Huckabee

LAGO VISTA INTERMEDIATE SCHOOL TO ADMIN RENOVATION

JANUARY 10, 2022

SCHEMATIC DESIGN PRESENTATION

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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 Intermediate School to Administration Conversion project is a wholly interior renovation effort to convert an existing educational building into a business office for the district. The facility will undergo a complete interior renovation of about 2/3 of its current footprint, removing existing classroom layouts, to make way for new office suites, that will house the ISD's administration staff.

SITE

The project is located on the existing site of Lago Vista Intermediate 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 Middle School to the west. The school is neighbored by commercial properties on all sides. At this time, no exterior site improvements are anticipated for the project.

BUILDING

The organization of the renovations start with the goal of no changes to the exterior envelope of the building. The two existing exterior doors on the front façade will function as the new entry points. The first will be the main entry for visitors and staff, who will enter a controlled vestibule and reception area.For access control and safety, visitors will need to be screened and registered before being allowed to enter the facility. The vestibule and reception area include a built-in reception desk and seating for guests to wait until entry is granted. As one enters the main administration area, the spaces are organized by departmental suites to allow for easy of communication and collaboration. Three suites are located along a central main corridor. Each suite includes a secretary/reception area as a gatekeeper to screen guests visiting the staff in that suite. The gatekeeper area for the Administration and Student Services suites will function in the near-term as soft seating and collaboration, but can easily have desk and waiting furniture added once those personnel are brought on board. The proposeed layout provides strategic access, for about half of the office spaces, to the small number of available existing exterior windows. Two Training/Conference rooms are located centrally and are easily accessed from Reception for visitors. Each room will function for 12-14 people in conference or 16-20 people for training depending on furniture arrangements. An operable wall that divides the two rooms can be opened to allow for one large space capable of holding 36-40 people. The main corridor leads to a communal break room and copy center for use by all staff and is supported by individual restroom facilities. Just around the corner from the break/work room are the Technology and Business departmental suites, the latter being located at the closest point in the renovation to the district storage facilities that will be managed by that department. All 5 departmental suites have storage rooms that are located and sized, including power and data, to become future offices providing a facility that can handle expansion for the foreseeable future.

The second set of exterior doors will be designated for entry to the new Board Room. Visitors will enter into a large lobby space where they can wait and chat without disturbing the meetings. The Board Room is designed to function primarily for board meetings with a permanent dais and the ability to seat up to 100 guests. The space will receive the latest technology for digital presentations and communication that will be intuitive and seamless. A back door from the Board Room leads conveniently to one of the Training/Conference rooms to serve as a the chamber for closed sessions. A side hallway leads to a pair of restrooms for use by visitors and a large buffet counter is provided for food and drink to be provided for visitors or for the district information to be displayed

The above mentioned scope of work constitutes nearly the entire project and utilizes approximately 2/3 of the existing building. The existing group restrooms will receive minor improvements to make them age appropriate. One of the existing classrooms will be utilized as an 18+ classroom which will remain largely unchanged with the exception of adding a kitchenette and residential appliances. DAEP will utilize a couple of the small existing resource rooms and those spaces will not receive any work. The existing storage room at the back center of the building will continue in that capacity but serve as the District’s main central storage. The existing MDF room will remain, but may need minor expansion for new equipment.

The interior design of the new administrative areas is intended to invoke a professional office feel while also being easily maintained and cost effective. Existing CMU block walls will be covered with gypsum board for a more cohesive look throughout. The majority of the work will be painted walls and 2x2 lay-in ceiling, but accent tile work and wood ceilings are used strategically throughout to provide visual impact where it can be appreciated by the majority of the building users. A handful of locations will receive supergraphics/logos for branding and district pride.

STRUCTURAL NARRATIVE

Foundation

At locations where saw-cutting the existing grade-supported slab is anticipated for under-slab utility modifications, and new concrete pour back will be required, the new slab will consist of a 5” concrete slab reinforced with #3 bars at 12” on-center each way over new vapor barrier.

Typical New Non-Load Bearing Walls

The new interior non-load bearing walls will be a mixture of light gage cold formed metal framing (CFMF) and conventionally reinforced concrete masonry units (CMU). The existing exterior walls consist of conventionally reinforced concrete masonry units (CMU) below and CFMF/wall girts above, both cladded with mixture of metal panel and masonry veneer.

