TECHNICAL MEMORANDUM

TO: Amarbeer Bhandari
Director of Facilities and Maintenance
Louis Riel School Division

FROM: Steven Florko, P.Eng.
DATE: February 14, 2025
SUBJECT JH Bruns Collegiate Additions
Transportation Study – February 2025 Addendum

This memo is an addendum to a Transportation Study completed by MORR Transportation Consulting Ltd. (MORR) in June 2024. Both the original study and this addendum deal with observed conditions at JH Bruns Collegiate (JHBC), and forecast future conditions with increased student enrollment.

The following types of conditions are considered in the memo:

- Vehicle-pedestrian interaction
- Vehicle traffic capacity and queueing
- Parking supply and demand
- Student pick-up and drop-off supply and demand
- Bus loading
- Provisions for cycling

In the memo, recommendations from the original study are considered in light of new information from January 2025 and new forecasts with higher enrollment figures. The recommendations are found to still be appropriate in light of the new information and forecasts.

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1 INTRODUCTION

In June 2024, MORR Transportation Consulting Ltd. (MORR) completed a Transportation Study for JH Bruns Collegiate (JHBC). The study considered existing conditions and forecast future conditions involving a proposed building addition. In December 2024, the Louis Riel School Division (LRSD) requested that MORR present the study findings to the School Board and to the parent & caregiver community. LRSD staff also reported that conditions had changed since the original study observations were completed in October 2023.

Changes included:

- Student enrollment increased from 786 to 866 students.
- New LRSD school bus service to the Sage Creek and Bonavista neighbourhoods, with the buses loading in the north lot bus loop. In 2023 the north lot bus loop was used by parents and caregivers picking up and dropping off students—Starting in September 2024 that activity was relocated to the Southdale Community Centre (SCC) lot south of the JHBC building.

In addition, future projected enrollment had increased from a forecast 911 students in the original study, to 1,100 students (or more) in the updated forecast.

In January 2025, MORR completed new observations and traffic projections based on the updated enrollment forecasts and updated the study findings accordingly.

This addendum memo summarizes data gathered in January 2025, updated analyses, and the resulting recommendations. The memo is organized under the following headings:

- January 2025 Scope of Work
  lists the scope of work completed in January 2025.
- Issues, Opportunities, and Recommendations
  details the January 2025 update, issues and opportunities identified, and resulting recommendations.
- Summary
  provides a summary of the findings and recommendations.

This addendum memo is not a stand-along document; it is intended to be read in conjunction with the original report dated June 2024.

2 JANUARY 2025 SCOPE OF WORK

Work completed in January 2025 included:

- Observations of traffic operations and traffic counts on Lakewood Boulevard between Willowlake Crescent and Beaverhill Boulevard.
- Observations of parking lot usage on the SCC property.
- Forecasts of future traffic volumes, parking demand, and pick up and drop off demand for three enrollment scenarios:

1. 900 to 1,000 students, as the forecast enrollment in September 2025, and representing the maximum enrollment without the building addition. For the purposes of the study, forecasts for this scenario used an enrollment of 930 students.

2. 1,000 to 1,100 students, representing a scenario at some point beyond the 2025-26 school year, with the building addition complete. Forecasts for this scenario used an enrollment of 1,050 students.

3. 1,100 to 1,200 (or more) students, representing a scenario at some point beyond the 2025-26 school year, with the building addition complete, and with near-capacity enrollment with the addition complete. Forecasts for this scenario used an enrollment of 1,200 students.

- Traffic operations analysis for conditions in January 2025 and for the future scenarios, using equations from the *Highway Capacity Manual 2000 Edition*. The analysis included consideration for volume to capacity ratios and 95th percentile queue lengths.

Figure 1 shows the January 2025 study area, with the original study area shown for reference.

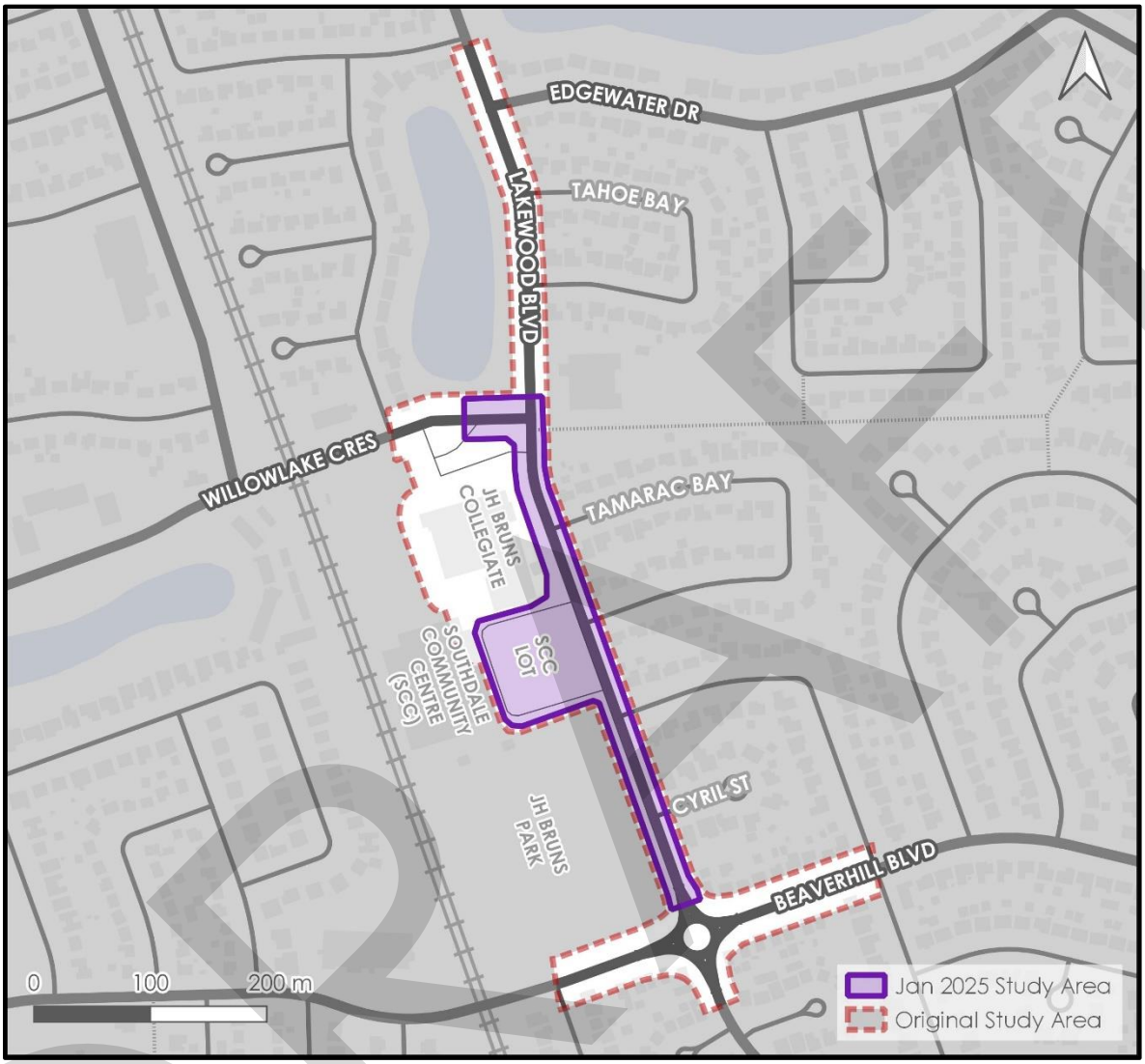

FIGURE 1: STUDY AREA

3 ISSUES, OPPORTUNITIES, AND RECOMMENDATIONS

Issues and opportunities were considered under the following categories:

- Vehicle-pedestrian interaction
- Vehicle traffic capacity and queueing
- Parking supply and demand
- Student pick-up and drop-off supply and demand
- Bus loading
- Provisions for cycling

Findings and recommendations for each category are presented in the following subsections.

3.1 Vehicle-Pedestrian Interaction

Vehicle-pedestrian interactions are safer when:

- Vehicle speeds are low approaching the conflict area
- Motorists and pedestrians can see each other far enough in advance of the conflict area
- The design of the whole road environment—the road itself, sidewalks, paths, landscaping, and buildings—clearly indicates which user group (vehicles or pedestrians) has right of way through the conflict area
- The crossing distance (exposure) is minimized

In the original study, the following issues and opportunities were identified:

- On Lakewood Boulevard at the main school door, the pavement width on Lakewood Boulevard (approximately 10 m) provides generous lateral clearance for vehicles, making it comfortable to travel at speeds higher than ideal on the approach to the conflict area. The width also presents an opportunity to develop a median refuge island.
    - The characteristics of the crossing qualify it as a candidate for crossing control per the Transportation Association of Canada (TAC) *Pedestrian Crossing Control Guide, 3rd Edition*. Further, the appropriate form of crossing control is a signed crossing with rectangular rapid flashing beacons (RRFBs). A controlled crossing would provide a clear indication that pedestrians have priority at the crossing. MORR understands that in the fall of 2024, LRSD requested that the City of Winnipeg investigate the need for a controlled crossing.
- In the SCC south lot (south of the JHBC building), vehicles dropping students off on the right side (north side) block sightlines between pedestrians crossing from the building to the lot to the south, and vehicles entering the lot from Lakewood Boulevard. Vehicles speeds are low through the conflict area, as all vehicle traffic has just turned off of Lakewood Boulevard. The design of the area includes a flush pavement for vehicles and pedestrians, and users appear to treat the area as a mixing area.
    - Sightlines can be improved by building a sidewalk along the south side of the building, with an extended curb. This will provide a dedicated refuge area for crossing pedestrians, where they will have clear sightlines with entering traffic.
    - In the original study there was less traffic through this conflict area, as the enrollment was lower, it was the fall season (with some students walking or cycling to school), and the north lot was available for student loading. In January 2025 those conditions had changed, leading to more traffic in the conflict area. In the original study the sidewalk was presented as a component of the building addition. As of the January 2025 condition the sidewalk would be beneficial—it can be implemented at any time, and it does not need to wait for the building addition.

In January 2025, the LRSD Board asked MORR to review the sidewalk crossing on Lakewood Boulevard at the entry to the SCC south lot. MORRs findings were:

- Vehicles generally yield to pedestrians at the sidewalk. When there is a long queue on Lakewood Boulevard, some pedestrians wave vehicles through. Vehicles speeds are low at the crossing, as vehicles

need to turn off of Lakewood Boulevard to enter the lot. The crossing design has the sidewalk lowered to road grade (a signal that the space is primarily for vehicles). The width of the crossing is typical and not necessarily an issue.

- The crossing experience for pedestrians could be improved by implementing a continuous sidewalk crossing. There is not a clear need for the treatment—as vehicles show good yielding to pedestrians with the existing design. The City of Winnipeg does not use continuous sidewalk crossings as a current practice, but they are used in other Canadian cities. LRSD should request that the City of Winnipeg consider a continuous sidewalk crossing at the lot entry.

3.2 Vehicle Traffic Capacity and Queueing

Vehicle capacity and queueing was observed under existing conditions in January 2025, and forecast for future conditions. Figure 2 shows the movements considered.

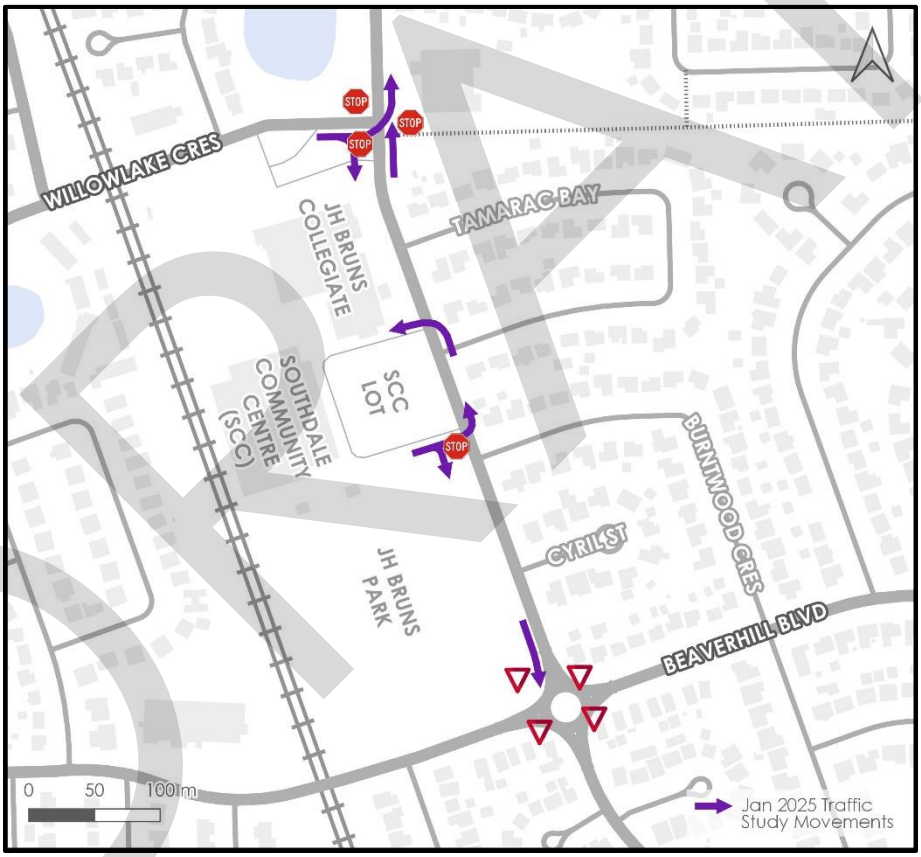

FIGURE 2: JANUARY 2025 TRAFFIC STUDY MOVEMENTS

School traffic is often concentrated in short time periods, with conditions within the peak hour varying significantly. As such, capacity and queueing estimates were calculated for the four-15 minute intervals in each of the AM and PM peak hours. This finer grained analysis enabled greater insight into potential changes in queueing duration in the future scenarios.

Analysis calculations were completed using a spreadsheet with analysis model equations, as it was more efficient for the multiple 15-minute interval calculations, compared to a traffic analysis program such as *Synchro,* which

is intended for hour-interval calculations. Capacity and queue values from the equations were compared to Synchro output and found to be consistent.

3.2.1 Traffic Volumes

Existing traffic volumes were quantified from traffic video collected on Tuesday, January 7th, 2025 and Friday, January 10th, 2025. Counts were taken from the January 7th video, and spot checked against the January 10th video. The video also allowed for review of queueing, and detailed traffic characteristics including gap and follow-up times. The HCM equations were calibrated to existing conditions using that data.

Figure 3 shows the traffic counts for the AM peak hour (7:45 AM to 8:45 AM) and the PM peak hour (3:30 PM to 4:30 PM) from the January 7th counts.

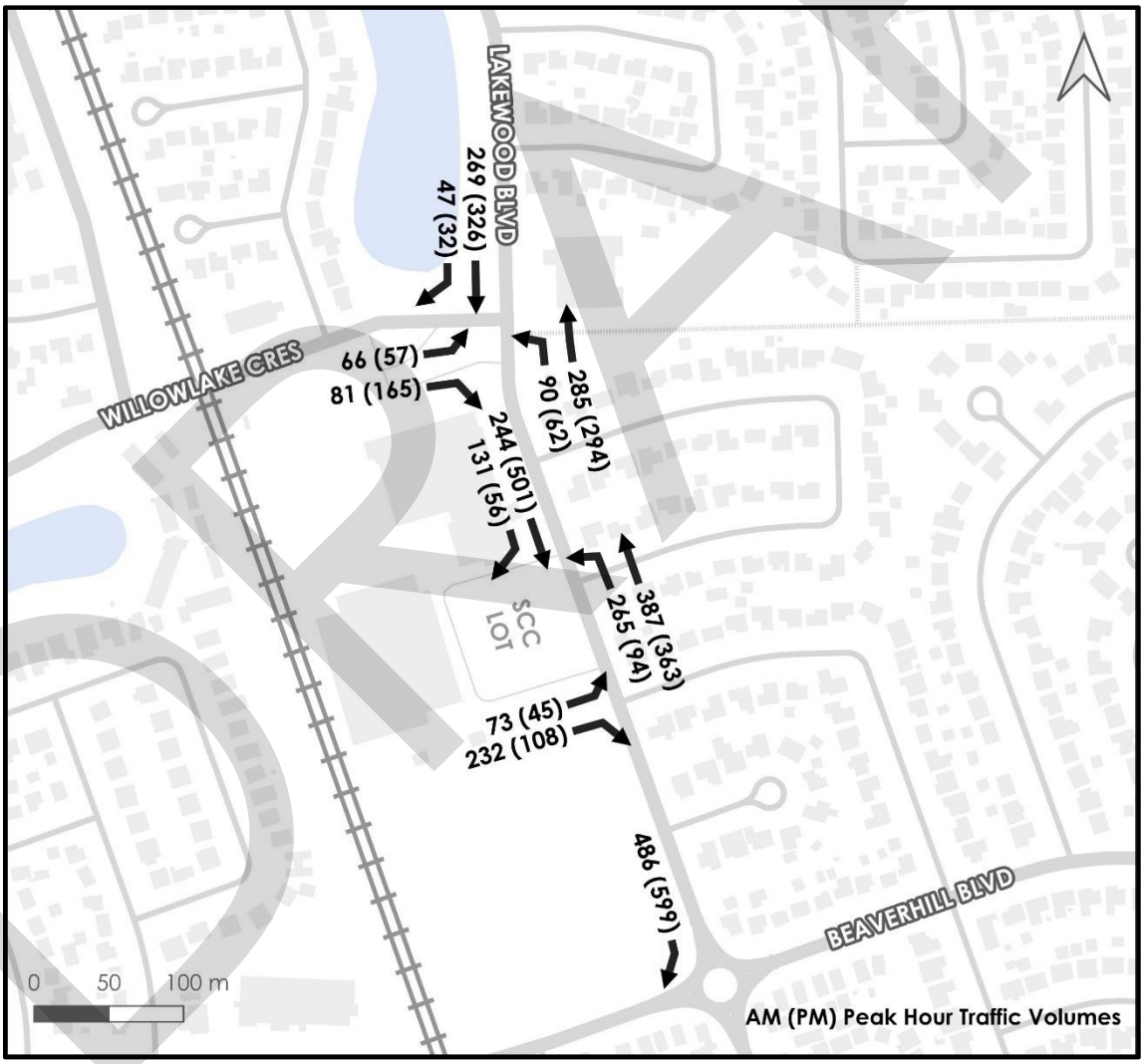

FIGURE 3: JANUARY 2025 PEAK HOUR TRAFFIC VOLUMES

Appendix A includes traffic volumes for the 15-minute intervals that make up the AM and PM peak hours.

