.3	20.9		16.5	20.3		38.4	45.1		42.3	51.5	42.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	5.6		0.2	3.9		8.7	0.3		0.3	10.4	0.1
Delay (s)	15.5	26.6		16.7	24.2		47.1	45.5		42.6	61.9	42.5
Level of Service	B	C		B	C		D	D		D	E	D
Approach Delay (s)		25.3			23.5			46.2			51.8	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			33.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			81.1%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	532	186	73	611	53	157	108	62	82	230	169
Future Volume (veh/h)	92	532	186	73	611	53	157	108	62	82	230	169
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	1758	1758	1758	1786	1786	1786	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	95	548	172	75	630	50	162	111	58	85	237	122
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	0	0	0
Cap, veh/h	352	759	238	308	956	76	233	220	115	266	288	279
Arrive On Green	0.04	0.59	0.58	0.03	0.59	0.57	0.09	0.20	0.20	0.05	0.16	0.14
Sat Flow, veh/h	1674	1283	403	1701	1633	130	1701	1105	577	1714	1800	1525
Grp Volume(v), veh/h	95	0	720	75	0	680	162	0	169	85	237	122
Grp Sat Flow(s),veh/h/ln	1674	0	1685	1701	0	1763	1701	0	1682	1714	1800	1525
Q Serve(g_s), s	3.1	0.0	39.8	2.4	0.0	33.9	10.2	0.0	11.6	5.4	16.6	9.2
Cycle Q Clear(g_c), s	3.1	0.0	39.8	2.4	0.0	33.9	10.2	0.0	11.6	5.4	16.6	9.2
Prop In Lane	1.00		0.24	1.00		0.07	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	352	0	997	308	0	1031	233	0	335	266	288	279
V/C Ratio(X)	0.27	0.00	0.72	0.24	0.00	0.66	0.70	0.00	0.50	0.32	0.82	0.44
Avail Cap(c_a), veh/h	520	0	997	451	0	1031	270	0	414	370	443	410
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)	0.77	0.00	0.77	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	19.2	17.3	0.0	18.3	41.5	0.0	46.3	44.0	52.8	47.2
Incr Delay (d2), s/veh	0.1	0.0	3.5	0.2	0.0	3.3	4.5	0.0	0.4	0.3	4.0	0.4
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	1.1	0.0	16.0	0.9	0.0	14.4	4.6	0.0	4.9	2.3	7.8	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.0	22.7	17.5	0.0	21.6	46.1	0.0	46.8	44.3	56.7	47.6
LnGrp LOS	B	A	C	B	A	C	D	A	D	D	E	D
Approach Vol, veh/h		815			755			331			444	
Approach Delay, s/veh		21.9			21.2			46.4			51.8	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	80.9	16.2	24.8	8.9	80.1	11.1	29.9				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	15.0	50.0	15.0	30.0	18.0	47.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	4.4	41.8	12.2	18.6	5.1	35.9	7.4	13.6				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.3	0.0	1.0	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			30.8									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	605	80	69	799	70	138	37	88	108	33	212
Future Volume (vph)	67	605	80	69	799	70	138	37	88	108	33	212
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1541	1622	1378	1660	1726		1660	1563		1644	1731	1471
Flt Permitted	0.16	1.00	1.00	0.33	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	264	1622	1378	572	1726		1660	1563		1644	1731	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	70	630	83	72	832	73	144	39	92	112	34	221
RTOR Reduction (vph)	0	0	28	0	2	0	0	70	0	0	0	201
Lane Group Flow (vph)	70	630	55	72	903	0	144	61	0	113	34	20
Heavy Vehicles (%)	11%	11%	11%	3%	3%	3%	3%	3%	3%	4%	4%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	93.8	88.8	88.8	92.2	88.0		12.6	11.0		13.0	11.4	11.4
Effective Green, g (s)	95.8	90.8	90.8	94.2	90.0		13.6	12.0		14.0	12.4	12.4
Actuated g/C Ratio	0.69	0.66	0.66	0.68	0.65		0.10	0.09		0.10	0.09	0.09
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	238	1067	906	431	1125		163	135		166	155	132
v/s Ratio Prot	c0.01	0.39		0.01	c0.52		c0.09	0.04		c0.07	0.02	
v/s Ratio Perm	0.19		0.04	0.11								0.01
v/c Ratio	0.29	0.59	0.06	0.17	0.80		0.88	0.45		0.68	0.22	0.15
Uniform Delay, d1	15.3	13.2	8.4	9.0	17.5		61.4	59.9		59.8	58.3	57.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	2.4	0.1	0.1	6.1		38.0	0.9		8.8	0.3	0.2
Delay (s)	15.6	15.6	8.5	9.0	23.6		99.5	60.7		68.6	58.6	58.1
Level of Service	B	B	A	A	C		F	E		E	E	E
Approach Delay (s)		14.8			22.5			81.0			61.4	
Approach LOS		B			C			F			E	
Intersection Summary												
HCM 2000 Control Delay			32.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			138.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			80.8%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	605	80	69	799	70	138	37	88	108	33	212
Future Volume (veh/h)	67	605	80	69	799	70	138	37	88	108	33	212
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	1646	1646	1646	1758	1758	1758	1758	1758	1758	1744	1744	1744
Adj Flow Rate, veh/h	70	630	67	72	832	66	144	39	73	112	34	174
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	11	11	11	3	3	3	3	3	3	4	4	4
Cap, veh/h	224	1015	860	388	983	78	158	51	95	231	239	203
Arrive On Green	0.04	0.62	0.62	0.04	0.61	0.61	0.09	0.09	0.09	0.14	0.14	0.14
Sat Flow, veh/h	1567	1646	1395	1674	1607	128	1674	548	1025	1661	1744	1478
Grp Volume(v), veh/h	70	630	67	72	0	898	144	0	112	112	34	174
Grp Sat Flow(s),veh/h/ln	1567	1646	1395	1674	0	1735	1674	0	1573	1661	1744	1478
Q Serve(g_s), s	2.3	32.8	2.7	2.2	0.0	57.5	11.8	0.0	9.6	8.6	2.4	15.9
Cycle Q Clear(g_c), s	2.3	32.8	2.7	2.2	0.0	57.5	11.8	0.0	9.6	8.6	2.4	15.9
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	224	1015	860	388	0	1061	158	0	145	231	239	203
V/C Ratio(X)	0.31	0.62	0.08	0.19	0.00	0.85	0.91	0.00	0.77	0.48	0.14	0.86
Avail Cap(c_a), veh/h	274	1015	860	449	0	1061	158	0	308	231	341	289
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	1.00	1.00	0.73	0.00	0.73	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	16.4	10.7	13.5	0.0	21.6	61.9	0.0	61.5	54.8	52.4	58.2
Incr Delay (d2), s/veh	0.3	2.9	0.2	0.1	0.0	6.3	46.2	0.0	3.2	0.6	0.1	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	12.9	0.9	0.8	0.0	24.2	7.0	0.0	4.0	3.7	1.1	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.0	19.3	10.8	13.5	0.0	27.8	108.1	0.0	64.8	55.4	52.5	70.2
LnGrp LOS	C	B	B	B	A	C	F	A	E	E	D	E
Approach Vol, veh/h		767			970			256			320	
Approach Delay, s/veh		18.9			26.8			89.2			63.2	
Approach LOS		B			C			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	89.1	17.0	22.9	9.7	88.4	23.2	16.7				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	9.0	70.0	12.0	26.0	9.0	70.0	12.0	26.0				
Max Q Clear Time (g_c+I1), s	4.2	34.8	13.8	17.9	4.3	59.5	10.6	11.6				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.1	0.0	1.4	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			36.1									
HCM 6th LOS			D									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 6th TWSC 5: Turner Road SE & Airway Drive SE

