Huckabee

LAGO VISTA ELEMENTARY SCHOOL

MAY 10, 2021

# DESIGN DEVELOPMENT PRESENTATION

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# LAGO VISTA INDEPENDENT SCHOOL DISTRICT
## ADDITIONS & RENOVATIONS TO LAGO VISTA ELEMENTARY SCHOOL

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**"Lago Vista ISD greatly appreciates the valuable input received from the Steering Committee who helped shape the scope of this project prior to community approval of the November 2020 Bond."**

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## ARCHITECTURAL NARRATIVE

### INTRODUCTION

The Lago Vista Elementary School project involves additions and renovations to achieve three goals. First is to increase the student capacity of the campus to allow for the Intermediate School to be re-integrated to create a traditional PK-5 elementary school. Second is increase student capacity to allow the building to serve the anticipated growth of the campus for the next 8-10 years. Third is to modernize the facility for current and future educational delivery needs. The functional capacity of the facility will be approx. 800 students when the project is complete. The program for the project includes:

- New General Classrooms
- New Library/Media Center
- New Special Education Spaces
- New Special Program Spaces
- Renovated Administration Suite
- New Controlled Entry Vestibule
- Expansion of the Existing Cafeteria
- Renovation and Expansion of Outdoor Learning and Play Areas

### SITE DEVELOPMENT

The project is located on the existing site of Lago Vista Elementary School. The existing site is approx. 8.83 acres bounded by Dawn Drive to the north, Deer Run Drive to the east, and Park Strip Road and Travis Drive to the south with Travis Drive wrapping around on the west side as well. The school is neighbored by single family housing to the north and south, commercial properties to the East, and multifamily housing to the West. The topography is dramatic with an elevation change of approx. 50 feet from the high end of the site to the low end.

The scope of this project does not change the vehicular flow of the campus, but does look to make improvements where possible. A 25 space parking lot is planned for the northeast corner of the site, but the district is currently considering the option of doing a shared lot on the site of the adjacent church. Geotechnical recommendations will be followed for pavement sections. A detention and water quality ponds exist at the west side of the site and the project anticipates needing to do improvements to those ponds due to impervious cover increases. The overall site drainage strategy will continue the current methods of a combination of surface and subsurface stormwater management systems that drain to those ponds.

The most substantial site related scope of work is the renovation and expansion of the existing outdoor learning and play areas. Two play spaces currently exist – one at northeast area of the site and one at the west side. Both locations will be heavily renovated with new playground equipment and play area improvements. The play area to the west will have a fire truck access drive integrated into the play area. Additionally, at multiple locations around the site, outdoor learning spaces will be planned into the project to allow for opportunities for teachers and students to take learning outside.

### BUILDING DESIGN

The new Library/Media Center addition is the most striking architectural element in the project. It is located where the D wing currently resides to provide a portion of new construction at the front of the campus and creates a destination space for the students and staff. The Library element pulls in the three main existing wall materials of a light brick, dark brick, and metal panels. These materials are durable and easily maintained. The roof form is sloped metal at a similar pitch to the existing B wing roof with similar canopy elements and trimmed out in the same blue fascia. Large sections of curtainwall glazing and dormer style clerestory windows bathe the interiors of the open area with natural light and provide a connection to the outdoors. On the west side, the roof is extended considerably to create covered outdoor learning spaces and a blurring of the transition between indoors and out. The interior of the Library/Media Center pushes the support spaces to the perimeter to create a wide open plan providing ultimate flexibility of use. Exposed steel roof trusses give a slightly industrial look while creating a greater sense of vertical volume. Niches around the perimeter offer opportunities for reading nooks, small group collaboration, and individual work. A computer lab is located directly off of the Library/Media Center and can flex as a maker space. A handful of Specials Rooms are also located in the addition. The strategy of locating the new Library/Media Center in the same location as the existing D wing will necessitate a slightly more complicated construction logistical solution for the Library to allow for the demolition of the old and building of the new to occur. It is currently anticipated that the Library may have to move twice to make this happen, but this issue will be reviewed again when the Construction Manager is added to the team.

The form of the new classroom addition is a study in efficiency of land use. The small size of the site necessitates a compact footprint and the result is a tight two-story configuration. Building codes drove the decision to pull the addition a minimum of 20’ off of the existing buildings to avoid expensive fire walls. This location strategy also dovetails nicely with how the topography is managed. The finish floor of the new addition is set between the elevations of the A wing and B wing to which it connects and allows it to sit very closely to the existing grade to minimize building pad costs. With a 14’-0” floor to floor dimension, the second level finish floor lands very close to the existing C wing finish floor elevation to which it connects. Each floor of the addition houses 12 classrooms, restrooms, workroom, breakroom, and MEPT support spaces. The doors to the classrooms recess in a way that creates two large collaboration areas as well as a smaller one at the intersection of the main corridors. The floors are nearly identical and that direct stacking provides for excellent cost efficiency and ease of construction. The exterior design of the addition melds existing materials and forms with a level of modern aesthetic. Similar to the Library, the addition pulls in the three main existing wall materials of a light brick, dark brick, and metal panels. The roof form is sloped metal at a similar pitch to the existing roof on the parallel C wing with the same blue fascia. Dormer style clerestory windows bring natural light down into the two main collaboration spaces on the 2nd floor. Each classroom receives two tall vertical windows and expanses of curtainwall glazing are used at strategic locations to bring natural light into the interiors of the addition and provide views out to the surroundings. In order to manage the topography and align floor levels, the second floor of the addition includes a pedestrian bridge connection to the C wing so that students and staff have enclosed and conditioned routes to every part of the campus. The addition is anticipated to house 2nd thru 5th grades while the existing A wing will house PK thru 1st grades.

A small addition is planned for the existing Cafeteria in the C wing. It aligns with the large existing opening

between the Cafeteria and feeder hallway. It includes a storage room for tables and chairs.

The renovations start with an overhaul of the administration area at the front entry. A controlled entry vestibule will be created that forces visitors into the Reception area to be checked in before being allowed further into the school. The remainder of the suite is rearranged to create larger offices and to pull more administrative spaces closer together. The Principal, Assistant Principal, Registrar, and Attendance will all be housed at the front entry for easy access by both parents and students. The Clinic remains in the same location and largely unchanged. Two storage rooms at the end of the A wing closest to the B wing will be converted into Counselor offices. New windows will be punched into the exterior walls to provide natural light into these two rooms. The Science and Art Rooms remain mostly unchanged. The existing computer labs will be converted into Special Education spaces, storage and an office.

