ACCESS AND CIRCULATION ASSESSMENT

FOR

ELK GROVE HIGH SCHOOL MODERNIZATION PROJECT

Elk Grove, CA

Prepared for:

Elk Grove Unified School District
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2885-18

EGHS Access rpt

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INTRODUCTION

The Elk Grove Unified School District (EGUSD) is in the midst of a comprehensive project to modernize its facilities at the Elk Grove HS campus on Elk Gove Florin Road. As part of the work new structures to replace aged facilities will be constructed and some areas of the campus will be repurposed. From the standpoint of access and circulation key work involves elimination of the current parking lot along Elk Grove Florin Road and the creation of a new drop-off and loading zone within the school's main western parking lot off of Valley Oak Lane. The design and operation of access to the western parking lot with the new drop-off and loading opportunities is the primary focus of the assessment.

Analysis Approach

The approach to this assessment follows:

- Identification of probable non-COVID "design hour" traffic volumes at locations on Valley Oak Lane and Elk Grove Florin Road based on available traffic count data, estimated pre-COVID traffic forecasts derived from other technical sources, and expectations of use of the new drop-off and parking facilities by parents, students and faculty.

- Identification of design concepts based on consideration of site "opportunities and constraints" relating to existing and potential street infrastructure, right of way limitations, the requirements of alternative transportation modes and community values.

- Development of traffic operational assessment tools to quantitively evaluate conditions under the Modernization project.

- Identification of preferred strategy for implementing EGHS' Valley Oak Lane access to best meet the goals of the EGUSD, the project's neighbors and the City of Elk Grove.

History

Elk Grove Union High School was the first union high school in the State of California. The high school opened its doors in 1893 at its first site on Main Street (now Derr Street and Elk Grove Boulevard in Old Town). In 1922, a new brick building was constructed where the Joseph Kerr campus is today. In 1964, the school moved to its present site and opened its doors as a three-year senior high school (grades 10-12); the junior high grades (7-9) remained at the current Joseph Kerr campus. Elk Grove is the second oldest high school in Sacramento County and until 1977, was the only comprehensive high school in the district.

The existing campus is located on the southwest corner of Valley Oak and Elk Grove-Florin road and consists of approximately 43 acres. The campus officially opened in 1964 and was last modernized in 1999. The 94 campus classrooms are housed in 23 permanent buildings and 37 relocatable buildings, 35 of which are over 20 years in age.

Modernization Goals

The primary objective of the modernization of the EGHS campus is to improve the campus so that the facilities are more consistent with newer high school campuses in the District. Those objectives include, among other things, improving the learning environments to support current and future technological needs; creating spaces that engage, foster creativity and enhance learning; as well as improve safety and accessibility to the facilities. At EGHS, however, the age, construction type, number of relocatable buildings as well as placement of the facilities pose significant challenges to modernizing the campus. After careful study it became evident that replacing rather than renovating many of the existing facilities was the most practical and feasible way to modernize the campus.

When complete, the "front door" of the EGHS campus will face the west parking lot (off Valley Oak Lane) and a new two-story thirty classroom building will be located at the northeast corner. There will be three additional new buildings: a new administration/classroom building facing the west parking lot and two career technical facilities: Culinary and Agriculture/Natural Resources. The culinary facility will be on the east side of the campus facing Elk Grove-Florin Road and the agriculture facility will be on the western side of campus. To accompany the new buildings there will be new outdoor learning and gathering spaces, parking lot improvements, new plantings and perimeter fencing.

Modernization of the campus is expected to take approximately five years and will be accomplished in approximately six increments.

- Culinary Building
- Utility improvements
- 30 Classroom Building
- New Administration/Classroom Building
- West Parking Lot improvements
- Agriculture Building
- Quad and landscape improvements

BACKGROUND TRAFFIC / CIRCULATION INFORMATION

Physical Setting

Elk Grove High School is located on the west side of Elk Grove Florin Road south of Valley Oak Lane, as shown in Figure 1. As noted in Figure 2 the school lies towards the southern end of its designated attendance area, but EGUSD does have an open attendance policy for grades 7-12.

Figure 3 notes prominent features in the vicinity of the EGHS site prior to the beginning of the Modernization project and locates the circulation system. **Streets** addressed in this evaluation include:

Elk Grove Florin Road is a two-lane arterial street with center Two-Way Left-Turn (TWLT) lane and Class 2 bike lanes / sidewalks on both sides of the street. On-street parking is prohibited, the posted speed limit is 35 mph, but a 25 mph school zone is signed along EGHS. Daily traffic volume counts conducted by the City of Elk Grove in 2019 indicated that Elk Grove Florin Road carried 6,700 vehicles per day in the area between Valley Oak Lane and Elk Grove Regional Park.

Valley Oak Lane is a two- lane street that extends from an intersection on Stockton Blvd easterly from about 3,500 feet to Elk Grove Florin Road. The EGHS site fronts on the most easterly 1,300 feet. The roadway has a broad landscaped median with mature oak trees that is typically 16 to 24 feet wide. The median opens to allow access at five public street intersections, but no auxiliary turns lanes are provided at those locations. All-way stop controls exist at four of the five openings. Class 2 bicycle lanes and sidewalk are provided along the length of Valley Oak Lane, and on-street parking is permitted on the north side between the bike lanes and curb. On-street parking is prohibited on the south side, but bus loading is permitted. The posted speed limit is 25 mph.

Minnie Circle is a two-lane residential street that provides access to a neighborhood north the EGHS campus off of Valley Oak Lane. The road is 32 feet wide (curb-to-curb), and on street parking is allowed. Minnie Circle forms a "loop" between Valley Oak Lane intersections with the "East" connection at the current EDHS parking lot entrance and the "West" connection towards the west end of the parking lot. Entering traffic is blocked by a barrier at the Minnie Circle (E) connection and secondary access for this neighborhood is available to the north via Ahmed Avenue and Aquarius Avenue to Emerald Oak Drive. A residential prima facie 25 mph speed limit applies.

E. Stockton Blvd is a two-lane frontage road along State Route 99 that provides north-south circulation through Elk Grove. In the area of EGHS E. Stockton Blvd runs from an intersection on Grant Line Road along the regional park through the Valley Oak Lane intersection to Elk Grove Blvd, with ramp connections to NB SR 99 about 2,000 feet north of Valley Oak Lane. Class 2 bike lanes are provided, and on-street parking is prohibited. The speed limit is posted at 40 mph.

Vista Grande Way is a two-lane local street that runs south from Valley Oak Lane into the neighborhood just west of the EGHS campus. The roadway is 42 feet wide, on-street parking is permitted and a 25 mph prima facie speed limit applies.