04/18/2022

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	42	109	65	231	314	42
Future Vol, veh/h	42	109	65	231	314	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	48	124	74	263	357	48

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	792	381	405	0	-	0
Stage 1	381	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	358	666	1154	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	331	666	1154	-	-	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.3	1.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1154	-	520	-	-
HCM Lane V/C Ratio	0.064	-	0.33	-	-
HCM Control Delay (s)	8.3	0	15.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-

HCM Signalized Intersection Capacity Analysis

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	1876	318	254	1490	76	269	143	331	167	161	145
Future Volume (vph)	64	1876	318	254	1490	76	269	143	331	167	161	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	3.0	4.0	4.0	2.6	4.0	4.0	2.6
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4975		3400	3505	1568	3467	1881	1599	3467	1881	1599
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4975		3400	3505	1568	3467	1881	1599	3467	1881	1599
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	64	1876	318	254	1490	76	269	143	331	167	161	145
RTOR Reduction (vph)	0	14	0	0	0	25	0	0	0	0	0	0
Lane Group Flow (vph)	64	2180	0	254	1490	51	269	143	331	167	161	145
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Free
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	8.0	73.8		15.4	81.2	91.5	15.7	22.1	37.5	10.3	16.7	140.0
Effective Green, g (s)	8.0	74.8		15.4	82.2	93.5	15.7	23.5	40.3	10.3	18.1	140.0
Actuated g/C Ratio	0.06	0.53		0.11	0.59	0.67	0.11	0.17	0.29	0.07	0.13	1.00
Clearance Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.4	4.0	4.0	5.4	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	101	2658		374	2057	1047	388	315	460	255	243	1599
v/s Ratio Prot	0.04	c0.44		0.07	0.43	0.00	c0.08	0.08	c0.09	0.05	0.09	
v/s Ratio Perm						0.03			0.12			0.09
v/c Ratio	0.63	0.82		0.68	0.72	0.05	0.69	0.45	0.72	0.65	0.66	0.09
Uniform Delay, d1	64.6	27.0		59.9	20.8	8.0	59.8	52.5	44.8	63.1	58.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.8	3.0		4.4	2.3	0.0	4.9	0.8	5.0	5.3	6.0	0.1
Delay (s)	75.4	30.0		64.3	23.0	8.0	64.7	53.2	49.8	68.4	64.0	0.1
Level of Service	E	C		E	C	A	E	D	D	E	E	A
Approach Delay (s)		31.3			28.2			55.8			46.0	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			35.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			80.1%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	1876	318	254	1490	76	269	143	331	167	161	145
Future Volume (veh/h)	64	1876	318	254	1490	76	269	143	331	167	161	145
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	1870	1870	1870	1856	1856	1856	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	64	1876	250	254	1490	61	269	143	259	167	161	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	3	3	3	1	1	1	1	1	1
Cap, veh/h	82	2523	333	321	2117	1055	345	332	447	220	264	
Arrive On Green	0.05	0.55	0.55	0.09	0.60	0.60	0.10	0.18	0.18	0.06	0.14	0.00
Sat Flow, veh/h	1781	4563	603	3428	3526	1572	3483	1885	1598	3483	1885	1598
Grp Volume(v), veh/h	64	1395	731	254	1490	61	269	143	259	167	161	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1762	1714	1763	1572	1742	1885	1598	1742	1885	1598
Q Serve(g_s), s	5.0	43.5	44.5	10.2	40.9	1.9	10.6	9.5	19.5	6.6	11.2	0.0
Cycle Q Clear(g_c), s	5.0	43.5	44.5	10.2	40.9	1.9	10.6	9.5	19.5	6.6	11.2	0.0
Prop In Lane	1.00		0.34	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	1882	974	321	2117	1055	345	332	447	220	264	
V/C Ratio(X)	0.78	0.74	0.75	0.79	0.70	0.06	0.78	0.43	0.58	0.76	0.61	
Avail Cap(c_a), veh/h	140	1882	974	490	2117	1055	572	444	542	274	283	
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	66.1	23.7	24.1	62.1	19.4	7.9	61.6	51.4	43.3	64.5	56.6	0.0
Incr Delay (d2), s/veh	11.1	2.7	5.3	3.9	2.0	0.1	2.9	0.7	0.9	8.3	2.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	16.8	18.5	4.5	15.8	0.6	4.7	4.5	7.7	3.2	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.2	26.4	29.4	66.0	21.3	8.0	64.5	52.1	44.2	72.8	59.5	0.0
LnGrp LOS	E	C	C	E	C	A	E	D	D	E	E	
Approach Vol, veh/h		2190			1805			671			328	A
Approach Delay, s/veh		28.9			27.2			54.0			66.3	
Approach LOS		C			C			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.1	81.4	17.9	23.6	10.5	88.1	12.8	28.6				
Change Period (Y+Rc), s	4.0	5.0	4.0	* 5.4	4.0	5.0	4.0	* 5.4				
Max Green Setting (Gmax), s	20.0	59.0	23.0	* 20	11.0	68.0	11.0	* 32				
Max Q Clear Time (g_c+I1), s	12.2	46.5	12.6	13.2	7.0	42.9	8.6	21.5				
Green Ext Time (p_c), s	1.0	11.6	1.3	0.3	0.1	18.2	0.2	1.7				

Intersection Summary

HCM 6th Ctrl Delay 34.1

HCM 6th LOS C

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th TWSC

1: Turner Road SE & Driveway #1

04/18/2022

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	2	392	263	0
Future Vol, veh/h	0	0	2	392	263	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	5	5	3	3
Mvmt Flow	0	0	2	451	302	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	757	302	302	0	-	0
Stage 1	302	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.15	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.245	-	-	-
Pot Cap-1 Maneuver	377	740	1242	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	376	740	1242	-	-	-
Mov Cap-2 Maneuver	376	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1242	-	-	-	-	
HCM Lane V/C Ratio	0.002	-	-	-	-	
HCM Control Delay (s)	7.9	0	0	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

HCM 6th TWSC

2: Turner Road SE & Driveway #2

04/18/2022

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	9	52	385	209	54
Future Vol, veh/h	9	9	52	385	209	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	4	4	5	5	3	3
Mvmt Flow	10	10	60	443	240	62

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	834	271	302	0	-	0
Stage 1	271	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.15	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.245	-	-	-
Pot Cap-1 Maneuver	335	763	1242	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	314	763	1242	-	-	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	566	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1242	-	445	-	-
HCM Lane V/C Ratio	0.048	-	0.046	-	-
HCM Control Delay (s)	8	0	13.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-

