

LAGO VISTA MIDDLE SCHOOL
JULY 12, 2021

DESIGN DEVELOPMENT PRESENTATION



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LAGO VISTA INDEPENDENT SCHOOL DISTRICT

ADDITIONS & RENOVATIONS TO LAGO VISTA MIDDLE 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 Middle School project involves additions and renovations to achieve three goals. The first is to increase student capacity to allow the building to serve the anticipated growth of the campus for the next 8-10 years. The second is to rebuild the science wing portion of the campus to be more functional and modern. The third is to improve circulation within the building and enhance safety and security. The program for the project includes:

- New General Classrooms
- New Science Labs
- New Resource Rooms
- New Weight Room
- New Life Skills Suite
- New Support Spaces
- Replace the existing Cooling Towers

SITE

The project is located on the existing site of Lago Vista Middle School. The existing site is approx. 30.59 acres bounded by FM 1431 to the north, Bar K Ranch Road to the west, ball fields to the south, and Lago Vista Intermediate School to the east. The school is neighbored by commercial properties on all sides. The scope of this project does not dramatically change the vehicular flow of the campus. The new addition sits at the location of a 30+ space parking lot. Geotechnical recommendations will be followed for pavement sections. The overall site drainage strategy will continue the current methods of a combination of surface and subsurface stormwater management systems. The site improvements on the project are relatively minimal.

BUILDING

The addition is the first key component of the project. It will require the demolition of the existing weight room and will house 8 new General Classrooms and a new Weight Room, along with a handful of support spaces. A new corridor between the addition and the existing building will enclose the current exterior circulation path to improve safety, security, and comfort. The addition will have a modified bitumen low slope roof that will tie into the existing low slope roof of the Gym building. The exterior veneer will be limestone in a mosaic pattern to match the existing veneer on the adjacent Gym building. The new addition will be separated off from the existing building by a 2 hour fire wall. The geotechnical information on the project shows that the site has very shallow hard limestone, so a soil supported slab on grade with shallow foundations at point loads is proposed for the foundation. In response to the current trends in the steel market, the vertical structure will be load bearing CMU to minimize steel on the project and the roof structure will be steel beams to avoid the use of joists which are currently showing 12-13 month lead times.

The renovation of the Science Wing is the second key component of the project. The interior of the existing wing will be completely gutted and rebuilt to include Science Rooms, Resource Rooms, General Classrooms, and a Life Skills Suite. The corridors will be significantly wider and align corridors in the new addition and adjacent existing academic wing to improve circulation.

Numerous minor scopes of work are included in the project. The existing courtyard will receive improvements for aesthetic, functional, and comfort purposes with the goal of making it a more attractive and useful space. The existing cooling towers will be replaced as the existing units are reaching the end of their useful life. The interior components of the mechanical system and controls system will largely remain unchanged. Access control improvements will be made between the main building and the Viking Hall building, particularly in regards to the flow of students from the main building to the Band Hall. The existing low slope roofs on the Gym building will be replaced with new systems to match the new addition roof.

The interior design for the areas that are being built and renovated employ a strategy of modernization combined with matches existing finishes. Corridors will have a neutral colored porcelain tile wainscot up to about 5'-6". The paint scheme will utilize a similar combination of blue, gold, and field paint, but the gold color will be the same as the one on the LVES project as the existing gold color is not the district standard. Casework will have a more modern look with dark grey base and upper cabinets and light grey countertops. The Science Room casework will have light gray chemical resistant laminate countertops with an alternate to upgrade those to black resin. Restrooms will receive a large format tile for both the walls and floors in a neutral palette with blue accents. Drinking fountain locations will get accents of the new blue tile as well. Doors will be a wood veneer to match existing. Flooring will be VCT in a neutral palette with accents of blue and gold at major corridor intersections. New ceilings and lighting will improve acoustics and brighten the spaces throughout. Upgrading the corridor finishes in the existing unrenovated academic wing, Library, Gym, locker rooms, Admin suite, and Viking Hall building are not included in the project, but an alternate is being considered new finishes in the corridors throughout the campus if extra funds become available.

CIVIL NARRATIVE

The civil design for Lago Vista Middle School 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.
- Roof drain discharge piping will be piped to connect underground into existing storm sewer. This will be done with consideration given to excessive cost if existing storm sewer pipes are not within



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reasonable proximity.

- Grass slopes will be no steeper than 4:1 adjacent to pedestrian routes
- Guardrails will be provided adjacent to pedestrian routes with drop-offs greater than 18".

Budget

The civil design will align with the budget goals for the school project by:

- Utilizing existing sidewalks to the maximum extent to connect exterior doors from new buildings.
- Coordination with Mechanical Engineer to utilize interior water and wastewater lines to minimize new water, wastewater, and fire sprinkler yard lines. This will reduce cutting existing pavement and connections to existing exterior service lines.

