

Excelsior Academy

SITE MASTER PLAN

PROJECT BOOK

AUGUST 2, 2023



FFKR | LANDSCAPE & PLANNING

Excelsior Academy's United Mission

Our mission is to educate students with a broad classical foundation of knowledge, assisting them with opportunities to learn at their challenge level, in an intentionally inviting environment, to help students acquire a
LIFE-LONG LOVE OF LEARNING.

IN THIS PROJECT BOOK

INTRODUCTION

SITE ANALYSIS

MASTER PLAN CONCEPTS

INFRASTRUCTURE STUDIES

RECOMMENDED NEXT STEPS



Introduction

PROJECT SCOPE & GOALS

Excelsior Academy selected FFKR Architects to facilitate an envisioning charrette and provide an overall site master plan study. The master plan seeks to create an inclusive and safe master campus plan. Key components of the master plan design include but not limited to increased driveway and drop-off/loading zone areas to improve the traffic circulation, queue length and student drop-off experience. In addition, the master plan of the new property to the south of the existing campus is to include a middle school building, high school building, track and sports field, parking lots, pick-up/drop-off zones, outdoor amenity and gathering spaces, retention areas, and any other improvement needs for the campus use. In addition a traffic circulation and other basic infrastructure needs assessments will be completed which take into account current and future school populations, current and future neighboring circulation plans, and other traffic considerations.

VALUE

- A master plan provides clearly defined direction and enables the process of growth and development to evolve as smoothly as possible.
- It allows for a deeper understanding of the site's development potential and a better idea of how to utilize the assets to maximize the economic and social benefits.
- The data collected during the process helps to determine the need for additional resources to achieve the school vision.
- The plan unfolds the big picture, providing the facts, both limiting and enabling which provides a reality check and foundation for what you want.
- It helps to align the project goals, objectives, underlying design principles, and regulations in order to satisfy both the needs and wants.
- It becomes a critical tool used to secure financing, attract students and faculty, and define legal definition and entitlements.
- It incorporates all stakeholders review, input and approval to ensure that the final master plan has incorporated the goals and vision from a functional, aesthetic, and financial point of view, and that there will be many champions of the plan to carry through to implementation.



Introduction

PROJECT SCOPE & GOALS

PROCESS

Step 1: Kick-Off Meeting

This step is to formally introduce all team members and decision makers. Determine communication and decision-making protocol and define the program and guiding design principles.

Step 2: Data Collection and Observation

Review existing survey, site, and building drawings, visit the site to understand the site's potential and maximize its assets.

Step 3: Inventory and Analysis

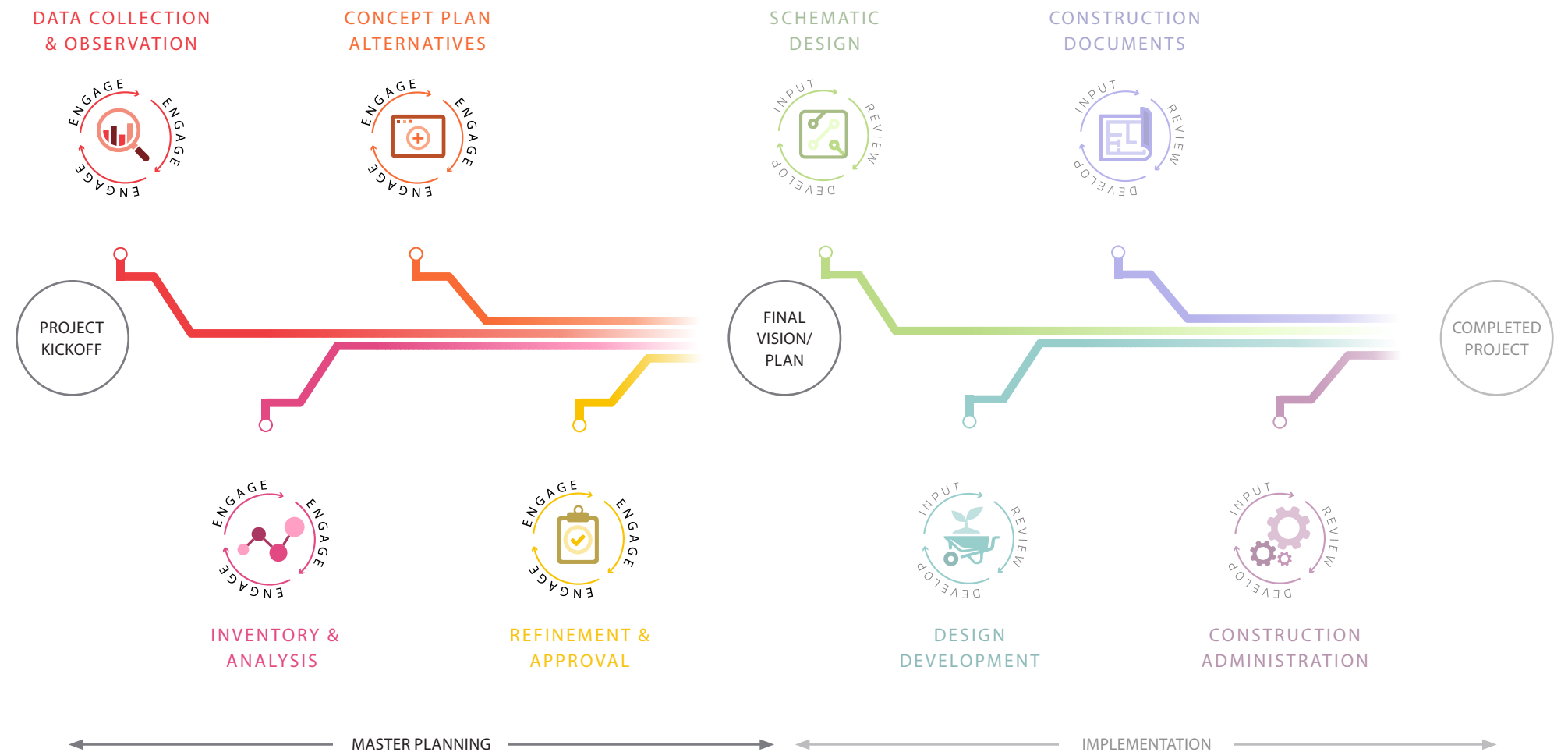
Analyze the collected data to understand the constraints and inform the development of ideas. Brainstorming session with the Committee.

Step 4: Concept Plan Alternatives

Align the project goals, vision, and guiding principles through an iterative process to arrive at a preferred site plan.

Step 5: Final Master Plan and Report

Refinement and compilation of final master plan along with supporting data, explanations, phasing suggestions and precedents into a bound report which will help inform and guide future planning and development decisions.

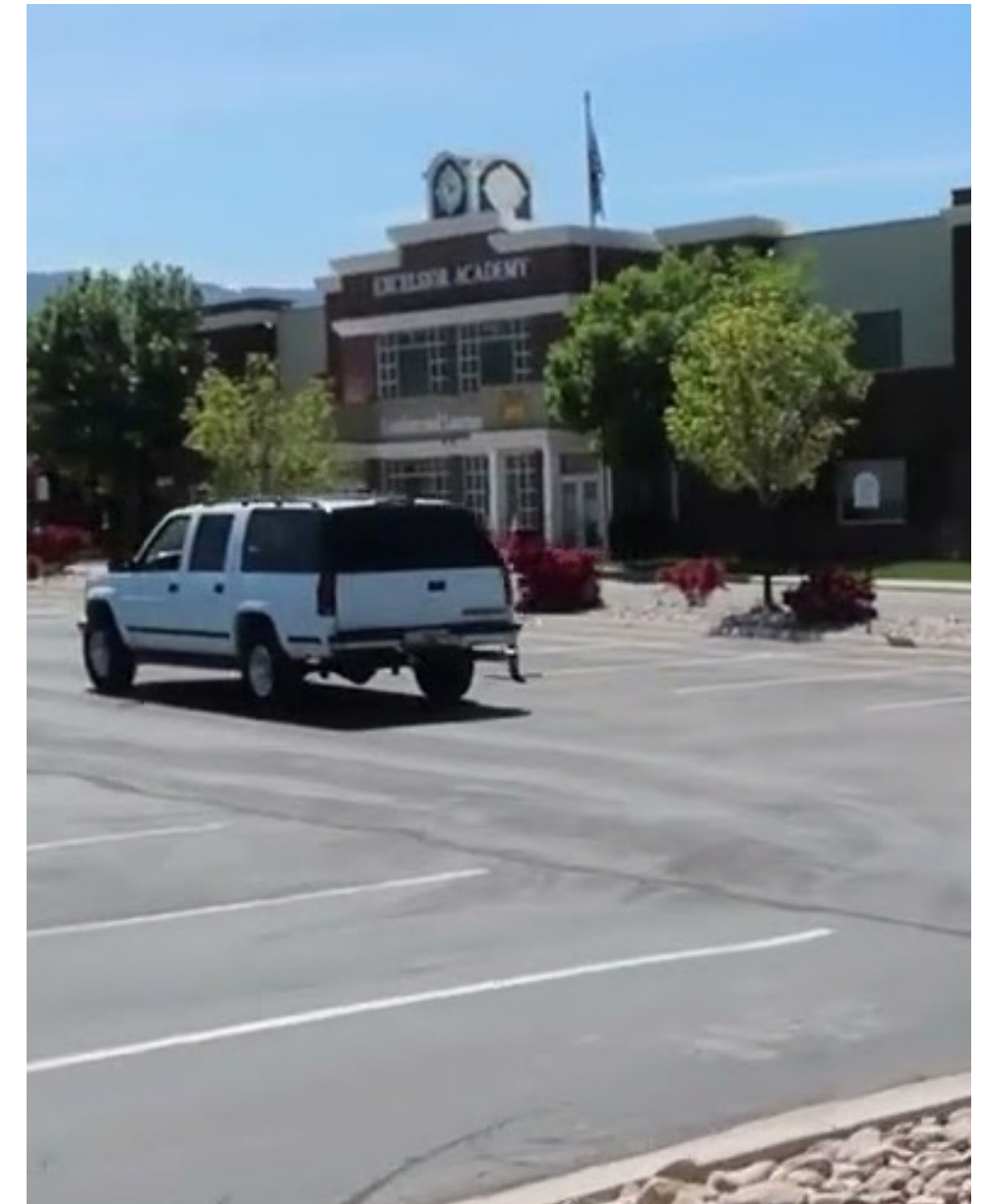


Introduction

PROJECT SCOPE & GOALS

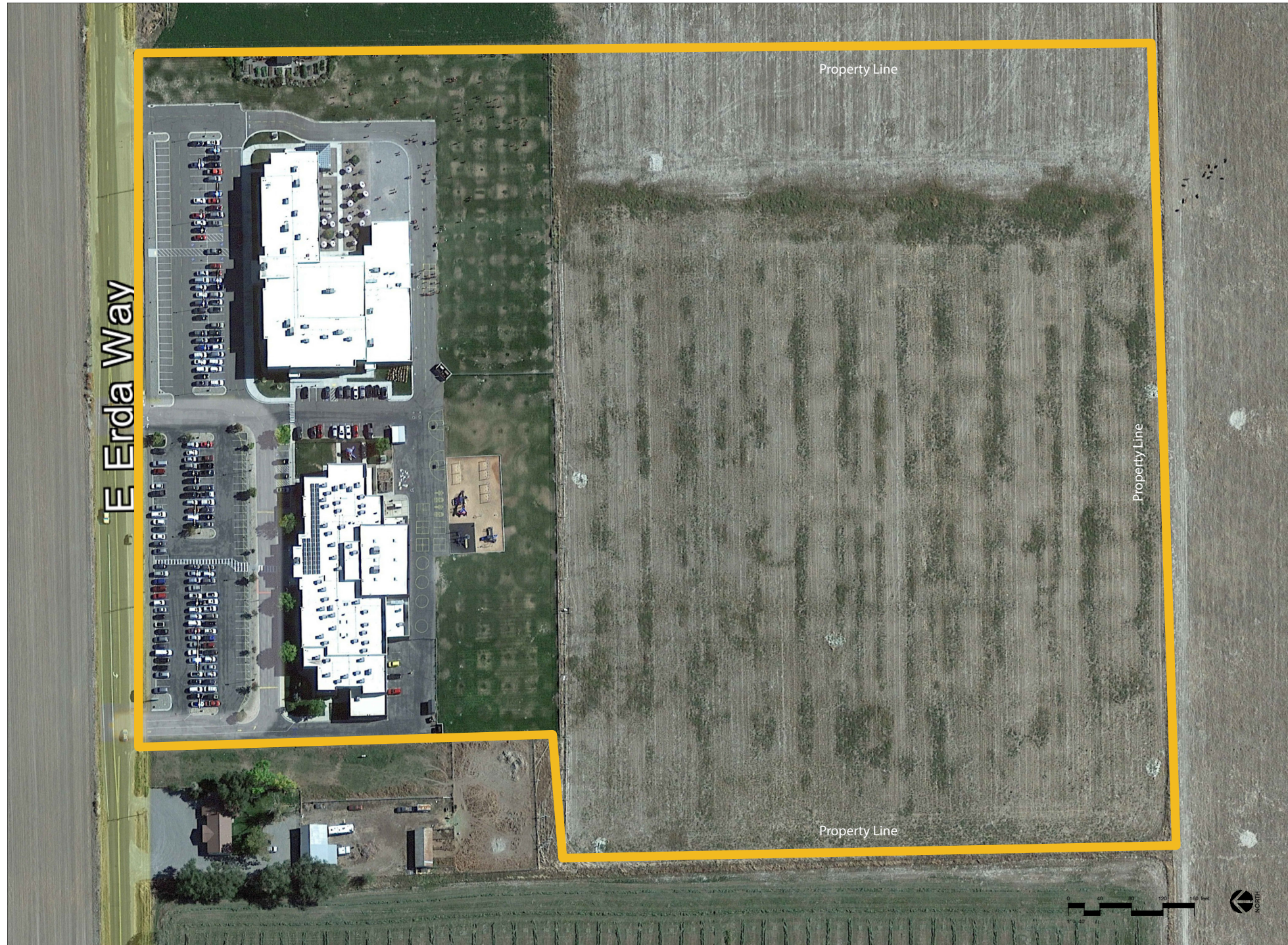
DESIGN PRINCIPLES

- Lessen interactions between pedestrians and vehicles at the main drop-off areas, as well as across campus and in neighboring area
- More prominent striping at pick-up/drop-off locations to enhance understanding of queue process
- Additional fencing to separate students from vehicles
- Longer queue areas for pick-up/drop-off
- Re designated entry / exit to remove car queue on Erda Way
- Effectively and seamlessly expand vehicular circulation safety throughout the site master plan phases and future neighbor inclusion
- Layout of campus expansion to the south to understand opportunities and constraints related to additional facility needs and desires
- Layout of site amenities and open spaces to be efficiently shared between the various schools
- Understand infrastructure needs and costs associated with campus expansion



SITE ANALYSIS

Site Analysis



EXISTING SITE

Existing excelsior campus is located at 124 E Erda Way, Erda, UT 84074 on approximately 9.90 acres of land. The current campus consists of an elementary school with an enrollment of approximately 900 students, and a middle school of with an approximate enrollment of 500 students and associated playgrounds, fields, gardens, parking, and entry plazas.

The campus expansion area is located directly south of the current campus on approximately 17.84 acres of land on a greenfield site.

The student population serves the surrounding communities of Tooele, Grantsville, lake point, Erda, Stockton, and Stansbury park.

