

COMMUNITY AND  
VILLAGE PLAN

# Saratoga Springs Middle School #450



ENGINEERS  
SURVEYORS  
PLANNERS

January, 2018

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## PREFACE

The following Community and Village Plan document addresses the proposed improvements as they pertain to the proposed Saratoga Springs Middle School located in Saratoga Springs, Utah. The property and the proposed improvements for the development are discussed in detail and follow the requirements set forth within the Community and Village Plan requirements of the City Code of Saratoga Springs. The purpose of the document is to inform the City (Staff, Planning Commission, and City Council) and Public of the proposed general design elements, open space plans, guiding design principles and land uses for the School project. In addition, utility capacities based on conceptual plans, will outline the methods used to anticipate the demands and service requirements necessary to provide adequate utility service and infrastructure for the proposed Saratoga Springs Middle School and the City. With the simplicity of the site with a single proposed use and the similarity of requirements of the Community and Village Plan, it is proposed that a single document be utilized.

## EXECUTIVE SUMMARY

The proposed Saratoga Springs Middle School #450 is an approximate 31-acre parcel located west of State Route 68 (Redwood Road) and adjacent to the existing Lake View Terrace subdivision of Saratoga Springs. The project is ideally situated to provide connectivity and minimize impact with local and major transportation corridors.

The proposed Community Plan incorporates the following units and approximate acreages:

- 31.34 Total Acres
  - 5.03 Acre Right-of-way Dedication
  - 26.31 Acre Saratoga Springs Middle School

## LEGAL DESCRIPTION

The proposed Saratoga Springs Middle School contains approximately 31.34 acres of property. Please see Appendix A for a copy of the ALTA survey for the property. The parcel metes and bounds legal description is as follows:

A portion of the northwest quarter of Section 35, Township 5 South, Range 1 West, Salt Lake Base and Meridian, described as follows:

Beginning at a point located north 139.94 feet and east 1711.70 feet from the west  $\frac{1}{4}$  corner of Section 35, Township 5 South, Range 1 West, Salt Lake Base and Meridian (basis of bearing: S1°16'48"E along the section line from the west  $\frac{1}{4}$  corner to the southwest corner of said Section 35); thence northwesterly along the arc of a 506.50 foot radius non-tangent curve to the left (radius bears: S78°40'27"W 224.97 feet through a central angle of 25°26'56" (chord: N24°03'01"W 223.13 feet); thence N36°46'29"W 27.73 feet; thence along the arc of a 583.50 foot radius curve to the right 374.51 feet through a central angle of 36°46'29" (chord: N18°23'14"W 368.12 feet); thence north 724.47 feet; thence along the arc of a 15.00 foot radius curve to the left 23.56 feet through a central angle of 90°00'00" (chord: N45°00'00"W 21.21 feet); thence north 95.00 feet; thence northeasterly along the arc of a 15.00 foot radius non-tangent curve to the left (radius bears: north) 23.56 feet through a central angle of 90°00'00" (chord: N45°00'00"E 21.21 feet); thence east 77.00 feet; thence southeasterly along the arc of a 15.00 foot radius non-tangent curve to the left (radius bears: east) 23.56 feet through a central angle of 90°00'00" (chord: S45°00'00"E 21.21 feet); thence east 680.56 feet; thence N82°52'30"E 257.99 feet; thence east 51.09 feet; thence along the arc of a 15.00 foot radius curve to the left 24.01 feet through a central angle of 92°03'55" (chord: N43°58'02"E 21.59 feet); thence N87°57'02"E 0.35 feet to the west right-of-way line of Redwood Road; thence S2°02'58"E along said right-of-way 1162.81 feet to the north line of Tanner Lane; thence along the north line of Tanner Lane the following twelve (12) courses: S87°57'12"W 118.80 feet; thence S83°22'46"W 100.32 feet; thence S87°57'12"W 53.76 feet; thence along the arc of a 428.00 foot radius curve to the left 68.13 feet through a central angle of 9°07'11" (chord: S83°23'36"W 68.05 feet); thence along the arc of a 11.00 foot radius curve to the right 16.44 feet through a central angle of 85°36'25" (chord: N58°21'47"W 14.95 feet); thence S73°27'35"W 56.01 feet; thence southwesterly along the arc of a 11.00 foot radius non-tangent curve to the right (radius bears: S74°26'26"W) 16.16 feet through a central angle of 84°11'55" (chord: S26°32'23"W 14.75 feet); thence along the arc of a 428.00 foot radius curve to the left 79.82 feet through a central angle of 10°41'09" (chord: S63°17'47"W 79.71 feet); thence S57°57'12"W 319.15 feet; thence along the arc of a 272.00 foot radius curve to the right 89.32 feet through a central angle of 18°48'56" (chord: S67°21'40"W 88.92 feet); thence along the arc of a 11.00 foot radius curve to the right 16.95 feet through a central angle of 88°17'48" (chord: N59°04'58"W 15.32 feet); thence S75°03'56"W 65.49 feet to the point of beginning.

Contains:  $\pm 31.34$  Acres

## PROPERTY BOUNDARY



## USE MAP AND BUILDOUT ALLOCATION

The following Use Map depicts the proposed land uses for the proposed Saratoga Springs Middle School #450 site. The project will be completed in a single Village phase with the following single land use type:

- **Civic Use.** This area is located west of State Route 68 and adjacent to the existing Lake View Terrace subdivision of Saratoga Springs. The anticipated land use coincides with the land uses within the City Center District Area Plan for Saratoga Springs.

Two different methods were requested in determining the land use intensities for this Village. Both methods illustrate the process used in determining the Equivalent Residential Units (ERUs) for this specific Middle School. They are as follows:

**Method 1 – District Area Plan Guidelines.** The District Area Plan (DAP) states that one ERU is equivalent to 2,165 square feet (sf) of “non-residential area.” The 2,165 sf is generated by dividing 10,000,000 sf commercial area by 4,620 non-residential ERUs as per the DAP. The total building square footage is 186,024 sf as shown within the architectural drawings. The following yields:

$$(186,024 \text{ sf}) / (2,165 \text{ sf/ERU}) = 86 \text{ ERUs}$$

**Method 2 – Water Supply Fixture Unit (wsfu).** The architectural drawings for the proposed middle school state the maximum occupancy as directed by the Alpine School District is 2,000 persons (includes both staff and students). In addition, a plumbing fixture analysis representing this maximum occupancy was calculated within the architectural drawings. Calculations provided within the utility section of this Community/Village Plan generate approximately **17.5 ERUs** for the proposed middle school.

The ERU density calculation method (Method 1) identified in the District Area Plan will be used and results in **86 ERUs** for the proposed middle school. Method 2 will be used later within this document for determining the anticipated utility capacities for the project.

### Village 1 – Alpine School District Saratoga Springs Middle School #450

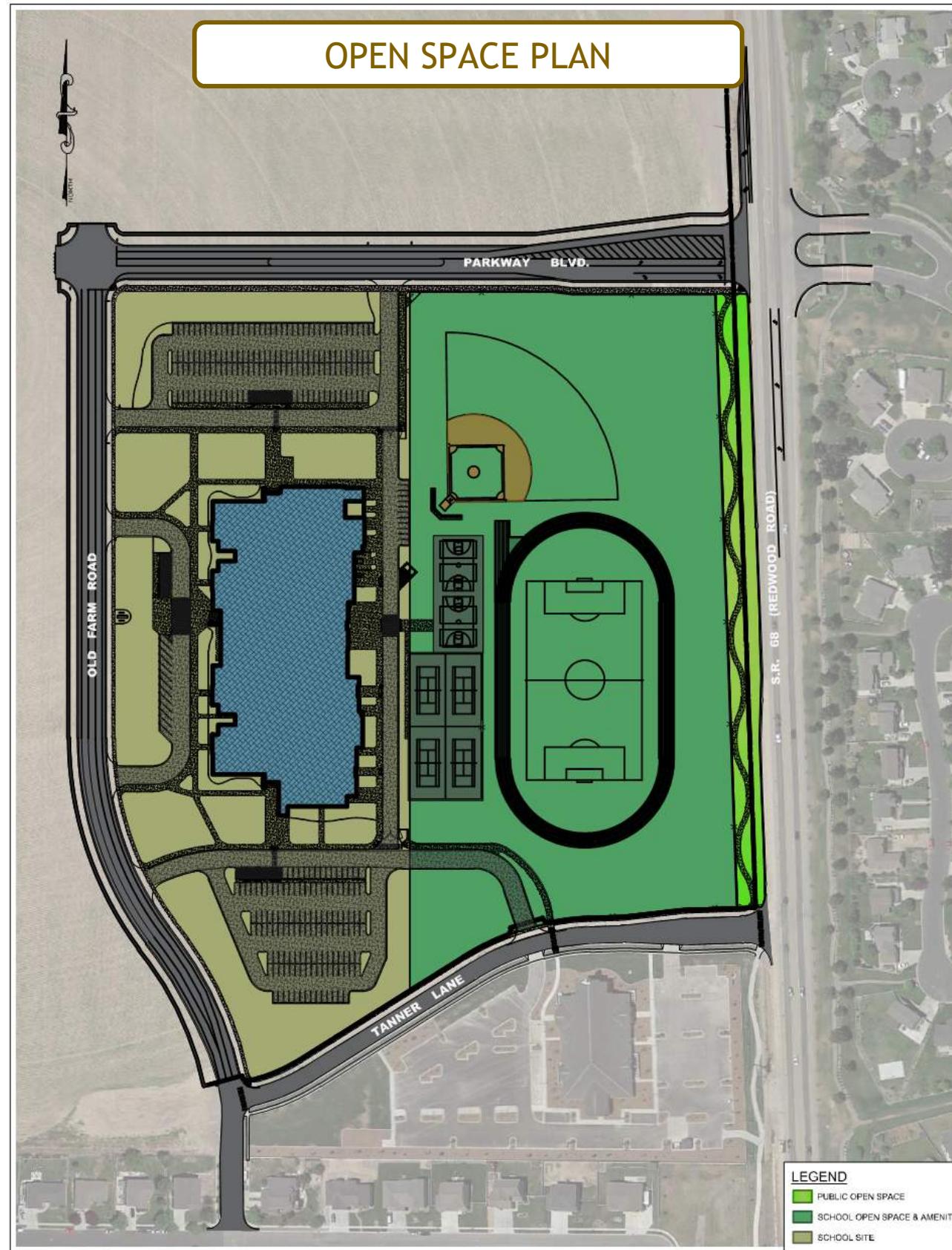
This Village is the only phase of this project and will only contain a single land use type.

Overall Village Area:	31.3 Ac (100%)
Civic Use:	26.3 Ac (84%) 86 ERUs (100%)
School Site:	12.8 Ac (41%)
School Open Space:	12.7 Ac (41%)
Public Open Space:	0.8 Ac (2 %)
Right-of-way:	5.0 ac (16%)
Projected Population:	0 Persons
Projected Employment:	50 Equivalent Full Time Jobs

## DEVELOPMENT STANDARDS AND LOTTING MAP

Civic Use is the only land use type within this proposed area. Development standards will adhere to the City Code and the latest approved version of the Standards and Specifications.