The interior design for the areas that are building built and renovated employs a similar strategy as the exteriors – utilizing existing materials and finishes with modern upgrades. Corridors will have a neutral colored porcelain tile wainscot up to about 5'-6' with a tack board strips at the top of the tile. Up high, blue and yellow paint stripes will be utilized in a similar fashion to the existing walls. Restrooms will receive a different larger format tile material in a similar neutral palette with blue accents. Drinking fountain locations will get accents of the new blue tile. Casework will have dark grey bodies with a lighter grey countertop to match the door frames. Doors will be a wood veneer. Flooring will be VCT with a pattern that diverges from the existing floors. New ceilings and lighting will improve acoustics and brighten the spaces throughout. Upgrading the corridor/classroom finishes in the A and B wing are not currently in the project, but an alternate is being considered to add this scope if extra funds become available. Rooms that are receiving heavy renovation will receive new finishes.

CIVIL NARRATIVE

The civil design for Lago Vista Elementary is anticipated to consider the following design criteria:

Safety
The safety of children, teachers and visitors will be considered in multiple aspects:
- Handicap accessible routes will be provided in compliance the Texas Accessibility Standards and reviewed with appropriate stakeholders.
- All other pedestrian routes will be designed with slopes and surfaces to minimize trip, fall, or slipping hazards.
- Storm drain discharge piping will not be larger than 12" without security grating.
- Grass slopes will be no steeper than 3:1 adjacent to pedestrian routes
- Guardrails will be provided adjacent to pedestrian routes with drop-offs greater than 18".
- Electrical, utility, or storm water management ponds will be fenced and locked.

Budget
The civil design will align with the budget goals for the school project by:
- having a goal of a grading plan which produces balanced earthwork (cut and fill approximately equal).
- Utilizing native grasses to minimize water use to revegetate disturbed areas.
- Minimizing below grade storm sewer piping. This can be an Issue with steeply sloped sites where surface runoff results in erosive velocities.

Compliance
The civil design will meet the City of Lago Vista Municipal Code by:
- Adhering to the current zoning, site development, utility, and environmental ordinances as applicable to site parking, utilities and storm water management.

Materials
- Earthwork: reuse of onsite materials such as topsoil and subsoil with low expansive properties.
- Retaining Walls: Site retaining walls will be constructed using stacked and battered limestone quarry blocks (2' wide x 2' tall x 4' long). Wall batter will vary with surrounding environment and necessary use. Large scale walls will be battered with a 3" horizontal offset at each course and guardrail style handrail installed at the top for fall protection. Smaller grade separation walls with functional use will have a minimum 18" horizontal offset (for seating use) and eliminate the need for guardrail or handrails.
- Pavement: the use of concrete or asphalt based upon technical input from Geotech and cost data from Construction Manager.
- Outdoor Learning Areas: surfacing for the outdoor learning areas will be synthetic turn with subsurface drainage system. This will apply to the east interior courtyard where all of the existing planting, grass and hardscape will be replaced with synthetic turn and quarry stone seating. Outside learning east of the library will be synthetic turf within the learning environment and surrounding concrete sidewalks.
- Piping: HDPE storm piping and pvc domestic and fire protection water and wastewater piping
- Permanent erosion and sedimentation controls: utilize grass lined channels with slopes less than 2%-3% and side slopes 3 horizontal to 1 vertical (3:1) or flatter.
- Disturbed areas without pavements or sidewalks: utilize native grasses with seed blankets or erosion matting (if necessary) on slopes steeper than 3:1.

Stormwater Management
- As required by the City of Lago Vista Pollution Control ordinance provide compliance with the Lower Colorado River Authority Highland Lakes Watershed Ordinance to provide water quality controls of storm water runoff.
- As required by City of Lago Vista and Texas Water Code provide detention controls to mitigate increased stormwater runoff flows to downstream properties.
- The site currently has an existing stormwater management pond. The pond was rehabilitated in 2013. It is the intent to limit work on the pond to the amount of additional capacity required by ordinance to handle the increase in stormwater runoff (if any) due to increased area of impervious cover.

Parking

- Project scope for onsite parking was to provide 50 new spaces. As a potential cost and usable site space saving, an agreement is being pursued with St. Mary, Our Lady of the Lake Catholic Church (SMOLLCC) to provide parking on the Church site. The shared parking would be located immediately adjacent and to the south of the south parking lot. Currently 25 spaces are being planned on the Church site and 25 spaces in the northeast corner of the school site. The shared parking agreement would include the school providing necessary detention and water quality capacity as part of the school stormwater management pond. Discussions between the LVISD and SMOLLCC

## LANDSCAPE NARRATIVE

Patron Safety

- By eliminating or not creating hiding places with large shrubs or small trees that children or unwanted visitors can use to avoid being seen.
- By maintaining site visibility to prevent vehicular or pedestrian blind spots to reduce potential accidents.
- Through carefully considered plant selection that will be child friendly and avoiding plants and trees with thorns, toxic leaves, and/ or berries children may consume.
- Minimizing the use of steel edging to prevent sharp edges or trip hazards as the material ages or wears.

Budget

The landscape and irrigation design will align with the budget goals for the school project by:

- Minimizing shrub quantities and utilization of trees to improve visual impact.
- Reducing the number of proposed trees by preservation of existing trees.
- Proposing contextual sized and code required planting beds at higher impact areas and limiting the amount of foundation landscape planting around the campus.
- Utilizing smaller container sized plant material at installation and letting it grow-in over several seasons.
- Utilizing district standards for irrigation components and control systems to limit the introduction of unknowns into maintenance & operations.
- Limiting sod turf to only high impact traffic areas and utilizing hydro seeding or sprigging turf instead on the remaining disturbed soil areas across the site.

Lago Vista Municipal Code Compliance

- Adhering to the current zoning ordinances as applicable to landscape and tree mitigation and/ or through an alternative compliant methodology as agreed to by the District and the City.

Water Conservation

- Use of native and adaptive plant material that requires adequate water at time of installation, can be weaned during grow-in over several growing seasons, and then can be utilized only as required once plants are established.
- Use of drip irrigation for shrub beds.
- Use of efficient spray/rotor irrigation with matched precipitation rates.
- Rain & soil sensor to prevent unnecessary watering.
- Natural areas of site with only temporary irrigation as required.

## STRUCTURAL NARRATIVE

Building Superstructure

The superstructure of the building must be adequate to resist the applied design loading, satisfy the performance criteria for such items as deflection and vibration control, and accommodate the architectural design. For this project, there are two systems being looked at as follows.

Foundation

At this time there is no Geotechnical information available. Once this information is received, a meeting with the owner will be requested to discuss the potential foundation types based on the Geotechnical Report's recommendations. Based on our previous experience, either a slab-on-grade system with perimeter grade beams supported by either drilled concrete piers or concrete footings; or, a structurally suspended slab over void-box with drilled concrete piers under the slab and other load bearing elements will likely be recommended.

Should a slab-on-grade system be used, it is anticipated that the ground floor will consist of a 5" concrete slab reinforced with #3 bars at 16" on-center each way over a prepared subgrade. Subgrade preparation is anticipated to consist of removal of on-site expansive soils and replacement with select fill; or, a combination of moisture conditioned on-site soil and select fill. The slab-on-grade will be placed over a 15 mil, Class A vapor retarder. Perimeter grade beams are anticipated to be 18" wide x 24" deep with 20 PLF of reinforcing. Grade beams are anticipated to be earth-formed with the vapor retarder wrapping to the outside face of the beam. Interior earth formed grade beams not supported by piers will be provided between metal building rigid frame supports.

