Traffic Operations Summary

Quick References

Current School Hours
7:50 AM to 2:30 PM

School AM Peak Hour
7:15 AM to 8:15 AM

School PM Peak Hour
2:30 PM to 3:30 PM

Existing Populations
Students 3,225±
Staff 440±

Projected Populations
Students 3,520
Staff 500

Downtown Analyzed Build Year
2024

Cawley Analyzed Build Year
2022

Cawley School Busing Program
46 buses (per City)
Anticipated Capacity 2,000±
Maximum Capacity 2,300

General Traffic Operations

In general, a school generates traffic congestion twice a day (during the morning arrival and the afternoon dismissal) for about 15 to 30 minutes each school day during the entire school year.

Overall Traffic Operations

Downtown Site

The existing Lowell High School is congested during the morning school peak hour and especially during the afternoon school peak hour. The intersections in the study area are operating at fair to poor levels of services during both peaks.

It is anticipated that the proposed school in the Downtown area will be slightly more congested than the current traffic operations found at the school due to the projected increase of the student and staff populations.

Cawley Site

For any alternate site in the City, the existing school traffic (plus the projected new traffic) that is currently being generated at the Downtown site will be moved from the Downtown area to the new site location.

At the Cawley site specifically, the intersections surrounding the proposed school are anticipated to operate at poor levels of service during the school peaks (twice a day, during the school year).

Cawley Site Mitigation

Due to the increase in traffic and the projected poor levels of service, intersection improvements (retiming/rephasing of the existing traffic signals along Rogers Street (Route 38), signing, striping, potential roadway widening to accommodate turn lanes, etc.) can be investigated to improve operations.

The following intersections do not meet traffic signal warrants:

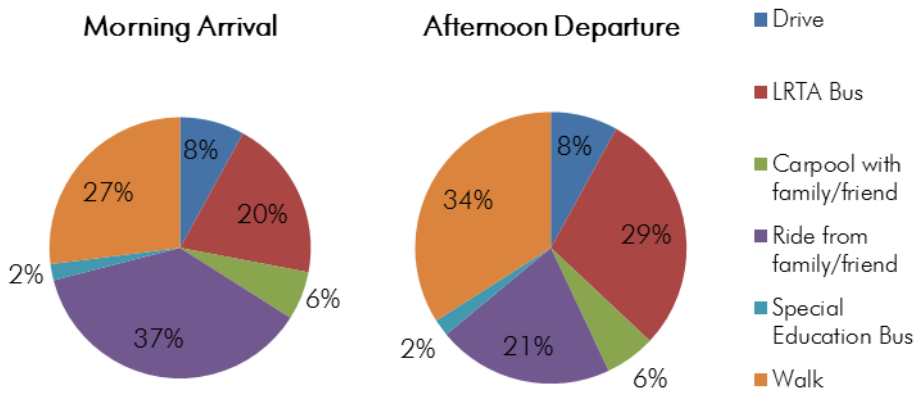
- Rogers Street (Route 38) and Village Street
- Andover Street (Route 133) and Douglas Road

Although a traffic signal warrant analysis was not requested for the intersection of Andover Street and Clark Road, preliminary findings suggest that this intersection may meet warrants for signalization. Additional traffic data (that was not collected) is required for a complete analysis.

Other Traffic Impact Information

Existing Mode of Transportation

Estimated Student Mode of Transportation for the Downtown Site Based on January and April 2017 Survey Results



Anticipated Trip Generation

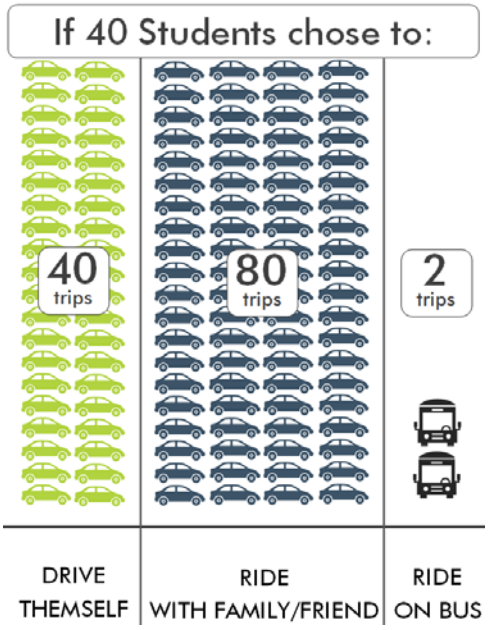
How the Modes translate to Anticipated Vehicle Trips

The mode of transportation surveys identified three basic vehicular modes that a student uses to travel to and from the high school:

1. driving and parking,
2. riding with family and friends, or
3. riding the bus.

The largest generator of vehicle trips of these three modes is a student that is dropped-off/ picked-up by rides from family and friends (see figure), since they require an entering and an exiting trip.

Number of Vehicle Trips Generated During a School Peak Hour
Based on Vehicle Mode



If fewer parking spaces are provided, there would be fewer students driving themselves, which would result in an increased number of students being dropped-off and picked-up.

