Huckabee

LAGO VISTA HIGH SCHOOL

JULY 12, 2021

DESIGN DEVELOPMENT PRESENTATION

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LAGO VISTA INDEPENDENT SCHOOL DISTRICT
ADDITIONS & RENOVATIONS TO LAGO VISTA HIGH 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 High School project involves multiple additions and renovations around the existing campus. These new areas will create space for new programs, expand space for existing programs, and provide additional support spaces that are currently needed. The program for the project includes:

- New Career and Technology Education (CTE) Addition
- New Shop/Athletics Addition
- New Fine Arts Addition
- Cafeteria Expansion and acoustical improvements
- Renovation of the Front Entry and Offices
- Renovation to expand the Band Instrument Storage
- Renovation to create more Locker Rooms
- Replace failing door hardware

SITE

The project is located on the existing site of Lago Vista High School. The existing site is approx. 82 acres bounded by Lohman Ford Drive to the west, a fire station to the south, and undeveloped land to the north and east. The scope of this project does not change the vehicular flow of the campus. All of the additions will reside in open land space with the exception of the Shop/Athletics addition which will take over the existing outdoor shop yard. A new yard will be constructed to the north of the existing and new shops. The new yard will be gravel and with chainlink fencing similar to the existing yard. A trailer parking space off of the existing yard drive entry next to the propane tanks which will remain in place. 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

Starting at the existing front door, the vestibule and a portion of the corridor will be renovated to shift the reception area out and allow for space for a waiting area. The reception office will be directly off of the vestibule/waiting with a similar transaction window arrangement to what exists. Two additional new offices will be created in this area for administrative functions that interact heavily with parents and visitors. Off of the existing corridor adjacent to administration, the CTE addition will be constructed and house a new Health Science Lab and Culinary Lab. The campus does not currently have these two programs, so both are relatively small and considered starter labs, but are designed to allow for easy expansion if interest grows. At the Cafeteria, the existing storefront exterior wall will be pushed out to expand the dining area. Behind the existing Gyms and Shop, an addition will be constructed that infills the outdoor area between the Gyms and fills out most of the open area behind the building. This addition will include a new event entry, Concessions, Restrooms, Locker Room, Shop, Multipurpose Room, and Weight Room. The event entry will allow for ticket taking and spectator gathering serving both gyms and minimize the traffic currently circulating through the main Gym when events are going on at both gyms. This lobby space will have Concessions and Restrooms to provide the amenities needed for the full fan experience. The Girls Locker Room will add much needed space for the girls athletic program. The new Shop will be directly adjacent to the existing Shop and the existing overhead doors will remain in place allowing for the new space to function either as a separate shop or as an expansion of the current space. LVISD currently anticipates that the new space will house the building trades/ wood shop curriculum components. The Multipurpose Room will serve the dance and cheer programs. It is sized for a UIL competition cheer mat and will have wood gym flooring, mirrors, and tall vertical volume to create a practice space that is similar to the gym spaces in which they regularly perform. The Weight Room will provide additional workout space to free up the heavily utilized weight room at the fieldhouse. The room will have overhead doors leading outside where workouts can continue outdoors. The Fine Arts addition will house a musical space that will start out as a large ensemble room, but could be modified for a choir program when the district decides to start the program. The existing Theater Classroom will become the Stage Set Storage; no changes are required to the existing room for this change. The addition will create a new Black Box/Theater Classroom. It will also include Band Uniform Storage, Booster Storage, and support spaces. Additionally, the corridor of the addition will connect the back of house corridor behind the stage to the front of the PAC which was a request made by the Facilities Committee during bond planning. Moving the uniform and booster storage out of the Band Hall will allow for the Instrument Storage for that program to be dramatically increased and improved. An existing storage room behind the Auxiliary Gym will be converted into two additional Locker Rooms. Lastly, door hardware that is currently failing will be replaced throughout the campus.