VICINITY MAP

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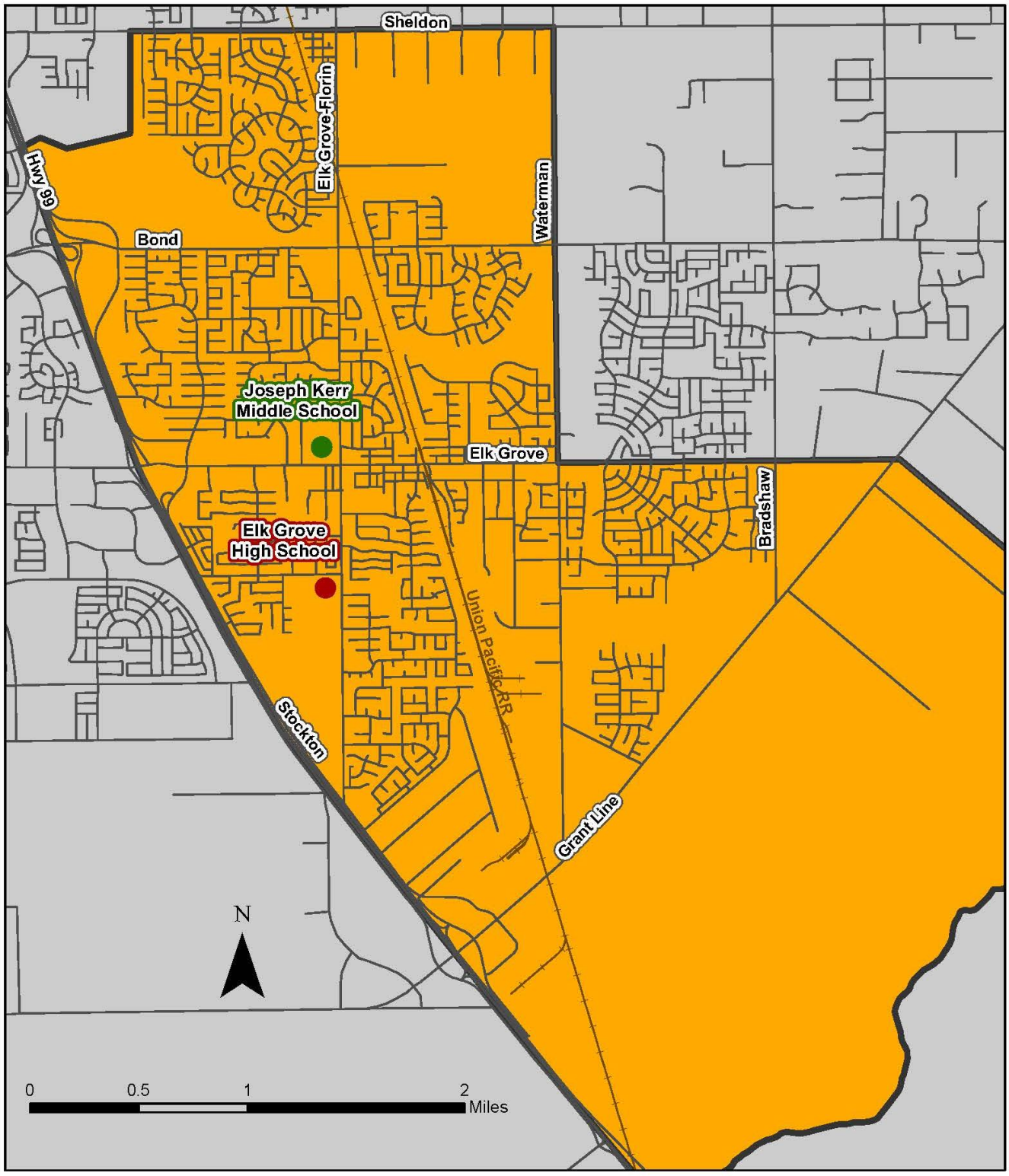
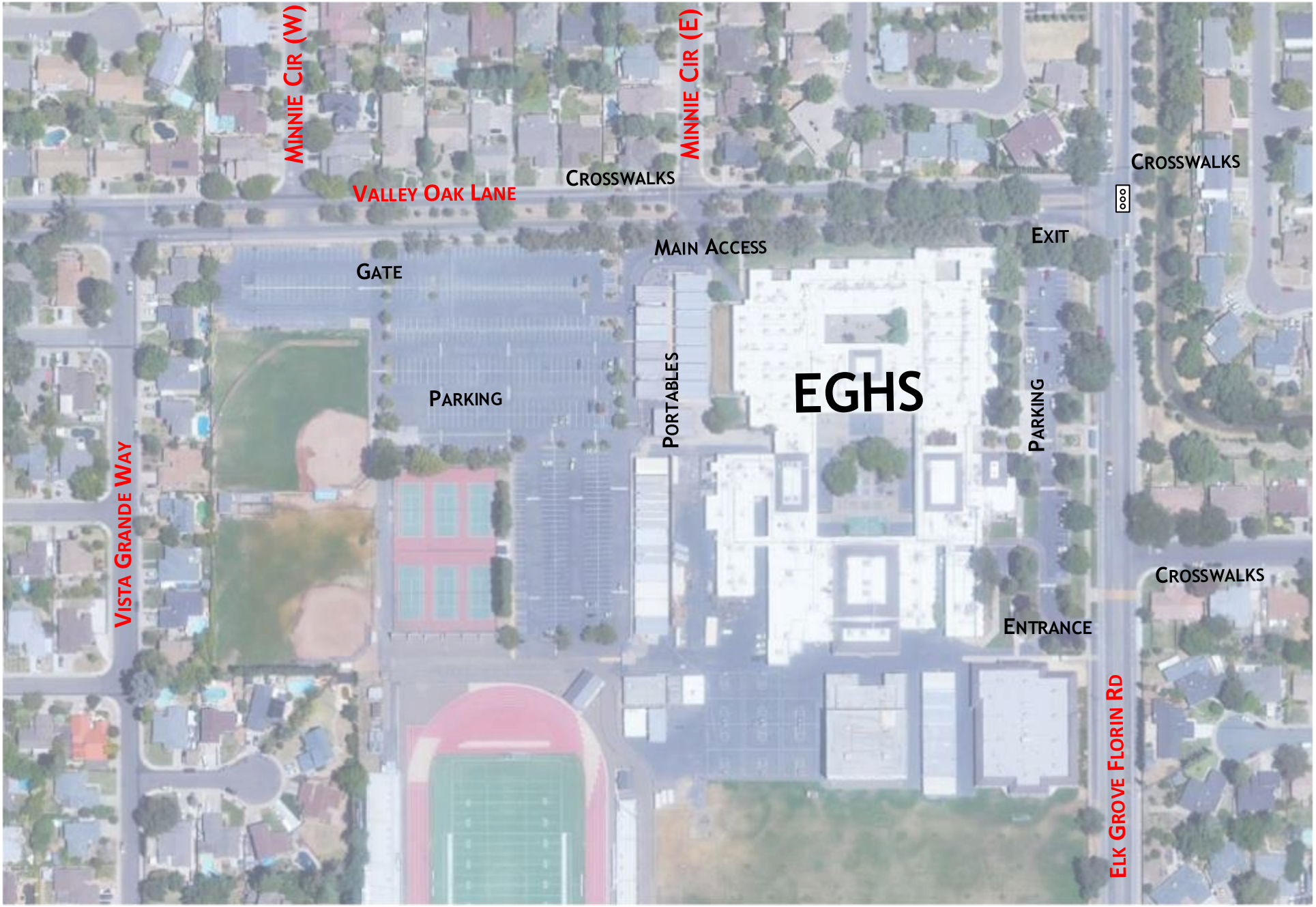
figure 1

Joseph Kerr Middle School
Elk Grove High School
Boundary Area



Boundary Adopted in Feb 2011

EGHS BOUNDARY AREA



ELK GROVE HIGH SCHOOL FEATURES

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figure 3

In urban areas the flow of traffic is governed by the operation of key intersections where traffic control devices and the "rules of the road" allocate the right of way between motorists. This evaluation considered the operation of these **intersections.**

The ***Elk Grove Florin Road / Valley Oak Lane intersection*** is a "tee" located at the Northeast corner of the EGHS campus. The intersection is controlled by a traffic signal. Elk Grove Florin Road has a single through travel lane in each direction, but the center TWLT lane is striped as a 200 foot dedicated left turn lane, and the TWLT lane continues south from that point. A separate 210 foot southbound right turn lane has been striped along the curb on the west side of Elk Grove Florin Road by ending the Class 2 bike lane at the Cadura Circle intersection about 350 feet beyond Valley Oak Lane (centerline to centerline). The eastbound Valley Oak Lane approach has been widened to provide a separate left turn lane by reducing the median width to 12 feet.

The intersection has marked crosswalks on the south and west legs, and pedestrians are prohibited across the north Elk Grove Florin Road leg to avoid conflicts the eastbound traffic turning left. Accessible ramps exist on each corner, and pedestrian push buttons and signal are provided. A separate marked pedestrian crossing exists on Elk Grove Florin Road about 550 feet from the intersection on the south side of Tralee Way.

The ***Valley Oak Lane / Minnie Circle East intersection*** is located about 610 feet west of Elk Grove Florin Road (centerline to centerline) and is controlled by an All-way stop. The current EGHS access is the south leg of this intersection. Each entering leg has a single travel lane, and a barricade stops traffic from leaving the intersection on Minnie Circle. Crosswalks are striped on the north across Minnie Circle and on the west across Valley Oak Lane. Accessible ramps exist at the crosswalks.

A second ***EGHS Parking Lot Access on Valley Oak Lane*** exists at a "tee" intersection roughly 450 feet from Minnie Circle East and 125 feet Minnie Circle West (centerline to centerline). Traffic controls are not signed, but exiting traffic is limited to right turns only by the median, and traffic on Valley Oak Lane is not stopped. The school access is gated.

The ***Valley Oak Lane / Minnie Circle West intersection*** is a "tee" controlled by a stop sign on the southbound Minnie Circle approach. A median opening exists, and all traffic movements are allowed. There are no crosswalks at this location, but accessible ramps exist on the northern corners.

The ***Valley Oak Lane / Vista Grande Way intersection*** is located by a median opening about 130 feet beyond the EGHS campus and 250 feet west of the Minnie Circle West intersection. This "tee" intersection is controlled by an All-way stop which is one of four All-way stops located in the 3,500 feet from E. Stockton Blvd to Elk Grove Florin Road. Each leg of the intersection has a single approach lane. While no crosswalks are marked, accessible ramps exist on each corner.

Baseline Traffic Volumes for Elk Grove HS

Approach. Typically school access evaluations performed for EGUSD facilities have made use of current traffic volume counts and observations of school access operations in real time to gain

a full understanding of circulation system operations and to identify bottlenecks both on and off site. Because EGUSD's schools have spent the year under a "distance learning" model, it was not possible to simply observe existing traffic to establish the baseline condition. Instead, a combination of available traffic count data from the City of Elk Grove Florin Road / Valley Oak Lane intersection and counts at the Stockton Blvd / SR 99 ramps intersection were used and cellphone-based GIS data from StreetLight Data Inc. was employed to estimate current traffic levels at other locations. This system has limitations as cellphone data can be affected by heavy pedestrian activity in the vicinity of intersections. As a result, the traffic volumes presented as "pre-COVID" conditions may not exactly match traffic patterns in 2019 but are adequate as a baseline for estimating the changes in traffic patterns caused by closing the Elk Grove Florin Road parking lot and creating a new student drop-off and loading area.

