



Educational Specifications

for

Arts Academy Magnet Middle School

Prepared by

**CREC
School Construction Division**

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General Note: The intent for these Design Guidelines and Standards are to serve as a general guideline for design criteria of the school facility and to outline various aspects that may require attention as applicable in each individual project. All information may need to be confirmed and analyzed during the design phase of the proposed project by the Architect with the pertinent CREC Staff, and other governing bodies that hold jurisdiction on this facility and its respective components. This document will continue to be developed and revised.

All work must conform to the Bureau of School Facilities' standards and guidelines in order to maximize reimbursement. Documents attached are provided for informational purposes only. All information and documentation must be confirmed at the beginning of the design process. A prep meeting must be scheduled as soon as a design professional is hired and all information confirmed at the initiation of the design phase. *Follow all NEASC (New England Association of School and Colleges), NAEYC (NAEYC Early Childhood Program Standards and Accreditation Criteria)(1-4-12)*

Software and digital files – The Owner requires a copy of all software programs involved with the operation of the school. In addition, the Owner requires a copy of all as-built drawings in CAD format.

2. Space/Program Narrative and Requirements

This section covers the general minimum requirements in a space such as layout, location, and built-in items such as casework, millwork, plumbing, voice, video, and data, technology, and FFE (furnishings, fixtures and equipment). Specialty spaces for Magnet theme usage will need to be determined during the design phase with pertinent staff.

Classroom Space

Grade 6 – Grade 8

General – The front of the room should serve as the main presentation area. The main presentation area should have white marker boards (adjacent to IWB), tack boards and/or tack surfaces (with acoustical qualities if possible). Secondary presentation areas should be incorporated with white board, tack boards and/or tack surfaces (with acoustical qualities if possible). Student storage/lockers should be provided. Window treatments should be provided (vertical blinds preferred). All other storage is to be movable storage.

Technology – (1) IWB located in main presentation area with (1) teacher’s computer station (w/ capability to control IWB), (8) student computer work stations, and (1) printer station. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system (1 on wall by entrance) and additional power outlets strategically located within the space.

FFE – Provide student chairs and individual desks, (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, (1) bookcase, (2) multi-purpose storage unit w/ casters, and computer tables w/chairs.

Grade 6 – 8 Science Classroom / Lab (Clab)

General – Room will be oriented to face the front of the room with half the space having seating facing front and half the space with laboratory setup. The classroom should be large enough to accommodate seating for up to 25 students on both halves. The front of the room should serve as the main presentation area. The presentation area should have white marker boards (adjacent to IWB), a tack board or tack surfaces (with acoustical qualities if possible). Secondary presentations area should be incorporated with white board, tack board or tack surfaces. Window treatments should be provided (vertical blinds preferred). Laboratory floor casework and upper storage casework will be provided on perimeter of the back half of the class to create laboratory setup all cabinets will be lockable. The size of the casework storage will be sized to accommodate equipment per teacher’s specifications. Lab sinks with water supply shall be installed with lab casework to serve each lab table station. Moveable lab tables w/ casters shall be provided. Eye-Drench shower will require floor drains and proper floor pitch in all “Wet Labs”, they will be located in the front of the classroom. Eye Goggle wall mount sterilization units are required in each science classroom, a power outlet is required. A teacher’s demonstration table

with a sink, gas and water supply shall be provided at the front of the class, the gas shut off to be located within the classroom.

Technology – (1) IWB located in main presentation area with, (1) teacher’s computer station (w/ capability to control IWB), and (1) printer station. Provide all necessary data drops and power for equipment mentioned and at lab table stations. Provide required telephone system (1 on wall by entrance) and additional power outlets strategically located within the space, the outlets will correspond to the unique equipment and layout provided by the teacher. Lab gas is not required at the student stations, students will utilize portable hot plates.

FFE – Provide student chairs and individual desks, lab stools with backs, (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, and (1) bookcase.

Grade 6 – 8 Science Classroom / Lab Prep Room

General – Room will be adjacent to Grade 6 – 8 Science Classroom / Lab. Storage. Provide floor casework and upper casework for storage w/ (1) multi-purpose sink and heavy-duty shelving 24” deep to store science kits.

Technology – (1) teacher’s computer station and (1) printer station, the teaching station will be the standup station and without a chair. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – Provide (1) task chair and refrigerator with freezer (explosion proof with audible alarm for power outage).

Magnet Theme Spaces

Black Box Theatre

General – This space will consist of “black box” theatrical presentations that are in line with the magnet theme of this school. The space requires raised platform areas for non-fixed seating, no windows for daylight, clear space for actual performance space, curtains, back drops, special lighting with controls, and sound system. The space will have to be acoustically treated.

Technology – (1) Computer Workstation w/ video output source (a high-power LCD projector). Provide required telephone system and data drops as required for above mentioned.

FFE – to be determined

Green Room

General – The term green room refers to the director's critique session held after a rehearsal or performance, since it is often held in the green room. This session is used for a pep talk, bonding among actors, and/or warm-up exercises. This space is

associated with performance and production spaces. It should include open space for warm-up activities if needed and space for feeding cast and crew.

Technology – Computer and video monitoring of performances spaces. Direct feed to production video and audio. Provide required telephone system and data drops as required for above mentioned.

FFE – Easy to move tables and comfortable chairs, movable partitions for overflow dressing room

Stagecraft Room

General – Stagecraft rooms are designed for the construction of fashion, props and staging of a theater performance. Generally it is equipped with tools for the construction of scenery and staging. There are three types of storage. One type of storage is for grand pianos, chairs, stands and choral risers etc. The second storage area is for scenery and props. A third storage area is storage for costumes and textiles.

Technology – (1) IWB located in main presentation area with, (1) teacher’s computer station (w/ capability to control IWB) (6) student computer workstations (with a preference for Apple) and (1) printer station, industrial quality bench and hand tools for wood and metal, industrial laundry and dryer machines, Steamer and capability to dye

FFE – (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, (1) bookcase, (20) 42x60 collapsible and movable art tables with chairs, (3) computer tables with chairs

Art Studio 2D

General – The purpose for this space is to provide a learning environment for students to explore the arts program offered by this school program. Room will be oriented to establish a flexible space for different teaching configurations. The classroom should be large enough to accommodate seating for up to 25 students. The front of the room should serve as the main presentation area. The presentation area should have white marker boards (adjacent to IWB), a tack board or tack surfaces (with a preference for more tack surfaces). Secondary presentation areas should be incorporated with white board, tack board or tack surfaces. (2) Counter spaces with multi-purpose sinks will be provided. Provide plenty of storage cabinets within Art Room. Include an area for art display within the space. Provide spot lighting directed to tables and the center of the room (aside from normal room lighting).

Technology – (1) IWB located in main presentation area with, (1) teacher’s computer station (w/ capability to control IWB), (6) student computer workstations (with a preference for Apple) and (1) printer station. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, (1) bookcase, (6) 42x60 movable art tables and art stools art flat storage for storing large paper flat with shelves about 4” to 5” apart, a cabinet with the capacity to hold flammable objects that has space for bin storage that can hold 30 – 12”x15” plastic bins for storing supplies, computer tables w/ chairs, table top easels, adjustable art table, and drying rack. (1) paper towel dispenser, (1) eyewash station, (1) table sized paper cutter, (1) flat file storage for papers and supplies, drying racks

Art Studio 3D

General – The purpose for this space is to provide a learning environment for students to explore the arts program offered by this school program. Room will be oriented to establish a flexible space for different teaching configurations. The classroom should be large enough to accommodate seating for up to 25 students. The front of the room should serve as the main presentation area. The presentation area should have white marker boards (adjacent to IWB), a tack board or tack surfaces (with a preference for more tack surfaces). Secondary presentation areas should be incorporated with white board, tack board or tack surfaces. (2) Counter spaces with multi-purpose sinks will be provided. Provide plenty of storage cabinets within Art Room. Include an area for art display within the space. Provide spot lighting directed to tables and the center of the room (aside from normal room lighting). This space will also include the Kiln Space listed below. Pull down electricity should be provided above the working surfaces.