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.
- Pavement: the use of concrete or asphalt based upon technical input from Geotech and cost data from Construction Manager.
- 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 4 horizontal to 1 vertical (4:1) 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 does not have a stormwater management pond. The previous project was permitted prior the effective date of the LCRA Highland Lakes Watershed Ordinance. Compliance of this Project to the City of Lago Vista Ordinances and HLWO is required. Discussions with the City regarding "redeveloped" impervious will occur to determine the extent of required pollution controls.

LANDSCAPE NARRATIVE

The landscape & irrigation design for Lago Vista Middle School is anticipated to consider the following design criteria:

Safety

The safety of children, teachers and visitors will be considered in multiple aspects:

- 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.

Compliance

The landscape and irrigation design will meet the City of Lago Vista Municipal Code by:

- 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

Plant selection and irrigation design will encourage water conservation by:

- 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.



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- **Wind Loads**
Wind Loads will be determined per ASCE 7 using the following anticipated parameters:
Wind Speed (3-sec gust) 120 MPH
Exposure Category C
Enclosed Structure
- **Seismic Loads**
Seismic loads will be determined per ASCE 7-10 using the following anticipated parameters:
Site Class C
Seismic Design Category A
Seismic Importance Factor 1.25

MEP NARRATIVE

MECHANICAL SYSTEMS

Mechanical system shall consists of new equipment for new additions and replacing old existing equipment that is using R-22 refrigerant where noted.

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. 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 classroom wing shall have a separate unit and thermostat for individual control of each classroom. New units will be high-efficiency package gas/electric DX rooftop units (RTU's). All new MDF and IDF data rooms will have separate air conditioning systems for 24/7 control. Outside air will be provided from rooftop package Make Up Air Units (MAU). Existing cooling tower will be removed and replaced with a new cooling tower.

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. Manufacture 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 entire complex. 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. Temperature Sensors: 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: Controls 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 dampers which exceed thirty-six (36") in width. Manufacturers: Ruskin, Air Balance,



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Arrow, Nailor or approved equal.

PLUMBING SYSTEMS

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. A floor drain will be provided at each emergency shower unit. 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. All vitreous china fixtures will be white in color. 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. Reference Civil drawings for routing. 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.

FIRE PROTECTION SYSTEMS

The existing building is provided with an automatic fire protection sprinkler system. A fire water service supply will be extended into the building in the areas being renovated or added. 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. System will include piping, sprinklers, wet and dry alarm valve assemblies, tamper switches, flow switches, valves, drains, inspector test, test drains, fire department connections, sprinkler heads, roof manifolds, etc. 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.

ELECTRICAL SYSTEMS

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 the parking area near Area E. 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



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transformers that are DOE 2016 compliant will be used inside the building electrical rooms, mezzanines or on roof of addition 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, new 480Y/277V distribution panels, and 208Y/120V branch circuit panelboards for all additions for protection of building loads from surges both from lightning and utility transients as well as building switching transients.

Interior Electrical Distribution System

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.

Interior Lighting Systems

LED lighting will be utilized throughout the building for additions and renovations. Building interior lighting control schemes shall comply with the requirements of IECC 2015 Edition. New and remodeled 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. footcandle 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).

SECURITY NARRATIVE

Provide expansion of existing electronic security systems and sub-systems including:

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.

Facility Areas and Requirements

The project will have various functional areas requiring security connectivity:

- Electronic Access Control of Exterior Doors
- Classroom Addition
- Enclosure of Courtyard
- Renovate Science Wing
- Additional Fine Arts/Instrument Storage
- Weight Room Addition
- Replace Roof for Entire Building
- Replace Central Plant Cooling Towers
- Repurpose to Consolidate Administrative Services

The project includes design and coordination for the following Electronic Security Infrastructure sub-systems:

- Horizontal Distribution System
- Spaces and Pathways
- Device wiring requirements for security
- Security Racks, Patch Panels and Termination Blocks
- Architectural, Electrical, and HVAC requirements for security systems
- Mechanical Locking Systems

The design scheme will also include specific criteria including:

- 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.



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- 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. Security cabling terminations shall be in wall mounted panels or rack mounted equipment. Grounding and bonding will be to a single reference point.

TECHNOLOGY INFRASTRUCTURE – DESIGN NARRATIVE

INFORMATION TECHNOLOGY

- 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.

- The basket cable tray will be sized based upon TIA-569 requiring an initial maximum cable fill of 25 percent or less and will also account for security cabling plus future growth. For every 10-foot tray section, either 12 inches of access on one side and above the tray or 3 feet of unencumbered space is required.