Existing Roof Framing Structure
The existing structure consists of pre-engineered metal rigid frames with roof purlins at approximately 5'-0" OC.

Descriptive Specifications

- Concrete
  Normal weight Portland cement concrete with 3" to 7" slump, depending on the application.
  Typical minimum 28-day compressive strength:

Slab-on-Grade	3,000 psi

- Reinforcing Steel

Deformed Bars (typical)	ASTM A615, Grade 60

- 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
Welding	E70XX per AWS D1.1

- Concrete Masonry Units (CMU)

Masonry Wall Compressive Strength (f'm)	1700 psi
Mortar	ASTM C270, Type N
Masonry Unit	ASTM C90, 1900 psi net area compressive strength
Grout	ASTM C476, f'm 2000 psi min.

Design Analysis

- Codes and Standards
  The following codes and standards will be used for the structural design of the project:
  International Building Code (IBC), 2015.
  American Society of Civil Engineers (ASCE) 7, Minimum Design Loads for Buildings and Other Structures.[1]
  American Concrete Institute (ACI) 318, Building Code Requirements for Structural Concrete.[1]
  American Institute of Steel Construction (AISC) Specification for Structural Steel Buildings, AISC360.[1]
  Concrete Masonry: Building Code Requirements for Concrete Masonry Structures, American Concrete Institute, (ACI) 530.[1]

1 The edition of the standard will be the edition referenced in the noted edition of the International Building Code.

Design Loads

- Dead Loads
  Design dead loads for the structural frame will include self-weight of the structural elements and the following superimposed dead loads:

Existing Ceiling and Mechanical at Roof	10 psf
Existing Corrugated Metal Panel Roofing	5 psf

- Live Loads
  Based on the anticipated functions to be contained in the building, the following superimposed live loads will be utilized in the design of the structural frame:

Public areas, corridors, lobbies, stairs	100 psf
Mechanical rooms (minimum)	150 psf
Storage (minimum)	125 psf
Roof (unreducible)	20 psf

- 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 using the following anticipated parameters:

Site Class	D
Seismic Design Category	A
Seismic Importance Factor	1.25

MEP NARRATIVE

MECHANICAL

The HVAC 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
Mechanical system shall consist of new equipment throughout. New units will be either high-efficiency two-speed R410a water source heat pumps or high-efficiency split system DX units that are reused from Elementary School demolition. New water source heat pumps will be connected to existing heat pump supply and return piping with new valves and hoses.
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).

Ventilation Requirements and Pressure Relationships
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. Split system makeup air units (MAU's) shall be used to provide neutral ventilation air for high occupancy areas.

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 allowed 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.

COVID-19 Measures
The industry is still discovering the best method to protect building occupants from the spread of infectious disease. We are implementing the most common-sense effective strategies known to protect the inhabitants with the most reasonable cost.

1. Individual Unit per Classroom – Each classroom will have its own unit. So, in the case an infected occupant occupies a classroom the air is contained to that classroom, not spreading to rest of building.
2. Dedicated Outside Air – Fresh treated outside air ensures that IAQ levels are meet in each classroom.
3. Filtration – Filtration can be increased up to MERV 13 without changing out of standard filter sizes or having dramatically negative effects on energy consumption. MERV 8-13 is considered in the normal filtration range with 13 being on the cleaner side.
4. Bipolar Ionization – Bipolar Ionization is being implemented with specific strategy from HCE for best protection. This means that if an infected person does come into spaces, in addition to other measures, this technology does its best to render viruses inert with enough exposure time. These devices are a one-time cost and last for many years without annual parts or maintenance. Once they reach end of useful life then they should be replaced.

Controls and EMS
Existing direct digital electronic automatic temperature control system to be expanded for new additions. 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: Sensors to match existing. 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.

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.

Air Filters
All air filters to be listed as Class 2 by Underwriters Laboratory, Inc., Building Materials Directory. Media: Non-woven, lofted cotton bonded to 96% free area welded wire support grid. Not less than 6.6 square feet media area per square foot of filter face area. Arranged in radially pleated configuration and bonded continuously to inside perimeter of high wet-strength beverage board cell sides. Cell Design: 2" deep with beverage board diagonal supports at entering air and leaving air faces of each cell. Air Cleaning Performance: Minimum MERV 13.

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, Arrow, Nailor or approved equal.