Technology – (1) IWB located in main presentation area with, (1) teacher’s computer station (w/ capability to control IWB), (6) student computer workstations (with a preference for Apple) and (1) printer station. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, (1) bookcase, (6) 42x60 slate art tables and art stools art flat storage for storing large paper flat with shelves about 4” to 5” apart, a locking cabinet with space for bin storage that can hold 30 – 12”x15” plastic bins for storing supplies, computer tables w/ chairs, table top easels, adjustable art table, drying rack, throwing wheels (quantity to be determined during design), (2) sinks, one basin and one regular (1) eyewash station, (1) clay extruder, (1) slab roller, (1) fireproof box (flammable).

Kiln Space

General – Room will be oriented to house kiln and accessories. This space will be located in the Art Studio 3D classroom space. It should include a separate source of power for the kiln.

Technology – Provide required telephone system and additional power outlets strategically located within the space.

FFE – (1) kiln, (1) kiln vent, (1) clay container w/ dolly, (1) pub mill, (2) wedging board, (1) potter’s wheel, (1) potter’s seat, (1) drying cabinet, (1) damp proof cabinet, (1) ss utility cart, and (2) ss shelving unit.

Art Storage

General – Room will be oriented for maximum art supply storage by providing multiple shelving 24” deep. The space should be adjacent w/ direct access to the Art Room.

Technology – Provide required wall mounted telephone at main door and additional power outlets strategically located within the space.

FFE – TBD.

Production Studio

General – This space is used for visual communications including graphic design, digital photography, and website design.

Technology – (1) IWB located in main presentation area with, (1) teacher’s computer station (w/ capability to control IWB), (20) student computer workstations with at least 21” monitors, 8 GB RAM and 1TB of storage loaded with the latest licensed operating system and Adobe Creative Suite (a preference for Apple), (1) standard printer station (1) Large format color printers and scanners, (20) Computer tablets for drawing, (5) DSLR cameras, and card readers.

FFE – (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, (1) bookcase, provide student chairs w/ computer tables.

Graphic Art Production

General – This space is used for visual communications including graphic design, digital photography and website design.

Technology – (1) IWB located in main presentation area with, (1) teacher’s computer station (w/ capability to control IWB), (20) student computer workstations with at least 21” monitors, 8 GB RAM and 1TB of storage loaded with the latest licensed operating system and Adobe Creative Suite (a preference for Apple), (1) standard printer station (1) Large format color printers and scanners, (20) Computer tablets for drawing, (5) DSLR cameras, and card readers.

FFE – (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, (1) bookcase, provide student chairs w/ computer tables.

Video Production

General – The purpose for this space is to provide a learning environment for students to explore video production offerings of this school program. Room will be oriented to establish a flexible space for different teaching configurations. The classroom should be large enough to accommodate seating for up to 25 students.

The front of the room should serve as the main presentation area. The presentation area should have white marker boards (adjacent to IWB), a tack board or tack surfaces (with a preference for more tack surfaces). Secondary presentation areas should be incorporated with white board, tack board or tack surfaces. (2) Counter spaces with multi-purpose sinks will be provided. Provide plenty of storage cabinets within Art Room. Include an area for art display within the space. Provide spot lighting directed to tables and the center of the room (aside from normal room lighting). Pull down electricity should be provided above the working surfaces. This room must be acoustically engineered to provide sound quality studio production and should be adjacent to the Broadcast Sciences space. This room should model the space designed for the East Lyme Middle School.

Technology – (1) IWB located in main presentation area with, (1) teacher’s computer station (w/ capability to control IWB), (6) student computer workstations (with a preference for Apple) and (1) printer station. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, (1) bookcase, (6) 42x60 slate art tables and art stools art flat storage for storing large paper flat with shelves about 4” to 5” apart, a locking cabinet with space for bin storage that can hold 30 – 12”x15” plastic bins for storing supplies, computer tables w/ chairs, table top easels, adjustable art table, drying rack, throwing wheels (quantity to be determined during design), (2) sinks, one basin and one regular (1) eyewash station, (1) clay extruder, (1) slab roller, (1) fireproof box (flammable).

Sound Engineering/Production

General – These spaces would be used by students and staff to create two rooms. One performance room and the other would be a control room with connecting window to monitor production. Wiring and cabling should connect both spaces with the ability to communicate to musicians or performers. Ideally there would be two rooms for recording and one control room. Rooms should be treated for proper sound. It should include plenty of outlets for musical equipment.

Technology – (1) Digital mixer, speakers, Condenser Microphones wired, Headphones and headphone distribution equipment (quantity to be determined during design), (1) Mac Pro with two large flat monitors for recording, IMACs with Logic software in control room for student individual production (quantity to be determined during design), Performa interface controller, Audio effects processors, MIDI stations with sound modules

FFE – Cabinets for audio equipment, control room furniture is designed to hold all electronic equipment placed by window between control room and recording rooms.

Broadcast Sciences

General – These spaces would be used by students and staff to create two rooms. One performance room and the other would be a control room with connecting window to monitor production. Wiring and cabling should connect both spaces with

the ability to communicate to performers. Editing suites can be shared with above spaces. Sound treatments for rooms

Technology – (2) P2 recording cameras similar to TV studios with headsets, tripods, lighting with external console for optimal lighting including dimmer rack, Headphones and headphone distribution equipment, digital mixer, wired and wireless microphones, boom poles with shotgun microphones (consult with teachers for more information), (1) Mac Pro with two large flat screens for recording, and IMACs with Logic software in control room for student individual production.

FFE – Cabinets for video equipment, control room furniture is designed to hold all electronic equipment placed by window between control room and recording rooms, green/blue wall for video production.

Music Orchestra

General – Because of magnet theme of school, the room will be larger than the average K-8 Music Instrumental and will be oriented to provide a flexible space for students learning/playing musical instruments. The general orientation of the room should incorporate rows in a semi-circular shape facing what is conceived as the front of the classroom towards the instructor. The back of the room should have student computer workstations and storage cabinets (further coordinate storage with HPS Dept. Head and music teacher). The room should have a small section of casework with counter and multi-purpose sink. The classroom should be large enough to accommodate seating for up to 30 students. The front wall of the room should serve as a presentation area. The presentation area should have white marker boards (adjacent to smart board), a tack board or tack surfaces. Secondary presentation areas should be incorporated with white board, tack board or tack surfaces. The room should be acoustically treated, finished and located remotely from quiet areas in the school.

Technology – (1) smart board located in main presentation area, (1) teacher's computer station (w/ capability to control smartboard), (4) student computer workstations and (1) printer station. Provide all necessary data drops for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – Provide student chairs and individual desks, (1) teacher's desk w/ chair, (1) teacher's lockable wardrobe, (1) 5 drawer lateral, bookcases, storage cabinets, computer tables w/ chairs, (1) piano w/ bench, (1) folio cabinet, (1) 20x20 printer stand, and (1) conductor's system.

Music Band/Choral

General – Because of magnet theme of school, the room will be larger than the average K-8 Choral Band Room and will be oriented to establish a flexible space for different teaching configurations. The classroom should be large enough to accommodate seating for up to 30 students. The front and back walls of the room should serve as presentation areas. The presentation areas should have white marker boards (adjacent to smart board), a tack board or tack surfaces. Secondary presentation areas should be incorporated with white board, tack board or tack

surfaces. The room should be acoustically treated, finished and located remotely from quiet areas in the school.

Technology – (1) smart board located in main presentation area, (1) teacher’s computer station (w/ capability to control smartboard), and (1) printer station. Provide all necessary data drops for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – Provide student music chairs and music stands, (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (2) 5 drawer lateral, (2) storage cabinet, (1) piano w/ bench, (1) folio cabinet, (1) 20x20 printer stand, (1) conductor’s system, (2) synthesizers, (2) music lab workstation w/ chairs, (2) chair move and store cart, (2) music stand move and store cart.

Music Storage

General – Room will be oriented for maximum music instrument storage via multiple shelving (must be coordinated with music teacher) as well as learning materials. The space should be adjacent to Music Rooms.

Technology – Provide required telephone system and additional power outlets strategically located within the space.

