K-8 FF-A WESTERN GROVE

PROJECT VERIFICATION

FOR:

St. Lucie County School District
9461 Brandywine Lane
Port St. Lucie, FL 34986

Edlund, Dritenbas, Binkley Architects & Associates, P.A.
65 Royal Palm Pointe, Suite-D
Vero Beach, Florida 32960
Ph. (772) 569-4320
Email edbvero@bellsouth.net
AR #AAC000886

Commission Number
#080123VB

May 22, 2024

Executive Summary

This document has been prepared to convey the general design requirements for the St Lucie Public Schools Protypical K8. This document describes the buildings basic construction methodologies and systems which will be the template for the project design and engineering.

Project Description/Program Narrative:

The school campus consists of an administration/common education core facility building. Two (2) classroom buildings, an audeteria with kitchen facilities (designed as an Enhanced Hurricane Protection Shelter), gymnasium, play area, hardcourts, and a multi-purpose playing field. Other amenities include a bus loop, staff and guest parking.

A covered walk extends from the bus drop-off location into the campus and connects to all buildings. Chiller and cooling tower equipment to be provided.

The administration and common core education facility is a partial two (2) story facility with a total gross area of 37,416 sq. ft. This structure is connected at the second-floor level with an open structure bridge to each of the classroom buildings. Each classroom building is two (2) stories with a floor area of 31,024 sq. ft. per floor, each building contains 62,048 sq. ft. gross.

The classroom building to the east of the admin/core facility contains grades K thru 1st on the first floor and the classroom building to the south of the admin core facility contains grades 2 thru 4 inclusive on the first floor. The second floor at the east classroom building contains grades 5 thru 6 inclusive, and the south 2nd floor classroom building contains grades 7 thru 8 inclusive.

Each floor of both classroom buildings consists of four (4) classroom pods surrounding an interior extended learning area. Student and staff toilet facilities are located on each floor within each school grade pod. Laboratories, ESE classrooms, science demonstration classrooms, skills labs, etc. are dispersed within both the common core facility and classroom buildings.

The audeteria is 33,569 sq. ft. gross and contains dining facilities, kitchen, custodial, stage, band classroom, vocal classroom, and art classroom. This building is to be designed as an EHPS Enhanced Hurricane Protection Shelter

The gymnasium is 20,201 sq. ft. gross and contains a ticket booth, concessions area, dance room, multi-purpose classroom, gymnasium, boy's and girl's locker facilities, toilets, showers, and PE storage. The chiller building is 2,179 sq. ft.

Accumulative gross building area for campus is 217,461 sq ft.

The project is scheduled to be completed to begin school in August of 2026.

The following is a summary of construction tasks which are being completed by the Mattamy Homes, which will corelate to the construction of the K8 FFA and be coordinated by the selected design and construction team:

Construction of Off-Site Roadway "North/South A"
Milestone Timeline

- December 2024 – Stabilized Access Road to Site – A continuously accessible stabilized access to the school site will be made available from December 2024 until the roadway completion
- January 2025 – NSA Road Construction Start
- February 2026 – Road open to public with 1st lift of asphalt and temporary striping
- July 2026 – Final lift of asphalt and Themo striping complete

Construction of School Site Infrastructure
Milestone Timeline

- Complete - Site Boundary & Topographic Survey Provided (Received March 26, 2024)
- In Progress - Preliminary Site Investigations – In Progress, will include:
    - Tree Survey
    - Environmental Assessment
    - Soils Borings
    - Title Search
- December 1st, 2024 - Temporary Electric
- December 1st, 2024 – Off-Site Stormwater Management System
- February 1st, 2025 - Construction Water to School Site
- June 1st, 2025 – All utilities (Potable Water, Sanitary Sewer, Natural Gas, Etc.) completed and provided to site
- June 1st, 2025 - Onsite permanent power will be coordinated with SLPS and FPL, including any offsite feeder lines for permanent power.
- **September 2025 – Lift Station Complete and Certified** - Off-Site Lift Station will be constructed near the Southeast corner of the commercial property Immediately north of the School Site.

Additional work to be provided by Land Developer:

- Placement and Compaction of Fill Materials to a mutually agreed upon elevation. Project Civil Consultant will provide plan outlining desired elevation and will monitor placement and compaction efforts. ***(This item is subject to availability of fill materials from adjacent land development activities and will occur prior to SLPS taking ownership of land)***

Any additional permits / site preparation activities will require support from SLPS Civil Engineer for design plans/documents and construction inspections.

CIVIL

Required Permits:

- South Florida Water Management District Environmental Resource Permit
- South Florida Water Management District Dewatering
- South Florida Water Management District Consumptive Use (possibly for irrigation)
- South Florida Water Management District Early Work/Mass Grade
- City of Port St. Lucie Utilities (water and sewer connection)
- City of Port St. Lucie Public Works (driveway connection and possibly mass grading)
- FDEP NPDES
- FDEP Water and Wastewater
-

STRUCTURAL

Structural Design Basis:

The buildings will be designed for an ultimate wind speed, per the 8th Edition of the Florida Building Code, which references ASCE 7-16, of 162 mph for non-educational structures of Risk Category II (e.g. Dug- Outs and Concession Building) and **173 mph** for all other buildings of Risk Category III. Additionally, exposure category C and an internal pressure coefficient of plus/minus 0.18 (enclosed structure) will be incorporated into the wind design.

Public Shelters shall be designed as Enhanced Hurricane Protection Areas (EHPAs). These buildings will be designed for an ultimate wind speed, per the 8th Edition of the Florida Building Code section 453.25.4, which references ICC 500-2014, of **210 mph**. EHPAs shall be Risk Category IV, exposure category C and an internal pressure coefficient of plus/minus 0.18 (enclosed structure). The exterior envelope of the building will need to meet missile impact criteria. This building shall be considered a “Threshold Building”.

Ground Floor Slab:

The ground floor slab is anticipated to be a 5” thick concrete slab-on-grade reinforced with Welded Wire Fabric (WWF) or polypropylene fibers assuming that the geotechnical report does not recommend otherwise.

