



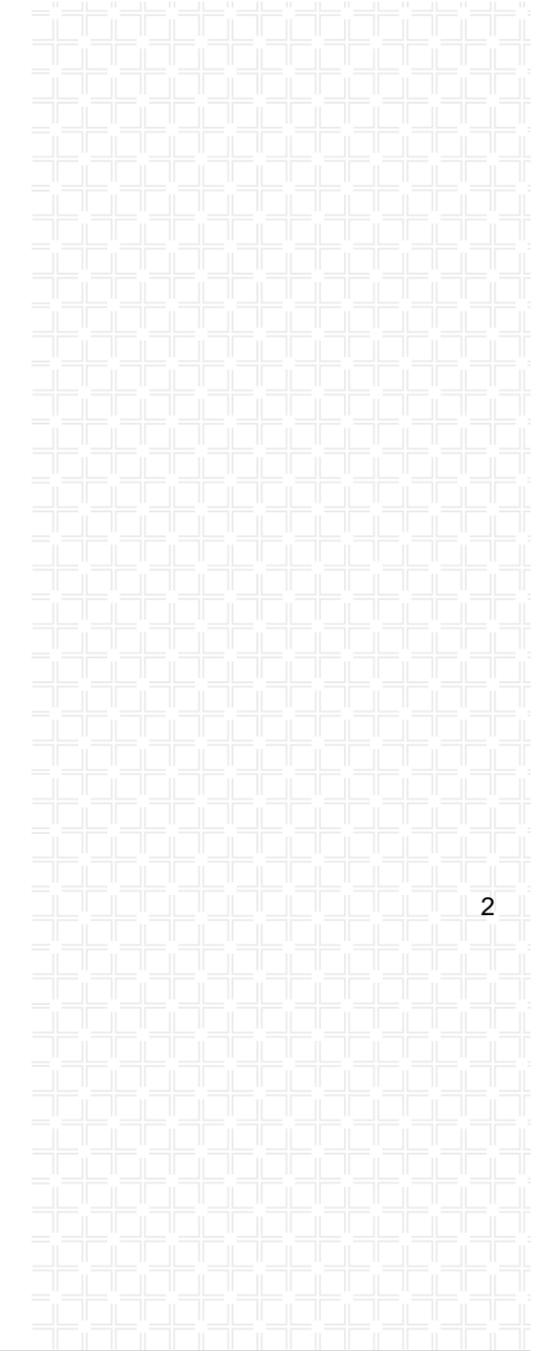
Agenda of Facilities Committee Meeting

The Board of Trustees Belton Independent School District

A Facilities Committee Meeting of the Board of Trustees of Belton Independent School District will be held November 10, 2021, beginning at 4:00 PM in the Big Red Room, 400 N. Wall Street, Belton, TX 76513. One or more trustees may participate via video conference.

The subjects to be discussed or considered or upon which any formal action may be taken are listed below. Items do not have to be taken in the same order as shown on this meeting notice.

- 1. Call to Order**
- 2. Public Comments**
- 3. Review and Discuss the Following Items:**
 - A. Elementary School Design Process Update 2
 - B. Bond Exploration Committee Update
- 4. Issues/Concerns for Future Agenda or Administrative Reports**
- 5. Adjourn**



BELTON INDEPENDENT SCHOOL DISTRICT
NEW BELTON ELEMENTARY SCHOOL
November 10, 2021

SCHEMATIC DESIGN PRESENTATION



ACKNOWLEDGMENTS 01

DESIGN PROCESS 02

NARRATIVE 03

PROGRAM 04

FLOOR PLAN 05

PRECEDENT IMAGES 06

MASSING 07



BELTON INDEPENDENT SCHOOL DISTRICT
NEW BELTON ELEMENTARY SCHOOL

Superintendent

Dr. Matt Smith

District Board Members

Jeff Norwood Board President

Ty Taggart Vice President

Manuel Alcozer Secretary

Suzanne M. McDonald Board Member

Janet Leigh Board Member

Chris Flor Board Member

Erin Bass Board Member

Project Design Team

Hannah Earle

Michael Boyle, AIA

Interior Designer, Huckabee

Principal, Huckabee

Mike Vermeeren, AIA

Mike Hall, AIA

Planning, Huckabee

Design Director, Huckabee

Julia Sherr, AIA

Project Leader / Architect, Huckabee

Student Design Team

Special thanks to the fourth, fifth and sixth grade students who contributed their ideas to this project

Elementary Design Team

Mandy Agee
Jennifer Aragon
Marcie Beck
David Bennett
Kim Christy-Anderson
Keith Cook
Elizabeth Cox
Kyla Cullens
Keri Dudley
Anna Fitzsimmons
Karley Free
Cassandra Garcia
Shanon Gish
Malinda Golden
Cecelia Johnson
Janet Jones
Janet Leigh
Deanna Lovesmith
Elizabeth Moore
Rose Morales

Michael Morgan
Mandy Mueller
Gabi Nino
Jennifer Ramirez
Pete Ramirez
April Robinson
Juan Rose
Jill Ross
Karen Rudolf
Todd Schiller
Daryl Schipper
Matt Smith
Rachel Starnes
Heather Stewart
Doug Taylor
Krystal Taylor
George Townsend
Heather Whiteley
Cary Zepernick
Keith Zeulke

Civil Engineering

Kimley - Horn and Associates, Inc
San Antonio, TX

Structural Engineering

Huckabee
Houston, TX

Landscape Architect

Kimley - Horn and Associates, Inc
San Antonio, TX

Technology/Security

Crux Solutions
Fort Worth, TX

MEP Engineering

Baird, Hampton & Brown
Fort Worth, TX

Food Service

Cosper & Associates
Bexar County, TX



BELTON INDEPENDENT SCHOOL DISTRICT NEW BELTON ELEMENTARY SCHOOL

Design Process

The Schematic Design phase is when Huckabee collects information and begins to translate that data into design solutions. Belton ISD has taken a progressive and inclusive approach to this design process that supports its values and beliefs and is consistent with its Journey of a Graduate profile. Huckabee has been fortunate to have the opportunity to work with staff at all levels, with parents and community members, and with an amazing group of BISD students.

On August 4, 2021, staff from multiple departments met with Huckabee to provide their vision for what should be included in the design of the new elementary school. Facilities, Fine Arts, Teaching and Learning, Safety and Security, Transportation, Food-service, Custodial/ Grounds, Technology and Special Programs were all represented throughout the day. These conversations were intended to supplement the separate efforts for developing educational specifications. The information collected from the meetings also served as a basis for grounding the subsequent community design meetings.

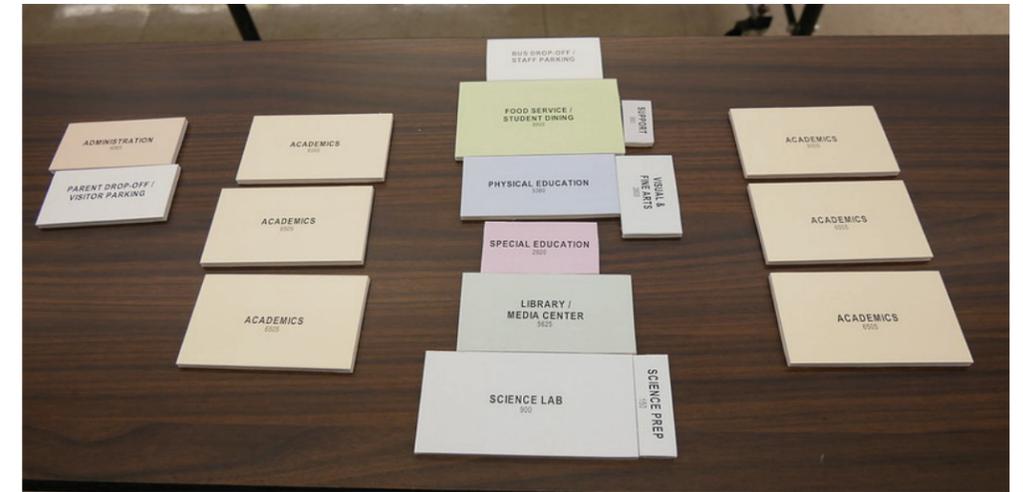


An elementary school design team was formed by the District to actively shape the design of the new school. Huckabee facilitated a series of 4 workshops in August and September that included initial visioning sessions and culminated in design charrettes (a design exercise where team members could propose actual layouts of the building). Each workshop was held at a different elementary school to allow the team to see the evolution of school design in the District. The design team was comprised of parents, community members and staff.

These meetings included:

- August 10, 2021 – Chisholm Trail Elementary: Committee Purpose, Overview of District Setting Documents, Campus Tour, Campus Values and Culture Activity, Empathy Diagramming Activity
- August 24, 2021 – Tarver Elementary: Yesterday-Today-Tomorrow Activity, Campus Tour, Precedent Images Activity,
- August 31, 2021 – Sparta Elementary: Read “If I Built a School,” School Essentials Activity, Design Charrette for Classroom Neighborhoods, Design Charrette for Building Layout
- September 7, 2021 – Charter Oak Elementary: Review, Discussion, and Vote on 4 Design Concepts, Small Group Sessions for Building Focus Areas

On October 13, 2021, Huckabee was privileged to work with a group of fourth, fifth and sixth grade students from schools across BISD. We started the day reading a book called “If I Built a School.” We talked about what architects and designers do and conveyed to the students that they would be designers for the day. The students embraced their charge to listen, to observe, and to develop solutions. Through a set of exercises, students shared what they would like to see in a new school and what they did not like. The group then toured Belton Early Childhood School and Belton New Tech High School at Waskow to see how furniture, technology, and design concepts could support teaching and learning. After a lunch break and a chance to rest their brains a bit, the students broke into small groups and used to-scale cut-outs of rooms to develop school designs. The students showed remarkable insight and maturity in their design solutions and preferences.