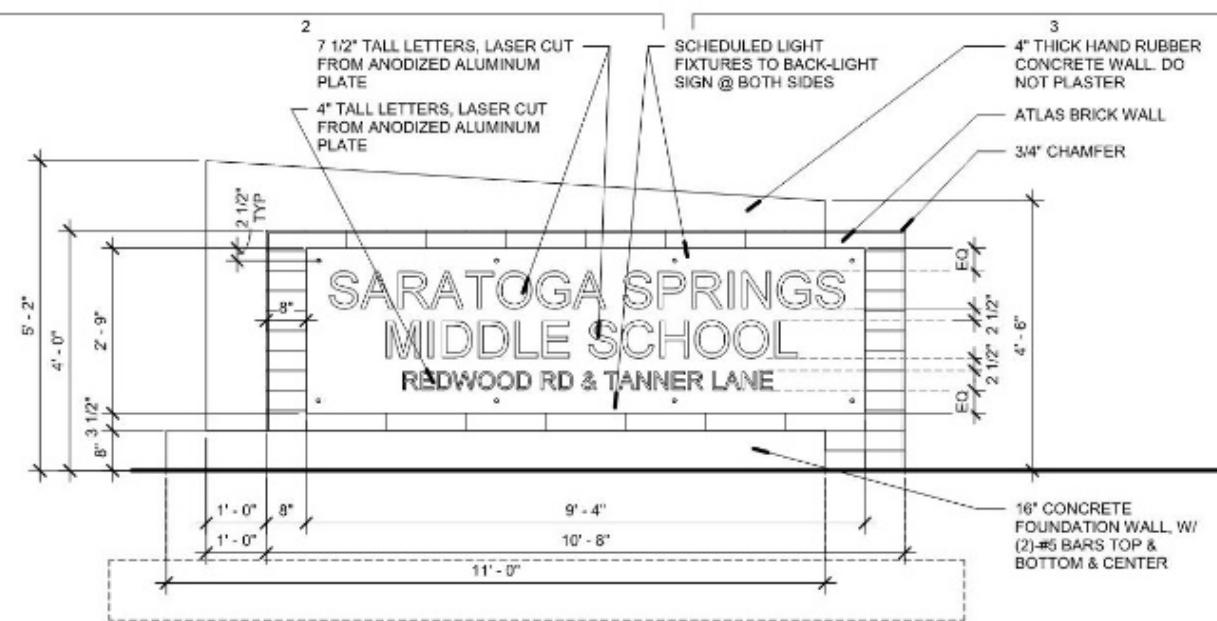
## OPEN SPACE PLAN

Open space and amenities are a necessity with this proposed Saratoga Springs Middle School due to the activities and curriculum provided by the Alpine School District for this age range. In addition, pedestrian wayfinding and safety is the utmost importance with a land use of this type. The following key elements will be provided and are based on the current City Code requirements:

**Public Sidewalks.** Sidewalks are to be installed along the entire school frontage. Sidewalk connections points will be at Old Farm Road, Redwood Road (south), and a mid-block crossing to the adjacent LDS Church. Roadway frontage improvements will adhere to City Roadway Standards. Sidewalk widths and placements will follow the 2017 Saratoga Springs City Standards and Specifications at a minimum.

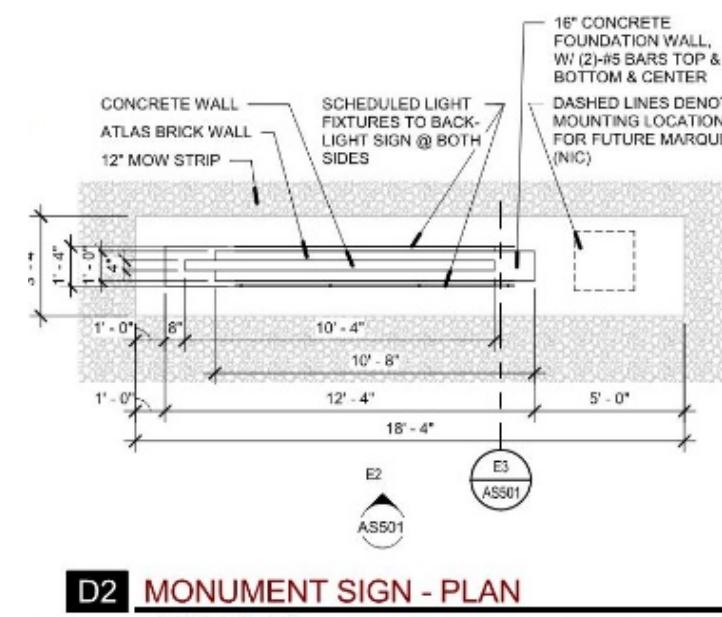
- **Open Space and Amenities.** In addition to the typical landscaping in and around the proposed Saratoga Springs Middle School, there is approximately 12 acres of open space to the rear of the school that includes amenities such as a running track (1), soccer field (1), baseball field (1), tennis courts (4) and basketball courts (2) which will be used for school curriculum and public use.
- **Public Open Space.** A 30-foot landscape and utility easement/buffer will be provided along Redwood Road that will be owned and maintained by the Alpine School District. The buffer will include a meandering trail located within a pedestrian access easement and follow the 2017 Saratoga Springs City Standards and Specifications at a minimum.
- **Monumentation and Signage.** Signage will be specific and similar to other local civic uses within the City. Monumentation and signage will meet the sign requirements set forth in Title 19.18.07 of the City Code. See the signage example provided in the following section.





**E2 MONUMENT SIGN - ELEVATION**

SCALE: 1/2" = 1'-0"



**D2 MONUMENT SIGN - PLAN**

SCALE: 1/4" = 1'-0"

**Fencing.** There will be various types of fencing located around the site. They are as follows:

- **6-Foot Chainlink.** This fence type typically follows the exterior property lines surrounding the open space. The chainlink material is essential for enclosing the open space and the associated activities. The material also provides two-way viewership (inside and out) while not compromising the safety of the students.
- **10-Foot Chainlink.** This fence type is typically placed specifically around amenities such as the tennis courts in order to ensure the functionality and safety of the athletes and spectators.
- **Decorative Iron Fence.** This fence type will be located around mechanical equipment such as transformers, generators and a cooling towers. The height of the fence is approximately 10-feet in order to keep unauthorized personal from entering.
- **Trash Enclosure.** This enclosure will consist of 10-foot atlas brick wall on three sides with a decorative iron fence for a gate.

**Lighting.** All lights within the City right-of-way will meet the City standards and specifications. Parking lot, wall and other types of lights will be presented with the architectural drawings according to Alpine School District standards and reviewed during the site plan submittal.

#### MAINTENANCE PLAN

All the proposed open space as discussed above will be owned and maintained by the Alpine School including the 30-foot landscape and utility easement/buffer along Redwood Road. The planter strips within the City right-of-way along each property boundary will be owned by the City but maintained by the Saratoga Springs Middle School. This includes the frontage along State Route 68 (Redwood Road) outside of the 30-foot landscape and utility easement/buffer.

#### PHASING PLAN

All improvements such as utility, roadway, site and open space for the proposed Saratoga Springs Middle School will be completed in a single construction phase.

## HOMEOWNERS ASSOCIATION

No homeowners association is anticipated for the project with all open space and amenities in and around the proposed middle school to be owned and maintained by the Alpine School District.

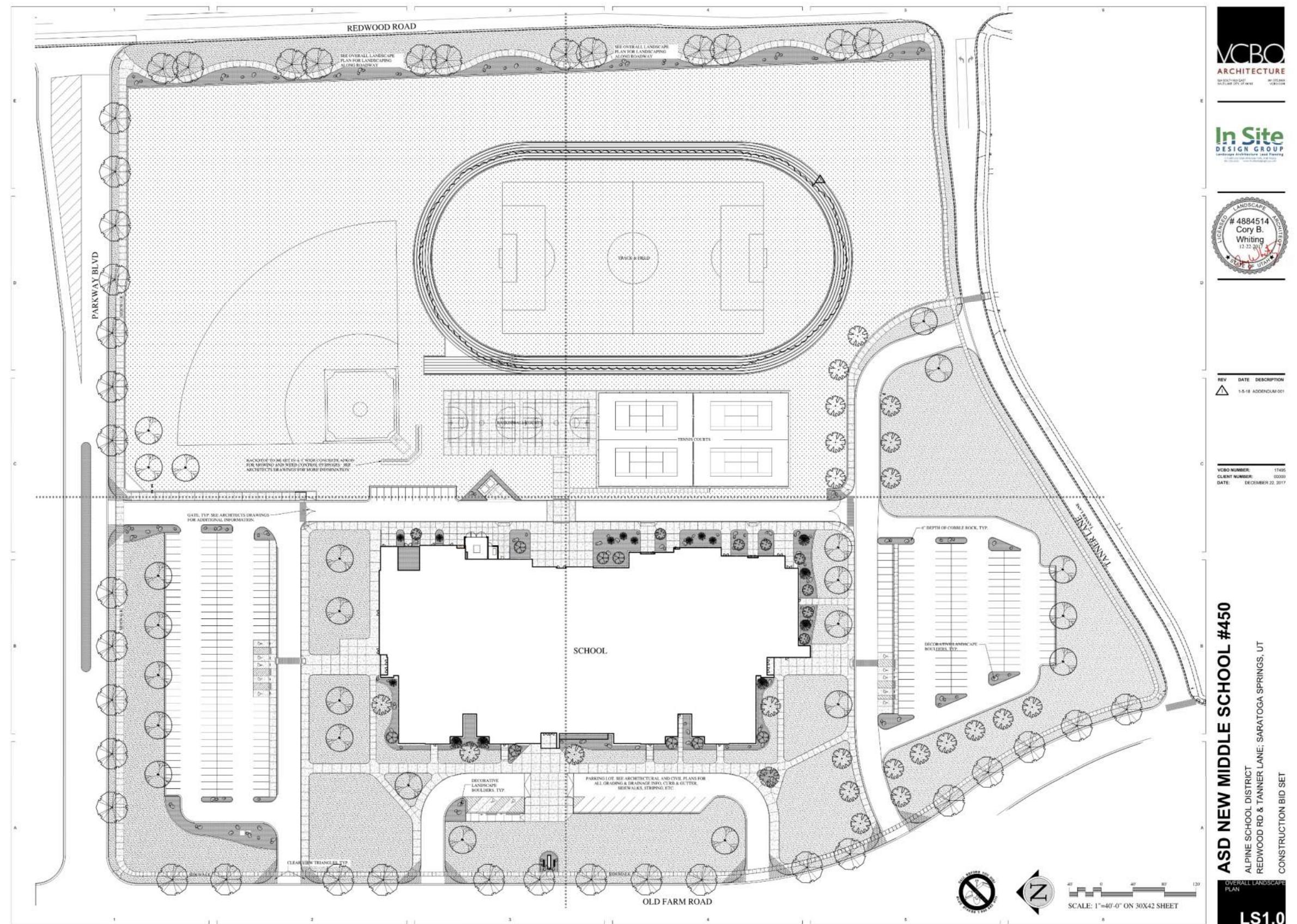
## DEVELOPMENT APPROVAL PROCESS

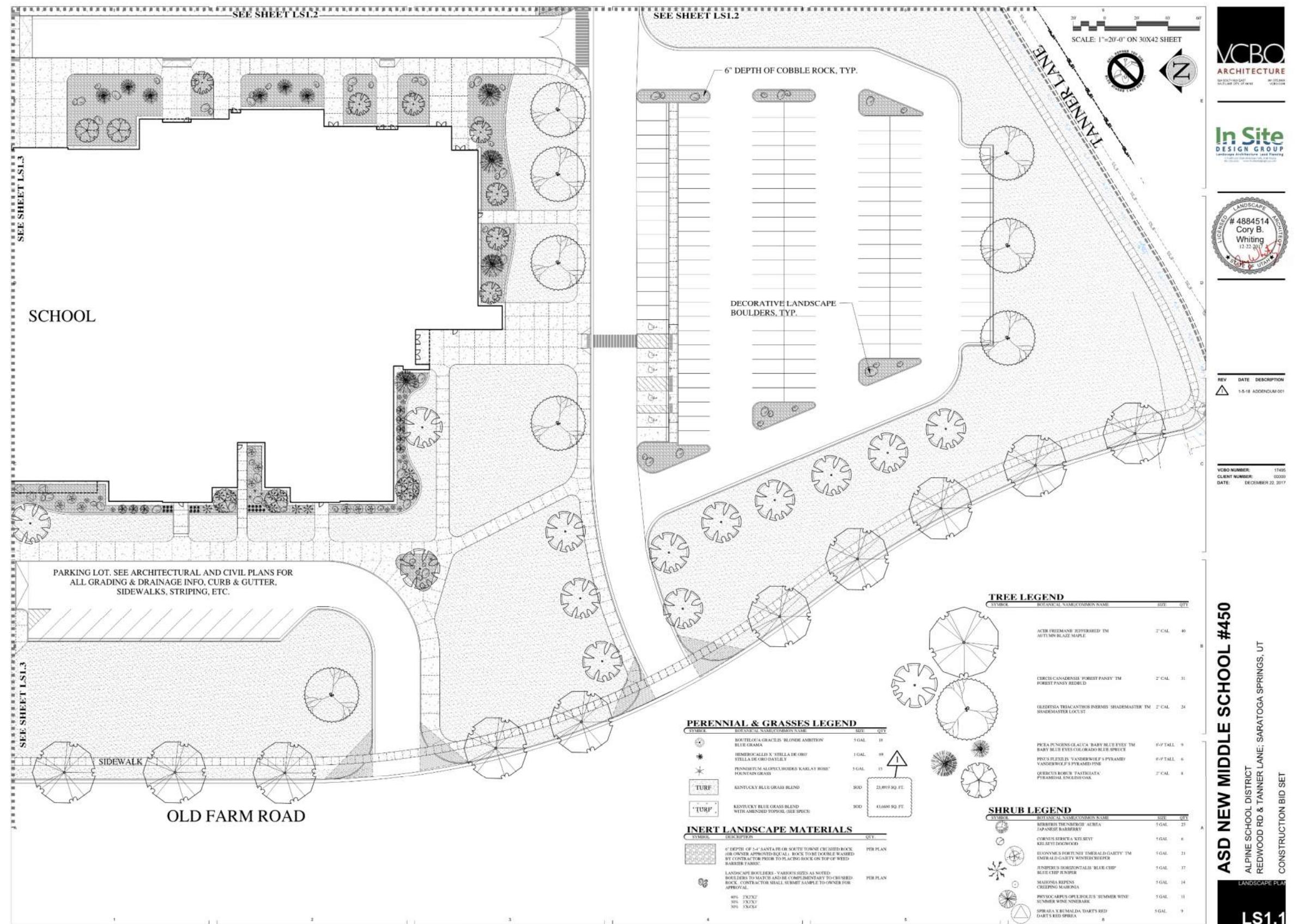
Preliminary plat, final plat, and site plan shall be approved by city staff.