Second Floor Framing:

The interior elevated floors are proposed to be a composite steel framing system. This system has excellent vibration damping characteristics and is capable of the required spans with relatively shallow members, easy to meet the required two-hour fire resistance rating and fast to erect. With the beams spaced out at the distance stated above, mechanical engineers will generally find adequate room in which to suspend (i.e. recess) their equipment between the beams.

The composite steel system consists of composite wide flange steel beams at each column line

and equally spaced approximately 9’-0” oc with headed studs welded to the top flange supporting a 2” galvanized composite metal deck plus 4½” normal weight reinforced concrete (above the flutes) for a total slab thickness of 6½”.

The exterior elevated floors are proposed to be 8” hollow core planks with a structural topping ranging in thickness from around 2” to 4”. The difference in thickness is needed to achieve the appropriate slope for positive drainage. The hollow core planks shall bear on cast-in-place concrete beams and columns.

Special attention will be paid to the detailing of the joints between the planks so as to minimize cracking in the topping.

Roof Framing:

The roof is proposed to be a 1½” Type B (wide rib) vented metal deck (for cellular lightweight insulating concrete) on open-web steel bar joists spaced at approximately 5’-0” oc supported by steel beams framing to steel columns.

Columns:

The interior columns will be W10 or W12 wide flange steel columns for multistory buildings and HSS4x4 or HSS5x5 for single story buildings.

The exterior columns may be masonry columns or concrete columns.

Walls:

The exterior walls are recommended to be 8” or 12” concrete block with poured concrete.

Interior load-bearing walls will be concrete masonry block reinforced according to loading.

ARCHITECTURAL

Wall Construction

Standard 8” or 12” concrete block masonry units with poured concrete intermediate and top roof beams.

Roof

Low-slope roofs: ¼” per foot slope with single-ply roof system over lightweight insulated concrete over metal deck over structural steel framing. Internal roofs will have roof drains with an overflow drain. Walls will have a preformed metal coping cap with scuppers and downspout. Minimum R Value = 30ci.

Windows and Glazing

Windows: Aluminum Storefront (YKK YHS 50TU) with Class 1 clear anodized finish. Exterior glass to be insulated low-E tinted with marble window stools. Interior glass to be ¼” thick clear tempered at non-rated locations.

Curtainwall: Aluminum (YKK YHC 300OG) with Class 1 clear anodized finish. Glass to be insulated low-E tinted with marble window stools.

Bullet Resistant Glazing: Provide level 1 bullet resistant glazing (TSS 001) at interior Administration Reception glazing only.

Stairs (Interior)

Factory primed concrete-filled metal pan on structural steel stringer. Tread and riser finish TBD. Painted steel handrails and guardrails. Stairs to have angled rubber treads with integrated risers as well as on the landing.

Hydraulic Elevators

Telescopic holeless hydraulic elevator, TKE Endura 30A or similar. 3000 # minimum @ 100’ per minute. Provide complete bentonite waterproofing system at elevator pits (manufacturer: Volclay UltraSeal System CETCO or similar).

Typical Interior Partitions

- Standard walls to be 8” concrete masonry units, painted and extended to underside of deck. Typical stud walls are 3 5/8” metal stud with full batt acoustic insulation and 5/8” gypsum wall board, painted and extended to underside of deck with 4” rubber base. Smoke resistant and fire rated to be indicated on life safety drawings.

- 12” x 24” porcelain tile full height in student and adult restrooms all walls with porcelain tile base.
- Abuse resistant gypsum board at all corridors (up to 8’-0”), locker rooms, cafeteria dining, and wrestling room.
- Corrugated aluminum perforated acoustical wall panels in the gymnasium above bleachers and wall pads.
- Band, Music, and Vocal room walls: 3 layers 5/8” gypsum board on isolation clips joints staggered 24” each layer over 3 5/8” metal studs with two layers of 5/8” gypsum board joints staggered 24” each layer.

Millwork

Typical Casework: Laminate-finished or solid surface cabinets and counter-tops on plywood construction. Millwork below countertop at reception desks to have fiberglass backed Kevlar surface for bullet resistance.

Science Lab and Prep areas: millwork to be high pressure laminate over plywood sheathing for vertical surfaces and epoxy resin countertops for horizontal surfaces. Science Casework by ICI Scientific (or equal).

Science Equipment

- Safety Glass Cabinet (Sheldon Labs #31170)
- Flammable Storage Cabinet (Sheldon Labs #25100)
- Acid Safety Cabinet (Edsal SKU AC300A)
- Drying Racks – Peg Board (Sheldon Labs #79530)
- Fire Blanket and Cabinet (Larsens Manufacturing FB 1016)
- First Aid Cabinet (Sheldon Labs #66109)
- Portable Fume Hood (Labconco Demonstration Hood System #394500/EMD)
    - Weight: 135 lbs
    - Dimensions: 39” x 31.9” x 68” h
    - Electrical 115 volts, 60 Hz, 10 amps
    - Nominal width: 3’-0”
    - Blower Requirements: none
    - FilterMate included
    - Conformance: ANSI Z9.5, CAN/CSA C22.2, Modified ASHRAE 110, SEFA 1
    - Enclosure Height: 68”
    - Style: Benchtop

Floors

- LVT for classrooms, cafeteria, and corridors.
- Carpet tiles with adhered backing in offices and media center.
- 12”x12” tiles with base in rest rooms.

- HDPE toilet partitions, floor mounted with ceiling support.
- Mechanical rooms, electrical rooms, and custodial closets to be sealed concrete.
- Science Labs and Art Labs to be opaque epoxy paint over concrete.
- Poured epoxy flooring at kitchen and culinary arts kitchen.
- Wood sprung floor system in Dance Rooms.
- Poured in place rubber gym flooring product “Soft-Crete” in Weight Rooms, Training Rooms, Locker Rooms, Multipurpose Room, and Athletic Offices. Color to be selected by manufacturer’s full range of colors.
- Synthetic / Rubber athletic flooring system in gymnasium
- Auditorium Stage: new stage floor to be Poplar flooring with water-based stain (color: black), over one-layer ¾” CDX covered with ¼” Masonite. Basis of design is Spotlight Stage II.