Should a structurally suspended system be used, it is anticipated that the ground floor will consist of an 8" structural slab over carton void forms with 10 psf of reinforcing. The void depth is estimated to be between 8" to 12". The slab will be placed over a 15 mil, Class A vapor retarder.

Perimeter grade beams are anticipated to be 18" wide x 24" deep with 30 plf of reinforcing. Grade beams will be isolated from the subgrade with 8" to 12" deep carton void forms, and soil retainers each side to prevent soil from entering the void space.

Typical Roof Structure
For the new additions, excluding the connecting bridges, the expected construction type is a steel column and beam superstructure with intermediate non-composite steel beams bearing on steel columns, as needed to accommodate span requirements. The library roof in Area D is expected to be framed with long-span trusses bearing on non-composite beams to support a metal roof deck. The roof in Area E is expected to be framed with open-web joists and double-pitched joists bearing on non-composite beams to support a metal roof deck. The roofs of the connecting bridges in Area B are expected to be framed with open-web joists bearing on cantilevered CMU walls to support a metal roof deck.

Typical Floor Structure
The second floor in Area E is expected to be framed using composite beams with intermediate composite steel beams bearing on steel columns, as needed to accommodate span requirements and a 5” composite floor deck. The composite beams will support a reinforced 5” thick composite floor deck.

Lateral Stability
The lateral stability of the additions will be provided by utilizing braced frames.

Applicable Structural Design Standards
Building Code: International Building Code, 2015 Edition
American Society of Civil Engineers (ASCE) 7, Minimum Design Loads for Buildings and Other Structures.
American Concrete Institute (ACI) 318, Building Code Requirements for Structural Concrete.
American Institute of Steel Construction (AISC) 360, Specification for Structural Steel Buildings.
American Concrete Institute (ACI) 530, Building Code Requirements for Concrete Masonry Structures.

Design Criteria
Concrete - Normal weight Portland cement concrete with 5” to 6” slump, depending on the application.
Minimum 28-day compressive strength:

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|---|---|
| Drilled Piers | 3,000 psi |
| Footings | 3,000 psi |
| Grade Beams, Pilasters, and Pier Caps | 3,000 psi |
| Slab-on-Grade | 3,000 psi |
| Slab-on-Void | 4,000 psi |
| Reinforcing Steel | |
| Deformed Bars (typical) | ASTM A615, Grade 60 |
| Post-tensioning tendons (1/2” dia., 7-wire strand) | ASTM A416 (270 ksi) |
| Structural Steel | |
| Wide-Flange Shapes | ASTM A992 |
| Steel Angles, Channels, Plates | ASTM A36 |
| Steel Tubes (HSS) | ASTM A500, GR B (46 ksi) |
| Steel Pipe | ASTM A53, GR B or A500, GR B |
| Field Bolted Connections | ASTM A325 Bolts |
| Anchor Rods | ASTM F1554, GR 36 |
| Welding | E70XX per AWS D1.1 |
| Steel Composite Deck | |
| 2” deep, 20 GA, 12” rib pattern | ASTM A653, G60 galv. finish. |
| Concrete Masonry Units (CMU) | |
| Masonry Wall Compressive Strength (f’m) | 1350 PSI |
| Mortar | ASTM C270, Type N |
| Masonry Unit | ASTM C90, 1900 PSI min. |

Design Criteria

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|---|---|
| Structural Element Dead Loads | |
| Ceiling and Mechanical at Roof | Member Self-Weight + 10 PSF |
| Roofing and Rigid Insulation | Member Self-Weight + 15 PSF |
| Structural Frame Live Loads | |
| Public areas, corridors, lobbies | 100 PSF |
| Mechanical rooms | 150 PSF |
| Storage (minimum) 125 PSF | |
| Roof (unreducible) 20 PSF | |
| Wind Loads Per ASCE 7 | |
| Wind Speed (3-sec gust) | 115 MPH |
| Exposure Category | C |
| Enclosed Structure | |
| Seismic Loads Per ASCE 7-10 | |
| Site Class | C |
| Seismic Design Category | A |
| Seismic Importance Factor | 1.25 |
| Response Modification Factor | 2 |

MEP NARRATIVE

FIRE PROTECTION

The 2-story addition and existing C-wing will be provided with an automatic fire protection sprinkler system. A fire water service supply will be extended into the building. Dry type sprinkler systems will be provided for areas where the sprinkler heads and piping will be exposed to freezing condition external to the buildings. The dry type sprinkler systems will include air compressor, dry pipe valve, air maintenance device, etc. The wet and dry sprinkler systems will be hydraulically designed in accordance with the requirements of all agencies having jurisdiction. Sprinkler heads in light hazard finished areas with suspended ceiling will be quick response, flush concealed with white cover plates. Heads

in non-finished areas such as Mechanical Equipment Rooms, Electrical Rooms, etc., will be chrome-plated brass. (Verify for use in Electrical rooms). The sprinkler systems will conform with all applicable provisions of the Owner's Insurance, NFPA Standards 13, 14 and other appropriate NFPA Standards, state and local codes. A fire pump is not anticipated to be required.

## PLUMBING

### Domestic Cold Water Supply System

A new underground domestic cold-water service will be provided to the building, supplied from a site water main. Where the domestic water service enters the building a shut-off valve will be provided. Throughout the building, domestic cold water will be routed to plumbing fixtures. The piping system will be sized based on the Plumbing Code requirements. The piping system will be insulated to prevent condensation from occurring on the exterior of the pipe.Service valves will be provided at each branch line serving two or more plumbing fixtures. All plumbing fixtures and equipment connections will be provided with local stop valves. Additional service valves will be provided, to isolate the system for maximum maintainability. Access panels will be provided with adequate space to operate the valves in walls and non-accessible ceilings. Water hammer Shock arrestors will be provided on all water rough-ins serving plumbing fixtures.

### Domestic Hot Water Supply System

Domestic hot water will be generated from a central water heater. The water heaters will generate and store hot water at 140°F. Point-of-use thermostatic mixing valves will reduce final delivery temperatures of hot water to the building plumbing fixtures to 110°F. The hot water piping system will have in-line circulation pumps to maintain the hot water temperature to within 10 degrees of the supplied temperature. The domestic hot water piping system will be sized similar to the domestic cold-water system. The hot water supply and return piping will be insulated to minimize heat loss.