Trip Generation. To assist in creating the baseline condition the number of automobile trips that could be expected to be generated by Elk Grove HS have been determined based on consideration of trip generation rates derived from national data or observed at other Sacramento area schools. Table 1 presents data published by the Institute of Transportation Engineers (ITE), rates used in EIR's, and trip generation rates developed from observation of another high school of similar size. To a degree the range in rates may result from factors such as pedestrian activity and bussing as well as the difficulty counting trips that are destined for the school but do not actually enter the campus and stop along local streets.

TABLE 1
HIGH SCHOOL TRIP GENERATION RATES

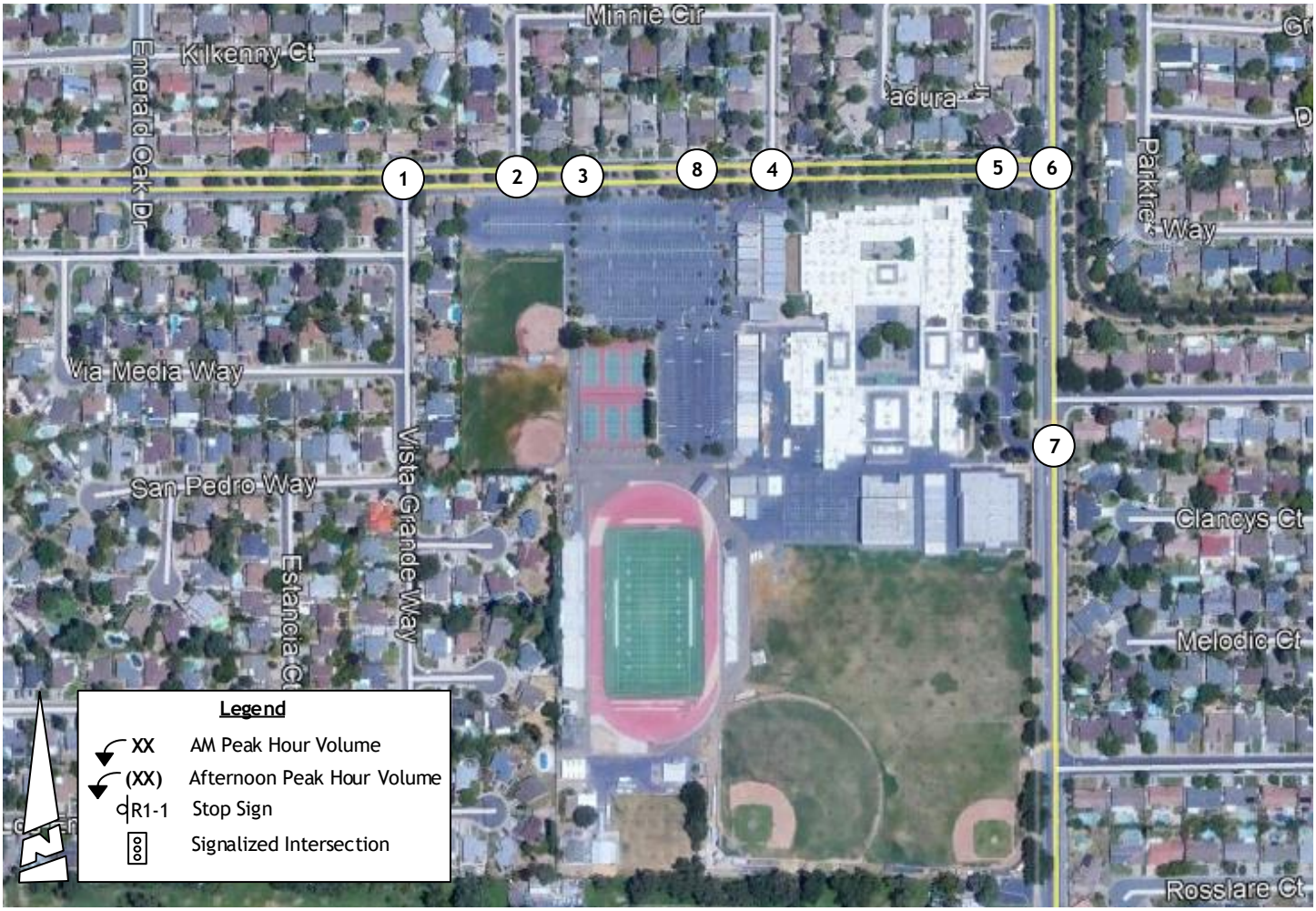
Land Use (ITE Code)	Daily Rate (per unit)	Vehicles Per Hour (per student)					
		AM Peak (highest hour from 7:00 to 9:00 am)			Afternoon (highest hour from 2:00 to 4:00 pm)		
		In	Out	Total	In	Out	Total
National Average High School (530)	1.71 / student	69%	31%	0.41	32%	68%	0.28
Used for EGUSD High Schools Based on observation of other schools	1.80 / student	70%	30%	0.67	31%	69%	0.39
Recent observation of Sacramento area high school with limited pedestrian activity and bussing	unknown	66%	34%	1.03	33%	67%	0.59

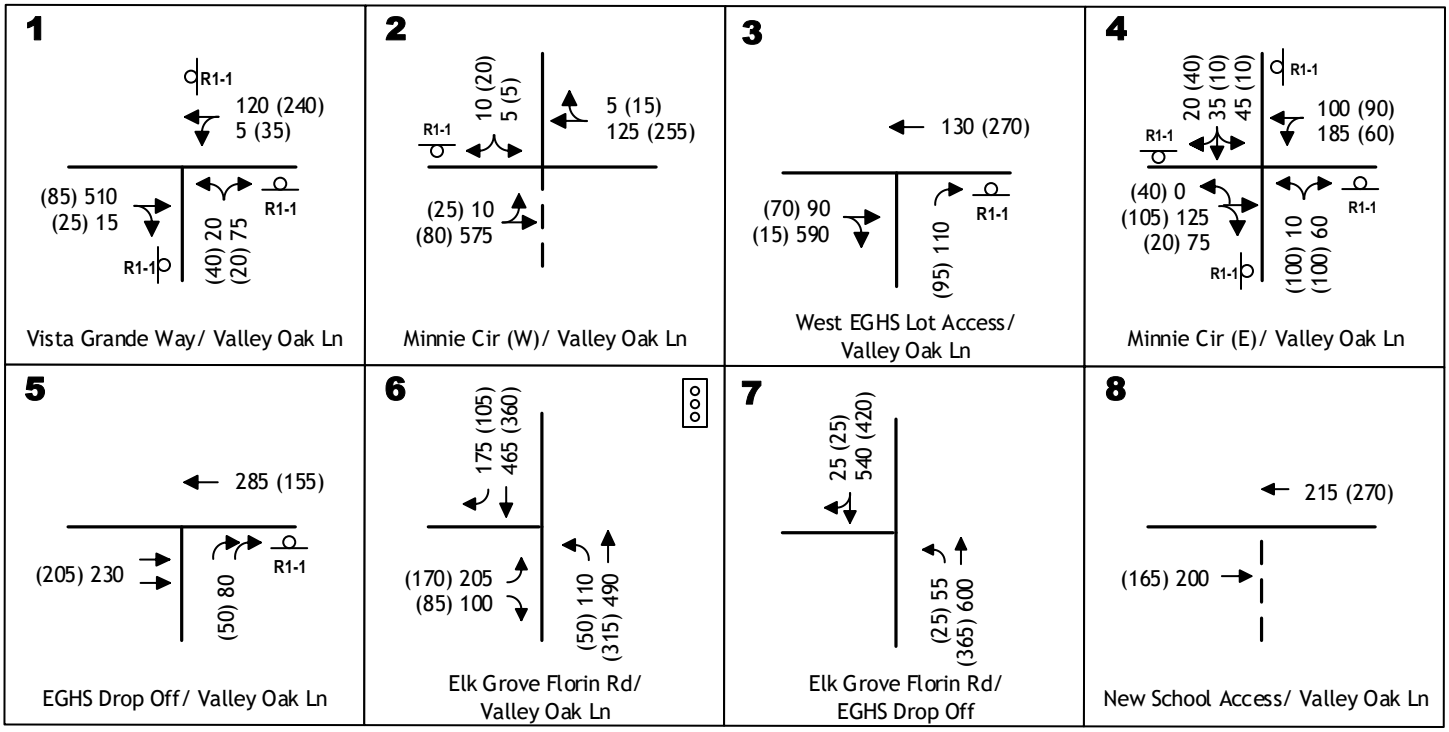
The resulting trip generation projections presented in Table 2 were determined to be applicable for this use. As shown, we would normally expect EGHS to generate 844 inbound and 362 outbound trips during the a.m. peak hour. For comparison rates based on observation of another Sacramento area 1,700 – 1,800 student High School with a high level of degree of automobile uses, relatively limited pedestrian access and limited bussing would be higher.

