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MEMORANDUM

TO: Susan Martini, Project Manager, Aurora Public Schools

FROM: Paul Brown and Faith Kelley, Felsburg Holt & Ullevig

DATE: July 31, 2020

SUBJECT: Revised East Middle School Trip Generation Study
FHU Reference 120179-01

Introduction

This memo presents the results of a trip generation study for the proposed East Middle School addition and remodeling in Aurora. The original memo was completed on May 14, 2020, and this revision has been prepared to reflect June 2020 comments from the City of Aurora. A separate comment response memo provides detailed responses to the City's input and describes the changes in this memorandum.

This study evaluates the traffic operations and circulation for the proposed development improvements. The site is located north of E 12th Avenue, west of Fraser Street, east of Eagle Street, and south of E 13th Avenue, and the address is 1275 Fraser Street. The school is anticipated to have 920 students after its renovation. Circulation and access to the reconstructed site will be provided from one-way pick-up/drop-off loops on E 13th Avenue (buses only) and E 12th Avenue (autos only). The site plan for the proposed development is shown on **Figure 1**.

Trip Generation

Traffic forecasts were prepared to estimate the amount of traffic that the proposed middle school reconstruction would generate daily and during weekday AM and PM peak hours. While traffic counts would normally be conducted for the existing development, the COVID-19 pandemic made it unreasonable to conduct traffic counts at the existing school. Therefore, data from Trip Generation, Institute of Transportation Engineers (ITE), 10th Edition was referenced to determine vehicle-trips generated by the renovated school on a typical weekday during AM and PM peak hours. The trip generation was determined using the estimated 920 students who would attend the school upon reopening after the renovations. The independent variable, number of students, was used over gross floor area and number of employees to produce more accurate calculations based on a larger sample size. The average rate was used to consider more conservative numbers than those calculated with the regression equation. As the school's dismissal time is earlier than typical PM peak hour traffic, peak hour of generator traffic was used to determine the maximum number of vehicles entering and leaving the site during a one-hour period. **Table 1** presents the vehicle-trip generation information for a typical weekday at the renovated middle school.

Table 1. Trip Generation Data

Land Use	ITE Code	Independent Variable	No. of Variables	Daily			AM Peak Hour			PM Peak Hour		
				IN	OUT	Total	In	Out	Total	In	Out	Total
Middle School	522	Students	920	980	980	1960	354	290	644	148	174	322