FFE – not required

Practice Rooms

General – Room will be oriented for music practice activity. The space should be located within the Band/Choral and Orchestra rooms.

Technology – Provide power outlets strategically located within the space and a data drop.

FFE – (4) music chairs and (4) music stands.

Dance Studio

General – Because of the magnet theme of this school, this added room is needed and will be oriented to establish a flexible space for different teaching configurations for various dance and theatrical movements programs. The room should have some sunlight, 2 walls opposite to each other with full height, high impact, tempered mirrors, handrails along perimeter of walls, recessed slab with high grade wood flooring to prevent injury, and sound absorption treatment. The front of the room should serve as the main presentation area. The presentation area should have a large (6’ long minimum) white marker board, a tack board or tack surfaces. Included in the space is the Dance Equipment Storage (see below).

Technology – (1) Interactive White Board (IWB) located in main presentation area with (1) teacher’s computer station (w/ capability to control IWB) and (1) printer station, sound system to accommodate multiple inputs of digital sound,

provide all necessary data drops for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

Furniture – Provide stackable student chairs, (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, and (1) bookcase. All other equipment needed for dance program needs to be coordinated with dance teacher.

Dance Equipment Storage

General – Because of the magnet theme of this school, this added room is needed and will be oriented for maximum dance equipment storage via multiple shelving (must be coordinated with dance teacher). The space should be adjacent to Dance Studio.

Technology – Provide required telephone system and additional power outlets strategically located within the space.

Resource Rooms

Teacher Work Rooms

General – The purpose of the room is to provide teachers with a space in which they can prep, make copies, and work on general projects.

Technology – (1) (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned. Provide required telephone system and power outlets for special equipment. Copiers require one network drop for printing and one phone drop for fax.

FFE – Provide (6) task chairs (1) 30x60 conference table (1) heavy duty copy machine with multiple sorter. Further coordination required during design phase.

Special Education

General – Room will be oriented to provide a space for teacher and a small group of students.

Technology – (1) Interactive White Board (IWB) located in main presentation area with (1) teacher’s computer station (w/ capability to control IWB) and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, Provide student chairs and individual desks, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (2) bookcases, and (1) 72” lateral file.

Literacy Intervention

General – Room will be oriented to provide a space for literacy staff to provide individual and small group instruction.

Technology – (1) Interactive White Board (IWB) located in main presentation area with (1) teacher’s computer station (w/ capability to control IWB and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, provide student chairs and individual desks, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (2) bookcases, and (1) 72” lateral file.

Math Intervention

General – Room will be oriented to provide a space to provide individual and small group instruction.

Technology – (1) Interactive White Board (IWB) located in main presentation area with (1) teacher’s computer station (w/ capability to control IWB) and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, provide student chairs and individual desks, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (2) bookcases, and (1) 72” lateral file.

Library Media Center

General Library/Media

General – Room will be oriented for maximum media storage and access with allowable circulation. The space should be located within Library Media Center. The stack area should be arranged so that there are tables and chairs dispersed between the stacks. The space should contain a circulation desk, large book shelves (max. 5’ high), an area for search computer stations strategically located (8 total), single student work areas, and a workroom. The amount of volumes per student needs to be verified with CREC during design phase. Acoustically, the space should be treated to promote maximum silence absorption.

Technology – (1) librarian’s computer station and (1) printer station, (12) search computers w/ (1) printer station. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space. Provide data drops for single- station student work/study areas. *Provide conduit at the main entrance of the library (multiple if required) for a future RFID system (1-4-12).*

FFE – (4) portable easels, (1) big book unit, (1) big book easel, (1) dictionary stand, (1) atlas stand, media lounge chairs, media end tables w/ media chairs, (1) media coffee table, (4) large media tables w/ media chairs (for older students), (1) large media table w/ media chairs (for younger students), (1) carrel starter, (2) carrel add on, stack starters and stack add-ons. To be finalized during design phase, *number of shelving to accommodate certification requirements of the ALA (American Library Association)(1-4-12)*

Computer Lab

General – Room will be oriented to establish an optimal space for computer station layout configuration. The classroom should be large enough to accommodate seating for up to 25 students. The front of the room should serve as the main presentation area. The presentation area should have a white marker board (adjacent to IWB), a tack board or tack surfaces. Secondary presentation areas should be incorporated with white board, tack board or tack surfaces.

Technology – (1) IWB located in main presentation area with (1) LCD projector mounted from building structure (coordinate locations of IWB w/ LCD projector), (1) teacher’s computer station (w/ capability to control IWB), (25) student computer workstations, and (1) printer station color and (2) printer stations b/w. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and power outlets strategically located to provide power for all technology as required.

FFE – Provide student chairs w/ computer tables, (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, and (1) bookcase.

Reading Area

General – Space within Library Media Center will be oriented to establish an optimal space for general reading and/or to accommodate group tables for team studying. The area will have the ability for video and instruction through the use of a IWB.

Technology – (1) IWB located in main presentation area with (1) LCD projector mounted from building structure (coordinate locations of IWB w/ LCD projector), and (1) teacher’s computer station (w/ capability to control IWB). Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – (30) stackable chairs if reading area is a standalone space.

Library Classroom

General – Room will be oriented to establish a flexible space for different teaching configurations. The classroom should be large enough to accommodate seating for up to 28 students. The front of the room should serve as the main presentation area. The presentation area should have white marker boards (adjacent to IWB), a tack board or tack surfaces. Secondary presentation areas should be incorporated with white board, tack board or tack surfaces. Window treatments should be provided (vertical blinds preferred).

Technology – (1) IWB located in main presentation area with, (1) teacher’s computer station (w/ capability to control IWB), (6) student computer work stations, and (1) printer station. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – Provide student chairs and individual desks, (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (1) 5 drawer lateral, (1) bookcase, (1) multi-purpose storage unit w/ casters, computer tables w/ chairs.

Food Service

Dining Area/Lounge

General – Room will be oriented to establish an optimal flexible space for dining seating configurations and other multi-purpose functions. The room will accommodate 3 lunch waves of students if possible. Natural/light windows and materials to soften noise levels should be incorporated into the design. Consider traffic flow, the pattern of student’s cueing up to get into the cafeteria and leaving. Cafeteria lines need to be separated out from the kitchen so students are not directly looking into the kitchen. Water fountains need to be located within the Dining area.

High School (grades 6-12) – scattered systems (TBD during design), no open facilities (ward off opportunity for wandering).

Technology – Provide data drops as per final programming. Provide required telephone system and additional power outlets strategically located within the space. Room design should plan for digital signage at the entrances, serving line and opposite ends of cafeteria. The following is required at each location for digital signage; one network drop, one duplex electrical receptacle, plywood backing board behind sheetrock for mounting LCD monitors. Digital signage height must be determined at time of the design but generally should be high enough to be out of arms reach.

FFE – Provide chairs and tables (individual stools on folding tables) for student dining. Use rubber tires that do not damage floor finishes.

Staff Dining

General – Room will be oriented to establish a lounge space for staff dining. The room will accommodate 15 individuals. Provide floor and upper casework and counter space for storage w/ a kitchen sink.

Technology – Provide data drops as per school principal request. Provide required telephone system and additional power outlets strategically located within the space. Plan for one LCD television mounted near the ceiling for general viewing. Would require power, network cable, and coax cable going back to MDF or demark.

FFE – Provide chairs and tables for dining. Residential quality refrigerator/freezer and microwave.

Dry Storage, Refrigerator/Freezer, Supplies/Storage, Food Service Office, Receiving, Dishwashing, Lavatory and Locker Rooms, and Kitchen Serving Area

General – Will be designed as per CREC – Food Services.

Athletics/Fitness

Fitness Center

General – Space should be able to accommodate fitness equipment and space for fitness activities. To be determined during design phase.

Technology – (1) IWB (located opposite student bench) (1) computer station and (1) printer station, (1) LCD projector, provide required telephone system and additional power outlets strategically located within the space for the equipment, P.A. system to address fitness center occupants, CD and DVD player.