### Sanitary Waste and Vent Systems

A complete waste and vent system will be provided to collect sanitary waste from all plumbing fixtures, floor drains, and any other equipment, in accordance with the Plumbing Code, unless indicated otherwise. The drainage piping system will be designed with a minimum slope of 1/4-inch per foot unless this is not possible. The building will have sanitary sewer lines discharging to the site sanitary sewer system. Floor and wall cleanouts will be strategically placed to avoid being located in sensitive areas. Floor drains will be provided for each air handling device, equipment requiring drains, toilet rooms with water closets, and mechanical equipment rooms. Each floor drain will be provided with a p-trap and a trap primer.

### Storm Drainage System

The roof drainage system shall be sized based on 5 inches per hour rainfall rate, according to the Plumbing Code. Majority of roof drainage is planned to be handled by collector and downspouts by Architect. Overflow drains (if required) will be provided to protect the roof in case of a primary roof drain blockage. The overflow drain lines will be piped separate from the roof drainage system extending to downspout nozzles on the exterior of the building. The roof drainage system will be insulated to prevent condensation from occurring on the exterior of the pipe. Roof drain bodies, overflow drain bodies and the horizontal piping from each drain will be insulated, extending to the first vertical drop and any horizontal offsets that occur (if needed).

### Plumbing Fixtures

Plumbing fixtures will be Grade A commercial quality and will be low water consumption type fixtures. Water closets will be dual flush type with 1.28 gallon per flush fixtures. The urinals will be 0.125 gallon per flush fixtures. Lavatories will have 0.50 gpm faucets and the sinks will have a 1.5 gpm flow control devices. Water closets will be floor mounted and urinals will be wall hung and provided with concealed support carriers. Lavatories, mop sinks, laboratory sinks and kitchen sinks will be provided with domestic hot and cold water. Where applicable, fixtures will be in compliance with the Americans with Disabilities Act. Wall hydrants will be provided on the exterior walls to provide wash down of entries, and other exterior areas around the building. Hydrants will be freeze-proof recessed type with hinged door, integral vacuum breakers and loose key.

### Natural Gas System

Natural gas will be provided to the building from the site natural gas main. A natural gas meter with regulator will be located outside the building, by the gas utility company. The natural gas piping system will enter the building and be piped to the rooftop units and the domestic water heater. The domestic water heater will be provided with flues routed up through the roof. The natural gas piping system will be sized based on the International Fuel Gas Code.

## MECHANICAL

### HVAC System Design

The system shall be designed with energy efficient quality equipment, ease of maintenance and equipment accessibility in mind. The system will be designed to control the interior temperature and humidity to uniform comfort conditions. Large spaces may be zoned separately by exposure and space function. This will allow for controlling a specific area (zone) by temperature and run time to provide maximum energy efficiency.

### Mechanical Systems

The mechanical system shall consist of new equipment for new additions and replacing old existing equipment that is using R-22 refrigerant where noted. All MDF and IDF data rooms will have separate air conditioning systems for 24/7 control. Outside air will be provided from split system Make Up Air Units (MAU). The air handling portion will be located on platforms.

### Existing Equipment

Some existing equipment has been replaced with new R-410a equipment (in approximately 2014-2015). This equipment will remain but will have new controls where needed. All existing equipment using outdated R-22 refrigerant will be replaced with new 2-stage, high-efficiency equipment of same size. New air handling equipment will be reconnected to existing ductwork.

New Equipment
The new classroom wing shall have a separate unit and thermostat for individual control of each classroom. New units will be high-efficiency split DX VRF (variable refrigerant flow) heat pump system. Air handling units for the First Floor will be located in mechanical closets. Air handling units for the Second Floor will be located in mechanical closets and on mechanical platforms above the ceiling.

Ventilation Requirements and Pressure Relationships
All floors of the building will have ventilation rates per IMC 2015 and ASHRAE 62.1 and the building will be under positive pressure. IAQ procedure will also be used for outside air requirements. Makeup air units (MAU's) shall be used to provide neutral ventilation air.

Bipolar Ionization (IAQ)
Bipolar Ionization device will be implemented throughout the new HVAC system. Based on the use of these devices ASHRAE allows as IAQ improvement we are allow to adjust the HVAC system and Outside Air strategy to provide a more Energy Efficient and complete system. Additional benefits include lower first cost of system as well as lower energy cost ongoing for operations. Manufacturer also makes claims for effectiveness against odors, allergens, Covid-19 and many others.

Controls and EMS
Provide a direct digital electronic automatic temperature control system for the new additions and renovated areas as needed. The system shall consist of direct digital control (DDC) systems for the HVAC equipment, an operator's terminal with keyboard for communication with and programming of the distributive memory in the direct digital controllers and shall incorporate all equipment necessary to provide the sequence of operation. All digital equipment designed to provide protection against interference by external voltages when operated in a commercial environment. This system shall use electronic temperature sensors, interfaced through standalone DDC controllers and unitary controllers. Control system shall have graphics indicating building floor plan, equipment identification and equipment indication and monitoring. All temperature control devices shall be standard catalog products and shall essentially duplicate equipment which has been in satisfactory service for at least 3 years. A minimum of 90% of the control equipment shall be by the installing manufacturer. Work to include a complete automatic temperature control system including any and all control devices, 120 volt (not provided by electrical contractor) and low voltage wiring and conduit, DDC controls, valves, dampers, relays, control modules, sensing devices, switches, and instrumentation necessary to obtain all functions and sequences. Control System Software shall provide for monitoring and recording of after-hours operation of units. Space Temperature Sensors: Provide with blank institutional type locking cover, single scaled set point adjustment and zone bus jack for zone terminal connection. All space sensors shall have built-in override switch and local set point adjustment. Manufacturers: Coordinate with Owner requirements.

Rectangular Ducts
Where special rigidity or stiffness is required, construct ducts of metal two-gauge numbers heavier. Ducts larger than 30" and larger to have Ductmate 35 slide on connections. Use metal cleats, metal corner cleats for non-breakaway joints, use plastic cleats for breakaway joints, ductwork 440 tape, #795 duct sealer and 5511M sealant. Fabricate and install per manufacturer's instructions. Ductwork shall be internally lined with acoustical liner with antimicrobial coating for sound attenuation at discharge of units. Ductwork shall be externally insulated as follows: The Contractor may use a 3/4, 1 or 1-1/2 pound density product with a minimum thickness of two inches (2") and a minimum installed R-value of 6.0. Density, thickness and installed R-value to be clearly indicated on submittal. Installed R-value must be 6.0 or higher. Fiberglass duct wrap insulation is to have a factory FSK or FRK facing which acts as the vapor barrier. Maximum permeability rating is 0.02 perms. Use only labeled Type UL181AP tape. Maintain a complete vapor barrier throughout all ductwork insulation applications. All exposed ductwork shall be internally insulated double wall spiral. All return air boots to be internally lined with acoustical liner.

Flexible Duct
Only above suspended or hard ceilings:
Provide duct listed as UL-181 Class I air duct, and constructed in compliance with NFPA 90A. ATCO Series 36. Maximum length five feet (5'). Install with not more than one (1) 90 full radius degree bend. Make joints with Nashua brand UL181A-P duct tape and 1/2" wide positive locking panduit straps. Exterior skin is to be tough vapor barrier reinforced metalized polyester jacket, tear and puncture resistant. Airtight inner core with no fiberglass erosion into airstream. R-Value: 6.0 at 75 degrees F. mean temperature.