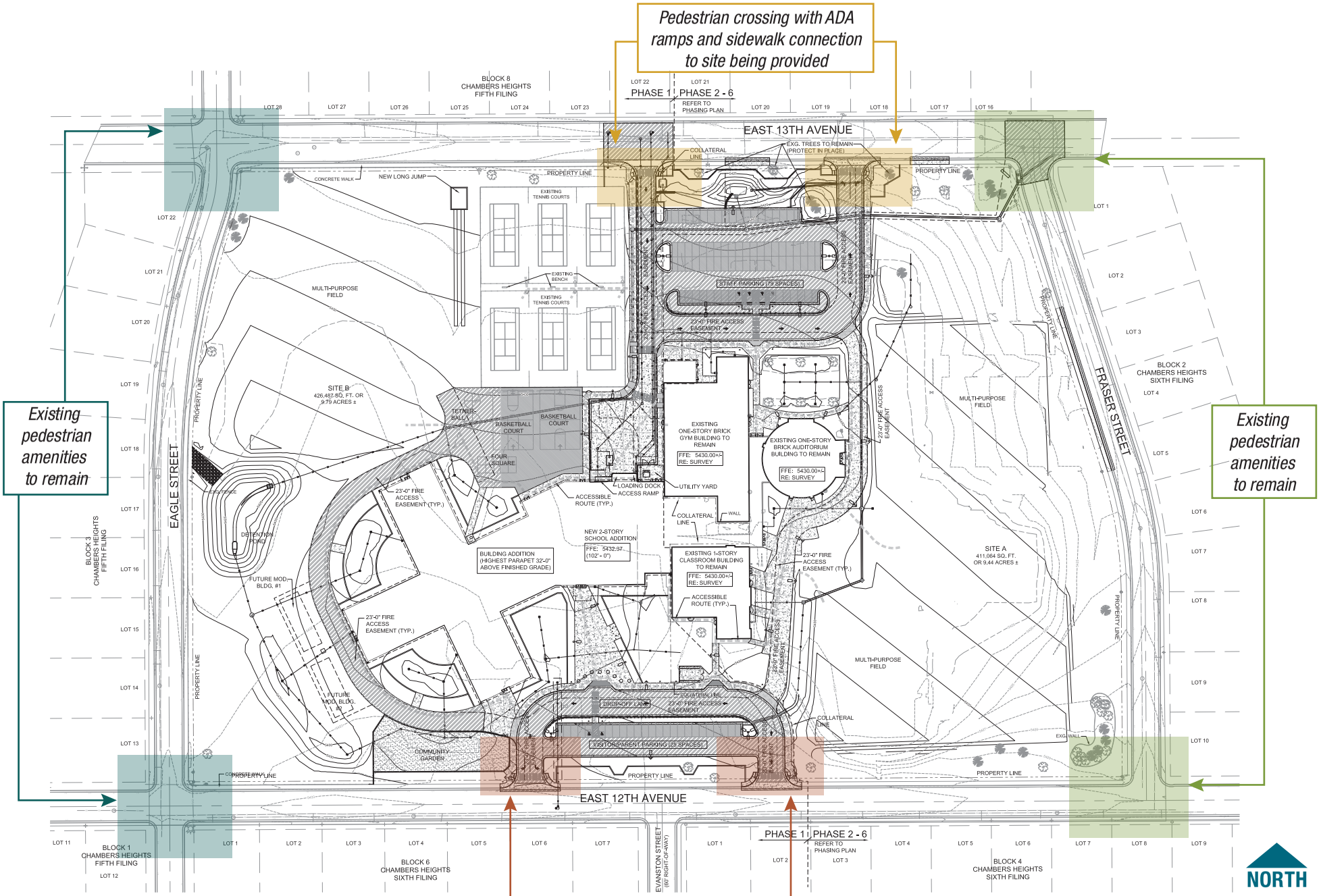

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FIGURE 1
Site Plan

APS East Middle School 20-179 7/31/20

Queuing Evaluation

A queuing evaluation was conducted for the anticipated parent pick-up/drop-off loops to evaluate adequate storage length at the pick-up/drop-off locations. The arrival rate and processing time of vehicles was based on previous studies for similar developments; however, due to the addition of accessible spaces in the pick-up/drop-off loop, the processing rate was reduced from 15 vehicles per 5 minutes to 14 vehicles per 5 minutes. Using the anticipated number of vehicles to enter the site in the PM, the maximum number of cars in the queue is anticipated to be 67 vehicles. This results in an anticipated maximum queue length of 1,675 feet for the school. The proposed 12th Avenue pick-up/drop-off loop is anticipated to accommodate 300 feet of onsite queue storage (including two accessible pick-up/drop-off areas), and the remainder of the pick-up/drop off activity is anticipated to occur offsite on the roadways that surround the school. This is an improvement over existing conditions, where all pick-up/drop-off occurs on the roadways surrounding the site. To maintain acceptable operations in the onsite pick-up/drop-off loop, it is recommended that the loop be restricted to a portion of the student population, perhaps a specific grade or a particular group of classrooms. This would provide parents with information about where to pick-up and drop-off their children before they arrive at the site, reducing congestion at the entrance to the onsite loop. It is anticipated that City of Aurora traffic engineering staff will continue to work with APS to help mitigate identified queuing issues with parent pick-up and drop off at East Middle School.