The new additions will be separated off from the existing building by 2 hour fire walls. The geotechnical information on the project shows that the site has shallow hard limestone, so soil supported slabs on grade with shallow foundations at point loads are proposed for the foundations. In response to the current trends in the steel market, the vertical structure for all of the additions 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 exterior design of the additions will be an exercise in matching the existing architectural aesthetic. Matching stone, CMU, metal panels, and clear anodized aluminum windows/storefronts will be utilized along with employing the same strategy of masonry banding and accents. The Cafeteria entry will be dismantled and rebuilt in the adjusted location and the new event entry canopy will be designed with the same architectural character. All of the additions will have single-ply PVC low slope roofs.

The interior design for the areas that are being built and renovated employ a strategy of matching existing finishes with a few exceptions where the district would like to improve the aesthetic. Corridors will have a neutral colored porcelain tile wainscot up to about 5’-6” with a tackboard strip at the top of the tile. The paint scheme will match the existing neutral palette. Casework will match existing with the dark wood verticals and a grey countertops. Restrooms will match the existing blue and grey wall tile colors with epoxy flooring. Drinking fountain locations will get accents of the existing blue tile as well. Doors will be a wood veneer to match existing. Flooring in the corridors and Cafeteria will be stained concrete. The design and construction team

will make every effort to have the stained concrete be as close of a match as possible to the existing with minimal flaws in the aesthetic, but Huckabee has shared their concerns with LVISD that this may be a challenge. LVISD said they aware of those concerns and would still like to move forward with the stained concrete. The flooring in the Shop and Locker Rooms will be sealed concrete, in the Multipurpose room will be a wood gym floor, and in the Weight Room will be rubber tiles. The flooring in the administrative spaces will be carpet tiles. The flooring in all other spaces will be VCT to match existing. The Shop, Multipurpose Room, and Weight Room will have exposed structure in lieu of ceilings. Locker Rooms and restrooms will have gypsum board ceilings. All other areas of renovation will receive lay in ceiling grid and tile. Upgrading the finishes in the existing unrenovated areas of the building is not included in the project, but alternates are being considered for adding tile as a wainscot in the MAC and corridors throughout the campus for improved durability and/or replacing the carpet in the MAC if extra funds become available.

CIVIL NARRATIVE

The civil design for Lago Vista High 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.
- Due to the relatively flat slopes in adjacent lawn areas, new 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 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 has an existing stormwater management pond. It is not the intent to require any expansion of the pond due to increased area of impervious cover. The original pond was designed for future additional impervious cover. This will be checked as part of the design process.

LANDSCAPE NARRATIVE

The landscape & irrigation design for Lago Vista High 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.

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
Based on the Geotechnical information that has been provided to the design team, it is anticipated that the foundation system 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. The slab-on-grade will be placed over a 15 mil, Class A vapor retarder. Concrete grade beams will be located around the building perimeter, and under all interior and exterior load bearing walls. Perimeter grade beams are anticipated to be 18” wide x 24” deep with 20 plf of reinforcing. Drilled piers or spread footings will be present at isolated column locations. Piers may be assumed to be an average diameter of 24 inches and have an average depth of 20 feet.

Typical Roof Structure
For all buildings, the expected construction type is load bearing CMU walls with non-composite steel beams and/or open web joists and a metal deck. Intermediate non-composite steel beams bearing on steel columns is also expected to accommodate span requirements.

Lateral Stability
Lateral loads are transferred from the roof to the foundation by use of brace frames, moment frames, and CMU shear walls.

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

Drilled Piers	3,000 psi
Footings	3,000 psi
Grade Beams, Pilasters, and Pier Caps	3,000 psi
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
Anchor Rods	ASTM F1554, GR 36
Welding	E70XX per AWS D1.1

- Concrete Masonry Units (CMU)

Masonry Wall Compressive Strength (f’m)	1750 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.
American Concrete Institute (ACI) 318, Building Code Requirements for Structural Concrete.1
American Institute of Steel Construction (AISC) Specification for Structural Steel Buildings, AISC 360.1
Concrete Masonry: Building Code Requirements for Concrete Masonry Structures, American Concrete Institute, (ACI) 530.1

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:

Ceiling and Mechanical at Roof	15 psf
Roofing and Rigid Insulation	15 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	100 psf
Mechanical rooms	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 7-10 using the following anticipated parameters:

Site Class	C
Seismic Design Category	A
Seismic Importance Factor	1.25

MEP NARRATIVE

PROJECT DESCRIPTION

The following narrative depicts a brief description of the mechanical, electrical, plumbing and fire protection systems planned for the new Lago Vista ISD – High School Renovations and Additions. All systems shall be installed in accordance with the 2015 IBC and the latest edition of all applicable Codes as approved by State Fire Marshal, NFPA, and NEC. The project will be designed and constructed with systems and materials appropriate for private development and good engineering practice.