FFE – (5) treadmills with electronic heart-rate monitors, (5) recumbent bikes with electronic heart rate monitors, (5) elliptical machines with electronic heart-rate monitors, (2) regular stationary bikes with electronic heart rate monitors, (2) multi-station weight training machines, (5) exercise mats, (5) physioballs, dumbbells ranging from two (2) pounds to fifty (50) pounds with racks, (5) stretch ropes for flexibility, (5) jump ropes, (4) station dip-stand, (4) pull-up bars, (1) upper body ergo meter, (2) free-weight benches (flat bench), (2) incline benches, (2) forty-five pound bars with two free weight trees to hold three hundred pounds, (3) types of resistance tubing bands (light, medium and heavy – 3 pairs each), (2) wrist rollers with clasps to add additional weight, (1) five drawer lateral cabinet, 30 multi-level steps for aerobics, (30) weighted bars for aerobic activity, P.A. system with built in CD player (system to be able to address all fitness center occupants at one time), (1) leg extension machine, (1) seated leg curl, (1) calf raise machine, (2) Smith machines, (1) chest-fly machine, (1) lateral raise machine, (1) shoulder press machine, (1) triceps extension machine, (30) heart-rate monitors, (1) weight and height scale, (10) body fat calibrators, and (1) bicep curl machine. To be determined during design of FFE.

Equipment Storage

General – Room will be oriented for maximum athletic equipment storage via multiple shelving (must be coordinated with physical education teacher). The space should be adjacent to Gymnasium.

Technology – Provide required telephone system and additional power outlets strategically located within the space.

FFE – to be determined

Changing Room/Toilet & Shower Rooms

General – Room will be oriented for toilet facilities, changing area, showers, and locker storage for female and male students separately. The space should be adjacent to Gymnasium. Space will also contain an area for laundry with all required power, exhaust, and plumbing.

Technology – Provide required telephone systems.

FFE – In laundry area, provide commercial/industrial quality and size washer and dryer with enough capacity to wash sports uniforms, large amounts of towels, etc.

Staff Office

General – Room will be oriented for physical education/athletic staff office. The space should be adjacent to Gymnasium.

Technology – (1) teacher’s computer station and (1) printer station. Provide all necessary data drops for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – (1) teacher’s desk w/ chair, (1) teacher’s lockable wardrobe, (2) 5 drawer lateral, (1) 20x20 printer stand and (2) side chairs.

Staff Toilets and Shower

General – Room will be oriented for toilet and shower facilities for physical education/athletic staff. The space should be directly accessible to Staff Office. Provide a handicap accessible shower w/ pull down seat and a pull down bench seat to change close.

Technology – Provide required telephone system and a GFI power outlet.

FFE – not required

Nursing – (Needs to be located close to Main Entrance)

Main Room

General – Room will be oriented to provide a space for staff person, waiting area, and file storage. This will also have the space for cots with screening (not required to be ceiling mounted).

Technology – Provide required wall mount telephone system and data drops for above mentioned. Computer station with printer to be used by Health Department only. Provide an additional phone line for potential fax machine or multifunction print device located in the Nurse office.

FFE – (1) administrator’s desk w/ chair, (4) waiting chairs, (3) 5-drawer lateral (36” to 48” wide), (1) lockable wardrobe, and (1) 20x20 printer stand, (1) narcotic cabinet (double locked), (1) refrigerator/freezer, (2-3) recovery couches, (2) 22x18 tables, and other supplies and items to be coordinated with CREC. Provide small microwave.

Exam Room

General – Room will be oriented to allow nurse to administer daily medication in an isolated area or to tend to any sick student. This space should have casework w/ sink and lockable cabinet. The space should be directly accessible to Main Room in Nursing suite. Lockable storage cabinets are to be provided as part of construction.

Technology – Provide required wall mount telephone system, a GFI power outlet and data drop.

FFE – Exam table and chairs. Stool with casters.

Unisex Handicap Toilet

General – Room to be located inside Nursing space. Provide millwork/casework for storage to be mounted above sink height.

Technology – not required

FFE – not required

Dental/Exam Room

General – Room will be oriented to allow for a dental services component. Also, the room needs to set up for hearing screenings and private conferences with students or parents. This space should have casework w/ sink and lockable cabinet. The space should be directly accessible to Main Room in Nursing suite. The room should be acoustically treated for hearing screenings. Lockable storage cabinets are to be provided as part of construction.

Technology – Provide required wall mounted telephone system, a GFI power outlet and data drop.

FFE – Provide stool on casters. Other devices to be determined during design phase.

Student Support Services

PPT Conference Room

General – The purpose for this space is to provide an area where Placement Planning Team (PPT) activities can occur such as student testing for (IEP) and small group meetings with faculty/administrative staff, parents and students. The front and back walls of the room should serve as presentation areas. The presentation areas should have 6' long white marker boards, a tack board or tack surfaces. The space should be large enough to accommodate seating for 10 students and a workstation for a teacher.

Technology – (1) teacher's computer station and (1) printer station. Provide all necessary data drops for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – (1) teacher's desk w/ chair, (1) 48x96 conference table, (10) waiting chairs, (2) 5 drawer laterals, (4) 2 drawer laterals, (1) coat rack, (1) 72" lateral file, and (4) bookcases.

Counseling

General – Room will be oriented to provide a space for counseling use and small group conference.

Technology – (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, (4) waiting chairs, (1) 30x30 conference table, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (2) bookcases, and (1) 72” lateral file.

Psychologist Office

General – Room will be oriented to provide a space for guidance staff use and small group conference.

Technology – (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, (4) waiting chairs, (1) 30x30 conference table, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (2) bookcases, and (1) 72” lateral file.

Social Worker Office

General – Room will be oriented to provide a space for social worker’s use and small group conference.

Technology – (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, (4) waiting chairs, (1) 30x30 conference table, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (2) bookcases, and (1) 72” lateral file.

Magnet Office

General – Room will be oriented to provide a space for magnet staff use and small group conference.

Technology – (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, (4) waiting chairs, (1) 30x30 conference table, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (2) bookcases, and (1) 72” lateral file.

Part Time Staff

General – Room will be oriented to provide a space for part time staff use and small group conference.

Technology – (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, (4) waiting chairs, (1) 30x30 conference table, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (2) bookcases, and (1) 72” lateral file.

Administration – (Needs to be located close to Main Entrance)

Principal’s Office

General – Room will be oriented to provide a space for principal’s use and small group conference.

Technology – (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) principal’s desk w/ chair, (4) waiting chairs, (1) 30x60 conference table, (2) 5 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (1) bookcase, and (1) principal’s credenza.

Assistant Principal’s Office

General – Room will be oriented to provide a space for assistant principal’s use.

Technology – (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, (4) waiting chairs, (1) 30x60 conference table, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (1) bookcase.

Principal’s Conference Room (adjacent to Principal and Assistant Principal’s office)

General – Room will be oriented to establish a meeting space for a small group of individuals usually with school assistant principal or other administrative staff. This space should be adjacent to assistant principal’s office. This room should be large enough to accommodate a meeting between 8-10 individuals.

Technology – Provide required telephone system and additional power outlets strategically located within the space.

FFE – (1) 48x96 conference table, (8) waiting chairs, (2) 2 drawer laterals, (1) coat rack, (1) 72” lateral file, (3) bookcases, (1) cube refrigerator, and (1) coffee maker.

Executive Assistant (adjacent to Principal’s office)

General – Room will be oriented to provide a space for assistant principal’s use.

Technology – (1) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (1) administrator’s desk w/ chair, (4) waiting chairs, (2) 2 drawer lateral, (1) coat rack, (1) teacher’s lockable wardrobe, (1) 20x20 printer stand, (1) bookcase.

General Office, Reception Area

General – Room will be oriented to provide a space for reception/administration person with millwork piece and general circulation of Administration.

Technology – (3) computer workstation and (1) printer station. Provide required telephone system and data drops for above mentioned.

FFE – (8) waiting chairs, (2) end tables, (1) copier, (1) fax, and (1) coffee table. Furniture as required for staff needs to be determined during the design phase.