BELTON INDEPENDENT SCHOOL DISTRICT NEW BELTON ELEMENTARY SCHOOL

Architectural:

Huckabee was engaged to design a new elementary school prototype for 800 students that reflects the community's vision for new schools and supports the District's underlying foundational elements like Journey of a Graduate. The layout of the building is based on a collaborative design process that included staff, parents, community members and students.

Site Design

A site for the new school has not been selected, so a site analysis is not included at this time. However, the following items will be considered in the site layout:

- Parent/ Guardian Vehicle Stacking: Maximize queue length to remove as many vehicles from the street as possible
- Separation of bus, passenger vehicle, and pedestrian/ bicycle traffic
- Separate bus lane for Special Programs
- Good access to exterior spaces and development of those areas for instructional opportunities
- Good visibility around the site for safety (sight-lines from building to parking and approach, lighting, cameras)
- Fencing of play areas
- Analysis of sun exposure to reduce glare and heat coming through windows
- Analysis of utilities and locations and services
- Building design as a "kit of parts" that allows for one- or two-story designs for different sized sites and for reduction in the number of classrooms for smaller capacity campuses
- Overall building footprint is generally a square to facilitate different orientations on different sites
- Building and pavement placement relative to trees, slopes and other site features

Building Design

The building concept that emerged from both the community design team and the student groups includes grade-level neighborhoods organized around an open collaboration area. The groups also thought it was important to place shared spaces such as the library, gym and cafeteria at the geographic center of the building to provide more equitable access. Natural light and easy access to outdoor spaces were also identified as critical considerations. The design solution is comprised of a central core of shared spaces (administration, library, special programs resources, gym, and cafeteria) with 6 fingers of grade-level neighborhoods radiating out from the core. These fingers provide access to outdoor spaces and bring natural light to the classrooms. The organization of the school is straightforward and easy to navigate and the repetition of the wings makes it more efficient to construct.

Each grade level contains 6 classrooms, which are paired together

for team teaching. An alternate bid item includes operable walls between each pair to help support collaborative teaching. Classroom design includes shared storage closets and student cubbies. In-classroom restrooms are provided at Kindergarten. The grade-level collaboration area can be seen by each classroom, helping to ensure they can be monitored during individual or small group work. These areas will include technology and marker board surfaces similar to a classroom to support different types of instructional activities. Huckabee has explored different options for bringing natural light into the collaboration areas. Each neighborhood includes its own storage room, staff restroom and student restrooms. For after-hours events or security lock-downs, each grade-level neighborhood can be closed off from the central core.

Although the current design is a one-story school, the consistently-sized classrooms allows for 3 of the grade-levels to be stacked on top of each other to create a two-story concept. This "kit of parts" approach allows the prototype to be adapted to smaller or more constrained sites. In addition, if a campus has a smaller capacity need, two classrooms at the end of each neighborhood can be eliminated.

As the design progresses, we will be incorporating additional staff and student comments such as providing some reading nooks at the library and being generous with color. In the next design phase, we will meet again with staff to review and adjust the layout and explore more detailed needs. We also hope to find opportunities to continue to engage with the students so they can see the results of their efforts and vision.



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Structural:

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
-Slab-on-Void	4,000 psi
- Reinforcing Steel

-Deformed Bars (typical)	ASTM A615, Grade 60
-Post-tensioning tendons (1/2" dia., 7-wire strand)	ASTMA416 (270 ksi)
- Structural Steel

-Wide-Flange Shapes	ASTM A992
-Steel Angles, Channels, Plates	ASTM A36
-Steel Tubes (HSS)	ASTM A500, GR B (46 ksi)
-Steel Pipe	ASTM A53, GR B or A500, GR B
-Field Bolted Connections	ASTM A325 Bolts
-Anchor Rods	ASTM F1554, GR 36
-Welding	E70XX per AWS D1.1
- Steel Roof Deck
 1. 1.5" deep, 20 GA, G90 Galvanized finish where to receive cementitious fireproofing.
 2. 1.5" deep, 20 GA, Ungalvanized with coat of manufacturer's standard primer paint over cleaned and phosphatized substrate where no cementitious fireproofing applied.
 3. 6" deep 18 GA or 20 GA, Ungalvanized with coat of manufacturer's standard primer paint over cleaned and phosphatized substrate where no cementitious fireproofing applied.
- Concrete Masonry Units (CMU)

-Masonry Wall Compressive Strength (f'm)	1350 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 B
- Seismic Design Category A
- Seismic Importance Factor 1.25
- Response Modification Factor 2

Building Superstructure

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

• Foundation

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

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

Should a structurally suspended system be used, it is anticipated that the ground floor will consist of an 8" structural slab over carton void forms with 10 psf of reinforcing. The void depth is estimated to be between 8" to 12". The slab will be placed over a 15 mil, Class A vapor retarder. Perimeter grade beams are anticipated to be 18" wide x 24" deep with 30 plf of reinforcing. Grade beams will be isolated from the subgrade with 8" to 12" deep carton void forms, and soil retainers each side to prevent soil from entering the void space.

• Typical Roof Structure

For all buildings, the roof construction type is steel framing with open web joists and a metal deck with intermediate non-composite steel beams bearing on steel columns or load bearing CMU walls, as needed to accommodate span requirements. We will additionally include a conversion table to convert open web steel joists to steel beams at the Contractor's option for cost and schedule purposes.

Lateral Stability

The lateral stability of the building will be provided with different forms of steel bracing such as "X" and "Chevron" braces or CMU shear walls. Where braces or CMU shear walls will not work with the building layout moment frames will be used.



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Mechanical Summary:

The total building area is 98,000 SF. The anticipated total cooling load for the building will be approximately 325-tons. There are two design options for mechanical systems which are outlined below.

Mechanical Equipment

Option 1 – Geothermal Water Source Heat-pumps - Rooftop Units (98,000 sf):

- High Efficiency, single-zone or multi-zone, variable volume rooftop units with geothermal water-source heat pumps – installed on the roof in various locations around the building.
- Rooftop units will be located on the roof to provide conditioned air within the building.
 - Separate units will be provided to serve larger spaces such as the classrooms, gyms and cafeteria. These units shall be treated as single-zone, variable air volume (VAV) units and utilize geothermal water-source heat pumps for cooling and heating.
 - Multi-zone variable air volume units with geothermal water-source heat pumps for cooling and heating will be provided to serve the offices and ancillary spaces divided into thermal zones. These units will have terminal units with electric reheat.
 - Miscellaneous electrical and IT spaces will be served by stand-alone wall mounted, ductless split system. The associated condensing units will be located on the roof.
- Geothermal System
 - The geothermal system will consist of well fields outside the building, drilled 250 feet deep.
 - We anticipate 360 wells will be required to meet the cooling load requirements.
 - A 1” pipe loop will be contained in each well, sealed with high conductivity grout.
 - The wells are spaced 20 feet apart for heat dispersion.
 - Well piping is connected to a 4” supply and return main, which is routed into the building.
 - The piping inside the building is routed in a loop with a branch to each rooftop heat pump.
 - Each rooftop heat pump will have a dedicated condenser water pump to circulate water through the geothermal system.
 - All geothermal piping inside and outside the building shall be SDR 11 polyethylene with butt fusion joints, and shall have a 50-year warranty.
- A desuperheater shall be provided on the kitchen rooftop unit to preheat domestic water and hydronic heating water.

- The basis of design geothermal rooftop unit manufacturer shall be Aaon.
- Roof mounted, centrifugal down-blast exhaust fans shall be provided for the restrooms; Greenheck or Cook.

Option 2 – Variable Refrigerant Flow (VRF):

- High Efficiency, single-zone Fan Coil Units shall be provided for each classroom.
- High Efficiency packaged DX RTUs shall be provided for the Kitchen, Gym and other large spaces.
- Ceiling cassettes shall be used in each Office.
- Outside air will be delivered to the VRF system via roof mounted DOAS units. The DOAS units shall be connected to the VRF condensers. The DOAS units shall have gas heating coils, hot gas reheat coils and DX cooling coils. The leaving conditions off the unit shall be room neutral air. The DOAS units shall be provide with energy recovery wheels. The building exhaust shall be routed through these units. Separate restroom exhaust fans will not be required.
- The basis of design for the VRF FCUs and Heat Pumps shall be LG. DOAS Units and RTUs shall be Aaon and JCI.

Make-Up Air Handling Unit (for kitchen hoods):

- Geothermal water source heat pump, DX cooling, gas heating, VAV.
- IECC-2021 states that the conditioned supply air delivered to the space shall not exceed the greater of the following:
 - The ventilation rate required to meet the space heating or cooling load.
 - The hood exhaust flow minus the available transfer air from adjacent spaces. Available transfer air is the portion of outdoor ventilation air not required to satisfy other exhaust needs, such as restrooms, and not required to maintain pressurization of adjacent spaces.

Dishwasher Exhaust Fan:

- Roof mounted, constant volume, centrifugal up-blast fan.

Grease Exhaust Fan:

- Kitchen – One fan per hood. Fan shall be a roof mounted, VAV, centrifugal up-blast with vented curb.