MORR reviewed the volume of traffic turning in and out of the SCC south lot and compared it to the volumes from the original study, and to typical trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*. The comparison to ITE rates is not perfect, for two reasons:

1. Counts at the south lot do not capture all JHBC traffic—there will be additional trips at the north lot.
2. Traffic in/out of the SCC lot could also be due to activity at SCC, and not just JHBC. On January 7th, MORR observed at least one vehicle in the SCC lot loading children in hockey equipment—activity likely not associated with JHBC. As of February 2025, MORR had contacted a representative from SCC to inquire about their activity, but a response had not been received.

Figure 1 shows the trip generation rates per student taken as the volume of traffic turning at the SCC south lot, from the original study, and from the January 2025 counts. ITE trip generation rates for high schools are shown for reference.

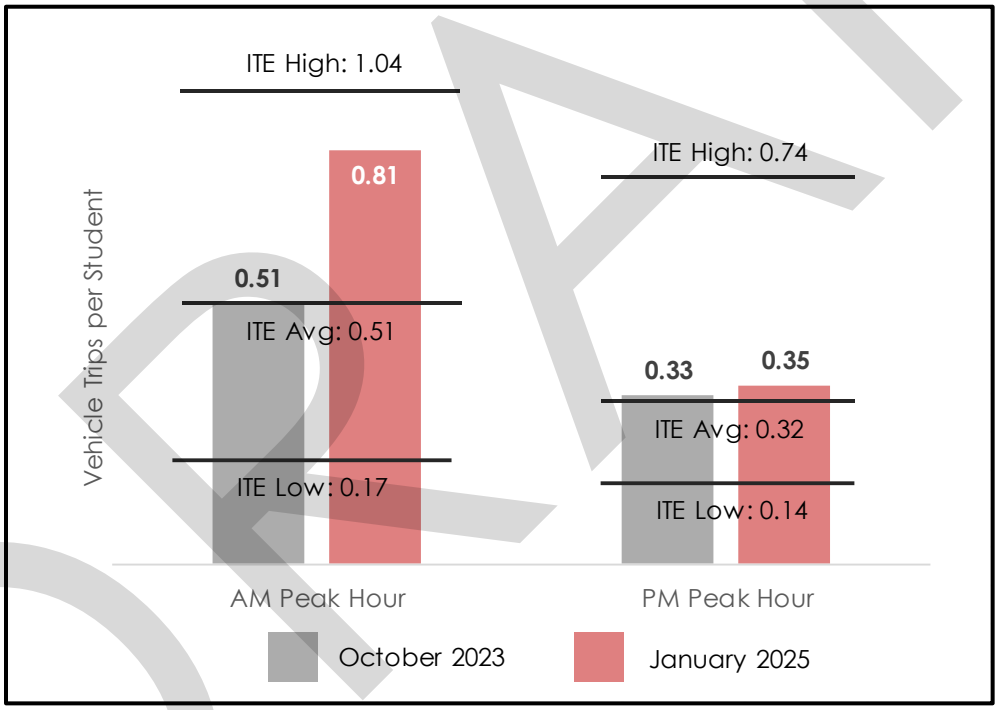

FIGURE 4: TRIP GENERATION RATE COMPARISON

In the original study, the trip generation rates were nearly equal to the ITE average rates, both in the AM peak hour and in the PM peak hour. In the January 2025 counts, the AM peak hour rate was closer to the high end of the ITE rates, while the afternoon rate was again near the ITE average rate. The change could be due to:

- The original study counts being conducted in October, vs January in this update. The October counts would have had a higher proportion of students walking or cycling to school, while in January some of those students may be driving themselves, or being driven to school—others may be taking Transit, which would not affect the vehicle trip generation rates.
- Activity at SCC contributing to the counts at the SCC south lot, and driving up the resulting trip generation rate.

Future traffic volumes were estimated using the higher rates observed in January 2025. Note that the scenarios with the building addition included an expanded north lot. For those scenarios, some staff trips were re-assigned from the SCC south lot to the north lot.

Figure 5 through Figure 7 show the forecast traffic volumes for the future scenarios.

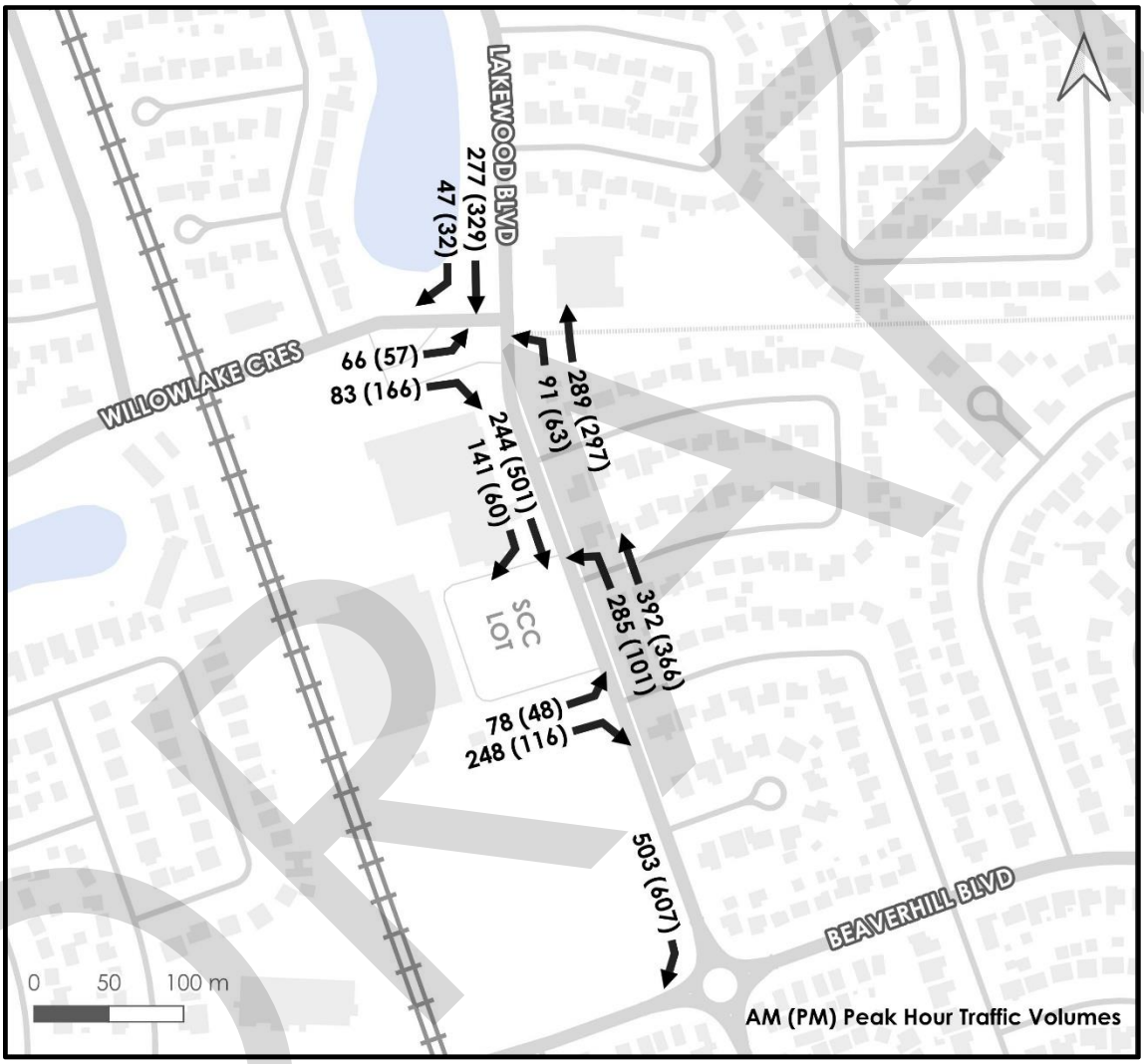

FIGURE 5: FORECAST PEAK HOUR TRAFFIC VOLUMES – 930 STUDENTS

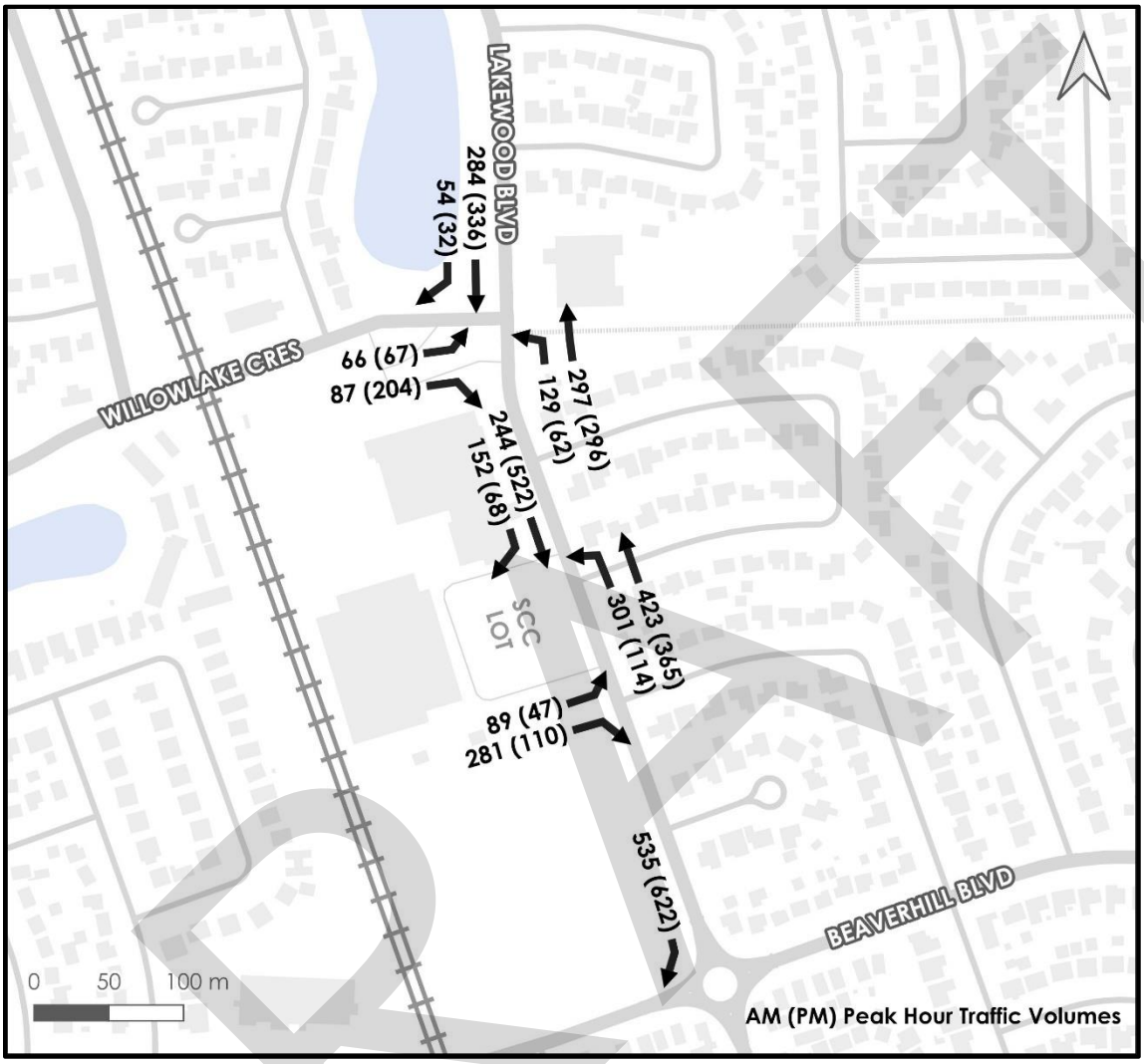

FIGURE 6: FORECAST PEAK HOUR TRAFFIC VOLUMES – 1050 STUDENTS

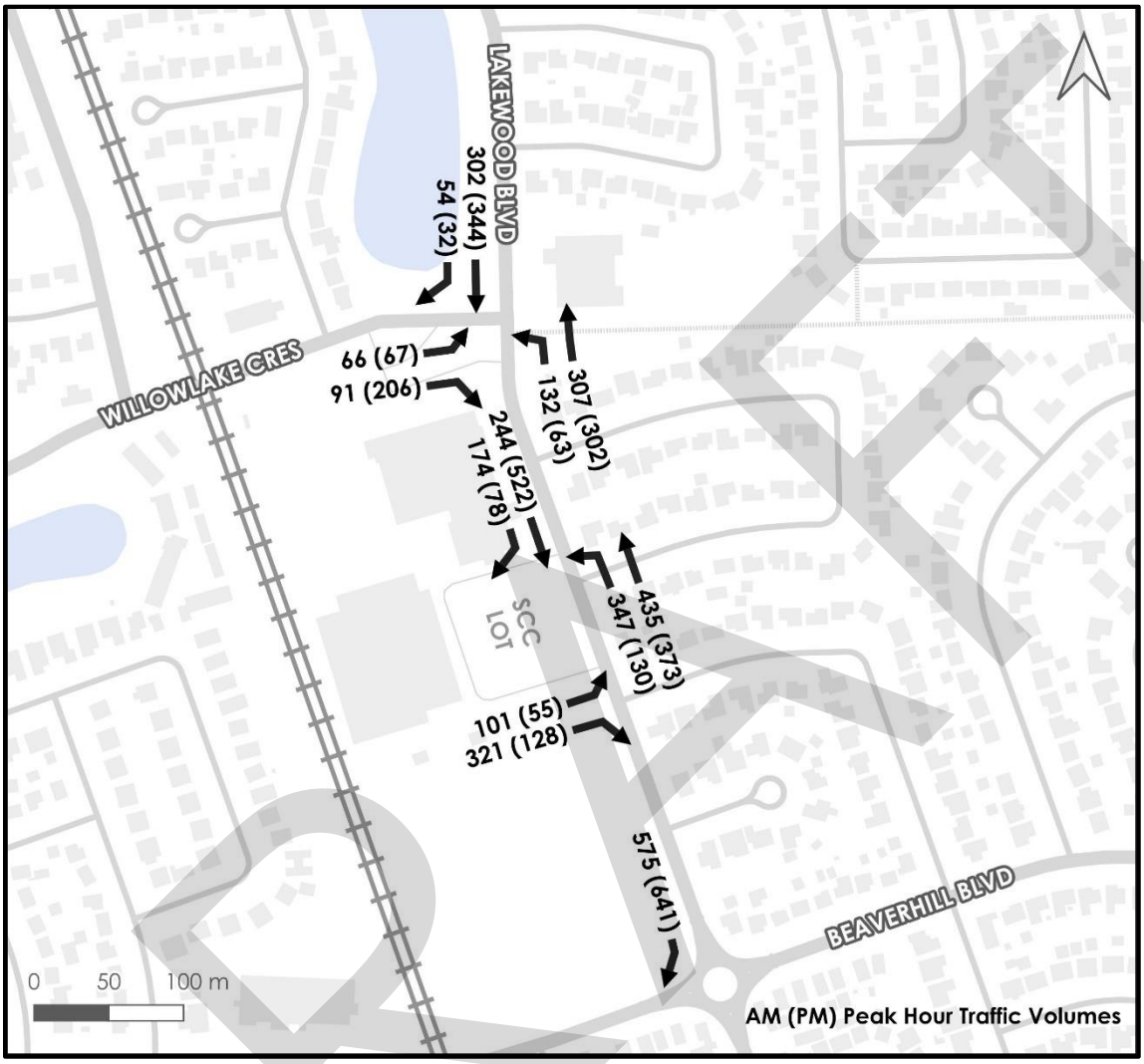

FIGURE 7: FORECAST PEAK HOUR TRAFFIC VOLUMES – 1200 STUDENTS

Forecast growth in traffic is most apparent at the movements entering and exiting the SCC lot. The northbound left-turn entry is forecast to see nearly 350 vehicles per hour in the morning with 1200 students enrolled, compared to 265 vehicles counted in January 2025. Similarly, the eastbound right-turn exiting the SCC lot is forecast to increase to just over 320 vehicles per hour in the morning with 1200 students enrolled, compared to just over 232 vehicles as of January 2025.

3.2.2 Analysis Results – SCC Lot Entry and Exit

To get a sense of existing operations, MORR conducted a drive through on January 7th, 2025, from Abinojii Mikanah to the SCC south lot. MORR logged observed queues and times arriving at various points:

- 8:24 AM: Arrived at the back of queue on eastbound Abinojii Mikanah turning left to go north on Lakewood Boulevard. The Lakewood Boulevard northbound queue extended back to Abinojii Mikanah, with additional queueing on Abinojii Mikanah. The eastbound left-turn queue on Abinojii Mikahah extended to the beginning of the left-turn taper.