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 in-stalled, 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. Current trends estimate that users have 2-3 devices that have wireless connectivity capabilities. Factors that influence wireless coverage and thereby device placement include:

- Building materials (e.g., concrete, drywall, wood, steel)
- Building configuration (i.e., closed, semi-closed, or open space)
- Building furnishings (e.g., cabinets, partitions, furniture)
- WLAN radio frequency (RF) coverage design (e.g., adjacent floors, directional antennas)
- Occupant density
- Number and types of devices and their usage

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. Connectivity for wireless access points on the exterior of the building will be coordinated with architectural elements to minimize aesthetic impact. Wireless coverage will be included for specific gathering areas, the perimeter of each respective building, and walkways between buildings.

TELECOMMUNICATIONS ROOMS (TR)

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.



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- 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 overhead 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.
- The factors used to derive the 90 meter (295 ft) distance are the voltage output at the equipment in the TR, the voltage loss due to the cables resistance and the input sensitivity of the work area equipment (NIC card).
- The room shall be free of water pipes not directly required in support of the equipment within the room.
- It is recommended that a device to monitor the environment and provide a network accessible image of the area be included in the TR.

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

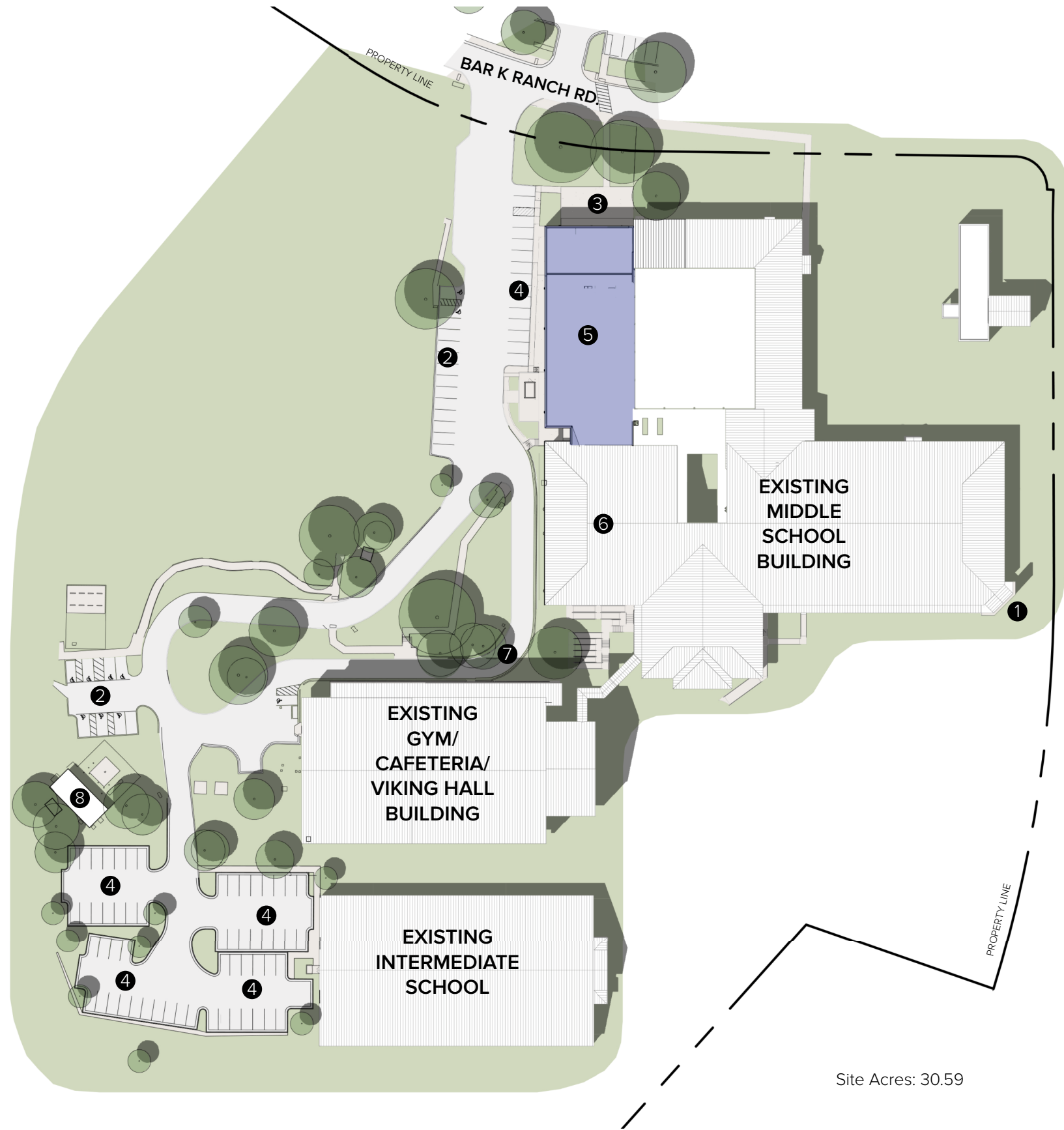
receptacle is a NEMA L14-30P.