General Mechanical Information

- Supply air duct mains will utilize long radius elbows when possible, and rectangular elbows with turning vanes where required. Ductwork sizing will comply with ASHRAE’s advanced energy design guide, 1,600 fpm for medium pressure ductwork and 0.04”/100-ft for low pressure ductwork.

- A plenum return shall be utilized with duct risers routed from the plenum space to the associated AHUs. The return air ductwork will be sized for a pressure loss not to exceed 0.04”/100-ft.
- Ductwork shall be G60 or better galvanized steel, constructed to SMACNA requirements for the specific sizes and systems. Ductwork shall be lined with 1-1/2” thick, R-6 acoustic liner (closed foam cellular glass, fiberglass is not acceptable) for the first 20’-0” from the RTUs. Beyond 20’-0” from the RTUs, ductwork will be wrapped with 2” thick R-6 flexible fiberglass insulation.
 - Ductwork serving the dishwasher exhaust system shall be stainless steel.
- Rooftop and fan coil units, ductwork and equipment will be sized to accommodate air velocities and noise criteria as specified by the acoustic consultant. Vibration isolation curbs with spring isolators will be provided for each RTU serving acoustically sensitive spaces. RTUs above sound critical spaces shall be installed on 4” tall concrete pads, have internal vibration isolation and a fully ducted return air system.
- Cross talk attenuators equal to Price TLRD will be provided for return air from each conference room and any space deemed to be sound sensitive.
- Bi-Polar Ionization shall be used on each unit to reduce the volume of outside air required.
- Each rooftop unit shall:
 - Contain variable speed compressors.
 - Utilize variable speed supply fans.
 1. Individual fan motor size shall not exceed 7.5-HP.
 - The units will be selected to meet ASHRAE Standard 62.1-2016 O/A requirements and provided with full economizers to comply with the 2021 International Energy Conservation Code (IECC).
 1. Outside air and relief air shall be made through the unit.
- New MDF room.
 - IT spaces will be provided with cooling-only units.
 - A new 2.5-ton DX ductless split system unit shall be specified.
- New Electrical/IDF rooms.
 - IT spaces will be provided with cooling-only units.
 - A new 1.5-ton DX ductless split system unit shall be specified for each Electric / IT room.



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- Fire Riser Room
 - A ceiling mounted, electric unit heater will provide heat to the fire riser room for freeze protection purposes.
- Air devices will be as follows:
 - Supply Air:
 1. Lay-in ceilings: 12"x12" or 24"x24" plaque face diffusers, equal to Price SPD series.
 2. Gyp. board-mounted: 4' long linear slot diffusers with square plenum, equal to Price SDS series.
 3. Exposed ductwork will utilize spiral duct grilles equal to Price HCD or SDG series.
 - Return Air Grilles:
 1. All locations: 24"x24" Perforated Face grilles, equal to Price PDDR series. Provide all return air grilles in sound sensitive spaces with return air canopies equal to Price RAC.
 - Exhaust Registers:
 1. All locations: 12"x12" or 24"x24" Perforated Face Registers (same as return grilles except with opposed blade dampers), equal to Price PDDR series.
 - Air devices in high humidity areas (kitchen, restrooms with a shower, etc):
 1. All aluminum, steel is not approved.
- Flexible ductwork will be allowed for run-outs to individual air devices. Flex duct run-outs will be limited to 6'-0" maximum stretched length.
- Any required fire dampers shall be Type B or Type C multi-leaf, 100% free area, UL listed with 165-degree fusible links by Ruskin or approved equal. The damper blades shall be fully out of the air-stream.
- All new equipment and piping will be specified to have plastic engraved identification tags.
- Testing, Adjusting and Balancing shall be by an independent AABC contractor.

HVAC Control Systems

- HVAC controls will be of the DDC type, utilizing BACnet Protocol and have a web-based front-end with remote access.
- Provide new controls for all new equipment.

Plumbing Equipment and Piping:

- The main gas service shall be provided by one point of connection at the street and routed to the building.
- A new 3" domestic water service shall be provided from the City Main to serve the building. This domestic water service shall be provided with a full-sized Reduced-Pressure-Zone type back-flow preventer (RPZ) installed within a mechanical room and shall be distributed to each fixture and domestic water heater within the building.
- Domestic hot water shall be provided via tank type water heaters using natural gas.
 - WH-1 (Kitchen)
 - A.O. Smith Commercial Gas Water Heater Cyclone LV (Large Volume)
 - Model #BTHL-150A, 250 gallons, Recovery = 218 gph, 80 degree rise
 - WH-2 and WH-3 (Remaining building plumbing fixtures)
 - A.O. Smith Commercial Gas Water Heater Cyclone LV (Large Volume)
 - Model #BTHL-150A, 250 gallons, Recovery = 218 gph, 80 degree rise
 - WH-4 (Storm Shelter Restrooms)
 - A.O. Smith Commercial Electric Water Heater
 - Model #DEL-30, 30 gallons, Recovery = 25 gph, 80 degree rise
- A new grease interceptor for the kitchen shall be specified as Park-USA model GT-5000 or equal.
- The domestic hot water system shall incorporate a stainless-steel circulation pump equal to Armstrong Astro 2,250 series circulators, 120V/1PH.
- Domestic water shall be Type 'L' copper pipe with wrought soldered fittings and will be routed above the ceiling. The

piping, fittings, valves, etc., shall be rated for 125 psig.

- Above grade waste piping shall be hubless service weight cast iron with heavy CISPI clamp fittings. Below grade waste piping shall be service weight hub and spigot cast iron.
- Natural gas piping shall be schedule 40 black steel with screwed joints for piping 2" and smaller, welded joints for piping over 2".

General Plumbing Information

- A hot water return loop shall be provided from each restroom chase such that the distance from the hot water return loop and the plumbing fixture does not exceed 6-in.
- Floor drains will be provided in all restrooms, janitor's closets, fire riser room, and mechanical rooms.
- A new domestic hot water loop shall be extended from each hot water heater to serve all spaces. Each domestic water heater and associated domestic hot water circulation pump will be located in a mechanical room or custodial space.
- Waste will be grouped together and routed to the exterior of the building in multiple locations.
- A gravity storm drainage system will be provided to take water from the flat roofs and sloped roofs to below grade for connection to the underground storm drainage system. Overflow drains will discharge onto grade with a downspout nozzle.
- A 4" perforated PVC subsoil system shall be provided beneath the new floor slab and along perimeter grade beams as identified by the geotechnical engineer.
- All plumbing systems (equipment and piping) will be specified to have identification tags.
- All domestic water piping will be specified to have 1" thick fiberglass insulation with all service jacket. Valve tag schedules will also be included on this project.
- Each restroom domestic water utility will be isolated with shutoff ball valves.
- Plumbing fixtures will be selected to meet the Texas State Water Conservation Standards. We anticipate specifying ultra-high efficiency flow flush valves for all water closets (1.28 gpf) and urinals (0.125 gpf) and low flow lavatories faucets (0.5 gpm) will be specified. Water closet and urinal flush valves shall be sensor operated, battery powered, Sloan (Retro) Royal III.
- Typically, the water closets and urinals will be of the wall hung type (American Standard or equal) with low water consumption flush valves (Sloan Royal or equal), the lavatories will be



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wall-hung or counter-mounted as is appropriate (American Standard or equal), the mop sinks will be floor-mounted terrazzo type (Fiat), and the electric water coolers will be of the bi-level type with a bottle filler, and of all stainless steel construction (by Sunroc or Oasis only). Sinks will be stainless steel, by Elkay or approved equal.

- Plumbing fixtures will be selected for TAS compliance and accessibility as directed for each location.
- All restroom fixtures will be touch free battery operated.
- Water hammer arrestors will be provided at all groups of fixtures, and at any other locations where fast-closing valves are present (air chambers are not acceptable).
- Trap primers will be provided for all floor drains.
- PVC piping above grade is not approved.

Fire Protection

- All of the buildings will be provided with a fire suppression system with both light and ordinary hazard, depending on the space types. We anticipate two (2) new 6" fire risers to serve the spaces.
- All threaded piping shall be schedule 40 black steel. The minimum thin wall piping allowed shall be schedule 30 for pipe up to 2" and schedule 10 for pipe over 2". All thin wall piping shall be joined using rolled grooves with couplings. If allowed by local codes, other types of piping may be used, but only those listed for fire sprinkler service.
- Sprinkler heads in finished ceilings shall be fully-recessed concealed flush type with cover plates to match the ceiling. Cover plate color shall be selected by the Architect from the manufacturer's standard color stock. Sprinkler heads in areas without ceilings shall be upright pendant type.
- Sprinkler heads will be considered as an integral part of the ceiling design. Locations of all sprinkler heads shall be coordinated with light fixtures, speakers, ceiling grids, joints, and reveals, and other ceiling elements.
- The heads shall be temperature rated for the locations in which they are installed.
- Automatic sprinkler protection is required throughout every interior accessible space unless otherwise approved by the authority having jurisdiction. The above ground, wet fire protection system piping shall be UL listed.

Electrical Systems

Power

We propose a new pad mounted utility transformer and meter to be installed on the property to serve the new elementary school building.

The utility company will provide the new transformer with a 277/480V, 3 phase, 4 wire secondary. The secondary feeders from the utility transformer shall run underground and terminate into a single 3,000 amp, 480/277V, 3PH, 4W, main switchboards 'MSB1' (location to be determined). "MSB1" will contain a single 3,000 amp main circuit breaker equipped with code required energy reduction and ground fault protection capabilities along with an integral surge protection device.