- 8:30 AM: Arrived at the stop bar eastbound on Abinojii Mikanah at Lakewood Boulevard. The eastbound left-turn phase was not processing many vehicles due to downstream queueing northbound on Lakewood Boulevard.
- 8:38 AM: Arrived in the SCC south lot. During the trip from Abinojii Mikanah to the lot, northbound Lakewood Boulevard was queued the entire way, with the queue originating from vehicles waiting to make northbound left-turns into the SCC south lot.

Review of the traffic video showed the queueing was present for approximately half an hour on the morning of January 7th, beginning around 8:05 AM and continuing until 8:35 AM. In the afternoon queueing from the northbound left-turn only reached significant lengths for a period of approximately 5 minutes, otherwise queues were short or non-existant.

The original study found a need for a northbound left-turn lane at the SCC lot, to address potential driver confusion. The significant queueing observed in January 2025 could also be addressed by the left-turn lane, as the lane would allow northbound through traffic to bypass vehicles waiting to turn left. Capacity and queueing calculations for the northbound left-turn in to the SCC lot were conducted based on a condition with the left-turn lane in place. Recall from the original study that the lane design included space to store six left-turning vehicles.

As noted above, the left-turn entering the SCC south lot and the movements exiting the south lot both operate in a condition where through traffic on Lakewood Boulevard continues free-flowing through the intersection (rather than being under control of a stop or yield sign). For this condition, the capacity of the movements entering and exiting the SCC lot was quantified using HCM equation 17-3:

$$c_{p,x} = v_{c,x} \frac{e^{-v_{c,x}t_{c,x}/3600}}{1 - e^{-v_{c,x}t_{f,x}/3600}}$$

Where:

$C_{p,x}$ = potential capacity of minor movement x (veh/h)
$v_{c,x}$ = conflicting flow rate for movement x (veh/h)
$t_{c,x}$ = critical gap for movement x (seconds)
$t_{f,x}$ = follow-up time for movement x (seconds)

Critical gap and follow-up times were set use HCM base values (from Exhibit 17-5) and values observed from the traffic video for the northbound left-turn at the SCC lot. Observations showed northbound left-turn critical gap values averaging 5 seconds (vs a base value of 4.1 seconds) and follow-up time values averaging 4 seconds (vs a base value of 2.2 seconds). For the eastbound movements exiting the SCC lot, critical gap times were set to the base values (7.1 seconds for minor street left-turns and 6.2 seconds for minor street right-turns) and follow up times were set to the 4 second average value observed from the northbound left-turn, which was more conservative (higher) than the base values of 3.5 seconds for the left-turn, and 3.3 seconds for the right turn.

In this Addendum, "Queue" or "Queueing" refers to queues based on traffic volumes that are not exceeded 95% of the time, known as 95th percentile queue lengths. Queues were calculated using HCM Equation 17-37:

$$Q_{95} \approx 900T\left[\frac{v_x}{c_{m,x}} - 1 + \sqrt{\left(\frac{v_x}{c_{m,x}} - 1\right)^2 + \frac{\left(\frac{3600}{c_{m,x}}\right)\left(\frac{v_x}{c_{m,x}}\right)}{150T}}\right]\left(\frac{c_{m,x}}{3600}\right)$$

Where:

Q_{95} = 95th percentile queue (vehicles)
v_x = flow rate for movement x (vehicles per hour)
$c_{m,x}$ = capacity of movement x (vehicles per hour)
T = analysis time period (hours)

Calculations are shown in detail in Appendix A. Table 1 shows a summary of the analysis results for the northbound left-turn at the SCC lot. Results are included for the January 2025 condition for comparison, though the lane did not exist as of January 2025.

TABLE 1: CAPACITY AND QUEUEING – NORTHBOUND LEFT-TURN AT SCC SOUTH LOT

Scenario	AM Interval	AM Congestion (v/c Ratio)	AM Queue[A] [vehicles]	PM Interval	PM Congestion (v/c Ratio)	PM Queue[A] [vehicles]
866 Students (January 2025)	7:45-8:00	Minimal (0.24)	0-1	15:30-15:45	Minimal (0.31)	1-2
	8:00-8:15	Minimal (0.44)	2-3	15:45-16:00	Minimal (0.20)	0-1
	8:15-8:30	Minimal (0.52)	3	16:00-16:15	Minimal (0.06)	0-1
	8:30-8:45	Minimal (0.44)	2-3	16:15-16:30	Minimal (0.09)	0-1
900 to 1,000 Students (Forecast 2025)	7:45-8:00	Minimal (0.26)	1	15:30-15:45	Minimal (0.34)	1-2
	8:00-8:15	Minimal (0.47)	2-3	15:45-16:00	Minimal (0.21)	0-1
	8:15-8:30	Minimal (0.57)	3-4	16:00-16:15	Minimal (0.07)	0-1
	8:30-8:45	Minimal (0.48)	2-3	16:15-16:30	Minimal (0.10)	0-1
1,000 to 1,100 Students (Forecast future w/ Addition)	7:45-8:00	Minimal (0.26)	1	15:30-15:45	Minimal (0.38)	1-2
	8:00-8:15	Minimal (0.47)	2-3	15:45-16:00	Minimal (0.25)	0-1
	8:15-8:30	Moderate (0.63)	4-5	16:00-16:15	Minimal (0.08)	0-1
	8:30-8:45	Minimal (0.55)	3-4	16:15-16:30	Minimal (0.12)	0-1
1,100 to 1,200+ Students (Forecast future w/ Addition)	7:45-8:00	Minimal (0.31)	1-2	15:30-15:45	Minimal (0.44)	2-3
	8:00-8:15	Minimal (0.56)	3-4	15:45-16:00	Minimal (0.28)	1-2
	8:15-8:30	Moderate (0.75)	6-7	16:00-16:15	Minimal (0.09)	0-1
	8:30-8:45	Moderate (0.64)	4-5	16:15-16:30	Minimal (0.13)	0-1

[A] 95th percentile queue length

If the northbound left-turn lane were present as of January 2025, the queue length would be expected to reach a maximum of three vehicles, during the AM peak hour. The queue is expected to increase incrementally with enrollment, with maximum queues reaching up to six or seven vehicles in the scenario with 1,100 to 1,200+ students enrolled. Recall from the original study, that the left-turn lane design includes space for approximately six vehicles. Queues in the scenario with 1,100 to 1,200+ students enrolled may occasionally extend out of the left-turn lane, blocking northbound traffic on Lakewood Boulevard and causing queueing in the through lane. Minimal afternoon queueing is expected in all scenarios. No significant congestion is expected in either the morning or afternoon, in all scenarios.

The northbound left-turn lane design recommended on Lakewood Boulevard in the original study is expected to remain sufficient for the future scenarios, though there could be a need to adjust the design to increase the storage length by one vehicle length for the scenario with 1,100 to 1,200+ students. Note that any changes to Lakewood Boulevard are at the City of Winnipeg's discretion as the road authority. LRSD can only request that the City make changes, with the original study and this addendum as support for the request.

Table 2 shows the analysis results for the movements exiting from the SCC south lot. There are two movements, each having its own lane: the eastbound left-turn, and the eastbound right-turn. Results are shown for the critical movement for each period: the right-turn in the morning, and the left-turn in the afternoon.

TABLE 2: CAPACITY AND QUEUEING – EASTBOUND MOVEMENTS AT SCC LOT

Scenario	AM Interval	AM Congestion (v/c Ratio)	AM Queue[A] [vehicles]	PM Interval	PM Congestion (v/c Ratio)	PM Queue[A] [vehicles]
866 Students (January 2025)	7:45-8:00	Minimal (0.2)	0-1	15:30-15:45	Minimal (0.00)	0
	8:00-8:15	Minimal (0.27)	1-2	15:45-16:00	Minimal (0.57)	3-4
	8:15-8:30	Minimal (0.42)	2-3	16:00-16:15	Minimal (0.09)	0-1
	8:30-8:45	Minimal (0.49)	2-3	16:15-16:30	Minimal (0.06)	0-1
900 to 1,000 Students (Forecast 2025)	7:45-8:00	Minimal (0.22)	0-1	15:30-15:45	Minimal (0.00)	0
	8:00-8:15	Minimal (0.29)	1-2	15:45-16:00	Moderate (0.62)	3-4
	8:15-8:30	Minimal (0.46)	2-3	16:00-16:15	Minimal (0.10)	0-1
	8:30-8:45	Minimal (0.53)	3-4	16:15-16:30	Minimal (0.07)	0-1
1,000 to 1,100 Students (Forecast future w/ Addition)	7:45-8:00	Minimal (0.24)	0-1	15:30-15:45	Minimal (0.00)	0
	8:00-8:15	Minimal (0.33)	1-2	15:45-16:00	Moderate (0.69)	4-5
	8:15-8:30	Minimal (0.51)	2-3	16:00-16:15	Minimal (0.08)	0-1
	8:30-8:45	Moderate (0.6)	3-4	16:15-16:30	Minimal (0.03)	0
1,100 to 1,200+ Students (Forecast future w/ Addition)	7:45-8:00	Minimal (0.28)	1-2	15:30-15:45	Minimal (0.00)	0
	8:00-8:15	Minimal (0.38)	1-2	15:45-16:00	Significant (0.82)	6-7
	8:15-8:30	Minimal (0.59)	3-4	16:00-16:15	Minimal (0.10)	0-1
	8:30-8:45	Moderate (0.68)	5-6	16:15-16:30	Minimal (0.04)	0-1

AM results from the eastbound right-turn
PM results from the eastbound left-turn
[A] 95th percentile queue length

Increased enrollment is not expected to have a significant affect on queues exiting the SCC lot, until the scenario with 1,100 to 1,200+ students, where queues in the morning are forecast to increase to up to six vehicles (vs three vehicles as of January 2025), and queues in the afternoon are expected to increase up to seven vehicles (vs up to four vehicles as of January 2025). Queueing at those levels is forecast to occur occasionally during a 15-minute period in the morning and during a 15-minute period in the afternoon, with little queueing outside those intervals, particularly in the afternoon peak hour. The 15-minute period in the afternoon is expected to see significant congestion, but little congestion is expected outside that period.

This performance is not expected to require mitigation.

3.2.3 Analysis Results – Lakewood Boulevard

Movements at all-way stop-control intersections (northbound Lakewood Boulevard at Willowlake Crescent, eastbound Willowlake Crescent at Lakewood Boulevard) or roundabouts (southbound Lakewood Boulevard at

Beaverhill Boulevard) can have their capacity quantified by complex equations that consider all of the activity at the intersections. Those equations can be difficult to calibrate to existing conditions.

Fundamentally, traffic capacity is governed by the time between successive vehicles, known as headway. A simple headway-based capacity equation was derived and used to calibrate results to existing conditions, by modifying the headway value. The equation was:

$$c_{15} = \frac{15\ minutes \times 60\ \frac{seconds}{minute}}{hw_{avg}}$$

Where:

c = 15-minute capacity
hw = average headway

The capacity from this equation is used to calculate the volume to capacity ratio, which—together with the capacity—is an input to the queueing equation. Headway values were set to give queue lengths consistent with the video observations and to give v/c ratios of no more than 1, such that the capacity was at least equal to the counted volume. Average headways used in the analysis included:

- 6.5 seconds for northbound Lakewood Boulevard at Willowlake Crescent
- 9.0 seconds for eastbound Willowlake Crescent at Lakewood Boulevard
- 4.8 seconds for southbound Lakewood Boulevard at Beaverhill Boulevard

Table 3 shows the analysis results for the northbound movements on Lakewood Boulevard at Willowlake Crescent.

TABLE 3: CAPACITY AND QUEUEING – NORTHBOUND LAKEWOOD BLVD AT WILLOWLAKE CRES

Scenario	AM Interval	AM Congestion (v/c Ratio)	AM Queue[A] [vehicles]	PM Interval	PM Congestion (v/c Ratio)	PM Queue[A] [vehicles]
866 Students (January 2025)	7:45-8:00	Significant (0.94)	12	15:30-15:45	Minimal (0.52)	2-3
	8:00-8:15	Significant (0.84)	8-9	15:45-16:00	Significant (0.82)	8-9
	8:15-8:30	Minimal (0.36)	1-2	16:00-16:15	Moderate (0.66)	4-5
	8:30-8:45	Minimal (0.57)	3-4	16:15-16:30	Minimal (0.57)	3-4
900 to 1,000 Students (Forecast 2025)	7:45-8:00	Severe (0.95)	12-13	15:30-15:45	Minimal (0.52)	2-3
	8:00-8:15	Significant (0.85)	8-9	15:45-16:00	Significant (0.84)	8-9
	8:15-8:30	Minimal (0.37)	1-2	16:00-16:15	Moderate (0.67)	4-5
	8:30-8:45	Minimal (0.58)	3-4	16:15-16:30	Minimal (0.57)	3-4
1,000 to 1,100 Students (Forecast future w/ Addition)	7:45-8:00	Severe (1.03)	15-16	15:30-15:45	Minimal (0.52)	2-3
	8:00-8:15	Severe (0.97)	13-14	15:45-16:00	Significant (0.85)	9-10
	8:15-8:30	Minimal (0.45)	2-3	16:00-16:15	Moderate (0.66)	4-5
	8:30-8:45	Moderate (0.64)	4-5	16:15-16:30	Minimal (0.56)	3-4
1,100 to 1,200+ Students (Forecast future w/ Addition)	7:45-8:00	Severe (1.04)	16-17	15:30-15:45	Minimal (0.52)	2-3
	8:00-8:15	Severe (0.99)	13-14	15:45-16:00	Significant (0.90)	10-11
	8:15-8:30	Minimal (0.47)	2-3	16:00-16:15	Moderate (0.66)	4-5
	8:30-8:45	Moderate (0.67)	4-5	16:15-16:30	Minimal (0.56)	3-4

AM results from the eastbound right-turn
PM results from the eastbound left-turn
[A] 95th percentile queue length

In the January 2025 scenario, Lakewood Boulevard was near capacity at Willowlake Crescent, for a 15-minute period in the AM peak hour. During that time queues can reach up to 12 vehicles, with another 15-minute period in the morning also having significant congestion and queues of up to 9 vehicles, and similar conditions for 15 minutes in the afternoon. Increasing enrollment to the 1,000 to 1,100 student scenario resulted in morning queues increasing by a forecast three to four vehicles, and the period with significant to severe queueing increased from 15 minutes to 30 minutes. This is due in part to the increased parking supply in the north lot in this scenario, resulting in more traffic continuing northbound on Lakewood Boulevard to Willowlake Crescent. Effects are expected to be less severe in the afternoon, with queues increasing by one to two vehicles, and the period with congestion remaining at 15 minutes.

With enrollment increased to 1,100 to 1,200+ students, queueing in the morning is expected to increase by another vehicle, with congestion also increasing incrementally. The congested period is expected to remain at 30 minutes, vs 15 minutes as of January 2025. Afternoon queues are expected to increase by another vehicle, with an incremental increase in congestion during a 15-minute period, but little congestion otherwise.

Table 4 shows the analysis results for the eastbound movements on Willowlake Crescent at Lakewood Boulevard. There is a right-turn channel allowing right-turns to proceed independent of left-turns, provided left-turn queues do not exceed three vehicles. Performance was evaluated for both movements, but Table 4 shows the results for the right-turn, as it was the movement with greater volumes and queue lengths.

TABLE 4: CAPACITY AND QUEUEING – EASTBOUND WILLOWLAKE CRES AT LAKEWOOD BLVD

Scenario	AM Interval	AM Congestion (v/c Ratio)	AM Queue[A] [vehicles]	PM Interval	PM Congestion (v/c Ratio)	PM Queue[A] [vehicles]
866 Students (January 2025)	7:45-8:00	Minimal (0.12)	0-1	15:30-15:45	Minimal (0.31)	1-2
	8:00-8:15	Minimal (0.19)	0-1	15:45-16:00	Minimal (0.49)	2-3
	8:15-8:30	Minimal (0.31)	1-2	16:00-16:15	Minimal (0.39)	1-2
	8:30-8:45	Minimal (0.19)	0-1	16:15-16:30	Minimal (0.46)	2-3
900 to 1,000 Students (Forecast 2025)	7:45-8:00	Minimal (0.12)	0-1	15:30-15:45	Minimal (0.31)	1-2
	8:00-8:15	Minimal (0.19)	0-1	15:45-16:00	Minimal (0.49)	2-3
	8:15-8:30	Minimal (0.32)	1-2	16:00-16:15	Minimal (0.39)	1-2
	8:30-8:45	Minimal (0.19)	0-1	16:15-16:30	Minimal (0.46)	2-3
1,000 to 1,100 Students (Forecast future w/ Addition)	7:45-8:00	Minimal (0.13)	0-1	15:30-15:45	Minimal (0.36)	1-2
	8:00-8:15	Minimal (0.2)	0-1	15:45-16:00	Minimal (0.58)	3-4
	8:15-8:30	Minimal (0.34)	1-2	16:00-16:15	Minimal (0.56)	3-4
	8:30-8:45	Minimal (0.2)	0-1	16:15-16:30	Minimal (0.55)	3-4
1,100 to 1,200+ Students (Forecast future w/ Addition)	7:45-8:00	Minimal (0.13)	0-1	15:30-15:45	Minimal (0.37)	1-2
	8:00-8:15	Minimal (0.21)	0-1	15:45-16:00	Minimal (0.59)	3-4
	8:15-8:30	Minimal (0.36)	1-2	16:00-16:15	Minimal (0.56)	3-4
	8:30-8:45	Minimal (0.21)	0-1	16:15-16:30	Minimal (0.55)	3-4

AM results from the eastbound right-turn
PM results from the eastbound left-turn
[A] 95th percentile queue length

There was little queueing or congestion on Willowlake Crescent at Lakewood Boulevard as of January 2025. Queues reached up to three vehicles, but quickly dissipated. Performance is expected to remain similar in all scenarios, though the occurrence of three to four vehicle queues may increase after the building addition is complete, and more staff are using Willowlake Crescent to exit the north lot.