Typical Ceilings

2’x2’ lay-in acoustical ceiling tiles in grid. Restrooms to have epoxy painted moisture resistant gypsum board.

Auditorium: Provide Ovation sound reflector panels at Auditorium as manufactured by Kinetics Noise Control or approved equal. Panel Shape: Curved panel. Core: 3/4” plywood. Facing: High-Pressure decorative laminate NEMA LD 3, Grade HGS. Facing basis of design to be Wilsonart or approved equal (Formica, Lamin-Art, Inc., or Pionite). Color to be selected by Architect.

Doors

- Interior - typical 3’x7’ solid core oak veneer with view-lites at all occupied areas – balance to be solid core oak veneer flush units.
- Entry doors to be aluminum storefront or curtainwall with glazing as shown on drawings.
- Exterior utility doors shall be insulated hollow metal. All HM doors & frames to be factory primed/field painted.
- All hardware to be heavy-duty commercial grade.

ATHLETICS

Athletic Locker Types

PE Locker Rooms: 12” x 12” HDPE 2 tier & 6 tier lockers, vented. Basis of design Scranton Products, Tufftec Standard Lockers, or other approved equal) over 4” concrete base.

Motorized Gym Dividers

Basis of design: Porter Athletic Equipment Company Model #9067500 or comparable product. Electronically operated with roll up drive pipe, steel pipe top batten and steep pipe bottom batten. ¾ or 1 HP, size verified by application by manufacturer. Voltage: 115V ac, single phase, 60 hertz. Control System to include key-switch operation with type 1 NEMA ICS 6 enclosure. Upper curtain: woven mesh with polyester, color to be selected by architect. Lower curtain: solid, woven, polyester fabric coated with vinyl. Color to be selected by architect.

Telescoping Bleacher Seating at Gymnasium and Sports Complex

MAXAM CourtSide XC10, Hussey Seating Company or other acceptable manufacturers. Closed deck telescoping bleachers, 5/8” AC grade plywood, minimum 5” diameter wheels with 1 ¼” non-marring soft rubber face. Foot level aisles to be 42” wide. Plastic modular seat completely enclosed with integral seat number plate. 50% of bleacher seating to have seat backs, 50% of bleacher seating to be standard. Typical row spacing 24” wide.

Canopies

Aluminum canopies are pre-engineered system with an extruded deck. All canopies are a flat walkway canopy with internal draining system and tied to storm water system. All canopies to have a clear finish.

Standard Equipment for Stage will likely include the following:

- AV Booth including AV Rack (w/ Digital Audio Mixer, Amplifiers, Microphone Receivers, Antenna, Etc.)
- 4 - Flat Panel LED TV's
- Three Overhead Projector & Motorized Screen
- Ceiling and Wall Speakers (Sound)
- Ceiling Speakers (Intercom)
- Ceiling & Wall Mounted Wireless Access Points
- Flush mount junction box in stage for lectern av connections
- Wall & Ceiling Mounted Microphones
- LED Track and Can Lighting
- CCTV System with Multiple Camera Locations
- Acoustic Wall and Ceiling Treatments

The following are excerpts of sample specifications of similar projects:

Theatrical Stage Curtain & Equipment

Minimum Standards

A. Overhead Lifting Components and Systems: Safety factor of 8.
B. Cable Bending Ratio: Minimum of 30 times the rope diameter.
C. Steel: 1/5 of stress yield
D. Maximum Fleet Angle: 2 degrees

Incidental Materials

1) Shop Primer: Manufacturers standard primer
2) Finish Paint
3) Miscellaneous hardware, cable fittings, clips and chain and hardware must be painted, galvanized or cadmium plated as required.

Materials

Stage Curtain Tracks

a) Front Curtain traveler track shall be Automatic Devices Company Model # 282 utilizing nylon tired ball bearing carriers, 6" operating pulleys and back pack devices. Tracks to be furnished complete with all necessary accessories.
b) Upstage Traveler curtain tracks shall be Automatic Devices Company Model #282 utilizing nylon tired ball bearing carriers and back-pack devices. Tracks to be furnished complete with all necessary accessories.
c) Curved track is to be Automatic Devices Company Model# 140 or# 500, as necessary, as determined by the final weight of the drapery.
d) All curtain tracks are to be supported rigidly from pipe battens using 2-piece, bent steel pipe clamps. Clamp spacing is per manufacturer's suggestion but is not to exceed 6'-0" on center.
e) Quantities, sizes and lengths per drawings and schedules.

Stage Drapery and Drops

Stage Curtain Construction

a) All draperies must be vat dyed and flame retarded by an immersion process.
b) All fabric cuts must be full length with no splices. Any fabric sections with visible streaking or spotting must be cut from bolt and discarded.
c) All Stage curtains furnished with sewn fullness must be box-pleated on 12-inch centers.
d) All top hems must have heavy-duty jute webbing double stitched at the top with machine set brass grommets one foot on center with tie lines or snap hooks as required.
e) All draperies must have, as a minimum, 50 % fullness unless otherwise specified.
f) All hems must be double turned with no visible selvage edges.
g) On-stage and off-stage vertical hems of House Curtain and Traveler Curtains must have 1/2 bolt width turned back hems. All other ve1tical hems must be 3 inches.
h) Floor length draperies must have a 6-inch bottom hem with a suspended inner canvas or muslin pocket containing #8 zinc plated chain weights.
i) Bottom hems of border curtains must be 4 inches.
j) All fabrics with pile ends must be sewn with pile running down unless otherwise specified.
k) All fabrics must be flameproofed using an immersion process. This process must be in accordance with the requirements of the NFPA 701 Large and Small scale test.