Ductwork Supports
Support all duct work to prevent sag, undue play and swing. Provide a hanger within twelve inches (12") from unit supply and return. Low Pressure Ductwork: Ducts 40" and Less: Provide with 1" x 18 gauge straps fastened to ductwork and to building construction. Space not more than eight feet (8') on center. Hanger straps shall lap under duct a minimum of one inch (1") and have a minimum of one (1) fastening screw on the bottom and two (2) on the side. Ducts Over 40": Provide mild steel rods fastened to angle iron stiffeners with nuts and to building construction with appropriate inserts, flanges or clamps. Space not more than four feet (4') on center with rods and angle supports. Use minimum twelve (12) gauge wire with saddle for support of flex duct. Maximum permissible sag is 1/2" per foot of spacing between supports. Use one inch (1") strap (minimum) for all round sheetmetal runouts; minimum 8'-0" o.c.

PLUMBING SYSTEMS

Domestic Cold Water Supply System
Connect to existing domestic cold water service. 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
New plumbing fixtures will connect to the existing system within the building. 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.

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 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 on the exterior walls are existing to remain.

FIRE PROTECTION SYSTEMS

The existing building has no fire protection sprinkler system

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 at the Water Plant / Intermediate School. All existing electrical gear in the Main Electric Room will be replaced with new gear to accommodate the remodel. MSB is located in Main Electric Room in the Intermediate School building. 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 room to transform down to 208Y/120V for convenience receptacles and other small loads for the remodel. Surge suppression units will be installed in the building at the main switchboard, 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.

Interior Electrical Distribution System
Furnish all labor, testing, supplies and materials, including but not limited to, installation of light fixtures, cutting and chasing, coordination with other trades on the job, etc, necessary for the installation of complete electrical systems. Include temporary electrical power and lighting to satisfy OSHA requirements. Verify all conditions and measurements at site. The electrical room 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 all areas. Building interior lighting control schemes shall comply with the requirements of IECC 2015 Edition. 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. No exterior lighting is to be provided in the scope. All existing exterior lighting is to remain. 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). New control panel will be installed in the Gym building prior to demolition of the existing Intermediate School FACP and all existing devices in the Gym building connected to the new panel. The new panel will be used to extend the Fire Alarm system to the remodeled Intermediate/Admin building.

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:
- Main Entry – Access Control / Door Release at receptionist desk
- Perimeter Doors – Access control / Video surveillance
- Main Circulation Corridors – Video Surveillance

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

Security Requirements
The design scheme for the Electronic Security Infrastructure is based on the following general require-ments:
- Federal, State, and Local codes, regulations and ordinances
- NFPA 101: Life Safety Code
- NFPA 730: Guide for Premises Security
- NFPA 731: Standard for the Installation of Electronic Premises Security
- Underwriters Laboratory and American National Standards Institute (UL/ANSI) Applicable Standards
- Telecommunications Industry Association (TIA) Applicable Standards
- BICSI Electronic Safety and Security Design Reference Manual (ESSDRM)
- Lago Vista ISD security system standards

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.
- All security device wiring shall be home run from the head end panels (point of termination) to the se-curity 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.

Design Assumptions
Surveillance cameras will be located to provide situational awareness throughout the facility for forensic review and alarm assessment.

The Internet Protocol (IP) cameras will provide:

- View activity and people in entryways and main circulation corridors, with sufficient resolution to make personal identification

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 secu-rity 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

The technology infrastructure design approach for the project will be based on the requirements of the varying spaces within the facility. These spaces will require different densities of information outlets for data and voice communications

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 communica-tions 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 tele-communications 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 mini-mum 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 ele-ments to minimize aesthetic impact. Wireless coverage will be included for specific gathering areas, the pe-rimeter of each respective building, and walkways between buildings.

Telecommunications Rooms (TR)

A typical 10 foot by 9 foot telecommunications room may include:

- Two (2) 19" wide equipment rack to house backbone fiber/copper, wireless access point (WAP) connections, building automation system 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 min. of 10 feet to allow for the addition off over-head ladder type cable tray as well as provide clearances for mechanical and electrical sys-tems.
- 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 TR's should be stacked one above the other floor to floor with one of the TR room stacks be-ing directly above the first floor ER.
- 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 lo-cated 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.

AUDIO VISUAL – DESIGN NARRATIVE.