Family Resource Center

General – The purpose for this room is to provide a space where parents, resource center staff, and/or faculty can meet in small group sessions to discuss parental issues, organize special activities, house special materials/kits, etc. Room will be oriented to establish a conference room-like space for small group meetings and a workstation for resource center staff. The front and back walls of the room should serve as presentation areas. The presentation areas should have white marker boards, tack boards or tack surfaces. The space should be large enough to accommodate seating for 10-12 individuals and a workstation.

Technology – (1) IWB located in main presentation area with (1) LCD projector mounted from building structure (coordinate locations of IWB w/ LCD projector), (1) teacher's computer station (w/ capability to control IWB), and (1) printer station. Provide all necessary data drops and power for equipment mentioned. Provide required telephone system and additional power outlets strategically located within the space.

FFE – (1) teacher's desk w/ chair, (1) large conference table with chairs, (2) 2 drawer laterals, (1) coat rack, (1) 72" lateral file, and (3) bookcases.

Secure Storage

General – Room will be oriented to provide maximum storage space via shelving 16" deep and special door w/ lock to store exams/testing materials. Space needs to be located within Administration.

Technology – not required

FFE – not required

Storage

General – Room will be oriented to provide maximum storage space via shelving 16" deep. Space needs to be located within Administration.

Technology – not required

FFE – not required

Copy/Mailroom

General – Room will be oriented to provide main copy station for school along with general mailroom. Built-in mail slots and shelving needs to be provided. Space needs to be located within Administration.

Technology – Provide required telephone system and power outlets for special equipment. Copiers require one network drop for printing and one phone drop for fax.

FFE – (1) heavy duty copy machine with multiple sorter. Further coordination required during design phase.

Unisex Handicap Toilet

General – Room to be located inside Administration space.

Technology – not required

FFE – not required

Kitchenette

General – Room will be oriented to provide a space for residential quality millwork for storage (upper and lower cabinets), kitchen type sink, etc. Space needs to be located within administration area.

Technology – Provide required telephone system and GFI power outlets.

FFE – (1) residential quality of the following: refrigerator, microwave.

General Support Space

Janitor's Closets – Where applicable, all janitor's closets will be equipped with a janitor's sink and multiple shelving 16"-18" deep. GFI power outlets will be provided. Provide walls/finishes adjacent to sink to be water and impact resistant. Ceiling height must be kept at a minimum 9'.

Janitor's Workroom/storage – Janitor's workroom will be equipped with multiple shelving 16"-18" deep. Video, voice and data will be provided. Provide lockers. Enough room to store attic stock products for facility (minimum size of 400sf).

Toilets, Mechanical, Electrical, MDF room, IDF rooms, etc. will be determined during the Architectural design phase as per applicable guidelines and codes. IDF rooms will be a minimum 9'x8' with double door access. MDF room will be a minimum 12'x8' single door access with work permanent station/counter.

Laundry Room – Provide small room to house washer and dryer appliances w/ shelving to store clothes washing products.

General Notes

1. If interactive white boards (IWB) cannot be purchased due to lack of funds for all rooms specified, at minimum, retain IWBs in labs and provide TV, computer monitors or projectors in lieu of IWBs. For TV monitors, maintain clear lines-of-sight.
2. Window treatments will be installed wherever applicable. Preference is durable vertical blind.
3. IWB must be installed over flat walls with plywood backing board behind sheetrock any place where wall mounted projectors may be installed.
4. Educational specifications will require confirmation by the various departments of CREC.
5. Number of student computer workstations called out for in teaching spaces are minimum quantities as per general guidelines. If funds and free space within class allow, the number of workstations can be augmented based on further discussion with CREC and School Administrator.
6. All technology and power needs are to be confirmed and coordinated with the appropriate educational departments.
7. A decision must be made at time of design as to whether the interactive white board computer will be located on the teacher's desk or on a cart next to the interactive white board. If applicable, a cart or stand must be provided for the computer/monitor to the interactive whiteboard. The cart must also be able to hold a medium size printer. Cart should be designed for convertibility to either standing or seated use.
8. A determination will need to be made at design time whether the school facility can accommodate computer labs with the computers set up around the perimeter of the room or set up classroom style.
9. Every wall in a classroom (up to 4 walls) should have a minimum of two network drops per wall (typ. in every classroom).
10. Conference rooms for 8+ people should have two network drops per wall. Small conference rooms should have one network drop per wall.
11. Principal and Assistant Principal offices should have a minimum of four network drops.
12. All classrooms, meeting rooms and large spaces (auditoriums, gymnasiums, etc.) must be designed with one ceiling mounted network drop for the installation of wireless networking access points.
13. Work space for technology support is required to stage and repair computers. A secure room is required that provides space for at least two 3'x5' work benches and one 3'x5' storage shelf.

3. Regulatory Approvals

1. All regulatory approvals required for the project must be investigated and coordinated with the proper agencies holding jurisdiction. The following may apply, including, but not limited to:

- **Fire Marshall (State, Local)**
- **Building Inspector (State, Local)**
- **Bureau of School Facilities**
- **Traffic (STC, Local)**
- **DOT**
- **MDC (as applicable)**
- **DEP**
- **CNG**
- **Local Zoning/Design Review Board**
- **Local Flood Commission**
- **CT Transit (if required)**
- **US Army Corps of Engineers (if required)**
- **Local municipal engineers**
- **Municipal Forester (if required)**
- **Power company providing service**
- **State – Life Cycle Cost**
- **Health Department**

4. Site Development (Site, Parking, Etc.)

The following outlines the general aspects that need to be thoroughly investigated by the Architect (design team) and Construction Manager during the design phase. Both parties must provide detailed information of existing conditions and recommendations as required during the design phase. The following is to be used only as a guide and in no way limits the extent of the required investigation.

1. Site Utilities

- Sanitary sewer
- Storm sewer
- Domestic water
- Electric service
- Natural gas service
- Video, voice, and data services
- Other site specific constraints
- Zoning limits (setbacks, percent lot coverage, etc.)

2. Parking, Paving, and Sidewalks

3. Drainage System and Erosion Control

4. Topography, Landscaping & Athletics

5. General Site Improvements

6. Design Considerations

- a.** Provide separate bus drop-off and parent drop-off areas.
- b.** Provide vegetation requiring minimal maintenance.
- c.** All work must be maintained within the property limits of the school.
- d.** Follow municipal standards for street lighting and fencing if required by local municipality.
- e.** If the project consists of grades PK-8, 2 separate playground areas with age-appropriate play equipment should be provided (one for grades PK-1 and one for grades 2 and older). Confirm with school staff during design process. Design must conform to Bureau of School Facility (BSF) standards and applicable ordinances, laws, etc.
- f.** Site Fencing – provide vinyl coated fencing in exterior applications. Research is there is a standard for exterior fencing with local municipality.
- g.** Snow shelves – include in design easy, unobstructed access to snow relocation area along with considering snow distribution on site.

5. ADA Accessibility

Existing conditions need to be investigated during the design phase. All ADAAG and accessibility requirements need to be met according to all applicable laws and codes. The intent of CREC is to provide a fully accessible facility in new buildings or as a structurally feasible in existing buildings.

6. Mold Issues

Assess current conditions as required and remediate as practicable. Provide Aircurity system or similar for early detection of mold.

7. Building Architecture & Structural Systems

The following outlines the general aspects that need to be thoroughly investigated by the Architect (design team) and Construction Manager during the design phase. All parties must provide detailed information of existing conditions and recommendations as required during the design phase. The following is to be used only as a guide and in no way limits the extent of the required investigation.

1. Foundations

2. Superstructure

3. Roofing – Use a roofing material that is according to LEED Silver Certification standards or higher and as per BSF guidelines.

4. Exterior Walls – Curved wall design is discouraged.

5. Exterior and Interior Stairs – Consider maintaining stair use to minimum code requirements.

6. Windows and Doors – Standard to be determined. Specify systems that can all be supplied and installed by same manufacturer (single source). Inoperable windows.

7. Design Considerations

General Note: Design team must consider as part of design, ease of repairs, maintenance, whole replacement and/or purchase of replacement parts in all products specified, installed and/or that are currently specified existing part in the construction of the facility.