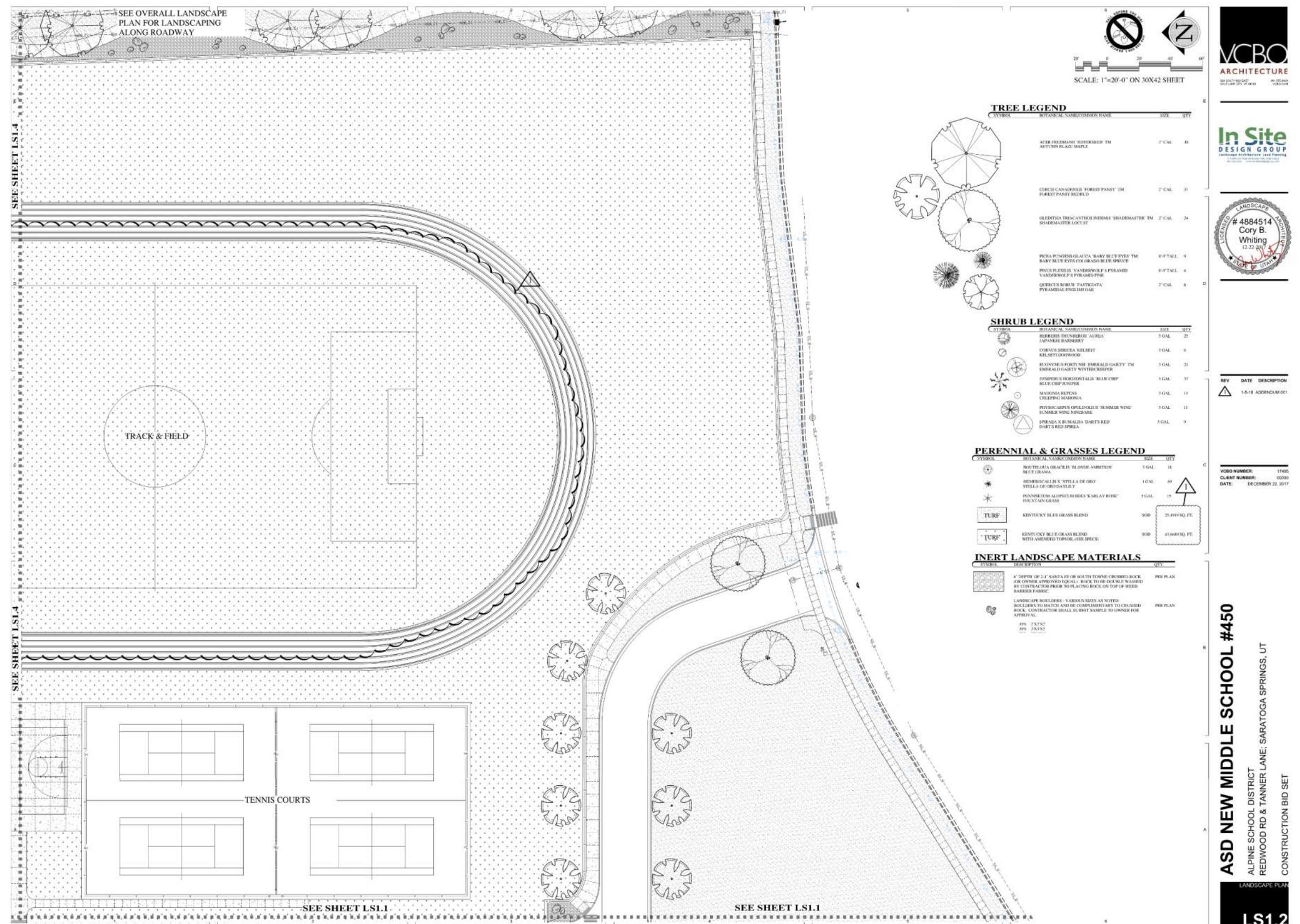
## GUIDING PRINCIPLES

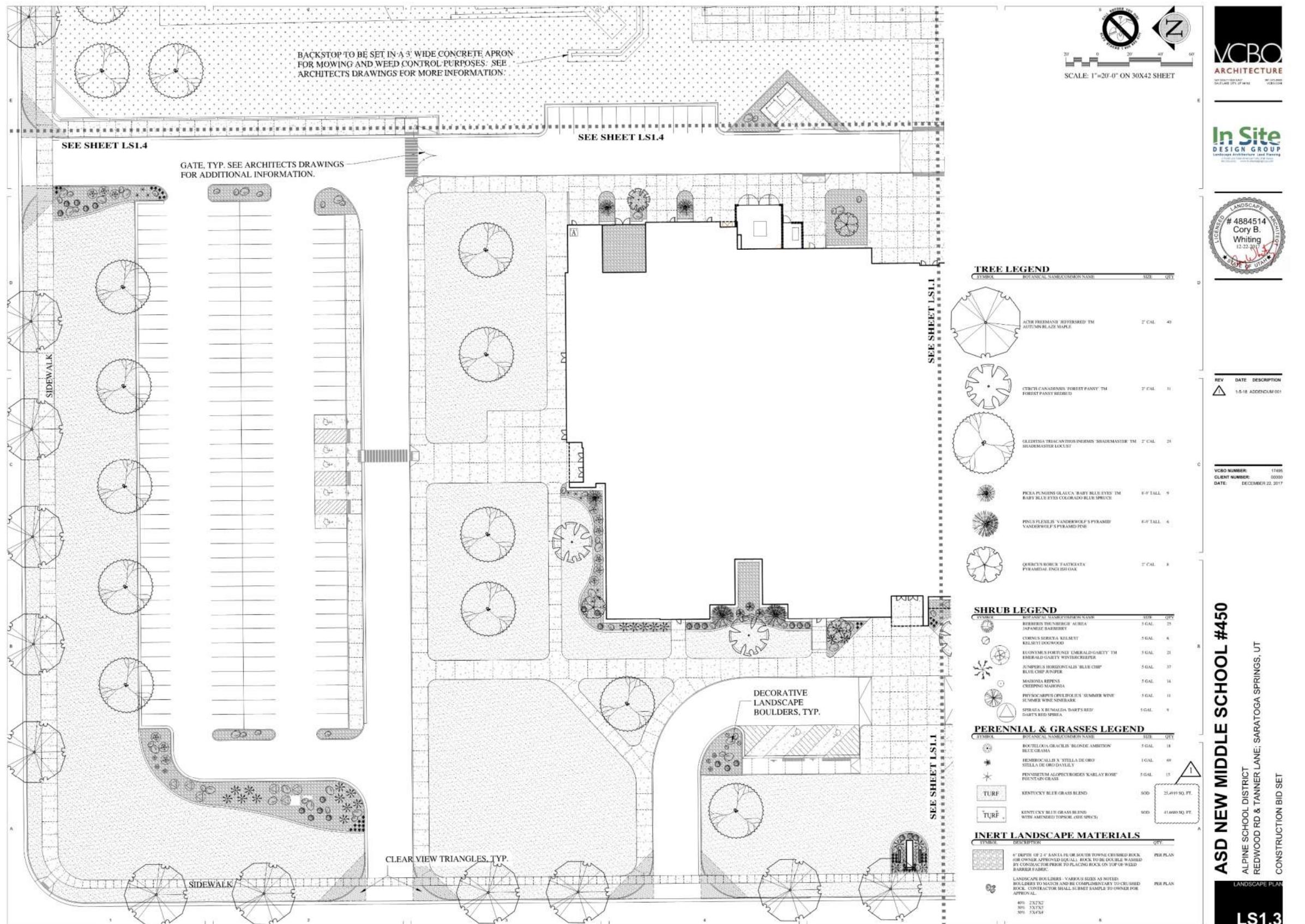
The guiding principles for the proposed Saratoga Springs Middle School will stay consistent with the other civic uses provided by the Alpine School District within Saratoga Springs. It's the school district's goal to integrate with the local surroundings and keep in harmony with the standards set forth by the City of Saratoga Springs. The following provides the guiding principles anticipated for the project:

- **Establishment of Standards.** Architectural design of the building will be similar to what is shown in the rendering shown on pages 17 to 20 with final design to be reviewed at site plan approval. No Covenants, Conditions and Restrictions (CC&Rs) are anticipated for the project.
- **United Theme.** It is the desire of the Alpine School District to keep consistent with their other civic uses within Saratoga Springs. Any and all street signage and monumentation will keep consistent with similar civic uses within the City. See the example below of a similar sign within Saratoga Springs. Colors and dimensions may vary with final design.
- **Minimize Impacts.** A variety of techniques have been incorporated within proposed Saratoga Springs Middle School to decrease the impacts on the surrounding area and adjacent neighbors to the project. This is accomplished through project orientation and transportation corridors.
  - **Project Orientation.** The front of the Saratoga Springs Middle School is oriented opposite of the existing State Route 68. This reduces the access points to this major transportation corridor.
  - **Transportation Corridors.** Primary access to the Saratoga Springs Middle School will be from two different access points to State Route 68. The proposed Parkway Boulevard and the existing Tanner Lane are two stop controlled access points to State Route 68. A secondary access to the south through the existing Old Farm Road may be used by local traffic accessing the proposed Saratoga Springs Middle School.
- **Community Plan Character.** Properly designed and placed landscaping can create a sense of character similar to other civic uses within the City. The following conceptual landscape plan provides an example of the anticipated landscaping for the proposed Saratoga Springs Middle School. Landscaping within the planter strips of the City right-of-way will adhere to City Standards and Specifications. Interior landscaping exhibits are conceptual by nature but show the general placement of trees, shrubs and other vegetation.