Site Analysis



Following site visits and observation, areas of focus and improvement were identified, as well as opportunities for existing features to be reused.

- Queue on and off property is #1 safety concern
- Need longer queue length with fewer pedestrian/vehicular interactions
- Schools start at the same time
- Student drop-off begins at 7:30 am
- Student pick-up begins 3:00-3:45 pm
- 1,400 current enrollment
- 1,500 with future middle school
- 2,000 with future high school
- Future housing development to the east to provide access road that can be used for future school access
- Existing south facing play areas are hot with little shade
- Off site queueing and parking and pedestrian activity on Erda Way is dangerous and not efficient
- Current middle school to become elementary school
- Limited parking

Site Analysis



EXISTING QUEUES:

4,015 ft on-site
+ 1,150 ft at Church
= 5,165 ft total

~800 ft of pick-up/drop-off length
~225 parking stalls

EXISTING QUEUES LENGTHS

MASTER PLAN CONCEPTS

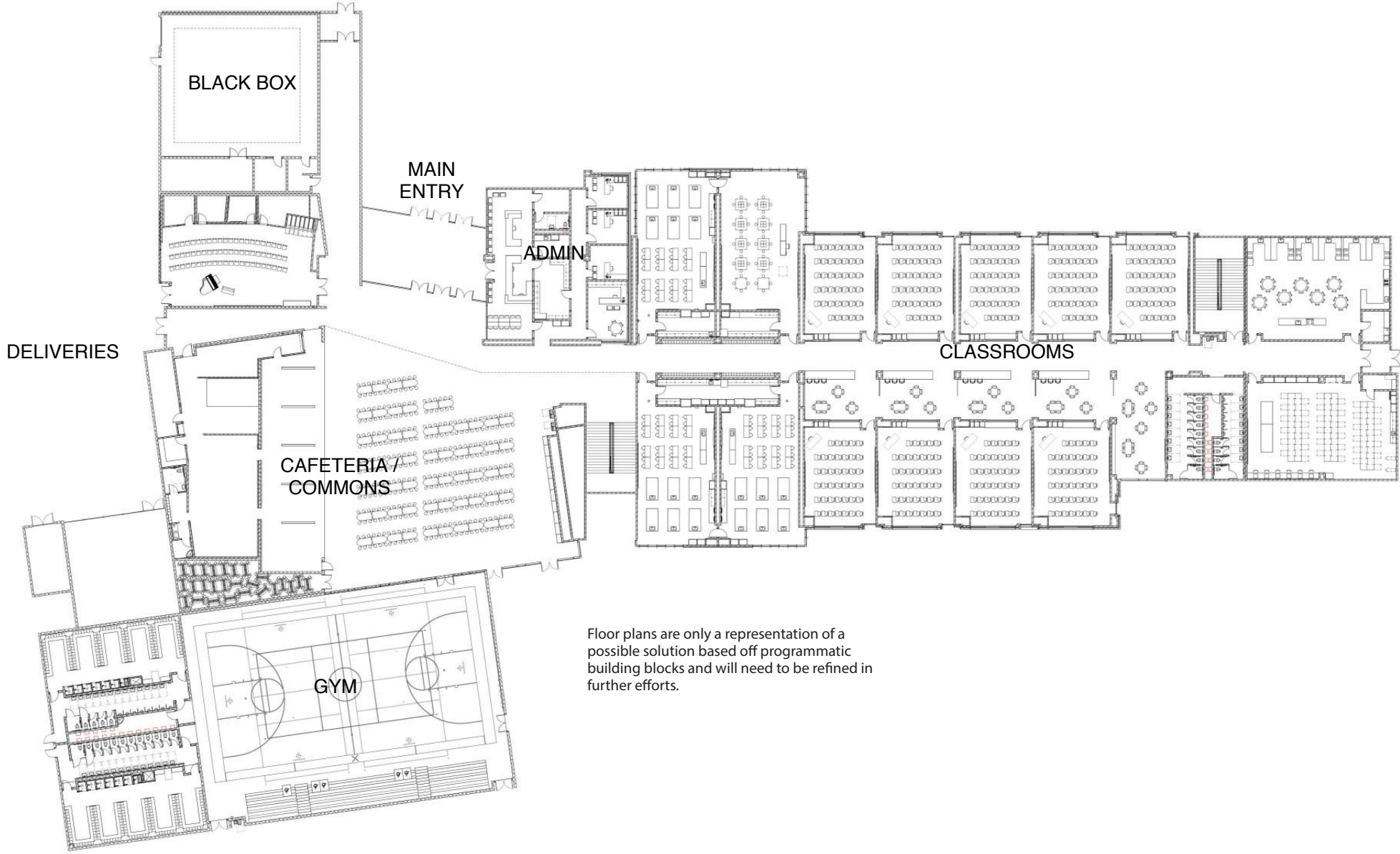
BUILDING PROGRAM CONCEPT

MASTER PLAN CONCEPT

VEHICULAR CIRCULATION CONCEPT

Master Plan Concepts

BUILDING CONCEPTS | HIGH SCHOOL



Floor plans are only a representation of a possible solution based off programmatic building blocks and will need to be refined in further efforts.



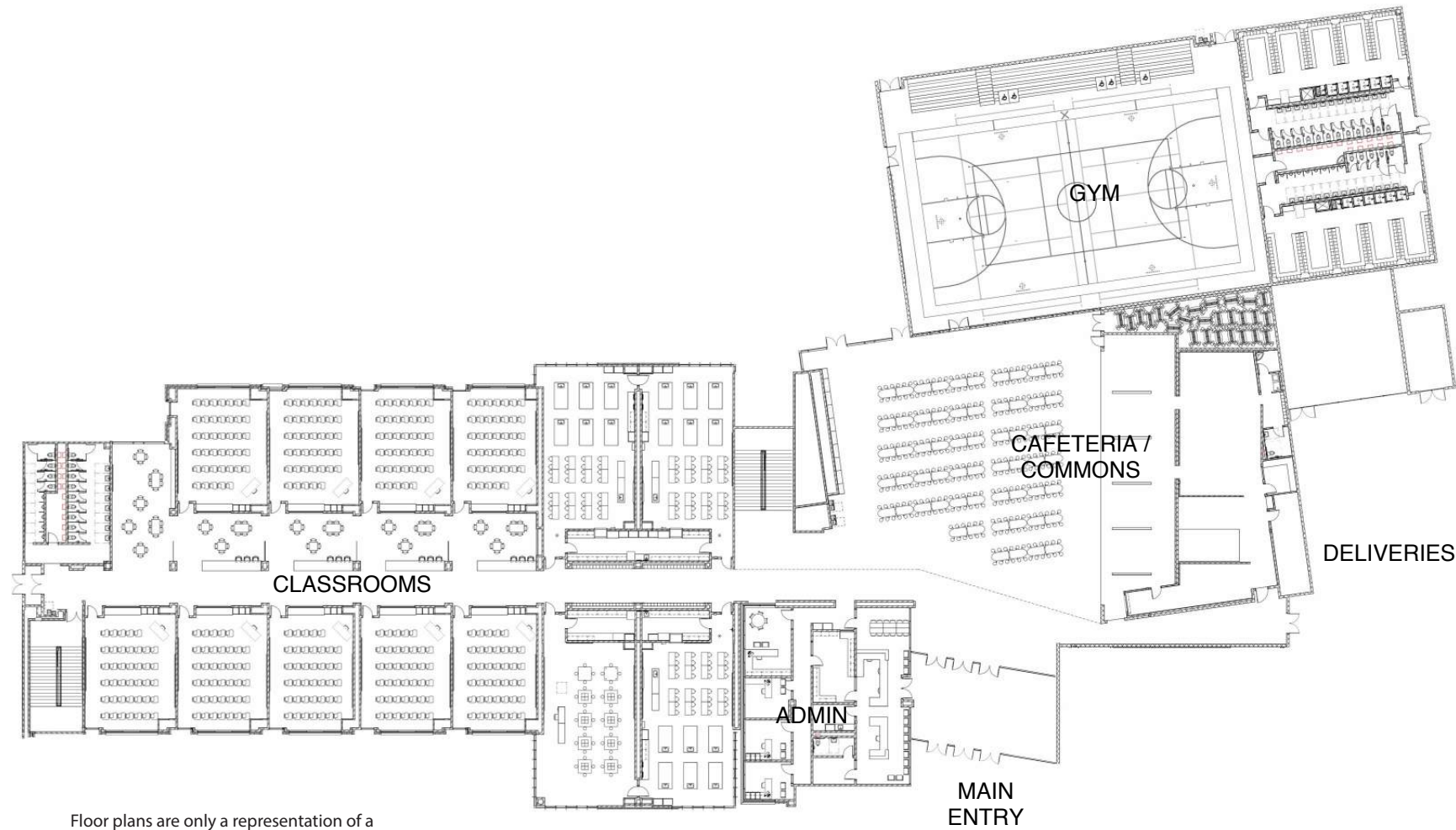
HIGH SCHOOL PROGRAM

(each school 2 levels)

- Approx 111,000 sf
- Math: 4 classrooms
- ELA: 3 classrooms
- Science: 3 classrooms/lab
- History: 3 classrooms
- CCA: 1 classroom
- Foods: 1 classroom
- Sewing: 1 classroom
- Health: 1 classroom
- Robotics: 1 classroom
- Spanish: 1 classroom
- Library
- Music room - 50 students
- Black box theater
- Gymnasium
- Full size basketball court
- Locker rooms
- Dance room
- Art room
- SPED: 2 classrooms
- Kitchen/cafeteria
- Administration

Master Plan Concepts

BUILDING CONCEPTS | MIDDLE SCHOOL



MIDDLE SCHOOL PROGRAM (each school 2 levels)

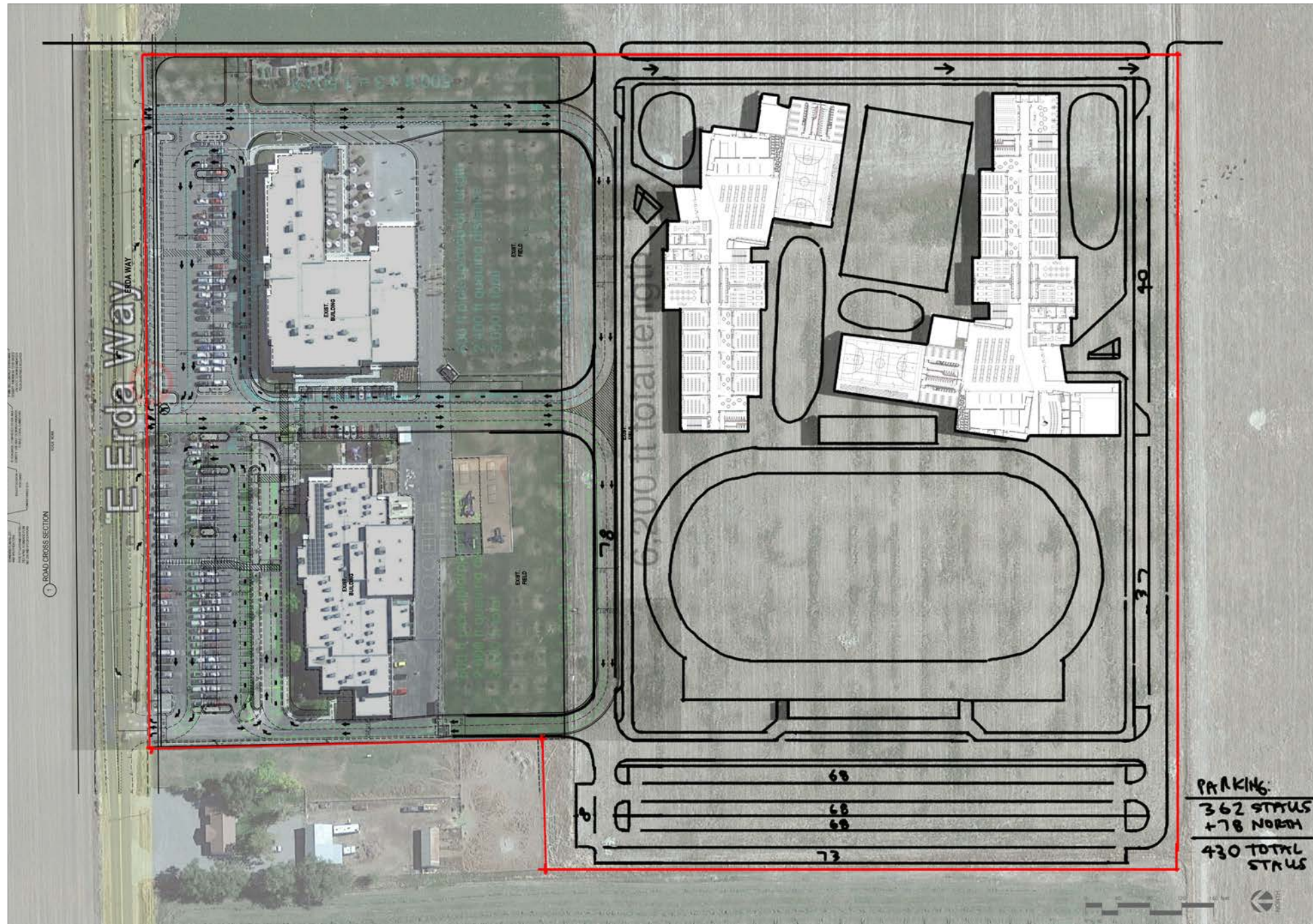
- Approx 87,000 sf
- 8 classrooms
- Science: 2 classrooms
- Specialty: 6 classrooms
- Art room
- Library
- Gymnasium
- Full size basketball court
- Locker rooms
- Kitchen/cafeteria
- Administration

Floor plans are only a representation of a possible solution based off programmatic building blocks and will need to be refined in further efforts.