HCM Signalized Intersection Capacity Analysis

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	222	436	146	79	500	79	215	219	64	54	92	72
Future Volume (vph)	222	436	146	79	500	79	215	219	64	54	92	72
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1644	1666		1629	1679		1629	1656		1527	1607	1366
Flt Permitted	0.18	1.00		0.27	1.00		0.50	1.00		0.29	1.00	1.00
Satd. Flow (perm)	306	1666		462	1679		865	1656		460	1607	1366
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	249	490	164	89	562	89	242	246	72	61	103	81
RTOR Reduction (vph)	0	8	0	0	4	0	0	8	0	0	0	59
Lane Group Flow (vph)	249	646	0	89	647	0	242	310	0	61	103	22
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	5%	5%	5%	12%	12%	12%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	79.9	69.0		67.2	61.3		38.1	27.0		25.6	19.5	32.1
Effective Green, g (s)	80.9	71.0		69.2	63.3		39.1	29.0		27.6	21.5	36.1
Actuated g/C Ratio	0.62	0.55		0.53	0.49		0.30	0.22		0.21	0.17	0.28
Clearance Time (s)	6.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	6.0
Vehicle Extension (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	330	909		307	817		345	369		155	265	421
v/s Ratio Prot	c0.08	0.39		0.02	c0.39		c0.08	c0.19		0.02	0.06	0.01
v/s Ratio Perm	0.39			0.14			0.13			0.06		0.01
v/c Ratio	0.75	0.71		0.29	0.79		0.70	0.84		0.39	0.39	0.05
Uniform Delay, d1	19.8	21.9		17.2	27.8		38.0	48.3		42.4	48.4	34.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.4	4.7		0.2	7.7		5.2	15.1		0.6	0.3	0.0
Delay (s)	28.2	26.6		17.4	35.6		43.2	63.4		43.0	48.7	34.4
Level of Service	C	C		B	D		D	E		D	D	C
Approach Delay (s)		27.0			33.4			54.7			42.6	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			36.8			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			79.6%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	436	146	79	500	79	215	219	64	54	92	72
Future Volume (veh/h)	222	436	146	79	500	79	215	219	64	54	92	72
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	1744	1744	1744	1730	1730	1730	1730	1730	1730	1632	1632	1632
Adj Flow Rate, veh/h	249	490	143	89	562	83	242	246	65	61	103	25
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	4	4	4	5	5	5	5	5	5	12	12	12
Cap, veh/h	367	735	215	362	759	112	347	280	74	158	241	341
Arrive On Green	0.09	0.57	0.55	0.05	0.51	0.50	0.12	0.21	0.21	0.05	0.15	0.15
Sat Flow, veh/h	1661	1297	379	1647	1473	218	1647	1319	348	1554	1632	1383
Grp Volume(v), veh/h	249	0	633	89	0	645	242	0	311	61	103	25
Grp Sat Flow(s),veh/h/ln	1661	0	1676	1647	0	1691	1647	0	1667	1554	1632	1383
Q Serve(g_s), s	8.9	0.0	34.3	3.3	0.0	39.0	15.0	0.0	23.5	4.3	7.5	1.8
Cycle Q Clear(g_c), s	8.9	0.0	34.3	3.3	0.0	39.0	15.0	0.0	23.5	4.3	7.5	1.8
Prop In Lane	1.00		0.23	1.00		0.13	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	367	0	950	362	0	871	347	0	354	158	241	341
V/C Ratio(X)	0.68	0.00	0.67	0.25	0.00	0.74	0.70	0.00	0.88	0.39	0.43	0.07
Avail Cap(c_a), veh/h	395	0	950	436	0	871	347	0	372	258	364	445
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)	0.80	0.00	0.80	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	19.8	17.0	0.0	24.8	41.7	0.0	49.6	45.2	50.4	37.6
Incr Delay (d2), s/veh	2.6	0.0	3.0	0.1	0.0	5.6	5.1	0.0	19.2	0.6	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	13.8	1.3	0.0	16.7	7.1	0.0	11.7	1.7	3.1	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	0.0	22.7	17.1	0.0	30.5	46.8	0.0	68.7	45.8	50.9	37.6
LnGrp LOS	C	A	C	B	A	C	D	A	E	D	D	D
Approach Vol, veh/h	882			734			553			189		
Approach Delay, s/veh	23.0			28.9			59.1			47.5		
Approach LOS	C			C			E			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.1	77.7	19.0	23.2	16.9	70.9	10.6	31.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	6.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	11.0	56.0	14.0	27.0	13.0	53.0	14.0	27.0				
Max Q Clear Time (g_c+I1), s	5.3	36.3	17.0	9.5	10.9	41.0	6.3	25.5				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.1	0.0	0.9	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	35.2											
HCM 6th LOS	D											