Lighting
Special consideration must be given to determine how to balance the control of ambient light—both direct and indirect—with the stated desire for rooms with glass walls and natural light. Targeted light level values should be defined in measureable units to enable to determine appropriate brightness for display technologies, and any lighting design should limit the amount of light that shines on a display and in the viewing areas in front of the display. Pendant-type lighting included in AV spaces with front projection must be carefully coordinated to eliminate conflicts with the projectors' light paths. If room has dimming control system, provide control interface for these systems in the IDF closet that serves the room for connection to the centralized control system.

Mechanical
Rooms and closets designed to support AV equipment racks must include cold supply air from the building's HVAC system to maintain proper operating temperature of all AV electronics, and may require return air paths as well. Plenum ceiling spaces above ceiling mounted projectors should remain clear from finished ceiling to deck.

Electrical
AV and IT pathways shall be part of the electrical building scope. AV infrastructure will use a shared technology cable tray designed throughout the facility, which will be installed by the electrical contractor. Since cables from other disciplines will also be present in the tray, separation from AV cables is necessary to prevent interference with intended signals. Technical power for A/V equipment should be provided by the electrical contractor, including individual branch circuits and dedicated A/V panels. Isolated grounds should be considered to minimize the effects of transverse and common mode events. Floor boxes should be included as standard supporting infrastructure for floor mounted interfaces.

Due to advantages gained by leveraging their size, floor boxes, should be given primary consideration over poke-thrus in all spaces where signal connectivity through the floor. Specifically, floor boxes are available in dimensions that permit a greater number of gangs than is available in even the largest poke-thrus, allowing more robust support for AV, voice/data, power, and CATV connections in a single unit. Floor boxes also provide space for larger connectors typically used in AV applications both in front of and behind mounted connector plates while allowing floor box covers to remain closed with only a small opening providing entry/egress for cables. Floor box depth should be at least six inches to provide appropriate space for connectors.

Structural
Building vibration is detrimental to the quality of projected images and video captured by cameras. Mechanical building designs should include measures to limit such effects. Blocking should be included as a support system for wall-mounted A/V equipment including: projection screens, flat panel displays, monitors, video cameras, loudspeakers, and small equipment racks.

Architectural
A/V-enabled room dimensions that exceed a 2:1 ratio of width to height or height to width may introduce challenges to media viewability and should be avoided where possible. Seating design should consider optimal sightlines for viewing images on projection screens and flat panel displays, and should not include positions that exceed 45 degrees horizontally off the display's center axis. Best practices would limit vertical viewing angles to 30 degrees. Certain AV enabled rooms will require the support of full-size equipment racks which require 36 inches of front and rear access. AV requirements should be considered when setting appropriate finished space heights. Room depths are a major factor in determining appropriate screen sizes, because screen heights are sized to ensure the viewability of displayed information by those furthest from the screen—often referred to as the "least favored viewer". For typical conference spaces or classrooms the bottom of a projected image should not display below 48 inches above finished floor to minimize the possibility of blocking the view from a meeting participant seated in front of another. In other larger room types it may be higher. These factors combine to determine the most appropriate minimum height for a finished ceiling to permit the most appropriate AV design to be included. Presentation positions must consider several factors, including number of displays or screens, room type and purpose and presentation style.

Interiors
Light reflectivity at the floor and horizontal furniture surfaces and busy or detailed floor patterns may adversely affect video captured for distance learning and videoconferencing. Coordination among interior design team should consider minimizing such design features. Floor boxes may be provided beneath tables, lecterns, and other locations in presentation spaces. Coordination between these devices and furniture is important to maintain accessibility to these cable paths and connectors. Millwork with AV equipment requires proper sizing, ventilation (including either active or passive), access and cable management. Sliding and rotating equipment racks can be used in millwork without rear access.

Furniture with AV interfaces such as touch panels, source inputs, and wired microphones should be coordinated to match finishes and accessibility that meets user needs

Active Equipment
Equipment refers to particular AV devices which have specific costs and capabilities associated with them. Equipment can be thought of as flat panel displays, video projectors, media switchers, DSP processors, wireless microphone systems, equipment racks, etc. Cable is also considered part of the equipment package because selection of specific A/V system elements will govern which type of cable will be used (i.e. coaxial, twisted pair, etc.).

Assisted Listening Systems:
- In rooms where ADA regulations require a permanently installed assisted listening system will be specified.