TABLE 2 TYPICAL TRIP GENERATION ESTIMATES							
		AM Peak Hour			Afternoon		
Quantity	Daily	In	Out	Total	In	Out	Total
Typical 1,800 EGUSD HS students	3,240	844	362	1,206	218	484	702
Other Sacramento Area HS of similar size[1]	unknown	1,226	626	1,852	345	716	1,070
[1] Del Oro HS, Loomis, CA 1/31/2017							

Estimated Current AM / Afternoon Peak Hour Traffic Data. Figure 4 presents the baseline AM Peak Hour data created for this analysis. As noted earlier the Elk Grove Florin Road / Valley Oak Lane data was taken from actual City traffic counts, while other locations were based on StreetLight data. As noted, the total volume based on our assumptions is close to but less than the average EGUSD total, and we expected that is primarily because of drop-off along Elk Grove Florin Road. This factor has been addressed in the development of forecasts for "plus Project conditions.

TABLE 3 ASSUMED BASELINE EGHS PEAK HOUR TRAFFIC VOLUME SUMMARY							
#	Location	AM Peak Hour			Afternoon Peak Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
3	Valley Oak Ln – Midblock	490	110	600	15	95	110
5	Valley Oak Ln – Minnie Circle East	295	70	365	70	200	270
6	Valley Oak Ln – East exit	-	80	80	50	50	100
7	Elk Grove Florin Rd / Drop-off	80	-	80	50	0	50
	Total	865	260	1,125	185	345	530





CURRENT PEAK HOUR TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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OPERATIONAL ANALYSIS / EVALUATION

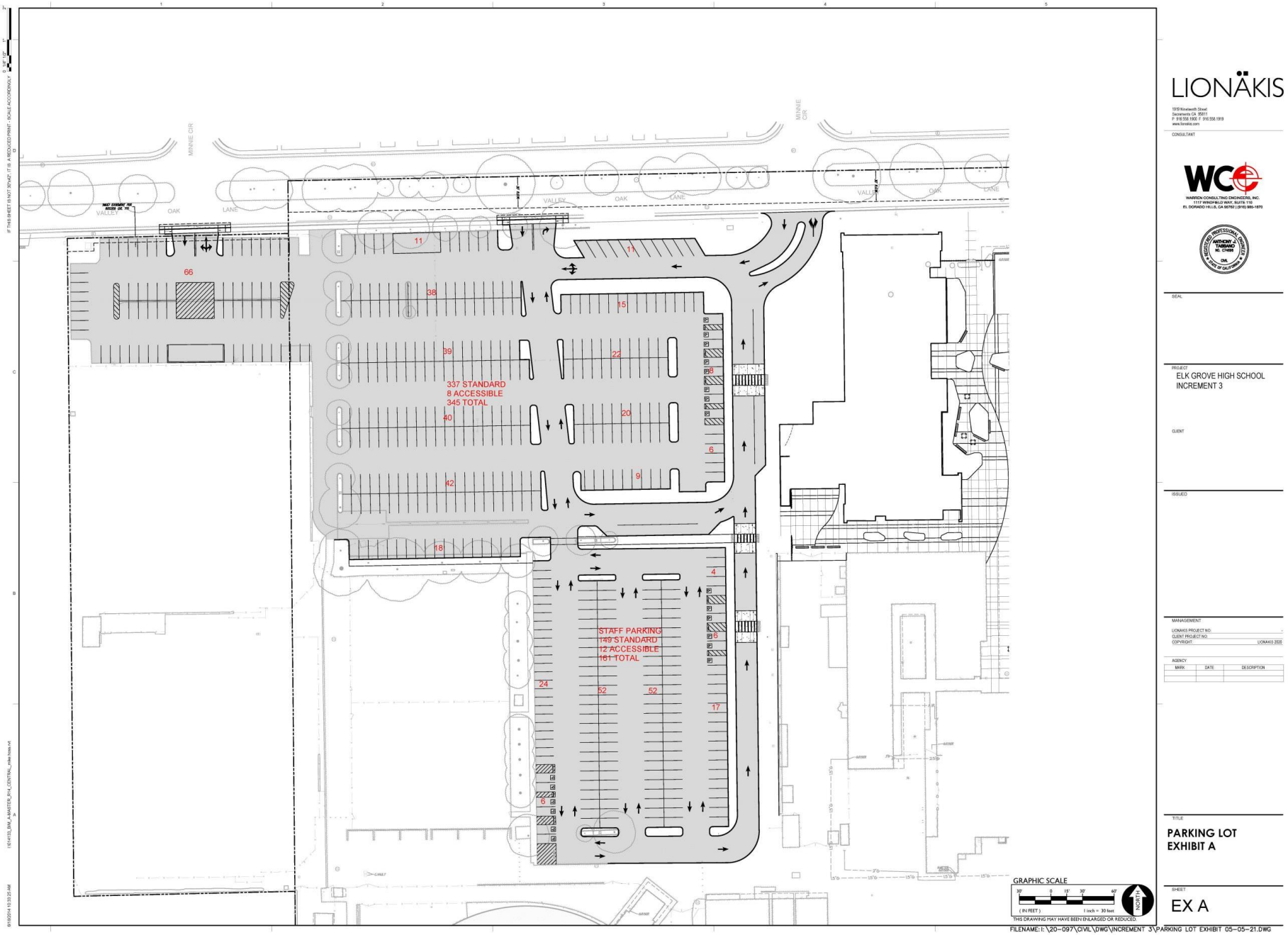
Proposed Project and Alternative

Project Development Criteria. The proposed EGHS access and circulation plan identified by EGUSD was developed based on consideration of a range of issues. In no particular order, these criteria are:

- ***Effect of EGHS Access on the operation of public street, primarily the Elk Grove Florin Road / Valley Oak Lane Intersection:*** Are westbound queues on Valley Oak Lane likely to extend back into the Elk Grove Florin Road intersection?
- ***Effects on median along Valley Oak Lane:*** Impacts to trees along Valley Oak Lane shall be minimized.
- ***Effects of Alterative Transportation Modes***. Are pedestrians and bicyclists affected and what measures are needed to safely accommodate pedestrians and bicyclists?
- ***Internal Parking Lot and Drop-off / Loading Zone Circulation:*** Does exiting traffic queue back into site and restrict internal traffic flow?

Proposed Project. Figure 5 presents the preliminary layout of the EGUSD's preferred plan for Access to Valley Oak Lane. The preferred plan has these features:

1. **Main Access at Minnie Circle East intersection**. Full access to the new drop-off / loading area will remain at the Minnie Circle East intersection, and the intersection will continue to have an all-way stop.
2. **New School Access at Minnie Circle West**. A new connection to the EGHS parking lot will be created at the existing median opening at Minnie Circle West to facilitate travel towards E. Stockton Blvd. Westbound left turns into EGHS will be prohibited during the travel times before and after school. An All-way stop would be installed.
3. **Existing All-way Stop at Vista Grande Way eliminated**. Stop sign on the Vista Grande Way approach will remain.
4. **Existing Valley Oak Lane Driveway Remains.** The existing driveway would continue to be used.
5. **New School Driveway West of Minnie Circle E**. A new right turn only driveway will be constructed west of Minnie Circle E.
6. **Crosswalk at Minnie Circle E Moved**. The existing crosswalk on the west side of the intersection will be relocated to reduce pedestrian traffic along Valley Oak Lane across the EGUSD entrance. Applicable ADA features will be included.
7. **Crosswalk at Minnie Circle W.** Crosswalks will be added at the new all-way stop.



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SEAL

PROJECT
ELK GROVE HIGH SCHOOL
INCREMENT 3

CLIENT

ISSUED

MANAGEMENT
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AGENCY

MARK	DATE	DESCRIPTION

TITLE
PARKING LOT EXHIBIT A

SHEET
EX A

PREFERRED ACCESS PLAN

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figure 5

Alternative Access. EGUSD considered various alternatives for EGHS access within the context of the evaluation criteria. The alternative plan moves the main drop-off / loading zone access to a location west of Minnie Circle East, as noted in Figure 6. The plan includes these features:

1. **Close the Existing EGHS access at Minnie Circle East**. The driveway would be eliminated, and the All-way Stop would remain. The existing crosswalk would remain on the west side of the intersection.

2. **Main Access at a new location west of Minnie Circle East intersection**. A new limited-access intersection would be constructed at a location west of Minnie Circle East. A new left turn lane would be constructed in the median allowing westbound left turns only. Note: the preliminary drawing of the alternative exaggerates the length of the turn lane which would be about 100 feet long to minimize loss of trees in the median. The access would be controlled by a stop sign on the EGHS exit.