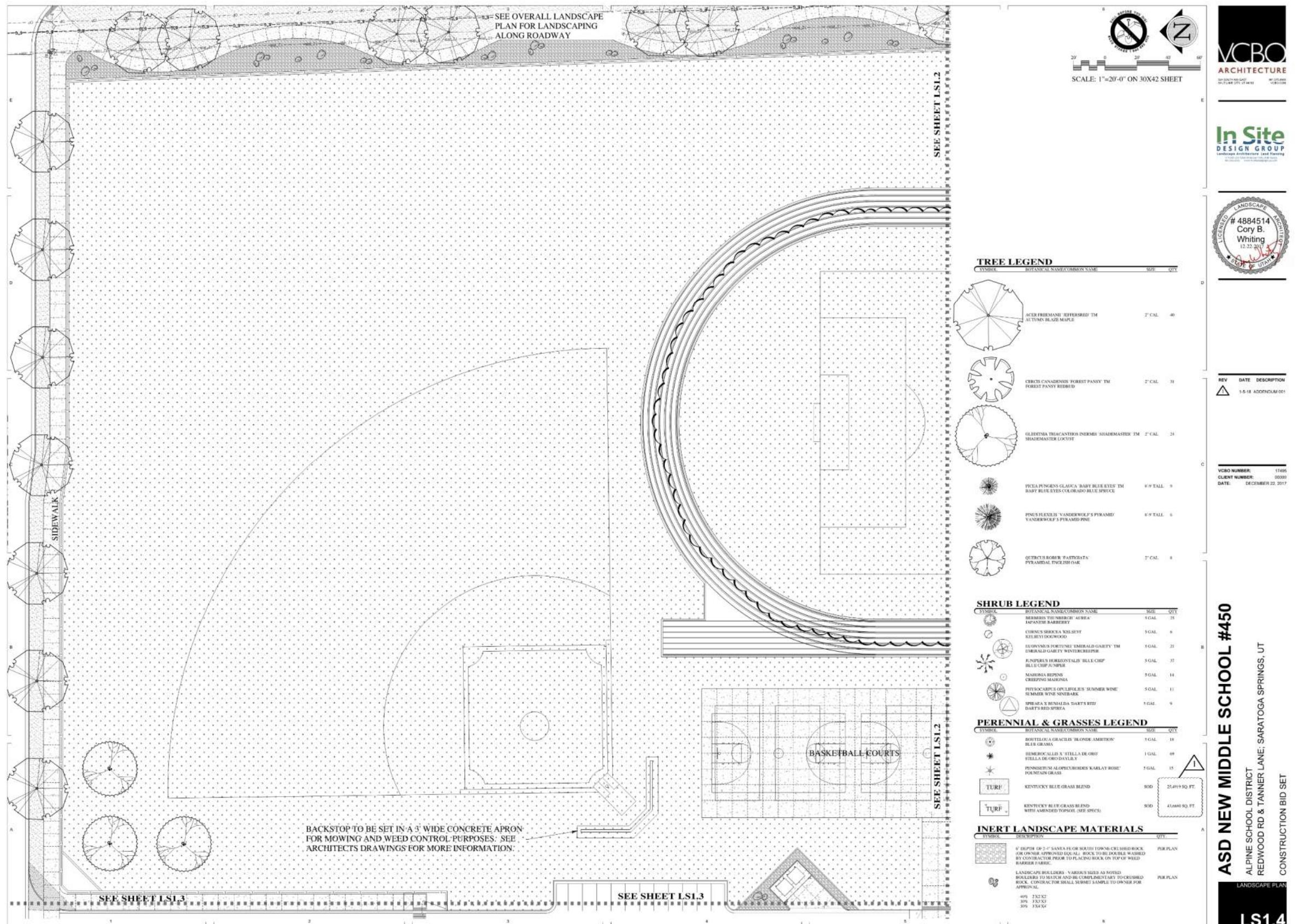








Saratoga Springs Middle School #450



Saratoga Springs Middle School #450

## UTILITY CAPACITIES

The location of the proposed Saratoga Springs Middle School has utilities located within the two-existing rights-of-way: Tanner Lane and State Route 68. The existing utilities within these two-existing rights-of-way will serve as the backbone infrastructure for the culinary water, secondary water, storm drain and sanitary sewer. The extension of Old Farm Road and the improvement of Parkway Boulevard will provide the necessary looping and sizing required to service the proposed Saratoga Springs Middle School and future residential uses in the area. The following addresses each of the different utilities and any specific requirements for each:

### CULINARY WATER

There is an existing 8-inch culinary water main located within Tanner Lane that loops to the existing subdivision on the south and the existing 14-inch culinary main within State Route 68 (Redwood Road). An additional loop will be created by extending a 14-inch culinary water main within Parkway Boulevard to the west and an 8-inch culinary water main within Old Farm Road. The 14-inch culinary water main within Parkway Boulevard will be extended to the west for future development. Water line sizes are consistent with those depicted in the City's Culinary Water Master Plan. The proposed Saratoga Springs Middle School falls within Water Zone 1 and makes no connection with the upper zone. Service to the area within Water Zone 2 will be addressed at the time of development.

### Fire Flow Requirements

Fire flow tests were conducted at the existing fire hydrants around the proposed Saratoga Springs Middle School. The available fire flow accounting for seasonal fluctuations provided 3,765 gpm at a residual pressure of 20 pounds per square inch (psi). This available fire flow will only increase with the proposed looping of the culinary water line around the site.

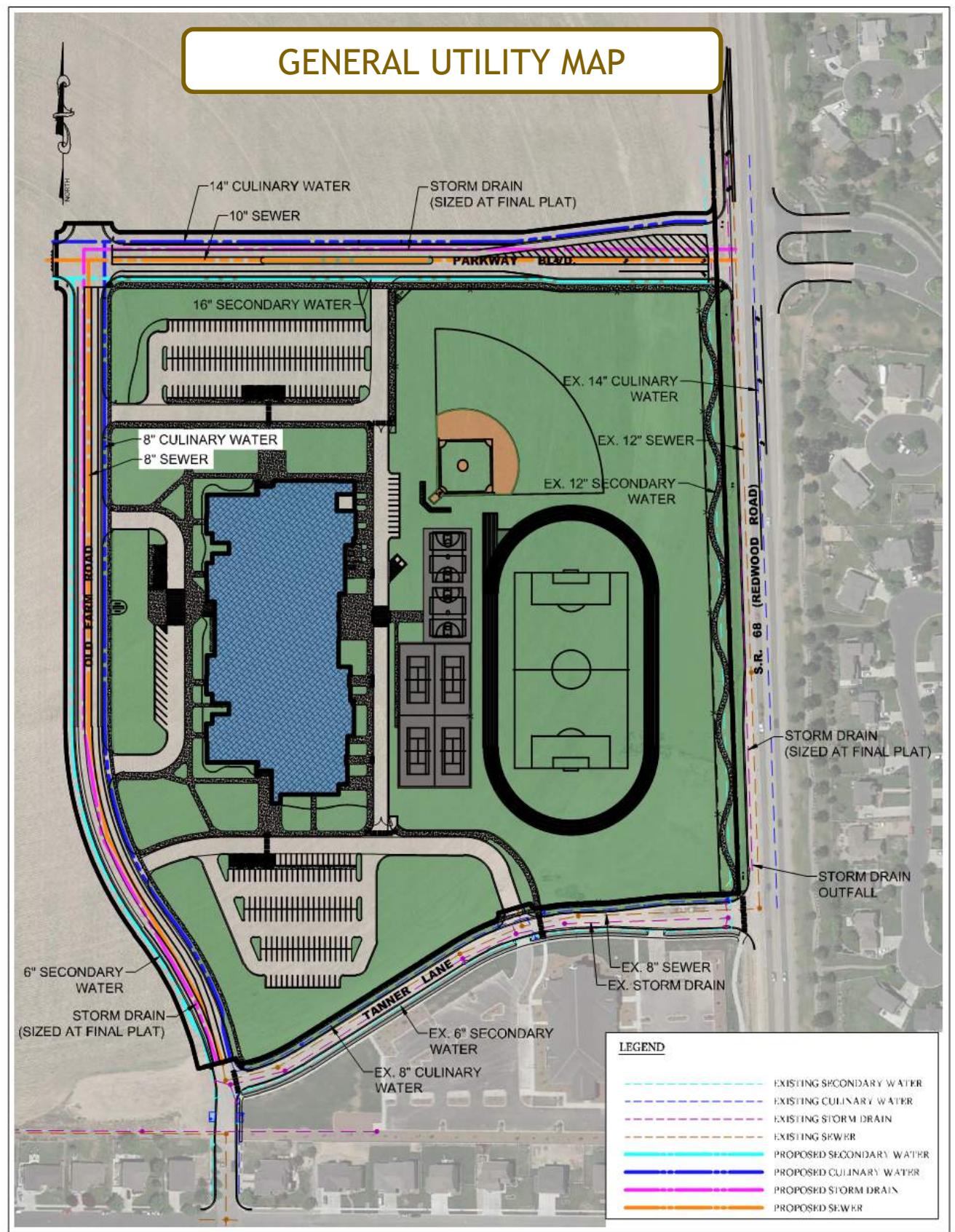
The proposed Saratoga Springs Middle School is a multi-story, 186,024 square foot, Type II-B structure with a fire flow requirement of 8,000 gpm as per the International Fire Code (IFC). The IFC allows for reductions to the fire flow requirement up to 75 percent when full sprinkler protection is provided. Based on the two criteria listed above, this provides a range of 2,000 to 3,765 gpm or a 53 to 75 percent reduction with the proposed full sprinkler protection. It is anticipated that the 53 percent reduction (3,765 gpm) will be accepted by the State Fire Marshal and local fire authority.

### Water Demands

Based on the 2,000 maximum occupants as directed by the school district, the following provides a breakdown of the anticipated plumbing fixtures within the proposed Saratoga Springs Middle School. The plumbing fixture requirements were based on the International Building Code (IBC) 2015, Section 2902.1 and are analyzed within the architectural drawings of the site plan. The following provides a summary of the architectural analysis:

Type	Fixtures Provided	wsfu per Fixture	Total wsfu
Unisex (Full Bathroom)	9	8.0	72.0
Lavatories	50	2.0	100.0
Water Closet (Women)	28	10.0	280.0
Water Closet (Men)	15	10.0	150.0
Urinal	13	5.0	65.0
Drinking Fountains	15	0.25	3.8
Service Sinks	10	3.0	30
<b>Total Fixtures</b>	<b>149</b>		<b>700.8</b>

A total of **700.8 wsfu** is equivalent to **17.5 Equivalent Residential Connections (ERCs)** as per the Saratoga Springs Drinking Water Impact Fee Plan, Section 2.4, Existing Equivalent Residential Connections.



The anticipated demand for the proposed Saratoga Springs Middle School is approximately 149 fixtures. The architectural plans provide more specific detail to the types of fixtures that can be reviewed and compared to the standards set in the International Plumbing Code (IPC).

#### SECONDARY WATER

There is an existing 6-inch secondary water main located within Tanner Lane that loops to the existing subdivision on the south and the existing 12-inch secondary main within State Route 68 (Redwood Road). An additional loop will be created by extending a 16-inch secondary water main within Parkway Boulevard to the west and a 6-inch secondary water main within Old Farm Road. The 16-inch secondary water main within Parkway Boulevard will be extended to the west for future development. Water line sizes are consistent with those depicted in the City's Secondary Water Master Plan. The proposed Saratoga Springs Middle School falls within Water Zone 1 and makes no connection with the upper zone. Service to the area within Water Zone 2 will be addressed at the time of development.

#### Overall Water Demand

The following design criteria was used in determining the secondary water demand for the project:

- Water Rights (WR) Required: 3.13 ac-ft/Irrigated Acre (IA) per year
- Storage Required: 9,216 gal/IA
- Peak Day Demand: 7.5 gpm/IA

The overall secondary water demand for source and storage is as follows:

Type of Use	Irrigated Area (acres)	Water Right Req'd (ac-ft/IA)	Total Water Right Req'd (ac-ft)	Storage Req'd (gal/IA)	Total Storage (gal)
School	17.3	3.13	54.15	9,216	159,437

#### SANITARY SEWER

There is an existing 8-inch sanitary sewer main located within Tanner Lane that discharges to an existing 12-inch sewer main within State Route 68 (Redwood Road). The sanitary sewer waste for the proposed Saratoga Springs Middle School will discharge to the existing 8-inch sanitary sewer main within Tanner Lane. An additional sanitary sewer main will be installed with Parkway Boulevard and service future development to the west (Sewer Service Area #1). This sewer line sizing is based on a maximum anticipated density for the service area but is not representative of a specific development proposal.

Table 1. Sewer Service Area #1

Indoor Use	Area (acres)	Density (units/acre)	ERUs
Residential Single-Family	223	8.0	1,784

The following methodology was used for purposes of establishing necessary maximum utility capacities for the sanitary sewer main located within Parkway Boulevard:

- Minimum Pipe Slope: 0.75 percent
- Pipe Capacity (d/D): 0.80
- Manning's n-value: 0.013
- Peaking Factor: 2.5

Based on the criteria listed above, pipe capacity calculations have been provided showing the anticipated flow and the equivalent amount of ERUs for the inflow from Sewer Service Area #1. The second calculation shows the full capacity of the same pipe and the equivalent amount of ERUs.

10" Pipe (Influent) = 1.76 cfs = 790 gpm (Peak Hr Flow) = 316 gpm = 454,920 gpd = **1,784 ERUs**  
2.5 Peaking Factor 255 gpd/ERU

10" Pipe Capacity = 1.86 cfs = 833 gpm (Peak Hr Flow) = 333 gpm = 479,534 gpd = **1,881 ERUs**  
2.5 Peaking Factor 255 gpd/ERU

Based on these criteria and design capacity calculations, the allowable capacity of the proposed 10-inch at a minimum slope is 1,881 ERU, well in excess of the required 1,784 ERUs for Sewer Service Area #1.

A proposed 8-inch sanitary sewer main is adequate for service within Old Farm Road as it only collects sanitary sewer waste from the future sub-basin just west of the roadway. It should be noted that the proposed 8 and 10-inch sewer main will remain dry until the future master plan sanitary sewer main is installed within Redwood Road.