This performance is not expected to require mitigation.

Table 5 shows the analysis results for southbound Lakewood Boulevard entering the roundabout at Beaverhill Boulevard.

TABLE 5: CAPACITY AND QUEUEING – SOUTHBOUND LAKEWOOD BLVD AT BEAVERHILL BLVD

Scenario	AM Interval	AM Congestion (v/c Ratio)	AM Queue[A] [vehicles]	PM Interval	PM Congestion (v/c Ratio)	PM Queue[A] [vehicles]
866 Students (January 2025)	7:45-8:00	Minimal (0.43)	2-3	15:30-15:45	Moderate (0.65)	4-5
	8:00-8:15	Minimal (0.58)	3-4	15:45-16:00	Moderate (0.74)	6-7
	8:15-8:30	Moderate (0.76)	7-8	16:00-16:15	Severe (0.97)	14-15
	8:30-8:45	Significant (0.83)	9-10	16:15-16:30	Significant (0.84)	9-10
900 to 1,000 Students (Forecast 2025)	7:45-8:00	Minimal (0.45)	2-3	15:30-15:45	Moderate (0.66)	4-5
	8:00-8:15	Minimal (0.59)	3-4	15:45-16:00	Moderate (0.76)	7-8
	8:15-8:30	Moderate (0.78)	7-8	16:00-16:15	Severe (0.98)	15-16
	8:30-8:45	Significant (0.86)	10-11	16:15-16:30	Significant (0.85)	9-10
1,000 to 1,100 Students (Forecast future w/ Addition)	7:45-8:00	Minimal (0.47)	2-3	15:30-15:45	Moderate (0.66)	5-6
	8:00-8:15	Moderate (0.63)	4-5	15:45-16:00	Significant (0.80)	8-9
	8:15-8:30	Significant (0.83)	9-10	16:00-16:15	Severe (1.00)	16-17
	8:30-8:45	Significant (0.92)	12-13	16:15-16:30	Significant (0.85)	9-10
1,100 to 1,200+ Students (Forecast future w/ Addition)	7:45-8:00	Minimal (0.50)	2-3	15:30-15:45	Moderate (0.68)	5-6
	8:00-8:15	Moderate (0.67)	5-6	15:45-16:00	Significant (0.86)	10-11
	8:15-8:30	Significant (0.90)	11-12	16:00-16:15	Severe (1.03)	18-19
	8:30-8:45	Severe (0.99)	16-17	16:15-16:30	Significant (0.86)	10-11

AM results from the eastbound right-turn
PM results from the eastbound left-turn
[A] 95th percentile queue length

Queueing and congestion southbound on Lakewood Boulevard entering the roundabout at Beaverhill Boulevard was most severe in the afternoon, where the observations found queues extending as far upstream as the SCC lot entry, a distance equivalent to a queue of approximately 40 vehicles. The capacity equation was calibrated to show near-capacity conditions for the peak afternoon interval, but the queue equation returned queue lengths of only 14 to 15 vehicles—much shorter than the observed maximum. This indicated that the queueing equation was not well-calibrated for these conditions. As such, queueing estimates were considered in terms of the relative increase vs the existing value returned.

Queues are expected to increase by one to two vehicles in the scenario with 900 to 1,000 students, and congestion is expected to be similar to January 2025. With enrollment of 1,000 to 1,100 students, the intervals with significant congestion are forecast to increase from 15 minutes to 30 minutes in the morning, and from 30 minutes to 45 minutes in the afternoon. Queues are expected to increase by two to three vehicles vs January 2025. With 1,100 to 1,200+ students, queues are expected to increase by five to seven vehicles vs January 2025.

This performance is not ideal, but it is due to network-level capacity constraints involving the roundabout at Beaverhill Boulevard and potentially at the intersection of Lakewood Boulevard and Abinojii Mikanah. Finding resolution to those issues was considered outside the scope of the study update.

3.3 Parking Supply and Demand

Existing parking demand was evaluated using observations from January 10th, 2025.

Observations focused on the JH Bruns overflow parking area in the SCC south lot. The north (staff) lot was observed briefly and found to be essentially full during school hours, and the west lot was not observed.

Observations in the south lot found approximately 30 of 72 overflow spaces were occupied during the period from 3:30 PM to 4:00 PM.

Future parking demand was forecast using parking generation rates from the original study. The process included:

- Staff parking was forecast based on the original study relationship between student enrollment and staff parking demand. For the future scenarios with more than 1,000 to 1,100 students and 1,100 to 1,200+ students, the north lot was assumed to be expanded to provide 76 staff parking spaces, increased from the existing 48 spaces. Staff parking demand exceeding 76 vehicles was assigned to the SCC south lot.
- Student parking demand was forecast using the original study relationship between student enrollment and student parking demand, applied to the future enrollment figures. Demand exceeding the 62 student parking spaces available in the west lot (a figure from the original study) was assigned to the SCC south lot.

Applying the process to the January 2025 condition resulted in a parking demand that was equivalent to having 33 unused JHBC spaces in the south lot—nearly equal to the observed 30 unused spaces from January 10th.

Table 6 shows the resulting parking demand projections and forecast use of parking spaces in the SCC south lot.

TABLE 6: FORECAST PARKING DEMAND, VS SUPPLY

	Staff Parking [vehicles]			Student Parking [vehicles]			JHBC Spaces in SCC Lot [vehicles]		
Enrollment	Demand	Supply (North Lot)	To South Lot	Demand	Supply (West Lot)	To South Lot	From Other Lots	Supply	Unused Spaces
866 Students (January 2025)	87	48	39	58	62	0	39	72	33[A]
900 to 1,000 Students (Forecast 2025)	93	48	45	63	62	1	46	72	26
1,000 to 1,100 Students (Forecast future w/ Addition)	105	76	29	71	62	9	38	72	34
1,100 to 1,200+ Students (Forecast future w/ Addition)	120	76	44	81	62	19	63	72	9

[A] January 2025 observations found 30 unused JHBC spaces in south lot

Utilization of the JHBC spaces in the SCC south lot is forecast to increase in Fall 2025 as enrollment increases, though not to the point that all of the spaces will be used. Future use of south lot stalls is forecast to decrease once the parking supply is increased in the north lot (as part of the building addition), such that utilization of the south lot with 1,000 to 1,100 students is expected to be similar to the existing condition with 866 students. With more than 1,100 to 1,200+ students, parking demand in the south lot is forecast to be nearly equal to the available supply.

If the available spaces in the SCC south lot are found to be inadequate, the total site parking supply can be increased by expanding the west lot. That change was noted as a possibility in the original study. Note that the west lot is on the SCC site, so any expansion would need to be done with SCC's approval.

The overall utilization of the SCC south lot will be affected by increased JHBC pick up and drop-off activity, which is discussed in the next section.

3.4 Pick Up and Drop Off Supply and Demand

Pick up and drop off (where parents or caregivers transport students to/from school) demand was observed on January 10th, 2025. MORR understood that all pick up and drop off activity was to take place in the SCC south lot, and observations were limited to that lot.

The afternoon pick-up period was considered the critical time, as it requires vehicles to wait in the SCC south lot for longer periods. In the morning drop-off period, vehicles tended to dwell in the lot for much shorter times. Counts of available spaces in the SCC south lot were conducted in the afternoon period, but not the morning period. Similarly, forecasts of future demand were completed for the afternoon pick-up period, but not the morning drop-off period. At the peak time in the afternoon (approximately 3:45 PM), there were 68 unused spaces in the SCC south lot, including spaces in the JHBC overflow parking area.

The following points outline how pick-up and drop-off demand was forecast:

- Pick-up demand rates were taken from the original study and applied to the January 2025 enrollment scenario, yielding a forecast peak pick-up demand to store 61 vehicles.
- Combining the pick-up demand with the demand for JHBC overflow parking (39 vehicles) resulted in a total of 100 JHBC-related vehicles using the south lot at the peak pick-up time.
- The JHBC demand accounted for 100 of the 182 spaces in the south lot, but observations in January 2025 found 68 unused spaces, or total demand for 114 spaces. Based on the observations, SCC-related demand would account for the additional 14 vehicles, beyond the JHBC demand. The observations only considered a single day, so for forecasting purposes, SCC background demand was set to a conservative (higher) level of 25 vehicles.
- The 25-vehicle estimated SCC demand was held constant in the future scenarios.
- Future JHBC pick-up demand was forecast using the pick-up demand rates from the original study.

Table 7 shows the resulting forecast usage of the SCC south lot at peak afternoon pick-up times.

TABLE 7: FORECAST PICK-UP DEMAND VS SCC SOUTH LOT CAPACITY

Enrollment	Peak Pick-Up Demand [vehicles]	JHBC Parking to South Lot[A] [vehicles]	Background SCC Demand [vehicles]	Total Demand [vehicles]	Supply [spaces]	South Lot Total Unused Spaces
866 Students (January 2025)	61	39	25	125	182	57
900 to 1,000 Students (Forecast 2025)	64	46	25	138	182	44
1,000 to 1,100 Students (Forecast future w/ Addition)	75	38	25	140	182	42
1,100 to 1,200+ Students (Forecast future w/ Addition)	85	63	25	176	182	6

[A] From Table 6

Spaces are expected to be available in the SCC south lot at peak afternoon pickup times in all future scenarios. Availability is forecast to decrease from 57 spaces in January 2025, to 42 to 44 spaces in scenarios with 900 to 1,000 students and with 1,000 to 1,100 students and an expanded north lot. Increasing enrollment to 1,100 to 1,200+ students is forecast to result in increased pick-up demand, to the point that the number of unused spaces will decrease to an estimated six spaces. Note that these figures are based on a conservative (higher) level of assumed background demand at SCC, on the order of 10 vehicles more than were observed on January 10th, 2025.

Recall from the previous section that parking capacity can be increased by expanding the west lot. That would free up south lot spaces for SCC loading use.

3.5 Bus Loading

The update work from January 2025 did not affect the original study findings related to bus loading demand. The single recommendation from the original study is unchanged: with the building addition, there will be a need for small modifications to the SCC west lot, as shown on Figure 25 and Figure 26 in the original study.

3.6 Provisions for Cycling

The update work from January 2025 did not affect the original study findings related to cycling. The recommendation from the original study remains: LRSD should ask the City of Winnipeg to develop the cycling network in Southdale.

4 SUMMARY

The following points summarize the findings from the work in January 2025:

- The recommendations from the original study hold. Recall that the City of Winnipeg is the road authority for Lakewood Boulevard, so any changes to the street would be at the City's discretion—LRSD can only request that the City make the changes listed below, with this addendum and the original study as supporting material. Three of the recommendations can be implemented as soon as possible:

  - A controlled pedestrian crossing on Lakewood Boulevard at the JHBC main doors, with sign control and rectangular rapid flashing beacons, and a median refuge island
  - A northbound left-turn lane on Lakewood Boulevard at the SCC lot entry
  - A sidewalk on the south side of the JHBC building, with a sidewalk extension to improve sightlines between pedestrians and vehicles entering the lot

- If the three recommendations are implemented, transport performance is forecast to be acceptable (with short-duration queueing and sufficient parking and pick-up capacity) with enrollment between 900 and 1,000 students, and without the building addition.
- If enrollment increases beyond 1,000 students—which MORR understood can only occur with the building addition—performance is expected to remain acceptable, though queues entering and exiting the SCC lot may increase by 1-2 vehicles (vs January 2025) and the duration of queueing on Lakewood Boulevard may increase from 30 minutes to 45 minutes. Affects from the increased enrollment are expected to be partially offset by increased staff parking capacity in the north lot added as pat of the expansion.
- If enrollment increases beyond 1,100 students, performance is expected to remain acceptable, though queues entering and exiting the SCC lot may increase by three or four vehicles (relative to January 2025) and the duration of queueing on Lakewood Boulevard may increase from 30 minutes to 45 minutes. At peak pick-up times, there are expected to be unused spaces in the SCC south lot, though the number is expected to be closer to 5-10 stalls than the 50-60 unused stalls in January 2025.

APPENDIX A
Traffic Data and Calculations

Traffic Counts - January 7, 2025

Lakewood Blvd & Willowlake Cres

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
7:45	28	102			57	5	14		12				218
8:00	29	87			64	9	10		19				218
8:15	14	36			80	16	23		31				200
8:30	19	60			68	17	19		19				202
Hour	90	285			269	47	66		81				838

Lakewood Blvd & SCC Entry

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
7:45	43	136			54	15							248
8:00	76	118			52	25							271
8:15	74	52			72	62							260
8:30	72	81			66	29							248
Hour	265	387			244	131							1027
8:00 North Lot Access	4					2							

Lakewood Blvd & SCC Exit

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
7:45							12		35				47
8:00							16		48				64
8:15							20		68				88
8:30							25		81				106
Hour							73		232				305

Lakewood Blvd & Beaverhill Blvd

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
7:45					81								81
8:00					108								108
8:15					142								142
8:30					155								155
Hour					486								486

Traffic Counts - January 7, 2025

Lakewood Blvd & Willowlake Cres

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
15:30	14	58			82	5	9		31				199
15:45	24	89			73	12	16		49				263
16:00	10	82			83	7	22		39				243
16:15	14	65			88	8	10		46				231
Hour	62	294			326	32	57		165				936

Lakewood Blvd & SCC Entry

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
15:30	44	81			112	22							259
15:45	29	116			109	16							270
16:00	8	88			151	9							256
16:15	13	78			129	9							229
Hour	94	363			501	56							1014

Lakewood Blvd & SCC Exit

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
15:30							0		12				12
15:45							36		58				94
16:00							5		32				37
16:15							4		6				10
Hour							45		108				153
15:45 North Lot Access							1		4				

Lakewood Blvd & Beaverhill Blvd

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
15:30					122								122
15:45					138								138
16:00					181								181
16:15					158								158
Hour					599								599

Peak Hour Volumes — January 2025 — AM Peak Hour

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Lakewood Blvd & Willowlake Cres	90	285	0	0	269	47	66	0	81	0	0	0	838
Lakewood Blvd & SCC Entry	265	387	0	0	244	131	0	0	0	0	0	0	1027
Lakewood Blvd & SCC Exit	0	0	0	0	0	0	73	0	232	0	0	0	305
Lakewood Blvd & Beaverhill Blvd	0	0	0	0	486	0	0	0	0	0	0	0	486

Peak Hour Volumes — 930 Students — AM Peak Hour

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Lakewood Blvd & Willowlake Cres	91	289	0	0	277	47	66	0	83	0	0	0	853
Lakewood Blvd & SCC Entry	285	392	0	0	244	141	0	0	0	0	0	0	1062
Lakewood Blvd & SCC Exit	0	20	0	0	0	0	78	0	249	0	0	0	347
Lakewood Blvd & Beaverhill Blvd	0	20	0	0	503	0	0	0	0	0	0	0	523

Peak Hour Volumes — 1050 Students — AM Peak Hour

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Lakewood Blvd & Willowlake Cres	129	297	0	0	284	54	66	0	87	0	0	0	917
Lakewood Blvd & SCC Entry	301	423	0	0	244	152	0	0	0	0	0	0	1120
Lakewood Blvd & SCC Exit	0	56	0	0	0	0	89	0	281	0	0	0	426
Lakewood Blvd & Beaverhill Blvd	0	56	0	0	535	0	0	0	0	0	0	0	591

Peak Hour Volumes — 1200 Students — AM Peak Hour

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Lakewood Blvd & Willowlake Cres	132	307	0	0	302	54	66	0	91	0	0	0	952
Lakewood Blvd & SCC Entry	347	435	0	0	244	174	0	0	0	0	0	0	1200
Lakewood Blvd & SCC Exit	0	102	0	0	0	0	101	0	321	0	0	0	524
Lakewood Blvd & Beaverhill Blvd	0	102	0	0	575	0	0	0	0	0	0	0	677

Peak Hour Volumes — PM Peak Hour

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Lakewood Blvd & Willowlake Cres	62	294	0	0	326	32	57	0	165	0	0	0	936
Lakewood Blvd & SCC Entry	94	363	0	0	501	56	0	0	0	0	0	0	1014
Lakewood Blvd & SCC Exit	0	0	0	0	0	0	45	0	108	0	0	0	153
Lakewood Blvd & Beaverhill Blvd	0	0	0	0	599	0	0	0	0	0	0	0	599

Peak Hour Volumes — 930 Students — PM Peak Hour

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Lakewood Blvd & Willowlake Cres	63	297	0	0	329	32	57	0	166	0	0	0	944
Lakewood Blvd & SCC Entry	101	366	0	0	501	60	0	0	0	0	0	0	1028
Lakewood Blvd & SCC Exit	0	7	0	0	0	0	48	0	116	0	0	0	171
Lakewood Blvd & Beaverhill Blvd	0	7	0	0	607	0	0	0	0	0	0	0	614

Peak Hour Volumes — 1050 Students — PM Peak Hour

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Lakewood Blvd & Willowlake Cres	62	296	0	0	336	32	67	0	204	0	0	0	997
Lakewood Blvd & SCC Entry	114	365	0	0	522	68	0	0	0	0	0	0	1069
Lakewood Blvd & SCC Exit	0	20	0	0	21	0	47	0	110	0	0	0	198
Lakewood Blvd & Beaverhill Blvd	0	20	0	0	622	0	0	0	0	0	0	0	642