Fire Dampers
Provide and install all fire dampers in all ductwork which passes through any rated egress pathways, as required by Local Building and Fire Safety Codes. All dampers UL approved and of type required by NFPA 90A. Install all dampers per manufacturer's instructions. All dampers shall have a UL555S leakage classification of II. Sleeves for fire dampers shall be of gauge as described in NFPA 90A and as a minimum of 18 gauge for dampers up to thirty-six inches (36") wide and fourteen (14) gauge for ampers which exceed thirty-six (36") in width. Manufacturers: Ruskin, Air Balance, Arrow, Nailor or approved equal.

ELECTRICAL

Electrical Utilities

The existing service to the building is 480Y/277V, 3-phase, 4-wire on the secondary of the building pad mount transformer. MSB is located in Main Electric Room in Area C. Lighting will be served at 277V and motors larger than 1/2 horsepower will be served at 480V, 3-phase. Energy-efficient, low voltage, indoor, dry-type transformers that are DOE 2016 compliant will be used inside the building electrical rooms or mezzanines to transform down to 208Y/120V for convenience receptacles and other small loads for all additions.

Building surge suppression systems will be installed in the building at the main switchgear, 480Y/277V distribution

panels, and 208Y/120V branch circuit panelboards for protection of building loads from surges both from lightning and utility transients as well as building switching transients.
The electrical rooms will have branch circuit panelboards, DOE 2016 compliant dry type transformers and 208Y/120 Volt branch circuit panelboards. Separate dedicated 480 Y/ 277 Volt panelboards for HVAC equipment and lighting branch circuits shall be provided.

DOE 2016 complaint, aluminum windings dry type transformers shall be provided to serve all non-linear load branch circuit panelboards.

Lighting Systems
LED lighting will be utilized throughout the building. Building interior lighting control schemes shall comply with the requirements of IECC 2015 Edition. All offices and classrooms shall be provided with dual technology occupancy sensors, and switches for a dimming lighting control system. Lighting control schemes will be further discussed with the Owner as the design progresses. All lighting will be provided with a color temperature of 3500°K and a color rendering index of 85 (CRI = 80). Emergency lighting and means of egress lighting shall be provided in accordance with NFPA Life Safety Code (NFPA 101) and shall all be served by wall mounted “frog-eye” battery packs. All exit light fixtures shall be LED type. Illumination levels shall comply with the requirements set forth by IES, allowable power densities, and the building program requirements unless otherwise indicated by the Owner. Foot-candle levels shall be minimized in areas where task lighting is used. All exterior lighting shall be LED type lighting in weatherproof fixtures mounted on poles, walls, or soffits as required to meet lighting requirements. All exterior lighting shall be time clock and photocell with motion-controlled dimming. All exterior fixtures shall be full cutoff design. Provide life-safety lighting in all exit paths in accordance with IES minimum foot-candle recommendations and AIA guidelines. All requirements of IECC 2015 Edition will be adhered to during the design of the lighting, this will include the use of automatic shut-off via time of day schedule, occupancy sensors and/or dual level switching. All specialty lighting will be coordinated with Architect.

Fire Alarm System
A digital, addressable voice alarm closed circuit, electrically supervised automatic and manual fire detection alarm system shall be provided. The system will consist of manual pull stations and audio-visual devices at means of egress throughout corridors, area smoke detectors, heat detectors in equipment rooms and smoke detectors in storage rooms. Duct mounted detectors in supply and return duct of air handling equipment for air handling system shutdown as required by code. The fire alarm system design will comply with the Americans with Disabilities Act regulations, and Texas Accessibility Standards (TAS), and the National Fire Protection Association NFPA 101, and NFPA 72, and the International Building Code (IBC).

Existing building Fire Alarm System will be replaced with new Voice Evacuation System to meet current code to the extent required by the Authority Having Jurisdiction (AHJ).

TECHNOLOGY & SECURITY NARRATIVE

Security
Electronic Access Control: This system replaces the typical mechanical key controlled door lock with a door locking system that uses an access card as the access credential. The system includes an electric door-locking mechanisms, card reader located adjacent the door, door status sensor, door prop alarm and a request to exit device. Typical system configuration is card or schedule controlled entry with free exiting.

Surveillance: This system provides electronic surveillance using high-resolution, Internet Protocol (IP) cameras; monitoring security sensitive areas for alarm assessment, and forensic investigations.

Lockdown Control: On command, this system will lock all exterior doors during an emergency.

Scope of Work
Security Connectivity, The security horizontal cabling will be terminated in wall mounted data gathering panels on each floor in designated, conditioned, secure rooms. The security cabling system standard shall be a minimum of four (4) conductors to each device and a minimum of eight (8) conductors to card readers.
All security device wiring shall be home run from the head end panels (point of termination) to the security device location (point of origin). Network surveillance video shall be run from the cameras (point of origin) to the head end equipment on a cabling distance basis. Connectivity shall be on Category cable.

The Internet Protocol (IP) cameras will provide:
View activity and people in entryways and elevator lobbies, with sufficient resolution to make personal identification.
View activity at stairwells, duress buttons and emergency phones
Identification of vehicles entering and exiting the facility, with sufficient camera resolution to view license plates.

Security significant area activity
Video images will be stored for forensic review. Cameras will record on detection of motion or detection of an alarm in the area. Video images will be available for 30 days based on reasonable estimates of activity in the facility. The Access Control and Video Surveillance systems will be compatible with and connected to the existing systems. Building infrastructure will be designed with pathways and spaces that shall support state-of-the-art security applications.

Technology
The design for the technology infrastructure to support Voice, Data, AudioVisual, and Security systems will be based upon:

- IBC, International Building Code
- NFPA 70, National Electrical Code
- International Electrical Code Administration Provisions (IECAP)
- NFPA 101, Life Safety Code
- The most current versions of ANSI/TIA/EIA standards for commercial buildings such as 568-B, 569B, 607A, etc.
- BICSI Telecommunications Distribution Methodologies as defined by the TDMM

- BICSI Electronic Safety and Security Design Reference Manual (ESSDRM)
- IEEE standards
- Industry Best Practices

Where possible, existing telecom rooms to be retained with new horizontal cabling routed to these spaces and terminated on new patch panels. The horizontal data electrical cable length from the IDF serving a floor cannot exceed 295 electrical feet to the most distant outlet served. Horizontal cabling will be at a minimum of Category 6. Backbone cabling to the new telecom room will consist of: 24 strands of Single Mode fiber. Data cabling will be terminated on rack mounted 8 pin 8 position RJ modular insulation displacement type termination patch panels with a T568B termination. Each communications room shall provide for a minimum of 20% space capacity for expansion. All conduit and cable tray pathways will be sized based upon a Category 6 horizontal cable type and diameter. Wall boxes for the work area outlets will be 4-11/16 inches square by 2-1/8 inches min depth with a single gang reduction plate. All conduit serving work area outlets will be minimum 1-inch diameter conduit with pull string and insulated bushings to protect cabling. Telecommunications conduit to be stubbed up to the nearest accessible ceiling space for tech access to cable tray and cable routing. Design low voltage cable tray pathways along hallways and corridors. Cable trays shall be sized to accommodate the initial number of designed cables plus 40% growth. Where possible existing pathways to be retained and reused for routing of the new structured cabling; additional pathways including both cable trays and J-hooks will be added as needed.