We anticipate that "MSB1" will have feeder circuit breakers serving the following loads:

- 1-600 amp, 3 pole: Electric Room (Kindergarten/Administration Wing)
- 1-600 amp, 3 pole: Electric Room (1st Grade Wing)
- 1-600 amp, 3 pole: Electric Room (4th Grade Wing)
- 1-600 amp, 3 pole: Electric Room (5th Grade/Library Wing)
- 1-800 amp, 3 pole: Kitchen Power
- 1-600 amp, 3 pole: Electric Room (Gym/Music Wing)
- Each of the electric rooms in Kindergarten, 1st, 4th, 5th, and Gym/Music Wings shall contain a 600 amp, 480/277V, 3PH, 4W distribution panel with circuit breakers to serve the following loads:
 - One 100 amp circuit breaker: 100 amp, 277/480V, 3PH, 4W panel to serve lighting loads.
 - One 175 amp circuit breaker: 480V-120/208V, 112.5 kVA step down transformer with 120/208V, 3PH, 4W panel(s) to serve general power loads.
 - One 70 amp circuit breaker: 480V-120/208V, 45 kVA, K-13 rated step down transformer with 120/208V, 3PH, 4W panel(s) with 200% neutrals and isolated grounds for computer power systems.
 - Additional 15, 20, 30, 40 amp circuit breakers: Mechanical units.
- An electric room will need to be located near the Kitchen and shall contain an 800 amp, 480/277V, 3PH, 4W distribution panel with circuit breakers to serve the following loads:

- One 600 amp circuit breaker: 600 amp, 277/480V, 3PH, 4W panel to serve Kitchen loads.
- One 175 amp circuit breaker: 480V-120/208V, 112.5 kVA step down transformer with 120/208V, 3PH, 4W panel(s) to serve Kitchen loads.
- Additional panel(s) with a shunt trip main circuit breaker(s) will serve all equipment installed under hoods.

- All panel-boards shall be sized to include 15% spare breaker space capacity for future expansion.
- Series connected ratings shall not be used in determining interrupting rating for new equipment installed for this project.

Lighting

- The lighting system shall be designed to maintain foot-candle levels set forth by the Illumination Engineering Society (IES) handbook and to optimize energy efficiency. The overall lighting control system shall be designed to exceed the requirements of the 2015 IECC.
- General lighting in classrooms, and music arts spaces will be accomplished using 2'x4' flat panel LED fixtures with smooth white frosted acrylic lenses with a 4000K color temperature. General lighting in the corridors and office spaces will be accomplished using 2'x2' flat panel LED fixtures.
- General lighting in the dining, collab./flex spaces and all associated corridors will utilize a combination of pendant/recessed linear LED fixtures and decorative pendant LED fixtures.
- General lighting in gyms will be accomplished using impact resistant high bay type LED fixtures with a 4000K color temperature.
- Restrooms and adjacent vestibules will utilize 6" diameter recessed LED fixtures.
- Storage rooms and mechanical/electrical/technology spaces will utilize 4' LED strip fixtures either chain hung, or surface mounted depending on the ceiling type.
- Emergency egress lighting will be powered from integral battery packs installed in the general lighting fixtures for egress illumination. Exit signs will be back-lit LED type.
- Exterior lighting shall consist of building mounted LED wall packs as well as linear LED fixtures in the canopies. The lighting system shall be designed to maintain foot-candle levels set forth by the Illumination Engineering Society (IES) handbook and to optimize energy efficiency.



BELTON INDEPENDENT SCHOOL DISTRICT

NEW BELTON ELEMENTARY SCHOOL

Lighting Controls Requirements

- The lighting control system is to be a distributed solution requiring a local room controller interconnected with distributed low voltage devices for control of room or area as described below. ESI Venture's (Touché Lighting Control) Room Manager Control System – Basis of Design
- All spaces shall comply with 2015 IECC lighting controls requirements and shall include multiple levels of lighting controls
- An architectural dimming system with occupancy/vacancy sensor(s), and AV integration will be provided in presentation rooms (classrooms, collab./flex spaces, dining, platform, and library, etc.).
- Vacancy sensor switching will be utilized in non-occupied areas (storage rooms, janitor closets, etc.) and occupancy sensor switching will be utilized in occupied areas (public corridors, stairways, restrooms, primary entrance lobbies, etc.) in compliance with 2015 IECC.
- All lighting installed with a daylight zone shall be controlled by an automatic daylight responsive control in compliance with 2015 IECC.
- Dimming switches and ceiling mounted vacancy sensors will be used in classrooms and office areas in compliance with 2015 IECC requirements. Classrooms shall be provided with zoned control for greater flexibility.
- Provide area lighting of the parking lots using pole mounted LED fixtures controlled by motion sensor, photocell, and/or timeclock in compliance with 2015 IECC.

Tornado Shelter Emergency Power & Lighting Requirements

- All power for essential lighting and mechanical ventilation shall be provided by an emergency power source (Universal Central Battery System with Auto Load Diagnostics) in addition to the normal power provided for this space.
- Battery Cabinets located within the tornado shelter space shall be dedicated to the ventilation supply fans in the tornado shelter.
- Essential lighting within the tornado shelter shall be comprised of vandal resistant, wet location rated, bug-eye type fixtures installed at a minimum of 8'-0" above finished floor to provide 2 foot-candle average on the path of egress. Fixtures will contain an integral battery pack to provide power for 120 minutes in the storm shelter.

- All openings, including all existing openings, through the shelter envelope shall be protected in accordance with ICC 500 section 306.3.

Conductors

- Conductors shall be made of soft drawn-annealed copper with conductivity not less than that of 98 percent pure copper with THHN/THWN-2 insulation. Conductors #12 gauge and smaller shall be stranded.
- Armored cable type MC may be used in accessible ceiling spaces in lengths not exceeding six feet as allowed by local building codes. Conductors #12 gauge and smaller in MC cable shall be stranded.

Conduits

Feeder Circuits:

- All feeder conductors shall be sized for a maximum voltage drop of 3% at design load.
- Utilize rigid metal conduits in concrete slabs, in damp and wet locations, and where exposed in mechanical and electrical equipment rooms and crawl spaces.
- Electrical metallic tubing with compression fittings where concealed by building structure.
- Exterior to the building and below grade, bury Schedule 40 nonmetallic conduit. Exterior to the building and above grade, use rigid steel conduit and for elbows and bends greater than 30 degrees regardless of whether conduit is above or below grade. Wrap buried metal conduit portions with .020-inch thick self-sticking, anti-corrosive PVC pipe wrapping tape. Install exterior conduits a minimum of 24" below finished grade. The use of 90-degree bends shall be allowed, up to 270 degrees total.

Branch Circuits:

- All branch circuit conductors shall be sized for a maximum voltage drop of 2% at design load.
- Utilize rigid metal conduit in concrete slabs and in damp and wet locations.
- Electrical metallic tubing with compression fittings where concealed by building structure and where exposed in mechanical and electrical equipment rooms.
- EMT shall be used on branch circuits to allow future growth flexibility.
- 3/4" trade size conduit minimum shall be used.

- Exterior to the building and below grade, bury Schedule 40 nonmetallic conduit. Exterior to the building and above grade, use rigid steel conduit and for elbows and bends greater than 30 degrees regardless of whether conduit is above or below grade. Wrap buried metal conduit portions with .020-inch thick self-sticking, anti-corrosive PVC pipe wrapping tape. Install exterior conduits a minimum of 18" below finished grade. The use of 90-degree bends shall be allowed, up to 270 degrees total.

Wiring Devices

- Switches: Line voltage: Equivalent to Hubbell HBL 1221. Low voltage: Watt Stopper or equivalent.
- General Purpose Receptacles: Decora type equivalent to Hubbell HBL 2162.
- GFI Receptacles: GFI receptacles will be provided near sinks, janitor closets, mechanical rooms, and other wet locations. Equivalent to Hubbell GFR5262SG with Hubbell #WP26E, cast aluminum, extra-heavy duty, while-in-use cover where installed outdoors.
- Isolated Ground Receptacles - Most electronic equipment (computer, printer, etc.) will be served by a 120V circuit consisting of a separate phase wire, dedicated neutral and ground conductors. This circuit will originate in a panel board with an isolated ground bus. The circuit will terminate at an isolated ground receptacle device bearing an orange triangle.
- Interior Coverplates: Nylon

Disconnect Switches

- Heavy-duty, quick make, quick break, three-pole switches. Use NEMA 1 enclosures where installed indoors. Use NEMA 3R for outdoor enclosures.

Lighting Protection System

- A lighting protection system is not included in the scope of work for this building.

Signal Systems

Telecommunications

- Raceways and outlet boxes shall be provided to support the installation of the data and telecommunication cabling included by other divisions of work in this project.



BELTON INDEPENDENT SCHOOL DISTRICT NEW BELTON ELEMENTARY SCHOOL

- Provide a one (1) inch conduit from all new telephone/data outlets to the accessible ceiling space nearest to the room where it is located.

Fire Alarm Systems

- Provide the installation, programming, and configuration of a complete digital protocol for a voice annunciated, analog addressable, fire alarm system. This system shall include, but not be limited to, system cabinet, power supply, built in Signaling Line Circuit (SLC), 80 character LCD annunciator, six programmable "Flexput" circuits, built in dual line Digital Communicator associated peripheral devices, batteries, wiring, conduit and other relevant components and accessories required to furnish a complete and operational Life Safety System, Silent Knight 6820EVS or equivalent.

