

LS3P



AIKEN COUNTY
PUBLIC SCHOOLS

**HIGHLAND SPRINGS
ELEMENTARY / MIDDLE
SCHOOL**

LS3P Commission No. 2201-183850



DRAFT

**SCHEMATIC DESIGN SUBMITTAL
JANUARY 2019**



CONTENTS

HIGHLAND SPRINGS ELEMENTARY / MIDDLE SCHOOL

Design Statement	2
Existing Site Plan	3
Proposed Site Plan	4-5
Floor Plan - Overall	6
Area Floor Plans	7-13
Conceptual Perspectives	14-15
Schedule	16
Budget	17
Materials and Systems	18-24

The Mission of Aiken County Public Schools, the emerging premier school district, is to cultivate future-ready students to serve our evolving community and world through an innovative, literacy-focused school system distinguished by

- *rigorous, personalized learning opportunities*
- *highly effective, service-driven professionals; and*
- *mutually beneficial partnerships.*

DESIGN STATEMENT



Our project scope is to develop a new elementary and middle school facility serving Area 2 that will house a core capacity of 811 students (496 elementary students and 315 middle school students) on a newly-developed site. A new, approximately 130,000 sf building will include learning areas for elementary students separated from middle school students as much as possible, as well as provide some shared facilities serving administration, the media centers, food service, and other areas where possible. This project will incorporate sustainable design solutions with a goal of achieving Designed to Earn the Energy Star.

The district has also asked us to develop an alternate scheme that would house additional 6th grade students upon opening, making the facility a K-6 school which is also indicated in this schematic submittal.

EXISTING SITE PLAN

The site near Belvedere Clearwater Road and Old Sudlow Lake Road to the northeast of downtown North Augusta is being jointly developed by Aiken County Public Schools and the developer of the proposed Highland Springs community. Access to the site of the new school facility will be provided by a new boulevard that will serve both the school and eventually other amenities in the Highland Springs community.

Vehicular circulation at the site will be arranged to provide separate automobile drop-off lanes and canopies for elementary school and middle school students. A single bus drop-off loop will serve two separate drop-off canopies for elementary and middle school students. Pedestrian traffic will be separated as much as possible from vehicular traffic.

The building itself will be oriented on the site to help maximize passive solar strategies, and the site design will seek to minimize the ecological impact on the property.



EXISTING SITE

OVERALL SITE PLAN



OVERALL SITE PLAN

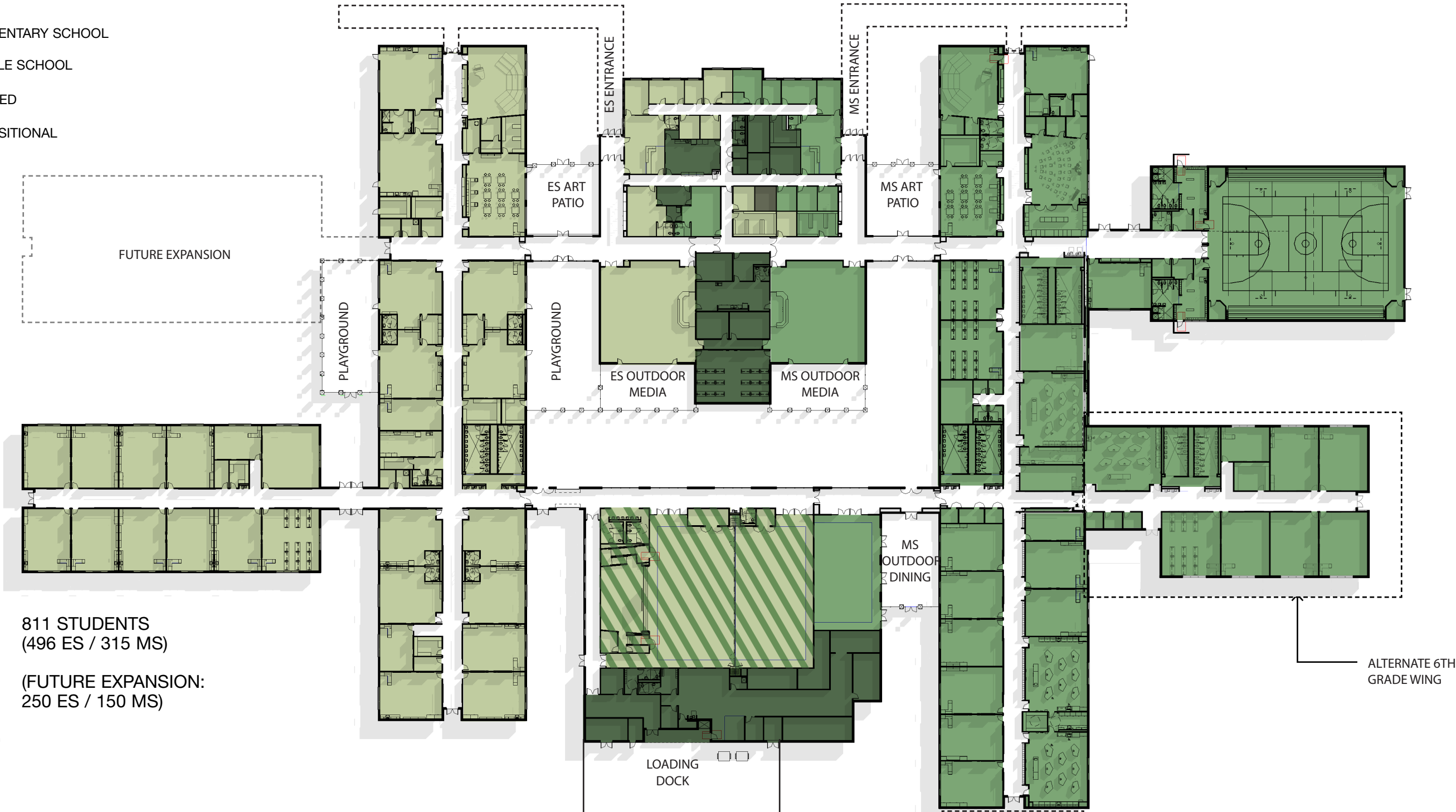
ENLARGED SITE PLAN



ENLARGED SITE PLAN

FLOOR PLAN - OVERALL

- ELEMENTARY SCHOOL
- MIDDLE SCHOOL
- SHARED
- TRANSITIONAL



811 STUDENTS
(496 ES / 315 MS)

(FUTURE EXPANSION:
250 ES / 150 MS)