Peak Hour Volumes — 1200 Students — PM Peak Hour

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Lakewood Blvd & Willowlake Cres	63	302	0	0	344	32	67	0	206	0	0	0	1014
Lakewood Blvd & SCC Entry	130	373	0	0	522	78	0	0	0	0	0	0	1103
Lakewood Blvd & SCC Exit	0	36	0	0	21	0	55	0	128	0	0	0	240
Lakewood Blvd & Beaverhill Blvd	0	36	0	0	641	0	0	0	0	0	0	0	677

HCM Analysis - January 2025 Calibration

Willowlake NB Queue

15 Min	15 Min NB (	Jan '25 NB	New Trips	NB Total	v/c	Qavg	Q95
7:45	138.4615	130	0.00	130	0.938889	14.42475	12.00817
8:00	138.4615	116	0.00	116	0.837778	4.326606	8.721022
8:15	138.4615	50	0.00	50	0.361111	0.204106	1.635199
8:30	138.4615	79	0.00	79	0.570556	0.758034	3.559589

hw 6.5, calibrated so Qavg similar to worst case observed

15 Min	15 Min NB (	Jan '25 NB	New Trips	NB Total	v/c	Qavg	Q95
15:30	138.4615	72	0.00	72	0.52	0.563333	2.982345
15:45	138.4615	113	0.00	113	0.816111	3.621955	8.126617
16:00	138.4615	92	0.00	92	0.664444	1.315688	4.90482
16:15	138.4615	79	0.00	79	0.570556	0.758034	3.559589

hw 6.5, calibrated so Qavg similar to worst case observed

SCC Lot NBL Queue

15 Min	Jan '25 SB	New SB	SB Total	HCM Cap	Jan '25 NBL	New NBL	NBL Total	v/c	Qavg	Q95
7:45	69	0.00	69	178.0715	43	0.00	43.00	0.241476	0.076874	0.941913
8:00	77	0.00	77	173.2193	76	0.00	76.00	0.43875	0.342987	2.241822
8:15	134	0.00	134	141.8398	74	0.00	74.00	0.521715	0.569089	3.006017
8:30	95	0.00	95	162.7177	72	0.00	72.00	0.442484	0.351187	2.267645

hc = 5
hf = 4

15 Min	Jan '25 SB	New SB	SB Total	HCM Cap	Jan '25 NBL	New NBL	NBL Total	v/c	Qavg	Q95
15:30	134	0.00	134	141.8398	44	0.00	44.00	0.310209	0.139506	1.313857
15:45	125	0.00	125	146.4386	29	0.00	29.00	0.198035	0.048902	0.731695
16:00	160	0.00	160	129.2547	8	0.00	8.00	0.061893	0.004084	0.197288
16:15	138	0.00	138	139.8367	13	0.00	13.00	0.092966	0.009528	0.306005

hc = 5
hf = 4

SB at Beaverhill

15 Min	5 Min SB Ca	Jan '25 SB	New Trips	SB Total	v/c	Qavg	Q95
7:45	187.5	81	0.00	81	0.432	0.328563	2.191499
8:00	187.5	108	0.00	108	0.576	0.782491	3.726178
8:15	187.5	142	0.00	142	0.757333	2.363546	7.1288
8:30	187.5	155	0.00	155	0.826667	3.942564	9.152605

hw = 4.8, critical from PM

15 Min	5 Min SB Ca	Jan '25 SB	New Trips	SB Total	v/c	Qavg	Q95
15:30	187.5	122	0.00	122	0.650667	1.211929	4.865071
15:45	187.5	138	0.00	138	0.736	2.051879	6.602371
16:00	187.5	181	0.00	181	0.965333	26.88082	14.93219
16:15	187.5	158	0.00	158	0.842667	4.513266	9.695168

hw = 4.8, calibrated so Qavg is significant, set to give v/c <1 vs counts

SCC Lot Exit EB

EBL	15 Min	'25 Conflic	ew Conflict	ntotal Conflicti	HCM Cap	Jan '25 EBL	New EBL	EBL Total	v/c	Qavg	Q95
	7:45	221	0.00	221	61.79899	12	0.00	12	0.194178	0.046791	0.703055
	8:00	230	0.00	230	58.5336	16	0.00	16	0.273347	0.102826	1.074255
	8:15	178	0.00	178	79.95716	20	0.00	20	0.250134	0.083438	0.969369
	8:30	194	0.00	194	72.67378	25	0.00	25	0.344003	0.180394	1.481157

EBR	15 Min	'25 Conflic	ew Conflict	ntotal Conflicti	HCM Cap	Jan '25 EBR	New EBR	EBR Total	v/c	Qavg	Q95
	7:45	54	0.00	54	174.4611	35	0.00	35	0.200618	0.050348	0.74494
	8:00	52	0.00	52	176.1277	48	0.00	48	0.27253	0.102097	1.104825
	8:15	72	0.00	72	160.1062	68	0.00	68	0.424718	0.31356	2.117475
	8:30	66	0.00	66	164.7646	81	0.00	81	0.49161	0.475385	2.72384

EBL	15 Min	'25 Conflic	ew Conflict	ntotal Conflicti	HCM Cap	Jan '25 EBL	New EBL	EBL Total	v/c	Qavg	Q95
	15:30	237	0.00	237	56.1087	0	0.00	0	0	0	0
	15:45	218	0.00	218	62.92567	36	0.00	36	0.572104	0.764911	3.234122
	16:00	242	0.00	242	54.43583	5	0.00	5	0.091851	0.00929	0.299788
	16:15	216	0.00	216	63.68768	4	0.00	4	0.062806	0.004209	0.19971

EBR	15 Min	'25 Conflic	ew Conflict	ntotal Conflicti	HCM Cap	Jan '25 EBR	New EBR	EBR Total	v/c	Qavg	Q95
	15:30	112	0.00	112	132.0434	12	0.00	12	0.090879	0.009085	0.298408
	15:45	109	0.00	109	133.9778	58	0.00	58	0.432908	0.330473	2.166578
	16:00	151	0.00	151	109.1516	32	0.00	32	0.29317	0.121598	1.206565
	16:15	129	0.00	129	121.5641	6	0.00	6	0.049357	0.002563	0.15534

Willowlake EB at Lakewood

EBL	15 Min	15 Min EB (	Jan '25 EBL	New Trips	EBL Total	v/c	Qavg	Q95
	7:45	100	14	0	14	0.14	0.022791	0.482948
	8:00	100	10	0	10	0.1	0.011111	0.3309
	8:15	100	23	0	23	0.23	0.068701	0.876165
	8:30	100	19	0	19	0.19	0.044568	0.691884

hw 9, calibrate

EBR	15 Min	15 Min EB (	Jan '25 EBR	New Trips	EBR Total	v/c	Qavg	Q95
	7:45	100	12	0	12	0.12	0.016364	0.405357
	8:00	100	19	0	19	0.19	0.044568	0.691884
	8:15	100	31	0	31	0.31	0.139275	1.298922
	8:30	100	19	0	19	0.19	0.044568	0.691884

hw 9, calibrate

15 Min	15 Min EB (	Jan '25 EBL	New Trips	EBL Total	v/c	Qavg	Q95
15:30	100	9	0.00	9	0.09	0.008901	0.294793
15:45	100	16	0.00	16	0.16	0.030476	0.563859
16:00	100	22	0.00	22	0.22	0.062051	0.828551
16:15	100	10	0.00	10	0.1	0.011111	0.3309

hw 9, calibrate

15 Min	15 Min EB (	Jan '25 EBR	New Trips	EBR Total	v/c	Qavg	Q95
15:30	100	31	0.00	31	0.31	0.139275	1.298922
15:45	100	49	0.00	49	0.49	0.470784	2.614326
16:00	100	39	0.00	39	0.39	0.249344	1.810554
16:15	100	46	0.00	46	0.46	0.391852	2.350867

hw 9, calibrate for ex Q95 3

Traffic Volume Changes - 930 Students

Trip Generation Rates

Source	AM	AM % In	AM In	AM Out	PM	PM % In	PM In	PM Out
ITE Trip Gen Rates (#525)	0.809469	0.564907	0.4572748	0.352194	0.349885	0.49505	0.17321	0.176674

Trip Gen Net Increase vs Jan '25	Enrollment	AM	AM In	AM Out	PM	PM In	PM Out
930 Students Total	64	51.806	29.265589	22.540416	22.39261	11.08545	11.30716

Convert to Peak 15 Vols (% from counts)	% AM In	% AM Out	AM In	AM Out	% PM In	% PM Out	PM In	PM Out
7:45	0.146465	0.154098	4.2863741	3.4734411				
8:00	0.255051	0.209836	7.4642032	4.7297921				
8:15	0.343434	0.288525	10.050808	6.5034642				
8:30	0.255051	0.347541	7.4642032	7.8337182				
15:30					0.44	0.078431	4.877598	0.886836
15:45					0.3	0.614379	3.325635	6.946882
16:00					0.113333	0.24183	1.256351	2.734411
16:15					0.146667	0.065359	1.625866	0.73903

Trip Distribution % (from counts)	N on Lakewood AM In	N on Lakewood AM Out	N on Lakewood PM In	N on Lakewood PM Out	S on Lakewood AM In	S on Lakewood AM Out	S on Lakewood PM In	S on Lakewood PM Out	W on Willowlake AM In	W on Willowlake AM Out	W on Willowlake PM In	W on Willowlake PM Out
7:45	0.21	0.21			0.741379	0.744681			0.05	0.05		
8:00	0.20	0.20			0.752475	0.75			0.05	0.05		
8:15	0.37	0.18			0.544118	0.772727			0.09	0.05		
8:30	0.23	0.19			0.712871	0.764151			0.06	0.05		
15:30			0.27	0.00			0.666667	1			0.06	0.00
15:45			0.30	0.32			0.644444	0.617021			0.06	0.06
16:00			0.44	0.12			0.470588	0.864865			0.09	0.02
16:15			0.34	0.33			0.590909	0.6			0.07	0.07

Notes: W on Willowlake estimated using ratio of NBT to NBL at Lakewood & Willowlake

Trip Distribution % (from counts)	North on Lake AM In	North on Lake AM Out	North on Lake PM In	North on Lake PM Out	South on Lake AM In	South on Lake AM Out	South on Lake PM In	South on Lake PM Out	West on Will AM In	West on Will AM Out	West on Will PM In	West on Willowlake PM Out
7:45	0.89	0.71			3.177829	2.586605			0.214319	0.173672		
8:00	1.47	0.95			5.616628	3.547344			0.37321	0.23649		
8:15	3.68	1.15			5.468822	5.025404			0.904573	0.325173		
8:30	1.70	1.46			5.321016	5.986143			0.447852	0.391886		
15:30			1.33	0.00			3.251732	0.886836			0.292656	0.00
15:45			0.98	2.24			2.143187	4.286374			0.199538	0.416813
16:00			0.55	0.31			0.591224	2.364896			0.11	0.054688
16:15			0.55	0.24			0.960739	0.443418			0.113811	0.051732

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	0.17	0.71	0.00	0	0.894226	0	0	0	0.214319	0	0	0
8:00	101	0.24	0.95	0.00	0	1.474365	0	0	0	0.37321	0	0	0
8:15	101	0.33	1.15	0.00	0	3.677413	0	0	0	0.904573	0	0	0
8:30	101	0.39	1.46	0.00	0	1.695335	0	0	0	0.447852	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.29	0.00	0.00	0.00
15:45	101	0.42	2.24	0.00	0.00	0.98	0.00	0.00	0.00	0.20	0.00	0.00	0.00
16:00	101	0.05	0.31	0.00	0.00	0.55	0.00	0.00	0.00	0.11	0.00	0.00	0.00
16:15	101	0.05	0.24	0.00	0.00	0.55	0.00	0.00	0.00	0.11	0.00	0.00	0.00

Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	3.18	0.89	0.00	0	0	1.108545	0	0	0	0	0	0
8:00	102	5.62	1.18	0.00	0	0	1.847575	0	0	0	0	0	0
8:15	102	5.47	1.48	0.00	0	0	4.581986	0	0	0	0	0	0
8:30	102	5.32	1.85	0.00	0	0	2.143187	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	102	3.25	0.00	0.00	0.00	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15:45	102	2.14	2.66	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	0.00
16:00	102	0.59	0.37	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00
16:15	102	0.96	0.30	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00

Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103	0.00	3.18	0.00	0	0	0	0.886836	0	2.586605	0	0	0
8:00	103	0.00	5.62	0.00	0	0	0	1.182448	0	3.547344	0	0	0
8:15	103	0.00	5.47	0.00	0	0	0	1.47806	0	5.025404	0	0	0
8:30	103	0.00	5.32	0.00	0	0	0	1.847575	0	5.986143	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	103	0.00	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.00	0.00	0.00
15:45	103	0.00	2.14	0.00	0.00	0.00	2.66	0.00	4.29	0.00	0.00	0.00	0.00
16:00	103	0.00	0.59	0.00	0.00	0.00	0.37	0.00	2.36	0.00	0.00	0.00	0.00
16:15	103	0.00	0.96	0.00	0.00	0.00	0.30	0.00	0.44	0.00	0.00	0.00	0.00

Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104	0.00	3.18	0.00	0	2.586605	0	0	0	0	0	0	0
8:00	104	0.00	5.62	0.00	0	3.547344	0	0	0	0	0	0	0
8:15	104	0.00	5.47	0.00	0	5.025404	0	0	0	0	0	0	0
8:30	104	0.00	5.32	0.00	0	5.986143	0	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	104	0.00	3.25	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15:45	104	0.00	2.14	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16:00	104	0.00	0.59	0.00	0.00	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16:15	104	0.00	0.96	0.00	0.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

New Site Plan - BG Reassignment
Staff parking in north lot - add 29 spaces, staff trips shift from SCC to north lot (via Willowlake)
Assumed 1 staff trips per space in peak hour
Trips per Peak Hour 0
AM all in, PM all out
Use 15 min profile from SCC lot, modified for staff (all arrive by 8:30)
Use directional distribution from SCC lot

% of AM Trips	% of Hour	North on Lakewood	South on Lakewood	West on Willowlake	AM Trips	North on Lakewood	South on Lakewood	West on Willowlak
7:45	0.25	0.052155	0.1853448	0.0125		0	0	0
8:00	0.50	0.098762	0.3762376	0.025		0	0	0
8:15	0.25	0.091471	0.1360294	0.0225		0	0	0
8:30	0	0	0	0		0	0	0

% of PM Trips	% of Hour	th on Lakewood	th on Lakewood	st on Willowlake
15:30	0	0	0	0
15:45	0.25	0.080745	0.1542553	0.015
16:00	0.50	0.057568	0.4324324	0.01
16:15	0.25	0.0825	0.15	0.0175

Only applies for 1050 and 1200 scenarios																									
Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	0.00				0	0							15:30	101	0.00	0.00					0.00		0.00			
8:00	101	0.00				0	0							15:45	101	0.00	0.00					0.00		0.00			
8:15	101	0.00				0	0							16:00	101	0.00	0.00					0.00		0.00			
8:30	101	0.00				0	0							16:15	101	0.00	0.00					0.00		0.00			
Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	0.00	0.00				0							15:30	102		0.00			0.00							
8:00	102	0.00	0.00				0							15:45	102		0.00			0.00							
8:15	102	0.00	0.00				0							16:00	102		0.00			0.00							
8:30	102	0.00	0.00				0							16:15	102		0.00			0.00							
Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103													15:30	103					0.00		0.00		0.00			
8:00	103													15:45	103					0.00		0.00		0.00			
8:15	103													16:00	103					0.00		0.00		0.00			
8:30	103													16:15	103					0.00		0.00		0.00			
Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104													15:30	104												
8:00	104													15:45	104												
8:15	104													16:00	104												
8:30	104													16:15	104												

Remove north lot access on Lakewood, turns move to Willowlake (affects Willowlake NBL, SBR, EBL, EBR)

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101													15:30	101												
8:00	101													15:45	101												
8:15	101													16:00	101												
8:30	101													16:15	101												

NEW TRIPS TOTAL																											
Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	0.17	0.71	0.00	0	0.894226	0	0	0	0.214319	0	0	0	15:30	101	0.00	0.00	0.00	0.00	1.33	0.00	0.00	0.00	0.29	0.00	0.00	0.00
8:00	101	0.24	0.95	0.00	0	1.474365	0	0	0	0.37321	0	0	0	15:45	101	0.42	2.24	0.00	0.00	0.98	0.00	0.00	0.00	0.20	0.00	0.00	0.00
8:15	101	0.33	1.15	0.00	0	3.677413	0	0	0	0.904573	0	0	0	16:00	101	0.05	0.31	0.00	0.00	0.55	0.00	0.00	0.00	0.11	0.00	0.00	0.00
8:30	101	0.39	1.46	0.00	0	1.695335	0	0	0	0.447852	0	0	0	16:15	101	0.05	0.24	0.00	0.00	0.55	0.00	0.00	0.00	0.11	0.00	0.00	0.00
Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	3.18	0.89	0.00	0.00	0.00	1.11	0.00	0.00	0.00	0.00	0.00	0.00	15:30	102	3.25	0.00	0.00	0.00	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:00	102	5.62	1.18	0.00	0	0	1.847575	0	0	0	0	0	0	15:45	102	2.14	2.66	0.00	0	0	1.182448	0	0	0	0	0	0
8:15	102	5.47	1.48	0.00	0	0	4.581986	0	0	0	0	0	0	16:00	102	0.59	0.37	0.00	0	0	0.665127	0	0	0	0	0	0
8:30	102	5.32	1.85	0.00	0	0	2.143187	0	0	0	0	0	0	16:15	102	0.96	0.30	0.00	0	0	0.665127	0	0	0	0	0	0
Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103	0.00	3.18	0.00	0.00	0.00	0.00	0.89	0.00	2.59	0.00	0.00	0.00	15:30	103	0.00	3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.00	0.00	0.00
8:00	103	0.00	5.62	0.00	0	0	0	1.182448	0	3.547344	0	0	0	15:45	103	0.00	2.14	0.00	0	0	0	2.660508	0	4.286374	0	0	0
8:15	103	0.00	5.47	0.00	0	0	0	1.47806	0	5.025404	0	0	0	16:00	103	0.00	0.59	0.00	0	0	0	0.369515	0	2.364896	0	0	0
8:30	103	0.00	5.32	0.00	0	0	0	1.847575	0	5.986143	0	0	0	16:15	103	0.00	0.96	0.00	0	0	0	0.295612	0	0.443418	0	0	0
Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104	0.00	3.18	0.00	0.00	2.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15:30	104	0.00	3.25	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:00	104	0.00	5.62	0.00	0	3.547344	0	0	0	0	0	0	0	15:45	104	0.00	2.14	0.00	0	4.286374	0	0	0	0	0	0	0
8:15	104	0.00	5.47	0.00	0	5.025404	0	0	0	0	0	0	0	16:00	104	0.00	0.59	0.00	0	2.364896	0	0	0	0	0	0	0
8:30	104	0.00	5.32	0.00	0	5.986143	0	0	0	0	0	0	0	16:15	104	0.00	0.96	0.00	0	0.443418	0	0	0	0	0	0	0