MECHANICAL SYSTEMS

Mechanical Systems
Mechanical system shall consist of new equipment for new additions. New additions shall have a separate unit and thermostat for individual control of each classroom/area. New units will be high-efficiency gas/electric DX units. All 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).
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
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. Special filter will be used in firing range equipment.

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.

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
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 (if applicable) 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.

Gas System
Propane gas is currently provided to the building from the site propane tanks. Piping will be extended as required to the new additions. The 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. This system will be extended to

the new additions. 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 transformers at the Main High School building and Performing Arts Center. MSB is located in Main Electric Room in Area B for the High 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 rooms or mezzanines to transform down to 208Y/120V for convenience receptacles and other small loads for all additions. Buildings already include surge suppression systems. Additional surge suppression units will be installed in the building at 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. Buildings already include power monitoring systems. Additional power monitoring equipment will be installed on new panels consistent with existing system to allow the same power monitoring groupings for HVAC, lighting, and receptacle loads in the power monitoring system for the Main Building and Performing Arts Building

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 mechanism, card reader located adjacent to 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: Controlled Entry Vestibule, New CTE Addition, Expand Cafeteria Dining, Expand Shop, Expand Girls Dressing Room + Weight Room, Enclose Aux. Gym Breezeway + Create Secure Entry, Expand Instrument Storage, Expand Band, Fine Arts Electives + Storage for Theater.

Scope of Work

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, Electric, 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. 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.

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 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. 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. 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

Conceptual TR Layout
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. 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:

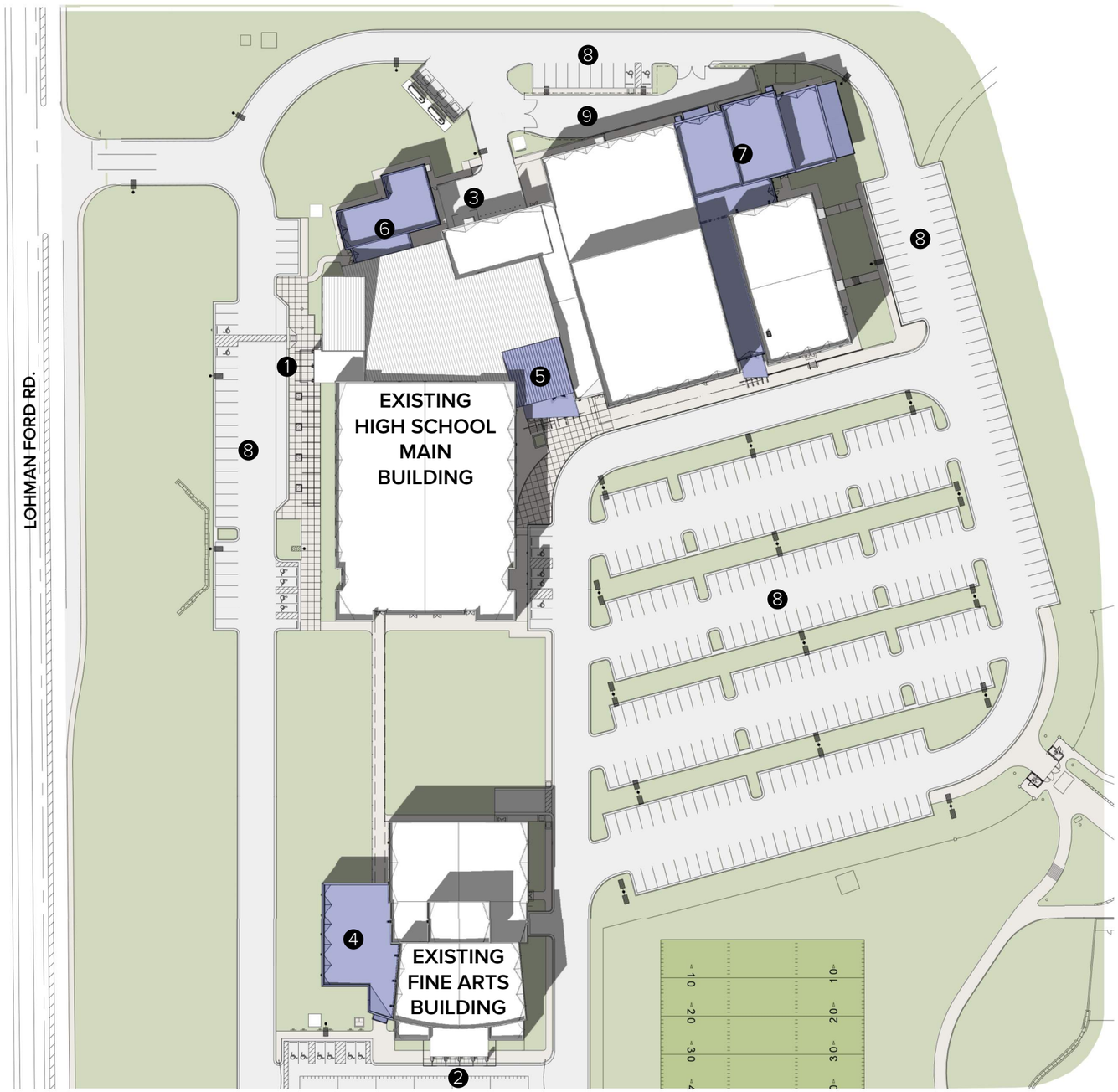
The TR must have adequate ventilation and be environmentally controlled 24 hours per day seven days per week. The thermostat to control the TR room environment shall be dedicated for the area and be located within the TR room. The TR room shall maintain a positive pressure with a minimum of one air change 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

High School Renovations	Program of Spaces				Capacity		
Goal Student Capacity: 0	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)
Administration							
Entrance							
Controlled Entry Vestibule			700	Renovation (700sf in bond)			
Office	3	150	450	incl. walls			
Waiting/Vestibule	1	250	250	existing vestibule renovation			
ATHLETIC SPACES							
Athletic Support							
Auxilliary Gym Locker Reconfiguration	1	900	900	Renovation (900sf in bond)			
INSTRUCTIONAL - SUBTOTAL NET AREA (sf)	**5**		**1,600**			**0**	**0**
Walls & Circulation (sf)		**0%**	**0**				
TOTAL GROSS AREA (sf)			**1,600**	Bond Max 1600 sf			

High School Additions	Program of Spaces				Capacity		
Goal Student Capacity: 90	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)
DINING							
Cafeteria							
Cafeteria Expansion	1	2,000	2,000	Addition (2,000sf in bond)			
CTE							
Instructional							
CTE Expansion			3,600	Addition (3,600sf in bond)			
Health Science Lab	1	1,250	1,250		25	25	23
Culinary Lab	1	1,250	1,250		25	25	23
Support	1	200	200				
Circulation/Walls	1	900	900				
ISS				Renovation (not in bond) (500sf)			
FINE ARTS							
Music							
Fine Arts Addition			5,000	Addition (5,000sf in bond)			
Elective (Choir?)	1	1,700	1,700		50	50	45
Jazz Band	1	750	750		15	15	14
Uniform Storage	1	250	250				
PAC Storage	1	550	550				
Booster Storage	1	100	100				
Support	1	500	500				
Circulation/Walls	1	1,150	1,150				
Instrument Storage	1	900	900	Renovation (900sf in bond)			
ATHLETIC/CTE SPACES							
Physical Education							
Gymnasium Infill			2,400	Addition (2,400sf in bond)			
Locker Room	1	600	600	(22) 18x18 ST or (14) 24x24 SF lockers			
Ticketing/Foyer/Circulation/Walls	1	1,400	1,400				
Support	1	400	400	Group Restrooms only			
Extracurricular Shop Expansion			8,000	Addition (8,000sf in bond)			
Shop	1	1,800	1,800	expand existing or create 2nd?	25	25	23
Weight Room	1	2,000	2,000				
Multipurpose Room	1	2,000	2,000	Dance/Cheer, wood floor, high ceiling			
Support	1	400	400	IDF/Elec			
Circulation/Walls	1	1,800	1,800				
INSTRUCTIONAL - SUBTOTAL NET AREA (sf)	**13**		**21,900**			**140**	**126**
Walls & Circulation (sf)		**0%**	**0**				
TOTAL GROSS AREA (sf)			**21,900**	Bond Max 21800 sf			