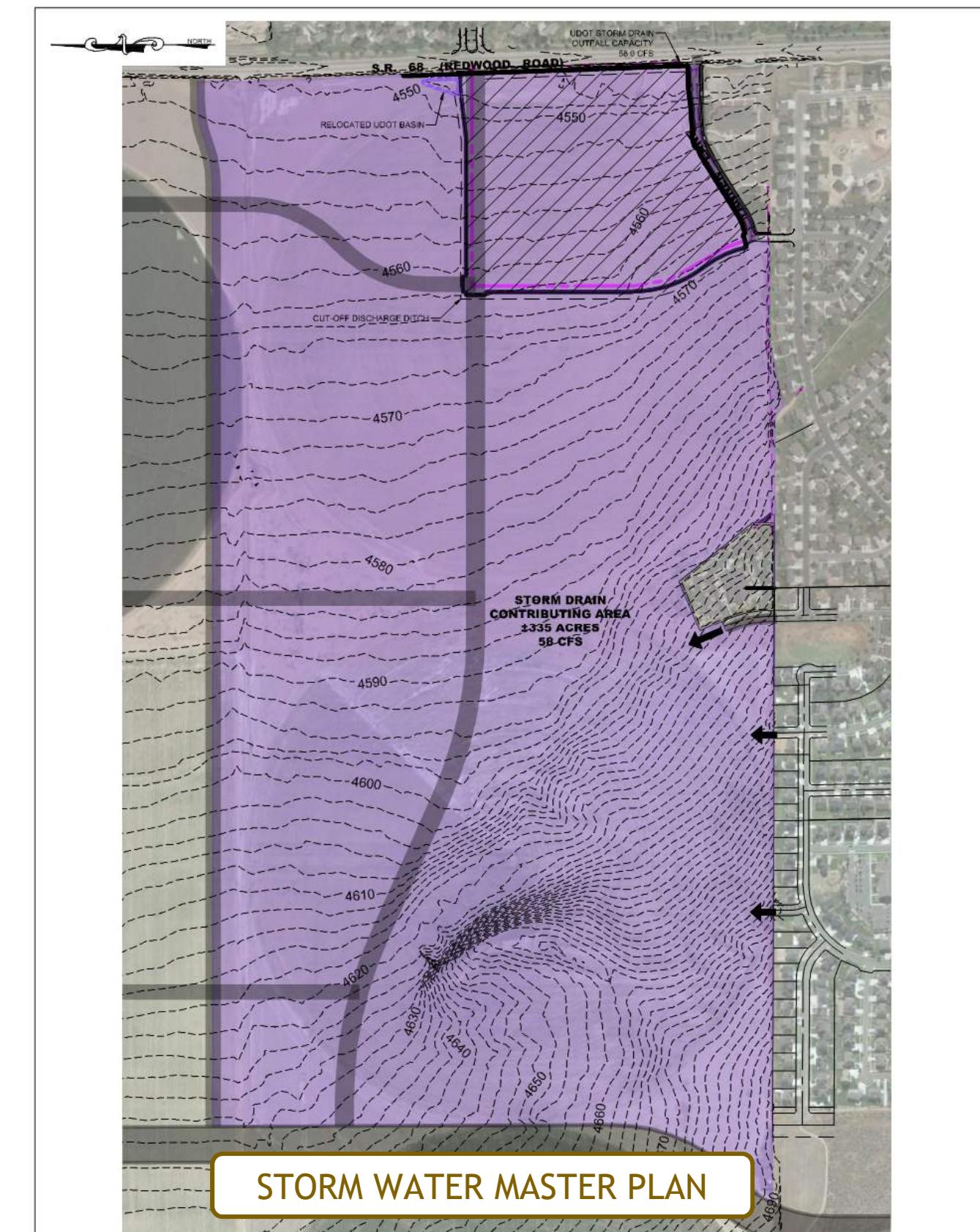
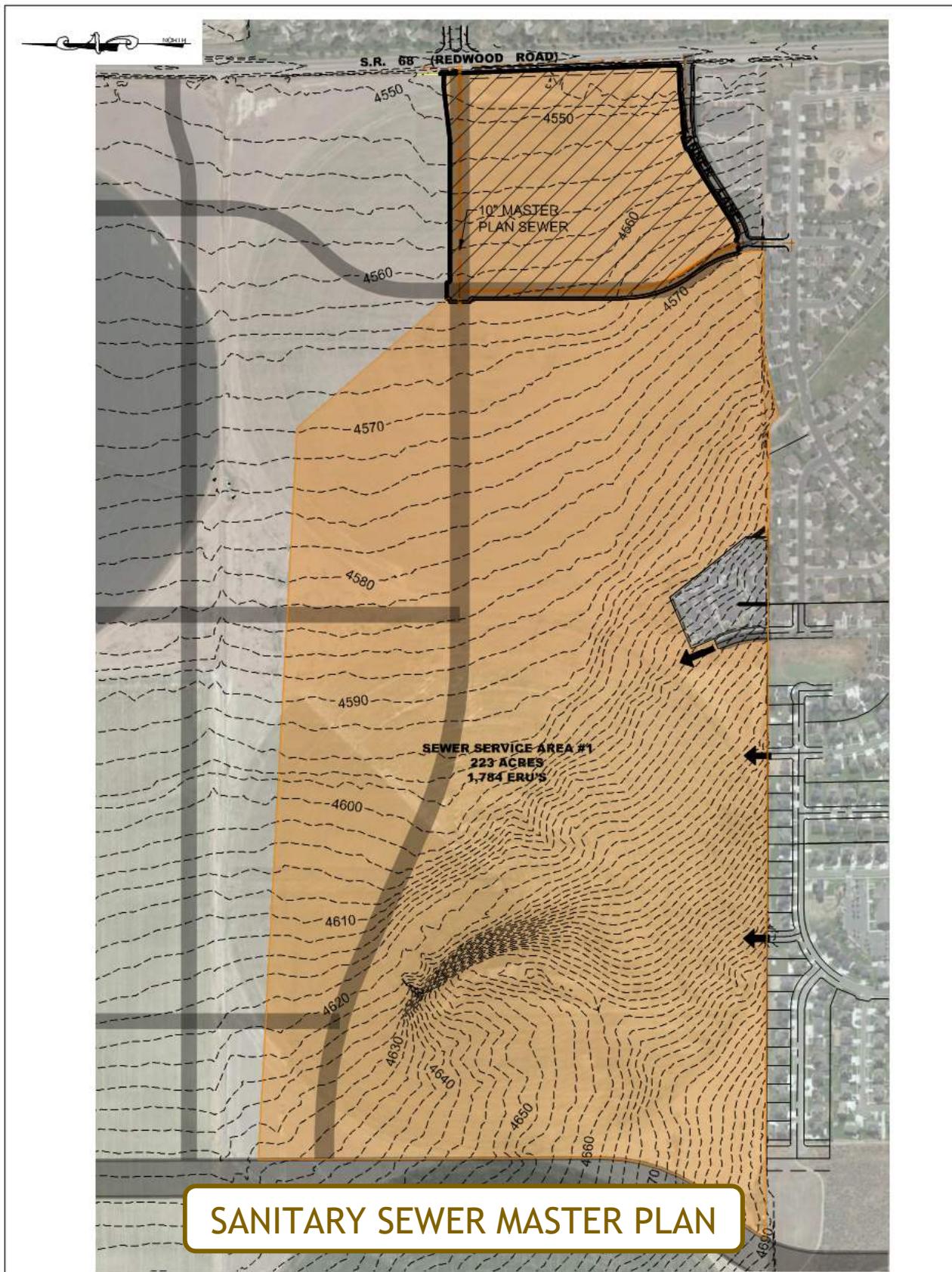
#### STORM DRAIN

A preliminary storm drain study in the Appendix – Storm Drain Analysis was completed for the proposed Saratoga Springs Middle School and the future upstream contributing area. Storm runoff flows were determined in order to size the pipe network to be improved with Parkway Boulevard and Old Farm Road and lower detention basins. The following provides a summary of the findings with the full report:

- 58 cfs capacity has been provided through the existing UDOT piping currently located at the southeast corner of the school site. This capacity is based on the UDOT calculations of a historical flow from approximately 340 acres at a 0.174 cfs per acre.
- For purposes of the master storm drainage, an equivalent 340 acres was provided which would eventually drain to the UDOT pipeline. The remainder of the Church property to the west and north would drain to the Tickville Wash.
- Master planned and existing road extensions have been accounted for within the storm drainage model to drain undetained. This includes Parkway Boulevard and Old Farm Road. Tanner Lane is already accounted within the existing Church system to the south.
- The proposed middle school and remaining pads would be allowed to discharge at a rate of 0.174 cfs per acre. This allowable discharge would include the collection of all roadways adjacent to the development.
- The modeling is based on the latest storm drainage criteria provided by the City.
- The relocated UDOT detention basin will be located on the north side of Parkway Boulevard and will collect all upstream runoff above the proposed middle school through a temporary cutoff ditch on the upstream property lines of the project.

#### OFFSITE UTILITIES

There are no offsite utilities required with the improvement of the proposed Saratoga Springs Middle School. Each of the utilities discussed above are adjacent to the property as depicted in the General Utility Map.



## TRANSPORTATION

The following addresses various elements related to the transportation design and service to the proposed Saratoga Springs Middle School and is in harmony with the City's Transportation Master Plan. This includes design parameters for proposed roadways and cross sections as it is applicable to the site.

### VEHICULAR AND PEDESTRIAN PLAN

Transportation/pedestrian access and connectivity is a key component for the Alpine School District. The exhibit to the right identifies major roadway locations and pedestrian pathways (sidewalks) and how it will integrate with the surrounding neighborhood. Tanner Lane is an existing 56-foot right-of-way that will be referenced with the roadway sections below.

### ROADWAY SECTIONS

See the exhibit to the right for identification of major roadway locations and classifications. A second exhibit on the following page shows the cross sections for each of the roads described below. These plans include only the main roadways and demonstrate connectivity and functionality for the site:

- **Redwood Road.** This major arterial roadway runs north-south along the eastern border of the project and is to be a City standard 180-foot right-of-way that follows the requirement set forth within the City's standards and Specifications. Access to this roadway will be limited to the existing intersection at Tanner Lane and a proposed intersection at Parkway Boulevard. The actual width of asphalt will be determined and governed by the Utah Department of Transportation (UDOT).
- **Parkway Boulevard.** The main east-west connection road is to be a City standard 95-foot right-of-way and follows the requirements set forth within the City's Standards and Specifications. No alternative to the City standards is proposed at this time. The design of the signalized intersection with Redwood Road is subject to Utah Department of Transportation's approval.
- **Old Farm Road.** The main north-south connection road is to be a City standard 77-foot right-of-way and will serve as the main access to the site with intermittent connections to the adjacent roads.