GROUNDING SYSTEM
The NEC and TIA compliant grounding system will include a bonding conductor installed from the main telecommunications ground buss bar or primary bus bar (PBB), located in the main communications room, to the building's electrical service entrance bonding point. From the PBB, a bonding backbone conductor will be installed, un-spliced, to each floor serving telecommunications room where it will be bonded to the respective room's Secondary Bus Bar (SBB).
The grounding and bonding system will be extended in each telecommunications room from the PBB or SBB to the hardware, equipment racks, and ladder racks with a minimum of #6 AWG stranded copper conductor. It is recommended that bonding at all main points be affected with exothermic welds and to test to less than or equal to .01 Ohms.

WIRELESS
All interior building spaces shall have coverage for currently supported Wi-Fi standards, 802.11ac at a minimum SNR of 25dBM. Wireless access point spacing will be based upon TIA-162-A Telecommunications Cabling Guidelines for Wireless Access Points which utilizes a 60 foot square grid basis for locating devices. This assumes a 20% additional insertion loss in the equipment cord and thus the permanent link cable length is 242 feet.

A typical 10 foot by 12 foot telecommunications room may include:
- One (1) 19" wide equipment rack to house backbone fiber/copper, wireless access point (WAP) connections, building automation system connections and cable management.
- Two (2) 19" wide equipment racks to house horizontal work area data connections and cable management.
- 110 blocks mounted on wall fields to support specified voice circuits
- Horizontal ladder racks on the perimeter of the room and across the row of equipment racks
- Vertical wire managers between equipment racks
- Telecommunications ground buss bars (TGB)
- Wall fields allocated for CATV and Electronic Security Access Control wall termination fields

TR architectural requirements:
The finished floor to ceiling height should be a minimum of ten feet to allow for the addition of over-head ladder type cable tray as well as provide clearances for mechanical and electrical systems.
A suspended ceiling is not required in the TR's.
The access controlled entrance door to these areas should swing out of the room and provide a large enough opening to bring in eighty four inch high by thirty-two inch wide by forty two inch deep equipment cabinets.
A minimum of three walls of the TR should be covered from one foot AFF to nine feet AFF with ¾ inch AC grade plywood painted on all sides with two coats of light color fire resistant paint.
All walls should be floor to deck with no lay-in ceiling.
The lighting level for the area shall be a minimum of 500 lux measured at three feet AFF and the finished floor surface shall have anti-static properties.

TR electrical requirements:
The Telecommunications Rooms (TR) shall have one non-switched 20A, 120VAC duplex convenience outlets at 6 foot intervals on each wall. The convenience outlets as well as the switched lighting circuits shall not be on the same circuit breakers used to power any equipment in the TR. The 120VAC power for the convenience outlets shall not be derived from the breakers used to power the communications equipment. The three wire AC power circuits for the communications equipment should be connected to a panel that is on the stand-by electrical system, be on separate circuit breakers. Due to the additional power requirements of PoE devices a minimum of two (2) twenty (20) amp circuits should be provided at the base of each equipment rack. Additionally, one (1) thirty (30) amp 208VAC circuit to power core network switching equipment shall be provided at the rack location indicated in the room details of the construction drawings. The receptacle is a NEMA L14-30P. The telecommunication bonding and grounding infrastructure specified in J-STD-607-A shall be made available in each TR.

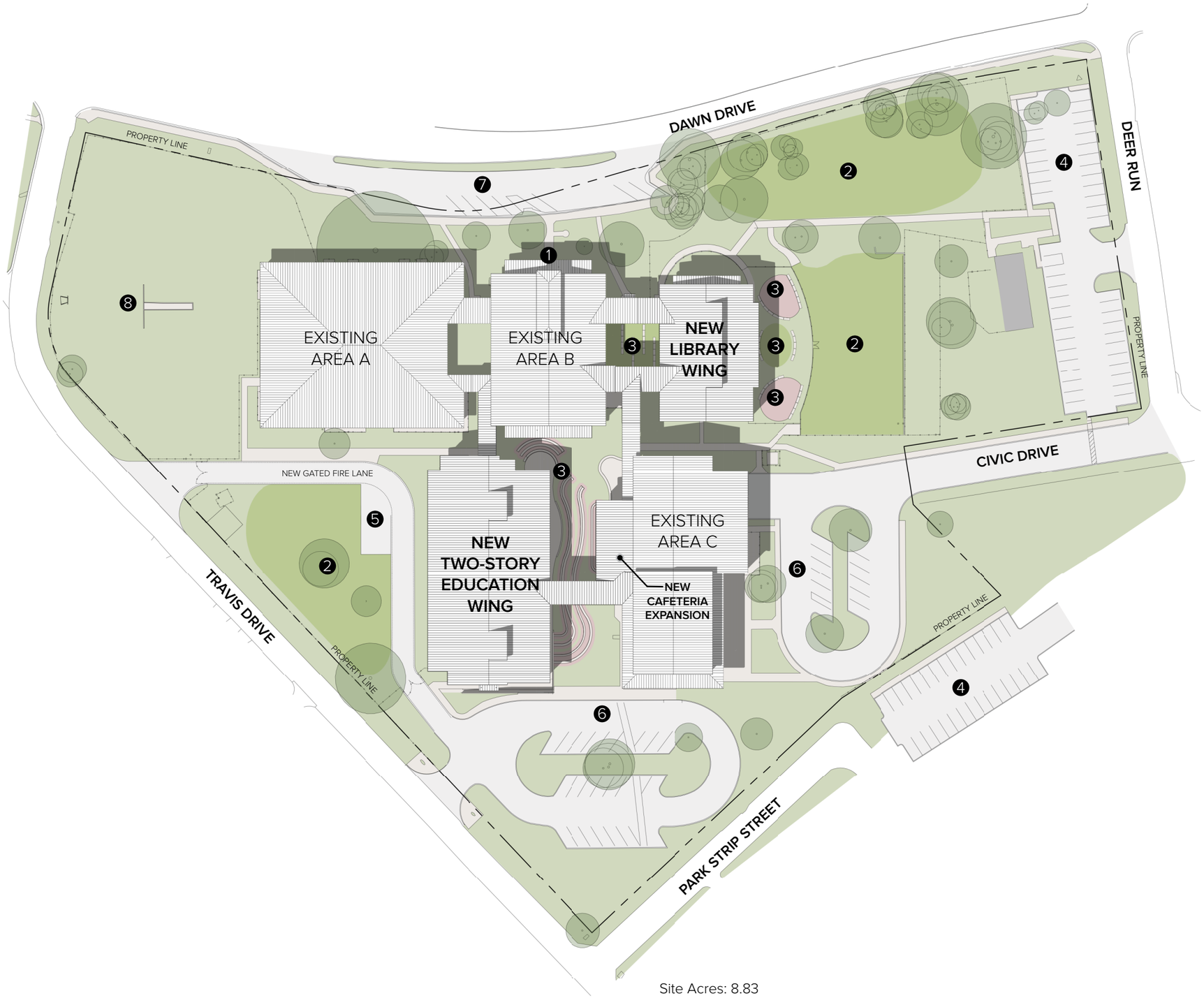
AV Space Functional Descriptions:
Classrooms
Infrastructure to support a short throw Boxlight projector on the marker board. Infrastructure to support ceiling mounted front projection. Input for audio and video presentations via a wall input plate located at the teaching desk.
Control of the system will be provided via a wall mounted key pad or touch screen. Headend equipment will be located within the ceiling plenum in UL rated enclosure.
Library
A/V system requirements are similar to a classroom. IT will allow for teacher meetings, educational use and group presentation events.