Master Plan Concept

PRELIMINARY CONCEPT | 1



FEATURES

PROS

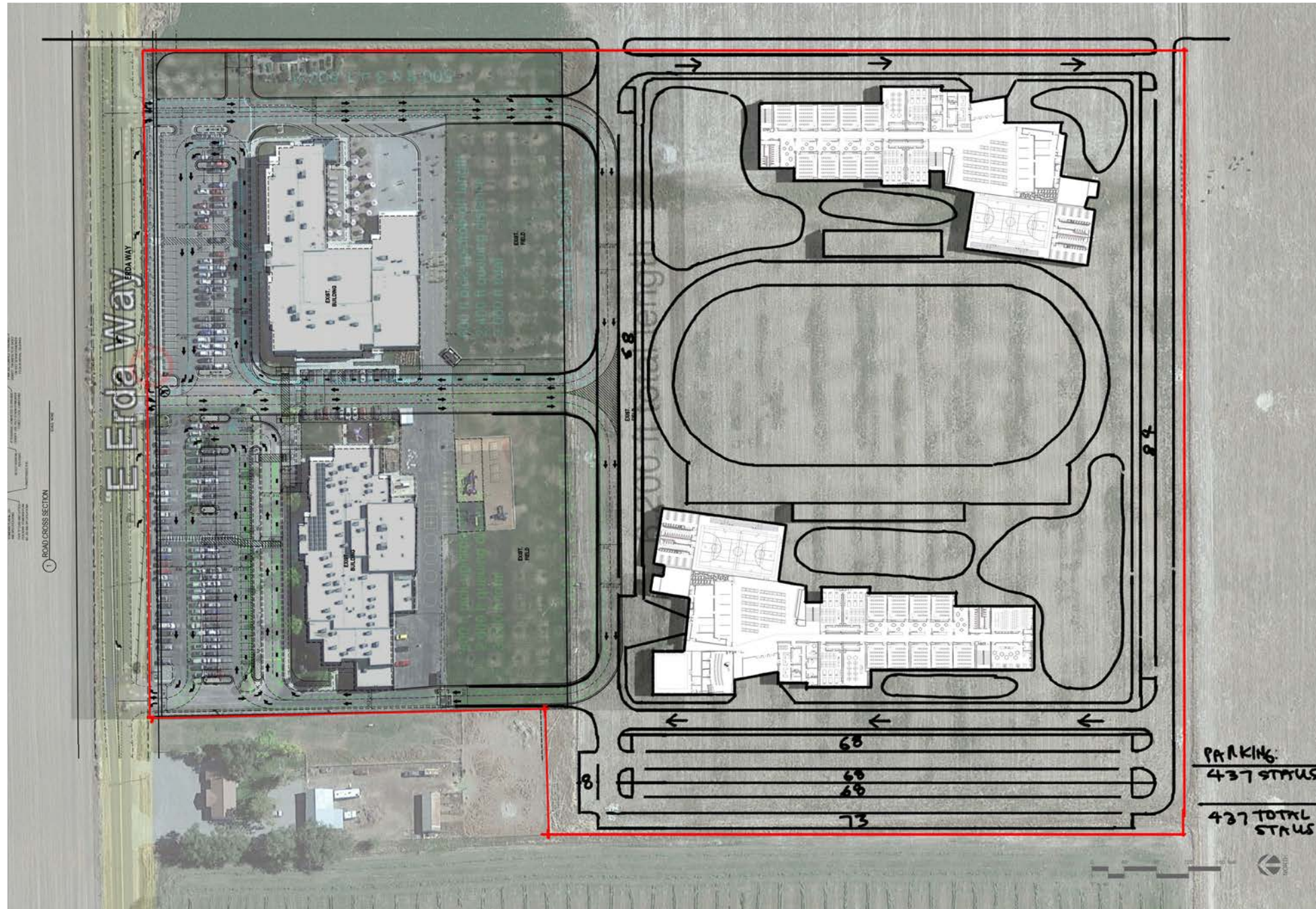
- East/West classroom orientation is optimal for controlling solar glare
- Both middle school and high school have adjacency to sports field
- Vehicular circulation all around site
- Separate drop offs for schools
- Adjacency of schools creates ease of shared program spaces, as well as communal court yards and quads
- North/south orientation of sports field
- Sports field located away from future housing development
- Vehicular parking and circulation located outside central pedestrian areas for safety

CONS

- Parking further away from schools
- Could have issues with proximity of older and younger students sharing same spaces

Master Plan Concept

PRELIMINARY CONCEPT | 2A



FEATURES

PROS

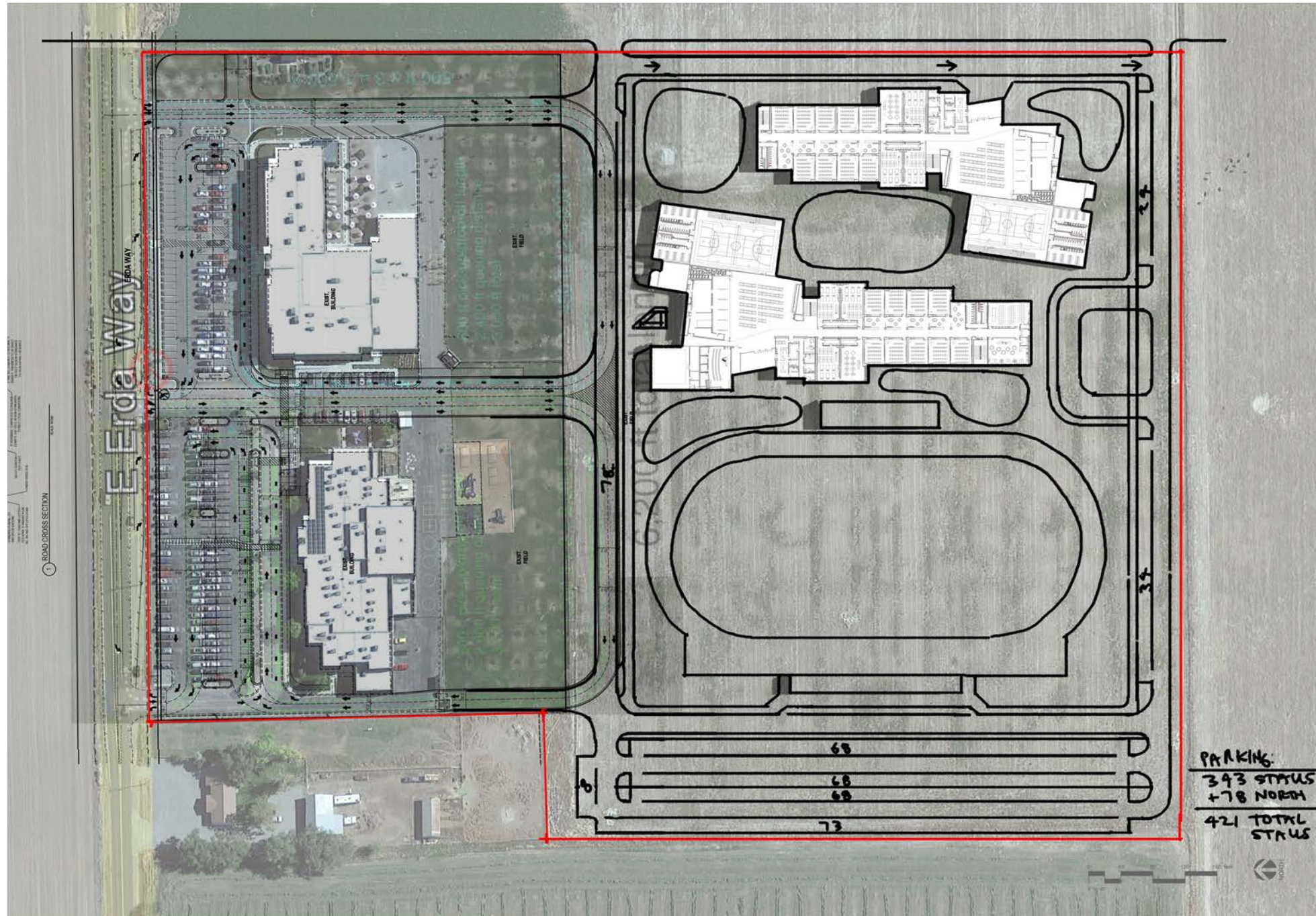
- Schools are separated
- Both middle school and high school are immediately adjacent to sports field
- Vehicular circulation all around site
- Multiple pick up/drop off zones
- North/South orientation of sports field

CONS

- Parking far away from middle school and sports field
- North/South orientation of schools not ideal for solar glare control

Master Plan Concept

PRELIMINARY CONCEPT | 2B



FEATURES

PROS

- Adjacency of schools creates ease of shared program spaces, as well as communal court yards
- Pick-up/drop-off areas more easily shared
- Sports field located away from future housing development
- Vehicular parking and circulation located outside central pedestrian areas for safety
- North/south orientation of sports field

CONS

- Parking further away from schools
- Could have issues with proximity of older and younger students sharing same spaces
- Orientation of schools north/south is more difficult to control solar glare
- Shorter queue length for drop-off / pick-up

Master Plan Final

PHASE 1

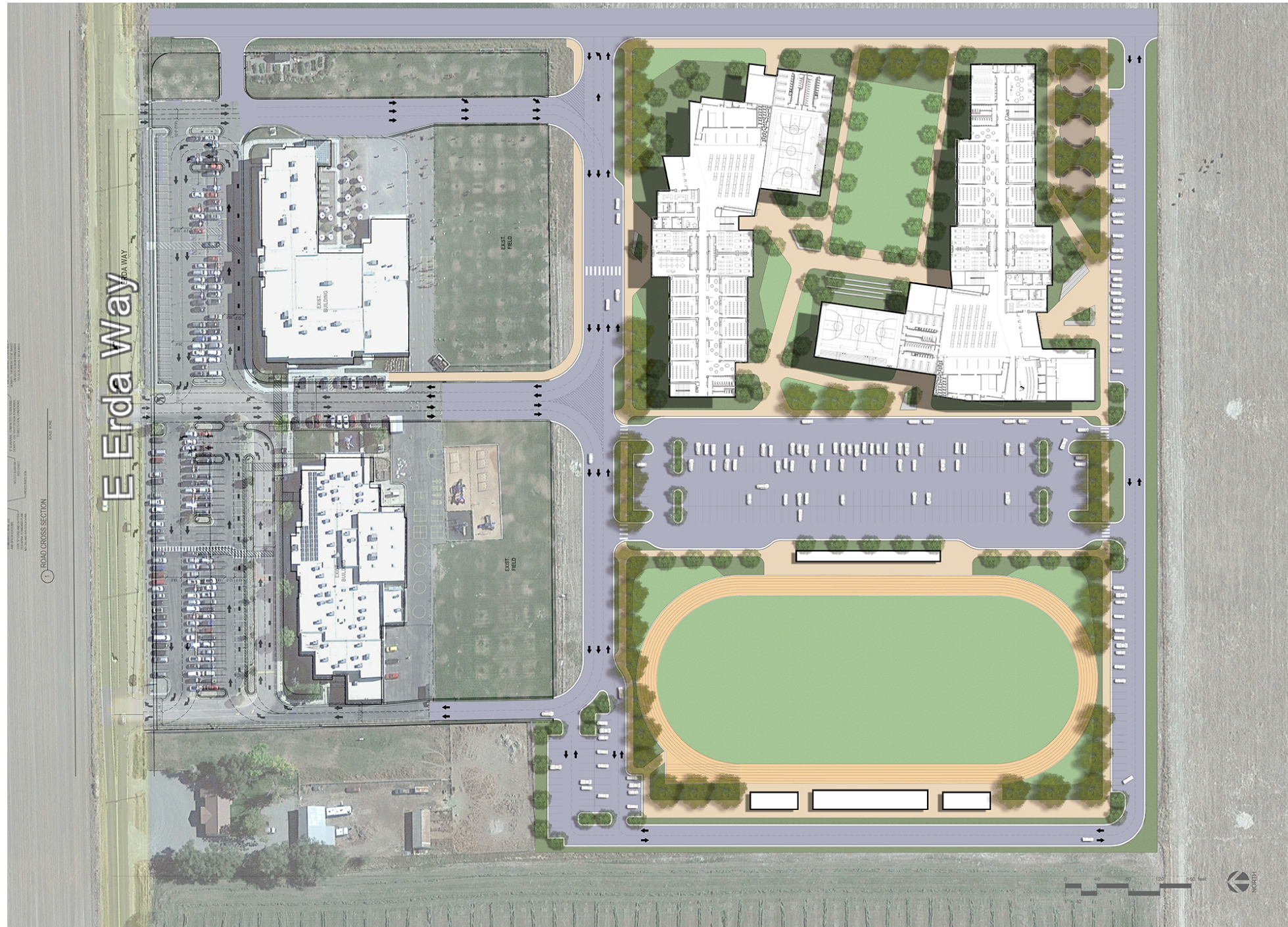


FEATURES

PROS

- East/West classroom orientation for optimal solar glare control
- Parking lot is easily expandable for future buildings
- Multiple entrances from future neighborhood
- Sufficient queue length and multiple drop-off / pick-up locations

Master Plan Final



FEATURES

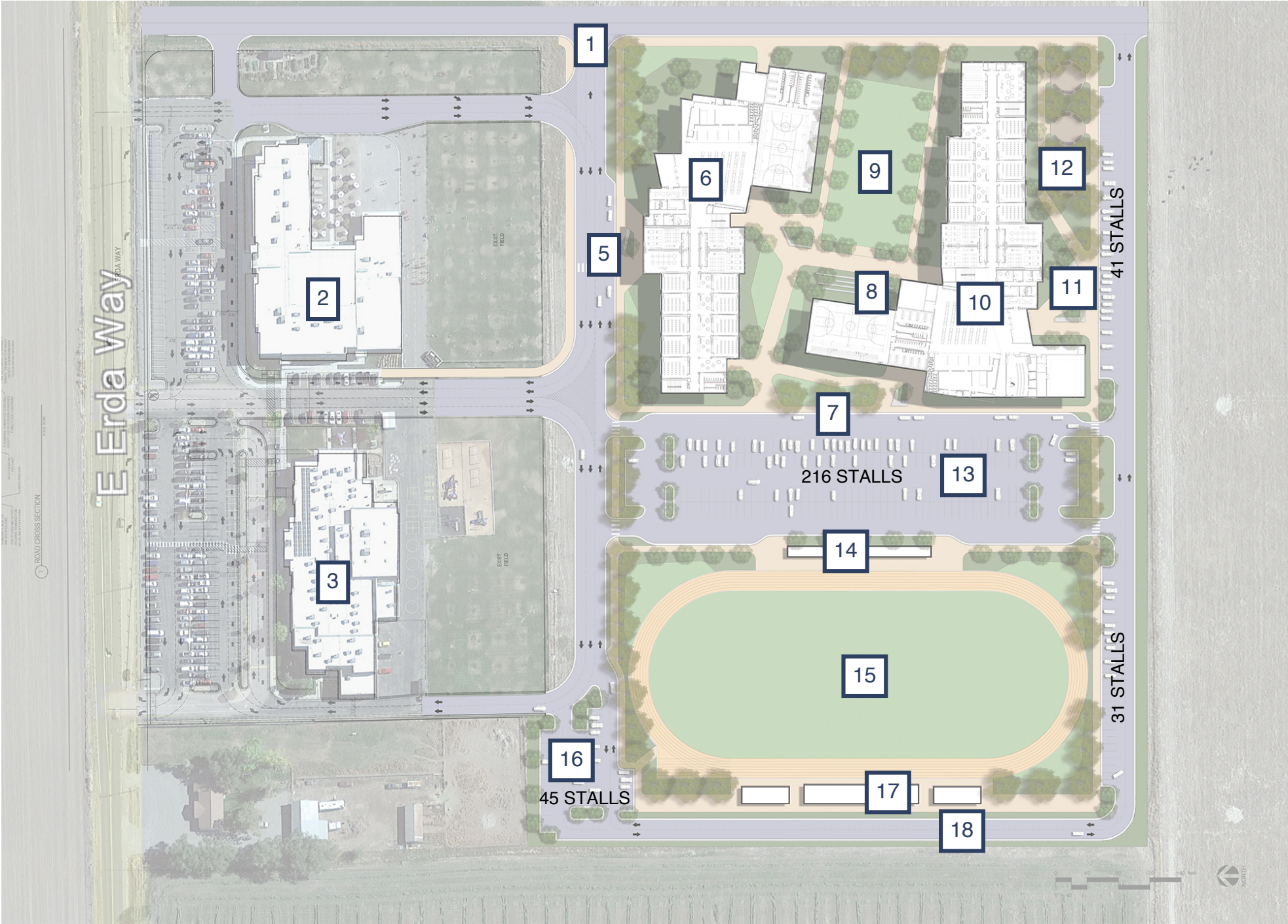
PROS

- East/West classroom orientation for optimal solar glare control
- Parking lot is easily accessible for schools and sports field
- Multiple entrances from future neighborhood
- Adjacency of schools creates ease of shared program spaces, as well as communal court yards
- Pick-up/drop-off areas more easily shared
- Sports field located away from future housing development
- North/south orientation of sports field
- Multiple options for drop-off and extending queue length