### FIRE DEPARTMENT ACCESS

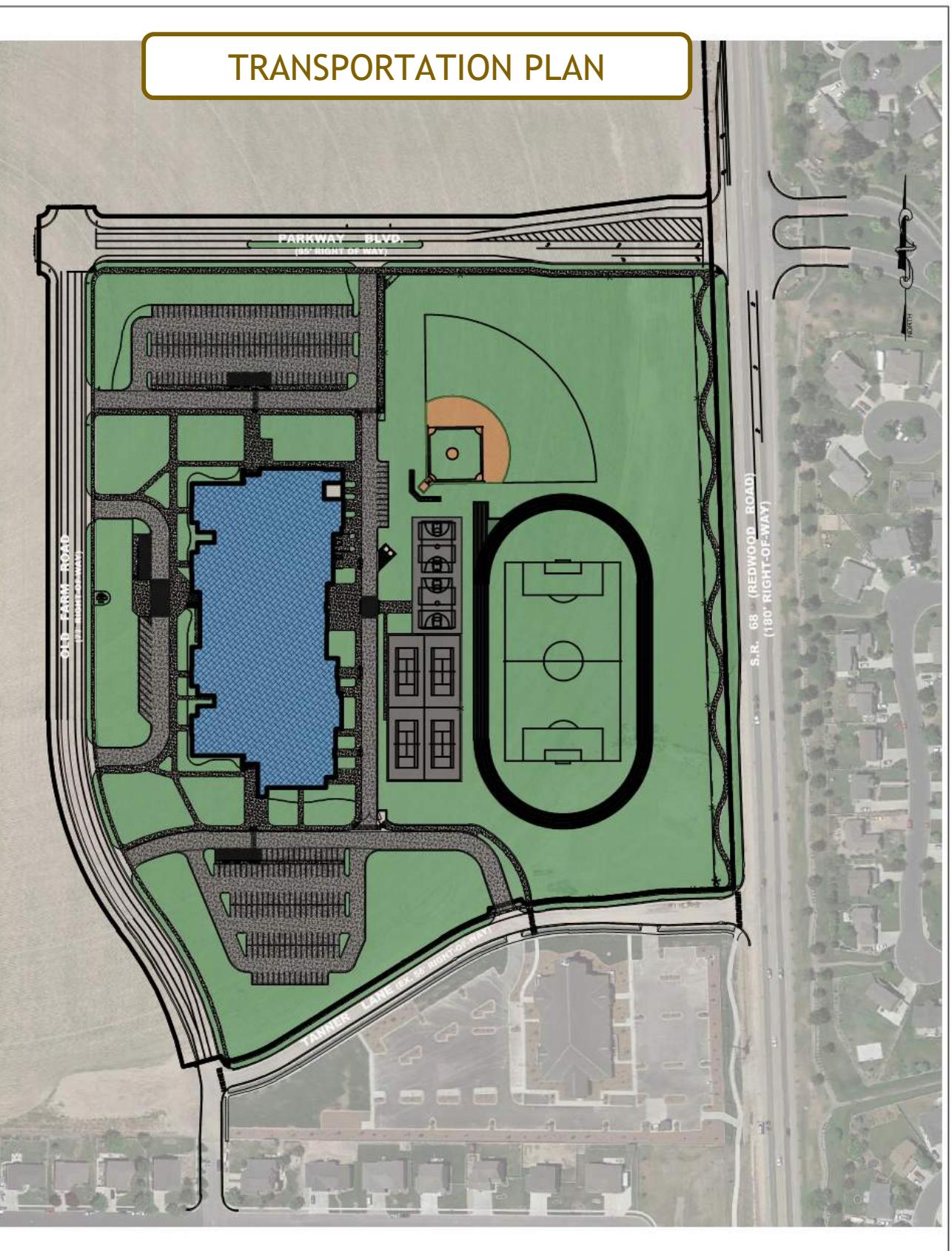
There are no proposed modifications to the City Standards and Specifications as it relates to the fire department accesses. The roadways all meet the City Standard requirements. The internal traffic circulation of the site will be addressed at the time of final plat or site plan approval with City Staff.

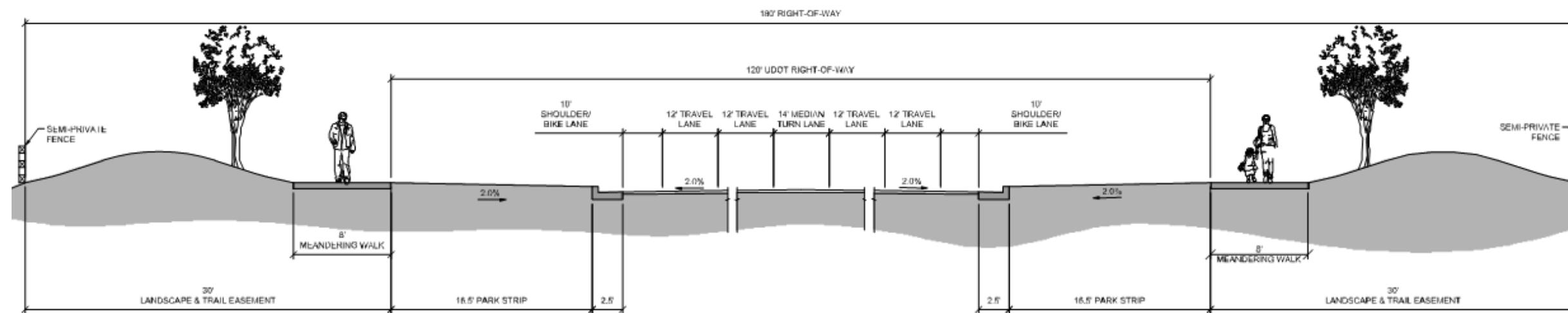
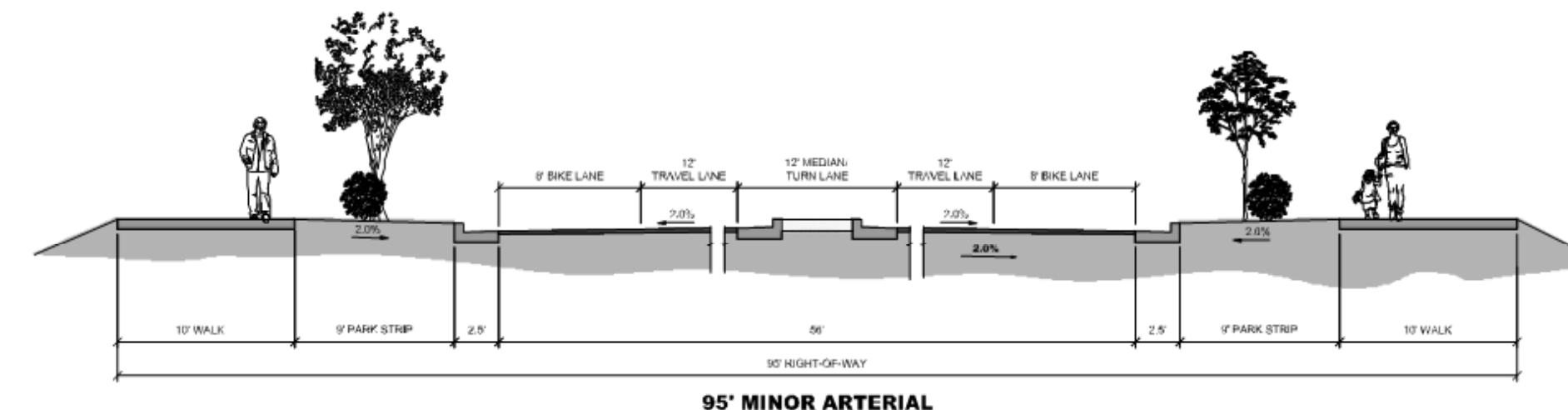
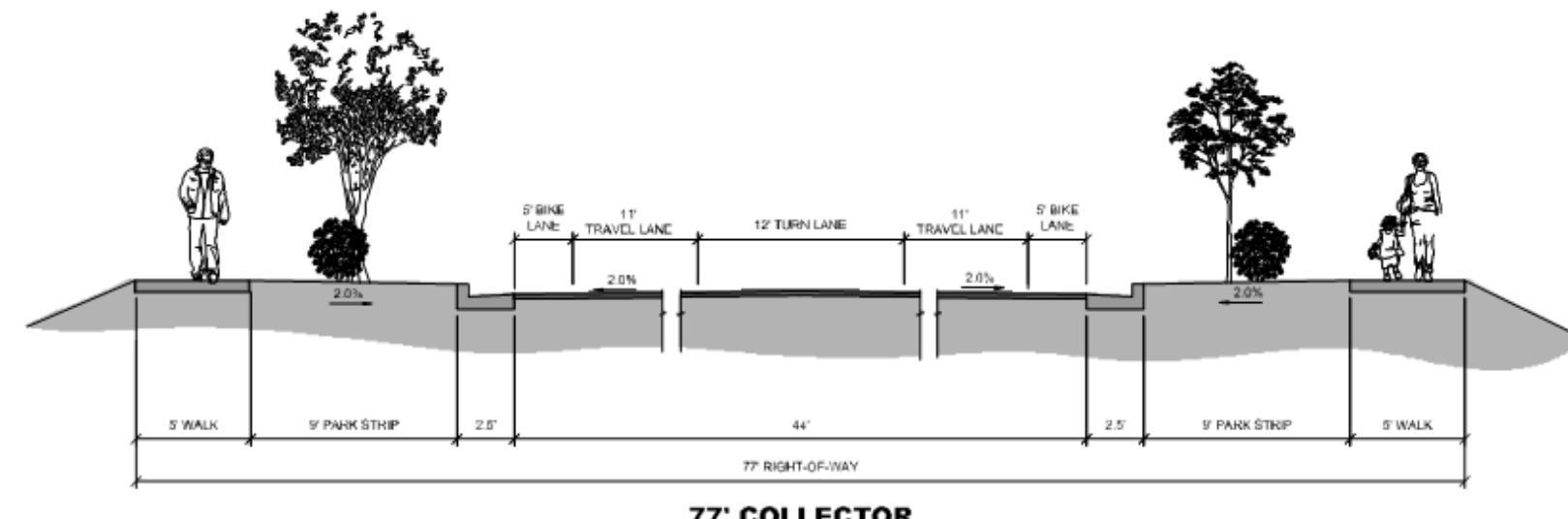
### ROAD NAME AND ADDRESSING

As shown on the exhibit to the right, the main roadways have been named. The existing roadway on the southern border will remain "Tanner Drive". "Old Farm Road" will be extended from the south. The east-west roadway on the northern boundary will be "Parkway Boulevard." No other additional roadways are planned internally to the property.

### OFF-STREET PARKING

A total of 309 total parking stalls will be provided by the Alpine School District for the project. Twelve of those stalls are accessible stalls required by the IBC. These parking counts meet the requirements established internally by the Alpine School District.





## ADDITIONAL ELEMENTS

The Natural Resource Inventory Map contains information regarding specific site elements such as:

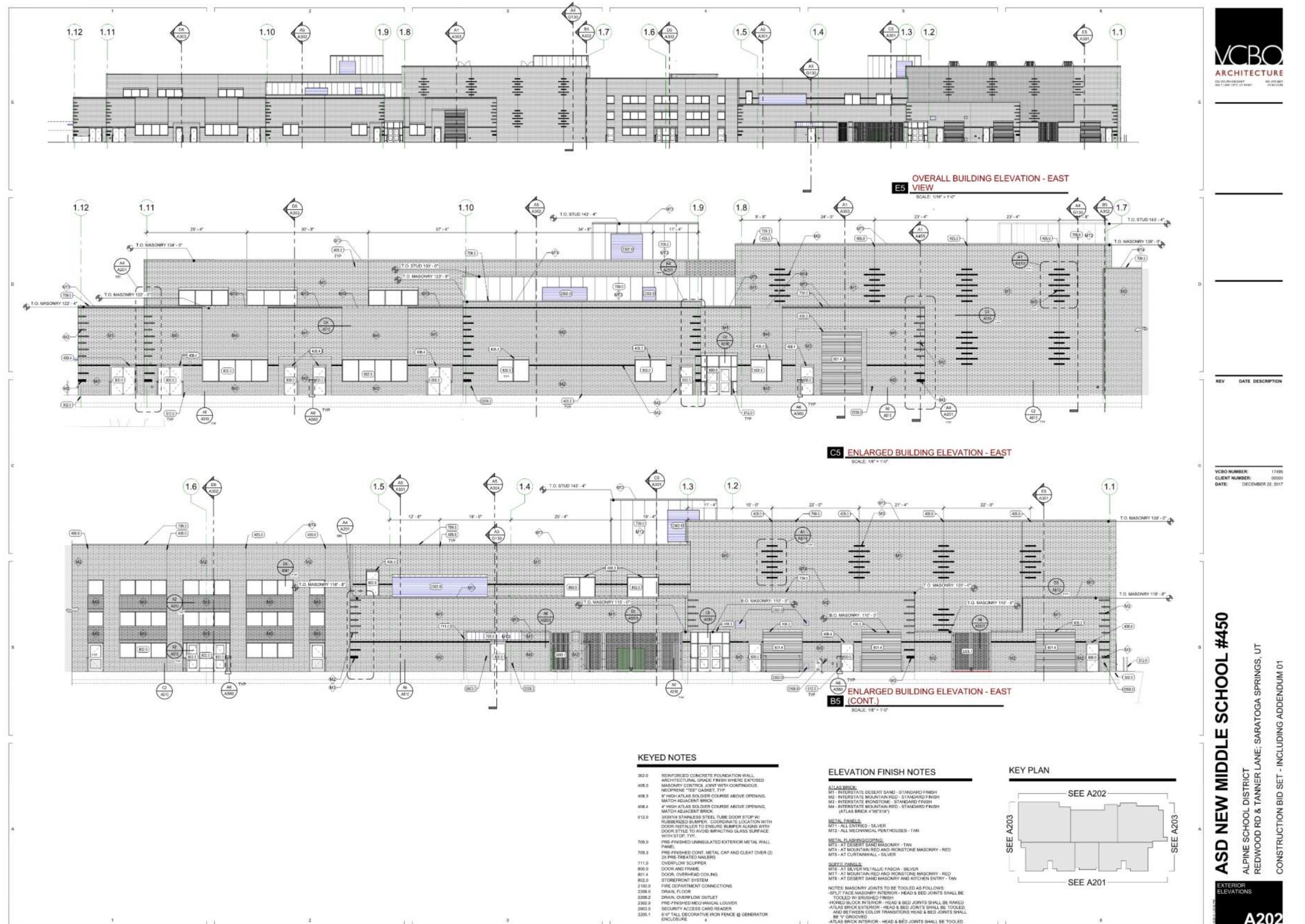
- **Waterways.** There are no existing waterways traversing the site.
- **Geological Information.** Geological information has been obtained from Utah County Hazards Mapping as published by Utah County Public Works Department, in coordination with USGS, MAG and other applicable agencies:
  - The eastern portion of the project falls within a high potential for liquefaction. The western portion of the project falls within a low to moderate potential for liquefaction.
  - No flood hazards have been identified. The project area is within flood zone "X" according to FIRM map 4955170115B, dated 17 July, 2002.
  - No landslides hazards have been identified in the project site.
  - No rock fall hazards have been identified in the project site.
  - No wildfire hazards have been identified in the project site.
  - No dam failure risks have been identified in the project site.
  - No avalanche hazards have been identified in the project site.
- **Fault Lines.** According to Utah County Hazards Mapping as published by Utah County Public Works Department, no fault lines or fault ruptures are identified within the project.
- **General Soils Data.** A geotechnical investigation has been conducted on the development by Intermountain GeoEnvironmental Services, Inc., dated May 24, 2017. Excerpts from the investigation include:
  - The subject property is approximately 24 acres and is proposed to be developed with construction of a new middle school. The proposed structure will be a one- to two-story concrete masonry unit, slab-on-grade building. We anticipate foundation loads for the proposed structures will not exceed 10,000 pounds per linear foot for bearing wall, 125,000 pounds for column loads, and 200 pounds per square foot for floor slabs.
  - Our field exploration included the boring of ten (10) borings to depths of 6 ½ to 46 ½ feet below the existing ground surface. Groundwater was not encountered within the excavations at the depths explored.
  - The native soils have a negligible potential for collapse (settlement) and a slight to moderate potential for compressibility under increased moisture contents and anticipated load conditions.
  - The subsurface soils encountered generally consisted of topsoil overlaying near-surface medium stiff to stiff clay and silt, and medium dense to dense sand. All topsoil should be removed beneath the entire building footprints, exterior flatwork, and pavements prior to construction.
  - Conventional strip and spread footings may be used to support the structure, with foundations placed entirely on a minimum of 24 inches of properly placed, compacted, and tested structural fill extending to undisturbed native soils.
  - Minimum roadway section for heavy traffic areas consist of 4 inches of asphalt, 10 inches of road base, over 12 inches of subgrade granular borrow. Minimum roadway section for the parking lot area 3 inches of asphalt over 12 inches of road base.
- **Slopes.** A slope analysis has been conducted for the development and areas of greater than 30 percent slope are identified within the exhibit to the right. The existing contours at 2-foot intervals are also shown within this exhibit.
- **Statement of Findings.** A statement regarding the findings of this submittal can be found in the Findings section towards the end of the document.