Security System

- Raceways, outlet boxes and power connections will be provided to support the security system as included by other divisions of work in this project.
- Raceways, outlet boxes and power connections will be provided to support the installation of new card readers and security cameras as included by other divisions of work in this project.

A/V

- Raceways, outlet boxes and power connections will be provided to support the installation of the new A/V systems as included by other divisions of work in this project.

Food Services

The kitchen facility shall be sized accordingly to provide adequate space and clearance as required to prepare and serve the maximum student population anticipated at this campus. The expected service format for this facility shall consist of traditional straight-line serving counters equipped with the required holding components for serving the meals at proper food safety requirements as required per HACCP regulations. The quantity of serving counters required and/or recommended will be dependent upon the duration and quantity of serving periods, time allowed for each serving period, and the capacity of seating in the dining space. The kitchen shall include adequate space for the following areas:

1. A serving area sized accordingly for as many as two serving lines or as required depending upon the serving format as required by

the district.

2. A large dry storage area for storing products that are to be delivered once weekly.
3. A walk-in cooler/freezer assembly sized accordingly to accommodate maximum storage for the anticipated delivery schedules.
4. Preparation and staging area equipped with a small prep sink, hand sinks, ice machine, and worktables for staging and serving of the meals.
5. The anticipated cooking appliances required shall consist of (1) 40-gallon braising pan, (1) 30 gallon braising pan, (2) double stacked convection oven, (1) double stacked steamer and (1) four to six burner range.
6. Warewashing area equipped with three-compartment pot wash sink and possibly a commercial dishwasher depending upon the service ware that is to be utilized at this facility.
7. An adequately sized kitchen managers office with millwork cabinetry and counters.
8. Employee uni-sex restroom and locker room area.
9. Utility room equipped with a mop sink, washing machine, dryer and chemical storage area.
10. Receiving Area to have one (1) entrance door into the kitchen, the door size to accommodate the largest cart used for deliveries. Receiving door to include a glass view window panel, digital card reader, doorbell, sufficient lighting and air screen located over the door. A time clock may be required at the receiving door. Security cameras may be required and located outside the receiving door. The width of the receiving corridor is to be 3'-6" at a minimum.

Note: It is our preliminary estimate that the food service area required for this facility will require approximately 2900-3200 square feet.

Kitchen and food production areas must have adequate space for proper employee circulation and uninterrupted work areas. The delivery and receiving areas shall be sufficiently sized and located to easily receive the daily prepared meals and weekly/bi-weekly deliveries. It is not anticipated or planned for this kitchen to prepare and transport any meals to other areas of this facility. The quantity of meals served each day and the anticipated delivery schedule of supplies will determine the sizes and areas required for dry and refrigerated storage. Currently it is assumed that the delivery schedule will be calculated as follows:

- Dry goods - Once a week
- Produce and perishables - Twice a week
- Bread and Bakery Items - Twice a week
- Frozen Goods - Once a week
- Paper goods and disposables - Once a week.

The equipment selections and quantities for all food service appliances will be determined upon the client's anticipated menu items and production requirements for this facility. All food service areas including storage areas shall have removable ceiling with cleanable surface. All kitchen floors to be anti-skid and non-porous sealed material. Altro commercial grade vinyl flooring is the preferred flooring of the Belton I.S.D. Child Nutrition Director. Trash dumpsters shall be in proximity to the loading dock area of the kitchen and be easily accessible for the kitchen staff.

Upon further design development of this facility through coordination meetings with the owner and the design team, we shall determine an estimated cost of the equipment as well as calculate the square footage necessary to meet the needs of this facility. This concludes our preliminary schematic design narrative for the kitchen and serving areas at the New Elementary School for Belton Independent School District.

Belton ISD Program							
New Elementary School		Program of Spaces			Capacity		
Space/Function	Quantity	Area per space (S.F.)	Net Area (S.F.)	Remarks	Capacity Per Space	Maximum Capacity	Functional Capacity
INSTRUCTIONAL SPACES						792	708
Instructional							
Kinder Classroom	6	800	4,800		22	132	118
Kinder Toilets	3	50	150				
Kinder Storage	3	100	300				
1st Grade Classroom	6	800	4,800		22	132	118
2nd Grade Classroom	6	800	4,800		22	132	118
3rd Grade Classroom	6	800	4,800		22	132	118
4th Grade Classroom	6	800	4,800		22	132	118
5th Grade Classroom	6	800	4,800		22	132	118
Instructional Support							
Collaboration/Flex Space	6	800	4,800				
Science Lab	1	900	900				
Science Prep Room	1	150	150				
Computer Lab	1	900	900				
Title 1	1	450	450				
Title 1 Math	1	250	250				
General Support							
Custodial	1	60	60				
Student Restrooms (3 Boys/3 Girls)	6	250	1,500				
Staff Single Toilets	4	60	240				
Media Storage	3	175	525				
INSTRUCTIONAL - SUBTOTAL NET AREA (sf)		67	39,025				
Walls & Circulation (sf)		35%	13,659				
TOTAL GROSS AREA (sf)			52,684				

SPECIAL PROGRAM SPACES							
Life Skills / Behavioral							
Self Contained Classroom	2	475	950		5	10	9
Laundry	1	90	90				
Toilet	1	80	80				
Tutor Rooms	4	150	600				
Resource Room	1	600	600				
Dyslexia	1	200	200				
Speech	1	150	150				
Diagnostics	1	250	250				
SPECIAL PROGRAMS - SUBTOTAL NET		12	2,920				
Walls & Circulation (sf)		35%	1,022				
TOTAL GROSS AREA (sf)			3,942				

Specials							
Art							
Art Room/Flex Room	1	800	800				
Music							
Music Room	2	800	1600				
Music Storage	1	200	200				
FINE ARTS - SUBTOTAL NET AREA (sf)		4	2,600				
Walls & Circulation (sf)		35%	910				
TOTAL GROSS AREA (sf)			3,510				

Belton ISD Program							
New Elementary School		Program of Spaces			Capacity		
Space/Function	Quantity	Area per space (S.F.)	Net Area (S.F.)	Remarks	Capacity Per Space	Maximum Capacity	Functional Capacity
PHYSICAL EDUCATION							
PE							
Gymnasium	1	4750	4750				
PE Support							
Gym Storage	1	400	400				
Office	1	150	150				
General Support							
Family Restroom (Near Gym)	1	80	80				
FINE ARTS - SUBTOTAL NET AREA (sf)		4	5,380				
Walls & Circulation (sf)		35%	1,883				
TOTAL GROSS AREA (sf)			7,263				
CORE SPACES							
Library/Media Center							
Library/Media Center	1	4500	4500				
Makerspace	1	800	800				
Office/Workroom	1	325	325				
Dining							
Dining Area	1	4750	4750				
Stage							
Stage	1	1050	1,050				
Ramps	0	0	0	Included in Dining			
Kitchen & Serving							
Serving	1	575	575				
Kitchen	1	1300	1300				
Dry Storage	1	225	225				
Warewash	1	225	225				
Staff Locker Room	1	50	50				
Staff Restroom	1	65	65				
Kitchen Office	1	70	70				
Custodial Office	1	100	100				
Custodial Room	1	70	70				
General Support							
Restrooms (Boys/Girls)	2	200	400				
CORE SPACES - SUBTOTAL NET AREA (sf)		16	14,505				
Walls & Circulation (sf)		35%	5,077				
TOTAL GROSS AREA (sf)			19,582				