HCM Signalized Intersection Capacity Analysis

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	655	123	65	503	142	93	36	45	38	21	3
Future Volume (vph)	191	655	123	65	503	142	93	36	45	38	21	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1629	1714	1457	1569	1597		1437	1387		1368	1440	1224
Flt Permitted	0.29	1.00	1.00	0.30	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	501	1714	1457	502	1597		1437	1387		1368	1440	1224
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	201	689	129	68	529	149	98	38	47	40	22	3
RTOR Reduction (vph)	0	0	43	0	6	0	0	42	0	0	0	3
Lane Group Flow (vph)	201	689	86	68	672	0	98	43	0	40	22	0
Heavy Vehicles (%)	5%	5%	5%	9%	9%	9%	19%	19%	19%	25%	25%	25%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	84.7	79.7	79.7	81.7	78.2		9.4	10.8		7.0	8.4	8.4
Effective Green, g (s)	86.7	81.7	81.7	83.7	80.2		10.4	11.8		8.0	9.4	9.4
Actuated g/C Ratio	0.71	0.67	0.67	0.69	0.66		0.09	0.10		0.07	0.08	0.08
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	411	1147	975	383	1049		122	134		89	110	94
v/s Ratio Prot	c0.02	0.40		0.01	c0.42		c0.07	0.03		c0.03	0.02	
v/s Ratio Perm	0.32		0.06	0.12								0.00
v/c Ratio	0.49	0.60	0.09	0.18	0.64		0.80	0.32		0.45	0.20	0.00
Uniform Delay, d1	8.8	11.1	7.1	8.0	12.4		54.8	51.3		54.9	52.8	52.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	2.3	0.2	0.1	3.0		29.0	0.5		1.3	0.3	0.0
Delay (s)	9.1	13.5	7.3	8.1	15.4		83.8	51.8		56.2	53.1	52.0
Level of Service	A	B	A	A	B		F	D		E	D	D
Approach Delay (s)		11.8			14.7			69.0			55.0	
Approach LOS		B			B			E			D	
Intersection Summary												
HCM 2000 Control Delay			19.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			122.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			70.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	655	123	65	503	142	93	36	45	38	21	3
Future Volume (veh/h)	191	655	123	65	503	142	93	36	45	38	21	3
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	1730	1730	1730	1674	1674	1674	1533	1533	1533	1449	1449	1449
Adj Flow Rate, veh/h	201	689	113	68	529	142	98	38	28	40	22	-44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	9	9	9	19	19	19	25	25	25
Cap, veh/h	508	1252	1061	454	900	242	108	57	42	57	55	46
Arrive On Green	0.05	0.72	0.72	0.03	0.71	0.71	0.07	0.07	0.07	0.04	0.04	0.00
Sat Flow, veh/h	1647	1730	1466	1594	1271	341	1460	820	604	1380	1449	1228
Grp Volume(v), veh/h	201	689	113	68	0	671	98	0	66	40	22	-44
Grp Sat Flow(s),veh/h/ln	1647	1730	1466	1594	0	1612	1460	0	1424	1380	1449	1228
Q Serve(g_s), s	4.3	22.3	2.8	1.4	0.0	25.4	8.1	0.0	5.5	3.5	1.8	0.0
Cycle Q Clear(g_c), s	4.3	22.3	2.8	1.4	0.0	25.4	8.1	0.0	5.5	3.5	1.8	0.0
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.42	1.00		1.00
Lane Grp Cap(c), veh/h	508	1252	1061	454	0	1142	108	0	99	57	55	46
V/C Ratio(X)	0.40	0.55	0.11	0.15	0.00	0.59	0.91	0.00	0.66	0.70	0.40	-0.95
Avail Cap(c_a), veh/h	508	1252	1061	479	0	1142	108	0	315	124	321	272
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	1.00	1.00	0.64	0.00	0.64	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.0	7.7	5.0	6.4	0.0	8.9	56.1	0.0	55.3	57.7	57.4	0.0
Incr Delay (d2), s/veh	0.2	1.7	0.2	0.0	0.0	1.4	57.9	0.0	2.8	5.5	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	8.0	0.9	0.4	0.0	8.5	4.7	0.0	2.1	1.3	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.2	9.5	5.2	6.5	0.0	10.3	114.0	0.0	58.1	63.2	59.1	0.0
LnGrp LOS	A	A	A	A	A	B	F	A	E	E	E	A
Approach Vol, veh/h		1003			739			164			18	
Approach Delay, s/veh		8.7			10.0			91.5			212.7	
Approach LOS		A			A			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	92.3	13.0	8.6	10.0	90.4	9.1	12.5				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	5.0	60.0	8.0	26.0	5.0	60.0	10.0	26.0				
Max Q Clear Time (g_c+I1), s	3.4	24.3	10.1	3.8	6.3	27.4	5.5	7.5				
Green Ext Time (p_c), s	0.0	1.1	0.0	0.0	0.0	1.2	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			18.2									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 6th TWSC
5: Turner Road SE & Airway Drive SE

04/18/2022

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	63	116	276	184	20
Future Vol, veh/h	21	63	116	276	184	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	5	5	1	1	3	3
Mvmt Flow	24	73	135	321	214	23
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	817	226	237	0	-	0
Stage 1	226	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	342	806	1336	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	300	806	1336	-	-	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	706	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.7	2.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1336	-	567	-	-	
HCM Lane V/C Ratio	0.101	-	0.172	-	-	
HCM Control Delay (s)	8	0	12.7	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.6	-	-	

HCM Signalized Intersection Capacity Analysis

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	1765	171	143	1256	219	169	93	111	61	72	81
Future Volume (vph)	192	1765	171	143	1256	219	169	93	111	61	72	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	4921		3400	3505	1568	3433	1863	1583	3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	4921		3400	3505	1568	3433	1863	1583	3433	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	192	1765	171	143	1256	219	169	93	111	61	72	81
RTOR Reduction (vph)	0	6	0	0	0	79	0	0	0	0	0	0
Lane Group Flow (vph)	192	1930	0	143	1256	140	169	93	111	61	72	81
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Free
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	19.7	86.4		10.8	77.5	85.1	13.7	16.8	27.6	7.6	10.7	140.0
Effective Green, g (s)	19.7	87.4		10.8	78.5	85.1	13.7	18.2	27.6	7.6	12.1	140.0
Actuated g/C Ratio	0.14	0.62		0.08	0.56	0.61	0.10	0.13	0.20	0.05	0.09	1.00
Clearance Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.4	4.0	4.0	5.4	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	244	3072		262	1965	953	335	242	312	186	161	1583
v/s Ratio Prot	c0.11	c0.39		0.04	0.36	0.01	c0.05	c0.05	0.03	0.02	0.04	
v/s Ratio Perm						0.08			0.04			0.05
v/c Ratio	0.79	0.63		0.55	0.64	0.15	0.50	0.38	0.36	0.33	0.45	0.05
Uniform Delay, d1	58.1	16.3		62.2	21.1	11.8	59.9	55.8	48.5	63.7	60.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.8	1.0		1.8	1.6	0.1	0.9	0.7	0.5	0.8	1.4	0.1
Delay (s)	72.9	17.2		64.1	22.7	11.9	60.8	56.5	49.0	64.5	62.2	0.1
Level of Service	E	B		E	C	B	E	E	D	E	E	A
Approach Delay (s)		22.3			24.9			56.2			39.3	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			27.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			66.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 		 	 		 			 			
Traffic Volume (veh/h)	192	1765	171	143	1256	219	169	93	111	61	72	81	
Future Volume (veh/h)	192	1765	171	143	1256	219	169	93	111	61	72	81	
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	1841	1841	1841	1856	1856	1856	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	192	1765	103	143	1256	204	169	93	39	61	72	0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2	
Cap, veh/h	221	3379	197	204	2218	1025	234	188	238	102	117		
Arrive On Green	0.13	0.70	0.69	0.06	0.63	0.62	0.07	0.10	0.09	0.03	0.06	0.00	
Sat Flow, veh/h	1753	4857	283	3428	3526	1572	3456	1870	1585	3456	1870	1585	
Grp Volume(v), veh/h	192	1217	651	143	1256	204	169	93	39	61	72	0	
Grp Sat Flow(s),veh/h/ln	1753	1675	1790	1714	1763	1572	1728	1870	1585	1728	1870	1585	
Q Serve(g_s), s	15.0	24.3	24.4	5.7	28.7	7.3	6.7	6.6	3.0	2.4	5.3	0.0	
Cycle Q Clear(g_c), s	15.0	24.3	24.4	5.7	28.7	7.3	6.7	6.6	3.0	2.4	5.3	0.0	
Prop In Lane	1.00		0.16	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	221	2331	1245	204	2218	1025	234	188	238	102	117		
V/C Ratio(X)	0.87	0.52	0.52	0.70	0.57	0.20	0.72	0.49	0.16	0.60	0.61		
Avail Cap(c_a), veh/h	313	2331	1245	514	2218	1025	494	374	396	272	254		
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	60.0	10.2	10.2	64.6	15.0	9.8	64.0	59.6	51.8	67.1	63.9	0.0	
Incr Delay (d2), s/veh	15.0	0.8	1.6	3.2	1.1	0.4	3.2	1.5	0.2	4.1	3.8	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	7.4	8.0	8.9	2.5	10.7	2.5	3.0	3.1	1.2	1.1	2.6	0.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	75.0	11.0	11.8	67.8	16.0	10.2	67.1	61.0	52.0	71.1	67.7	0.0	
LnGrp LOS	E	B	B	E	B	B	E	E	D	E	E		
Approach Vol, veh/h	2060					1603		301		133			A
Approach Delay, s/veh	17.2					19.9		63.3		69.3			
Approach LOS	B					B		E		E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	12.4	101.4	13.5	12.8	21.7	92.1	8.2	18.1					
Change Period (Y+Rc), s	4.0	5.0	4.0	* 5.4	4.0	5.0	4.0	* 5.4					
Max Green Setting (Gmax), s	21.0	63.0	20.0	* 18	25.0	59.0	11.0	* 27					
Max Q Clear Time (g_c+I1), s	7.7	26.4	8.7	7.3	17.0	30.7	4.4	8.6					
Green Ext Time (p_c), s	0.7	27.5	0.8	0.1	0.6	18.0	0.1	0.5					