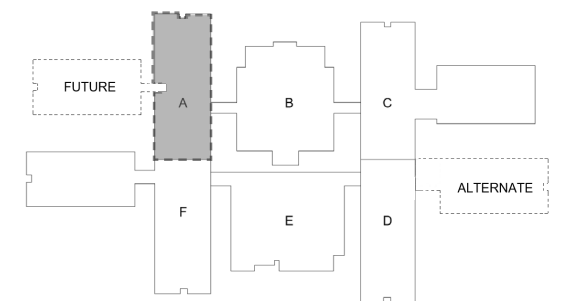


ALTERNATE 6TH GRADE WING

OVERALL FLOOR PLAN

FLOOR PLANS - ELEMENTARY

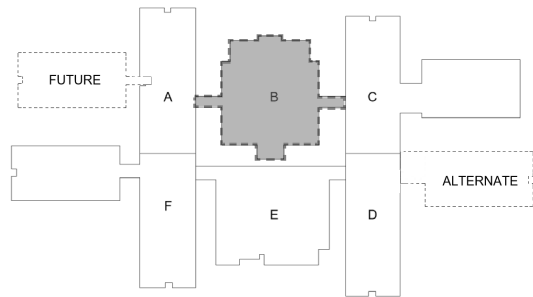
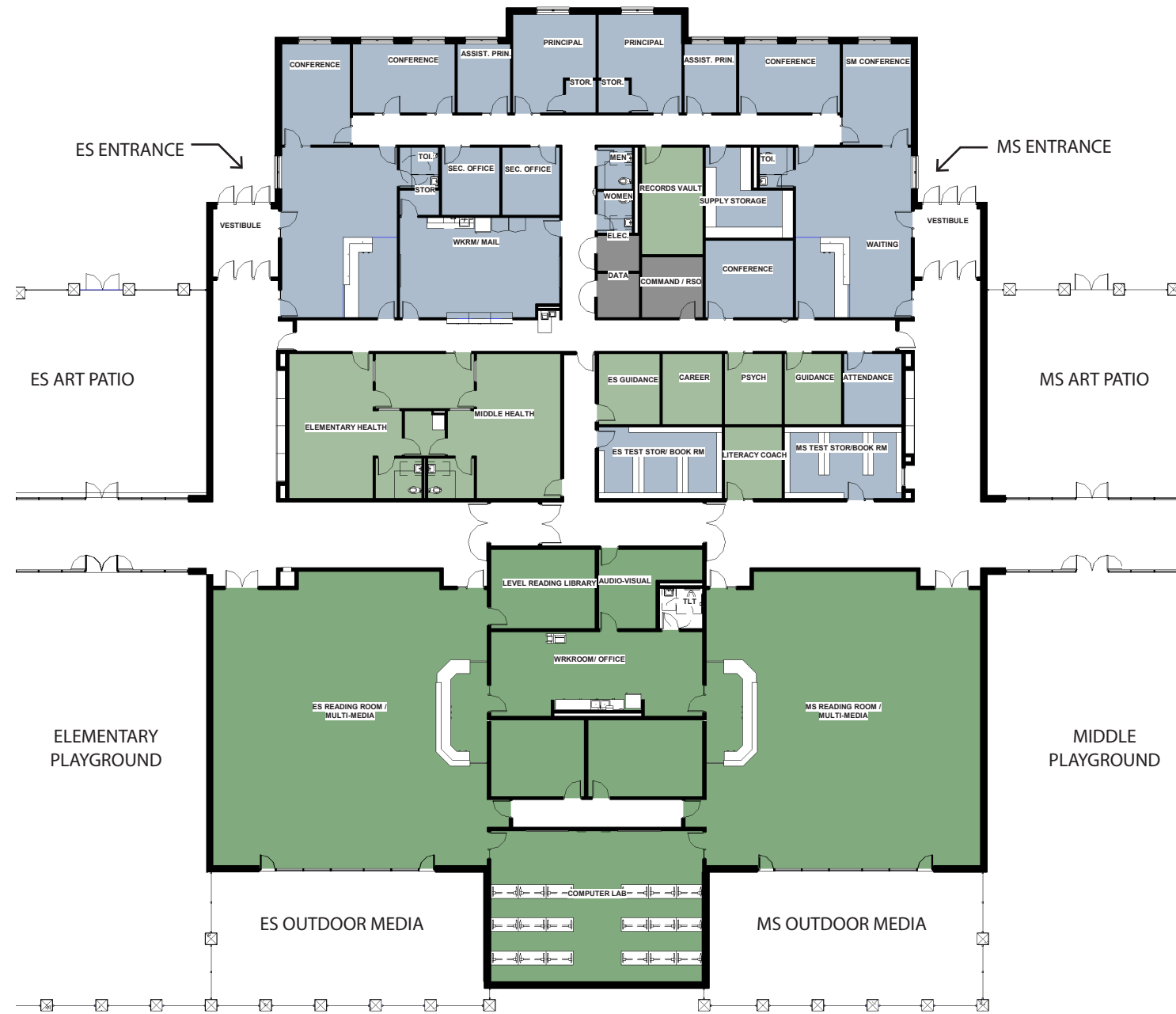
- ADMINISTRATION
- ART
- ATHLETICS
- CLASSROOM
- DINING & FOOD SERVICE
- GUIDANCE
- MEDIA CENTER
- MUSIC
- SPECIAL EDUCATION
- SUPPORT