Location / Placement:
- Active AV components of the system(s) will be located within the presenting room or adjacent AV room when applicable. Headend equipment will be located in wall mounted equipment cabinet.

AV Space Functional Descriptions:
Conference/Training Classrooms
- Infrastructure to support wall-mounted flat panel displays will be provided. Displays will be sized appropriately to allow for optimal viewing of displayed content.
- Infrastructure to support video conferencing cameras.
- Input for audio and video presentations via floor box and/or wall input plate located at the podium/teaching desk.
- Control of the system will be provided via a wall mounted key pad or touch screen.
-

Board Room
- Infrastructure to support a motorized projection screen behind the dais will be provided. Projection screen will be sized appropriately to allow for optimal viewing of displayed content as dictated by finish ceiling height.
- Infrastructure to support ceiling mounted front projection and supplementary flat panel displays.
- Input for audio and video presentations via floor boxes located at the presentation podium and dais.
- Infrastructure to support video conferencing and presentation cameras.
- Control of the system will be provided via a wall mounted key pad or touch screen.

Lago Vista ISD Program

Intermediate to Admin Conversion — Program of Spaces

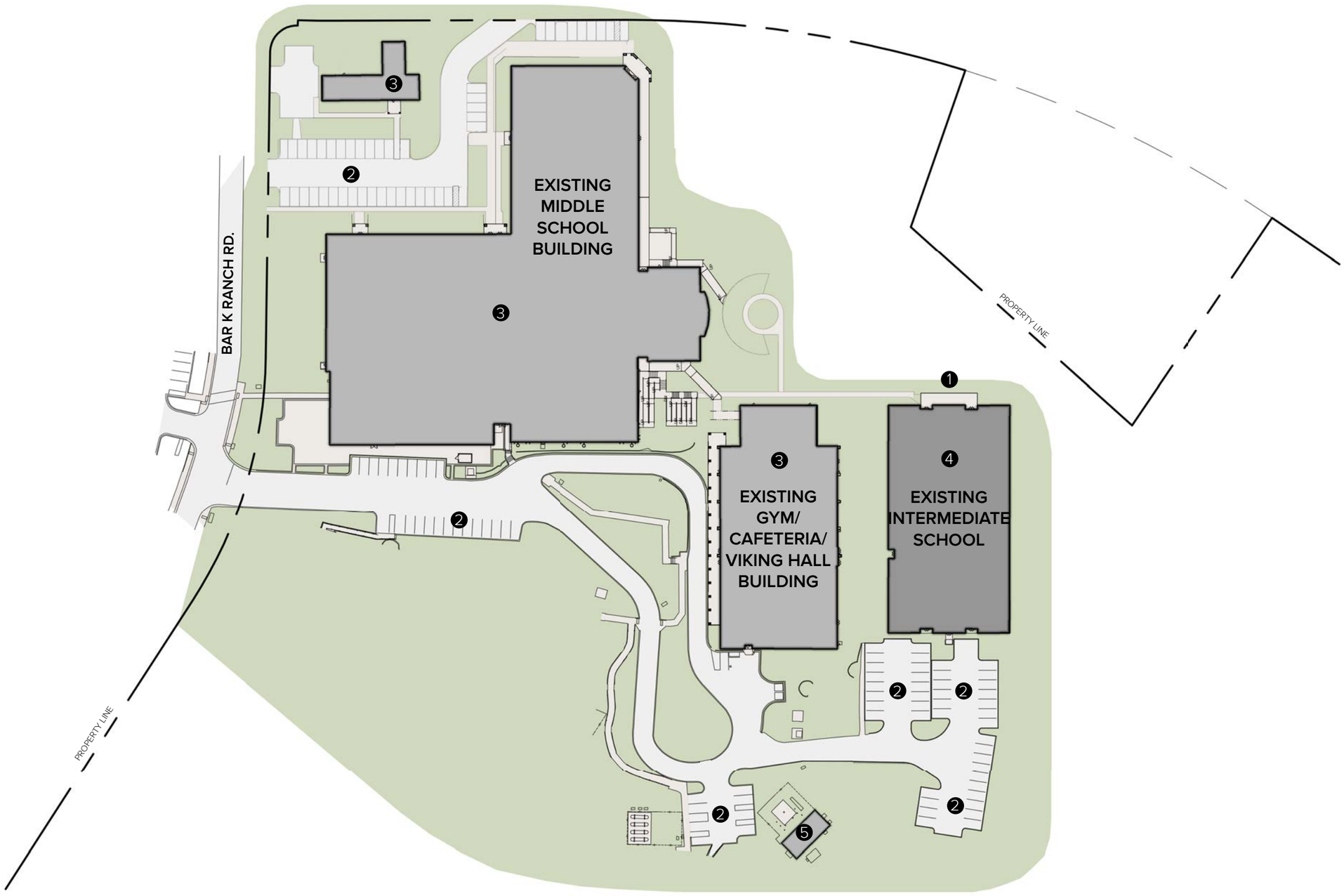
	# of spaces	Area per space (S.F.)	Net Area (S.F.)	Notes	Adjacencies
MAIN ADMINISTRATION					
Adminstration					
Vestibule/Waiting	1	100	100		at main front entry
Reception	1	400	400	open office	at main front entry
Adminstration Office Manager (Holly)	1	150	150	office	also Superintendent's Secretary - Visual to Reception
Superintendent	1	350	350	office	Direct access to or very near Board Room
Communications Director	1	200	200	office	Visual to Reception
Conference Room	1	240	240		Between Admin & Student Services - Don't go through offices to access
Storage/Future Office	1	150	150		
Student Services					
Deputy Superintendent (Suzy)	1	300	300	office	
Director of Student Support	1	200	200	office	
Federal/Special Programs	1	150	150	office	
Curriculum Director	1	200	200	office	
Elementary & Secondary Curriculum (2 people)	1	200	200	shared office	
PIEMS w/ Storage	1	250	250	office	
Storage/Future Office	1	150	150		
Business Office					
CFO	1	300	300	office	
Payables/Procurement	1	150	150	office	
Receivables/Warehouse Mgmt	1	150	150	office	
Payroll/Benefits/ Future HR Director	1	150	150	office	
Storage/Future Office	1	150	150		
Special Education					Locate in a suite with controlled access - Middle of the building, closer to Suzy
Office Manager/Reception (Heidi)	1	300	300	open office	Ind. 4-6 p. table
Director (Heather)	1	250	250	office	
LSSP	2	150	300	office	
LSSP Storage	1	150	150	office	
Diagnostician	2	150	300	office	
Storage	1	150	150	office	Next to Office Manager
504 Liason	1	150	150	office	
Storage/Future Office	2	150	300		
Technology					Anywhere in the building
Director	1	200	200	office	
Assistant Director	1	150	150	office	
Open Work Area w/ Campus Leads	1	400	400		3 small landing desks for Leads
Secure Storage	1	150	150		