Scenery Drop Construction

a) All fabrics must be vat dyed unless specified as a natural color.
b) All fabrics must be flame proofed by the immersion process, in accordance with the requirements of the NFPA 701 Large and Small scale test.
c) All fabric cuts must be full width with no splices.
d) Cuts must be sewn horizontally unless otherwise specified. Seamless fabrics as specified.
e) Top hem must be reinforced with heavy jute webbing double stitched with #4 machine set brass grommets one-foot on center with 36-inch tie lines.
f) Side hems must be 3 inch double turned and show no selvedge.
g) Bottom hem must have a bottom hem with a suspended inner 6- inch heavy canvas lined pipe pocket with an opening 10-foot on center for inserting pipe weight.

Fabric Manufacturers

Velour Fabrics (weights and colors as specified)

a. J.L. DeBall
b. KM Fabrics

c. Piedmont Plush Mills
d. Rose Brand

Muslin, Canvas and Scrim (type, weight and color as specified)

a. Dazian Fabrics
b. Frankel Associates
c. Gerriets International

Drapery Schedule

a. 1 each Main Curtain from Majestic IFR Velour, in two sections, each section being **11'-10" high X 19'-0" wide.** With ADC #282 track.
b. 1 each Front Valance from Majestic IFR Velour, in one section *(none on this project)* by *(none on this project)* wide.
c. 1 each Mid-Stage Traveler from Majestic IFR Velour, in two sections, each section being *(to be determined)* high by *(to be determined)* wide. With ADC #282 track.
d. 1 each Rear Traveler from Majestic IFR Velour, in two sections, each section being *(to be determined)* high by *(to be determined)* wide. With ADC #282 track.
e. 3 pair -Leg Curtains from Majestic IFR Velour, each section of a pair *(to be determined)* high by *(to be determined)* wide.
f. 1 each -Border Curtains from Majestic IFR Velour, in one section *(to be determined)* high by *(to be determined)* wide.
g. 1 each -White Scrim drop from seamless fabric, in one section (*to be determined)* high by *(to be determined)* wide.
h. 1 each -Black Scrim drop from seamless fabric, in one section *(to be determined)* high by *(to be determined)* wide.
i. 1 each - Cyclorama Curtain from 108" natural muslin, in one section *(to be determined)* high by *(to be determined)* wide.

Manually-Operated Front Projection Screens

1 General: Provide manufacturer's standard units consisting of case, screen, mounting accessories and other components a required for a complete installation and complying with descriptive requirements indicated below.

2 Spring-Roller-Operated Projection Screens: Units designed and fabricated for wall or ceiling installation and complying with the following requirements:

Screen Case: Fabricated in one piece from not less than 22-gage steel with flat back design, vinyl-covered or baked-enamel finish, and end caps with integral roller brackets and furnished with universal mounting brackets in finish matching end caps to enable attachment to wall or ceiling.

Screen: Mildew - and flame-resistant glass fiber fabric with vinyl-coated viewing surface complying with requirements indicated below, with top edge mounted on. And securely anchored to, a 3" diameter rigid steel spring roller and bottom edge formed into a pocket holding a tubular metal slat, with ends of rod protected by plastic caps containing a screw-attached saddle and pull.

Size of Viewing Surface: **100" high X 160" wide,** or a close equivalent.

Type of Viewing Surface: Matte white with minimum gain characteristics complying with FS GG-S-00172D (I) for Type A screen surface. Edge Treatment: Black masking borders.

Products: Subject to compliance with requirements, provide one of the following:

Da-Lite Screen Co., Inc., Model C (manual), w/ White Baked Enamel Case Bretford/Knox Manufacturing Co. (equivalent)
Draper Shade & Screen Co.
(equivalent) Buhl Industries
(equivalent)

Television Mounting System

TV Bracket

a. Install at each TV outlet shown on the plans, a single or dual arm style Flat Screen TV wall mount assembly with a 10-degree fixed tilt and key locking. Mounting height to centerline of arm or mounting bracket shall be 80" above finish floor. Coordinate final location of Flat Screen TV mount with television and power outlets shown on the drawings.

b. Provide proper wall backing and blocking to support weight of TV and to accommodate the manufacturer's mounting bracket. Bracket must be selected to accommodate a 10 inch to 65-inch TV.

c. Single or Dual action swing arm bracket shall have 45 degree left to right swivel action. Color shall be black fused epoxy or powdercoat finish.

Manufacturers:

Subject to the listed product requirements provide products from one of the following manufacturers:

- PREMIER MOUNTS Model AMl75 for 42" to 63" displays. 175 # capacity
- PREMIER MOUNTS Model AM80 for 37" to 47" displays. 80# capacity
- PREMIER MOUNTS Model AM50-B for 10" to 40" displays. 50 # capacity
- PEERLESS Model SP850-UNL for32" to 65" displays. 150# capacity
- PEERLESS Model PP740 for 22" to 40" displays. 80# capacity
- PEERLESS Model SP735P for IO" to 26" displays. 40# capacity
- Or as manufactured by CHIEF in similar sizes and capacities: Models TS525TU, TS318SU, and TSI 18SU.
- Or as manufactured by SANUS in similar sizes and capacities: Models VLF220, VMF220, and SF213.

HVAC

Chilled Water System

The campus will be served by a Water-Cooled Chilled Water Thermal Storage System.

The system will be comprised:

Three (3) 400-ton water cooled chillers (estimated) sized to accommodate the total capacity for the campus plus ten percent redundancy.

Three (3) 400-ton cooling towers (estimated) with VFD for airside controls. Cooling towers to be selected based on 0.4% Evaporation wet bulb temperature (81.7 deg F). Cooling towers to be connected in parallel. Provide full line size by bass and automatic 3-way valve for use when condenser water temperature drops below minimum requirements of chiller manufacturer. Three cell cooling towers able to be isolated for maintenance/service, counter flow design, REYMSA-Marley or equivalent.

Four (4) Glycol pumps with VFD to achieve variable flow sequence. Provide one (1) pump per chiller with a standby pump. Pumps to be centrifugal, base mounted with premium efficiency motors. CT-PP-SP, one spare pump for each application (redundancy).