FLOOR PLAN - AREA A

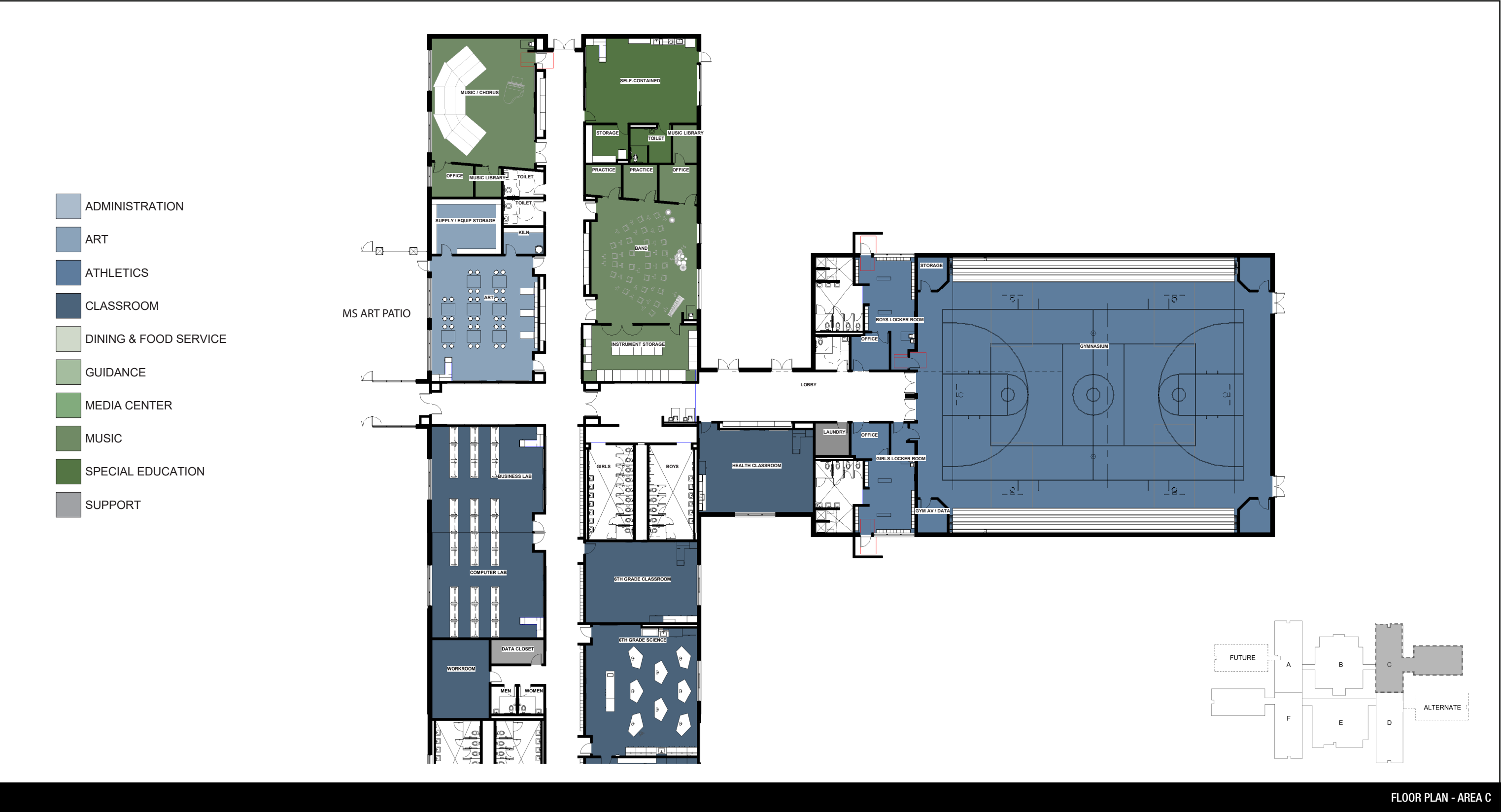
FLOOR PLANS - ES / MS ADMIN & ES/MS MEDIA

- ADMINISTRATION
- ART
- ATHLETICS
- CLASSROOM
- DINING & FOOD SERVICE
- GUIDANCE
- MEDIA CENTER
- MUSIC
- SPECIAL EDUCATION
- SUPPORT



FLOOR PLAN - AREA B

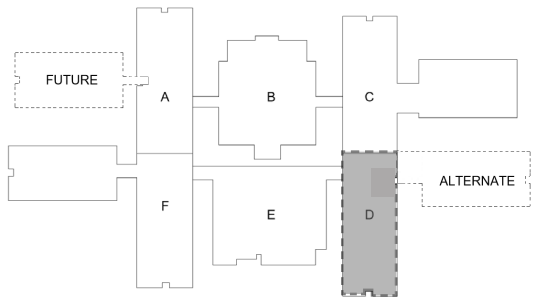
FLOOR PLANS - MIDDLE SCHOOL



FLOOR PLAN - AREA C

FLOOR PLANS - MIDDLE SCHOOL

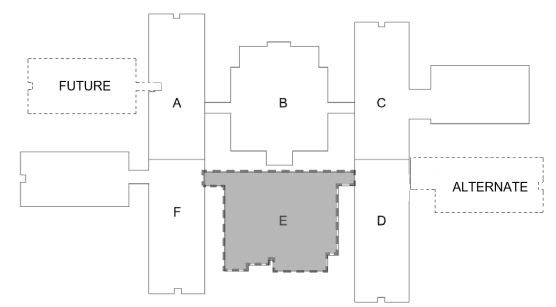
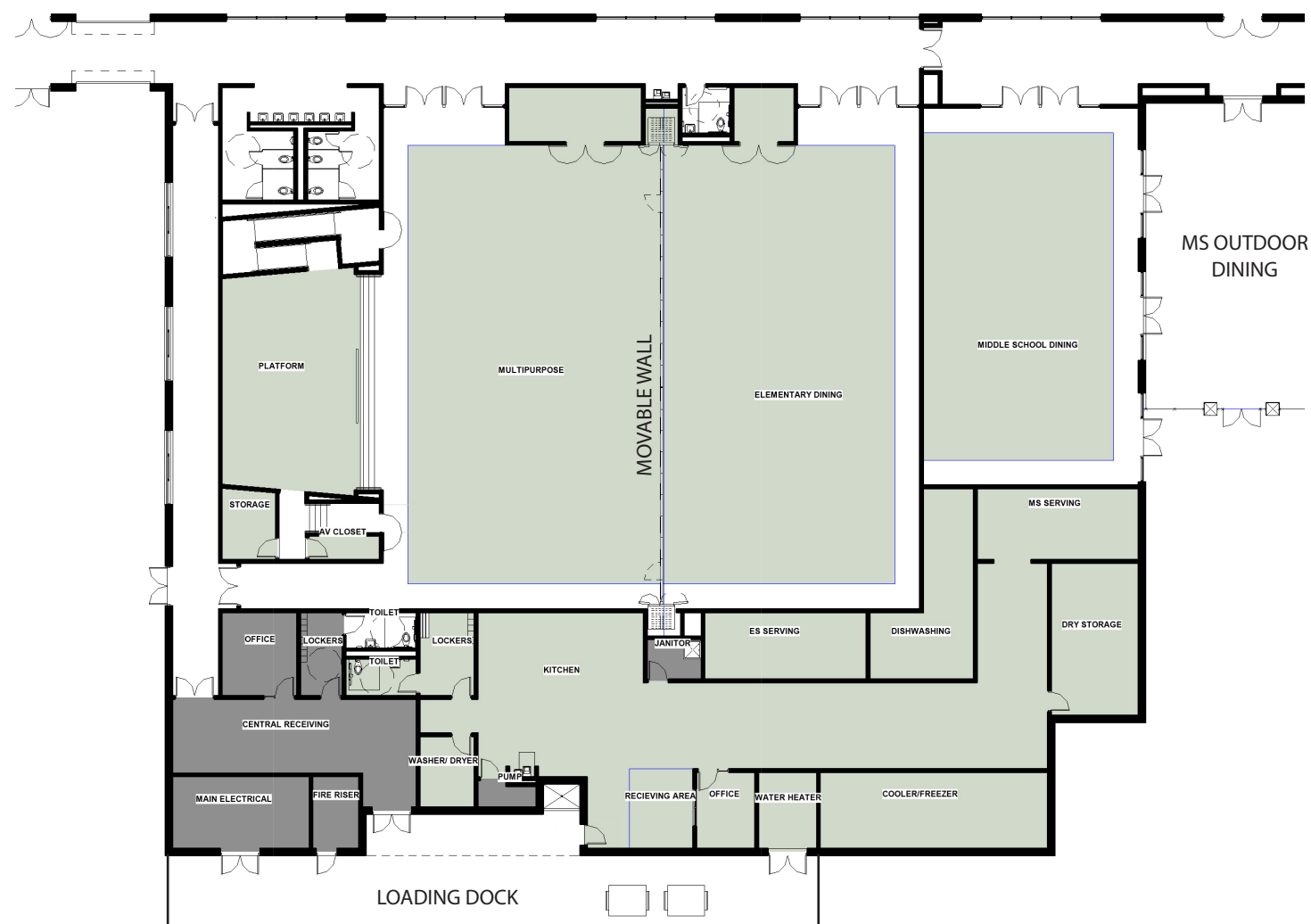
- ADMINISTRATION
- ART
- ATHLETICS
- CLASSROOM
- DINING & FOOD SERVICE
- GUIDANCE
- MEDIA CENTER
- MUSIC
- SPECIAL EDUCATION
- SUPPORT