Lago Vista ISD Program Cont.

Intermediate to Admin Conversion — Program of Spaces

	# of spaces	Area per space (S.F.)	Net Area (S.F.)	Notes	Adjacencies
MAIN ADMINISTRATION					
Other					
Break Room w/ restrooms & storage	1	580	580		existing to remain
DAEP	2	600	1200		locate in two small rooms at SW end of bldg
18+ classroom	1	600	600		locate in existing classroom at SE end of bldg
Board Room					
Board Room	1	2200	2200		
Conference/Training	1	1100	1100		Adjacent to Board Room
Lobby	1	400	400		Adjacent to Board Room, at 2nd front entry - It can be used as corridor space.
MAIN ADMINISTRATION - SUBTOTAL NET AREA			**12,820**		
GENERAL FACILITY SUPPORT					
District Storage	1	950	950		
General Storage	1	200	200		
Group Restroom	1	660	660		existing to remain
Custodial	1	100	100		existing to remain
Electrical	1	180	180		existing to remain
MDF	1	150	150		
GEN.FACILITY - SUBTOTAL NET AREA (sf)			**2,240**		

SUBTOTAL NET AREA (sf)		**15,060**
SUBTOTAL WALLS & CIRCULATION (sf)	**45%**	**6,777**
TOTAL GROSS AREA (sf)		**21,837**



COLOR LEGEND

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

1. Main Entry
2. Existing Parking To Remain
3. Existing Building to Remain
4. Renovated Existing Building
5. Existing Cooling Tower