- a. Foundations** – Design as per geotechnical recommendations and structural requirements. Preferred foundation system is spread and/or conventional concrete footings.
- b. Perimeter drain systems** – No drainage allowed on sidewalks or on surfaces around building. Drain systems should be tied to storm system.
- c. Roofing** - Required - Roof manufacturer representative present during installation/ 20 year “no dollar limit” (NDL) warranty. Explore cost of 30 year roof NDL. White pvc roof preferred for flat roof design. Minimum pitch is ½” per foot according to BSF guidelines and other regulations.
- d. Exterior Walls** – Preferable wall construction to be CMU backup, insulation, air space, with brick veneer. Provide graffiti resistant/easy clean performance coating (mockup during design phase to be presented to CREC Facility Staff for approval) up to 8 feet high. Limit expansive glass wall usage. Preferable glass system is store front with easy-to-replace window units (tempered glass). Curtain wall is discouraged.
- e. Interior Walls** – Preferable interior wall structure to be CMU block. An alternative is 6 inch metal stud walls with impact resistant gyp. bd. on both sides up to bottom side of ceiling. Install impact resistant corner guards at gyp. bd. wall corners, especially on high traffic areas. In toilet rooms, provide at minimum a 6’ high ceramic tile wainscot on all walls. Zolatone products are discouraged as a finish.
- f. Stairs** – Metal pan stair structure with rubber tread for egress stairs. Do not allow for any hiding spaces underneath any stair areas (completely enclose).
- g. Windows** – Consider easy maintenance and replacement for window selection. No operable windows.
- h. Doors** – Exterior doors shall be metal, weather resistant with FRP finish. Interior doors shall be solid wood core doors with 6” x36” light. No sidelights required around door area. All doors that form part of fire/smoke rating enclosure shall have magnetic hold opens that work in conjunction with the fire alarm/life safety system of by district procedure. This is to keep school staff from using shims on doors that need to close in the event of an alarm.

Lockdown – Lockdown feature component is required. Interchangeable cylinders within locksets are desired. Door locks to be wired. No wireless.

Door access shall be controlled by either a command station, central computer, or multiple computers with authority.

- i. Atriums/Tall Spaces** – The design of atriums are discouraged. No circulation space shall exceed 2-story height. All spaces will be designed with maintenance and ease of access in mind. All tall spaces shall be kept to a minimum. Avoid the use of smoke evacuation systems.
- j. Ceilings** – Preferred ceiling system throughout the facility is 2x4 acoustical (classrooms, office space, etc.). Preferred ceiling system in all bathrooms is gyp. bd. assembly with metal access panels as required. In large spaces (cafeterias, multipurpose, etc.) or stairs, preferred condition is exposed ceiling with acoustical deck.
- k. Flooring/Base** – Preferred floor finishes (Greenseal certified products) in the following spaces:
 - 1. General Spaces – VCT
 - 2. Classrooms – VCT
 - 3. Fitness areas – Epoxy or sealed concrete
 - 4. Storage areas – sealed concrete
 - 5. Stairs – rubber stair tread. Nora is acceptable product.
 - 6. Kitchen – quarry tile
 - 7. Office/Admin – carpet tile (durable, easy to clean, easy to replace)
 - 8. Base – Where VCT and/or carpet is used, use rubber base. Where ceramic tile and/or quarry tile used, provide matching base.
 - 9. Library/Media Center – Carpet tile
 - 10. Gymnasium – wood flooring (explore protective flooring to cover wood floor)
 - 11. At water fountain floor area – provide a water resistant/slip resistant finish. Sometimes, due to usage, there may be standing water on floor surface. Must provide a finish that can withstand standing water. No VCT or carpet.

*Epoxy floors would be desirable wherever applicable. To be determined during design phase.

**Make provisions for topical treatment to concrete in the event humidity/pH levels in the concrete are not supportive of floor finish manufacturer’s warranties.

***For VCT products, use Greenseal products per manufacturer’s recommendations.
- l. Lightning protection** – Lightning protection to be included in the design of all new and/or major renovation projects. Single mast lighting should be considered.
- m. Lockers** – Preference is padlock access. No integrated combination system. Both academic and athletic.
- n. Carbon monoxide detection** – to be provided in building as required.

- o. FFE Warranties** – Explore a minimum 5-10 year warranty for classroom chairs.
- p. Substitutions** – All substitutions must be approved by the Owner.

8. Technology

STRUCTURED CABLING STANDARDS

Introduction

Contents of this document

Questions about these standards should be referred to the Director of Technology through the Project Manager from the Construction Division overseeing the pertinent construction project.

Scope of authority

CREC has its own Technology department which will hold jurisdiction over the technology aspects and infrastructure in a new and/or renovated facility. In an effort to organize and standardize technology specifications in all construction projects that will be operated by CREC, the Technology Division has created this document to provide basic direction to design teams and construction professionals.

Basic requirements

Standardization of designs

It is the goal of CREC to deploy standardized, consistent technology systems across all school and facility sites operated by CREC. Adherence to the standards described in this document is critical to realizing this goal.

Designers shall use standardized symbols for voice and data drops as described in Appendix A in this section.

Requirements for review and documentation

CREC requires review of design drawings and bid specifications at the following points: completion of schematic design, completion of design development, and 50% CDs.

CREC requires copies of all relevant plans and specifications put out to bid for technology systems.

Failure to comply with these requirements may lead to significant change orders to the project.

Compliance with applicable codes

All designs and contractors' work must meet all applicable ANSI, NEC, EIA/TIA, ADA, NFPA, FCC, BICSI, ANSI/TIA/EIA-568, and local building codes as minimum requirements.

Entrance Facility

Access from the street

CREC requires four (4) four-inch conduits from the street, SBC manhole or telephone pole, as directed by CREC. The first conduit shall contain three 1.25-inch inner ducts.

The fourth street conduit is for municipal fire alarm interconnects and should be coordinated with the Local Fire Department.

Demarcation extension

If AT&T's demarcation point is not located in the MDF room, CREC requires a two-inch EMT conduit extending from the SBC demarcation point to the MDF room with two (2) 25 pair CAT6, or higher, cables to be terminated on 110 blocks at either end.

In the MDF room, the 110 block shall be on the wall field.

At the demarcation point, the 110 block shall be mounted to the wall within 24 inches of the AT&T entrance cabinet.

Cable Type and Manufacturers

Copper Cable

All copper cabling (data and voice) shall be of Category 6e (CAT6e), or higher, plenum-rated cable, except where otherwise specified in this document. Acceptable manufacturers: *Berk-Tek* (preferred), *Mohawk/CDT*, *AVAYA*, *Belden*, and *General Cable*.

All data cable shall be designated blue in color and voice cable shall be designated white in color.

All copper connecting components (patch panels and jacks) shall be Enhanced Category 5 (CAT5e), or higher. Use all EIA 568B equipment. Acceptable manufacturers: *Ortronics* (preferred), *Hubbel Premise Wiring Inc*, *Belden*, *Leviton*, and *Siemon*.

Exception: *Wiremold* jacks should be used where *Wiremold* two-channel raceway has been used.

Contractors shall provide a service loop of no less than six (6) feet at the MDF/IDF termination.

Voice riser cable shall be Category 6 (CAT6) grade or higher. Acceptable manufactures: *Berk-Tek* (preferred), *AVAYA Inc*, *Belden*, *General Cable*, *Superior/Essex*, and *CommScope*.

Installers must meet or exceed the cable or equipment manufacturer's minimum requirements for number of staff certified to install that product.

Optical Cable

All multimode optical cable plant shall be 50µm/125µm.

Acceptable manufactures: *Seicor*, *Phoenix Optix*, *Berk-Tek*, or *Corning*.

Installers must meet or exceed the cable or equipment manufacturer's minimum requirements for number of staff certified to install that product.