Downtown Site Trip Generation

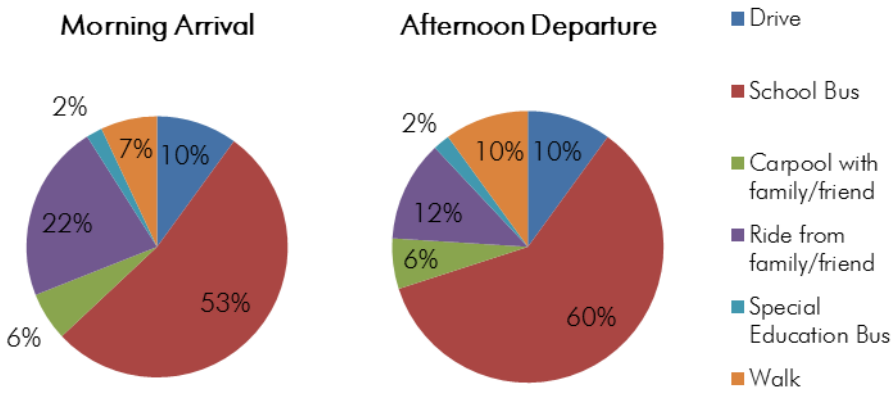
The additional trips anticipated for the additional high school population were based on the existing modes of transportation that students and staff are currently traveling to and from the high school.

Anticipated Generated New Vehicle Trips Summary
Downtown Site

Time Period	Direction	New Vehicle Trips
School A.M. Peak Hour	Enter	159
	Exit	91
School P.M. Peak Hour	Enter	35
	Exit	100

Cawley Site Trip Generation

Anticipated Student Mode of Transportation for the Cawley Site



Anticipated Number of Students Using Each Mode under Build Conditions
Cawley Site

Mode	Morning Arrival	Afternoon Departure
Drive	352	352
School Bus	1,866	2,112
Ride - Carpool	211	211
Ride - Drop-off/Pick-up	775	423
Special Education Bus	70	70
Walk	246	352
TOTAL	3,520	3,520

Anticipated Vehicle Trips Generated under Build Conditions
During School A.M. Peak
Cawley Site

Mode	School A.M. Peak				
	Students	Staff	Total	Entering	Exiting
Drive	352	357	709	709	0
LRTA Bus	N/A	8	0	0	0
School Bus	46	N/A	92	46	46
Ride - Carpool	N/A	8	8	8	0
Ride - Drop-off	775	N/A	1,550	775	775
Special Education Bus	11	N/A	22	11	11
		TOTAL	2,381	1,549	832

Anticipated Vehicle Trips Generated under Build Conditions
During School P.M. Peak
Cawley Site

Mode	School P.M. Peak				
	Students	Staff	Total	Entering	Exiting
Drive	352	333	685	0	685
LRTA Bus	N/A	7	0	0	0
School Bus	46	N/A	92	46	46
Ride - Carpool	N/A	7	7	0	7
Ride - Pick-up	423	N/A	846	423	423
Special Education Bus	11	N/A	22	11	11
		TOTAL	1,652	480	1,172

Cawley Site Parking

New High School Parking Requirement

City of Lowell's *Zoning Book* (with amendments through 10.22.2013)

High School 6 parking spaces per instructional room

Depending on the City's interruption of an 'instructional' room, the minimum number of on-site parking spaces is 840 parking spaces.

The final Cawley site design may require on-site parking variance.

Anticipated parking demand for the Cawley site

An anticipated parking demand can be developed based on the amount of estimated vehicles that are currently parking around the existing Downtown high school site by students and staff.

Anticipated Parking Demand for Staff/Visitors	500 parking spaces
Anticipated that 10% of Students will Drive and Park	350 parking spaces
TOTAL Anticipated On-site Parking Demand	**850 parking spaces**

Cawley Sidewalk/ Pedestrian Improvements

All possible improvements outlined here should be further investigated by the City for feasibility (e.g. available right-of-way, grades, utilities, vegetation, etc.).

Existing Sidewalk Areas

In general, the existing sidewalks on the study roadways require:

- Installation/reconstruction of curb ramps (aka wheelchair ramps) at all side streets and marked crosswalks;
- Spot reconstruction of existing sidewalks due to poor condition or inadequate sidewalk width;
- Installation of pedestrian improvements to the existing Andover Street/Douglas Road crosswalk previously investigated by the City; and
- Upgrade existing/ install additional pedestrian signal heads and pushbuttons at signalized intersections on Rogers Street/Main Street (Route 38).

No Sidewalk Areas

Douglas Road and Clark Road do not provide a connection for pedestrians between Andover Street (Route 133) and Rogers Street (Route 33) and the proposed school site. Sidewalks are not necessarily needed on both sides of these two roadways. The City can propose to install a sidewalk on only one side of a road, rather than both sides, due to physical and/or budget constraints. However, if the City decides to install sidewalk on the west side, for instance, then a crosswalk with curb ramps will need to be marked and signed to allow pedestrians to cross and continue on the sidewalk on the east side of the road.