Site Acres: 30.59

0 25 50 100 200

Huckabee

LAGO VISTA INTERMEDIATE SCHOOL TO ADMIN RENOVATION

OVERALL SITE

COLOR LEGEND

- Administration
- Administration Support
- Student Services
- Business Office
- Special Education
- Technology
- Academics
- Dinning
- Support

0 5 10 20 40

Huckabee

LAGO VISTA INTERMEDIATE SCHOOL TO ADMIN RENOVATION

FLOOR PLAN

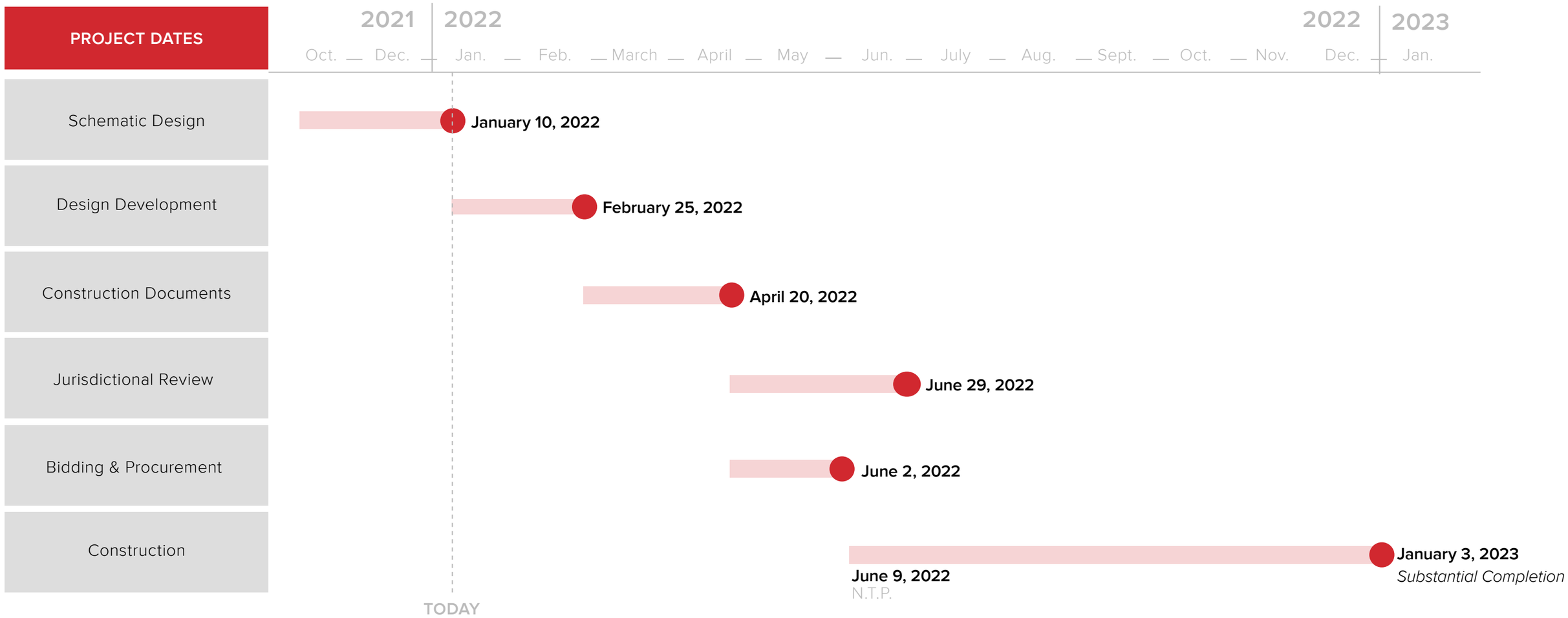
Huckabee

LAGO VISTA INTERMEDIATE SCHOOL TO ADMIN RENOVATION

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

RECEPTION PERSPECTIVE


Excellence In ALL We Do


PROJECT DATES
2021
2022
2022
2023
Oct.
Dec.
Jan.
Feb.
March
April
May
Jun.
July
Aug.
Sept.
Oct.
Nov.
Dec.
Jan.
Schematic Design
January 10, 2022
Design Development
February 25, 2022
Construction Documents
April 20, 2022
Jurisdictional Review
June 29, 2022
Bidding & Procurement
June 2, 2022
Construction
January 3, 2023
Substantial Completion
June 9, 2022
N.T.P.
TODAY

MORE THAN ARCHITECTS