MDF/IDF Room Layout

Rack Arrangement

MDF rack system requires full access around the rack. The rack fully extended requires 4' clearance in front for a total of a 6' depth, with the door closed as mentioned above in "General Support Space"

IDF Racks will be free standing, 7 feet tall with minimum 1-inch rails for mounting equipment with 6-inch vertical wire management between all racks. All racks and cabinets must have clearance in the front and back. Power outlets are to be fed from above; a quad outlet is to be mounted at 60" and 18" AFF on the back side of each 6" wire management system. A minimum of 2'-6" clearance at one side must be provided for access to the back of racks and cabinets. A 1' minimum clearance in the front of the rack (with door closed) must be provided. Acceptable manufactures: *Chatsworth Products Inc*, *B-Line*, *Middle-Atlantic*, and *Ortronics*.

Voice cabling shall be installed in separate rack/racks, in the right most rack utilizing u10 through u23, where u1 is at the bottom of the rack.

Data cabling shall be installed in separate rack/racks, starting at the right most rack utilizing u25 through u40 where u1 is at the bottom of the rack.

Exception: In building MDFs, leave the left-most rack empty except for fiber LIUs and start one rack to the right for voice terminations.

No more than 240 drops per rack/5 patch panels, 48 ports each. Fill racks up to 240 drops before placing any drops in the next rack

- **Example:** if a closet has two data racks with a total of eight patch panels, the left data rack will have five patch panels and the right data rack will have three.

Patch panels shall be 48-port, high-density 2U in size. All patch panels will have 1u or 2u spaces left empty between each patch panel which as specified by CREC Technology services during design phase.

Fiber LIUs shall be placed at the top of the left-most rack in the closet.

Leave 1U empty below any installed LIU before starting with any wire managers and patch panels in that rack.

Conduits

All conduits shall be installed with unobstructed access to cable tray. When possible the entrance and distribution conduit should enter on the same wall allowing access to the cable tray.

Wall field

One wall in each MDF/IDF room should be installed with plywood, floor to ceiling. Plywood should be treated with a minimum of two coats of fire retardant paint. Stand-off construction is not required.

The wall field should be preferentially located behind the racks.

On the wall field, 110 blocks shall be installed in the following order from left to right: 110 block for demarc extension (3.2.1), 110 block reaching to MDF voice rack (5.12.7), 110 blocks terminating riser(s) to IDF(s) (5.12.5), 110 block for specialty connections (7.4.1).

Overhead equipment and space

All MDFs and IDFs will have full compliment of ladder rack. It shall be installed above racks, circling the room, and supplied with an extension to the voice/security plywood backboard. Acceptable manufactures: *Chatsworth Products Inc. and B-Line.*

Note: Basket Style Type is forbidden and shall not be listed as an equivalent for MDF/IDF ladder-rack installation.

If a ceiling must be installed, it must be a minimum of 8'6" in height to provide adequate space above distribution racks and cable tray (required).

Cable run lengths

It is imperative that closets be located so as to minimize cable lengths for both horizontal and vertical cable runs. These closets must be located as to maintain a maximum cable length no greater than (90) ninety meters from the communication outlet being served by that closet.

MDF/IDF Room Size

The MDF will be a private room 12' x 8'. Add 3' x 8' every additional rack required to keep cable count to 240 per rack.

Example: Any MDF with 481 - 720 data/voice cables will require a 15' x 8' room. This MDF room will have a minimum of five distribution racks – one fiber/equipment rack, one voice rack and three data racks.

IDF will be a private room 9' x 8'. IDF rooms will have a minimum of three distribution racks. Add 3' x 8' every additional rack required to keep cable count to 240 per rack.

Review of third-party equipment placement

CREC must review and approve placement of other equipment in racks, cabinets, or on walls prior to installation.

Electrical and Grounding Requirements

Power sufficient to provide two (2) 120V 20A receptacles per rack should be installed at the top of the racks (or on overhead cable tray). If this is not possible, wall installation behind the racks is acceptable.

Each pair of 20A receptacles will be on its own circuit (e.g. if two racks share a quad outlet box, there should be two 20A circuits feeding that box).

Where available, all circuits in the MDF and IDFs will be connected to a building generator.

Any HVAC, lighting, and motor circuits will not connect to the communication closet's isolated panels.

Grounding Bar of Copper shall be installed per 2005 NEC 250.64(c,3) in all MDF/IDFs.

All distribution racks and ladder rack will be grounded with a number six-ground green in color. This ground must be installed and connected to a bus bar supplied by the electrical contractor.

MDF/IDF Environment

All MDF/IDFs will have year-round continuous cooling to support temperatures of 64-75°F with a humidity value of 15% to 80% relative.

All distribution rooms should be supplied with adequate and uniform lighting. Coordinate light fixture positions with equipment layout, especially cable trays and ladder racking, to ensure no direct light will be obstructed.

All distribution rooms shall be free of any school/city storage and supplies.

All MDF/IDFs must be cleaned before being turned over to CREC.

Access control

All MDF and IDF rooms must be secured by a locking door.

MDF/IDF Room Connectivity

Two (2) four inch conduits will be installed to every IDF originating from the MDF.

Each IDF shall be connected to the building MDF with 24 strands of optical fiber (12 strands of multimode and 12 strands of single mode).

When running optical fiber into any provided conduits it must be run through inner-duct.

Exception: Interior armored fiber-optic cable installed

All optical fiber termination solutions shall be LC-type.

Each IDF shall be connected to the building MDF with Cat6-25 pair copper run as one (1) 25 pair cable.

One (1) 25 pair riser cable shall terminate on a 24-port 1U high-density patch panel in the IDF and on a 110 block on the wall field, labeled accordingly, in the MDF.

In IDFs, terminate each pair of the copper riser(s) (MDF-to-IDF) cables on the blue pair (pair one) of each port of the IDF riser patch panel. Coil the 25th pair (violet/slate) at the patch panel end of each cable for repair and/or later use.

Install the patch panel at the top of the IDF voice rack with a 1U wire manager above it; patch panel and wire manager shall be directly below the fiber LIU.

In the MDF room install two (2) 25 pair CAT5 cables from the wall field to the voice rack, terminated on a 110 block on the wall field and on a patch panel in the rack.

If the AT&T termination cabinet is in the MDF room, the terminations shall be beneath or adjacent to the termination cabinet.

A temporary six strand multimode fiber-optic cable and 25 pair voice cable may be required between the original MDF/IDF and the new MDF/IDF locations for renovation projects in order to maintain voice and data service throughout the project. **CREC along with approved project/construction managers shall determine this solution.**

User-Side Jacks and Faceplates

Jack Color

Data cabling shall be terminated at the top of the location with BLUE jacks.

Voice cabling shall be terminated the bottom of the location with WHITE jacks.

Wireless Access Points (WAP) shall be terminated in the center of the location using YELLOW jacks.

Labeling

Data and drops shall be labeled with the room number and sequential letters starting with "A" (e.g. the first three data drops in Room 201 would be labeled 201A, 201B, and 201C). Skip the letter "V". If a room has more than twenty-five (25) data drops, label the twenty-sixth (26th) as xxxAA, the twenty-seventh (27th) as xxxAB, etc.

Voice drops shall be labeled with the room number and the letter "V" (e.g. the telephone drop in Room 128 would be 128V). If there are multiple voice drops in one room, label them xxxV, xxxV1, xxxV2, etc.

Wireless Access Points (WAP) shall be labeled with the room number and the letters "WAP" (e.g. the wireless drop in Room 128 would be 128WAP). If there are multiple voice drops in one room, label them xxxWAP, xxxWAP1, xxxWAP2, etc.

In each room with multiple jacks, data drops shall be labeled in a clockwise direction (left to right) starting at the entrance doorway. Where drops are not on walls, (e.g., floor and ceilings), a logical orderly sequence shall be laid out. Voice drops shall start with xxxV at the wall telephone location (classroom) and proceed clockwise, or at the presumed primary desk location in offices and other spaces. At the patch panels in the MDF and IDFs, drops shall be cut down in sequence (left to right) by room number and letter. Exception: Drops added subsequent to initial installation shall be inserted on the patch panel at the end of the row for that floor.

User End-Points

Wall Phones

Flush mounted voice jacks shall be located 42-48 inches to center above the finished floor (AFF).