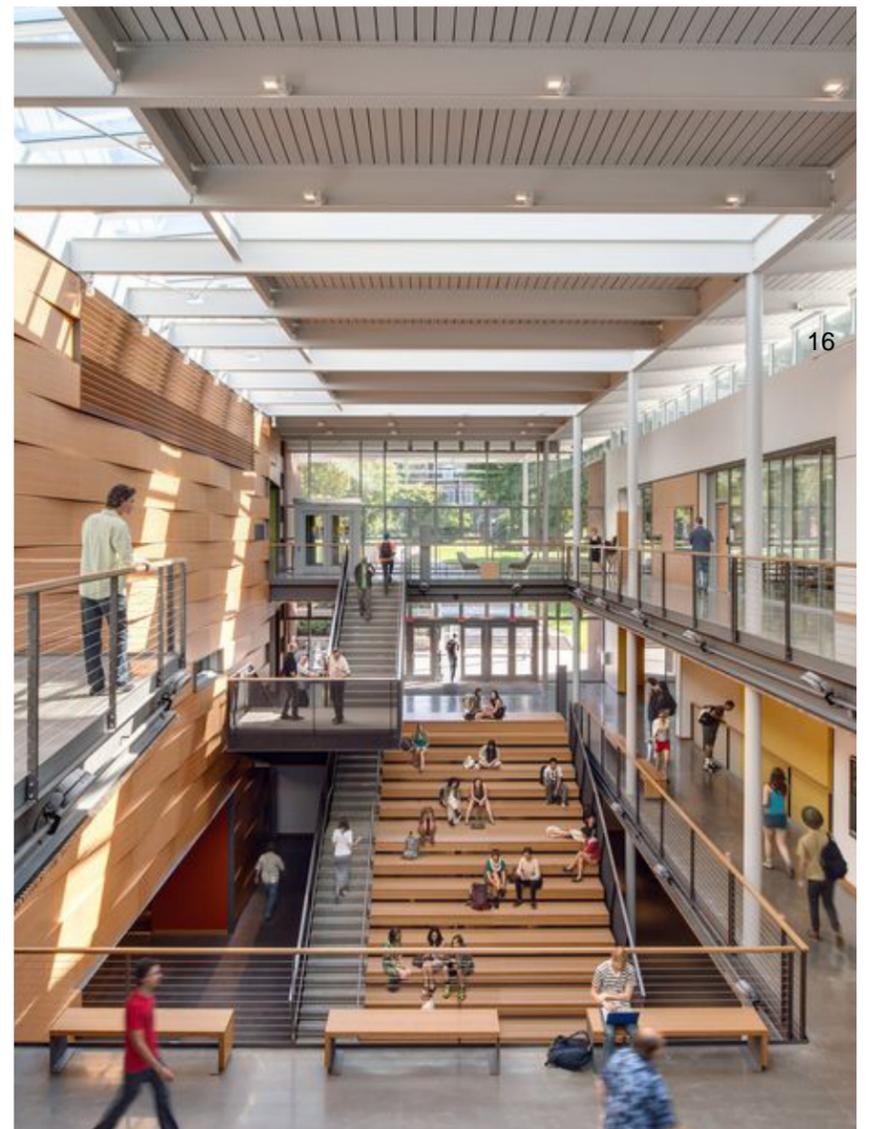


Belton ISD Program							
New Elementary School		Program of Spaces			Capacity		
Space/Function	Quantity	Area per space (S.F.)	Net Area (S.F.)	Remarks	Capacity Per Space	Maximum Capacity	Functional Capacity
Administrative Spaces							
Reception/Waiting	1	425	425				
Principal's Office	1	200	200				
Secretary Office	1	150	150				
Principal's Conference Room	1	200	200				
Assistant Principal's Office	1	150	150	Locate centrally near students			
Counselor's Office	1	175	175	Locate centrally near students			
Office	1	200	200				
TAKS	1	50	50				
Mailroom	1	250	250				
Staff Workroom	1	600	600	Locate centrally near students			
Administration Conference Room	1	380	380				
Records	1	150	150				
PIEMS	1	150	150				
Storage	1	50	50				
Administration Toilet	1	60	60				
PA Room	1	50	50				
Custodial Room	1	70	70				
Clinic							
Health Clinic Treatment/Waiting Area	1	475	475				
Nurse Office	1	125	125				
Clinic Restroom	1	80	80	Verify 1 room or several isolated rooms			
Isolation Room	1	75	75				
MAIN ADMINISTRATION - SUBTOTAL NET	21		4,065				
Walls & Circulation (sf)		35%	1,423				
TOTAL GROSS AREA (sf)			5,488				
GENERAL FACILITY SUPPORT							
IDF Room	2	80	160				
MDF Room	1	125	125				
Electrical Small	3	60	180				
Electrical Large	2	125	250				
Riser Room	1	125	125				
GEN.FACILITY - SUBTOTAL NET AREA (sf)	9		840				
Walls & Circulation (sf)		35%	294				
TOTAL GROSS AREA (sf)			1,134				
CAMPUS SUBTOTAL NET AREA (sf)	133		69,335	CAPACITY TOTALS		802	717
SUBTOTAL WALLS & CIRCULATION (sf)			24,267				
CAMPUS TOTAL GROSS AREA (sf)			93,602				

COLOR LEGEND

- Administration
- Administration Support
- Academic
- Academic Support
- Library
- Library Support
- Dining
- Kitchen
- Athletic
- Athletic Support
- Fine Art
- Fine Art Support
- Special Space
- Special Space Support
- Circulation
- Restrooms/Support Spaces





Huckabee

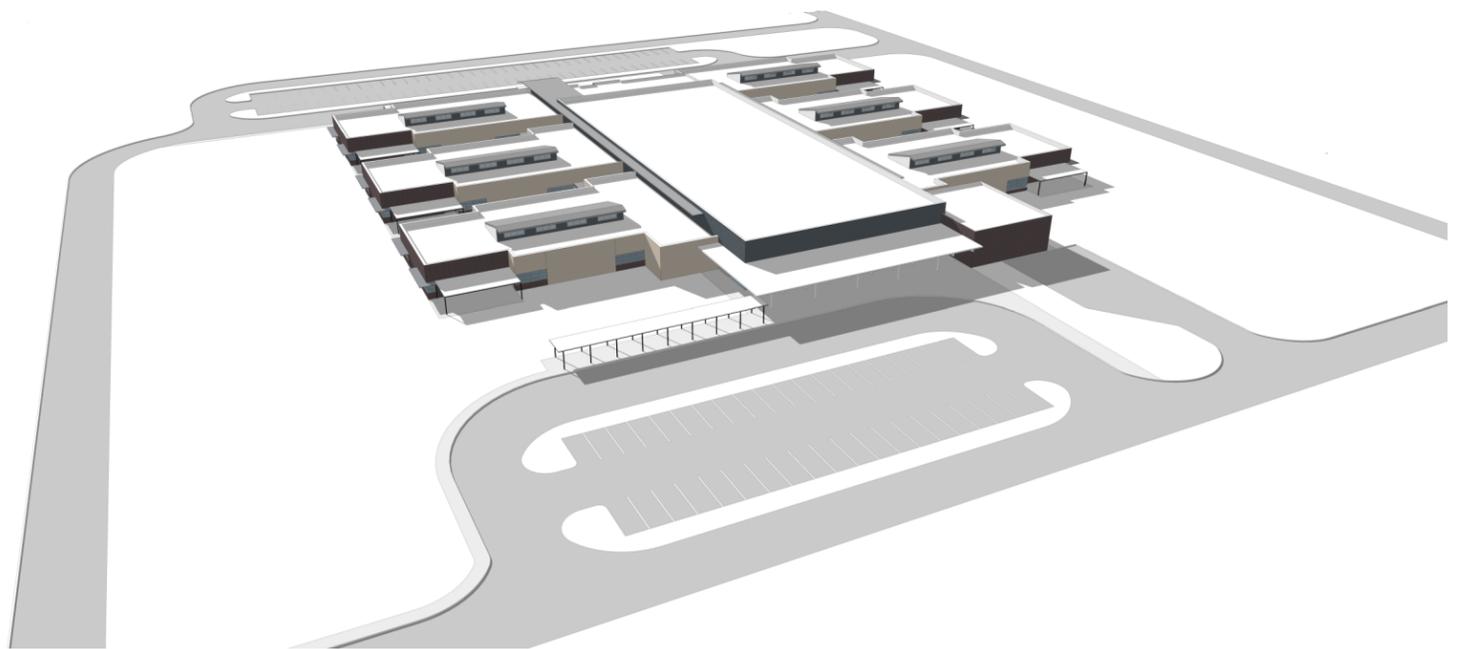
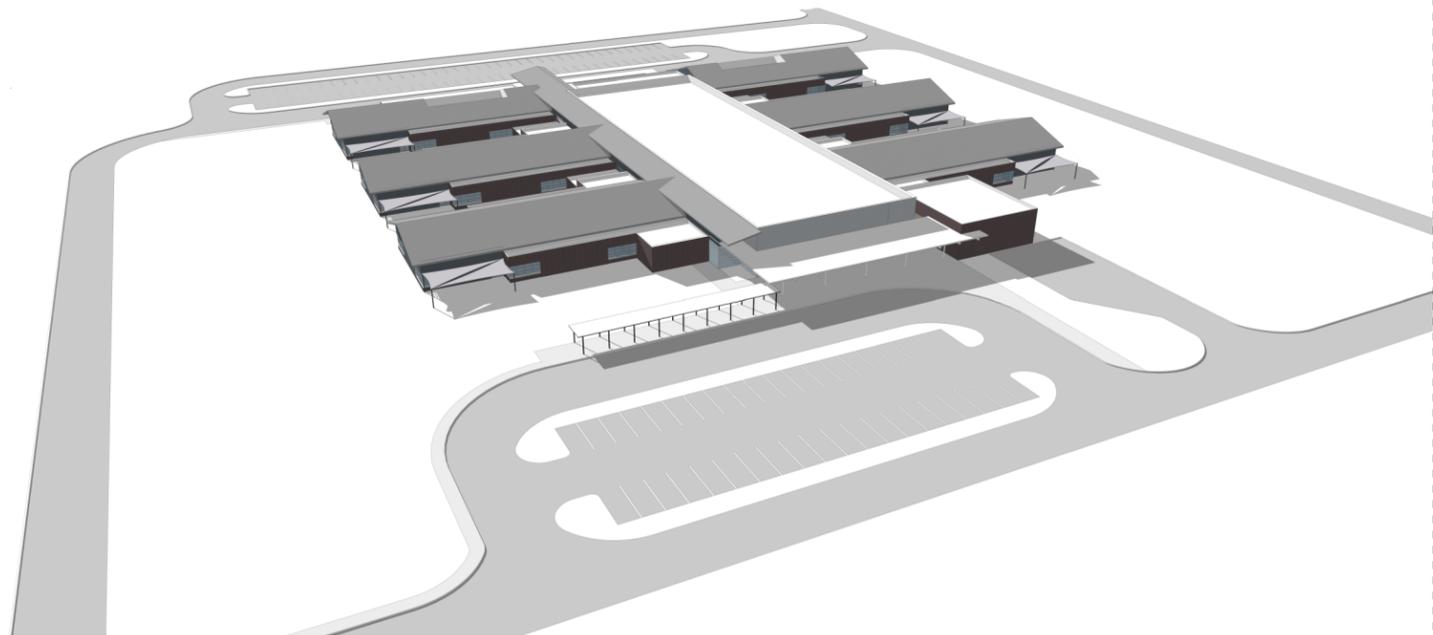
BELTON INDEPENDENT SCHOOL DISTRICT
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PRECEDENT IMAGES