# Lago Vista ISD Program

| Elementary School Additions | Schematic Design | | | Capacity | | |
|---|---|---|---|---|---|---|
| **800 Student Capacity** | # of spaces | Area per space (S.F.) | Net Area (S.F.) | Student Capacity Per Space | Max Capacity (TEA- Instruct. Spaces) | Functional Cap. (District Pref.- Instruct. Spaces) |
| **INSTRUCTIONAL SPACES** | | (average) | | | | |
| 2nd Grade Classrooms | 6 | 757 | 4,542 | 22 | 132 | 118 |
| 3rd Grade Classrooms | 6 | 755 | 4,529 | 22 | 132 | 118 |
| 4th Grade Classrooms | 6 | 757 | 4,542 | 22 | 132 | 118 |
| 5th Grade Classrooms | 6 | 754 | 4,525 | 25 | 150 | 135 |
| **Instructional Support** | | | | | | |
| Teacher Work Room | 2 | 191 | 382 | | | |
| Teacher Restrooms | 4 | 59 | 236 | | | |
| Grade Level Storage | 24 | 54 | 1,296 | | | |
| Teacher Break Room | 2 | 327 | 654 | | | |
| Bookroom | 2 | 133 | 266 | | | |
| **General Support** | | | | | | |
| Girls Multi-Use Restroom | 2 | 225 | 450 | | | |
| Boys Multi-Use Restroom | 2 | 225 | 450 | | | |
| Custodial Closets | 2 | 121 | 242 | | | |
| Electrical Rooms | 2 | 63 | 126 | | | |
| Mechanical Rooms | 12 | 44 | 528 | | | |
| IDF Rooms | 2 | 83 | 166 | | | |
| **INSTRUCTIONAL - SUBTOTAL NET AREA (sf)** | **80** | | **22,934** | | | |
| **SPECIAL PROGRAM SPACES** | | | | | | |
| **Computer Labs** | | | | | | |
| Computer Lab | 1 | 901 | 901 | | N/A | N/A |
| Computer Lab Storage | 1 | 72 | 72 | | | |
| **Special Education** | | | | | | |
| **Resource** | | | | | | |
| GT | 1 | 376 | 376 | | N/A | N/A |
| Math Intervention & Dislexia | 1 | 751 | 751 | | N/A | N/A |
| ESL | 1 | 379 | 379 | | N/A | N/A |
| **SPECIAL PROGRAMS - SUBTOTAL NET AREA** | **5** | | **2,479** | | | |
| **CORE SPACES** | | | | | | |
| **Library** | | | | | | |
| Stacks/Media/Reading | 1 | 3934 | 3934 | | N/A | N/A |
| Library Workroom | 1 | 208 | 208 | | | |
| Professional Library | 1 | 256 | 256 | | | |
| **Dining** | | | | | | |
| Dining Area | 1 | 998 | 998 | | | |
| Chair Storage | 1 | 361 | 361 | | | |
| **General Support** | | | | | | |
| IDF Rooms | 1 | 65 | 65 | | | |
| **CORE SPACES - SUBTOTAL NET AREA (sf)** | **6** | | **5,822** | | | |
| **GENERAL FACILITY SUPPORT** | | | | | | |
| Vertical Access - Stairs | 1 | 1466 | 1466 | | | |
| Elevator | 1 | 78 | 78 | | | |
| Elevator Equipment Room | 1 | 0 | 0 | | | |
| **GEN.FACILITY - SUBTOTAL NET AREA (sf)** | **3** | | **1,544** | | | |
| **SUBTOTAL NET AREA (sf)** | **94** | | **32,779** | **CAPACITY TOTALS** | **546** | **489** |
| **SUBTOTAL WALLS & CIRCULATION (sf)** | | **33%** | **10,748** | | | |
| **TOTAL GROSS AREA (sf)** | | | **43,527** | | | |

# Lago Vista ISD Program

| Elementary School Renovations | Program of Spaces | | | Capacity | | |
|---|---|---|---|---|---|---|
| **800 Student Capacity** | # of spaces | Area per space (S.F.) | Net Area (S.F.) | Student Capacity Per Space | Max Capacity (TEA- Instruct. Spaces) | Functional Cap. (District Pref.- Instruct. Spaces) |
| **SPECIAL PROGRAM SPACES** | | | | | | |
| **Resource** | | | | | | |
| Reading Intervention | 2 | 420 | 840 | | | |
| SPED Resource | 1 | 348 | 348 | | | |
| Speech | 1 | 425 | 425 | | | |
| **Life Skills** | | | | | | |
| Life Skills | 1 | 711 | 711 | 10 | 10 | 9 |
| OT/PT | 1 | 440 | 440 | | | |
| Restroom | 1 | 105 | 105 | | | |
| **General Support** | | | | | | |
| Faculty Restroom | 1 | 64 | 64 | | | |
| Storage | 1 | 146 | 146 | | | |
| **SPECIAL PROGRAMS - SUBTOTAL NET AREA** | **9** | | **3,079** | | | |
| **FINE ARTS** | | | | | | |
| **Music** | | | | | | |
| Music Room | 1 | 822 | 822 | N/A | N/A | N/A |
| Music Storage | 1 | 98 | 98 | | | |
| **FINE ARTS - SUBTOTAL NET AREA (sf)** | **2** | | **920** | | | |
| **MAIN ADMINISTRATION** | | | | | | |
| **Administrative Spaces** | | | | | | |
| Reception | 1 | 287 | 287 | | | |
| Principal's Office | 1 | 182 | 182 | | | |
| Asst. Principal Office | 1 | 135 | 135 | | | |
| Attendance Clerk | 1 | 98 | 98 | | | |
| Counselor's Office | 2 | 150 | 300 | | | |
| Admin. Conference Room | 1 | 116 | 116 | | | |
| Registrar | 1 | 134 | 134 | | | |
| Admin Restrooms | 2 | 43 | 86 | | | |
| Mail Room | 1 | 262 | 262 | | | |
| Records | 1 | 191 | 191 | | | |
| Workroom | 1 | 90 | 90 | | | |
| Admin Breakroom | 1 | 59 | 59 | | | |
| Staff Breakroom | 1 | 204 | 204 | | | |
| **Clinic** | | | | | | |
| Clinic Office | 1 | 203 | 203 | | | |
| Clinic Toilet | 1 | 47 | 47 | | | |
| Clinic Storage | 1 | 65 | 65 | | | |
| **MAIN ADMINISTRATION - SUBTOTAL NET AREA** | **18** | | **2,459** | | | |
| **SUBTOTAL NET AREA (sf)** | **29** | | **6,458** | **CAPACITY TOTALS** | **10** | **9** |
| **SUBTOTAL WALLS & CIRCULATION (sf)** | | **15%** | **942** | | | |
| **TOTAL GROSS AREA (sf)** | | | **7,400** | | | |