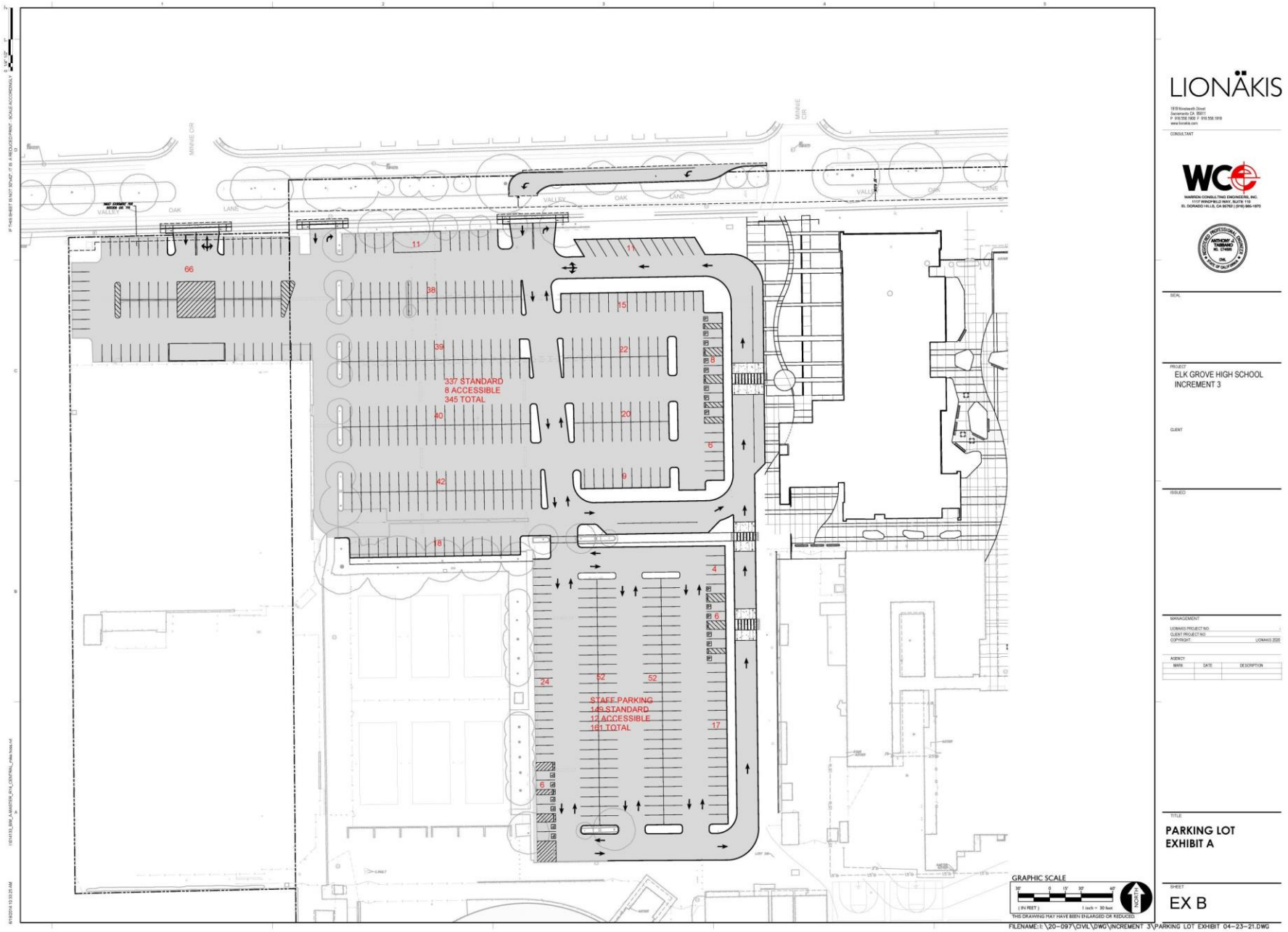
   The following features would be the same as noted for the preferred project.

3. **New School Access at Minnie Circle West**. A new connection to the EGHS parking lot will be created at the exiting median opening at Minnie Circle West to facilitate travel towards E. Stockton Blvd. Westbound left turns into EGHS will be prohibited during the travel times before and after school. An All-way Stop would be installed.

4. **Existing All-way Stop at Vista Grande Way eliminated**. Stop sign on the Vista Grande Way approach will remain.

5. **Existing Valley Oak Lane Driveway Remains.** The existing driveway would continue to be used.

6. **Crosswalk at Minnie Circle W.** Crosswalks will be added at the new all-way stop.



ALTERNATIVE ACCESS PLAN

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figure 6

Traffic Volumes Forecasts

Assumptions. Figure 7 presents a.m. and afternoon peak hour traffic volumes anticipated with implementation of the preferred access plan under assumptions which are intended to present a "conservative" view of the potential effects of the project on traffic operations in the immediate area of the EGHS.

1. All of the motorists using the existing parking lot along Elk Grove Florin Road will use the new drop-off area and parking lot.

2. The overall traffic volume oriented to the west on Valley Oak Lane to / from Stockton Blvd will not change appreciably.

3. The total traffic volume turning left into the drop-off area from westbound Valley Oak Lane will increase from the current 185 a.m. peak hour vehicles per hour (vph) to 300 vph as, in addition to the relocated drop-off trips, some parents today dropping off on Elk Grove Florin Road also use the new drop-off area. Similarly, the current afternoon volume of 60 left turns is assumed to increase to 220.

4. While some current background through traffic on Elk Grove Florin Road is likely to be e redistributed to the new access as fewer parents elect to drop-off / load along Elk Grove Florin Road, no appreciable reduction in through traffic on Elk Grove Florin Road has been assumed in order to present a "conservative" analysis of traffic operations.

Figure 8 presents traffic volumes under the access alternative. These forecasts assume the overall traffic volume remain similar but are relocated based on new access locations and controls.

1

185 (280)
5 (35)
(85) 510
(25) 15
(40) 20
(20) 75
R1-1

Vista Grande Way/ Valley Oak Ln

2

10 (20)
0 (0)
25 (5)
R1-1
5 (15)
170 (170)
R1-1
(25) 10
(75) 475
(5) 100
R1-1
(125) 5
(0) 0
(5) 10
R1-1

Minnie Cir (W)/ Valley Oak Ln

3

175 (185)
(65) 410
(20) 100
(35) 20
R1-1

West EGHS Lot Access/
Valley Oak Ln

4

20 (40)
35 (10)
35 (10)
R1-1
115 (95)
300 (210)
R1-1
(170) 120
(5) 10
R1-1
(50) 40
(225) 175
R1-1

Minnie Cir (E)/ Valley Oak Ln

6

235 (205)
405 (335)
(295) 190
(110) 140
(100) 180
(315) 470

Elk Grove Florin Rd/
Valley Oak Ln

8

175 (185)
(100) 40
(0) 390
(75) 80
R1-1

New School Access/ Valley Oak Ln

EXISTING PLUS PROJECT – PREFERRED ACCESS PLAN
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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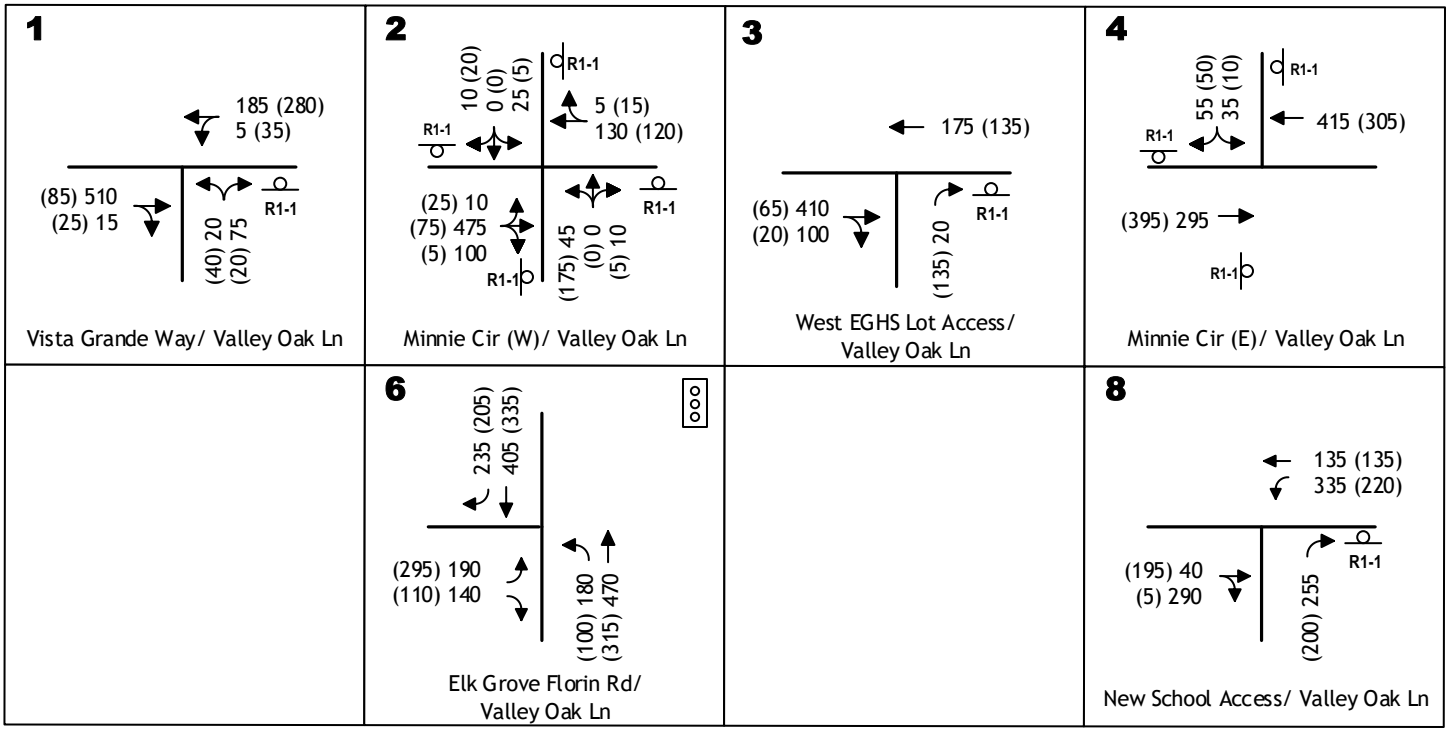
figure 7