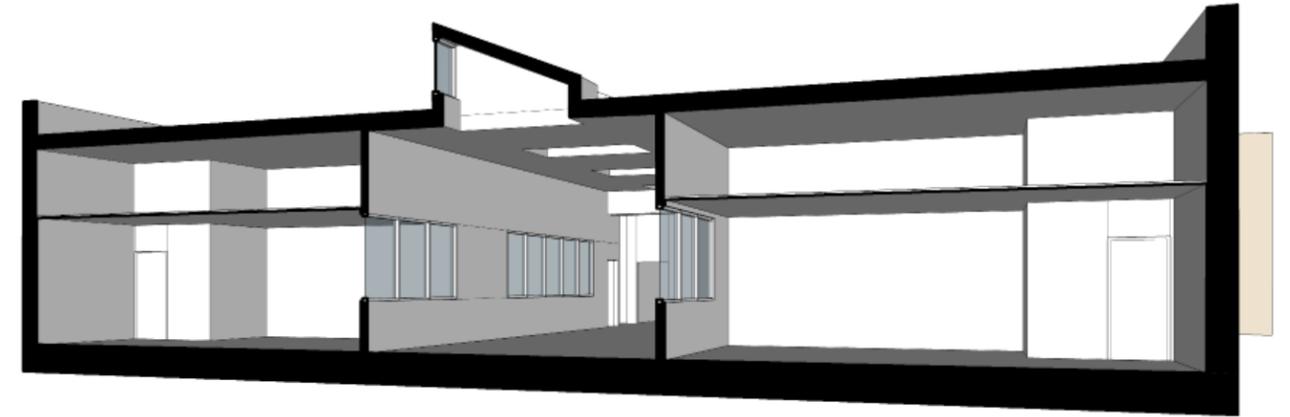
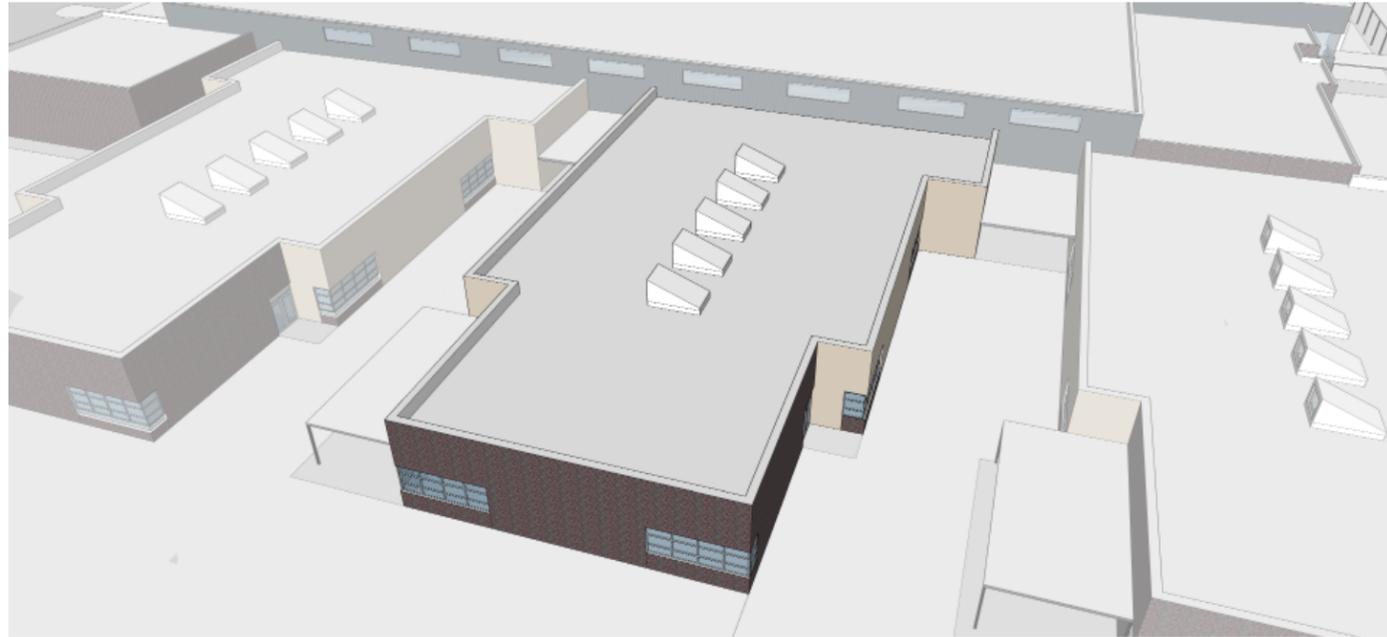
Concept 1



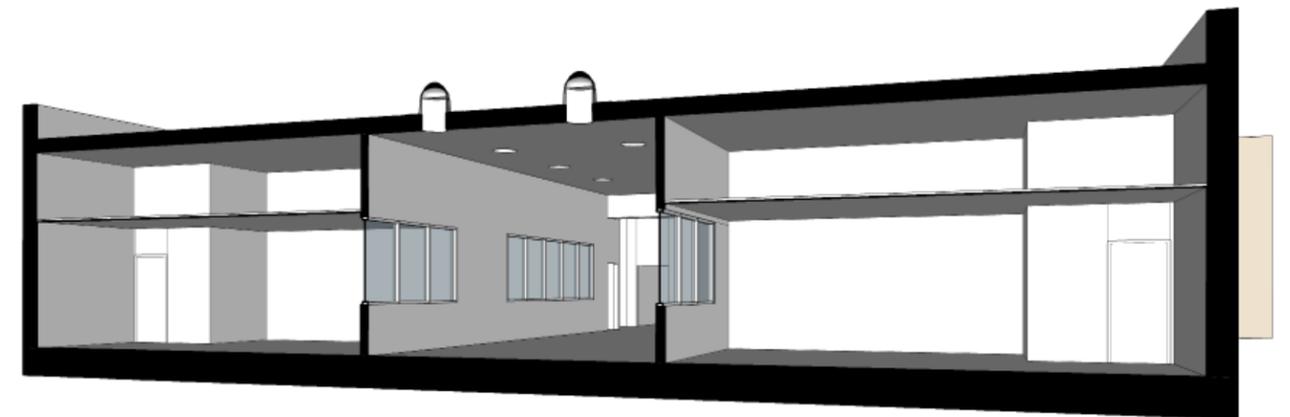
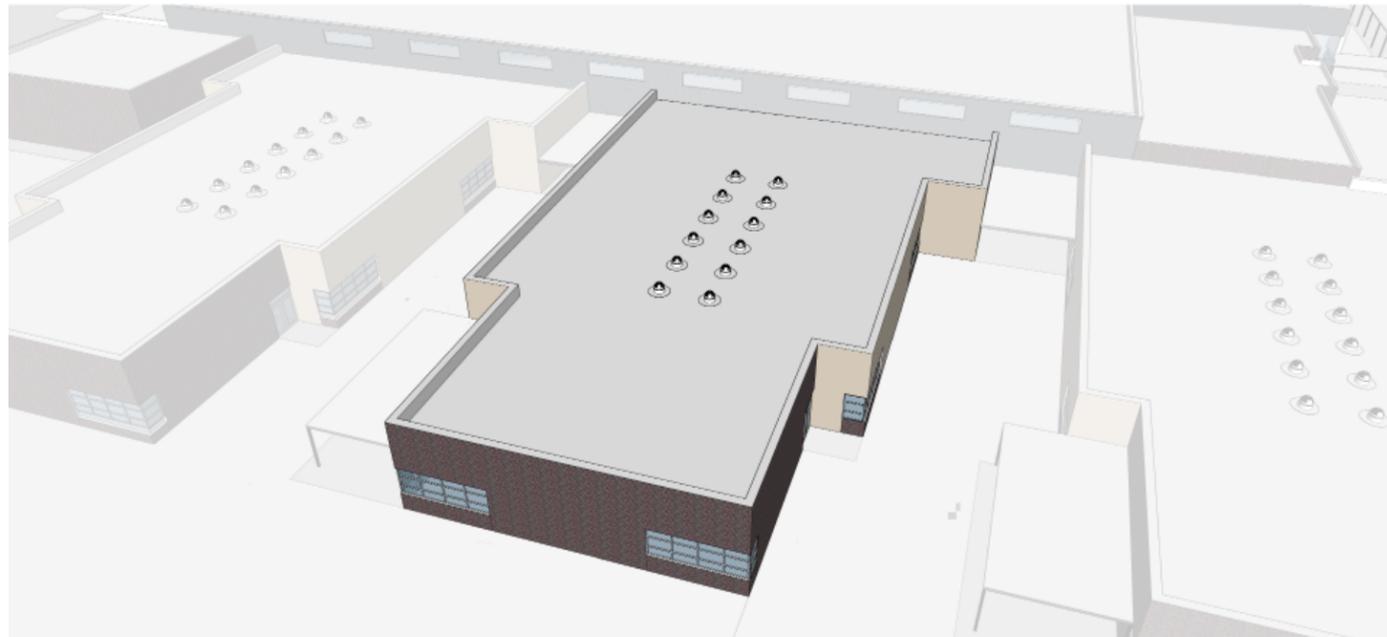
Concept 2