CAMPUS SUBTOTAL NET AREA (sf)	**18**		**23,500**	**CAPACITY TOTALS**		**140**	**126**
SUBTOTAL WALLS & CIRCULATION (sf)			**0**				
CAMPUS TOTAL GROSS AREA (sf)			**23,500**	**Bond Max 23,500**			



COLOR LEGEND

- Grass
- Paving
- Sidewalks
- Existing Building
- New Building

1. Main Entry - Main Building
2. Entry - Fine Arts Building
3. Kitchen & Culinary Delivery
4. Fine Arts Addition
5. Cafeteria Addition
6. Culinary Arts & Health Science Addition
7. Shop & Athletics Addition
8. Existing Parking
9. Shop Yard

Site Acres: 82.84

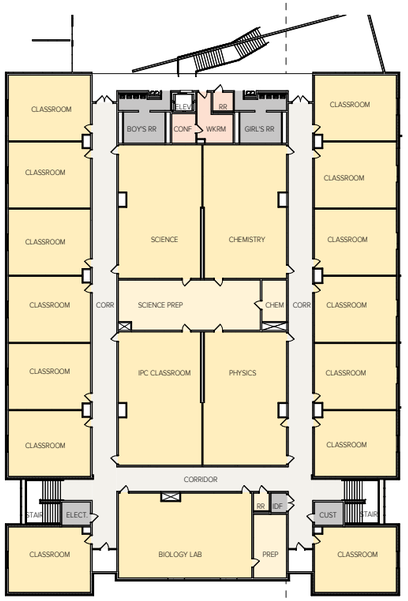
0 25 50 100 200

PARTIAL OVERALL SITE

04

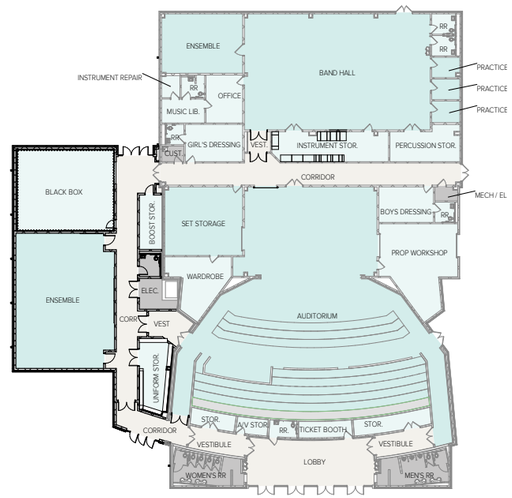
Huckabee

ADDITIONS & RENOVATIONS TO LAGO VISTA HIGH SCHOOL



SECOND FLOOR PLAN

FIRST FLOOR PLAN



FINE ARTS FLOOR PLAN

COLOR LEGEND

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

0 12.5 25 50 100

FIRST & SECOND FLOOR PLANS

05

Huckabee