Intersection Summary

HCM 6th Ctrl Delay 23.4

HCM 6th LOS C

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th TWSC
1: Turner Road SE & Driveway #1

04/18/2022

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	2	341	488	0
Future Vol, veh/h	0	1	2	341	488	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	0	1	2	367	525	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	896	525	525	0	-	0
Stage 1	525	-	-	-	-	-
Stage 2	371	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	312	554	1047	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	311	554	1047	-	-	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1047	-	554	-	-
HCM Lane V/C Ratio	0.002	-	0.002	-	-
HCM Control Delay (s)	8.4	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC

2: Turner Road SE & Driveway #2

04/18/2022

Intersection

Int Delay, s/veh 1.6

Movement

	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	43	41	8	300	482	7
Future Vol, veh/h	43	41	8	300	482	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	4	1	1	1	1
Mvmt Flow	46	44	9	323	518	8

Major/Minor

	Minor2	Major1	Major2
Conflicting Flow All	863	522	526
Stage 1	522	-	-
Stage 2	341	-	-
Critical Hdwy	6.44	6.24	4.11
Critical Hdwy Stg 1	5.44	-	-
Critical Hdwy Stg 2	5.44	-	-
Follow-up Hdwy	3.536	3.336	2.209
Pot Cap-1 Maneuver	322	551	1046
Stage 1	591	-	-
Stage 2	716	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	319	551	1046
Mov Cap-2 Maneuver	319	-	-
Stage 1	585	-	-
Stage 2	716	-	-

Approach

	EB	NB	SB
HCM Control Delay, s	16.5	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1046	-	402	-	-
HCM Lane V/C Ratio	0.008	-	0.225	-	-
HCM Control Delay (s)	8.5	0	16.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

HCM Signalized Intersection Capacity Analysis

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	532	186	73	611	55	157	109	62	95	236	192
Future Volume (vph)	99	532	186	73	611	55	157	109	62	95	236	192
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1660	1680		1693	1760		1693	1685		1710	1800	1530
Flt Permitted	0.22	1.00		0.20	1.00		0.19	1.00		0.55	1.00	1.00
Satd. Flow (perm)	380	1680		362	1760		345	1685		982	1800	1530
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	102	548	192	75	630	57	162	112	64	98	243	198
RTOR Reduction (vph)	0	7	0	0	2	0	0	17	0	0	0	130
Lane Group Flow (vph)	102	733	0	75	685	0	162	159	0	98	243	68
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	78.9	72.2		75.3	70.4		36.9	24.6		28.9	20.6	27.3
Effective Green, g (s)	78.9	74.2		75.3	72.4		36.9	26.6		28.9	22.6	27.3
Actuated g/C Ratio	0.61	0.57		0.58	0.56		0.28	0.20		0.22	0.17	0.21
Clearance Time (s)	4.0	6.0		4.0	6.0		4.0	6.0		4.0	6.0	4.0
Vehicle Extension (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	296	958		259	980		225	344		264	312	321
v/s Ratio Prot	c0.02	c0.44		0.01	0.39		c0.07	0.09		0.02	c0.14	0.01
v/s Ratio Perm	0.19			0.16			0.14			0.06		0.03
v/c Ratio	0.34	0.77		0.29	0.70		0.72	0.46		0.37	0.78	0.21
Uniform Delay, d1	15.7	21.3		16.8	20.9		38.1	45.4		41.7	51.3	42.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	5.8		0.2	4.1		8.8	0.4		0.3	10.6	0.1
Delay (s)	16.0	27.1		17.0	25.0		47.0	45.8		42.1	62.0	42.6
Level of Service	B	C		B	C		D	D		D	E	D
Approach Delay (s)		25.7			24.3			46.4			51.2	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			33.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			81.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

3: Turner Road SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	532	186	73	611	55	157	109	62	95	236	192
Future Volume (veh/h)	99	532	186	73	611	55	157	109	62	95	236	192
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	1758	1758	1758	1786	1786	1786	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	102	548	172	75	630	52	162	112	58	98	243	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	1	1	1	1	1	1	0	0	0
Cap, veh/h	347	754	237	305	944	78	232	217	112	271	294	287
Arrive On Green	0.04	0.59	0.57	0.03	0.58	0.56	0.09	0.20	0.20	0.06	0.16	0.15
Sat Flow, veh/h	1674	1283	403	1701	1627	134	1701	1109	574	1714	1800	1525
Grp Volume(v), veh/h	102	0	720	75	0	682	162	0	170	98	243	146
Grp Sat Flow(s),veh/h/ln	1674	0	1685	1701	0	1762	1701	0	1683	1714	1800	1525
Q Serve(g_s), s	3.3	0.0	40.1	2.4	0.0	34.6	10.2	0.0	11.8	6.2	17.0	11.2
Cycle Q Clear(g_c), s	3.3	0.0	40.1	2.4	0.0	34.6	10.2	0.0	11.8	6.2	17.0	11.2
Prop In Lane	1.00		0.24	1.00		0.08	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	347	0	991	305	0	1022	232	0	329	271	294	287
V/C Ratio(X)	0.29	0.00	0.73	0.25	0.00	0.67	0.70	0.00	0.52	0.36	0.83	0.51
Avail Cap(c_a), veh/h	512	0	991	447	0	1022	269	0	414	364	443	413
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)	0.75	0.00	0.75	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	0.0	19.5	17.6	0.0	18.8	41.3	0.0	46.8	43.3	52.6	47.4
Incr Delay (d2), s/veh	0.1	0.0	3.5	0.2	0.0	3.5	4.6	0.0	0.5	0.3	4.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	16.2	0.9	0.0	14.7	4.6	0.0	5.0	2.7	8.1	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.3	0.0	23.0	17.8	0.0	22.2	45.9	0.0	47.3	43.6	57.2	47.9
LnGrp LOS	B	A	C	B	A	C	D	A	D	D	E	D
Approach Vol, veh/h		822			757			332			487	
Approach Delay, s/veh		22.1			21.8			46.6			51.7	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	80.5	16.1	25.3	9.2	79.4	12.0	29.4				
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0				
Max Green Setting (Gmax), s	15.0	50.0	15.0	30.0	18.0	47.0	15.0	30.0				
Max Q Clear Time (g_c+I1), s	4.4	42.1	12.2	19.0	5.3	36.6	8.2	13.8				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.3	0.0	1.0	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			31.4									
HCM 6th LOS			C									