CONS

- Buildings in close proximity

Master Plan Final



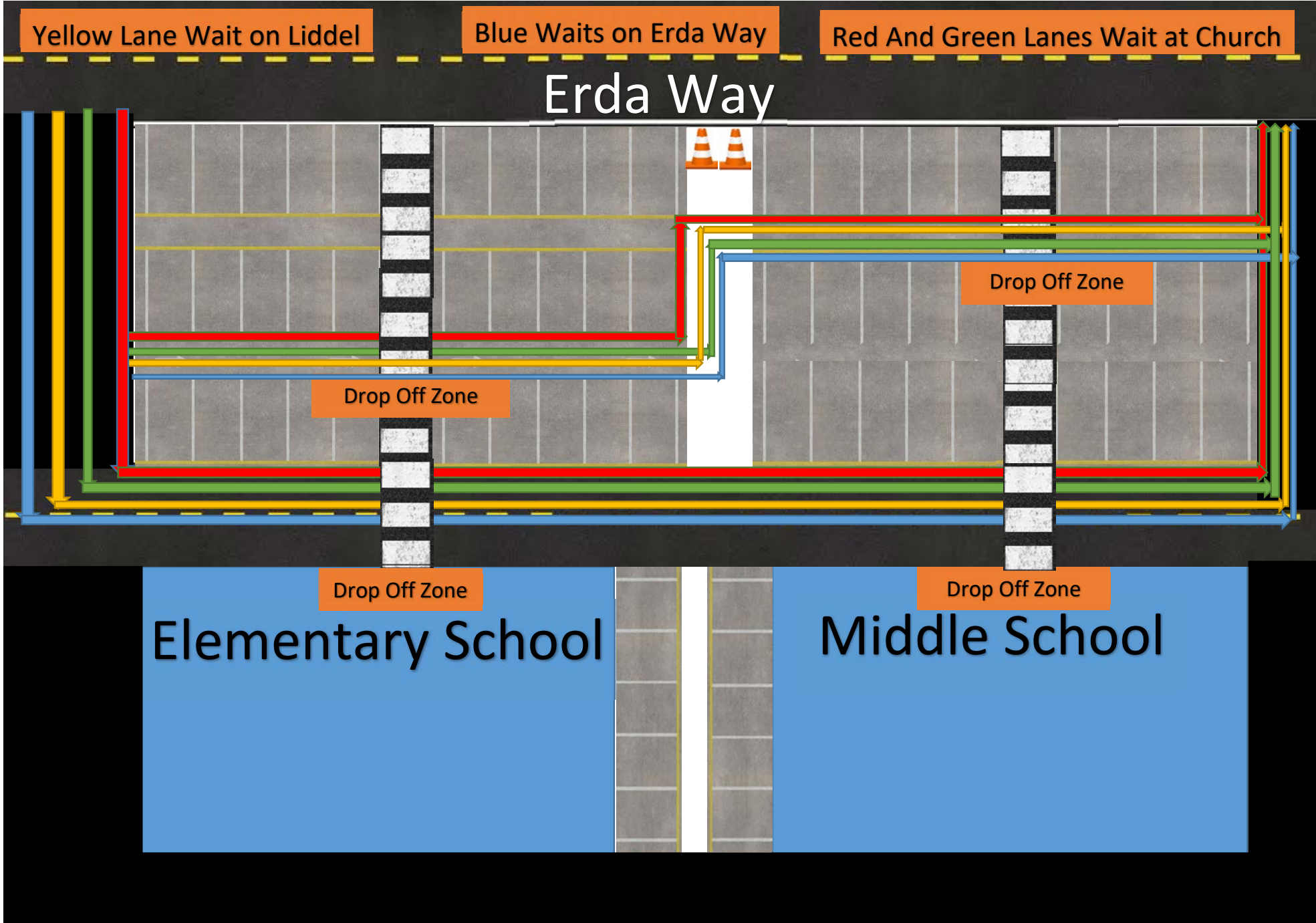
LEGEND

- 1 New Access Road on Adjacent Development
- 2 Existing Middle School
- 3 Existing Elementary School
- 4 Current Campus Drop-Off Circulation Improvements
- 5 Main Arrival for Middle School with Gathering Space and Drop-Off / Pick-Up Lanes
- 6 Proposed Middle School
- 7 Drop-Off / Pick-Up for New Schools
- 8 Outdoor Amphitheater and Gathering Spaces
- 9 Shared Quad Open Space and Event Field
- 10 Proposed High School
- 11 Main Arrival to High School with Gathering Space and Possible Drop-Off / Pick-Up Lanes
- 12 Outdoor Classrooms with Tree Canopy
- 13 Main Parking Area
- 14 Sports Field Spectator Bleachers with Drop-Off Lanes or Bus Queuing
- 15 Sports Field and Track
- 16 Parking at Sports Field
- 17 Sports Field Spectator Bleachers and Storage
- 18 Bypass Road for Queuing and Emergency Access

Total Parking: +/- 343 Stalls

INFRASTRUCTURE STUDIES

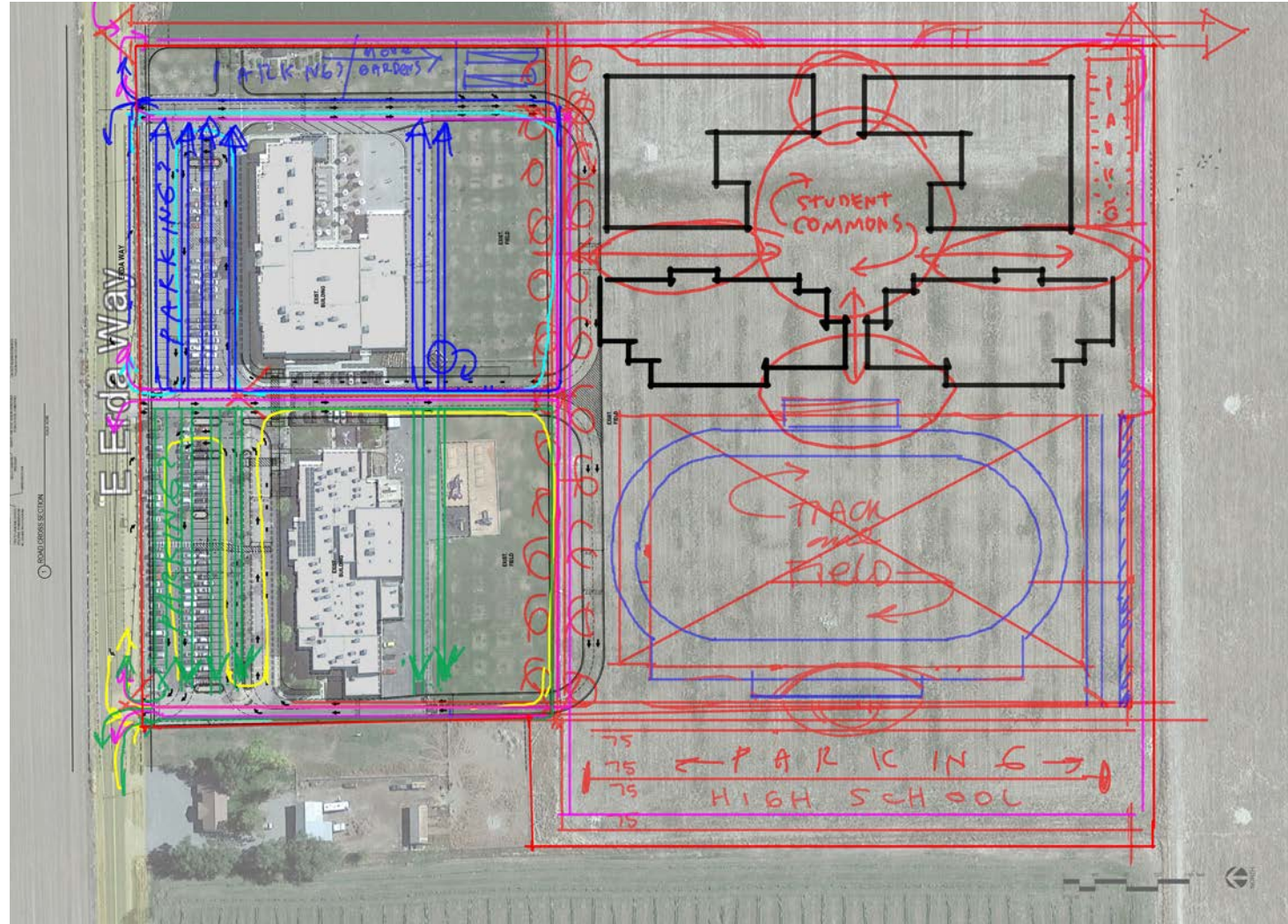
Circulation Concepts



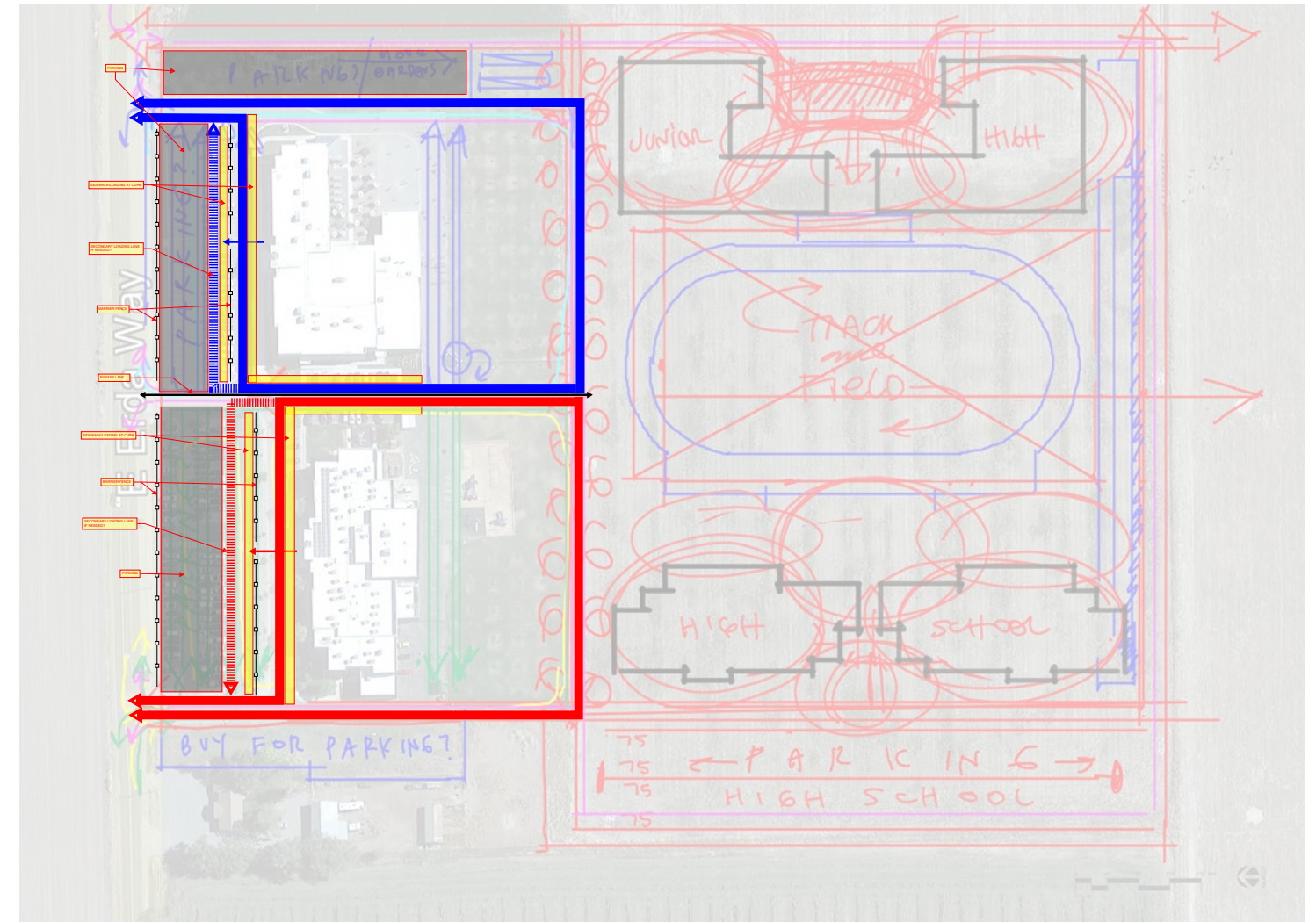
VEHICULAR CIRCULATION CONCEPT | EXISTING DROP OFF PLAN

Circulation Concepts

EXISTING CAMPUS VEHICULAR IMPROVEMENTS



CONCEPT 1



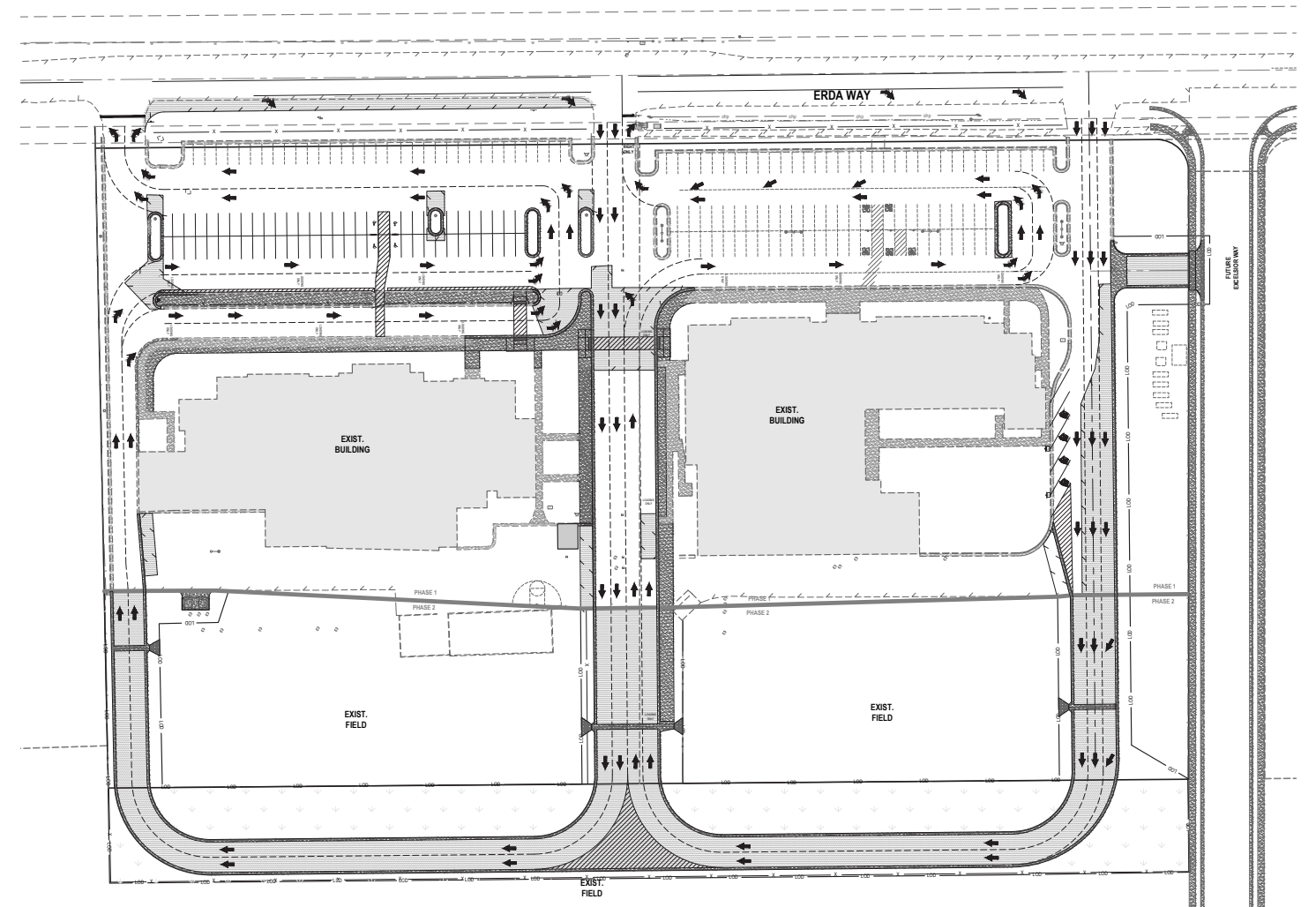
CONCEPT 2

Circulation Concepts

EXISTING CAMPUS VEHICULAR IMPROVEMENTS



REFINED CONCEPT



FINAL PLAN VIEW

Traffic Solutions

HALES ENGINEERING MEMORANDUM

Date: July 20, 2023
To: Excelsior Academy
From: Hales Engineering

Subject: Erda Excelsior Academy Circulation Traffic Study

EXECUTIVE SUMMARY

The following are the key findings and conclusions of this traffic study:

- Based on the existing observations and the on-site queueing analysis, it is recommended that the site be reconfigured to contain more on-site queue storage. It is also recommended that additional ingress and egress capacity be added, as most vehicles currently use one ingress point and one egress point.
- The following are the details of the proposed configuration, which are also shown in Figure 3:
 - » The circulation roads are extended to the south behind the school
 - » The middle school enters the east access and exits via the middle and west accesses
 - » The elementary school enters the middle access and exits via the west access
 - » Three queue storage lanes are located along the eastern edge that merge into two lanes just before the bend at the south
 - » Families with children in both elementary and middle schools pick up their children on the middle school (east) side
 - » Crossing guards should direct groups of children to cross internal circulation roads every 30-40 seconds

- There is some excessive queueing during peak times at the Erda Way / S.R. 36 intersection. This will likely increase as entry to the school becomes easier from the east. Little can be done at this time to mitigate the queueing.
- Recommendations for the master plan are found in the body of the memo.