HCM Analysis - 930 Students

Willowlake NB Queue

15 Min	15 Min NB	Jan '25 NB	New Trips	NB Total	v/c	Qavg	Q95
7:45	138.4615	130	0.89	130.8868	0.945294	16.33418	12.2455
8:00	138.4615	116	1.18	117.1824	0.846318	4.660612	8.965662
8:15	138.4615	50	1.48	51.47806	0.371786	0.220028	1.70834
8:30	138.4615	79	1.85	80.84758	0.583899	0.819364	3.727475

hw 6.5, calibrated so Qavg similar to worst case observed

15 Min	15 Min NB	Jan '25 NB	New Trips	NB Total	v/c	Qavg	Q95
15:30	138.4615	72	0.00	72	0.52	0.563333	2.982345
15:45	138.4615	113	2.66	115.6605	0.835326	4.237274	8.651875
16:00	138.4615	92	0.37	92.36952	0.667113	1.336911	4.949211
16:15	138.4615	79	0.30	79.29561	0.572691	0.767534	3.585987

hw 6.5, calibrated so Qavg similar to worst case observed

SCC Lot NBL Queue

15 Min	Jan '25 SB	New SB	SB Total	HCM Cap	Jan '25 NBL	New NBL	NBL Total	v/c	Qavg	Q95
7:45	69	1.11	70.108545	177.3922	43	3.18	46.18	0.260315	0.091612	1.039316
8:00	77	1.85	78.847575	172.1151	76	5.62	81.62	0.474198	0.427658	2.560661
8:15	134	4.58	138.58199	139.5473	74	5.47	79.47	0.569476	0.753274	3.548962
8:30	95	2.14	97.143187	161.5048	72	5.32	77.32	0.478754	0.439725	2.595403

hc = 5
hf = 4

15 Min	Jan '25 SB	New SB	SB Total	HCM Cap	Jan '25 NBL	New NBL	NBL Total	v/c	Qavg	Q95
15:30	134	1.63	135.6259	141.0226	44	3.25	47.25	0.335065	0.168841	1.465887
15:45	125	1.18	126.1824	145.8271	29	2.14	31.14	0.213562	0.057994	0.803413
16:00	160	0.67	160.6651	128.946	8	0.59	8.59	0.066627	0.004756	0.213391
16:15	138	0.67	138.6651	139.506	13	0.96	13.96	0.100073	0.011128	0.331848

hc = 5
hf = 4

SB at Beaverhill

15 Min	5 Min SB Cc	Jan '25 SB	New Trips	SB Total	v/c	Qavg	Q95
7:45	187.5	81	2.59	83.58661	0.445795	0.358592	2.310421
8:00	187.5	108	3.55	111.5473	0.594919	0.873724	3.987288
8:15	187.5	142	5.03	147.0254	0.784135	2.8484	7.85147
8:30	187.5	155	5.99	160.9861	0.858593	5.213181	10.26579

hw = 4.8, critical from PM

15 Min	5 Min SB Cc	Jan '25 SB	New Trips	SB Total	v/c	Qavg	Q95
15:30	187.5	122	0.89	122.8868	0.655396	1.246489	4.947872
15:45	187.5	138	4.29	142.2864	0.758861	2.388119	7.1681
16:00	187.5	181	2.36	183.3649	0.977946	43.36553	15.58296
16:15	187.5	158	0.44	158.4434	0.845032	4.607895	9.777948

hw = 4.8, calibrated so Qavg is significant, set to give v/c <1 vs counts

SCC Lot Exit EB

	15 Min	'25 Conflic	ew Conflicti	otal Conflicti	HCM Cap	Jan '25 EBL	New EBL	EBL Total	v/c	Qavg	Q95
EBL	7:45	221	3.18	224.17783	60.62659	12	0.89	12.88684	0.212561	0.057379	0.784064
	8:00	230	5.62	235.61663	56.58016	16	1.18	17.18245	0.303683	0.132445	1.231407
	8:15	178	5.47	183.46882	77.39261	20	1.48	21.47806	0.277521	0.106602	1.108423
	8:30	194	5.32	199.32102	70.39535	25	1.85	26.84758	0.381383	0.235126	1.714521
EBR	7:45	54	0.00	54	174.4611	35	2.59	37.58661	0.215444	0.059162	0.814134
	8:00	52	0.00	52	176.1277	48	3.55	51.54734	0.29267	0.121098	1.217507
	8:15	72	0.00	72	160.1062	68	5.03	73.0254	0.456106	0.382488	2.385125
	8:30	66	0.00	66	164.7646	81	5.99	86.98614	0.527942	0.590442	3.106932

	15 Min	'25 Conflic	ew Conflicti	otal Conflicti	HCM Cap	Jan '25 EBL	New EBL	EBL Total	v/c	Qavg	Q95
EBL	15:30	237	3.25	240.2517	55.01525	0	0.00	0	0	0	0
	15:45	218	2.14	220.1432	62.11879	36	2.66	38.66051	0.622364	1.02569	3.747086
	16:00	242	0.59	242.5912	54.24121	5	0.37	5.369515	0.098993	0.010876	0.325279
	16:15	216	0.96	216.9607	63.32054	4	0.30	4.295612	0.067839	0.004937	0.216737
EBR	15:30	112	0.00	112	132.0434	12	0.89	12.88684	0.097595	0.010555	0.322703
	15:45	109	0.00	109	133.9778	58	4.29	62.28637	0.464901	0.403911	2.440305
	16:00	151	0.00	151	109.1516	32	2.36	34.3649	0.314836	0.144669	1.331131
	16:15	129	0.00	129	121.5641	6	0.44	6.443418	0.053004	0.002967	0.167426

Willowlake EB at Lakewood

	15 Min	15 Min EB I	Jan '25 EBL	New Trips	EBL Total	v/c	Qavg	Q95
EBL	7:45	100	14	0	14	0.14	0.022791	0.482948
	8:00	100	10	0	10	0.1	0.011111	0.3309
	8:15	100	23	0	23	0.23	0.068701	0.876165
	8:30	100	19	0	19	0.19	0.044568	0.691884

hw 9, calibrate

	15 Min	15 Min EB I	Jan '25 EBL	New Trips	EBL Total	v/c	Qavg	Q95
EBL	15:30	100	9	0.00	9	0.09	0.008901	0.294793
	15:45	100	16	0.00	16	0.16	0.030476	0.563859
	16:00	100	22	0.00	22	0.22	0.062051	0.828551
	16:15	100	10	0.00	10	0.1	0.011111	0.3309

hw 9, calibrate

	15 Min	15 Min EB I	Jan '25 EBR	New Trips	EBR Total	v/c	Qavg	Q95
EBR	7:45	100	12	0.2143187	12.21432	0.122143	0.016995	0.413518
	8:00	100	19	0.3732102	19.37321	0.193732	0.04655	0.708398
	8:15	100	31	0.9045727	31.90457	0.319046	0.149482	1.351903
	8:30	100	19	0.4478522	19.44785	0.194479	0.046953	0.711719

hw 9, calibrate

	15 Min	15 Min EB I	Jan '25 EBR	New Trips	EBR Total	v/c	Qavg	Q95
EBR	15:30	100	31	0.29	31.29266	0.312927	0.142522	1.315938
	15:45	100	49	0.20	49.19954	0.491995	0.476491	2.632602
	16:00	100	39	0.11	39.11307	0.391131	0.251258	1.818536
	16:15	100	46	0.11	46.11381	0.461138	0.394625	2.360487

hw 9, calibrate

Traffic Volume Changes - 1050 Students

Trip Generation Rates

Source	AM	AM % In	AM In	AM Out	PM	PM % In	PM In	PM Out
ITE Trip Gen Rates (#525)	0.80947	0.56491	0.4572748	0.352194	0.34988	0.49505	0.17321	0.17667

Trip Gen Net Increase vs Jan '25	Enrollment	AM	AM In	AM Out	PM	PM In	PM Out
1050 Students Total	184	148.942	84.138568	64.803695	64.3788	31.8707	32.5081

Convert to Peak 15 Vols (% from counts)	% AM In	% AM Out	AM In	AM Out	% PM In	% PM Out	PM In	PM Out
7:45	0.14646	0.1541	12.323326	9.9861432				
8:00	0.25505	0.20984	21.459584	13.598152				
8:15	0.34343	0.28852	28.896074	18.69746				
8:30	0.25505	0.34754	21.459584	22.52194				
15:30					0.44	0.07843	14.0231	2.54965
15:45					0.3	0.61438	9.5612	19.9723
16:00					0.11333	0.24183	3.61201	7.86143
16:15					0.14667	0.06536	4.67436	2.12471

	N on Lakewood				S on Lakewood				W on Willowlake			
Trip Distribution % (from counts)	AM In	AM Out	PM In	PM Out	AM In	AM Out	PM In	PM Out	AM In	AM Out	PM In	PM Out
7:45	0.21	0.21			0.74138	0.74468			0.05	0.05		
8:00	0.20	0.20			0.75248	0.75			0.05	0.05		
8:15	0.37	0.18			0.54412	0.77273			0.09	0.05		
8:30	0.23	0.19			0.71287	0.76415			0.06	0.05		
15:30			0.27	0.00			0.66667	1			0.06	0.00
15:45			0.30	0.32			0.64444	0.61702			0.06	0.06
16:00			0.44	0.12			0.47059	0.86486			0.09	0.02
16:15			0.34	0.33			0.59091	0.6			0.07	0.07

Notes: W on Willowlake estimated using ratio of NBT to NBL at Lakewood & Willowlake

	North on L	North on L	North on Lak	North on Lak	South on L	South on L	South on L	South on L	West on W	West on W	West on W	West on Willowlake
Trip Distribution % (from counts)	AM In	AM Out	PM In	PM Out	AM In	AM Out	PM In	PM Out	AM In	AM Out	PM In	PM Out
7:45	2.57	2.05			9.13626	7.43649			0.61617	0.49931		
8:00	4.24	2.72			16.1478	10.1986			1.07298	0.67991		
8:15	10.57	3.31			15.7229	14.448			2.60065	0.93487		
8:30	4.87	4.19			15.2979	17.2102			1.28758	1.1261		
15:30			3.83	0.00			9.34873	2.54965			0.84139	0.00
15:45			2.83	6.45			6.16166	12.3233			0.57367	1.19834
16:00			1.59	0.91			1.69977	6.79908			0.33	0.15723
16:15			1.59	0.70			2.76212	1.27483			0.32721	0.14873

Route Assignment (all new via SCC lot)			AM In	AM In	AM In	AM In	PM In	PM In	PM In	PM In			AM Out	AM Out	AM Out	AM Out	PM Out	PM Out	PM Out	PM Out
Direction	Int In	Move In	7:45	8:00	8:15	8:30	15:30	15:45	16:00	16:15	Int Out	Move Out	7:45	8:00	8:15	8:30	15:30	15:45	16:00	16:15
North on Lakewood	101	SBT	2.57	4.24	10.57	4.87	3.83	2.83	1.59	1.59	103	EBL	2.05	2.72	3.31	4.19	0.00	6.45	0.91	0.70
North on Lakewood	102	SBR	2.57	4.24	10.57	4.87	3.83	2.83	1.59	1.59	102	NBT	2.05	2.72	3.31	4.19	0.00	6.45	0.91	0.70
North on Lakewood			2.57	4.24	10.57	4.87	3.83	2.83	1.59	1.59	101	NBT	2.05	2.72	3.31	4.19	0.00	6.45	0.91	0.70
South on Lakewood	104	NBT	9.14	16.15	15.72	15.30	9.35	6.16	1.70	2.76	103	EBR	7.44	10.20	14.45	17.21	2.55	12.32	6.80	1.27
South on Lakewood	103	NBT	9.14	16.15	15.72	15.30	9.35	6.16	1.70	2.76	104	SBT	7.44	10.20	14.45	17.21	2.55	12.32	6.80	1.27
South on Lakewood	102	NBL	9.14	16.15	15.72	15.30	9.35	6.16	1.70	2.76			7.44	10.20	14.45	17.21	2.55	12.32	6.80	1.27
West on Willowlake	101	EBR	0.62	1.07	2.60	1.29	0.84	0.57	0.33	0.33	103	EBL	0.50	0.68	0.93	1.13	0.00	1.20	0.16	0.15
West on Willowlake	102	SBR	0.62	1.07	2.60	1.29	0.84	0.57	0.33	0.33	102	NBT	0.50	0.68	0.93	1.13	0.00	1.20	0.16	0.15
West on Willowlake			0.62	1.07	2.60	1.29	0.84	0.57	0.33	0.33	101	NBL	0.50	0.68	0.93	1.13	0.00	1.20	0.16	0.15

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	0.50	2.05	0.00	0	2.3709	0	0	0	0.61617	0	0	0
8:00	101	0.68	2.72	0.00	0	4.2388	0	0	0	1.07298	0	0	0
8:15	101	0.93	3.31	0.00	0	10.5726	0	0	0	2.60065	0	0	0
8:30	101	1.13	4.19	0.00	0	4.87409	0	0	0	1.28758	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101	0.00	0.00	0.00	0.00	3.83	0.00	1.00	0.00	4.84	0.00	0.00	0.00
15:45	101	1.20	6.45	0.00	0.00	2.83	0.00	0.00	0.00	0.57	0.00	0.00	0.00
16:00	101	0.16	0.91	0.00	0.00	1.59	0.00	0.00	0.00	0.33	0.00	0.00	0.00
16:15	101	0.15	0.70	0.00	0.00	1.59	0.00	0.00	0.00	0.33	0.00	0.00	0.00

Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	9.14	2.55	0.00	0	0	3.18707	0	0	0	0	0	0
8:00	102	16.15	3.40	0.00	0	0	5.31178	0	0	0	0	0	0
8:15	102	15.72	4.25	0.00	0	0	13.1732	0	0	0	0	0	0
8:30	102	15.30	5.31	0.00	0	0	6.16166	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	102	9.35	0.00	0.00	0.00	0.00	4.67	0.00	0.00	0.00	0.00	0.00	0.00
15:45	102	6.16	7.65	0.00	0.00	0.00	3.40	0.00	0.00	0.00	0.00	0.00	0.00
16:00	102	1.70	1.06	0.00	0.00	0.00	1.91	0.00	0.00	0.00	0.00	0.00	0.00
16:15	102	2.76	0.85	0.00	0.00	0.00	1.91	0.00	0.00	0.00	0.00	0.00	0.00

Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103	0.00	9.14	0.00	0	0	0	2.54965	0	7.43649	0	0	0
8:00	103	0.00	16.15	0.00	0	0	0	3.39954	0	10.1986	0	0	0
8:15	103	0.00	15.72	0.00	0	0	0	4.24942	0	14.448	0	0	0
8:30	103	0.00	15.30	0.00	0	0	0	5.31178	0	17.2102	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	103	0.00	9.35	0.00	0.00	0.00	0.00	0.00	0.00	2.55	0.00	0.00	0.00
15:45	103	0.00	6.16	0.00	0.00	0.00	0.00	7.65	0.00	12.32	0.00	0.00	0.00
16:00	103	0.00	1.70	0.00	0.00	0.00	0.00	1.06	0.00	6.80	0.00	0.00	0.00
16:15	103	0.00	2.76	0.00	0.00	0.00	0.00	0.85	0.00	1.27	0.00	0.00	0.00

Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104	0.00	9.14	0.00	0	7.43649	0	0	0	0	0	0	0
8:00	104	0.00	16.15	0.00	0	10.1986	0	0	0	0	0	0	0
8:15	104	0.00	15.72	0.00	0	14.448	0	0	0	0	0	0	0
8:30	104	0.00	15.30	0.00	0	17.2102	0	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	104	0.00	9.35	0.00	0.00	2.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15:45	104	0.00	6.16	0.00	0.00	12.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16:00	104	0.00	1.70	0.00	0.00	6.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16:15	104	0.00	2.76	0.00	0.00	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00

New Site Plan - BG Reassignment
Staff parking in north lot - add 29 spaces, staff trips shift from SCC to north lot (via Willowlake)
Assumed 1 staff trips per space in peak hour
Trips per Peak Hour 29
AM all in, PM all out
Use 15 min profile from SCC lot, modified for staff (all arrive by 8:30)
Use directional distribution from SCC lot