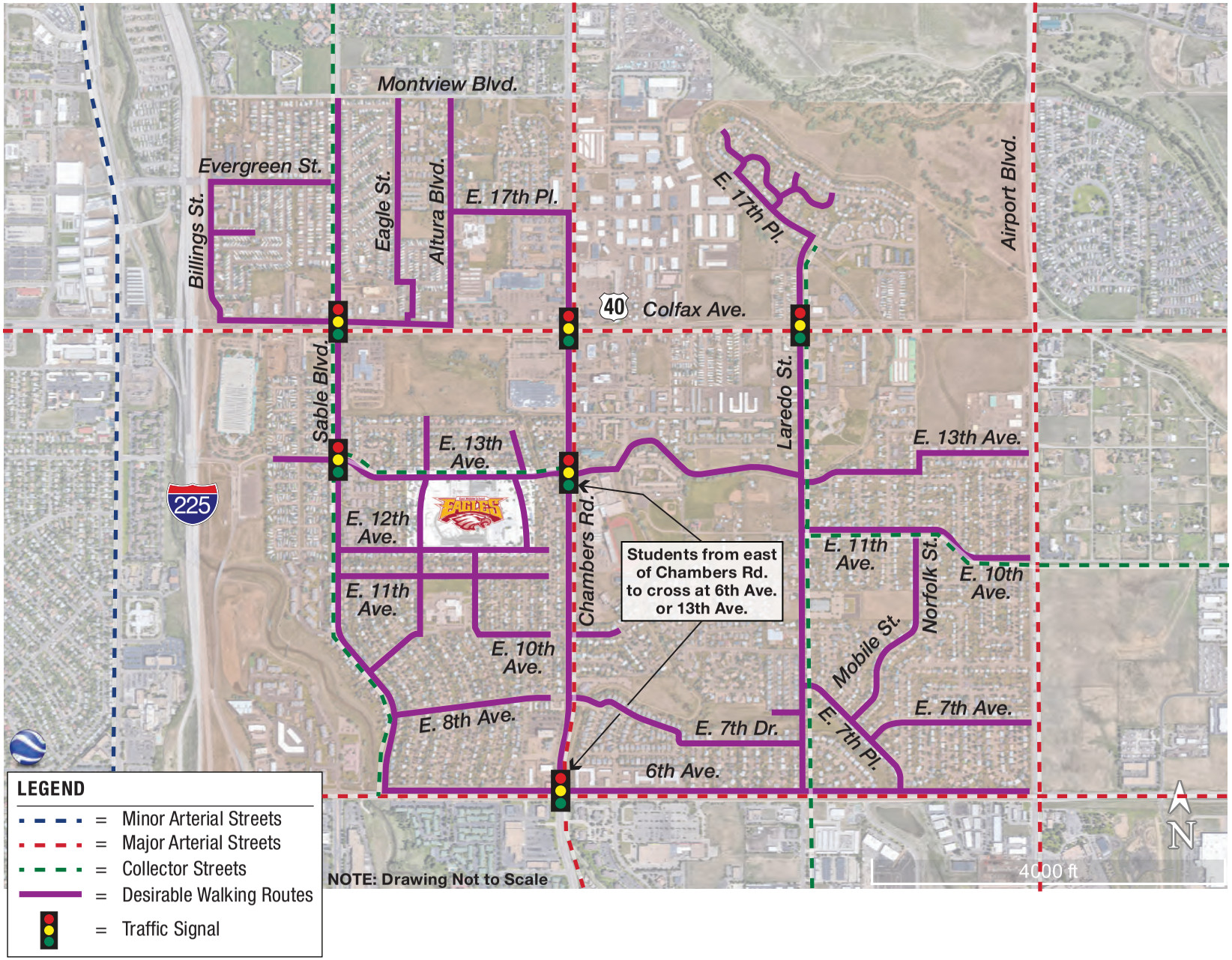
Parking Recommendations

The current number of parking spaces at East Middle School is 107, 104 regular spaces and 3 handicapped spaces with 2 being van accessible. The renovated middle school site plan shows 104 spaces, including 6 handicapped spaces with 4 being van accessible. The demand for parking spaces at the school was calculated using the ITE parking generation manual, as well as the City of Aurora Parking Ordinance. The number of parking spaces required can be determined by the number of students or the number of employees; however, the number of employees for East Middle School was significantly out of the data set range provided by the ITE manual. Using the projected 920 students who are estimated to attend East Middle School upon renovation, the ITE manual requires 83 parking spaces. The City of Aurora requires 80 spaces based on the 120 employees projected to work at the site. Both requirements are well below the current and proposed number of spaces for the school; therefore, parking issues are not expected at the renovated middle school.

Pedestrian Connectivity

To better understand pedestrian connectivity near East Middle School, desirable walking paths within a one-mile radius of the school were identified. Students coming from the northwest are expected to use Sable Boulevard to cross Colfax and enter the school from the west side of 13th Avenue. Students coming from the northeast are expected use Laredo Street to cross Colfax and connect with High Line Canal Trail to reach the east side of 13th Avenue. Pedestrians coming from south of the school are expected to use either Chambers Road or Sable Boulevard to connect with 12th Avenue. Students coming from the southeast are expected to either travel from 6th Avenue to Chambers Road to reach 13th Avenue or use Laredo Street to High Line Canal Trail and finally to the east side of 13th Avenue. These routes are summarized on **Figure 2**. Students are probably using these routes today, but the closure of the school due to the pandemic did not allow FHU to observe student walking patterns in the field.

A previous evaluation of walking routes in the 2007 School Traffic Control Devices Study did not identify significant concerns for this school. The documented year 2007 conditions were compared to current conditions and existing amenities were found to be similar to or better than those shown in the earlier study. Since this is an addition and remodeling, the off-site amenities are not expected to change further. The pedestrian amenities along the streets bordering the school site have been identified on **Figure 1** for reference.



NORTH

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FIGURE 2

Desirable Walking Routes

APS East Middle School 20-179 7/31/20

An additional review of the anticipated routes for pedestrian concerns was performed. The main concern identified along the walking paths was the limited pedestrian crossings of Chambers Road. Those crossings that do exist are signalized in accordance with City crossing guidelines for arterials. The existing signalization and related pedestrian amenities at the available Chambers Road crossings should be maintained regardless of the addition and remodeling.