FLOOR PLAN - AREA D

FLOOR PLANS - ES / MS DINING & MULTIPURPOSE

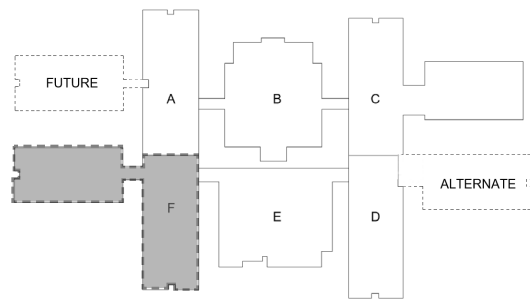
- ADMINISTRATION
- ART
- ATHLETICS
- CLASSROOM
- DINING & FOOD SERVICE
- GUIDANCE
- MEDIA CENTER
- MUSIC
- SPECIAL EDUCATION
- SUPPORT



FLOOR PLAN - AREA E

FLOOR PLANS - ELEMENTARY SCHOOL

- ADMINISTRATION
- ART
- ATHLETICS
- CLASSROOM
- DINING & FOOD SERVICE
- GUIDANCE
- MEDIA CENTER
- MUSIC
- SPECIAL EDUCATION
- SUPPORT



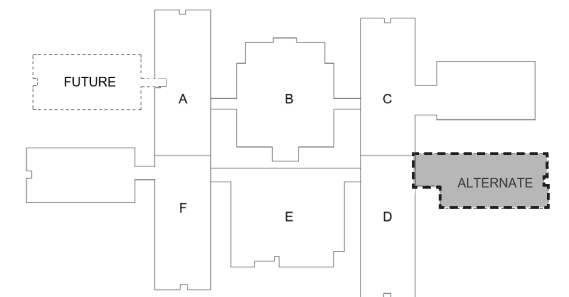
FLOOR PLAN - AREA F

FLOOR PLANS - 6TH GRADE ALTERNATE

- ADMINISTRATION
- ART
- ATHLETICS
- CLASSROOM
- DINING & FOOD SERVICE
- GUIDANCE
- MEDIA CENTER
- MUSIC
- SPECIAL EDUCATION
- SUPPORT