Four (4) condenser water pumps with VFD for balancing. Provide one pump per cooling tower with a standby pump. Pumps to be centrifugal, base mounted with premium efficiency motors.

Two (2) chilled water pumps with VFD to achieve variable flow sequence. Provide one (1) pump per chiller with a standby pump. Pumps to be centrifugal, base mounted with premium efficiency motors.

Chilled Water Chemical Treatment: Complete automatic shut feeder system with bulk storage for corrosion inhibitors and antimicrobials. Non toxic/food grade slycol should be considered.

Condenser Water Chemical Treatment: Complete automatic system with total dissolved solids meter with flow through cell, chemical proportioning pump, solenoid controlled adjustable flow bleed valve, automatic blow down and bulk chemical storage for corrosion inhibitors, deposit disbursements, antimicrobials, and pH adjustment chemicals.

Forty (40 Estimated) Ice Storage Tanks. The thermal storage ice tank system shall be a closed-circuit single source system, including; modular ice storage tanks, glycol management system, heat transfer fluid, ice-inventory meter, ethylene glycol fluid (25%), glycol filters/strainers, and water treatment chemicals

Two (2) Plate hydronic heat exchangers. Heat exchanger shall be counter flow arrangement.

The plant will be provided with all the required apparatus to support a water-cooled chiller ice thermal storage plant including air separator, expansion tank, make-up water assembly, chemical feed station and all other components required for a complete operational plant. An insulated buffer tank will be provided to ensure the system has enough water for the chiller equipment including low load conditions when the system is bypassing much of the flow.

Chilled water piping will be distributed throughout the Campus to the air handling units. The piping system will be Aquatherm piping with foamglass insulation. All exterior and interior exposed piping will be provided with aluminum jacketing. All concealed piping will be provided with PVC jacketing.

Condenser water piping shall not be steel, HDPE is the only acceptable option.

The chilled water control valves at the air handling units will be pressure independent characterized control valves.

An evaluation will be provided to remove the need for a pony chiller for the EHPA facility. Alternative may include the use of the remaining ice in the Ice Storage System or provide a secondary DX coil on the Emergency Power.

Air Handling Systems

Air handling systems serving administration, offices spaces, auditorium dining and classrooms will be multiple central station variable air volume (VAV) chilled water air handling units. Each unit will be comprised of Electronically Commutated Motor ECM fan wall section, access section, cooling coil and filter / mixing box. A variable frequency drive (VFD) will not be required for ECM motors for VAV control and the fan speed will modulate to maintain the system duct static pressure setpoint.

For multizone VAV systems, space temperature control will be achieved utilizing variable air volume terminals (VAV's) with integral electric heaters. All classrooms, resource rooms and conference rooms will be provided with independent VAV terminals. Office and general purpose spaces will be grouped together based on similar space types, similar envelope exposures and operational schedules. Each VAV terminal will be provided with a space mounted temperature sensor.

VAV terminals serving conference, multi-purpose, and work rooms or assembly spaces will be interlocked with the occupancy sensors for unoccupied setback control.

Single zone large spaces such as gymnasium and dining room will be served by single zone VAV air handling units with electric heat. Each unit will be comprised of Electronically Commutated Motor ECM fan wall section, access section, cooling coil and filter / mixing box. A variable frequency drive (VFD) will not be required for ECM motors for VAV control and the fan speed will modulate to maintain the space setpoints using a constant supply air temperature.

The kitchen will be served by single zone constant volume chilled water air handling unit equipped with electric heat and face and bypass dampers to provide adequate dehumidification at part load conditions.

Air handling systems will provide outdoor air control utilizing motorized dampers in the outside air and return air stream. Air flow stations will be used to track outside airflow rates and modulate the control dampers accordingly.

Air Purification Systems

Each air handling unit except for the kitchen system will be provided with an air purification system. Systems shall use the needlepoint technology for bipolar ion generation. Each air handling system is to be provided with a duct mounted ion sensing device to provide feedback to the BAS that the ion generators are working within their parameters. Desired outside air reduction goal would be to monitor CO2 levels and have numbers manipulate O.A. damper positions.

Exhaust / Ventilation Systems

All building spaces that require exhaust systems will be provided with the code minimum exhaust airflow.

The kitchen hoods will be served by grease exhaust duct and fan systems and include tempered make-up air systems. Kitchen hoods are to be selected for the minimum differential in exhaust and make-up airflow as possible.

Science classrooms will be equipped with chemical fume hoods. Fume hoods will be ducted to high velocity plume discharge type exhaust fans on the roof.

All roof fans or intake hoods or wall louvers on the exterior of the building will be hurricane rated assemblies that meet the wind and impact requirements of the Florida Building Code.

The audeteria will be provided with HVLS fans to provide the 2 cfm per square foot requirement for use as an EHPA facility.

All wall louvers on the exterior of the building will be hurricane rated assemblies that meet the wind and impact requirements of the Florida Building Code.

Air Distribution Systems

All supply, return and outside air ductwork will be insulated sheet metal duct. The first 20 feet of supply and return ductwork from AHU's will be double wall internally lined acoustical ductwork with perforated interior liner and mylar separation. All other concealed ductwork will be externally wrapped sheet metal.

All exposed supply duct in occupied spaces shall be double wall spiral round or flat oval ductwork.

The return air system will be a fully ducted system. No return air plenums will be used.

Supply duct between AHU's and VAV terminals shall be +4" pressure class. All other supply, return, outside air and exhaust ductwork will be +/-2" pressure class. Any transfer ducts will be 1" pressure class.

All exhaust ductwork will be uninsulated sheet metal.

All ductwork shall be installed per SMACNA requirements.

All air distribution devices shall be aluminum construction.

Independent DX Systems

MDF, dry food storage, elevator equipment rooms shall be provided with independent ductless split systems.

Direct Digital Control (DDC) System

A complete building automation system will be provided for the HVAC controls from one of the approved manufacturers. The system will utilize a web based server accessible from any county workstation connected to the network via web browser. A complete graphics package will be provided with building floor plans and individual equipment status web pages. All equipment and communications will be BACnet compatible.