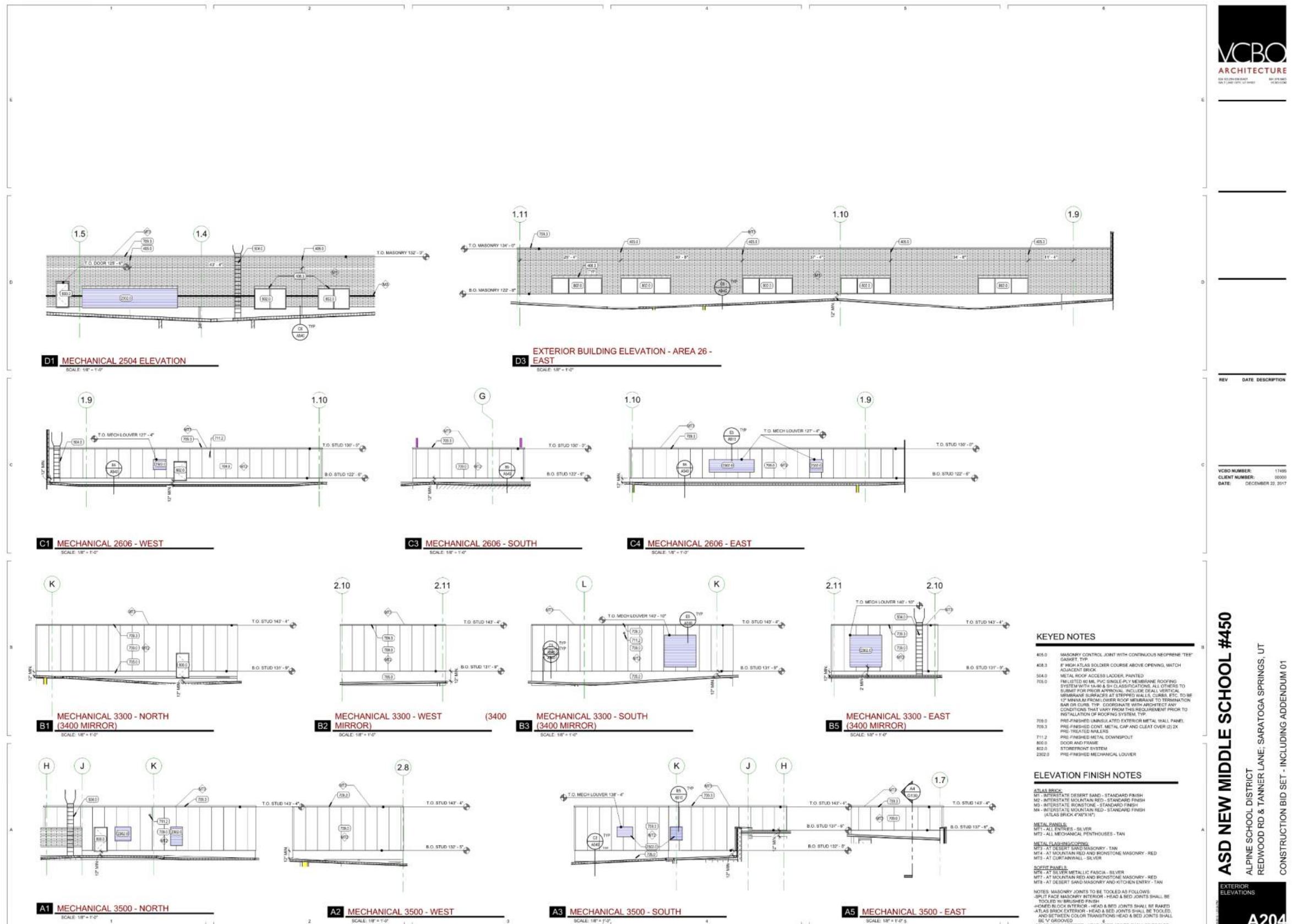
- **Environmental Issues.**
  - **Wetlands.** No wetlands are sources of surface or shallow groundwater have been identified in the project site.
  - **Historical Sites.** No historical sites have been identified in the project site.
  - **Existing Trees.** No existing trees are present on the site.
- **Traffic Study.** The following provides a summary of the key findings and recommendations of the Traffic Study completed by Hales Engineering:
  - All study intersections are anticipated to operate at acceptable LOS during the morning peak hour in opening day (2019) background conditions.
  - The development will consist of 1,200 students on opening day and 1,500 at full build out.
    - It is recommended that the portion of Old Farm Road in front of the Middle School be built as a three-lane collector as shown in the Saratoga Springs Transportation Master Plan.
    - It is recommended that Parkway Boulevard, west of Redwood Road, be built as a Minor Arterial as shown in the Saratoga Springs Transportation master plan with a three-lane cross section.
    - It is recommended that the North Access be planned to be a minimum of 400 feet west of the Parkway Boulevard / Redwood Road intersection. It is also recommended that the North Access be a right-in right-out (RIRO) only access to reduce conflicts and queuing on the Minor Arterial adjacent to Redwood Road.
    - It is recommended that the Northwest Access be planned to be a minimum of 300 feet south of the Old Farm Road / Parkway Boulevard intersection.
  - All study intersections are anticipated to operate at an acceptable LOS during the morning peak hour with project traffic added.
    - Coordinate construction of the west side of Parkway Boulevard with UDOT with the reconstruction of Redwood Road this year to ensure proper alignment and placement of improvements.
- It is recommended that a southbound right-turn pocket be constructed at the Parkway Boulevard / Redwood Road (SR-68) intersection (this may already be part of the current Redwood Road project).
- All study intersections are anticipated to operate at an acceptable LOS during the morning peak hour in future (2024) background conditions except Tanner Lane / Redwood Road.
  - The intersection of Tanner Lane / Redwood Road is anticipated to perform at unacceptable LOS during the morning peak hour. The eastbound left-turn movement onto Redwood Road is anticipated to experience lengthy delays as vehicles have to wait to find acceptable gaps in traffic. It is not uncommon that side streets on busy arterials experience longer than normal delays. Vehicles attempting to make eastbound left-turns at this intersection will likely reroute to the adjacent signals to more easily make a left-turn onto Redwood Road at either Parkway Boulevard or Grandview Boulevard.
- All study intersections are anticipated to operate at an acceptable LOS during the morning peak hour in future (2024) plus project conditions except Tanner Lane / Redwood Road. The following are recommended:
  - Add left-turn phasing to the Parkway Boulevard / Redwood Road intersection in the northbound direction.
  - The west leg of Parkway Boulevard / Redwood Road, when constructed, have a dedicated left, through-, and right turn lanes.
  - Schools typically experience delays and queuing during the 15 to 20-minute period before and after school.

- **Compliance Issues.**
- **Architectural Standards.** Architectural design of the building will be similar to what is shown in the rendering below and typical elevations on the following page.
- **Common Area Maintenance.** No common area maintenance is anticipated for this project.