HCM Signalized Intersection Capacity Analysis

4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	610	80	73	815	73	138	37	89	109	33	212
Future Volume (vph)	67	610	80	73	815	73	138	37	89	109	33	212
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1541	1622	1378	1660	1726		1660	1563		1644	1731	1471
Flt Permitted	0.16	1.00	1.00	0.32	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	254	1622	1378	560	1726		1660	1563		1644	1731	1471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	70	635	83	76	849	76	144	39	93	114	34	221
RTOR Reduction (vph)	0	0	29	0	2	0	0	70	0	0	0	201
Lane Group Flow (vph)	70	635	54	76	923	0	144	62	0	114	34	20
Heavy Vehicles (%)	11%	11%	11%	3%	3%	3%	3%	3%	3%	4%	4%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	93.6	88.6	88.6	93.6	88.6		11.9	11.1		12.3	11.5	11.5
Effective Green, g (s)	95.6	90.6	90.6	95.6	90.6		12.9	12.1		13.3	12.5	12.5
Actuated g/C Ratio	0.69	0.66	0.66	0.69	0.66		0.09	0.09		0.10	0.09	0.09
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lane Grp Cap (vph)	231	1064	904	435	1133		155	137		158	156	133
v/s Ratio Prot	c0.01	0.39		0.01	c0.53		c0.09	0.04		c0.07	0.02	
v/s Ratio Perm	0.20		0.04	0.11								0.01
v/c Ratio	0.30	0.60	0.06	0.17	0.81		0.93	0.45		0.72	0.22	0.15
Uniform Delay, d1	15.7	13.4	8.5	8.8	17.5		62.1	59.8		60.6	58.2	57.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	2.5	0.1	0.1	6.5		50.4	0.9		12.9	0.3	0.2
Delay (s)	16.0	15.9	8.6	8.8	24.0		112.5	60.7		73.4	58.5	58.0
Level of Service	B	B	A	A	C		F	E		E	E	E
Approach Delay (s)		15.1			22.8			87.7			62.8	
Approach LOS		B			C			F			E	
Intersection Summary												
HCM 2000 Control Delay			33.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			138.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			81.9%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 4: 36th Avenue SE & Kuebler Boulevard

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	610	80	73	815	73	138	37	89	109	33	212
Future Volume (veh/h)	67	610	80	73	815	73	138	37	89	109	33	212
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	1646	1646	1646	1758	1758	1758	1758	1758	1758	1744	1744	1744
Adj Flow Rate, veh/h	70	635	67	76	849	69	144	39	74	114	34	174
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	11	11	11	3	3	3	3	3	3	4	4	4
Cap, veh/h	211	1013	858	385	981	80	158	50	96	230	239	203
Arrive On Green	0.04	0.62	0.62	0.04	0.61	0.61	0.09	0.09	0.09	0.14	0.14	0.14
Sat Flow, veh/h	1567	1646	1395	1674	1604	130	1674	543	1030	1661	1744	1478
Grp Volume(v), veh/h	70	635	67	76	0	918	144	0	113	114	34	174
Grp Sat Flow(s),veh/h/ln	1567	1646	1395	1674	0	1734	1674	0	1573	1661	1744	1478
Q Serve(g_s), s	2.3	33.3	2.7	2.4	0.0	60.3	11.8	0.0	9.7	8.8	2.4	15.9
Cycle Q Clear(g_c), s	2.3	33.3	2.7	2.4	0.0	60.3	11.8	0.0	9.7	8.8	2.4	15.9
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	211	1013	858	385	0	1061	158	0	146	230	239	203
V/C Ratio(X)	0.33	0.63	0.08	0.20	0.00	0.87	0.91	0.00	0.77	0.50	0.14	0.86
Avail Cap(c_a), veh/h	260	1013	858	444	0	1061	158	0	308	230	341	289
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	1.00	1.00	0.72	0.00	0.72	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	16.6	10.7	13.6	0.0	22.1	61.9	0.0	61.5	55.0	52.4	58.2
Incr Delay (d2), s/veh	0.3	2.9	0.2	0.1	0.0	7.0	46.2	0.0	3.2	0.6	0.1	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	13.1	0.9	0.9	0.0	25.5	7.0	0.0	4.0	3.7	1.1	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.4	19.6	10.9	13.7	0.0	29.2	108.1	0.0	64.7	55.6	52.5	70.2
LnGrp LOS	C	B	B	B	A	C	F	A	E	E	D	E
Approach Vol, veh/h	772			994			257			322		
Approach Delay, s/veh	19.2			28.0			89.0			63.2		
Approach LOS	B			C			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	88.9	17.0	22.9	9.7	88.4	23.1	16.8				
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0				
Max Green Setting (Gmax), s	9.0	70.0	12.0	26.0	9.0	70.0	12.0	26.0				
Max Q Clear Time (g_c+I1), s	4.4	35.3	13.8	17.9	4.3	62.3	10.8	11.7				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.1	0.0	1.3	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	36.6											
HCM 6th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM 6th TWSC
5: Turner Road SE & Airway Drive SE

04/18/2022

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	42	111	77	262	319	42
Future Vol, veh/h	42	111	77	262	319	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	48	126	88	298	363	48
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	861	387	411	0	-	0
Stage 1	387	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	326	661	1148	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	296	661	1148	-	-	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.2	1.9		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1148	-	494	-	-	
HCM Lane V/C Ratio	0.076	-	0.352	-	-	
HCM Control Delay (s)	8.4	0	16.2	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	1.6	-	-	

HCM Signalized Intersection Capacity Analysis

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  		 	 		 			 	 	
Traffic Volume (vph)	64	1876	319	257	1490	76	274	146	349	167	162	145
Future Volume (vph)	64	1876	319	257	1490	76	274	146	349	167	162	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	3.0	4.0	4.0	2.6	4.0	4.0	2.6
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4974		3400	3505	1568	3467	1881	1599	3467	1881	1599
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4974		3400	3505	1568	3467	1881	1599	3467	1881	1599
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	64	1876	319	257	1490	76	274	146	349	167	162	145
RTOR Reduction (vph)	0	14	0	0	0	25	0	0	0	0	0	0
Lane Group Flow (vph)	64	2181	0	257	1490	51	274	146	349	167	162	145
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	Free
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6			8			Free
Actuated Green, G (s)	8.0	73.5		15.5	81.0	91.3	15.9	22.3	37.8	10.3	16.7	140.0
Effective Green, g (s)	8.0	74.5		15.5	82.0	93.3	15.9	23.7	40.6	10.3	18.1	140.0
Actuated g/C Ratio	0.06	0.53		0.11	0.59	0.67	0.11	0.17	0.29	0.07	0.13	1.00
Clearance Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.4	4.0	4.0	5.4	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	101	2646		376	2052	1044	393	318	463	255	243	1599
v/s Ratio Prot	0.04	c0.44		0.08	0.43	0.00	c0.08	0.08	c0.09	0.05	0.09	
v/s Ratio Perm						0.03			0.13			0.09
v/c Ratio	0.63	0.82		0.68	0.73	0.05	0.70	0.46	0.75	0.65	0.67	0.09
Uniform Delay, d1	64.6	27.3		59.9	20.9	8.0	59.7	52.4	45.2	63.1	58.1	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.8	3.1		4.6	2.3	0.0	4.9	0.8	6.5	5.3	6.1	0.1
Delay (s)	75.4	30.4		64.5	23.2	8.1	64.6	53.1	51.7	68.4	64.2	0.1
Level of Service	E	C		E	C	A	E	D	D	E	E	A
Approach Delay (s)		31.6			28.4			56.6			46.1	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			35.4				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			80.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