PLUMBING

APPLICABLE DESIGN CODES & STANDARDS

A complete design will be provided for this project in accordance with the standards in the latest editions of the following listed applicable codes, ordinances, laws and regulations:

Florida Plumbing Code 8th Edition, 2023
Florida Building Code 8th Edition, 2023
Florida Energy Efficiency Code 8th Edition, 2023
Florida Accessibility Code 8th Edition, 2023
Florida Fuel Gas Code 8th Edition, 2023
ASTM – American Society for Testing Materials
ASPE – American Society of Plumbing Engineers
ANSI – American National Standards Institute
AWWA – American Waterworks Association
UL – Underwriters Laboratory
PDI – Plumbing and Drainage Institute
NSF – National Sanitation Foundation

PLUMBING SYSTEM DESIGN

Site
The sanitary, storm and domestic water systems for all new buildings will be shown from the building up to 5 feet outside the building. These connections points will be coordinated with the Civil Engineer, and civil documents will provide site plumbing system routing and utility connections.

Sanitary/Vent Piping System

- Sanitary and vent systems will be provided in the new media building per all current and/or applicable codes. Sanitary and vent systems will be routed from each fixture to underground and shown to five (5) feet outside the building. These connection points outside the building will be coordinated and picked up by the civil engineer and routed underground to the sanitary main.

- Sanitary sewer piping will be solid-wall Schedule 40 PVC or hub-and-spigot cast iron pipe, as is appropriate.

- Sanitary vent piping will be solid-wall Schedule 40 PVC and provided as required by code. Vent systems will be collected and routed above the ceiling and up through the roof to vent to atmosphere. Roof penetrations will be minimalized as appropriate and coordinated with the roof plans.

Domestic Water Piping System

- Domestic water systems will be provided in the new media building per all current and/or applicable codes. Domestic water systems will be routed/distributed above the ceiling to serve each fixture.

- The system(s) will be designed for fluid velocities to not exceed 8FPS for cold water and 5FPS for hot water within the piping.

- Where water service enters the building, the connection points outside the building will be coordinated with existing services and the civil engineer. The civil documents will show the underground site domestic water routing to the utility service main.

- Throughout the system, each individual fixture will have the capability of being isolated from the water service using angle stops. Where the main water service enters the building, a primary shutoff will be provided internal to the building on the riser. Also, where appropriate, each large group of fixtures will have isolation ball valves installed above the ceiling for maintenance or emergency shutoff capabilities.

- All above ground domestic hot and cold-water piping located in unconditioned areas or in walls will be hard drawn type L copper. Domestic water piping larger than 1-1/2" located below ground, in a conditioned space, or above ceiling shall be SCH-80 CPVC. Domestic water piping 1-1/2" or less located below ground, in a conditioned space, or above ceiling shall be SCH-40 CPVC.

- All hand washing sinks and Lavatories shall receive tempered water.

- Water usage to the kitchen will be monitored and trended by means of a flow meter compatible with the building controls system.

Domestic Hot Water Equipment

A combination of electric tank type water heaters and instantaneous type water heating systems will be utilized to provide 140degF water to each mop sink and/or kitchen fixtures, and 110degF water to every hand washing fixture.

- A hot water recirculation loop and pump, (with sensor(s), aquastat and/or timer) will be provided to ensure efficient delivery of hot water to all fixtures and equipment.

- All hot water heaters will be provided with temperature limiting devices, as required by code. Mixing valves will also be utilized to ensure water temperature at each sink or lav does not exceed the tempered water temperature limit (110degF).

Grease Waste System

A grease waste system will be designed as a hydromechanical waste and vent system. A grease waste line shall serve kitchen shall be routed out to the site Schier grease trap system prior to reconnection with sanitary lateral on site.

The below ground piping; hub and spigot cast iron.

Above ground grease waste piping; no hub cast iron. Above ground grease vent piping: no hub cast.
An exterior grease interceptor (size to be determined by number of meals served per day during design phase) will be provided to collect the grease waste from the kitchen and shall be sized as required by local authority having jurisdiction.

Storm Drainage

Storm drainage for the new building will be designed around the roof design itself. Storm water will be collected via grated primary roof drains and routed down within the building to below grade at 5'-0" from building, where their locations will be coordinated with civil for collection and site distribution.

Secondary drains will either be provided by a combination primary/secondary pre-engineered roof drain, or by architecturally provided scuppers and downspouts. All scuppers and downspouts will be coordinated between the architectural and the civil plans.

Storm drain piping within the building will be service weight cast iron piping. Depending on application, below grade storm piping will be either solid-wall SCH-40 PVC piping or Service weight cast iron piping.

All new condensate piping will be routed, via hub drain, to the storm system. Backflow preventors will be provided within exterior valve box or civil engineer will provide an open structure storm connection, (air-gap) to prevent storm water backflow in the building structure.

Natural Gas

A natural gas system will be designed to provide gas as required to the building.
Gas system will include, but not be limited to:

Piping will be sized from gas meter and regulator located at a building exterior wall with site service main coordinated with site plan by civil engineer.

A solenoid valve will be provided downstream of meter and regulator set, connected to building fire alarm panel, to shutdown gas during fire alarm activation.

Gas piping from meter and regulator set will be schedule 40 black steel.

Gas regulator shall be provided at each equipment connection.

Piping shall be sized within the building at 5 PSI maximum to minimize pipe sizing.

Gas control/detection system with monitoring for classroom supplied with gas, and mechanical rooms supplied with gas.

Plumbing Fixtures

All new plumbing fixtures will be commercial grade. Accessible fixtures shall be Specified to comply with the Florida Accessibility Code. All plumbing fixtures will be provided with low flow type faucets, flush valves, and shower heads.