EXISTING PLUS PROJECT – ALTERNATIVE ACCESS PLAN
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

Traffic Operational Analysis

Analysis Methods. The operation of street and intersections in the vicinity of EGHS was evaluated using the Synchro-SimTraffic simulation model. This simulation model is commonly employed in the Sacramento region and is accepted by local agencies, including the City of Elk Grove. SimTraffic attempts to determine traffic flow conditions in a manner that accounts for the effects of congestion and delay at adjoining intersections across peak periods. SimTraffic results are identified in terms of average vehicle delays and peak period queue lengths. SimTraffic is intended to be a stochastic model (i.e., randomness is intentionally present when running the simulations), and the results for each individual model run will vary within each scenario based on random patterns of vehicle and pedestrian arrivals. The simulation results contained herein reflect the average of the mean 8 one-hour simulation runs selected from a 10-run sample.

SimTraffic creates a visual representation of traffic flow conditions over time, and this information can be useful for identifying circulation network bottlenecks. It is also possible to pause the simulation and produce a visual "screenshot" of conditions occurring at a particular moment. However it is important to note that conditions vary throughout individual traffic signal cycles as lanes fill and traffic disperses. Peak queuing in one lane will not necessarily coincide with the moment of peak activity at another.

The relative effects of implementing the EGHS Modernization project have been evaluated in terms of 1) the length of queues in turn lanes and on stop controlled approaches at key locations and 2) the length of delays experienced by motorists. Queues are presented herein in terms of the "Average length over the hour and the 95th percentile queue. The 95th percentile queue does represent the longest queue that may occur but would be a queue with length exceed only 5% of the time. Conditions with the proposed access plan have been compared to the assumed current baseline condition.

Baseline Conditions. Table 4 shows delay and queue forecast information for the Current condition. It is important to note that simulation does not account for the random nature of traffic distribution immediately inside of the existing Valley Oak Lane entrance, and delays at that location are not included.

Review of the baseline data indicated that:

- In the morning the queue of traffic in the eastbound Valley Oak Lane left turn lane approaching Elk Grove Florin Road exceeds the available storage.

- In the morning the queue of westbound traffic on Valley Oak Lane extending back from the Minnie Circle East intersection does not reach Elk Grove Florin Road.

TABLE 4
PEAK HOUR DELAYS / QUEUES
ESTIMATED PRE-COVID CONDITIONS

Location	Control	Lane	Storage Distance (feet)	AM Peak Hour				Afternoon Peak Hour			
				Volume (vph)	Average Delay (sec/veh)	Queue Length (feet)		Volume (vph)	Average Delay (sec/veh)	Queue Length (feet)	
						Average	95th %			Average	95th %
Elk Grove-Florin Rd / Valley Oak Lane	Traffic Signal	NB left	200[1]	110	29	65	145	50	32	100	185
		SB right	210	175	10	65	185	105	5	40	110
		EB left	75	205	24	90	185	170	13	45	70
		EB right	525	100	7	35	85	85	2	30	60
Valley Oak Lane / Minnie Circle (East)	All-Way Stop	WB	525	285	24	100	270	150	10	45	95
		EB	400[2]	200	12	55	105	165	8	45	85
		NB	-	70	6	30	55	200	17	65	175
		SB	-	100	8	40	75	60	5	30	55
Valley Oak Lane / Vista Grande Way	All-Way Stop	EB	525	525	19	130	370	105	6	130	370
		WB	200	125	5	35	55	275	7	35	55
		NB	120	95	5	35	65	60	5	35	65

[1] lane continues as TWLT lane

[2] distance to next driveway or intersection

HIGHLIGHTED Queue exceeds storage

Conditions with Proposed Access Plan. Table 5 identifies the forecasted delays and queue lengths with implementation of the preferred project. As shown, these queuing issues have been identified.

- The queue in the ***eastbound left turn lane at the Elk Grove Florin Road intersection*** will continue to be longer than storage. Making the turn lane longer would help reduce queuing on the approach to the Elk Grove Florin Road intersection but would impact trees in the median.

- The ***95th % westbound queues extending back from the Minnie Circle East intersection will reach Elk Grove Florin Road***. Occasionally those queues may make it difficult for traffic entering Valley Oak Lane from northbound Elk Grove Florin Road, as evidenced by the long delay for that movement. Because southbound traffic can make "right turns on red" there are likely to be times when the westbound lane exiting the intersection is already occupied when the signal turns green for northbound left turns. This could lead to the long average delay (78 seconds) and long queues for that movement. This condition is illustrated visually in a "screenshot" from the simulation presented in Figure 9.

  In reality, the length of the westbound queue and its effects on the Elk Grove Florin Road intersection will depend on the extent parents use the new drop-off area, as parents could instead elect to continue to drop-off along Elk Grove Florin Road if delays in reaching the new facility are considered to be unacceptable.

- Relatively long delays are anticipated on the EGHS exit to the Minnie Circle East intersection.

- The ***eastbound queue approaching Minnie Circle East*** may occasionally reach the new driveway in the afternoon. However, alternative access to Valley Oak Lane exists at the existing driveway to the west.

- The ***eastbound queue approaching Minnie Circle East*** is likely to extend beyond the Vista Grande Way intersection in the morning. This would increase delays for motorists on Vista Grande Way. However, alternative access to Valley Oak Lane exists at Emerald Oak Drive.

- Because all-way stop controls would remain at the Minnie Circle intersections, the delays experienced by motorists on those streets remain relatively low.

AM SIMULATION WITH PREFERRED PLAN

TABLE 5
PEAK HOUR DELAYS / QUEUES WITH PREFERRED LAYOUT

Location	Control	Lane	Storage Distance (feet)	AM Peak Hour				Afternoon Peak Hour			
				Volume (vph)	Average Delay (sec/veh)	Queue Length (feet)		Volume (vph)	Average Delay (sec/veh)	Queue Length (feet)	
						Average	95th Percentile			Average	95th Percentile
Elk Grove-Florin Rd / Valley Oak Lane	Traffic Signal	NB left	200[1]	180	78	165	455	100	49	75	180
		SB right	210	235	6	95	235	205	14	75	190
		EB left	75	190	28	80	145	295	28	100	155
		EB right	525	140	10	75	225	110	12	110	325
Valley Oak Lane / Minnie Circle (East)	All-Way Stop	WB	525	415	49	235	570	305	42	135	400
		EB	175[2]	130	10	45	80	175	14	50	100
		NB	-	215	9	25	55	275	69	180	480
		SB	-	90	8	35	65	60	7	35	60
Valley Oak Lane / New right only Access	NB Stop	NB	-	80	3	30	50	75	12	35	80
		EB	200[2]	430	1	<25	<25	175	3	<25	40
Valley Oak Lane / Minnie Circle /(West)	All-Way Stop	EB	180	585	12	105	205	105	7	35	65
		WB	525	175	5	35	50	175	6	40	60
		NB	-	15	4	<25	40	130	7	35	70
		SB	-	35	4	<25	45	25	4	<25	45

[1] lane continues as TWLT lane

[2] distance to next driveway or intersection

HIGHLIGHTED Queue exceeds storage

Comparative delay location

Operational Results with Alternative Layout. The relative effects of implementing the EGHS Modernization project with alternative access to Valley Oak Lane have also been evaluated in terms of the length of queues at key locations and the length of delays experienced by motorists. Table 6 presents results of simulation analysis for the Alternative. Queues in excess of available storage are again noted and the relative differences in the length of delays between the proposed plan and the alternative have been noted.

- The queue in the ***eastbound left turn lane at the Elk Grove Florin Road intersection*** will continue to be longer than storage, and there is no appreciable difference in the effect caused by the alternative.
- The average delay for westbound traffic at the Valley Oak Lane / Minnie Circle East intersection is reduced slightly under the alternative primarily due to the elimination of the fourth intersection leg. As a result, the ***westbound queues extending back from the Minnie Circle East intersection*** are projected to be slightly shorter under the alternative, although the 95th percentile queue would still reach Elk Grove Florin Road. The effects of reduced queuing is evidenced by the slightly short average delay for northbound left turns at the Elk Grove Florin Road intersection (i.e., 60 seconds rather than 78 seconds in the a.m. peak hour), and by the shorter 95th percentile queue in that lane (i.e., 400 feet versus 455 feet).
- The 95th percentile queue will fill the ***westbound left turn lane at the new access*** intersection. As a result, there will be occasions when westbound through traffic is impeded. However, this effect is already included in the queue estimates for the Minnie Circle East intersection. Lengthening the turn lane to provide more queueing would affect additional trees in the median.
- The length of ***delays exiting EGHS at the new access*** would be slightly shorter than at the Minnie Circle East intersection under the preferred plan (i.e., 58 seconds versus 69 seconds).
- The ***eastbound queue approaching Minnie Circle East*** may occasionally reach the new driveway in the afternoon. While access to Valley Oak Lane exists at the exiting driveway to the west, more exiting traffic would be delayed by this limitation.
- The ***eastbound queue approaching Minnie Circle West*** is likely to extend beyond the Vista Grande Way intersection in the morning. As was the case with the preferred alternative, this would increase delays for motorists on Vista Grande Way. The affected neighborhood has alternative access to Valley Oak Lane at Emerald Oak Drive.