04/18/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 		 	 		 			 			
Traffic Volume (veh/h)	64	1876	319	257	1490	76	274	146	349	167	162	145	
Future Volume (veh/h)	64	1876	319	257	1490	76	274	146	349	167	162	145	
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	1870	1870	1870	1856	1856	1856	1885	1885	1885	1885	1885	1885	
Adj Flow Rate, veh/h	64	1876	251	257	1490	61	274	146	277	167	162	0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Percent Heavy Veh, %	2	2	2	3	3	3	1	1	1	1	1	1	
Cap, veh/h	82	2475	328	324	2084	1040	350	349	463	220	279		
Arrive On Green	0.05	0.54	0.54	0.09	0.59	0.59	0.10	0.19	0.19	0.06	0.15	0.00	
Sat Flow, veh/h	1781	4561	605	3428	3526	1572	3483	1885	1598	3483	1885	1598	
Grp Volume(v), veh/h	64	1396	731	257	1490	61	274	146	277	167	162	0	
Grp Sat Flow(s),veh/h/ln	1781	1702	1762	1714	1763	1572	1742	1885	1598	1742	1885	1598	
Q Serve(g_s), s	5.0	44.5	45.5	10.3	41.9	1.9	10.8	9.6	20.9	6.6	11.2	0.0	
Cycle Q Clear(g_c), s	5.0	44.5	45.5	10.3	41.9	1.9	10.8	9.6	20.9	6.6	11.2	0.0	
Prop In Lane	1.00		0.34	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	82	1847	956	324	2084	1040	350	349	463	220	279		
V/C Ratio(X)	0.78	0.76	0.76	0.79	0.71	0.06	0.78	0.42	0.60	0.76	0.58		
Avail Cap(c_a), veh/h	140	1847	956	490	2084	1040	572	444	544	274	283		
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	66.1	24.8	25.2	62.0	20.3	8.4	61.5	50.4	42.7	64.5	55.6	0.0	
Incr Delay (d2), s/veh	11.1	2.9	5.8	4.1	2.1	0.1	2.9	0.6	1.0	8.3	2.5	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	2.5	17.3	19.2	4.6	16.3	0.6	4.8	4.5	8.2	3.2	5.6	0.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	77.2	27.7	31.0	66.1	22.4	8.5	64.4	51.0	43.7	72.8	58.1	0.0	
LnGrp LOS	E	C	C	E	C	A	E	D	D	E	E		
Approach Vol, veh/h	2191					1808		697		329			A
Approach Delay, s/veh	30.3					28.1		53.3		65.6			
Approach LOS	C					C		D		E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8					
Phs Duration (G+Y+Rc), s	17.2	80.0	18.1	24.7	10.5	86.8	12.8	29.9					
Change Period (Y+Rc), s	4.0	5.0	4.0	* 5.4	4.0	5.0	4.0	* 5.4					
Max Green Setting (Gmax), s	20.0	59.0	23.0	* 20	11.0	68.0	11.0	* 32					
Max Q Clear Time (g_c+I1), s	12.3	47.5	12.8	13.2	7.0	43.9	8.6	22.9					
Green Ext Time (p_c), s	1.0	10.7	1.3	0.3	0.1	17.7	0.2	1.7					

Intersection Summary

HCM 6th Ctrl Delay 35.0

HCM 6th LOS D

Notes

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

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection: 3: Turner Road SE & Kuebler Boulevard

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	357	675	339	459	349	666	147	233	192
Average Queue (ft)	100	235	71	247	202	298	43	96	44
95th Queue (ft)	237	528	231	432	368	577	104	189	110
Link Distance (ft)		2202		1164		718		1721	
Upstream Blk Time (%)						2			
Queuing Penalty (veh)						0			
Storage Bay Dist (ft)	260		240		250		300		150
Storage Blk Time (%)		7		10	8	19		6	0
Queuing Penalty (veh)		13		8	23	42		8	0

Intersection: 4: 36th Avenue SE & Kuebler Boulevard

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	R
Maximum Queue (ft)	318	480	175	299	638	190	242	112	81	50
Average Queue (ft)	85	172	23	65	264	84	64	40	19	4
95th Queue (ft)	191	359	108	210	530	163	159	90	58	26
Link Distance (ft)		609	609		2202		664		359	
Upstream Blk Time (%)		0	0							
Queuing Penalty (veh)		0	0							
Storage Bay Dist (ft)	325			200		160		140		130
Storage Blk Time (%)	0	1			15	2	1	0	0	
Queuing Penalty (veh)	0	3			9	2	1	0	0	

Intersection: 5: Turner Road SE & Airway Drive SE

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	72	110
Average Queue (ft)	34	19
95th Queue (ft)	59	69
Link Distance (ft)	574	2525
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	R	L	L	T
Maximum Queue (ft)	401	577	480	354	138	178	478	473	110	154	200	248
Average Queue (ft)	197	275	230	153	58	44	263	240	24	62	87	92
95th Queue (ft)	348	486	410	308	111	136	433	415	74	126	153	191
Link Distance (ft)		603	603	603			1079	1079	1079			1094
Upstream Blk Time (%)		1	0									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	350				350	350				175	175	
Storage Blk Time (%)	3	3					3			0	1	2
Queuing Penalty (veh)	16	6					4			1	1	6

Intersection: 6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

Movement	NB	SB	SB	SB
Directions Served	R	L	L	T
Maximum Queue (ft)	229	57	128	170
Average Queue (ft)	18	7	54	63
95th Queue (ft)	118	35	111	125
Link Distance (ft)				711
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	1000	300	300	
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Zone Summary

Zone wide Queuing Penalty: 143

Intersection: 3: Turner Road SE & Kuebler Boulevard

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	360	636	297	478	206	230	345	611	250
Average Queue (ft)	84	301	47	255	105	106	81	277	149
95th Queue (ft)	257	559	145	424	181	195	241	535	304
Link Distance (ft)		2202		1164		718		1721	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	260		240		250		300		150
Storage Blk Time (%)		12		10	0	0		42	1
Queuing Penalty (veh)		11		7	0	1		106	4