Introduction

This memorandum addresses the traffic study completed for Excelsior Academy located in Erda, Utah. Attention has been called to queues from the pick-up/drop-off areas spilling onto Erda Way, and the purpose of this memorandum is to address the existing queueing and to propose a solution.

Project Description

Excelsior Academy is located on the south side of Erda Way between Liddell Lane and S.R. 36. The Academy is purchasing the land south of the existing school site for additional circulation and future expansion space. The vicinity map of the school site is shown in Figure 1.



Figure 1: Vicinity map of the study site in Erda, Utah

Data Collection

Weekday morning (7:00 to 9:00 a.m.) and afternoon (2:30 to 4:30 p.m.) peak period traffic counts were performed at the following intersections:

- Erda Way / S.R. 36
- East Church Access / Erda Way
- West Church Access / Erda Way
- East Academy Access / Erda Way
- Middle Academy Access / Erda Way
- West Academy Access / Erda Way
- Liddell Lane / Erda Way

The counts were performed on Tuesday, March 14, 2023. The morning peak hour was determined to be between 8:30 and 9:30 a.m., and the afternoon peak hour was determined to be between 3:30 and 4:30 p.m. The afternoon peak hour volumes were approximately 11% higher than the morning peak hour volumes. Therefore, the afternoon peak hour volumes were used in the analysis to represent the worst-case conditions, and because picking up students generally takes longer than dropping them off. Detailed count data are included in Appendix B.

Hales Engineering made seasonal adjustments to the observed traffic volumes. Monthly traffic volume data were obtained from a nearby UDOT automatic traffic recorder (ATR) on I-80 (ATR #615). In recent years, traffic volumes in March have been equal to approximately 97% of average traffic volumes. The observed traffic volumes were adjusted accordingly to determine average turning movement counts at the study intersections.

Figure 2 shows the existing afternoon peak hour volumes as well as intersection geometry at the study intersections.

Traffic Solutions

On-site Queueing Analysis

On-site queueing was modeled using VISSIM software and calibrated using drone footage of the afternoon peak hour, conversations with the project team, and observations from a site visit. It was observed that the pick-up areas fill up before school lets out and queueing extends out from the West Access. Excelsior Academy currently uses a church parking lot located to the east of the site to provide additional queue storage without obstructing Erda Way.

Based on the simulation runs, a maximum queue of approximately 2,150 feet beyond the West Access for left-turning vehicles was observed, which is consistent with real-world observations when accounting for the multi-lane stacking that occurs in the church parking lot. To mitigate the on-site queueing, it is recommended that the circulation be reconfigured. A concept showing the proposed configuration is shown in Figure 3.

In this configuration, vehicles may enter from the east and middle accesses and exit from the west and middle accesses. To avoid conflict with entering vehicles, it is recommended that vehicles exiting the middle access be restricted to right turns only. As shown, vehicles that wish to use the west access to turn left to exit may do so via either school. Vehicles at the middle school pick-up zone can turn left across the incoming elementary school traffic when a gap is available and join the exiting elementary school traffic.

Since the elementary school has available space, it is recommended that it utilize a pair of 300-foot drop-off zones in front of the school. Given the limited space in front of the middle school, it is recommended that the drop-off zone wrap around the building on the west side and continue to the south. To accommodate additional queue storage for the middle school, it

**Erda - Excelsior Academy Master Plan TS
Existing (2023) No-Build**

**Afternoon Peak Hour
Figure 2**



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04/12/2023

Traffic Solutions

is recommended that three stacking lanes be provided along the eastern edge, which could end right before the bend to the west. Without the third lane, the maximum simulated queue nearly reached the access. A staff member may be needed, at least initially, to facilitate the merging.

It is recommended that families with students in both the elementary and middle schools pick up and drop off on the middle school side to even out the traffic entering either zone, since the elementary school contains more students. A crosswalk (with a crossing guard) should be striped between elementary drop-off/pick-up zones (preferably at the eastern edge of the sidewalk in front of the elementary school). The crossing guard should stop vehicle traffic every 30-40 seconds to direct groups of students across the crosswalk.

Based on the analysis of the proposed configuration, a maximum queue of 550 feet beyond the pick-up areas for the elementary school is anticipated. A maximum queue of 600 feet beyond the pick-up area for the middle school is anticipated. Both queues fit within the proposed configuration. Based on the simulation, the queues behind the pick-up areas are anticipated to diminish by around 30-35 minutes after school gets out.

It is anticipated that a new parallel north-south public road will be constructed to the east of the project as part of another development. Since the East Access will be located close to this new road, the Academy could consider building a drive aisle connection from the school site to the new road. The East Access would likely go to a right-in, right-out configuration, and left-turn movements would occur at the new intersection to the east. With the proposed configuration, it is anticipated that more vehicles will choose to enter the site from the east. An imbalance currently exists between exiting and entering traffic and the

directions they travel as many drivers loop around to the west and either bypass the queue by entering from the west or parking on the side of the road. Since the new configuration would eliminate the need for alternate routes, more traffic will likely enter from the east. The revised afternoon peak hour volumes are shown in Figure 4.

Level of service (LOS) was calculated for each of the accesses, which is a measure of intersection performance based on delay per vehicle. LOS A through D are generally considered acceptable for urbanized areas. Based on the analysis, both the middle and west accesses are anticipated to perform at poor levels of service, as shown in Table 1.

This is poor LOS and delay for vehicles exiting the Academy site. However, LOS and delays are anticipated to be acceptable for vehicles on Erda Way. Little can be done to mitigate the poor levels of service due to the high volume of vehicles entering the access. Drivers will need to wait to make a turn, as they do currently.

A maximum westbound queue of 100 feet was observed at the East Access / Erda Way intersection without a left-turn lane. This is not due to on-site queueing, but rather vehicles waiting for gaps in the opposing traffic to enter the site. For this reason, westbound left-turn lanes are recommended at both the east and middle accesses, although they may not be needed immediately on opening day. These left-turn lanes would require widening on Erda Way. Right-turn lanes are recommended as well, which can be striped in the existing paved shoulder on Erda Way in front of the school. If in the event queues exceed storage capacity on occasion, turn lanes also provide an additional factor of safety.

Traffic Solutions

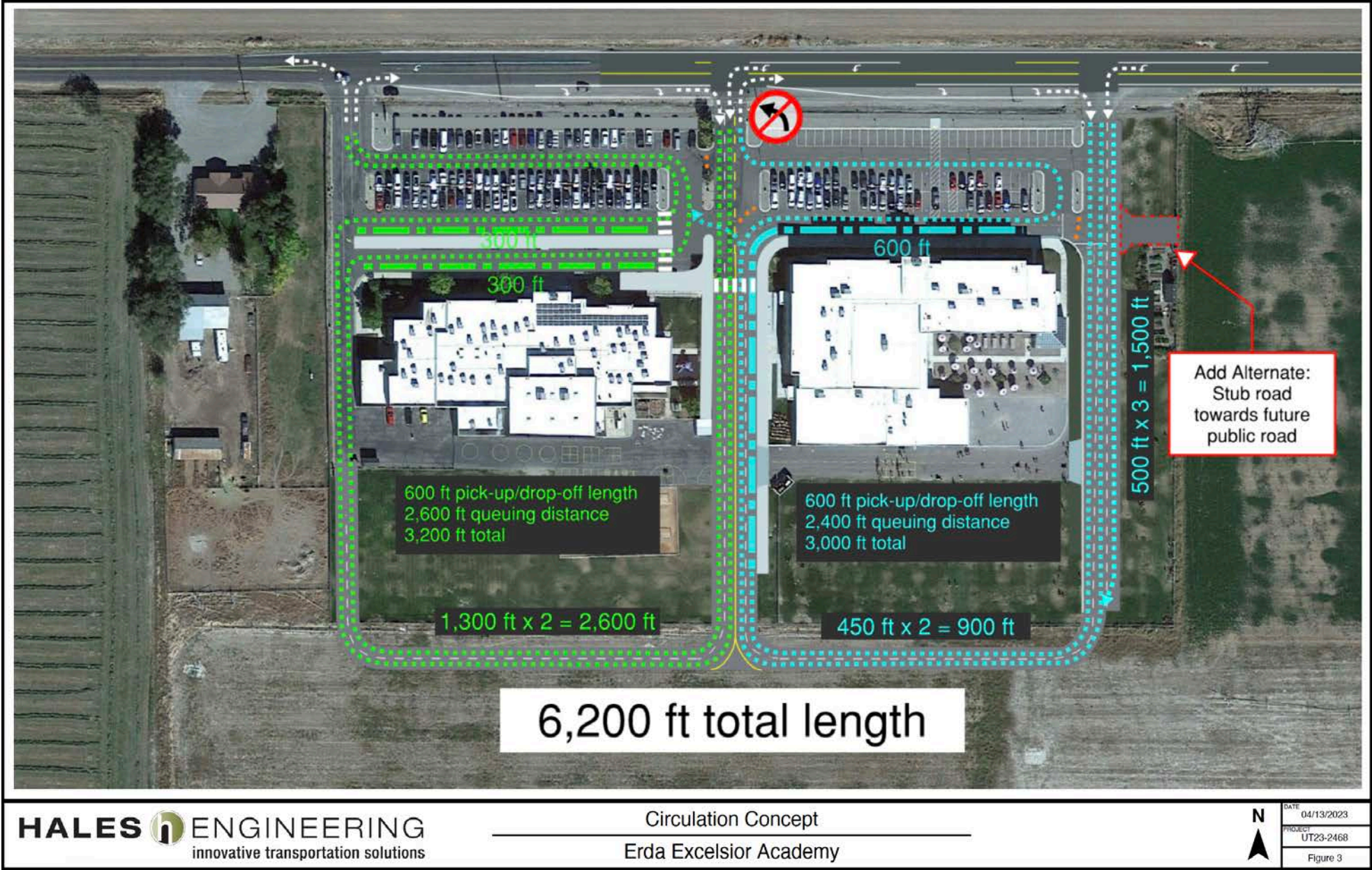


Figure 3: Circulation concept

Erda - Excelsior Academy Master Plan TS Existing (2023) Build

Afternoon Peak Hour Figure 4



Table 1: Existing (2023) No-Build Afternoon Peak Hour LOS

Intersection		Level of Service		
Description	Control	Movement ¹	Aver. Delay (Sec. / Veh.)	LOS ²
East Access / Erda Way	-	WBL	2.8	a
Middle Access / Erda Way	NB Stop	NBL	>50	f
West Access / Erda Way	NB Stop	NBL	>50	f

1. Movement indicated for unsignalized intersections where delay and LOS represents worst movement. SBL = Southbound left movement, etc.
2. Uppercase LOS used for signalized, roundabout, and AWSC intersections. Lowercase LOS used for all other unsignalized intersections.

Source: Hales Engineering, April 2023

Erda Way / S.R. 36 Analysis

To determine impacts on the Erda Way / S.R. 36 intersection, Hales Engineering performed an LOS analysis using Synchro/SimTraffic software.

Hales Engineering determined that the Erda Way / S.R. 36 intersection is currently operating at an acceptable LOS C with an average delay of 33.5 seconds per vehicle during the afternoon peak hour. These results serve as a baseline condition for the impact analysis of the proposed changes during existing (2023) conditions.

Hales Engineering calculated the 95th percentile queue lengths for the Erda Way / S.R. 36 intersection. Some significant queueing was observed during the afternoon peak hour (675 feet southbound and 575 feet eastbound).

Little can be done to reduce the queueing. UDOT is making some safety improvements (protected left-turn phasing) to the intersection that will likely make it operate worse than it currently does, which was accounted for in the analysis. As more people enter the site from the east, queueing will likely increase. In the build scenario analysis, significant queueing of 850 feet for the northbound approach, 775 feet for the southbound approach, and 825 feet for the eastbound approach is anticipated. The

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Figure 4: Existing (2023) build afternoon peak hour volumes

Traffic Solutions

intersection is anticipated to perform at LOS D with an average delay of 47.8 seconds per vehicle.

The installation of dual northbound left-turn lanes would likely reduce the queueing, but it would require an additional receiving lane on Erda Way and widening on S.R. 36. Without this improvement, some vehicles will likely go around and route to the west, as they do currently.

Master plan Traffic Circulation

Hales Engineering completed an evaluation of the circulation, queueing, and parking for the proposed south expansion of Excelsior Academy as part of the master plan.

Circulation and Queueing

Hales Engineering reviewed the preliminary master plan concepts and identified the following key guiding design principles to ensure good circulation on site:

- It is anticipated that most vehicles for the proposed south middle school and high school buildings would enter and exit the site from the new proposed Excelsior Way, located east of campus.
- It is recommended that circulating drive aisles not be planned adjacent to Excelsior Way. Minimum drive aisle throat lengths of at least 150 feet are recommended between Excelsior Way and the first access.
- Right-side pick-up and drop-off would be preferred, which would mean having a clockwise circulation on-site would be best.
- It is anticipated that the Middle School will have longer queues for pick-up and drop-off and should therefore be located either further west or north on the south portion of campus based on right-side drop-off and a clockwise circulation.
- It is recommended that two eastbound lanes be planned

between the north and south sides of campus to counter the two westbound lanes. This will allow for sufficient traffic flow during peak times.