ADDITIONS & RENOVATIONS TO LAGO VISTA HIGH SCHOOL

Huckabee

ADDITIONS & RENOVATIONS TO LAGO VISTA HIGH SCHOOL

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

CAFETERIA EXPANSION ENTRY PERSPECTIVE

Huckabee

ADDITIONS & RENOVATIONS TO LAGO VISTA HIGH SCHOOL

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

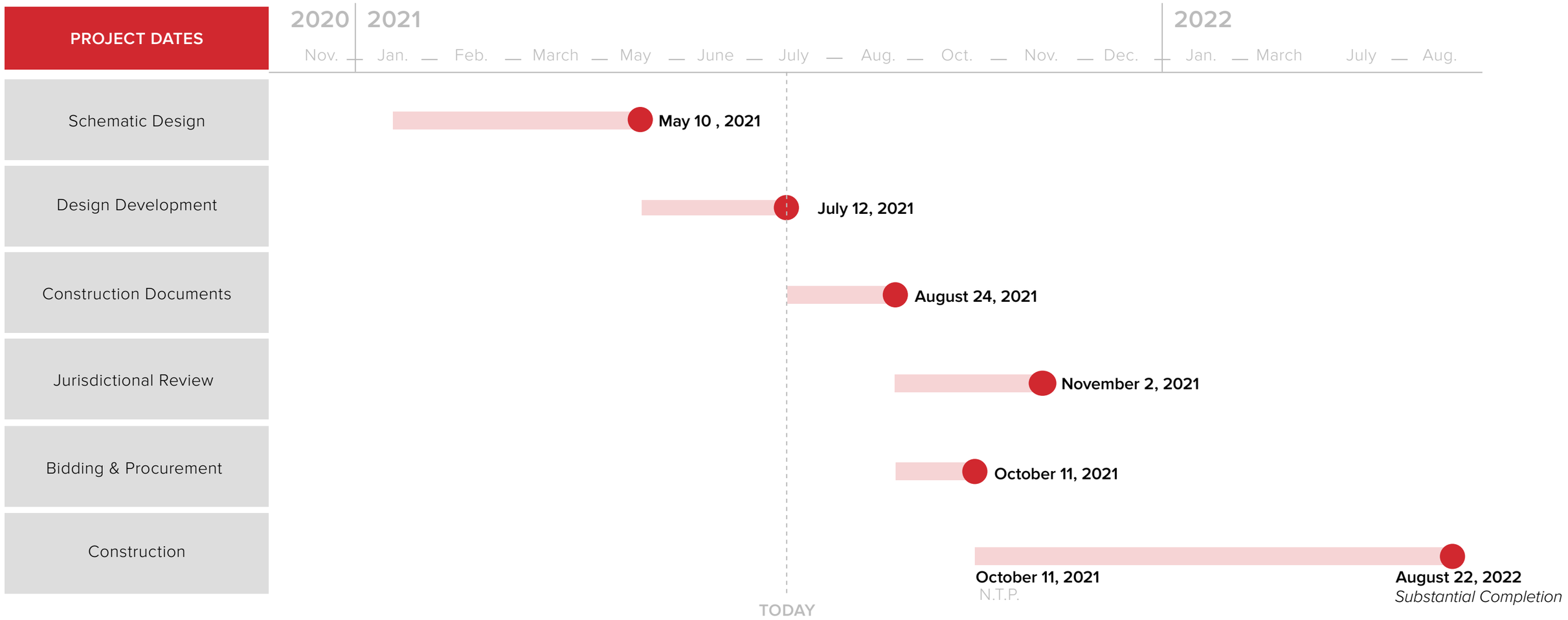
GYM ENTRY PERSPECTIVE

Huckabee

ADDITIONS & RENOVATIONS TO LAGO VISTA HIGH SCHOOL

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

FINE ARTS ADDITION PERSPECTIVE


PROJECT DATES
2020
2021
2022
Nov.
Jan.
Feb.
March
May
June
July
Aug.
Oct.
Nov.
Dec.
Jan.
March
July
Aug.
Schematic Design
Design Development
Construction Documents
Jurisdictional Review
Bidding & Procurement
Construction
May 10 , 2021
July 12, 2021
August 24, 2021
November 2, 2021
October 11, 2021
October 11, 2021
N.T.P.
August 22, 2022
Substantial Completion
TODAY

MORE THAN ARCHITECTS