- The telecommunication bonding and grounding infrastructure specified in J-STD-607-A shall be made available in each TR.

TR mechanical requirements:

- The TR must have adequate ventilation and be environmentally controlled 24 hours per day seven days per week.
- The thermostat to control the TR room environment shall be dedicated for the area and be located within the TR room.
- The TR room shall maintain a positive pressure with a minimum of one air change per hour, and have a cooling system capable of maintaining a constant temperature between 64° F and 75° F with a relative humidity between 30 percent and 55 percent (measured at 5 feet AFF).
- No liquids other than those necessary for the operation of the TR shall be plumbed through the TR area.
- Additionally, no building drain system piping shall pass through the TR area.
- Recommendations for the fire suppression system in the TR include inert gas with specialized smoke and heat detection.
- If water type sprinkler system is required per local code it is recommended that the system be a pre-action type system.

Lago Vista ISD Program							
Middle School Renovations		Program of Spaces			Capacity		
Goal Student Capacity:	Quantity	Area per space (S.F.)	Net Area (S.F.)	Remarks	Student Capacity Per Space	Max Capacity (TEA- Instruct. Spaces)	Functional Cap. (District Pref.- Instruct. Spaces)
INSTRUCTIONAL SPACES							
Instructional							
Classrooms	5	750	3,750	Courtyard infill	25	125	113
Resource Rooms	2	750	1,500	Renovation	24	48	43
Science Lab/Classroom incl.prep/storage	4	1,250	5,000	Renovation	24	96	86
Office/Storage/Staff Restroom	0	0	0	Capture from extra circulation			
Life Skills							
Life Skills	1	800	800	Classroom Space + Motor Lab Space	10	10	9
Restroom/Changing/Shower	1	150	150				
Laundry Room	1	80	80				
Kitchenette	1	150	150				
Storage	1	100	100				
General Support							
Girls Multi-Use Restroom	1	200	200				
Boys Multi-Use Restroom	1	200	200				
Custodial Closets	1	75	75				
Electrical Rooms	1	100	100	existing to remain?			
IDF Rooms	1	100	100				
INSTRUCTIONAL - SUBTOTAL NET AREA (sf)		16	12,205			279	251
Walls & Circulation (sf)			3,662				
TOTAL GROSS AREA (sf)			15,867	Bond Max 15000 sf			
Middle School Additions							
		Program of Spaces			Capacity		
Goal Student Capacity:	Quantity	Area per space (S.F.)	Net Area (S.F.)	Remarks	Student Capacity Per Space	Max Capacity (TEA- Instruct. Spaces)	Functional Cap. (District Pref.- Instruct. Spaces)
INSTRUCTIONAL SPACES							
Instructional							
Classrooms	4	750	3,000	Addition	25	100	90
ATHLETIC SPACES							
Physical Education							
Weight Room	1	1,000	1,000	Addition			
INSTRUCTIONAL - SUBTOTAL NET AREA (sf)		5	4,000			100	90
Walls & Circulation (sf)			1,200				
TOTAL GROSS AREA (sf)			5,200	Bond Max 6000 sf			
CAMPUS SUBTOTAL NET AREA (sf)		21	16,205	CAPACITY TOTALS		379	341
SUBTOTAL WALLS & CIRCULATION (sf)			4,862				
CAMPUS TOTAL GROSS AREA (sf)			21,067	Bond Max 21,000sf			



COLOR LEGEND

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

- 1 Main Entry
- 2 Existing Parking To Remain
- 3 Outdoor Workout Area
- 4 New Parking Area
- 5 New Weight Room & Ed Wing
- 6 Renovated Science Wing
- 7 Existing Pick-up and Drop-Off
- 8 Cooling Tower To Be Replaced



OVERALL SITE



04

COLOR LEGEND

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



FLOOR PLAN

Huckabee

ADDITIONS & RENOVATIONS TO LAGO VISTA MIDDLE SCHOOL

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



Huckabee

ADDITIONS & RENOVATIONS TO LAGO VISTA MIDDLE SCHOOL

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WEIGHTROOM ADDITION PERSPECTIVE

06

PROJECT DATES

- Schematic Design
- Design Development
- Construction Documents
- Jurisdictional Review
- Bidding & Procurement
- Construction



TODAY

May 10, 2021

July 12, 2021

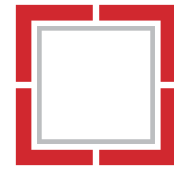
September 9, 2021

November 18, 2021

October 18 2021

October 25, 2021
N.T.P.

November 26, 2022
Substantial Completion



MORE THAN ARCHITECTS