6TH GRADE



FLOOR PLAN - 6TH GRADE ALTERNATE

BIRD'S EYE VIEW



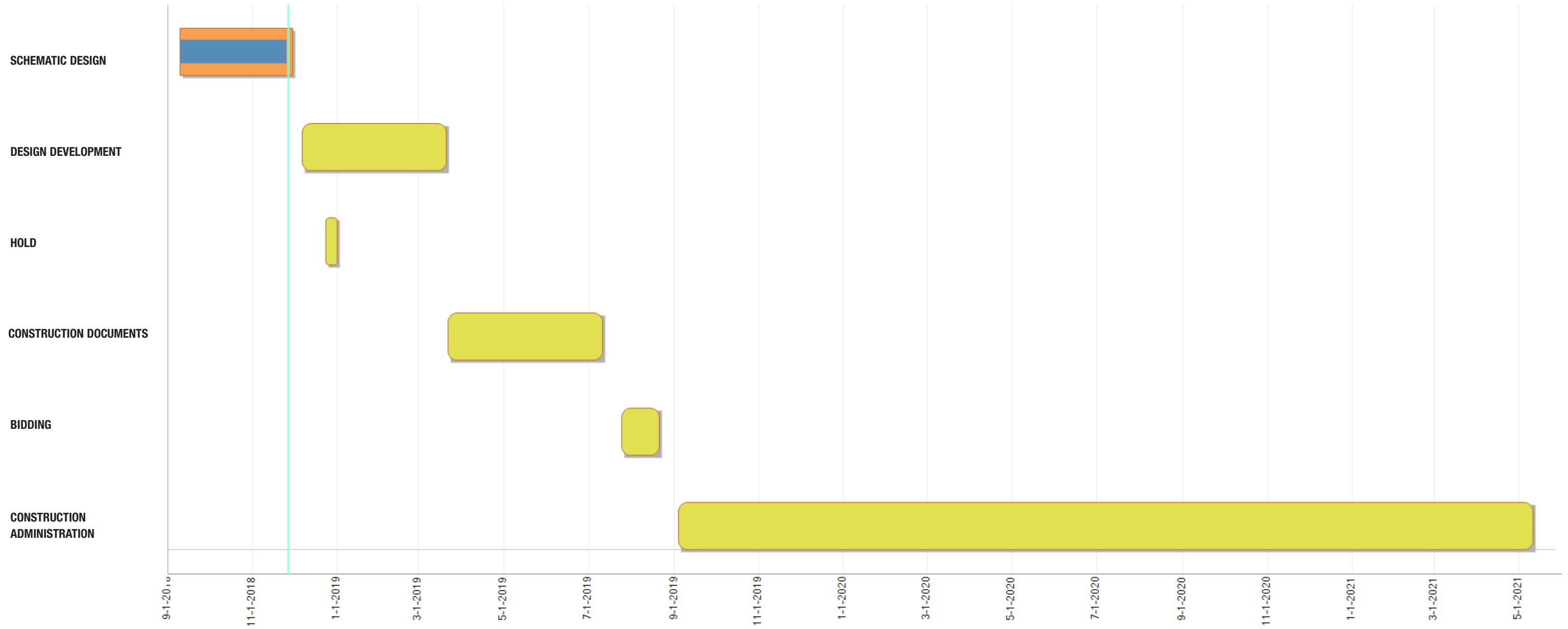
OVERALL VIEW

CONCEPTUAL PERSPECTIVES



MAIN ENTRY PERSPECTIVE

SCHEDULE



UPDATE W/ ESTIMATE

MATERIALS AND SYSTEMS

A. STRUCTURAL SYSTEM

General Structural Description

1. Applicable Building Code: 2015 IBC and ASCE 7-10 for wind, seismic and gravity loadings.
2. Structure: The building will be a one-story structure with exterior and interior load-bearing CMU walls.
3. Seismic Design Category: Although the soils investigation for this project has not been completed yet, preliminary indications from the geotechnical firm are that the building will be classified as Seismic Site Class D. This will result in a classification of Seismic Design Category C for the building in accordance with the 2015 International Building Code.

Foundations and Slabs-On-Grade

1. Floor Slab: Floor slab will be a 4" slab on grade reinforced with wire fabric over a vapor retarder and 4" granular base.
2. Foundations: Although the soils investigation for this project has not been done yet, the foundation system will likely consist of conventional wall footings for exterior walls and spread footings for columns. Tops of exterior footings will typically be at 2'-0" below finish floor and tops of interior footings will typically be at 1'-4" below finish floor.
3. Concrete: Concrete for foundations and floor slabs on grade will be 3000 psi normal weight concrete.

Roof System

1. Typical Areas: Roof structural system for the majority of the building will be galvanized steel deck on open web steel joists.
2. Gymnasium: Roof structural system at the gymnasium will be longspan steel joists with acoustical galvanized and prime painted steel deck.
3. Mechanical Units: Concrete slabs will not be provided for rooftop mechanical units. Units will be supported on the typical bar joist and metal deck system, with steel beams added where required.

Wall System

Masonry Walls: walls, and interior load-bearing walls, and interior partition walls will be lightweight CMU. Exterior walls will have brick veneer in some locations. All CMU walls will be reinforced and grouted at reinforced cells. CMU walls will function both as load-bearing elements to support the roofs and as shear walls to laterally brace the buildings to resist wind and seismic loads. CMU wall thickness will be 8" at typical conditions and 12" at two-story high spaces such as the gymnasium. Three-hour walls will be 12" CMU walls grouted solid.

Steel Framing

1. Steel Frame: A steel frame will be provided in some areas which have extensive glass areas in exterior walls as required to support the roof and floor. Steel tube girts and wind columns may also be required for backup of large curtain wall areas. Resistance to wind and seismic lateral loads in these areas will be provided either by moment frames, braced frames or concrete block shear walls, or a combination of these elements.
2. Steel Materials: steel wide flange shapes will be ASTM A992, 50 ksi. Steel tubes will be ASTM A500, Grade B. Steel pipe will be ASTM A53, Grade B. All other structural steel will be ASTM A36. Lintels in exterior walls will be hot-dipped galvanized.

B. ROOFING

The insulation system within the new roof system assemblies will consist of polyisocyanurate roof insulation and perlite roof insulation with a minimum R-value of 30.

The roofing membrane on the low sloped roof areas will consist of three (3) plies of fiberglass felts adhered in hot asphalt and an Energy Star granule surfaced modified bitumen cap sheet adhered in cold adhesive. A three (3) year Contractor's Warranty and a twenty (20) year Manufacturer's Warranty will be provided for the low sloped roofing system.

All sheet metal components for both roofing systems will consist of pre-finished, minimum 24 gage Galvalume. Other specific flashing details will require other appropriate metal types.

The roofing systems will comply with the 2015 IBC and ACPS requirements.

C. EXTERIOR AND INTERIOR WALLS

The exterior facade of the new wings will consist of masonry and metal panels with aluminum windows. The majority of the interior wall surfaces will be painted concrete block.

D. DOORS AND WINDOWS

Exterior doors will be painted hollow metal (steel) while interior doors will typically be stained solid core wood. All door frames will be hollow metal (steel). Classroom windows will typically be aluminum, triple-glazed, with integral blinds. Aluminum storefront windows will be used at selected locations.



MATERIALS AND SYSTEMS

E. WALL FINISHES

All interior walls will be primed and will have a minimum of two finish coats of paint applied. Waterborne epoxy paint will be used on all concrete block walls.

F. FLOOR FINISHES

Vinyl composition tile will be used at the classrooms, labs, and corridors. The group toilets will feature an epoxy flooring. The middle school gym will have wood flooring and the elementary school multipurpose room will have resilient sports flooring. Quarry tile will be used at the locker rooms. Floors will be painted with waterborn epoxy floor paint in janitor, electrical, data, mechanical, and fire riser rooms.

G. CEILINGS

Acoustical ceiling tile (2'x2') will typically be provided throughout corridor and classroom spaces. Hard ceilings will be used in toilet and shower areas. No ceilings will typically be installed in janitor, electrical, data, mechanical, or fire riser rooms.

H. ACCESSORIES AND SPECIALTIES

Marker and tack boards will be provided in all classroom and teaching areas. Signage will be provided to identify each space. Rough-ins will be provided for District-installed Smart Boards.

I. CASEWORK AND MILLWORK

Durable grade plastic laminate cabinets will be typically provided throughout. Display cabinets will be provided, as will reception desks and media center circulation desks.

J. FOOD SERVICE

A full service kitchen will be designed to provide meals to the combined elementary and middle school. The total FTE to be served is 811. The kitchen will be designed with commercial grade equipment.