Student Water Closets – floor mounted vitreous china with manual operated low flow flush valves. Seat height above finished floor will be 12" for child's height, 15" for youth standard/ADA.
Staff Water Closets – floor mounted vitreous china with manual operated low flow flush valves. Seat height above finished floor will be 15" for adult and 17" for adult ADA.
Urinals – wall hung vitreous china with manual operated ultra-low flow flush valves. Rim height above finished floor shall be 17" for standard/ADA.

Lavatories – shall be vitreous china, countertop drop-in or wall mounted types with ADA approved trim. Faucet sets shall be self-closing metering type, hot and cold water.
Staff ADA Lavatories – shall be vitreous china, wall mounted with ADA approved trim. Faucet sets shall be self-closing metering type, hot and cold water.

- Electric water coolers with bottle fillers – shall be self-contained, bi-level, meeting ADA mounting requirements.
- Exterior drinking fountains shall be stainless steel bubbler (non-electric) type, rated for exterior use.
- Mop Sinks – shall be floor mounted cast stone units with stainless steel wall mounted faucet set and splash guards.
- Showers – shall be thermostatic type shower valves, single lever with
    - 1.5GPM shower head. A floor drain shall be provided with all showers.
- Floor Drains – shall be provided with trap guards. All mechanical rooms shall have a condensate drain, floor drain and a hose bib.

FIRE PROTECTION

Applicable Codes, Standards and Guidelines:

- The following publications and guidelines shall be used as references for the design of the fire sprinkler systems on this project.
- Florida Building Code Latest Edition with Supplements
- Florida Fire Prevention Code 8th Edition, 2023
- NFPA Codes, Standards, Recommended Practices and Guides.
- Underwriters Laboratories, Inc. (UL) Standards, Recommended Practices.

Site Work:

A new 6" underground supply main shall connect to the public water supply and extend to the backflow device located adjacent to the proposed property. A double check detector assembly listed for fire protection use will be provided between the fire protection system and the public water supply. The 6" underground supply main shall extend from the double check detector assembly to each building's fire sprinkler riser assembly.

Fire department connection (FDC) piping shall extend from each building to a dedicated site FDC. All fire department connections shall be located within fire department acceptable distance from a fire hydrant. A method of draining fire department connection shall be provided. All fire department connections shall have a minimum of (2) 2-1/2” connections.

Sprinkler System:

A wet automatic sprinkler system shall be provided in accordance with NFPA 13 standards.

The building shall be completely protected by a hydraulically designed fire sprinkler system designed to meet NFPA 13 standards and the requirements of the state and local Fire Marshal.

Quick response sprinkler heads shall be provided in all light and ordinary hazard occupancy areas.

Standard response sprinkler heads shall be provided in all extra hazard occupancy areas.

The area per riser/ sprinkler control valve assembly will not exceed 52,000 sq.ft. Each riser/ floor control assembly will consist of a supervised control valve, check valve, pressure relief valve, flow switch, gauge and test and drain valve.

The design of the fire protection system will be based on hydraulic design that utilizes 90 percent of available pressure and will include interior and underground pipe to location of the fire hydrant flow test. Pressure safety margin of 10 percent will be maintained throughout.

Complete sprinkler coverage for all rooms and areas will be provided as required per NFPA 13 standards.

Sprinklers shall be located in center or quarter point of ceiling tiles and symmetrically with other ceiling features. Ceiling features include, but are not limited to, walls, lights, air diffusers, and other architectural features.

Main and auxiliary drains will be provided to drain the entire system. These will be connected to the storm system with a gravity drain sized to accommodate flow from pressure pipe or will discharge to the exterior of the building.

Dry pipe system with nitrogen generator will be provided in all areas exposed to outside elements. Dry pipe system will be pitched as required per NFPA 13 standards back to system main drain. Dry pipe system riser will be located within a heated space/ room.

Design Criteria:

General Building:

System Description:	Wet Pipe
Occupancy Classification:	Light Hazard
Density:	0.10 gpm/ ft2
Hydraulic Remote Area:	1,500 ft2
Sprinkler Orifice Size:	½”
Hose Stream Allowance:	100 gpm
Duration of Supply:	30 minutes
Standard coverage head	225 sq. ft. Maximum Spacing

Mechanical Rooms, Storage Rooms, Electrical Rooms and all other areas or rooms with similar fire loads:

System Description:	Wet Pipe
Occupancy Classification:	Ordinary Hazard Group I
Density:	0.15 gpm/ft2
Hydraulic Remote Area:	1,500 ft2
Sprinkler Orifice Size:	½” & ¾”
Hose Stream Allowance:	250 gpm
Duration of Supply:	60 − 90 minutes
Standard coverage head	130 sq. ft. Maximum Spacing

Elevator Equipment rooms and all other areas or rooms with similar fire loads:

System Description:	Wet Pipe
Occupancy Classification:	Ordinary Hazard Group II
Density:	0.20 gpm/ft2
Hydraulic Remote Area:	1,500 sq. ft.
Sprinkler Orifice Size:	½" & ¾"
Hose Stream Allowance:	250 gpm
Duration of Supply:	60 − 90 minutes
Standard coverage head	130 sq. ft. Maximum Spacing

Fire Pump System (PENDING FLOW TEST DATA)::

An electrical fire pump system with a soft start controller and integrated automatic transfer switch shall be provided in accordance with NFPA 20 standards. Fire pump shall be sized to accommodate all required system supplies.

- Fire pump room shall be a minimum of 14' x 14'.
- Fire pump room shall be located at the exterior of the building and have double doors leading to outside.
- Fire pumps shall have a minimum pumping capacity of 500 gpm.
- Fire pump shall be horizontal split case type.
- 5 GPM Jockey pump and associated jockey pump controller shall be provided.
- 6" test header with (2) 2-1/2" test valves shall be provided.
- 6" bypass shall be provided around pump.
- Housekeeping pad shall be provided for both fire pump and jockey pump.
- Required clearance of 3'-0" shall be maintained in front of fire pump and jockey pump controllers.
- Fire pump room shall be heated to maintain temperature above 40° F.