Site Acres: 8.83

**COLOR LEGEND**

- Grass
- Paving
- Sidewalks
- Existing Building
- New Building
- Retaining Wall

1. Main Entry
2. Play Area
3. Outdoor Learning Area
4. Potential New Parking Lot
5. Hardscape Play Area
6. Parent Drop-Off
7. Bus Drop-Off
8. Detention Pond

0 25 50 100 200

# OVERALL SITE

04

**Huckabee**

ADDITIONS & RENOVATIONS TO LAGO VISTA ELEMENTARY SCHOOL


SECOND FLOOR PLAN

FIRST FLOOR PLAN

## COLOR LEGEND

- Administration
- Academic
- Library
- Special Programs
- Cafeteria
- Athletics
- Restrooms/Support Spaces
- Circulation

0 12.5 25 50 100

# Huckabee

ADDITIONS & RENOVATIONS TO LAGO VISTA ELEMENTARY SCHOOL



# FIRST & SECOND FLOOR PLANS

**Huckabee**

ADDITIONS & RENOVATIONS TO LAGO VISTA ELEMENTARY SCHOOL

NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION - JASON ANDRUS, TX #19417

# LIBRARY & MAIN ENTRY PERSPECTIVE

**Huckabee**

ADDITIONS & RENOVATIONS TO LAGO VISTA ELEMENTARY SCHOOL

NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION - JASON ANDRUS, TX #19417

# TWO STORY ADDITION PERSPECTIVE

**Huckabee**

ADDITIONS & RENOVATIONS TO LAGO VISTA ELEMENTARY SCHOOL

NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION - JASON ANDRUS, TX #19417

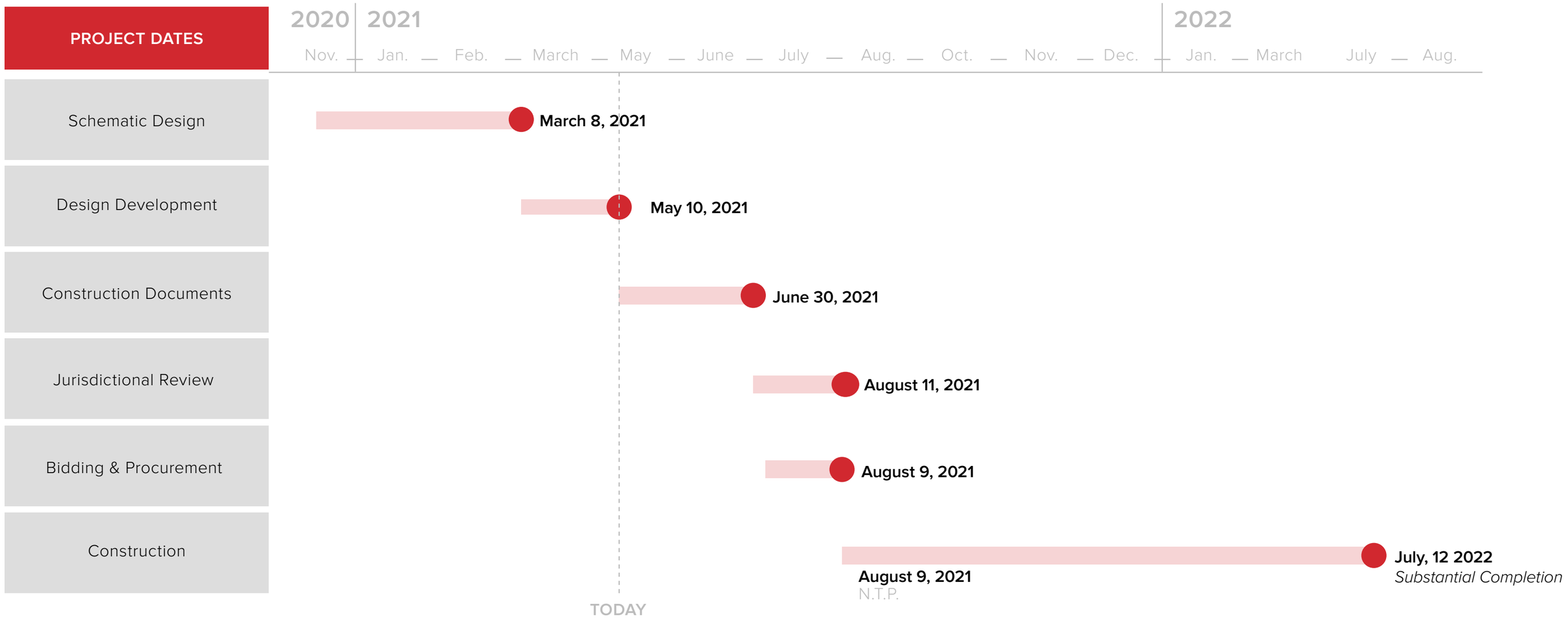
# COURTYARD PERSPECTIVE

**Huckabee**

ADDITIONS & RENOVATIONS TO LAGO VISTA ELEMENTARY SCHOOL



LIBRARY INTERIOR PERSPECTIVE


PROJECT DATES
2020
2021
2022
Nov.
Jan.
Feb.
March
May
June
July
Aug.
Oct.
Nov.
Dec.
Jan.
March
July
Aug.
Schematic Design
March 8, 2021
Design Development
May 10, 2021
Construction Documents
June 30, 2021
Jurisdictional Review
August 11, 2021
Bidding & Procurement
August 9, 2021
Construction
July, 12 2022
Substantial Completion
August 9, 2021
N.T.P.
TODAY

MORE THAN ARCHITECTS