The menu served will follow USDA government guidelines. Most foods will be prepared ready for heating or from scratch. There will be an emphasis on fresh vegetables and fruits. The kitchen will be self-sustaining and produce meals only for the school population.

The kitchen will be designed to be visually open from the office to the wall separating the serving lines from the kitchen. Walls, if required with in the kitchen, will be 54" half height walls. This allows the manager to have full view of the production and cooking area and open communication between the staff when working in the kitchen.

The dish room will be in a separated room to keep water and humidity within the space. Pass thru windows from each serving area will extend into the kitchen and cafeteria and have ample space for the students/staff to place their trays/dishes on the soiled dish table.

The office will have views of the kitchen and receiving area thru glazing in the walls. As an added security measure the delivery door needs to be provided with a "peephole".

Lockers and unisex restroom will be provided for the kitchen staff off the delivery corrido, and a separate washer/dryer room will be provided off the receiving area for kitchen linens. A mop closet with a sink basin will be provided as well. Chemical storage, brooms, mops, and buckets will be stored in this area.

A Fly Fan will be provided over the delivery door. The fan will be provided with a limit switch actuator at the door to turn the fan on when the door is opened and off when the door is closed.

The storage area of the kitchen will include both dry and refrigerated spaces. The dry storage room will have wire shelving and dunnage racks. The refrigerated storage or walk-in cooler and freezer will comprise of foamed in-place, high efficient aluminum panels. The panels, walls, ceilings, and floors will be held together by means of three or more cam locks per panel. Each panel locks to those adjacent to form a tight seal preventing the transfer of air and water. The walk-ins will have insulated floors, finish (either quarry tile or diamond tread aluminum) to be coordinated during design. The refrigeration system will use CFC free refrigeration, R404 or similar. All walk-in doors will have triple pane windows with safety release inside latch. Lighting will be LED units manufactured for -40 degree operation.





MATERIALS AND SYSTEMS

The finishes in the kitchen will be designed to be easily cleanable and meet current codes.

Foodservice equipment will be specified in adherence to Energy Star criteria and Net Zero energy use. The following are key equipment design characteristics:

1. All Energy Star Rated (where applicable).
2. Low flow water spray nozzles and faucets.
3. Low water flow dish washing systems.
4. Where applicable, the equipment will be manufactured within 500 mile radius of the job site. Equipment for the multi-cultural food preparation will be selected based upon the respective cooking styles and techniques.
5. Equipment specified will have local authorized service and maintenance facilities in addition to local manufacturer representation.
6. A utility distribution system (UDS) will be specified in between and/or behind the cooking equipment. An advantage of a UDS is the reduced stub-ups required to connect to each item, making it easier to clean the floors and space behind the equipment. An additional advantage of a UDS is to make it easier to move equipment in and out of the kitchen or to rearrange equipment underneath the hood.

The exhaust hoods will be provided with Variable speed exhaust fans. This system will automatically reduce the CFMs being exhausted when cooking is not taking place. The design team will review and provide analysis to determine ROI.

There will be an emphasis on fresh vegetables and fruits. Most foods will be prepared on-site, fresh every day. Food preparation will be mostly from scratch, with some pre-made or pre-prepared items. Preparation equipment will include: Automatic Slicer, 30 quart Mixer with attachments, and vertical cutter/mixer. Additional items include: Work Tables, Sinks, Heated Cabinets, Refrigerators, Utility Carts, Racks, Shelving, Hand Sinks, and Hose Reels.

The Cooking equipment will include: Exhaust Hood, Utility Distribution System, Double Stacked Convection Ovens, Double Stacked Combi Ovens, 30 Gallon Tilt Skillet, Floor Trough, 20 Gallon Kettle with Stand, and 2 Burner Range. The equipment will be both electric and/or gas heated. No direct steam equipment is to be used.

The elementary school and middle school will have their own dedicated serving space. Each serving area will have separate Serving lines with separate entrance and exits. Each line to have a POS. Serving Lines to include: 4-well hot food counter, 3-well cold food counter, a flat counter, milk cooler, and cashier counters. Data Cabling will be required at the POS. The Food Guards for the Hot Food Counters will be designed to not allow the students access for the first two wells as this is normally the protein section of the counter. The Food Guards for the remaining two wells can be adjustable for service or self-serve operation. The Cold Food Counter will have Food Guards that are designed for self-serve operation. The milk Cooler will sit at the beginning of the serving line. A hand sink will be included in the Serving Area.

The scullery or dish room will be designed to withstand the water, heat, and humidity produced by the equipment. All equipment will be stainless steel, including stainless panels on the walls where required. The students will pass the trays thru a window or door opening and set on the soiled dish table. The staff will dump waste from the trays into a trash can and stack the trays in the dish rack. A mobile silver soak sink may be used if the students are using stainless flatware.

The racks will be pre-flushed and fed into a conveyor dishwasher with a built in booster heater. The dishwasher will automatically push the trays onto the clean dish table to dry.

A three compartment sink will be provided for pot and utensil washing. The equipment in the scullery will include: Pot & Pan Sink, Pot Shelf, Soiled Dish Table, Condensate Ducts, Dishwasher with Booster Heater, Clean Dish Table, Hand Sinks, and Hose Reels.

Hand Sinks will be provided with Wrist Handle operation. Hose Reels will be provided in the Kitchen and Dish room.

K. FIRE PROTECTION

The Building will be designed and constructed according to the following codes/standards:

- 2015 International Building Code
- 2015 International Fire Code
- 2013 NFPA 13 "Installation of Sprinkler Systems"
- 2013 NFPA 24 "Installation of Private Fire Service Mains and Their Appurtenances"

MATERIALS AND SYSTEMS

DESIGN REQUIREMENTS:

The Building shall be divided into four zones. Zones shall be sized to accommodate possible future additions.

The fire riser shall be located in Fire Riser 771 which is accessible from the exterior. The incoming 6" fire line into this room shall be provided with an exterior freestanding Post Indicator Valve (PIV). The fire department connection shall be a freestanding FDC. A double check valve backflow preventer shall be provided at incoming riser entrance to room. A wet sprinkler valve assembly (i.e., riser check valve and floor control assembly) shall be provided for each sprinkler zone.

A wall-mounted Backflow Preventer Test Connection shall be provided on the exterior wall of this room for forward flow testing of the backflow preventer. An exterior horn/strobe (furnished and installed by Division 28 Fire Alarm) mounted on the exterior wall of this room shall be provided to indicate local activation of sprinkler system.