- To maximize queue storage, it is recommended that the middle school pick-up/drop-off be located on the north side of the buildings and that a circulator road be provided on the west side of campus around the proposed ball field. Some pick-up and drop-off could occur on the west side of the buildings as well. Pick-up and drop-off should be avoided on the south side to ensure vehicles don't back up onto Excelsior Way.
 - » Based on the queueing results from the north side and the number of students expected on the south campus, it is recommended that at least 2,500 feet of queue storage be planned on the south campus, while maximizing the pick-up / drop-off length as much as possible.
- With some students shifting from the north campus to the south campus, there may be capacity to route some south campus vehicles through the north campus vehicle aisles (specifically for egress movements) as needed.
- It is recommended that older students (on the south campus) that have younger siblings in the elementary school be picked up and dropped off on the north campus and that the older students cross the east-west road between campuses. It is recommended that a safe walking route be provided for these students, which would include a pedestrian crosswalk on the east-west road.

Parking

The following are initial ideas regarding the potential parking supply on the south campus, based on national parking demand rates from the Institute of Transportation Engineers (ITE):

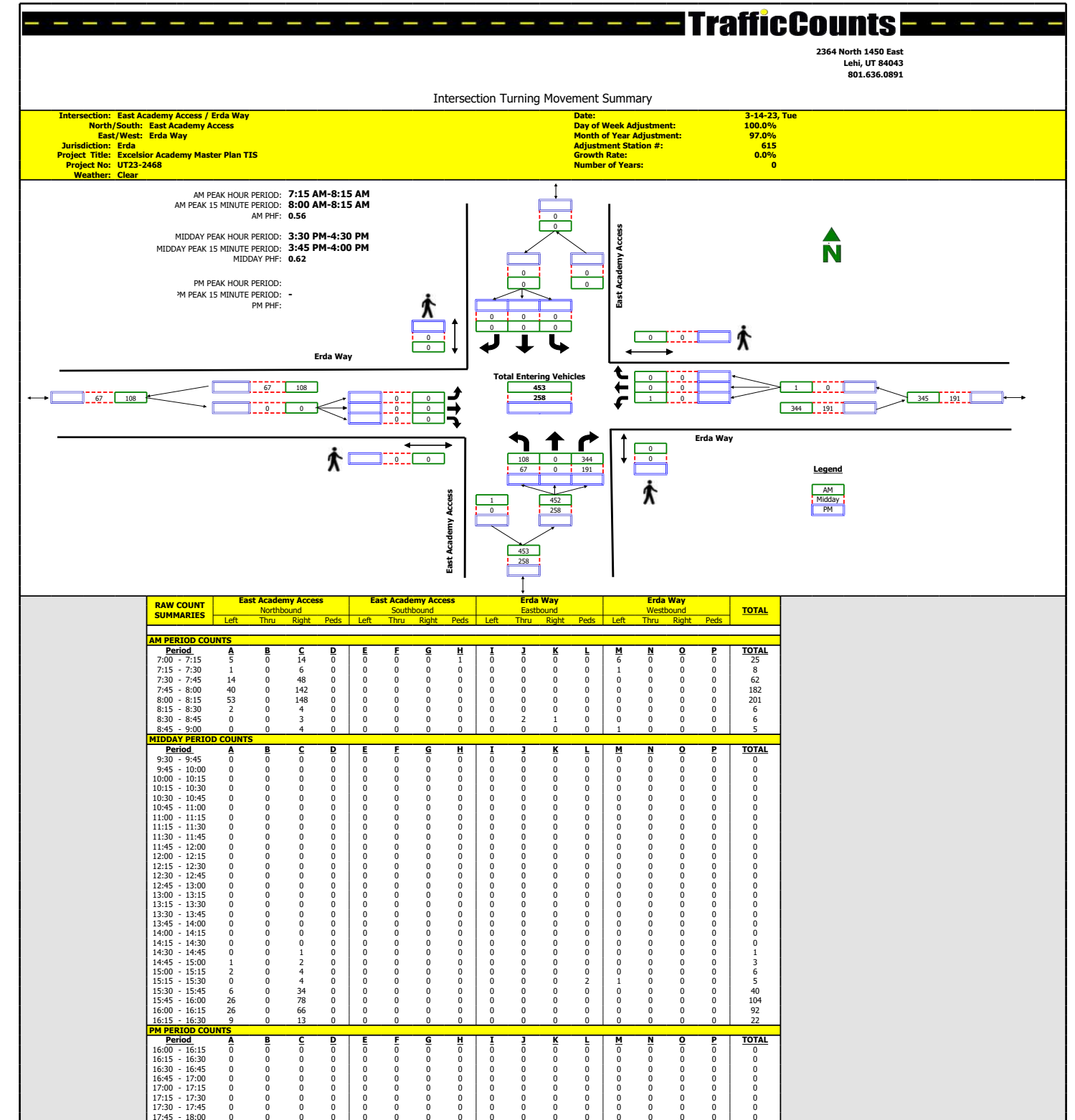
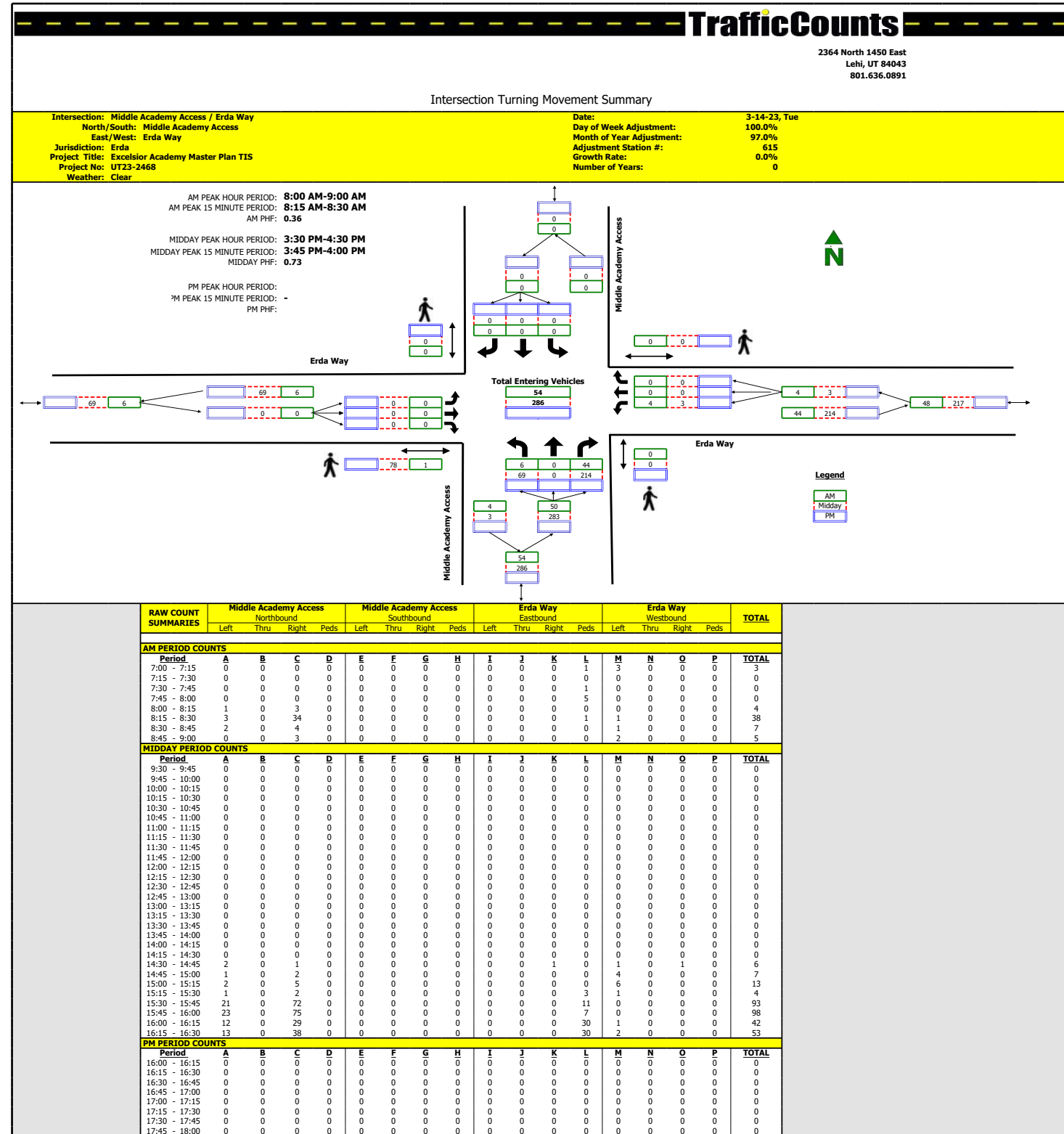
- ITE has the following 85th percentile parking demand rates for school parking:

- » Public Elementary School: 0.20 stalls/student
- » Public Middle School: 0.12 stalls/student
- » Public High School: 0.32 stalls/student
- » Private School (K-12): 0.35 stalls/student

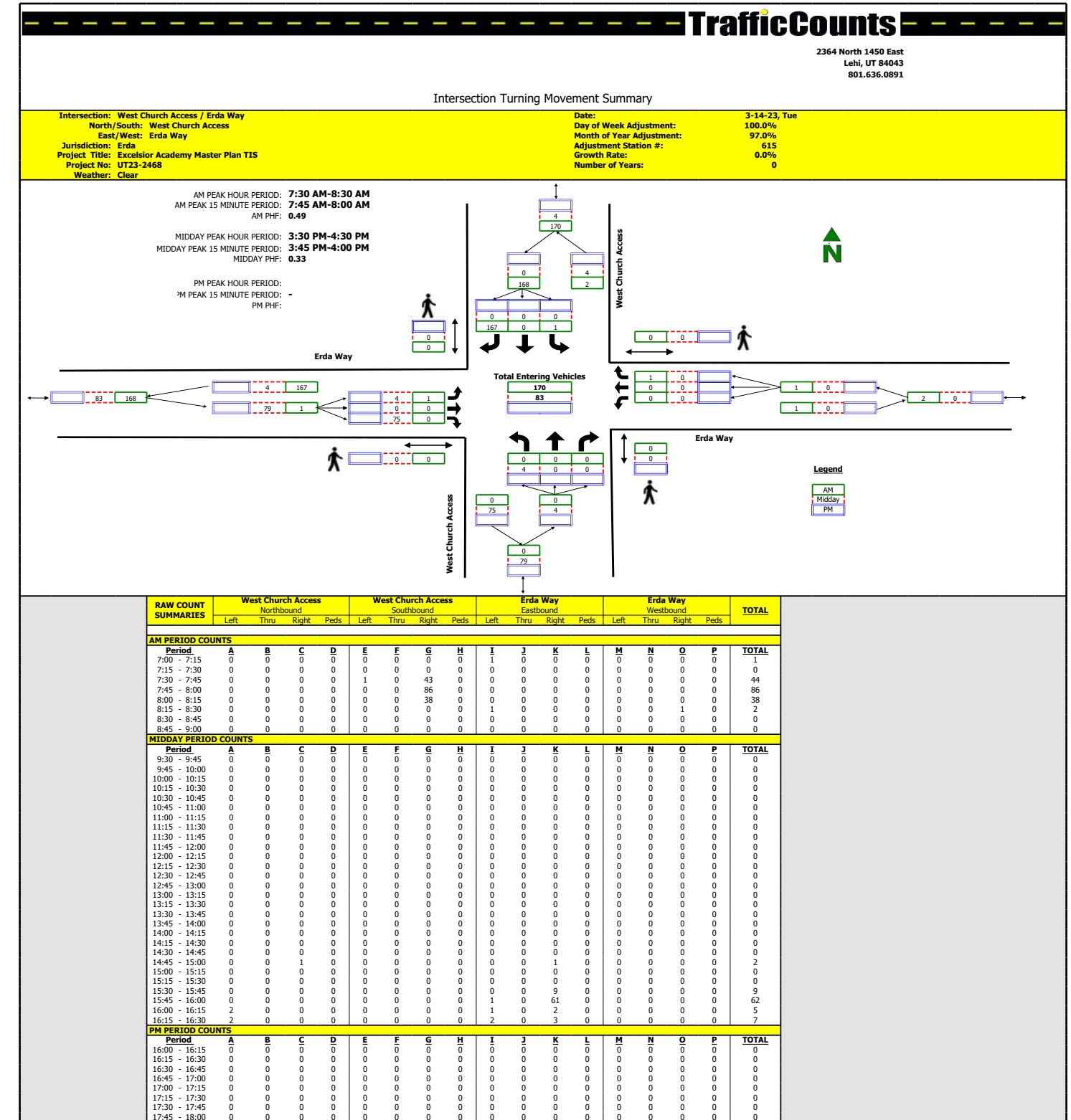
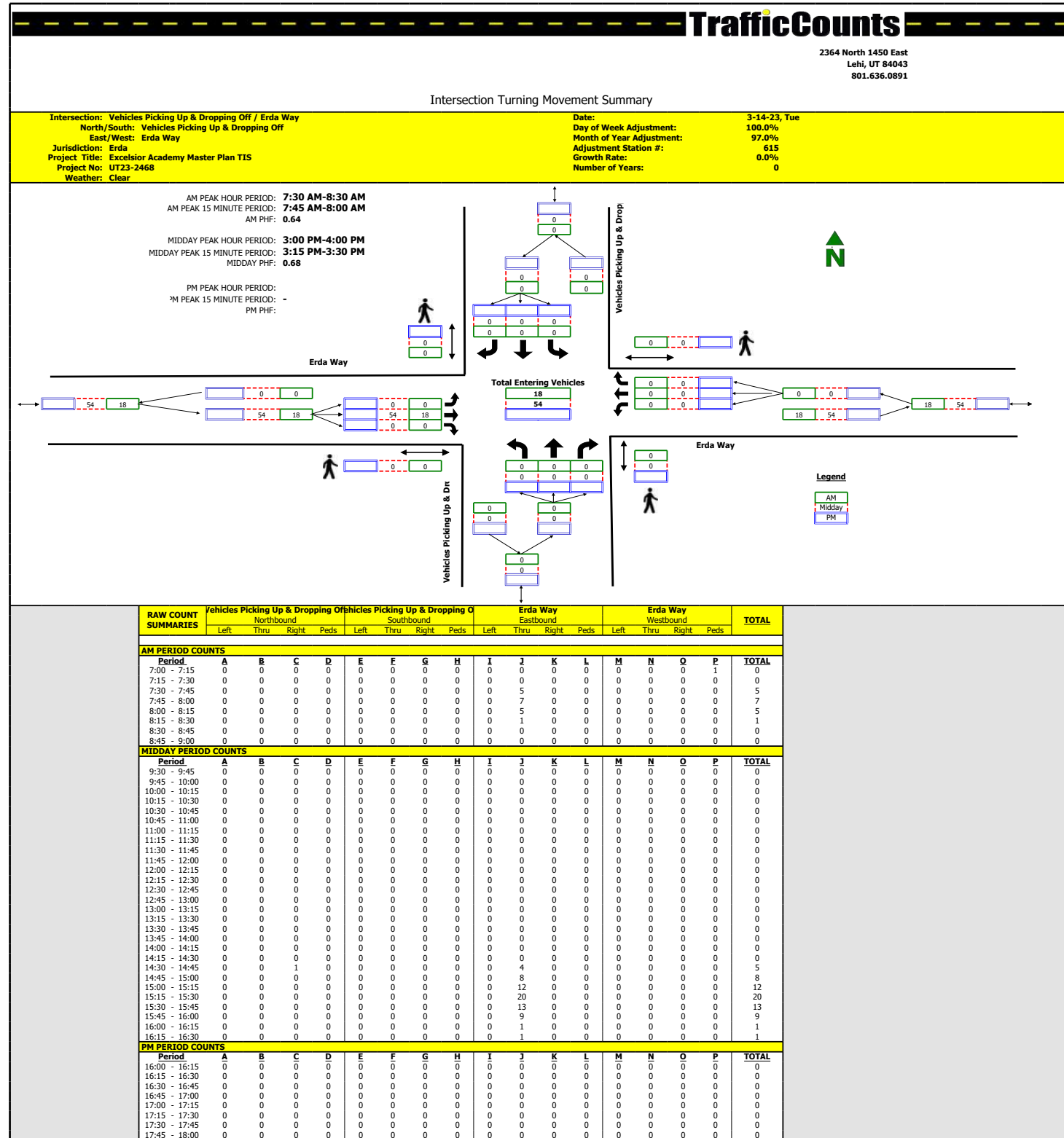
- Based on discussions with Excelsior Academy, the following number of students are expected by grade level:
 - » Elementary School: 1,000 students
 - » Middle School: 600 students
 - » High School: 400 students
- The following are the parking demand calculations based on the ITE rates and number of students:
 - » Public School Rates:
 - Elementary School: $0.20 \times 1,000 = 200$ stalls
 - Middle School: $0.12 \times 600 = 72$ stalls
 - High School: $0.32 \times 400 = 128$ stalls
 - Total: 2,000 students & 400 stalls
 - » Private School (K-12):
 - $0.35 \times 2,000 = 700$ stalls
- It is anticipated that the north campus will have approximately 189 stalls after construction is complete. Recent plans for the south campus show approximately 367 stalls being provided, for a total of 556 stalls on site. The north campus currently has 1,400 students, which equates to approximately 0.14 stalls/student. This is more in line with the public school rates than the private school rates.
- Based on the ITE data and calculations, it is anticipated that the proposed parking supply will be sufficient, as it is higher than what public school parking rates would suggest and is approximately the average of the public school and private school stall counts.