Effects on Alternative Transportation Modes

The area around EGHS has extensive facilities for bicycles and pedestrians, as noted earlier. Sidewalks line each street, and marked school zone crosswalks are available at most intersections. Class 2 bike lanes exist on Valley Oak Lane and Elk Grove Florin Road. Development of new EGHS access to planned drop-off and loading areas will need to be accompanied by facilities to maintain a safe path of travel for students, as noted below.

Valley Oak Lane / Minnie Circle East Intersection Crosswalk Relocation. Today a marked crosswalk exists on the west side of the Minnie Circle East intersection, as noted in Figure 10. The location is consistent with the primary traffic flow directions into (Westbound left turns) and out of (Northbound right turns) the parking lot, but pedestrians using the crosswalk cross the driveway to reach the school's buildings. The school entrance will be improved with implementation of the preferred plan, but to safely handle pedestrians the crossing should be moved to the east side of the intersection. The effects of this change have been assumed in the preceding operational analysis. The exact location of the crossing will need to be established as the intersection layout is finalized, and ADA accessible features will be needed on each corner and across the median. Because the driveway would be closed under the Alternative Plan, the crosswalk would not need to be relocated.

Valley Oak Lane / Minnie Circle West Intersection Crosswalks. New crosswalks are proposed, and ADA accessible ramps will be needed on the south side of the intersection.

Internal Circulation Concepts

With the introduction of the new drop-off and loading area the EGHS parking area is divided into three primary areas. The secured faculty parking will occupy the bottom third east of the tennis courts. The drop-off and loading area will be located in the northeastern third. Student parking would occupy the northwestern third as well as the area inside of the drop-off and loading circle.

Preferred Plan. The preferred plan features a "looped" circulation layout that serves all three areas. As noted in Figure 11, traffic destined for the faculty lot and drop-off zone would head to the middle of the lot and proceed south. Motorists headed to the drop-off area would turn left at the midpoint while faculty continue along the tennis courts. Student parking would enter from the west and use the improved entrance to each their area of the parking lot. The location of the new driveway on Valley Oak Lane will be consistent with the main entrance route.

Alternative Plan. The alternative plan follows the same overall site layout but focusses the entry at the new access driveway on Valley Oak Lane, as noted in Figure 12.

Effects on Valley Oak Lane Median

Preferred Plan. The preferred plan minimizes impacts to the Valley Oak Lane median. The only area where trees may be affected is on the east side of the Minnie Circle East intersection, where the new crosswalk would cross the end of the median affecting 1 tree.

Alternative Plan.

The alternative Plan would require the elimination of an additional 9 or 10 trees.

In the early stages of planning other traffic configurations were considered. Other than the Preferred Plan, and the access to the Minnie Circle West intersection, all other alternative layouts would have required the removal of trees to add traffic capacity with additional paving. None of these alternative plans have been studied further.

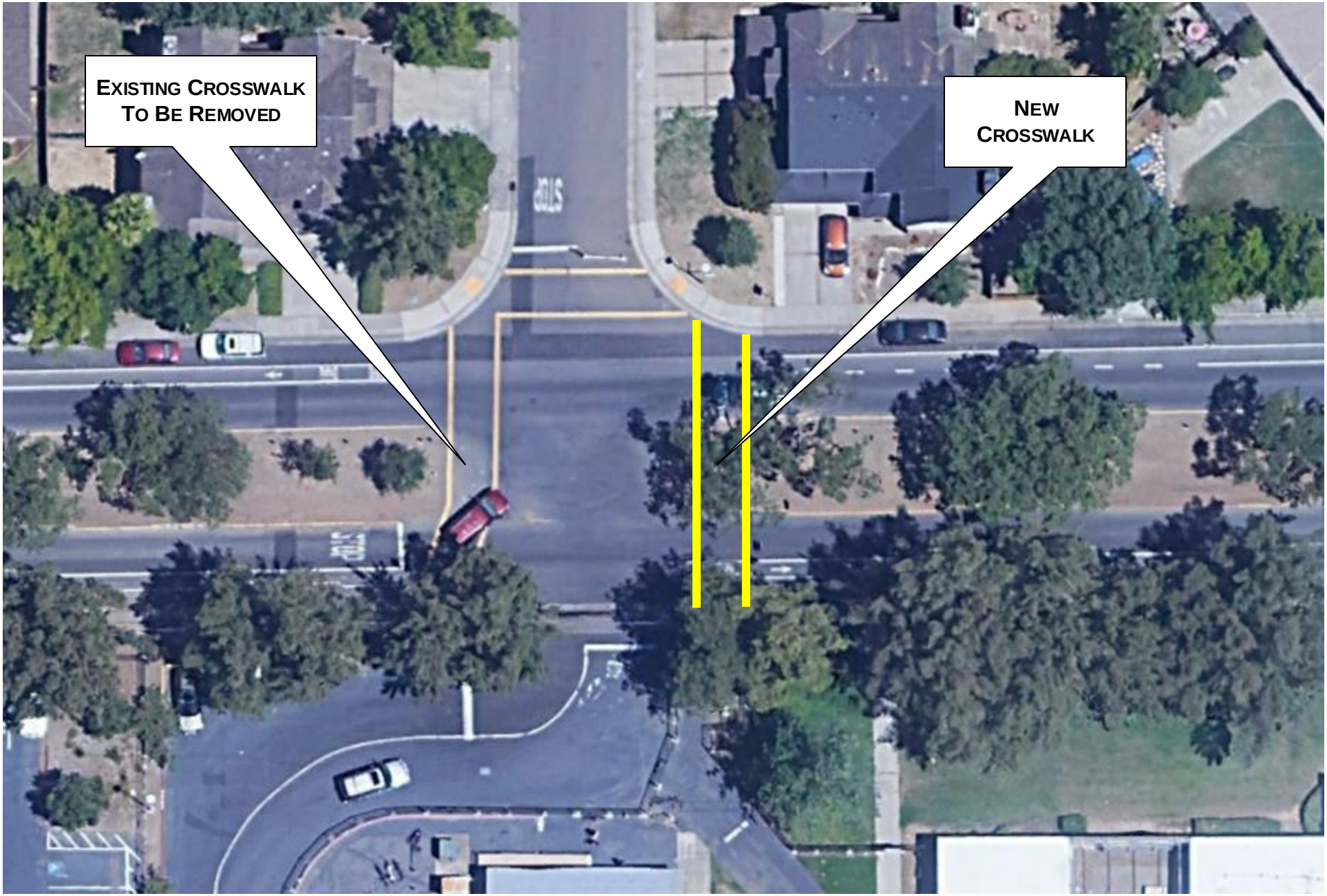
TABLE 6
PEAK HOUR DELAYS / QUEUES WITH ALTERNATIVE ACCESS LAYOUT

Location	Control	Lane	Storage Distance (feet)	AM Peak Hour				Afternoon Peak Hour			
				Volume (vph)	Average Delay (sec/veh)	Queue Length (feet)		Volume (vph)	Average Delay (sec/veh)	Queue Length (feet)	
						Average	95th Percentile			Average	95th Percentile
Elk Grove Florin Rd / Valley Oak Lane	Traffic Signal	NB left	200[1]	180	60	140	400	100	39	75	155
		SB right	210	235	13	80	205	205	10	70	185
		EB left	75	190	26	80	140	295	28	100	160
		EB right	525	140	10	65	180	110	13	105	300
Valley Oak Lane / Minnie Circle (East)	All-Way Stop	WB	525	415	41	200	515	305	28	120	330
		EB	175[2]	275	14	60	105	395	9	75	130
		NB	-	0	-	--	-	0	-	-	-
		SB	-	90	4	30	65	60	6	30	60
Valley Oak Lane / New Access	NB Stop	WB left	100	335	9	60	110	220	5	35	85
		WB thru	175	135	3	<25	95	135	4	<25	40
		EB	200[2]	330	2	<25	40	200	4	<25	80
		NB	-	255	8	60	130	200	58	125	350
Valley Oak Lane / Minnie Circle /(West)	All-Way Stop	EB	180	585	14	115	225	105	6	35	60
		WB	525	130	6	35	60	135	6	35	60
		NB	-	55	6	25	55	180	9	45	105
		SB	-	35	4	<25	45	25	4	<25	45

[1] lane continue as TWLT lane

[2] distance to next driveway or intersection

HIGHLIGHTED Queue exceeds storage.