% of AM Trips	% of Hour	North on Lakewood	South on Lakewood	West on Willowlake	AM Trips	North on Lakewood	South on Lakewood	West on Willowlak
7:45	0.25	0.05216	0.1853448	0.0125		1.5125	5.375	0.3625
8:00	0.50	0.09876	0.3762376	0.025		2.86411	10.9109	0.725
8:15	0.25	0.09147	0.1360294	0.0225		2.65265	3.94485	0.6525
8:30	0	0	0	0		0	0	0

% of PM Trips	% of Hour	th on Lakew	ath on Lakew	st on Willowlake
15:30	0	0	0	0
15:45	0.25	0.08074	0.1542553	0.015
16:00	0.50	0.05757	0.4324324	0.01
16:15	0.25	0.0825	0.15	0.0175

						0	0	0					
						2.3416	4.4734	0.435					
						1.66946	12.5405	0.29					
						2.3925	4.35	0.5075					

Only applies for 1050 and 1200 scenarios

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	5.38				-1.5125	1.5125						
8:00	101	10.91				-2.86411	2.86411						
8:15	101	3.94				-2.65265	2.65265						
8:30	101	0.00				0	0						

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101	0.00	0.00					0.00		0.00			
15:45	101	-0.44	-2.34					2.34		4.47			
16:00	101	-0.29	-1.67					1.67		12.54			
16:15	101	-0.51	-2.39					2.39		4.35			

Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	-5.38	5.38				-1.5125						
8:00	102	-10.91	10.91				-2.86411						
8:15	102	-3.94	3.94				-2.65265						
8:30	102	0.00	0.00				0						

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	102		0.00			0.00							
15:45	102		-2.78			4.47							
16:00	102		-1.96			12.54							
16:15	102		-2.90			4.35							

Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103												
8:00	103												
8:15	103												
8:30	103												

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	103					0.00		0.00		0.00			
15:45	103					4.47		-2.78		-4.47			
16:00	103					12.54		-1.96		-12.54			
16:15	103					4.35		-2.90		-4.35			

Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104												
8:00	104												
8:15	104												
8:30	104												

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	104												
15:45	104												
16:00	104												
16:15	104												

Remove north lot access on Lakewood, turns move to Willowlake (affects Willowlake NBL, SBR, EBL, EBR)

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	4.00											
8:00	101	4.00											
8:15	101	4.00											
8:30	101	4.00											

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101							1.00		4.00			
15:45	101							1.00		4.00			
16:00	101							1.00		4.00			
16:15	101							1.00		4.00			

NEW TRIPS TOTAL

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	9.87	2.05	0.00	0	1.0684	1.5125	0	0	0.61617	0	0	0
8:00	101	15.59	2.72	0.00	0	1.37469	2.86411	0	0	1.07298	0	0	0
8:15	101	8.88	3.31	0.00	0	7.91992	2.65265	0	0	2.60065	0	0	0
8:30	101	5.13	4.19	0.00	0	4.87409	0	0	0	1.28758	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101	0.00	0.00	0.00	0.00	3.83	0.00	1.00	0.00	4.84	0.00	0.00	0.00
15:45	101	0.76	4.11	0.00	0.00	2.83	0.00	3.34	0.00	9.05	0.00	0.00	0.00
16:00	101	-0.13	-0.76	0.00	0.00	1.59	0.00	2.67	0.00	16.87	0.00	0.00	0.00
16:15	101	-0.36	-1.69	0.00	0.00	1.59	0.00	3.39	0.00	8.68	0.00	0.00	0.00

Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	3.76	7.92	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00
8:00	102	5.24	14.31	0.00	0	0	2.44767	0	0	0	0	0	0
8:15	102	11.78	8.19	0.00	0	0	10.5206	0	0	0	0	0	0
8:30	102	15.30	5.31	0.00	0	0	6.16166	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	102	9.35	0.00	0.00	0.00	0.00	4.67	0.00	0.00	0.00	0.00	0.00	0.00
15:45	102	6.16	4.87	0.00	0	4.4734	3.39954	0	0	0	0	0	0
16:00	102	1.70	-0.90	0.00	0	12.5405	1.91224	0	0	0	0	0	0
16:15	102	2.76	-2.05	0.00	0	4.35	1.91224	0	0	0	0	0	0

Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103	0.00	9.14	0.00	0.00	0.00	2.55	0.00	7.44	0.00	0.00	0.00	0.00
8:00	103	0.00	16.15	0.00	0	0	3.39954	0	10.1986	0	0	0	0
8:15	103	0.00	15.72	0.00	0	0	4.24942	0	14.448	0	0	0	0
8:30	103	0.00	15.30	0.00	0	0	5.31178	0	17.2102	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	103	0.00	9.35	0.00	0.00	0.00	0.00	0.00	0.00	2.55	0.00	0.00	0.00
15:45	103	0.00	6.16	0.00	0	4.4734	0	4.87236	0	7.84992	0	0	0
16:00	103	0.00	1.70	0.00	0	12.54	0	-0.8971	0	-5.74146	0	0	0
16:15	103	0.00	2.76	0.00	0	4.35	0	-2.05012	0	-3.07517	0	0	0

Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104	0.00	9.14	0.00	0.00	7.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:00	104	0.00	16.15	0.00	0	10.1986	0	0	0	0	0	0	0
8:15	104	0.00	15.72	0.00	0	14.448	0	0	0	0	0	0	0
8:30	104	0.00	15.30	0.00	0	17.2102	0	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	104	0.00	9.35	0.00	0.00	2.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15:45	104	0.00	6.16	0.00	0	12.3233	0	0	0	0	0	0	0
16:00	104	0.00	1.70	0.00	0	6.79908	0	0	0	0	0	0	0
16:15	104	0.00	2.76	0.00	0	1.27483	0	0	0	0	0	0	0

HCM Analysis - 1050 Students

Willowlake NB Queue

15 Min	15 Min NB	Jan '25 NB	New Trips	NB Total	v/c	Qavg	Q95
7:45	138.462	130	11.92	141.925	1.02501	-42.0068	15.4821
8:00	138.462	116	18.31	134.31	0.97002	31.3853	13.194
8:15	138.462	50	12.19	62.1943	0.44918	0.3663	2.30688
8:30	138.462	79	9.31	88.3118	0.63781	1.12315	4.48182

hw 6.5, calibrated so Qavg similar to worst case observed

15 Min	15 Min NB	Jan '25 NB	New Trips	NB Total	v/c	Qavg	Q95
15:30	138.462	72	0.00	72	0.52	0.56333	2.98234
15:45	138.462	113	4.87	117.872	0.8513	4.87367	9.11115
16:00	138.462	92	-0.90	91.1029	0.65797	1.26572	4.79861
16:15	138.462	79	-2.05	76.9499	0.55575	0.69523	3.38122

hw 6.5, calibrated so Qavg similar to worst case observed

SCC Lot NBL Queue

15 Min	Jan '25 SB	New SB	SB Total	HCM Cap	Jan '25 NBL	New NBL	NBL Total	v/c	Qavg	Q95
7:45	69	1.67	70.674567	177.046	43	3.76	46.76	0.26412	0.0948	1.05951
8:00	77	2.45	79.447669	171.758	76	5.24	81.24	0.47297	0.42446	2.54878
8:15	134	10.52	144.52056	136.624	74	11.78	85.78	0.62784	1.05917	4.3252
8:30	95	6.16	101.16166	159.252	72	15.30	87.30	0.54818	0.66507	3.33129

hc = 5
hf = 4

15 Min	Jan '25 SB	New SB	SB Total	HCM Cap	Jan '25 NBL	New NBL	NBL Total	v/c	Qavg	Q95
15:30	134	4.67	138.674	139.501	44	9.35	53.35	0.38242	0.23681	1.78383
15:45	125	7.87	132.873	142.409	29	6.16	35.16	0.24691	0.08095	0.96616
16:00	160	14.45	174.453	122.691	8	1.70	9.70	0.07906	0.00679	0.25637
16:15	138	6.26	144.262	136.75	13	2.76	15.76	0.11526	0.01502	0.38834

hc = 5
hf = 4

SB at Beaverhill

15 Min	5 Min SB C.	Jan '25 SB	New Trips	SB Total	v/c	Qavg	Q95
7:45	187.5	81	7.44	88.4365	0.47166	0.42106	2.54719
8:00	187.5	108	10.20	118.199	0.63039	1.07518	4.52564
8:15	187.5	142	14.45	156.448	0.83439	4.20388	9.41071
8:30	187.5	155	17.21	172.21	0.91845	10.3446	12.698

hw = 4.8, critical from PM

15 Min	5 Min SB C.	Jan '25 SB	New Trips	SB Total	v/c	Qavg	Q95
15:30	187.5	122	2.55	124.55	0.66426	1.31427	5.10698
15:45	187.5	138	12.32	150.323	0.80172	3.24176	8.36558
16:00	187.5	181	6.80	187.799	1.0016	-628.932	16.8588
16:15	187.5	158	1.27	159.275	0.84947	4.79354	9.93498

hw = 4.8, calibrated so Qavg is significant, set to give v/c < 1 vs counts

SCC Lot Exit EB

EBL	15 Min	'25 Conflic	ew Conflicti	otal Conflicti	HCM Cap	Jan '25 EBL	New EBL	EBL Total	v/c	Qavg	Q95
	7:45	221	9.14	230.13626	58.4855	12	2.55	14.5497	0.24877	0.08238	0.9522
	8:00	230	16.15	246.14781	53.0844	16	3.40	19.3995	0.36545	0.21047	1.57959
	8:15	178	15.72	193.72286	72.7944	20	4.25	24.2494	0.33312	0.1664	1.41597
	8:30	194	15.30	209.29792	66.3061	25	5.31	30.3118	0.45715	0.38498	2.24607

EBR	15 Min	'25 Conflic	ew Conflicti	otal Conflicti	HCM Cap	Jan '25 EBR	New EBR	EBR Total	v/c	Qavg	Q95
	7:45	54	0.00	54	174.461	35	7.44	42.4365	0.24324	0.07819	0.9506
	8:00	52	0.00	52	176.128	48	10.20	58.1986	0.33043	0.16307	1.4451
	8:15	72	0.00	72	160.106	68	14.45	82.448	0.51496	0.54672	2.95947
	8:30	66	0.00	66	164.765	81	17.21	98.2102	0.59606	0.87957	3.9565

EBL	15 Min	'25 Conflic	ew Conflicti	otal Conflict	HCM Cap	Jan '25 EBL	New EBL	EBL Total	v/c	Qavg	Q95
	15:30	237	9.35	246.349	53.0198	0	0.00	0	0	0	0
	15:45	218	10.64	228.635	59.018	36	4.87	40.8724	0.69254	1.55992	4.51277
	16:00	242	14.24	256.24	49.9291	5	-0.90	4.1029	0.08217	0.00736	0.26552
	16:15	216	7.11	223.112	61.0174	4	-2.05	1.94988	0.03196	0.00105	0.0987

EBR	15 Min	'25 Conflic	ew Conflicti	otal Conflicti	HCM Cap	Jan '25 EBR	New EBR	EBR Total	v/c	Qavg	Q95
	15:30	112	0.00	112	132.043	12	2.55	14.5497	0.11019	0.01365	0.36918
	15:45	109	4.47	113.473	131.103	58	7.85	65.8499	0.50228	0.50687	2.78903
	16:00	151	12.54	163.541	102.616	32	-5.74	26.2585	0.25589	0.088	1.0052
	16:15	129	4.35	133.35	119.01	6	-3.08	2.92483	0.02458	0.00062	0.07549

Willowlake EB at Lakewood

EBL	15 Min	15 Min EB	Jan '25 EBL	New Trips	EBL Total	v/c	Qavg	Q95
	7:45	100	14	0	14	0.14	0.02279	0.48295
	8:00	100	10	0	10	0.1	0.01111	0.3309
	8:15	100	23	0	23	0.23	0.0687	0.87616
	8:30	100	19	0	19	0.19	0.04457	0.69188

hw 9, calibrate

EBR	15 Min	15 Min EB	Jan '25 EBR	New Trips	EBR Total	v/c	Qavg	Q95
	7:45	100	12	0.6161663	12.6162	0.12616	0.01821	0.42892
	8:00	100	19	1.0729792	20.073	0.20073	0.05041	0.73973
	8:15	100	31	2.6006467	33.6006	0.33601	0.17003	1.4544
	8:30	100	19	1.2875751	20.2876	0.20288	0.05163	0.74944

hw 9, calibrate

EBL	15 Min	15 Min EB	Jan '25 EBL	New Trips	EBL Total	v/c	Qavg	Q95
	15:30	100	9	1.00	10	0.1	0.01111	0.3309
	15:45	100	16	3.34	19.3416	0.19342	0.04638	0.707
	16:00	100	22	2.67	24.6695	0.24669	0.08079	0.95808
	16:15	100	10	3.39	13.3925	0.13393	0.02071	0.45904

hw 9, calibrate

EBR	15 Min	15 Min EB	Jan '25 EBR	New Trips	EBR Total	v/c	Qavg	Q95
	15:30	100	31	4.84	35.8414	0.35841	0.20022	1.59646
	15:45	100	49	9.05	58.0471	0.58047	0.80315	3.55006
	16:00	100	39	16.87	55.8656	0.55866	0.70715	3.30302
	16:15	100	46	8.68	54.6772	0.54677	0.65962	3.17449

hw 9, calibrate

Traffic Volume Changes - 1200 Students

Trip Generation Rates

Source	AM	AM % In	AM In	AM Out	PM	PM % In	PM In	PM Out
ITE Trip Gen Rates (#525)	0.80947	0.56491	0.4572748	0.352194	0.34988	0.49505	0.17321	0.17667

Trip Gen Net Increase vs Jan '25	Enrollment	AM	AM In	AM Out	PM	PM In	PM Out
1200 Students Total	334	270.363	152.72979	117.63279	116.861	57.8522	59.0092

Convert to Peak 15 Vols (% from counts)	% AM In	% AM Out	AM In	AM Out	% PM In	% PM Out	PM In	PM Out
7:45	0.14646	0.1541	22.369515	18.127021				
8:00	0.25505	0.20984	38.953811	24.683603				
8:15	0.34343	0.28852	52.452656	33.939954				
8:30	0.25505	0.34754	38.953811	40.882217				
15:30					0.44	0.07843	25.455	4.62818
15:45					0.3	0.61438	17.3557	36.254
16:00					0.11333	0.24183	6.55658	14.2702
16:15					0.14667	0.06536	8.48499	3.85681

	N on Lakewood				S on Lakewood				W on Willowlake			
Trip Distribution % (from counts)	AM In	AM Out	PM In	PM Out	AM In	AM Out	PM In	PM Out	AM In	AM Out	PM In	PM Out
7:45	0.21	0.21			0.74138	0.74468			0.05	0.05		
8:00	0.20	0.20			0.75248	0.75			0.05	0.05		
8:15	0.37	0.18			0.54412	0.77273			0.09	0.05		
8:30	0.23	0.19			0.71287	0.76415			0.06	0.05		
15:30			0.27	0.00			0.66667	1			0.06	0.00
15:45			0.30	0.32			0.64444	0.61702			0.06	0.06
16:00			0.44	0.12			0.47059	0.86486			0.09	0.02
16:15			0.34	0.33			0.59091	0.6			0.07	0.07

Notes: W on Willowlake estimated using ratio of NBT to NBL at Lakewood & Willowlake

	North on L	North on L	North on Lak	North on Lak	South on L	South on L	South on L	South on L	West on W	West on W	West on W	West on Willowlake
Trip Distribution % (from counts)	AM In	AM Out	PM In	PM Out	AM In	AM Out	PM In	PM Out	AM In	AM Out	PM In	PM Out
7:45	4.67	3.72			16.5843	13.4988			1.11848	0.90635		
8:00	7.69	4.94			29.3118	18.5127			1.94769	1.23418		
8:15	19.19	6.02			28.5404	26.2263			4.72074	1.697		
8:30	8.85	7.60			27.7691	31.2402			2.33723	2.04411		
15:30			6.96	0.00			16.97	4.62818			1.5273	0.00
15:45			5.13	11.71			11.1848	22.3695			1.04134	2.17524
16:00			2.88	1.64			3.08545	12.3418			0.59	0.2854
16:15			2.88	1.27			5.01386	2.31409			0.59395	0.26998

Route Assignment (all new via SCC lot)			AM In	AM In	AM In	AM In	PM In	PM In	PM In	PM In			AM Out	AM Out	AM Out	AM Out	PM Out	PM Out	PM Out	PM Out
Direction	Int In	Move In	7:45	8:00	8:15	8:30	15:30	15:45	16:00	16:15	Int Out	Move Out	7:45	8:00	8:15	8:30	15:30	15:45	16:00	16:15
North on Lakewood	101	SBT	4.67	7.69	19.19	8.85	6.96	5.13	2.88	2.88	103	EBL	3.72	4.94	6.02	7.60	0.00	11.71	1.64	1.27
North on Lakewood	102	SBR	4.67	7.69	19.19	8.85	6.96	5.13	2.88	2.88	102	NBT	3.72	4.94	6.02	7.60	0.00	11.71	1.64	1.27
North on Lakewood			4.67	7.69	19.19	8.85	6.96	5.13	2.88	2.88	101	NBT	3.72	4.94	6.02	7.60	0.00	11.71	1.64	1.27
South on Lakewood	104	NBT	16.58	29.31	28.54	27.77	16.97	11.18	3.09	5.01	103	EBR	13.50	18.51	26.23	31.24	4.63	22.37	12.34	2.31
South on Lakewood	103	NBT	16.58	29.31	28.54	27.77	16.97	11.18	3.09	5.01	104	SBT	13.50	18.51	26.23	31.24	4.63	22.37	12.34	2.31
South on Lakewood	102	NBL	16.58	29.31	28.54	27.77	16.97	11.18	3.09	5.01			13.50	18.51	26.23	31.24	4.63	22.37	12.34	2.31
West on Willowlake	101	EBR	1.12	1.95	4.72	2.34	1.53	1.04	0.59	0.59	103	EBL	0.91	1.23	1.70	2.04	0.00	2.18	0.29	0.27
West on Willowlake	102	SBR	1.12	1.95	4.72	2.34	1.53	1.04	0.59	0.59	102	NBT	0.91	1.23	1.70	2.04	0.00	2.18	0.29	0.27
West on Willowlake			1.12	1.95	4.72	2.34	1.53	1.04	0.59	0.59	101	NBL	0.91	1.23	1.70	2.04	0.00	2.18	0.29	0.27