Saratoga Springs Middle School #450

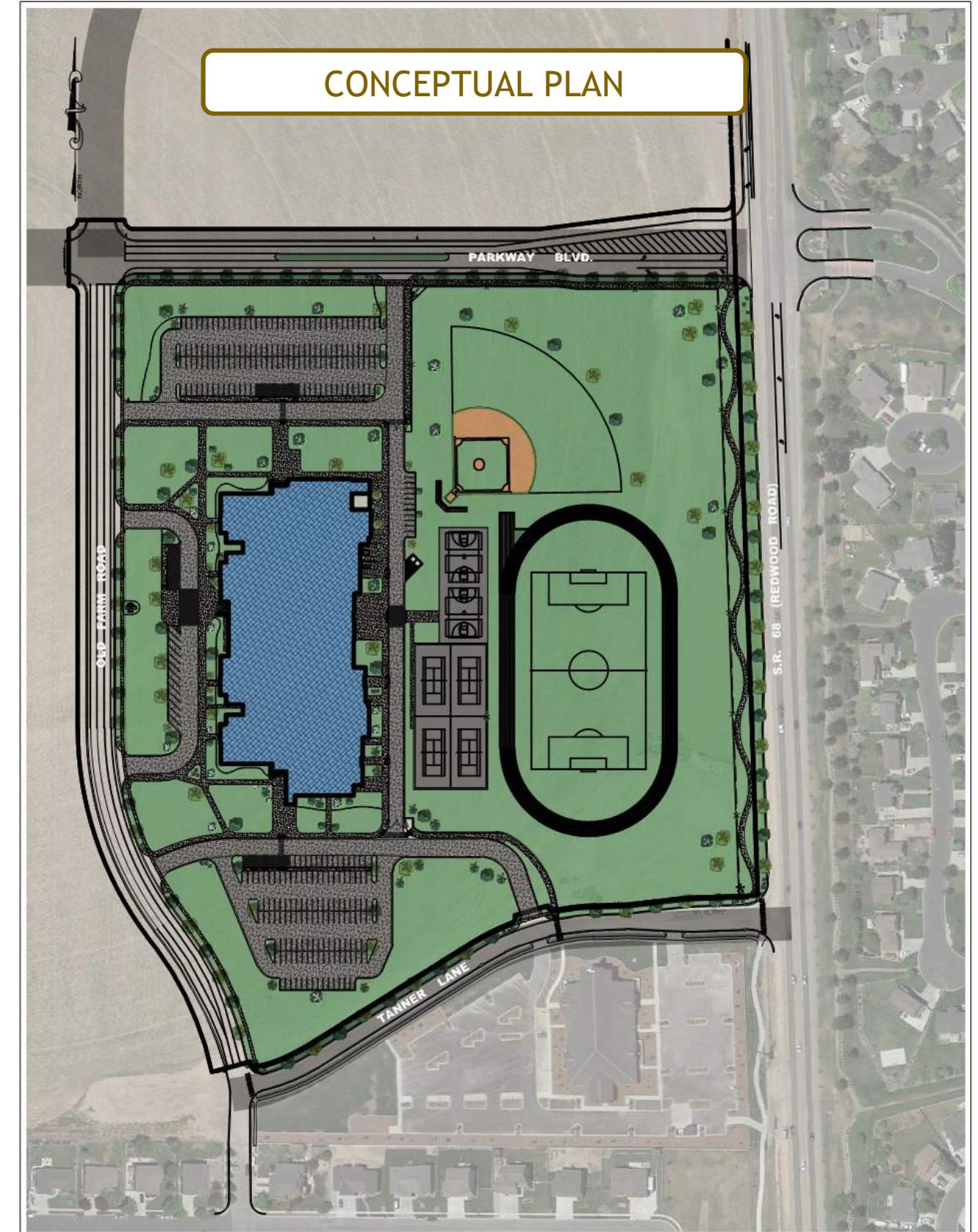






## CONCEPTUAL PLANS

- A. **Wildlife Mitigation Plans.** The United States Fish and Wildlife Service has been contacted to determine whether there are any endangered species or wildlife that needs to be mitigated at this time. The Division responded and do not have any concerns due to the current agricultural use of the land.
- B. **Open Space Management Plans.** All the proposed open space as discussed above will be owned and maintained by the Alpine School including the 30-foot landscape and utility easement/buffer along Redwood Road. The planter islands within the City right-of-way along each property boundary will be owned by the City but maintained by the Saratoga Springs Middle School. This includes the frontage along State Route 68 (Redwood Road) outside of the 30-foot landscape and utility easement/buffer.
- C. **Hazardous Material Remediation Plans.** No hazardous materials have been identified within the site. Should any hazardous materials be identified through further geotechnical investigation or site observation, acceptable mitigation must be completed prior to development.



## DESIGN GUIDELINES

There are no proposed changes presented in these Design Guidelines that differ from the current City Code and Design Standards and Specifications. The following evaluates various design guideline items as required within the Community and Village Plan requirements:

- **Architectural Standards.** Architectural design of the building will be similar to what is shown in the previous rendering with final design to be reviewed at site plan approval.

## FINDINGS

The proposed Saratoga Springs Middle School is consistent with the goals, objectives and policies outlined within the District Area Plan (DAP) for Saratoga Springs. The DAP currently shows this area zoned for residential use and allows for civic uses similar to the proposed middle school. The middle school will provide irreplaceable value and honor to the surrounding area due to the services and education rendered to the local community. In addition to these intangible qualities, the physical presence of the school with its abundance of manicured open space, amenities and architectural standards will create an amiable environment that can be enjoyed by all ages, young or old. The addition of the school will help the City by providing adequate provisions for utility service, roadway networks and emergency access while balancing the need for public safety services for current and future needs in the area. The Alpine School District prides themselves for the civic service they provide to the region and see this proposed Saratoga Springs Middle School as a worthy extension and symbol for those values within the City of Saratoga Springs.

## APPENDIX - STORM DRAIN ANALYSIS

# Saratoga Springs Middle School #450

## STORM DRAIN ANALYSIS

Revised: January 8, 2018

Prepared By:



ENGINEERS  
SURVEYORS  
PLANNERS



3302 N Main Street  
Spanish Fork, UT 84660  
(801) 798-0555

## **DESCRIPTION OF DEVELOPMENT**

The Saratoga Springs Middle School #450 site is to be located west of Redwood Road and east of Foothills Boulevard, between Tanner Lane and Parkway Boulevard, in Saratoga Springs, Utah. There is a total of approximately 331.6 acres including the school site that will drain to the east towards the school. The school site to be developed now consists of approximately 33.08 acres of this total. The remainder of the upstream contributing area is to be developed in the future.

## **EXISTING STORM DRAINAGE FEATURES**

There is no existing storm drain infrastructure associated with the future contributing areas. There is no offsite drainage accounted for in this study other than what is specifically detailed in this report. See the exhibit included in Appendix A for the included areas. Foothills Boulevard will act as a cutoff channel for areas to the west. This runoff will be directed to the north to Tickville Wash where it has historically flowed.

## **ALLOWABLE DISCHARGE**

The development area is to discharge to a single outfall point. The total outfall for the area covered in this report has been limited to a maximum flow of 58.00 cfs based on the UDOT outfall that it will flow into. As required by the City, the future development sites and roads will all need to be detained in order to control the total discharge to the outfall during the 100-year storm event.

In order to determine an appropriate release rate, the maximum flow of 58.00 cfs for the 100-year storm was divided by the total area of 331.64 acres. This provided a maximum release rate of **0.174 cfs/acre** for the entire site for the 100-year storm event. Based on this release rate, the maximum allowable release for the school will be 5.76 cfs. There is no model associated with the storm drain calculations for this study.

In order to account for future upstream flows, the pipe that is to be installed in Parkway Boulevard, on the north side of the school will have to provide capacity for the future upstream flows. Based on the allowable release rate and the remaining area to be developed, this flow will be 51.95 cfs. Detention ponds will need to be designed and installed with future development to ensure the allowable release rate for this area is not exceeded. The number and location of these detention ponds will be determined with future plans for this area. Inlets and pipes will need to be sized to ensure that the full 100-year flow can be conveyed into the detention basins that are to be constructed in the future.

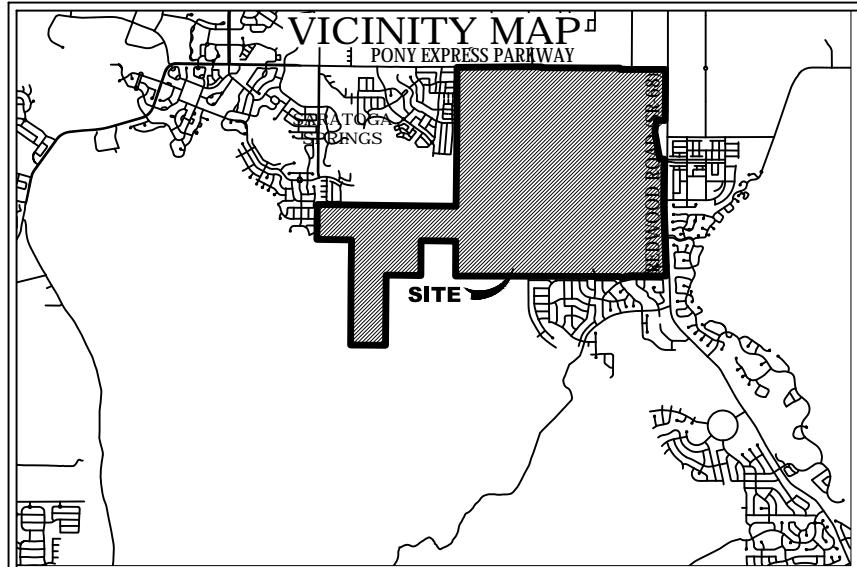
## **STORM WATER TREATMENT**

Saratoga Springs City requires the runoff from the 5-year storm to be treated to remove pollutants before it is discharged from the site. A treatment device will be installed with the school improvements that is capable of treating the discharge from the improved area. An additional treatment device will be installed in the future to treat the runoff from the remainder of the site.

## **CONCLUSION**

Based on the maximum allowable discharge and the total contributing area, an allowable release rate of 0.174 cfs/acre was determined for the proposed Junior High School site as well as the future contributing areas. In addition, a storm water treatment device was sized to treat the runoff before it will be discharged from the site.

## **APPENDIX A – CONTRIBUTING AREA EXHIBITS**



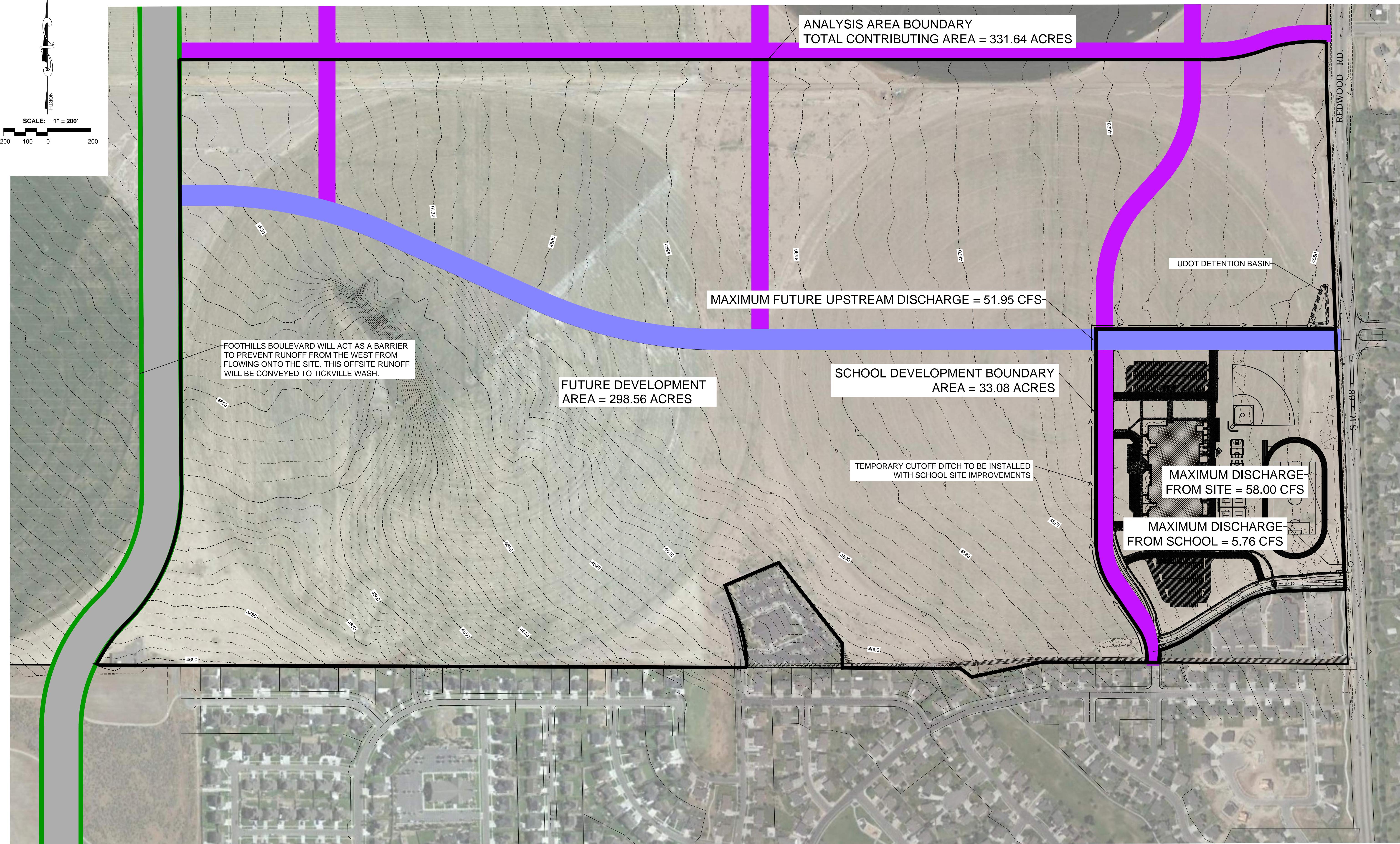
NOTES:

1. THE MAXIMUM ALLOWABLE RELEASE RATE FOR THE SITE IS 58.00 CFS BASED ON THE CAPACITY OF THE UDOT OUTFALL.
2. THE MAXIMUM RELEASE RATE FOR THE SITE IS 0.174 CFS/ACRE.

FUTURE ROAD LEGEND:

95' ARTERIAL

77' COLLECTOR



**LEI**  
- A Utah Corporation -  
**ENGINEERS**  
**SURVEYORS**  
**PLANNERS**

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www.lei-eng.com

NOT FOR  
CONSTRUCTION

ALPINE SCHOOL DISTRICT  
LOCATION: NW & SW QUARTERS OF SECTION 35, T5S, R1W, SLB&M, SARATOGA SPRINGS, UTAH

STORM DRAIN MASTER PLAN

REVISIONS  
1  
2  
3  
4  
5

LEI PROJECT #: 2017-0002  
DRAWN BY: BAP  
CHECKED BY: NKW  
SCALE: 1" = 200'  
DATE: 1/4/2018  
SHEET 1