Based on preliminary water flow information, it is not anticipated that a fire pump will be required. The mechanical rooms, electrical rooms, storage areas, workrooms, janitor rooms, computer labs, locker rooms, storage, and data rooms shall be designed for Ordinary Hazard Group I occupancy. The remainder of the building shall be designed for Light Hazard Occupancy.

The automatic sprinkler system shall be hydraulically calculated to provide a safety factor margin of 5 psi or 10 percent, whichever is greater. The fire protection system shall be seismically braced and restrained as required for a Seismic Design Category C facility.

ABOVE GRADE PIPING:

- Piping 1-1/2" and larger shall be Schedule 10 or 40 steel piping with mechanical grooved pipe couplings and fittings. Welded outlets are acceptable in lieu of fittings.
- Piping 1-1/4" and smaller shall be Schedule 40 with threaded fittings.
- Piping, except for hot dipped galvanized piping, shall be internally coated to be resistant to bacterial growth and maintain minimal bacterial count after multiple flushes of the pipe.
- Piping and fittings exposed to ambient conditions or installed on the exterior shall be hot-dipped zinc coated (galvanized).
- Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, Grade "A" EPDM-rubber gasket, and bolts and nuts. Fittings and couplings for grooved end products shall be provided by one manufacturer.

BELOW GRADE PIPING -In-Building Riser:

- Piping below grade (including incoming fire line and fire department connection line) from 5'-0" outside the building to riser flange inside the building shall be an "In-Building Riser".
- The "In-Building Riser" shall be composed of a single extended ninety degree fitting fabricated from Type 304 stainless steel tubing with a maximum working pressure of 200 psi.
- The riser shall have a grooved (or flanged) end on the outlet (building) side and a Cast Iron Pipe size coupler on the entrance (underground) side. Diameter shall be as shown on the drawings.
- The grooved (or flanged) end on the outlet side shall include a coupler and cap to facilitate testing of the underground piping.
- The riser shall be similar in all respects to the Ames Model "In-Building Riser" as manufactured by Ames Fire & Waterworks or approved equal.
- Piping below grade, from 5'-0" outside the building, shall be ductile iron, AWWA C151, Class 50. Lining shall be AWWA C104, cement mortar, seal coated. Gaskets shall be rubber in accordance with AWWA C111. Fittings shall be AWWA C110, ductile iron or cast iron, 250 psi pressure rating; or AWWA C153, ductile iron compact fittings, 350 psi pressure rating. All bolts, nuts, washers, and rodding used for installation of underground piping, valves, and fittings from the riser flange back to site water connection shall be stainless steel conforming to UNS31600 (formerly AISI Type 316).
- Piping below grade may be Class 200 PVC pipe conforming to AWWA C900. If Class 200 PVC piping is used, a transition from approved PVC piping for underground supply to cement-lined ductile iron pipe conforming to AWWA C151 and C104 shall be provided prior to rising above grade. Fittings shall conform to AWWA C110.

Concealed flat plate pendent sprinklers shall be installed in all areas with finished ceilings except where noted otherwise. Upright sprinklers shall be installed in mechanical rooms, electrical rooms, storage rooms, and similar rooms and any other space without ceilings. Provide sprinkler guards for any sprinkler installed less than 7'-0" AFF.





MATERIALS AND SYSTEMS

FIRE DEPARTMENT CONNECTION (FDC):

- Remote freestanding
- Polished chrome finish
- Two (2) 2-1/2" connections with clappers with caps and chains

BACKFLOW PREVENTER TEST CONNECTION (BFPTC):

- Wall Mounted
- Polished Chrome Finish
- Two (2) 2-1/2" Connections
- Interior Valve with Tamper Switch (Normally closed operation)

MISCELLANEOUS MATERIALS WILL INCLUDE:

- All material installed on the exterior or exposed to ambient will be hot dipped galvanized or 304 SS.

L. PLUMBING SYSTEM

Domestic Water:

- Wall hydrants will be surface mounted, loose key, anti-freeze with backflow preventer. Hydrants shall be located at approximately 100-ft. intervals around perimeter of the building.
- Roof hydrants will be provided at rooftop equipment for wash down and maintenance purposes.
- Hose bibb with loose key and vacuum breaker will be located in all toilets with floor drains and in mechanical room.

Water Heating:

- Large demand usage areas (i.e., kitchen, showers, etc.) will be provided with natural gas fired water heaters.
- Water heaters for lesser usage areas shall be electric storage tank type water heaters.
- A hot water recirculation system shall be provided with water heating when the hot water system piping exceeds 100 feet from water heater to last fixture.

Sanitary Sewer and Storm Drainage:

- Sanitary sewer shall be collected inside the building and extend 5'-0" outside the building for connection to site utility system.
- A Food Grease Waste Interceptor shall be provided for the kitchen waste system.

Miscellaneous Utilities:

- Natural gas shall be provided to all gas fired equipment (i.e., building heating systems, domestic hot water heating systems, kitchen equipment, etc.)

Materials:

- Domestic Water Lines:
 - Type "L" copper above floor.
 - Type "K" copper below floor.
- Sanitary Sewer and Storm Drain:
 - No-hub cast iron with heavy duty stainless steel couplings for piping located above floor.
 - Schedule 40 PVC hard wall piping and fitting shall be used for piping below grade.
- Natural Gas Line:
 - Above floor there are Black Steel Schedule 40 or Corrugated Stainless Steel piping by Tracpipe.
 - Below floor there are Black Steel Schedule 40 or Corrugated Stainless Steel piping by Tracpipe with Schedule 40 PVC casing.

MATERIALS AND SYSTEMS

Water Closets have a floor mounted flush valve type. Water closets installed in group restrooms shall have sensor operated flush valves. Sensor flush valves shall have minimum 10 years of battery life. Urinals are the wall hung flush valve type. Urinals installed in gang restrooms shall have sensor operated flush valves. Sensor flush valves shall have minimum 10 years of battery life.

Lavatories shall be wall hung enameled cast iron with hot and cold water faucets. Group restroom shall have sensor faucets. Faucets shall have minimum 10 years of battery life. Single adult restrooms shall have manual faucet with gooseneck and 4" wrist blades.

Art room sinks shall be stainless steel 18 gauge type 302 with hot water and cold water. Art room sinks will be provided with above floor sediment traps. Classroom sinks shall be stainless steel 18 gauge type 302 with hot and cold water. Water coolers shall be stainless steel wall hung vandal resistant type. There shall be one water cooler with bottle filling station on each floor.