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	0.91	3.72	0.00	0	4.66674	0	0	0	1.11848	0	0	0
8:00	101	1.23	4.94	0.00	0	7.69434	0	0	0	1.94769	0	0	0
8:15	101	1.70	6.02	0.00	0	19.1915	0	0	0	4.72074	0	0	0
8:30	101	2.04	7.60	0.00	0	8.84753	0	0	0	2.33723	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101	0.00	0.00	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15:45	101	2.18	11.71	0.00	0.00	5.13	0.00	0.00	0.00	1.04	0.00	0.00	0.00
16:00	101	0.29	1.64	0.00	0.00	2.88	0.00	0.00	0.00	0.59	0.00	0.00	0.00
16:15	101	0.27	1.27	0.00	0.00	2.88	0.00	0.00	0.00	0.59	0.00	0.00	0.00

Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	16.58	4.63	0.00	0	0	5.78522	0	0	0	0	0	0
8:00	102	29.31	6.17	0.00	0	0	9.64203	0	0	0	0	0	0
8:15	102	28.54	7.71	0.00	0	0	23.9122	0	0	0	0	0	0
8:30	102	27.77	9.64	0.00	0	0	11.1848	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	102	16.97	0.00	0.00	0.00	0.00	8.48	0.00	0.00	0.00	0.00	0.00	0.00
15:45	102	11.18	13.88	0.00	0.00	0.00	6.17	0.00	0.00	0.00	0.00	0.00	0.00
16:00	102	3.09	1.93	0.00	0.00	0.00	3.47	0.00	0.00	0.00	0.00	0.00	0.00
16:15	102	5.01	1.54	0.00	0.00	0.00	3.47	0.00	0.00	0.00	0.00	0.00	0.00

Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103	0.00	16.58	0.00	0	0	0	4.62818	0	13.4988	0	0	0
8:00	103	0.00	29.31	0.00	0	0	0	6.1709	0	18.5127	0	0	0
8:15	103	0.00	28.54	0.00	0	0	0	7.71363	0	26.2263	0	0	0
8:30	103	0.00	27.77	0.00	0	0	0	9.64203	0	31.2402	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	103	0.00	16.97	0.00	0.00	0.00	4.63	0.00	0.00	0.00	0.00	0.00	0.00
15:45	103	0.00	11.18	0.00	0.00	0.00	13.88	0.00	0.00	0.00	0.00	0.00	0.00
16:00	103	0.00	3.09	0.00	0.00	0.00	1.93	0.00	0.00	12.34	0.00	0.00	0.00
16:15	103	0.00	5.01	0.00	0.00	0.00	1.54	0.00	0.00	2.31	0.00	0.00	0.00

Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104	0.00	16.58	0.00	0	13.4988	0	0	0	0	0	0	0
8:00	104	0.00	29.31	0.00	0	18.5127	0	0	0	0	0	0	0
8:15	104	0.00	28.54	0.00	0	26.2263	0	0	0	0	0	0	0
8:30	104	0.00	27.77	0.00	0	31.2402	0	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	104	0.00	16.97	0.00	0.00	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15:45	104	0.00	11.18	0.00	0.00	22.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16:00	104	0.00	3.09	0.00	0.00	12.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16:15	104	0.00	5.01	0.00	0.00	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00

New Site Plan - BG Reassignment
Staff parking in north lot - add 29 spaces, staff trips shift from SCC to north lot (via Willowlake)
Assumed 1 staff trips per space in peak hour
Trips per Peak Hour 29
AM all in, PM all out
Use 15 min profile from SCC lot, modified for staff (all arrive by 8:30)

Use directional distribution from SCC lot		North on	South on	West on		North on	South on	West on
% of AM Trips	% of Hour	Lakewood	Lakewood	Willowlake	AM Trips	Lakewood	Lakewood	Willowlak
7:45	0.25	0.05216	0.1853448	0.0125		1.5125	5.375	0.3625
8:00	0.50	0.09876	0.3762376	0.025		2.86411	10.9109	0.725
8:15	0.25	0.09147	0.1360294	0.0225		2.65265	3.94485	0.6525
8:30	0	0	0	0		0	0	0
% of PM Trips	% of Hour	th on Lakev	ath on Lakew	st on Willowlake				
15:30	0	0	0	0		0	0	0
15:45	0.25	0.08074	0.1542553	0.015		2.3416	4.4734	0.435
16:00	0.50	0.05757	0.4324324	0.01		1.66946	12.5405	0.29
16:15	0.25	0.0825	0.15	0.0175		2.3925	4.35	0.5075

Only applies for 1050 and 1200 scenarios

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	5.38				-1.5125	1.5125						
8:00	101	10.91				-2.86411	2.86411						
8:15	101	3.94				-2.65265	2.65265						
8:30	101	0.00				0	0						

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101	0.00	0.00				0.00			0.00			
15:45	101	-0.44	-2.34				2.34			4.47			
16:00	101	-0.29	-1.67				1.67			12.54			
16:15	101	-0.51	-2.39				2.39			4.35			

Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	-5.38	5.38				-1.5125						
8:00	102	-10.91	10.91				-2.86411						
8:15	102	-3.94	3.94				-2.65265						
8:30	102	0.00	0.00				0						

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	102		0.00			0.00							
15:45	102		-2.78			4.47							
16:00	102		-1.96			12.54							
16:15	102		-2.90			4.35							

Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103												
8:00	103												
8:15	103												
8:30	103												

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	103					0.00		0.00					
15:45	103					4.47		-2.78		-4.47			
16:00	103					12.54		-1.96		-12.54			
16:15	103					4.35		-2.90		-4.35			

Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104												
8:00	104												
8:15	104												
8:30	104												

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	104												
15:45	104												
16:00	104												
16:15	104												

Remove north lot access on Lakewood, turns move to Willowlake (affects Willowlake NBL, SBR, EBL, EBR)

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	4.00											
8:00	101	4.00											
8:15	101	4.00											
8:30	101	4.00											

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101							1.00		4.00			
15:45	101							1.00		4.00			
16:00	101							1.00		4.00			
16:15	101							1.00		4.00			

NEW TRIPS TOTAL

Lakewood Blvd at Willowlake Cres	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	101	10.28	3.72	0.00	0	3.16424	1.5125	0	0	1.11848	0	0	0
8:00	101	16.15	4.94	0.00	0	4.83023	2.86411	0	0	1.94769	0	0	0
8:15	101	9.64	6.02	0.00	0	16.5389	2.65265	0	0	4.72074	0	0	0
8:30	101	6.04	7.60	0.00	0	8.84753	0	0	0	2.33723	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	101	0.00	0.00	0.00	0.00	6.96	0.00	1.00	0.00	5.53	0.00	0.00	0.00
15:45	101	1.74	9.37	0.00	0.00	5.13	0.00	3.34	0.00	9.51	0.00	0.00	0.00
16:00	101	0.00	-0.03	0.00	0.00	2.88	0.00	2.67	0.00	17.13	0.00	0.00	0.00
16:15	101	-0.24	-1.12	0.00	0.00	2.88	0.00	3.39	0.00	8.94	0.00	0.00	0.00

Lakewood Blvd at SCC Entry	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	102	11.21	10.00	0.00	0.00	0.00	4.27	0.00	0.00	0.00	0.00	0.00	0.00
8:00	102	18.40	17.08	0.00	0	0	6.77792	0	0	0	0	0	0
8:15	102	24.60	11.66	0.00	0	0	21.2596	0	0	0	0	0	0
8:30	102	27.77	9.64	0.00	0	0	11.1848	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	102	16.97	0.00	0.00	0.00	0.00	8.48	0.00	0.00	0.00	0.00	0.00	0.00
15:45	102	11.18	11.11	0.00	0	4.4734	6.1709	0	0	0	0	0	0
16:00	102	3.09	-0.03	0.00	0	12.5405	3.47113	0	0	0	0	0	0
16:15	102	5.01	-1.36	0.00	0	4.35	3.47113	0	0	0	0	0	0

Lakewood Blvd at SCC Exit	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	103	0.00	16.58	0.00	0.00	0.00	0.00	4.63	0.00	13.50	0.00	0.00	0.00
8:00	103	0.00	29.31	0.00	0	0	0	6.1709	0	18.5127	0	0	0
8:15	103	0.00	28.54	0.00	0	0	0	7.71363	0	26.2263	0	0	0
8:30	103	0.00	27.77	0.00	0	0	0	9.64203	0	31.2402	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	103	0.00	16.97	0.00	0.00	0.00	0.00	0.00	0.00	4.63	0.00	0.00	0.00
15:45	103	0.00	11.18	0.00	0	4.4734	0	11.1079	0	17.8961	0	0	0
16:00	103	0.00	3.09	0.00	0	12.54	0	-0.03105	0	-0.19874	0	0	0
16:15	103	0.00	5.01	0.00	0	4.35	0	-1.35727	0	-2.03591	0	0	0

Lakewood Blvd at Beaverhill Blvd	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
7:45	104	0.00	16.58	0.00	0.00	13.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8:00	104	0.00	29.31	0.00	0	18.5127	0	0	0	0	0	0	0
8:15	104	0.00	28.54	0.00	0	26.2263	0	0	0	0	0	0	0
8:30	104	0.00	27.77	0.00	0	31.2402	0	0	0	0	0	0	0

Lakewood	Int	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
15:30	104	0.00	16.97	0.00	0.00	4.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15:45	104	0.00	11.18	0.00	0	22.3695	0	0	0	0	0	0	0
16:00	104	0.00	3.09	0.00	0	12.3418	0	0	0	0	0	0	0
16:15	104	0.00	5.01	0.00	0	2.31409	0	0	0	0	0	0	0

HCM Analysis - 1200 Students

Willowlake NB Queue

15 Min	15 Min NB	Jan '25 NB	New Trips	NB Total	v/c	Qavg	Q95
7:45	138.462	130	14.00	144.003	1.04002	-27.0257	16.1477
8:00	138.462	116	21.08	137.082	0.99004	98.3628	13.9988
8:15	138.462	50	15.66	65.6585	0.4742	0.42766	2.52978
8:30	138.462	79	13.64	92.642	0.66908	1.35281	4.98219

hw 6.5, calibrated so Qavg similar to worst case observed

15 Min	15 Min NB	Jan '25 NB	New Trips	NB Total	v/c	Qavg	Q95
15:30	138.462	72	0.00	72	0.52	0.56333	2.98234
15:45	138.462	113	11.11	124.108	0.89634	7.75013	10.5197
16:00	138.462	92	-0.03	91.9689	0.66422	1.31392	4.90111
16:15	138.462	79	-1.36	77.6427	0.56075	0.71587	3.44059

hw 6.5, calibrated so Qavg similar to worst case observed

SCC Lot NBL Queue

15 Min	Jan '25 SB	New SB	SB Total	HCM Cap	Jan '25 NBL	New NBL	NBL Total	v/c	Qavg	Q95
7:45	69	4.27	73.272719	175.466	43	11.21	54.21	0.30895	0.13812	1.31277
8:00	77	6.78	83.777923	169.198	76	18.40	94.40	0.55793	0.70416	3.4652
8:15	134	21.26	155.25959	131.474	74	24.60	98.60	0.74993	2.24889	6.45882
8:30	95	11.18	106.18476	156.474	72	27.77	99.77	0.63761	1.12184	4.54861

hc = 5
hf = 4

15 Min	Jan '25 SB	New SB	SB Total	HCM Cap	Jan '25 NBL	New NBL	NBL Total	v/c	Qavg	Q95
15:30	134	8.48	142.485	137.62	44	16.97	60.97	0.44303	0.3524	2.25376
15:45	125	10.64	135.644	141.013	29	11.18	40.18	0.28497	0.11357	1.16855
16:00	160	16.01	176.012	122.001	8	3.09	11.09	0.09086	0.00908	0.29823
16:15	138	7.82	145.821	135.991	13	5.01	18.01	0.13246	0.02023	0.45456

hc = 5
hf = 4

SB at Beaverhill

15 Min	5 Min SB C.	Jan '25 SB	New Trips	SB Total	v/c	Qavg	Q95
7:45	187.5	81	13.50	94.4988	0.50399	0.51211	2.87105
8:00	187.5	108	18.51	126.513	0.67473	1.39968	5.30153
8:15	187.5	142	26.23	168.226	0.89721	7.83109	11.7815
8:30	187.5	155	31.24	186.24	0.99328	146.838	16.4021

hw = 4.8, critical from PM

15 Min	5 Min SB C.	Jan '25 SB	New Trips	SB Total	v/c	Qavg	Q95
15:30	187.5	122	4.63	126.628	0.67535	1.40489	5.3132
15:45	187.5	138	22.37	160.37	0.8553	5.05574	10.1454
16:00	187.5	181	12.34	193.342	1.03116	-34.1274	18.5527
16:15	187.5	158	2.31	160.314	0.85501	5.04195	10.1347

hw = 4.8, calibrated so Qavg is significant, set to give v/c <1 vs counts

SCC Lot Exit EB

EBL

15 Min	'25 Conflic	ew Conflicti	ntal Conflicti	HCM Cap	Jan '25 EBL	New EBL	EBL Total	v/c	Qavg	Q95
7:45	221	16.58	237.5843	55.9107	12	4.63	16.6282	0.29741	0.12589	1.19695
8:00	230	29.31	259.31178	49.005	16	6.17	22.1709	0.45242	0.3738	2.13798
8:15	178	28.54	206.54042	67.413	20	7.71	27.7136	0.4111	0.28699	1.9104
8:30	194	27.77	221.76905	61.5133	25	9.64	34.642	0.56316	0.72602	3.13572

15 Min	'25 Conflic	ew Conflicti	ntal Conflicti	HCM Cap	Jan '25 EBL	New EBL	EBL Total	v/c	Qavg	Q95
15:30	237	16.97	253.97	50.6228	0	0.00	0	0	0	0
15:45	218	15.66	233.658	57.2541	36	11.11	47.1079	0.82279	3.82014	6.24389
16:00	242	15.63	257.626	49.5102	5	-0.03	4.96895	0.10036	0.0112	0.32979
16:15	216	9.36	225.364	60.1945	4	-1.36	2.64273	0.0439	0.00202	0.1371

EBR

15 Min	'25 Conflic	ew Conflicti	ntal Conflicti	HCM Cap	Jan '25 EBR	New EBR	EBR Total	v/c	Qavg	Q95
7:45	54	0.00	54	174.461	35	13.50	48.4988	0.27799	0.10703	1.13464
8:00	52	0.00	52	176.128	48	18.51	66.5127	0.37764	0.22915	1.7636
8:15	72	0.00	72	160.106	68	26.23	94.2263	0.58852	0.84175	3.84257
8:30	66	0.00	66	164.765	81	31.24	112.24	0.68122	1.4557	5.32929

15 Min	'25 Conflic	ew Conflicti	ntal Conflicti	HCM Cap	Jan '25 EBR	New EBR	EBR Total	v/c	Qavg	Q95
15:30	112	0.00	112	132.043	12	4.63	16.6282	0.12593	0.01814	0.42903
15:45	109	4.47	113.473	131.103	58	17.90	75.8961	0.5789	0.79586	3.64339
16:00	151	12.54	163.541	102.616	32	-0.20	31.8013	0.30991	0.13917	1.29953
16:15	129	4.35	133.35	119.01	6	-2.04	3.96409	0.03331	0.00115	0.10318

Willowlake EB at Lakewood

EBL

15 Min	15 Min EB	Jan '25 EBL	New Trips	EBL Total	v/c	Qavg	Q95
7:45	100	14	0	14	0.14	0.02279	0.48295
8:00	100	10	0	10	0.1	0.01111	0.3309
8:15	100	23	0	23	0.23	0.0687	0.87616
8:30	100	19	0	19	0.19	0.04457	0.69188

hw 9, calibrate

15 Min	15 Min EB	Jan '25 EBL	New Trips	EBL Total	v/c	Qavg	Q95
15:30	100	9	1.00	10	0.1	0.01111	0.3309
15:45	100	16	3.34	19.3416	0.19342	0.04638	0.707
16:00	100	22	2.67	24.6695	0.24669	0.08079	0.95808
16:15	100	10	3.39	13.3925	0.13393	0.02071	0.45904

hw 9, calibrate

EBR

15 Min	15 Min EB	Jan '25 EBR	New Trips	EBR Total	v/c	Qavg	Q95
7:45	100	12	1.1184758	13.1185	0.13118	0.01981	0.44835
8:00	100	19	1.9476905	20.9477	0.20948	0.05551	0.77958
8:15	100	31	4.720739	35.7207	0.35721	0.1985	1.58861
8:30	100	19	2.3372286	21.3372	0.21337	0.05788	0.79757

hw 9, calibrate

15 Min	15 Min EB	Jan '25 EBR	New Trips	EBR Total	v/c	Qavg	Q95
15:30	100	31	5.53	36.5273	0.36527	0.21021	1.64153
15:45	100	49	9.51	58.5147	0.58515	0.82535	3.60496
16:00	100	39	17.13	56.1306	0.56131	0.71819	3.33226
16:15	100	46	8.94	54.9439	0.54944	0.67002	3.20298

hw 9, calibrate