Clerestory Option 1

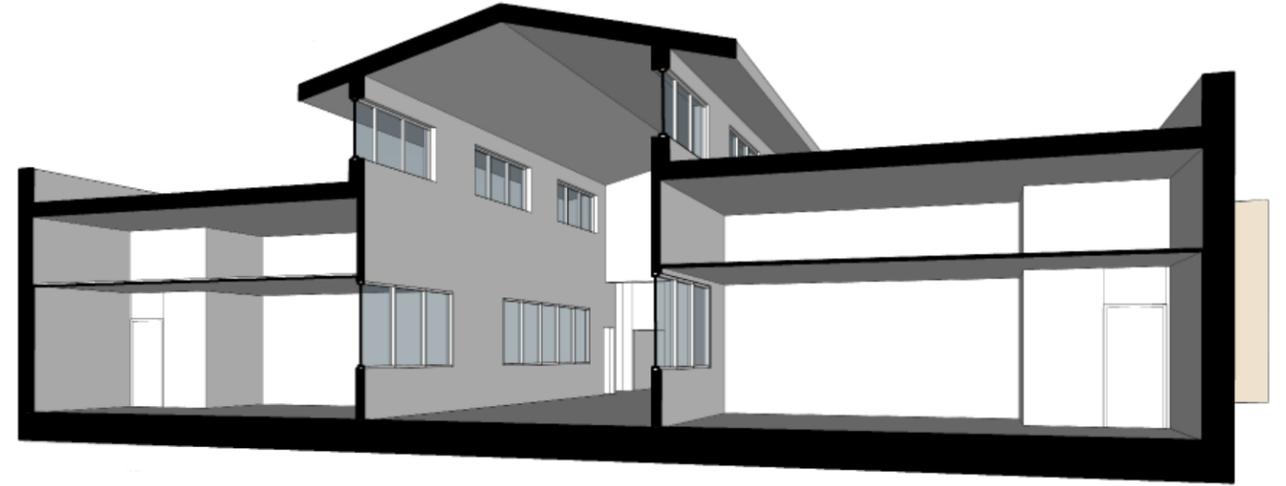
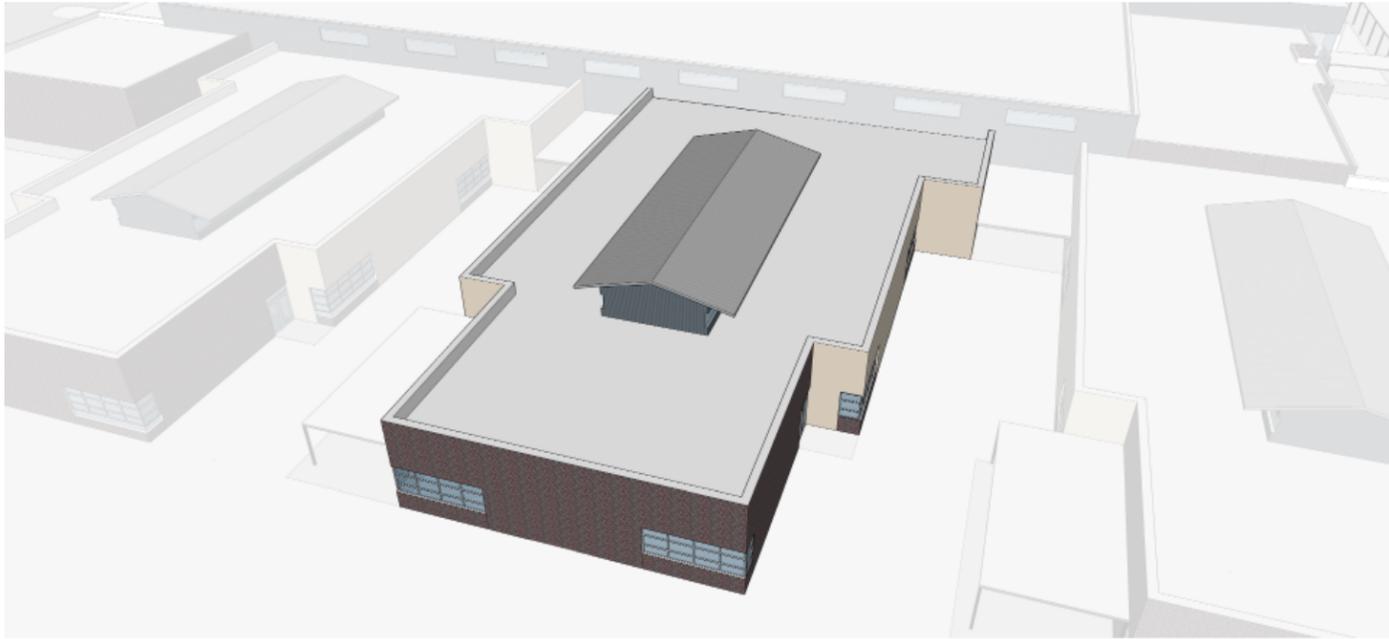


Clerestory Option 2

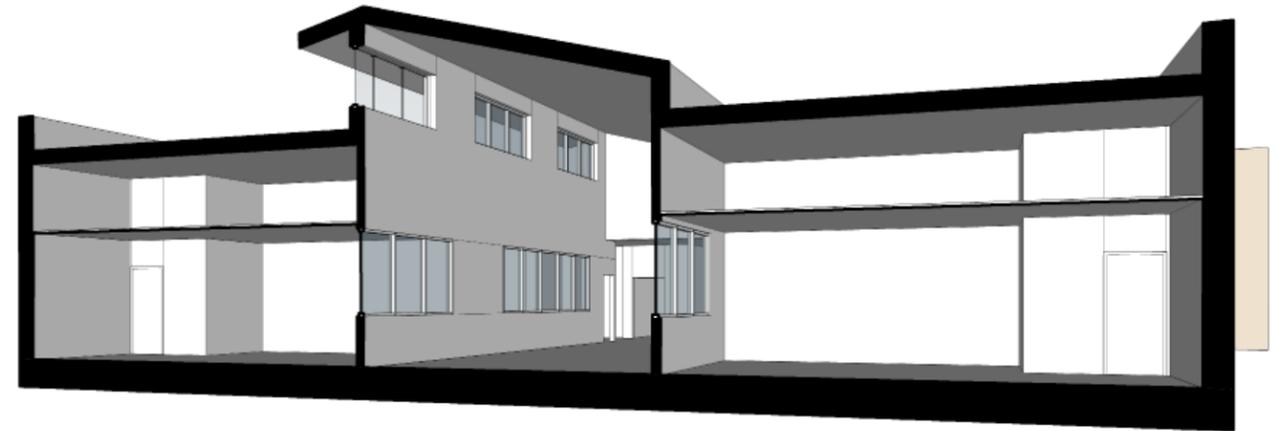
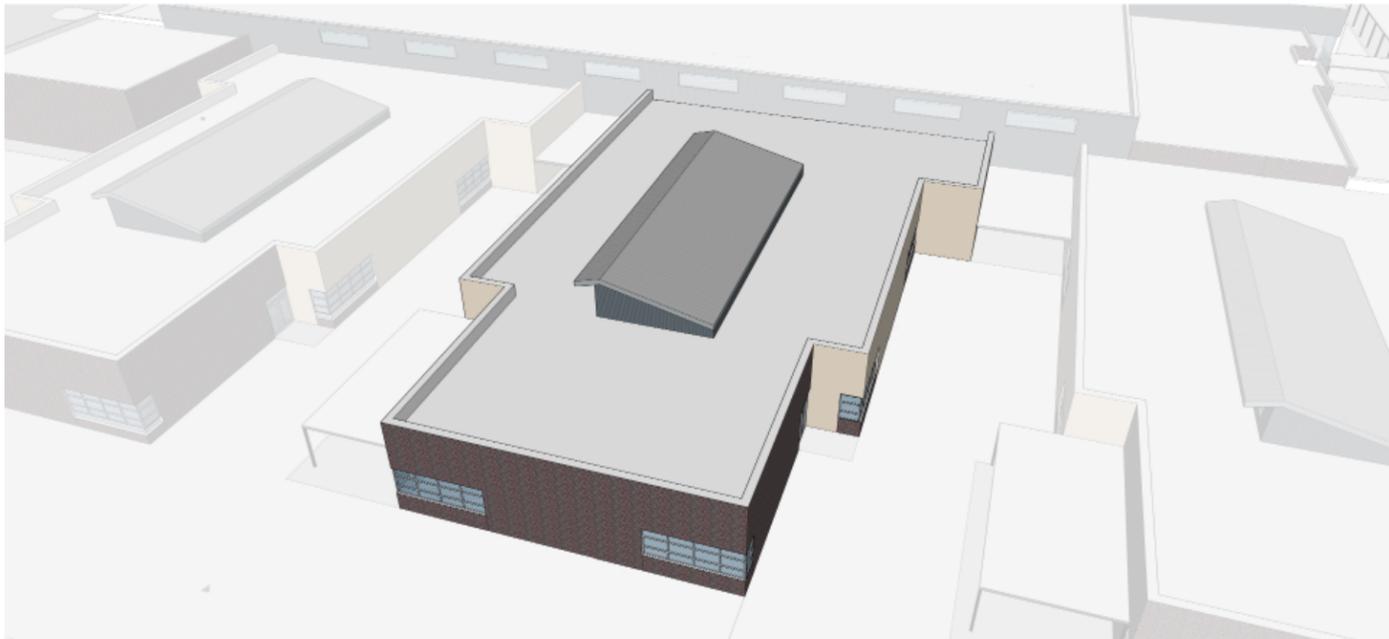


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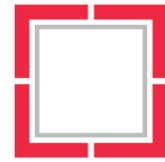
Clerestory Option 3



Clerestory Option 4



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MORE THAN ARCHITECTS