Piping:

All yard and interior fire protection equipment shall be UL listed and FM approved. The yard underground service line shall be type DR-14, C900, CPVC pipe. Interior main piping 2-1/2" and larger shall be schedule 10 black steel, with grooved end fittings and welded branch line outlets. Branch line piping 2" and smaller shall be schedule 10 black steel with grooved end fittings and welded outlets and/ or schedule 40 with threaded ends. Springs, Amr-overs and drops shall be schedule 4) steel with threaded ends. All piping and fittings exposed to the outside elements or located within corrosive environments shall be galvanized matching above requirements.

All piping and fittings exposed to the outside elements or located within corrosive environments shall be galvanized matching above requirements.

Sprinklers:

Upright, glass bulb, type sprinkler heads shall be installed in all unfinished areas. Pendent type, glass bulb type sprinkler heads shall be installed in all areas with ceilings. Unless otherwise indicated, sprinkler heads shall have ½" threaded male connection, ½" orifice and shall have a temperature rating of 155. F.

All sprinkler heads exposed to the outside elements or located within corrosive environments shall be UL listed corrosion resistant. Sprinkler heads shall have an Electroless Nickel PTFE (ENT) coating.

Valve & Alarm Requirements:

Paddle type water flow indicators shall be installed on each fire sprinkler riser assembly, including outdoor electrically operated bell. Valves controlling the fire sprinkler system, including backflow device, shall have tamper switches. All electrical devices shall be monitored by central station or similar as required by local authority having jurisdiction and shall be in compliance with NFPA 72.

ELECTRICAL

Each building will have an electrical service from an FPL transformer. Each building service will be sized at 277/480 volt, 3 Phase, 5 wire feeder to a main switchgear located in a dedicated room. Low-voltage transformer will be provided for all low-voltage equipment and receptacles.

A single 750KVA generator will provide emergency life safety and stan-by power for the campus. Each building will receive (2) transfer switches for both emergency life safety and stand-by feeds.

Lighting will be all LED lay in fixtures or recessed fixture for classrooms and office and LED Hi-bays for the gym and larger areas. Parking lot and bus loop will have LED fixtures on 20' AFG concrete poles.

Receptacles will be 20amp, spec grade and have stainless steel plates.

The fire alarm system will be a digital addressable voice system manufactured by Notifier. There shall be an FACP in the office and a FACP node in the EHPA manager's office. A fire alarm annunciator shall be provided at the front lobby for fireman control. Speaker/strobes and strobes will be used for notification devices. The system will include duct detectors for all supply and return ducts, smoke detectors in closets and storage rooms with heat detectors in mechanical and electrical rooms. Pull stations will be used throughout buildings at entry points. Tamper and flow switches will protect all fire sprinkler risers in each building, DDC and fire indicator valves.

Intercom system:

An IP addressable income system shall be provided with headend equipment in the MDF and intercom nodes in all IDF rooms. Individual CAT 6 cables will be provided to each speaker/intercom button combination in each classroom. Speakers will be provided in walkways, hallways, and exterior coverage around buildings. Administration phones will be provided in main office, principal's office, asst principal's office and the secretary's office.

IT/Data:

Provide (4) 4" conduits from the ISP at the street to the MDF room. Each IDF room in all buildings will get (3) 4" conduits with (3) maxcells in each. from the MDF room. Each Building will get a (24) strand single mode OS3 fiber, and 50 pair CAT 5 copper backbone terminated on fiber patch panel and 110 blocks respectfully. Horizonal cable drops will be CAT6A with CAT6A jacks. WAP drops will be provided in every classroom, hallway, and exterior for coverage in courtyard.

BAS:

A broadcast antenna system shall be provided to cover the entire school campus.

- Systems required: Centegix, Wireless Access Cameras, Etc.
    - Security Cameras - need school design maps and Security Team will adjust placement of camera locations
    - Centegix - no additional data drops required
        - Vendor performs assessment for proper placement of Gateways based upon layout designs
            - may be beneficial for higher level wall electrical outlet areas such as gym, cafeteria, auditorium
    - Wireless Access Points - need conceptual AP placement design for ITS to review
        - need 2 data drops per AP
        - *we can provide network heat maps based off existing 2-story K-8 of similar design as a reference*

- List of standard technology for the classroom. *(11 data drops per classroom)*
    - Teacher Station: 3 data drops
    - Student Stations: 4 data drops
    - Access Points: 2 data drops
    - Time Clock: 1 data drop
    - Camera/Audio/Visual (CAVS) - *(Current design but under review for changes*)
        - single ceiling mounted projector w/ power receptable
        - HDMI cable run back to teacher station
        - Sound amplifier power outlet near teacher station, *(mid-level on wall to allow for equipment cabinet)*
        - 1 data drop near center classroom whiteboard vicinity for potential Interactive Panel instead of projector

- Special infrastructure required (beyond maintenance systems: Security Alarm, Fire Alarm, Intercom, Access Controls)
    - analog lines for elevators, fire alarm, fax machines, etc.
    - each network IDF will require 25 pair copper for voice
    - each network IDF will require single mode 12-strand fiber as homerun sealed conduit
    - CAT6A copper cabling
    - potential for network data drop to be used on the cafeteria display panels for signage

- Locations, sizing and requirements for IDF and MDF
    - MDF on generator power
    - IDF on generator power for Cafeteria/Gym
    - Radio repeater to be located in MDF
    - MDF & IDFs in classroom buildings to be 2ft wider if possible
    - Need two 208 L6-30 twistlock along with standard power for MDF
    - Dedicated A/C in every MDF & IDF

Card Access System:

A card access system shall be provided to cover the entire school campus entries and gates including but not limited to HID readers, door position switches and electrified door locks. System will match the school district wide systems.

Security system:

Security shall be provided to cover the entire school campus entries, windows, and gates. The system shall include motion sensors, door sensors and glass breaks.

CCTV:

A complete CCTV camera system shall be provided including but limited to the main head end, DVR storage space, network switches, power supplies and IP cameras. Cameras in parking lot shall have fiber from building to the poles and a network switch in a weatherproof book at each camera pole.