MINNIE CIRCLE EAST CROSSWALK

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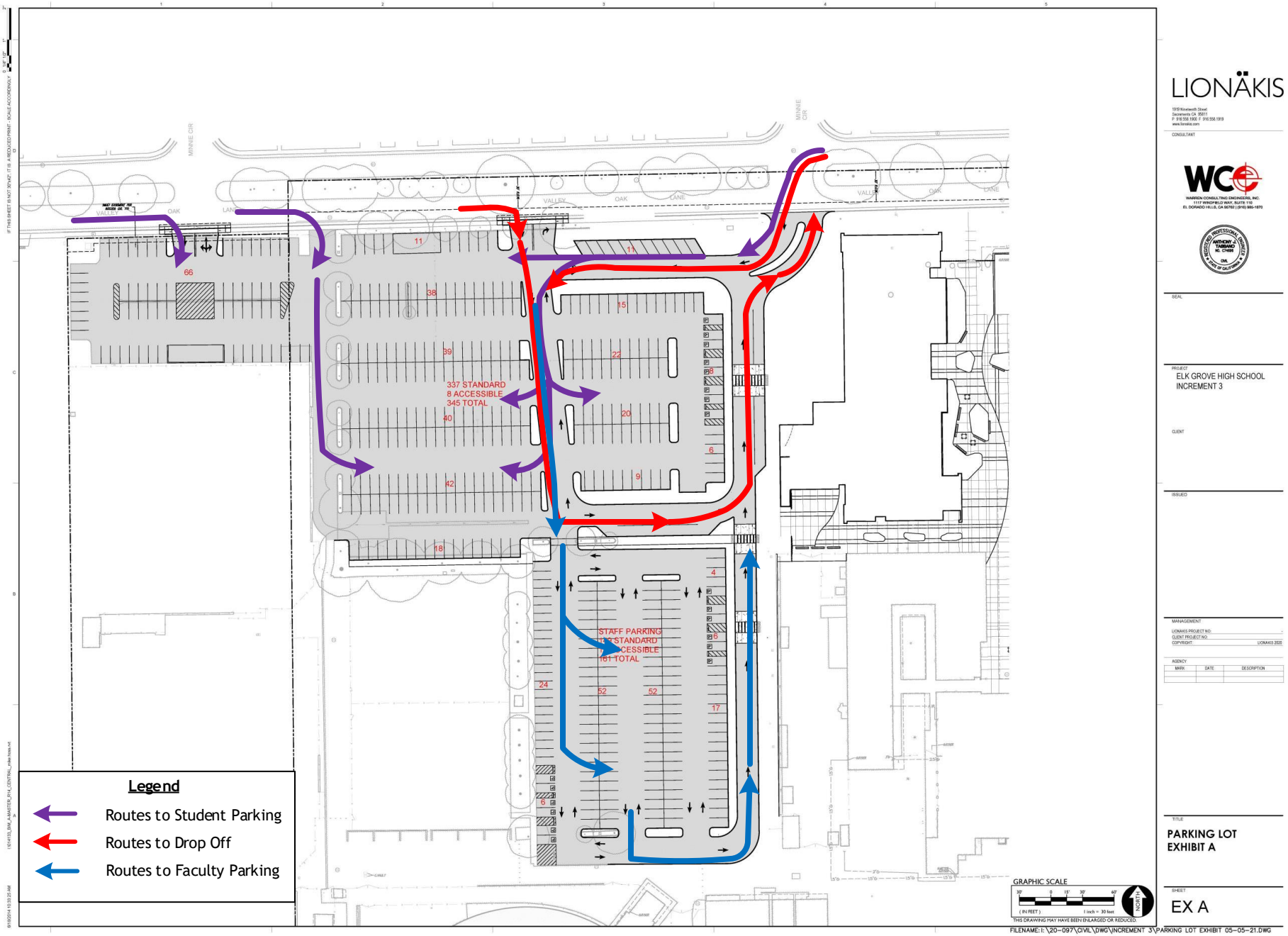
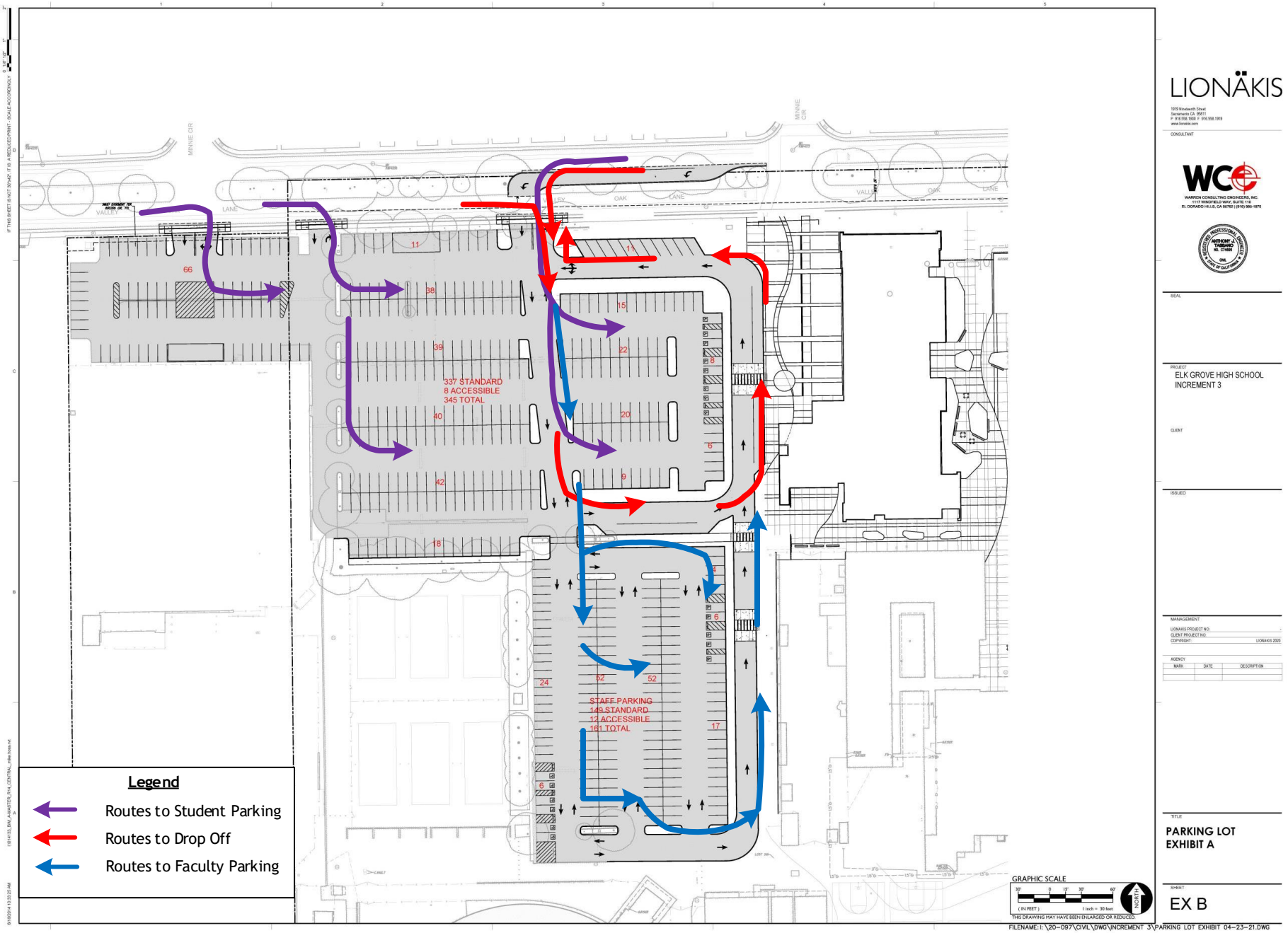
figure 10



INTERNAL CIRCULATION PATTERN – PREFFERED PLAN



INTERNAL CIRCULATION PATTERN – ALTERNATIVE PLAN

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figure 12

CONCLUSIONS

The EGUSD believes that the Preferred Plan is superior to the Alternative Plan based on these considerations.

Traffic Operations

Both the Preferred and Alternative plans would contribute to traffic congestion before and after school on Valley Oak Lane between Minnie Circle East and Elk Grove Florin Road, and both are likely to result in westbound queues that extend back to Elk Grove Florin Road, although conditions with the Alternative Plan may be slightly better.

Alternative Transportation Modes

With identified improvements both plans would provide adequate and safe access to EGHS for bicycle and pedestrians.

On-Site Circulation

Both plans support the internal circulation concept planned to accommodate the new drop-off and loading, secured faculty parking area and student parking lots.

Valley Oak Lane Median / Trees

The Preferred Plan could require the removal of 1 tree on the east side of the Minnie Circle East Intersection for the re-aligned pedestrian crosswalk. The alternative Plan would require the elimination of an additional 9 or 10 trees.

Overall

While the Alternative Plan may offer slightly improved traffic operations, the Preferred Plan is superior because it impacts fewer trees on Valley Oak Lane.