M. MECHANICAL SYSTEM

Each classroom will be served by a dedicated rooftop, constant volume, DX heat pump with auxiliary electric heat. Outside air will be provided by multiple 100% outside air units with DX coils and SCR preheat.

The administration offices are to be served by two (2) packaged, rooftop, multi-fan, VAV air handlers with DX coils and SCR electric preheat, and shutoff and fan-powered terminal boxes with SCR electric reheat.

The new Gym is to be served by two (2) single-zone, packaged, rooftop, DX heat pumps with auxiliary electric heat and modulating hot gas reheat for humidity control. Outside air may be provided by a 100% outside air unit with a DX coil and a SCR electric preheat coil. Exposed spiral ducts are to be utilized in the Gym.

The locker rooms are to be served by two (2) single-zone, packaged, rooftop, DX heat pumps with auxiliary electric heat and modulating hot gas reheat for humidity control. During occupied mode, these heat pumps will draw air directly from the gym, and the locker rooms will be exhausted. During unoccupied mode, these heat pumps will operate in 100% recirculation mode.

The Elementary and Middle School Reading/Multi-Media rooms and Computer Lab are each to be served by a single-zone, packaged, rooftop, DX heat pump with auxiliary electric heat and modulating hot gas reheat for humidity control.

The Dining and Multipurpose rooms are each to be served by a single-zone, packaged, rooftop, DX heat pump with auxiliary electric heat and modulating hot gas reheat for humidity control.

The Central Receiving room and adjacent spaces are to be served by a single-zone, packaged, rooftop, DX heat pump with auxiliary electric heat and modulating hot gas reheat for humidity control.

The Kitchen and adjacent support rooms are to be served by a single-zone, packaged, rooftop, DX heat pump with auxiliary electric heat and modulating hot gas reheat for humidity control. The Kitchen hood is to be served by a rooftop 100% outside air makeup air unit with gas pre-heat, and a Type 1 grease exhaust fan. The grease exhaust fan system will be VAV, and will be controlled by a VFD in the hood utility cabinet. The Kitchen office is to be served by a dedicated ductless, split-system, DX heat pump. The indoor heat pump (IDPH) will either be wall-mounted or ceiling cassette-type, and the condensing unit (ODHP) will either be located on the roof, or directly outside on grade.

Science laboratories and fume hoods are to be served by roof mounted utility fans with a 10' discharge stack. Science rooms, chemical storage rooms, and prep rooms will be exhausted with rooftop fans. All laboratory and fume hood exhaust ductwork will be continuously welded stainless steel, flat oval or spiral type.

Generally, all electrical, fire protection, and mechanical rooms are to be ventilated with exhaust fans, and heated with wall-mounted electric unit heaters.

Recessed electric wall heaters and ceiling unit heaters will serve stairways, entryways, and vestibules. Toilets, janitor's closets, electrical rooms, health rooms, kiln rooms, workrooms, showers, and washer / dryer rooms will be exhausted. Transfer fans will ventilate data closets with a heat load of 3000 Btuh or less.

All ducts will be either rectangular or spiral galvanized sheet metal unless specified otherwise. Insulation for concealed supply and return duct will be 2" FSK fiberglass insulation. Exposed ductwork will be dual wall spiral with liner protecting the inner airstream and shall have a paint grip coating to allow finish painting of the duct. Ceiling diffusers will be louvered face grilles. Ducts will be Seal Class A. Grease exhaust duct (Type 1 Hood) will be continuously welded steel duct.

HVAC systems will be controlled by a web-based Automated Logic Control System. Most exhaust fans will be controlled by occupancy schedules; some may be controlled by wall switches. Common lighting zones (primarily corridors and exterior lighting) will be controlled by the building control system. Space humidity sensors will be provided at various locations to monitor space humidity levels. All rooftop, single zone, heat pump units, except for the units serving the locker rooms, will have needlepoint bi-polar ionization.





MATERIALS AND SYSTEMS

N. ELECTRICAL SYSTEM

An underground service lateral will be obtained from a utility company pad-mount (SCE&G) transformer. Service voltage will be 480Y/277 3 phase 4 wire. Nominal service size is estimated to be 4000A at 480Y/277 3 phase 4 wire. Surge Protective Devices (SPDs) will be provided for the main service to the building and at stepdown transformer locations.

Mechanical loads will be served at 480V 3 phase. Lighting will be served at 277V single phase where applicable. Receptacle and miscellaneous loads will be fed at 120V single phase.

Emergency power will be derived from an outdoor diesel generator set in a sound attenuated weatherproof enclosure. Nominal size is estimated to be 80 kW at 480Y/277 3 phase 4 wire. Emergency power will be provided for exit signs, egress lighting, fire alarm system, telephone, communications equipment, security systems, and technology/IT closets. In addition, emergency power will be provided for coolers/freezers and fire pump operation (if the building is required to be equipped with a fire pump).

Generally lighting shall consist of lay-in LED fixtures. Classroom lighting will be equipped with dimming for audiovisual presentation. LED high bay fixtures will be used in gymnasium areas. In lobby and public spaces LED downlights will be used along with other accent lighting.

Emergency lighting will be provided by building fixtures connected to the emergency generator system. Exit signs shall be of the L.E.D. type.

Automatic lighting control will be provided by occupancy sensors in accordance with the requirements of ASHRAE 90.1. Exterior lighting will be controlled by a photocell and time clock.

Building mounted security lighting shall consist of architectural wall packs and recessed can down lights with LED lamp sources.

Parking lot lighting will be provided by pole mounted LED lighting fixtures.

The fire alarm system will be a voice evacuation type utilizing strobes, speakers, and pre-recorded voice messages to notify occupants. The fire alarm system will report automatically to a Central Receiving Station.

Wiring, conduit, and cable tray pathway will be provided for the telephone/data network system. The telephone/data network electronic equipment will be provided by the school district. Cable trays will be provided for the support of wiring systems and shall be for the sole use of telephone/data wiring, IT, security, and CCTV. HVAC controls shall not be installed in the cable tray system.

Empty conduit system shall be provided within the instructional spaces (smartboards, projectors, etc.) to support multi-media applications between the instructor's station and display equipment.

The school intercom system will be based on the Front Row intercom and classroom audio system which will provide two-way school calling to instructional areas and general paging throughout the building. Call-back buttons shall be provided in classrooms and selected locations.

The system will also provide classroom audio amplification for the instructor in each classroom.

Conduit pathway and raceway will be provided as required to support security systems for intrusion detection, video surveillance, and access control.