Intersection: 4: 36th Avenue SE & Kuebler Boulevard

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	R
Maximum Queue (ft)	239	557	63	300	1009	213	228	170	220	214
Average Queue (ft)	53	256	18	101	490	114	85	83	52	106
95th Queue (ft)	164	465	48	284	944	194	176	151	151	191
Link Distance (ft)		609	609		2202		664		359	
Upstream Blk Time (%)		0								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	325			200		160		140		130
Storage Blk Time (%)		5			28	5	2	3	1	10
Queuing Penalty (veh)		3			20	6	2	8	5	13

Intersection: 5: Turner Road SE & Airway Drive SE

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	104	88
Average Queue (ft)	46	21
95th Queue (ft)	80	66
Link Distance (ft)	574	2525
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	R	L	L	T
Maximum Queue (ft)	450	619	554	562	276	389	515	487	44	225	274	514
Average Queue (ft)	123	387	327	276	152	145	262	246	4	139	169	179
95th Queue (ft)	349	694	595	526	249	294	492	475	22	239	279	402
Link Distance (ft)		603	603	603			1079	1079	1079			1094
Upstream Blk Time (%)		2	0	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	350				350	350				175	175	
Storage Blk Time (%)		15				0	5			12	21	7
Queuing Penalty (veh)		10				0	12			56	99	42

Intersection: 6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	534	257	385	526	300
Average Queue (ft)	252	116	172	225	65
95th Queue (ft)	514	241	318	443	259
Link Distance (ft)				711	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	1000	300	300		200
Storage Blk Time (%)		0	1	27	0
Queuing Penalty (veh)		0	2	84	1

Zone Summary

Zone wide Queuing Penalty: 492

Intersection: 1: Turner Road SE & Driveway #1

Movement

Directions Served
 Maximum Queue (ft)
 Average Queue (ft)
 95th Queue (ft)
 Link Distance (ft)
 Upstream Blk Time (%)
 Queuing Penalty (veh)
 Storage Bay Dist (ft)
 Storage Blk Time (%)
 Queuing Penalty (veh)

Intersection: 2: Turner Road SE & Driveway #2

Movement

	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	40	113
Average Queue (ft)	16	15
95th Queue (ft)	42	63
Link Distance (ft)	327	1721
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Turner Road SE & Kuebler Boulevard

Movement

	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	359	551	339	556	350	592	146	194	146
Average Queue (ft)	123	204	65	256	211	323	44	90	45
95th Queue (ft)	267	441	205	455	366	601	103	167	99
Link Distance (ft)		2202		1164		718		1721	
Upstream Blk Time (%)						4			
Queuing Penalty (veh)						0			
Storage Bay Dist (ft)	260		240		250		300		150
Storage Blk Time (%)	0	6		12	3	28		4	0
Queuing Penalty (veh)	1	14		9	10	61		5	0

Intersection: 4: 36th Avenue SE & Kuebler Boulevard

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	R
Maximum Queue (ft)	281	461	72	257	567	204	188	99	86	40
Average Queue (ft)	84	174	22	54	256	88	57	36	24	3
95th Queue (ft)	182	347	55	170	477	174	134	79	64	18
Link Distance (ft)		609	609		2202		664		359	
Upstream Blk Time (%)		0								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	325			200		160		140		130
Storage Blk Time (%)		1			14	3	0			
Queuing Penalty (veh)		3			9	3	0			

Intersection: 5: Turner Road SE & Airway Drive SE

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	90	106
Average Queue (ft)	36	27
95th Queue (ft)	66	82
Link Distance (ft)	574	2525
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	R	L	L	T
Maximum Queue (ft)	447	530	449	359	156	318	513	482	119	204	237	277
Average Queue (ft)	200	283	233	163	66	64	250	228	33	76	98	90
95th Queue (ft)	363	490	419	323	130	199	445	420	90	154	182	209
Link Distance (ft)		603	603	603			1079	1079	1079			1094
Upstream Blk Time (%)		0										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	350				350	350				175	175	
Storage Blk Time (%)	2	3					3			1	2	4
Queuing Penalty (veh)	13	6					4			2	5	10

Intersection: 6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

Movement	NB	SB	SB	SB
Directions Served	R	L	L	T
Maximum Queue (ft)	193	108	134	138
Average Queue (ft)	11	9	58	66
95th Queue (ft)	85	49	114	129
Link Distance (ft)				711
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	1000	300	300	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 153

Intersection: 1: Turner Road SE & Driveway #1

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	32
Average Queue (ft)	1	1
95th Queue (ft)	12	14
Link Distance (ft)	162	608
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Turner Road SE & Driveway #2

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	88	59
Average Queue (ft)	39	7
95th Queue (ft)	71	37
Link Distance (ft)	327	1721
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Turner Road SE & Kuebler Boulevard

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	359	562	339	487	219	232	346	801	250
Average Queue (ft)	79	271	67	263	110	111	116	337	169
95th Queue (ft)	239	467	213	434	190	196	330	711	322
Link Distance (ft)		2202		1164		718		1721	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	260		240		250		300		150
Storage Blk Time (%)		10		10	0	1		48	3
Queuing Penalty (veh)		10		7	0	1		138	11

Intersection: 4: 36th Avenue SE & Kuebler Boulevard

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	R
Maximum Queue (ft)	174	462	73	300	1195	196	206	220	284	211
Average Queue (ft)	45	221	20	98	581	106	83	95	67	124
95th Queue (ft)	116	403	51	282	1106	182	172	175	199	211
Link Distance (ft)		609	609		2202		664		359	
Upstream Blk Time (%)		0							0	
Queuing Penalty (veh)		0							0	
Storage Bay Dist (ft)	325			200		160		140		130
Storage Blk Time (%)		2			31	3	1	4	2	13
Queuing Penalty (veh)		1			23	4	2	10	5	18

Intersection: 5: Turner Road SE & Airway Drive SE

Movement	EB	NB	B18
Directions Served	LR	LT	T
Maximum Queue (ft)	89	101	11
Average Queue (ft)	46	21	0
95th Queue (ft)	73	66	8
Link Distance (ft)	574	2525	1094
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	R	L	L	T
Maximum Queue (ft)	403	618	570	585	264	449	566	549	31	224	273	593
Average Queue (ft)	103	395	341	268	147	152	280	272	3	147	181	206
95th Queue (ft)	297	678	597	517	241	319	527	520	14	238	289	479
Link Distance (ft)		603	603	603			1079	1079	1079			1094
Upstream Blk Time (%)		2	0	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	350				350	350				175	175	
Storage Blk Time (%)		15				0	6			15	21	11
Queuing Penalty (veh)		10				0	15			72	102	71

Intersection: 6: Turner Road SE/Airport Road SE & Mission Street SE (OR-22/OR-99E)

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	T	R
Maximum Queue (ft)	587	235	377	560	300
Average Queue (ft)	283	100	163	244	72
95th Queue (ft)	592	216	303	484	273
Link Distance (ft)				711	
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)	1000	300	300		200
Storage Blk Time (%)			0	30	0
Queuing Penalty (veh)			0	92	1

Network Summary

Network wide Queuing Penalty: 593