If you have any questions regarding this memorandum, please contact us at 801.766.4343.

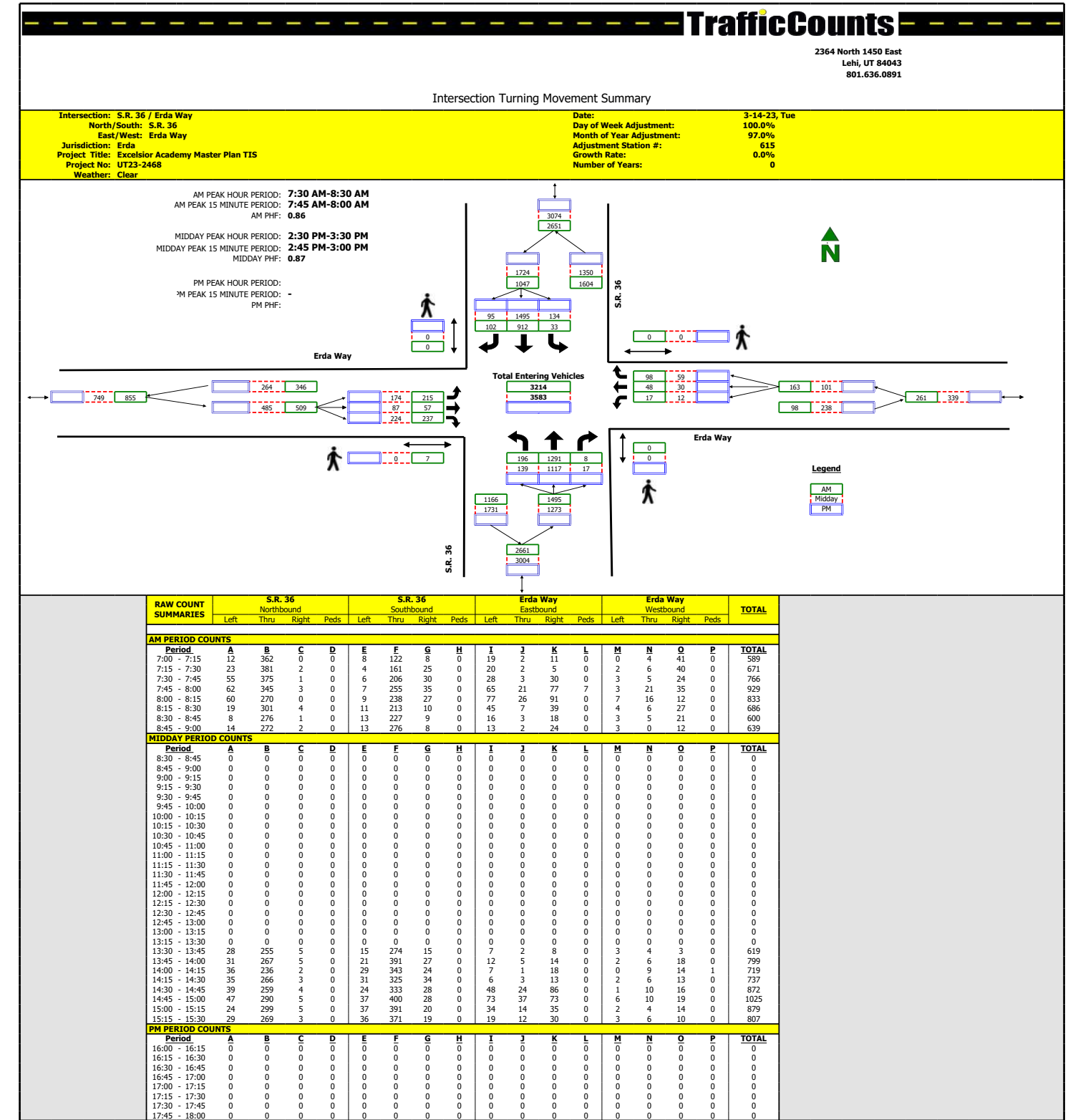
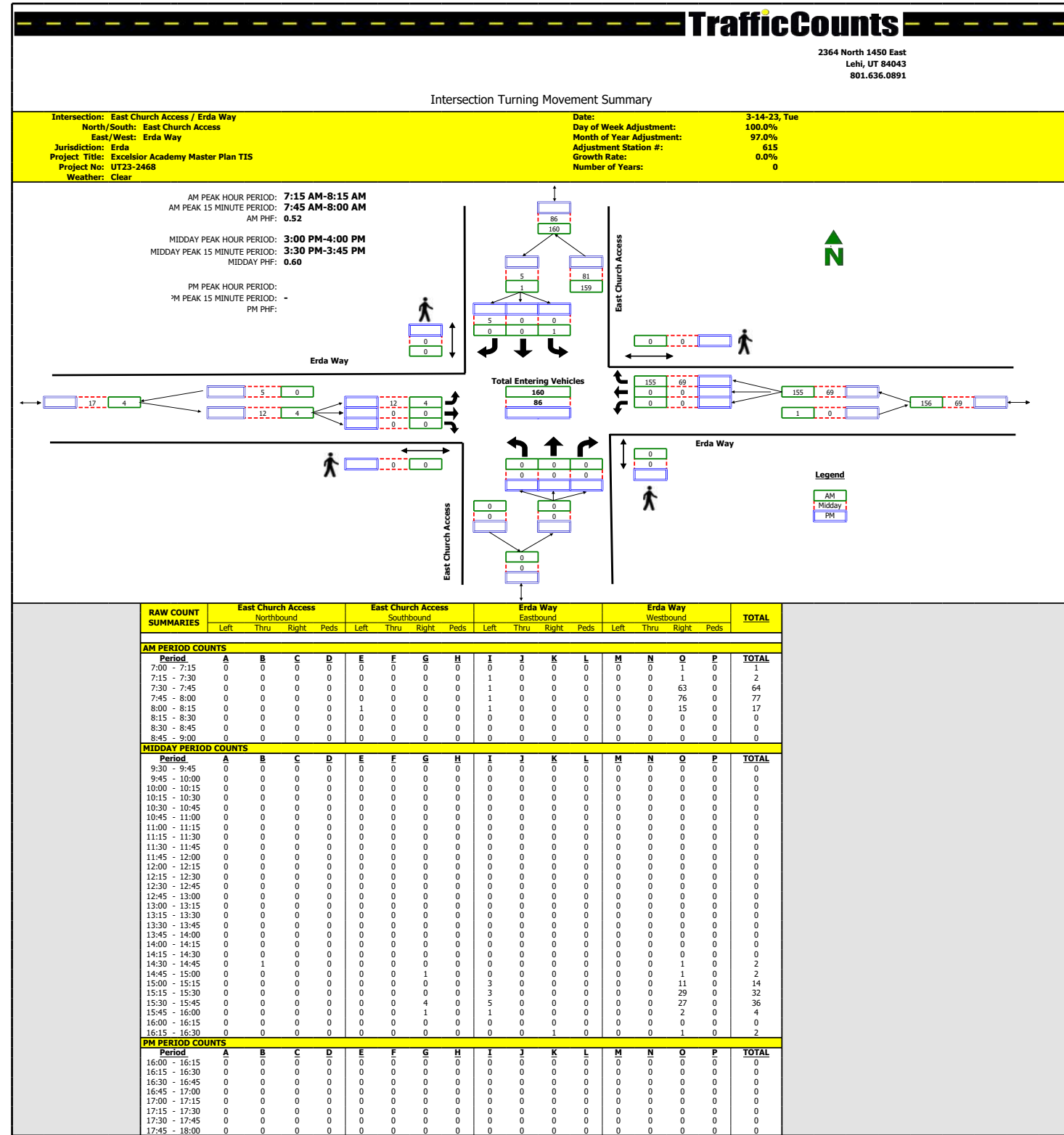
Traffic Solutions



Traffic Solutions














Traffic Solutions



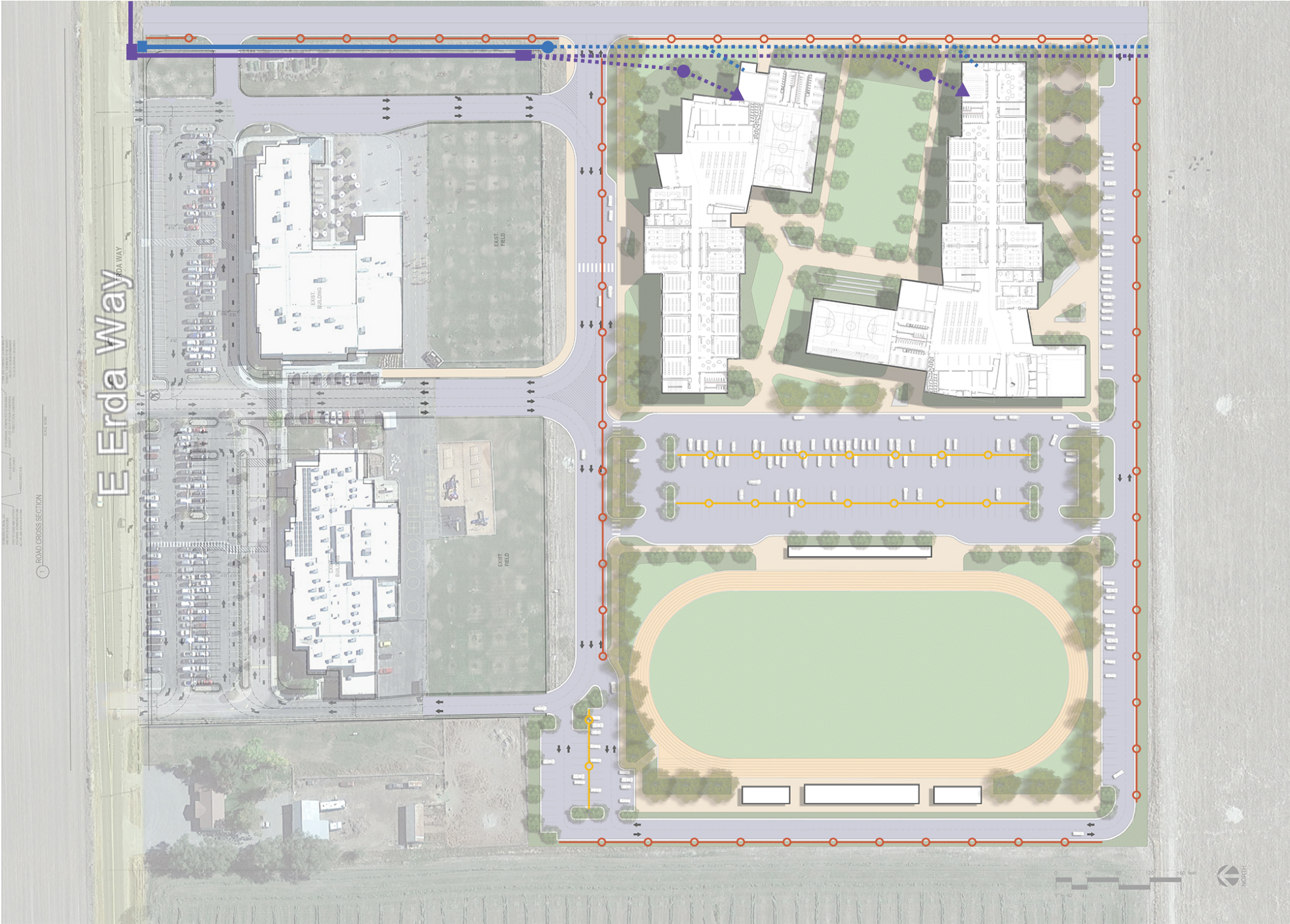
Electrical Solutions



LEGEND

-  Rmp 6" conduit
-  Rmp power ground sleeve
-  Future rmp 6" conduit
-  Future rmp transformer
-  Future rmp service entrance & ct
-  Centurylink connection
-  4" centurylink conduit
-  Centurylink pedestal
-  Future centurylink 4" conduit
-  Typical road lighting
-  Typical parking lot lighting

Electrical Solutions



NARRATIVE

There are existing power poles a little past the east and west property lines that we can come down and extend power back to the new building locations. There will be a few ground sleeves that will need to be added. Looking at the proposed layout, each building will most likely need a transformer and service. All this will need to be coordinated with RMP once we start the design of the buildings. I would imagine the stadium could be fed from one of the buildings.

As far as centurylink they would not give me much information until we have a design for them. I would imagine we could come off one of the power poles and feed back to the new buildings in the same way we are feeding power.

LEGEND

- Rmp 6" conduit
- Rmp power ground sleeve
- ⋯ Future rmp 6" conduit
- Future rmp transformer
- ▲ Future rmp service entrance & ct
- Centurylink connection
- 4" centurylink conduit
- Centurylink pedestal
- ⋯ Future centurylink 4" conduit
- Typical road lighting
- Typical parking lot lighting

Civil Solutions

Grading

The site is relatively slopes gently to the north and west. There should not be any problems that I can for see with the grading of the two new schools or the foot ball field.

Drainage, Storm Water

Drainage and storage of the storm water is going to have to be addressed.

Open drainage basin, this site will need to be a retention basin vs a detention basin because there is no out let to discharge runoff into. Retention basin are in general 2 to 3 times larger than detention basins. Disadvantages of open drainage basins, they take up a lot of real state, they need to be landscaped. Basins are not always full, they dry out between storms and will need to be irrigated. They need to be protected and maintenance kept up on to insure that they function properly. Basins can also pose many safety hazards including drowning when the water is high. Advantages of open drainage basins, they are basins include the cost to construct, (based on land value). Retention basins are less expensive to implement. They can be landscaped to provide open space, require no special training to maintain them other than landscaping maintenance training.

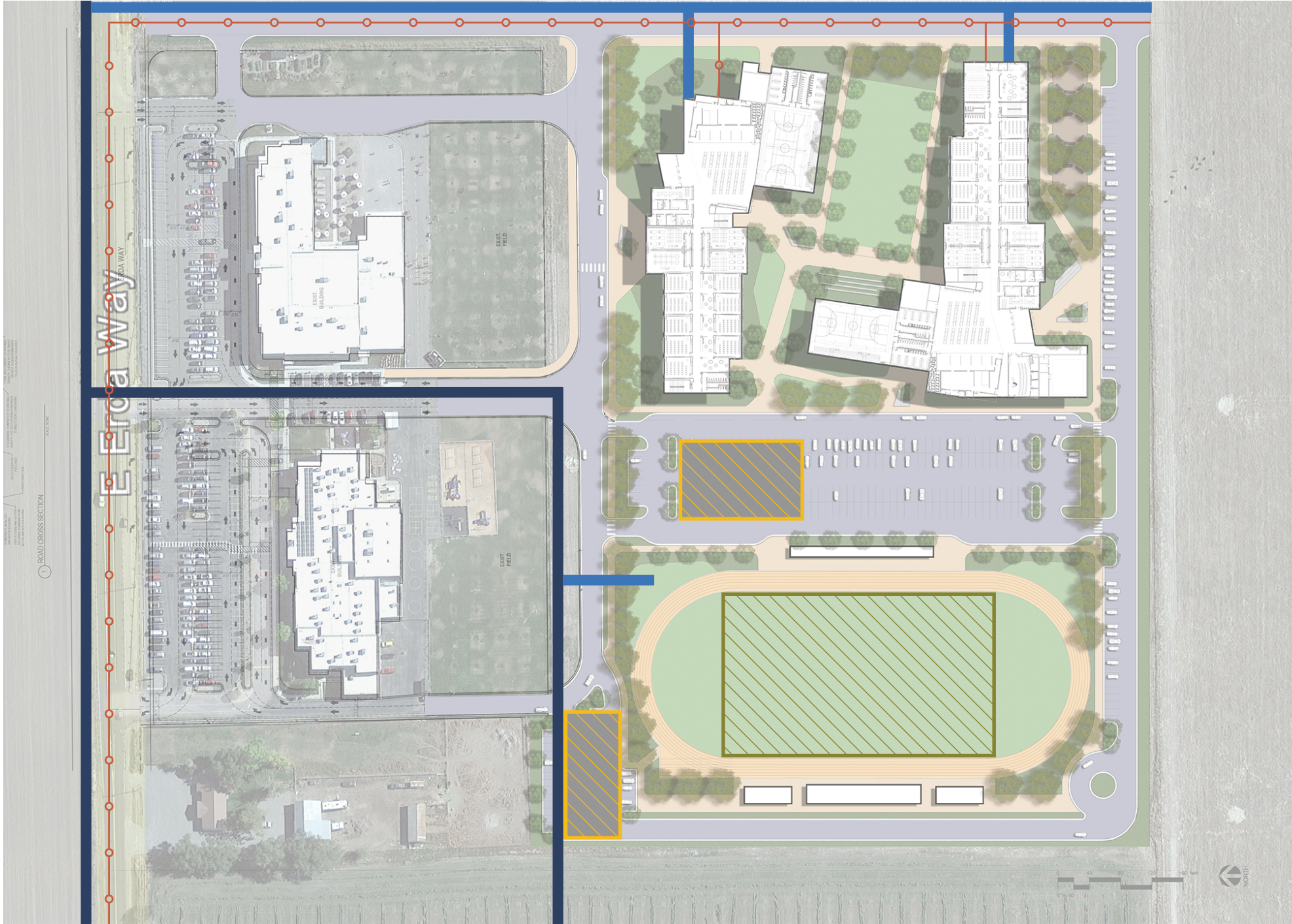
Below-ground tanks, Advantages they are concealed from view, do not consume above-ground space, can be freeze protected, and they can be configured any possible way to work with any design. They can be distributed throughout the site to lesson the need for a more costly pipe network. Underground is a good option for high density, urban areas with limited available space, unusually shaped parcels, or in markets where land is more expensive. Disadvantages, the added expenses of digging, plumbing, and professional installation make underground tanks pricier than their above-ground counterparts. Maintenance is more difficult to perform and more expensive in underground tanks.

After looking at the proposed layout I would go with below-ground tanks under the parking lots.






Utilities

Erda City does not have a lot of utilities at this time, but they are slowly coming to this area.

Civil Solutions



LEGEND

-  Existing water line
-  Future water line
-  Future sewer line
-  Possible underground retention area
-  Possible surface retention area

Civil Solutions

DETENTION BASIN



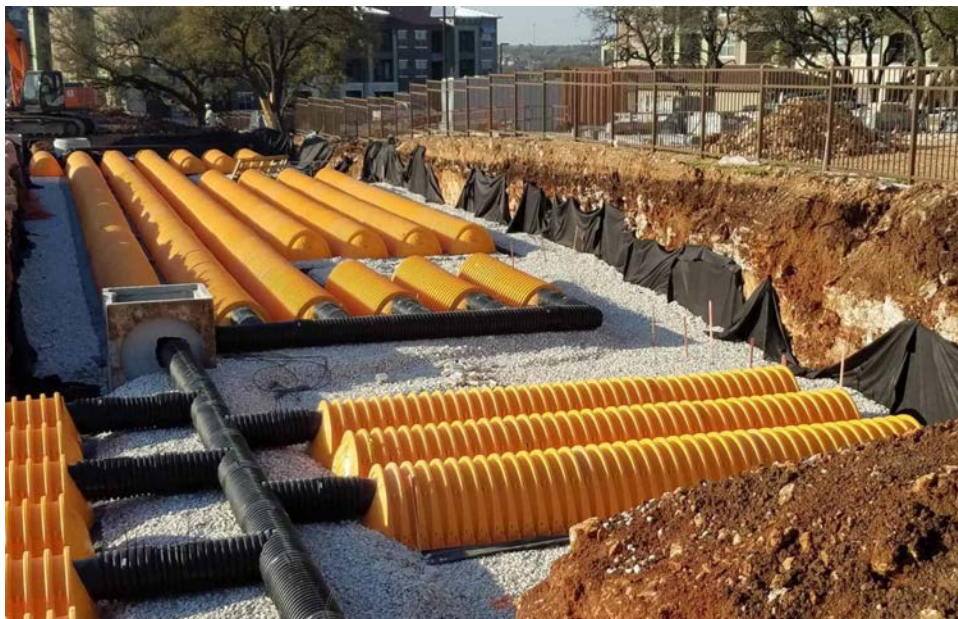
PROS

- Utilizing natural systems to infiltrate water into the aquifers
- Open space that can be utilized as play or sports fields

CONS

- Inefficient use of land results in higher land costs
- Standing water can create turf maintenance issues
- Potential safety hazard when standing water is present

STORM TECH



PROS

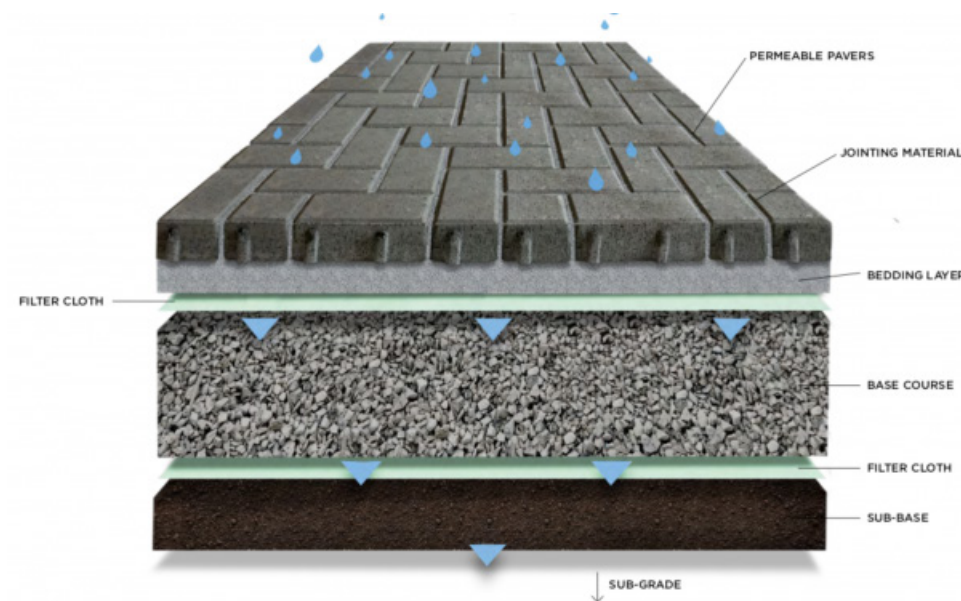
- Utilizing natural systems to infiltrate water into the aquifers
- Efficient use of land allowing for more developable land

CONS

- Higher up front costs
- Difficult to maintain over the long term

Civil Solutions

PERMEABLE PAVERS



PROS

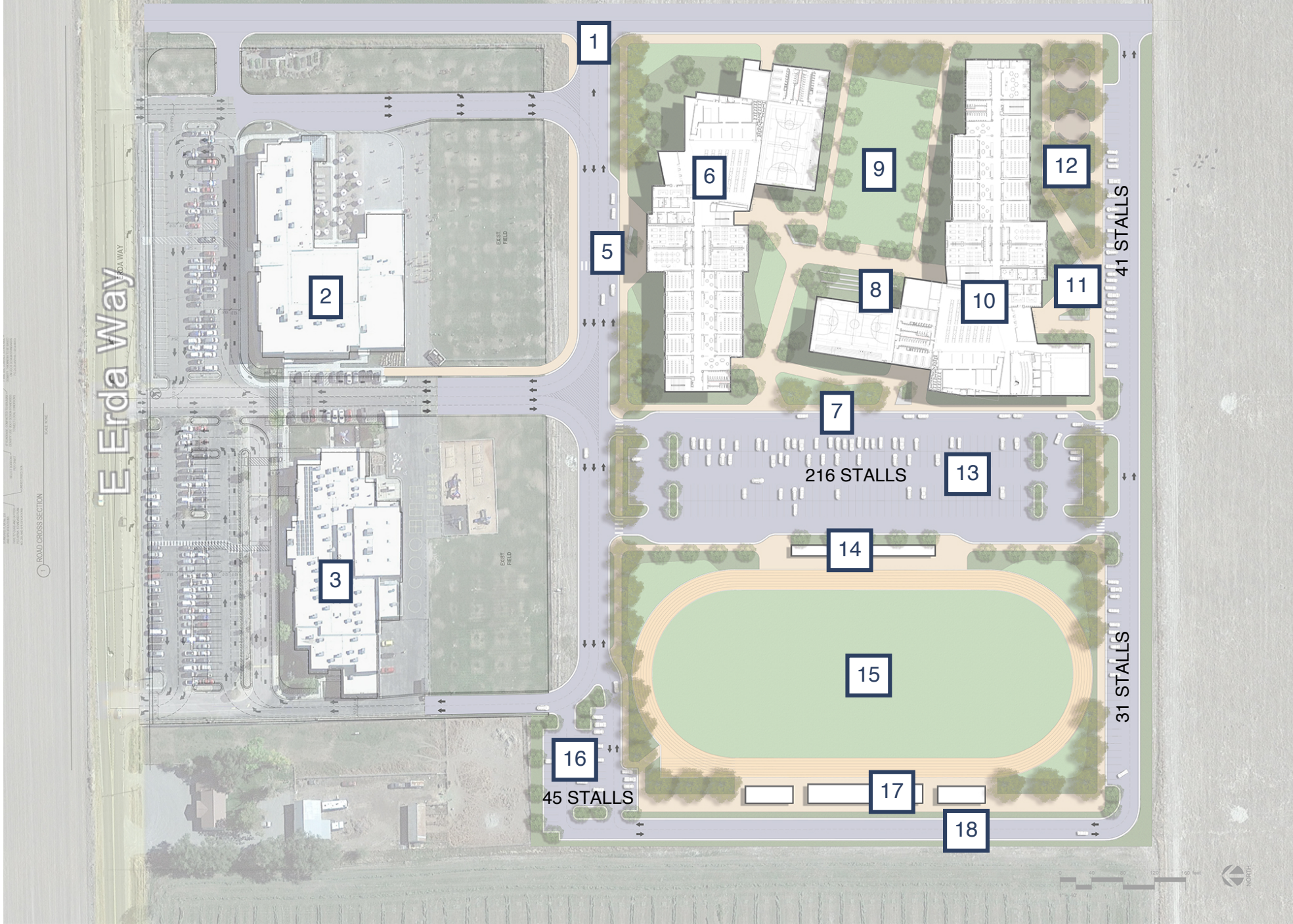
- Utilizing natural systems to infiltrate water into the aquifers
- Efficient use of land allowing for more developable land
- High end look
- Low long term maintenance costs
- Easy repairs
- Less ice build up in winters, more slip resistant
- Install during winter months

CONS

- Slightly higher up front installation cost
- Longer installation time

RECOMMENDED NEXT STEPS

Final Conceptual Master Plan



LEGEND

- 1 New Access Road on Adjacent Development
- 2 Existing Middle School
- 3 Existing Elementary School
- 4 Current Campus Drop-Off Circulation Improvements
- 5 Main Arrival for Middle School with Gathering Space and Drop-Off / Pick-Up Lanes
- 6 Proposed Middle School
- 7 Drop-Off / Pick-Up for New Schools
- 8 Outdoor Amphitheater and Gathering Spaces
- 9 Shared Quad Open Space and Event Field
- 10 Proposed High School
- 11 Main Arrival to High School with Gathering Space and Possible Drop-Off / Pick-Up Lanes
- 12 Outdoor Classrooms with Tree Canopy
- 13 Main Parking Area
- 14 Sports Field Spectator Bleachers with Drop-Off Lanes or Bus Queuing
- 15 Sports Field and Track
- 16 Parking at Sports Field
- 17 Sports Field Spectator Bleachers and Storage
- 18 Bypass Road for Queuing and Emergency Access

Total Parking: +/- 343 Stalls

NEXT STEPS

PROGRAMMING FUTURE PROJECTS

- Develop performance and design criteria for proposed facilities
- Define space requirements, space relationships and circulation, including consideration of special requirements, such as ambient environment, safety and security, furnishings, flexibility and site information and such elements as image, efficiencies, functionality, cost and schedule
- Identify space requirements and relationships for furniture, equipment, operating procedures, security requirements and communications
- Evaluate the way the spaces support the core values of the school

SPACE ANALYSIS AND MODELING OF EXISTING FACILITIES

- Visually audit the space to identify the unintended and adapted use of space, including transitory spaces - currently unstated or unscheduled
- Right sizing spaces - can more smaller spaces function better for spontaneous, organic gatherings or small group work?
- Identify areas of adaptive use versus designed use. For example, activities that aren't intentionally supported such as display of work and other actions that are happening improvised
- Efficiencies (repurpose existing), co-locate functions, create face of school, express brand/culture
- Workshop "future space" concepts

SITE SURVEY

- Commission a full ALTA survey, including topographical and vegetation survey to confirm understanding of the site boundaries, setbacks, easements, and issues related to drainage, grade, and existing trees
- The process can take 6-8 weeks and can hold up the design process if not available from the beginning