Surface mounted voice jacks will originate from the ceiling to a height of 52 inches AFF.

Surface mounted jacks shall be in a low-profile box, protruding no more than 1 1/2" from the wall.

Wall phones shall be located with a minimum of eight inches clearance from center on either side horizontally and twelve inches below center of jack from any obstruction, switchplate or fixture.

All classroom wall phones will be located within 4 feet of the entrance door.

Exceptions: classroom wall phones may be placed elsewhere if the four foot requirement would result in a condition where the teacher cannot see all student

seats from the wall phone position. Also, phones should not be positioned so that they become obstructed by opened doors or other permanent fixtures in the room.

Any non-office space where it is reasonably expected that a person might enter, close the entry door, and work for an extended period of time shall be provided with a wall-mounted telephone.

Examples: classrooms, conference rooms, workrooms, store rooms, elevator machine rooms, book rooms, boiler rooms, MDF and IDF rooms.

Exceptions: phones are generally **not** provided in locker rooms.

Office Areas

Each work location shall be wired with at least two data drops and one voice drop (2D+1V).

Most offices of greater than 120 square feet shall require this configuration on two opposite walls to permit desk placement on either side of the room.

Selected other locations shall be provided with a double voice/double data (2D+2V) drop. Examples: principals' desks and nurses' desks (where an analog telephone set is provided for emergency backup), and the location of multi-function fax/copier/printer machines.

Classrooms

The three-year CREC technology plan calls for classrooms to be equipped with, at minimum, four (4) student computers, one (1) teacher computer, and one (1) network printer. In order to provide flexibility in placement of printers and support for such things as laptop carts with integrated wireless access points, CREC specifies that classrooms be equipped with eight (8) data drops and two (2) voice drops.

Instructor's desk locations shall be provided with a standard desk complement of two (2) data drops and one (1) voice drop.

The location should be coordinated with other cabling needed to support interactive white boards, LCD projectors and the like.

A wall-phone drop will be placed at the entrance door as specified previous sections.

Specialty Services

CREC requires that all telephones and non-standard data services be served by dedicated cable drops to the nearest IDF or home run to the MDF as follows:

The following analog voice services are provisioned by CREC and shall be served by voice-only or standard desk drops (terminated at the IDF or MDF in patch panel ports):

- Failover and emergency trunks lines to Call Managers (IP-PBXs)
- Emergency analog desk sets for principals, nurses, custodians, and others
- Fax machines (main office, food services, libraries, special programs, and others)
- Personal (desktop PC) or system modems (energy management, temperature control, etc.)
- Extension or night bells
- Paging system interconnect (system provider to specify the number of talk paths/drops)
- TDD – Telecommunications Device for the Deaf
- Postage Meters

The following critical services shall be served by dedicated voice-only drops home run to the MDF (terminated in a 110 block on the telco wall backboard):

- Security system interface (whether dial circuit or dedicated leased circuit)
- Fire alarm system monitoring interface (NOTE: for system trouble reporting)
- Gas, electric, and water meter dialup connections (gas line to be extended in conduit)
- Elevator emergency phone (conduit in mechanical rooms, through to the elevator machine)
- Area of refuge/rescue assistance (AOR) control panel interconnect (where not integrated with fire alarm system) NOTE: System provider shall specify the number of talk paths required. Each one shall require a separate four-pair Cat 5e drop.
- Generator
- EMS dial in (used for offsite service by contractors access)

Miscellany

Many school and municipal buildings are used as polling places. A standard desk compliment of two (2) data one (1) voice drop is required in polling places for temporary use during elections.

All structured cable supporting POE equipment shall be installed in the top most patch panel.

Where there is any uncertainty regarding these requirements or a question regarding structured cable placement or termination, the issue must be brought to the attention of CREC for direction prior to field installation.

Project Completion

Testing

The communication contractor will test each cable to Cat 6 basic link standards and provide test results electronically to CREC Technology Division.

The contractor will test all fiber optics plant installed and provide test results electronically to CREC Technology Division.

All test results and shall be provided on or before scheduled customer turnover date.

Coordination with telco / fiber-optic carriers

CREC is responsible for the scheduling and the installation of leased and owned street service copper and optical fiber plant.

Documents to be provided

Contractors will provide “as built diagrams” electronically accompanied by a half size blue print mounted and protected in wiring closets.

Warranty

Contractor in conjunction with the manufacturer shall warranty the installation for a minimum of twenty-five years.

Drawings/Legends

Provide a legend in the drawings. Use easy to read and understandable symbols on drawings.

*General Technology Note – if school staff desires anything different to the standard, items will need to be reviewed with CREC - Technology Division.

9. Technology Integration Plan - Curriculum & Instruction (general guidelines as applicable)

1. Libraries

- a. Elementary Schools – 1 Computer (Librarian), 4 search computers
- b. Middle Schools – 1 Computer (Librarian), 8 search computers
- c. High Schools - 1 Computer (Librarian), 12 search computers

2. Classrooms

- a. 1 Laptop Computer (teacher)
- b. Student Computers
 1. PK-K grade – 4 student stations
 2. 1st-5th grade – 6 student stations
 3. 6th -12th grade – 8 student stations
- c. 1 printer per classroom

3. Wireless laptop cart station (if used)

- a. 25 laptops per cart

4. Interactive White Boards (fixed) – Size of device surface to be determined based on room size.

- a. All classrooms
- b. Labs if funds available
- c. Library

5. Peripheral Devices (If used) – Per classroom, a digital still and video camera, digital microphone, and document camera (Ipevo device to be considered)

6. Drops for data in all general spaces

- a. Teleconference
- b. Gym
- c. Auditorium
- d. Cafeteria
- e. Conference rooms
- f. As many logical areas as possible

7. Audio Enhancement System – if funds are available, provide an Audio Enhancement System

8. Digital signage – if funds available, provide digital signage infrastructure (data and power) at the following locations:

- a. Primary entrances
- b. Administration office
- c. Cafeteria

*Maintain clear lines-of-sight for all video viewing equipment

10. Food Service

Please note this is a listing of general specifications to be considered when designing a food service area and does not cover specifications for all kitchen/dining room equipment. Also note all specifications need to meet local, State, and Federal building and health codes. Not all code requirements are addressed in this list.

- A full production kitchen should be contemplated, unless directed to provide otherwise
- Food service facility optimally will be at ground level with no dependency on elevators for food and supply deliveries.
- Consideration for windows in the kitchen and dining areas should be given.
- Loading dock should be easily accessible and proper height to receive deliveries.
- Location of loading dock should consider walking pattern of students/staff.
- Receiving of goods for storage should not occur in food preparation area.
- Kitchen floors should be quarry tile. At minimum; slip-resistant, grease-proof surface with continuous cove base. No ceramic floors.
- Walls should have a durable, smooth, nonabsorbent, washable surface such as glazed ceramic tile, glazed structural blocks, fiberglass reinforced panel, or concrete block covered with epoxy paint.
- Stainless steel panels are required behind cooking appliances, from the bottom of the exhaust hood to just below the cooking unit, provide stainless steel coverage to the lowest unit evenly for a uniform fit.
- Walk-in refrigerators and freezers should be flush with kitchen floor – no ramps. Double grade. Explore remote monitoring.
- Temperature alarms for refrigerators and freezers. Adequate lighting for walk-ins.
- Refrigeration compressors should have a remote, easy access location.
- Bathroom must be available for kitchen employees. One unisex bathroom is acceptable for most operations, unless it requires a large staff.

- Bathroom must be handicap accessible.
- Locker facilities available for food service employees.
- Office provided for food service manager with visibility of food production area.
- No laminated surfaces in serving area or dining room.
- Serving line to be visually separated from kitchen production areas so that kitchen area is hidden from customer view
- Serving line pattern to include:
 - o Mobile milk dispenser (16 case recommended)
 - o Hot Counter and self-service heated hot top display, with added plate rest shelving on serving side
 - o Pass through flat counter
 - o Cold display self-service counter and/or cold display case
 - o Cashier station, must be lockable.
 - o Height of serving line to be age appropriate.
 - o Number of serving lines to be determined by number of students anticipated per wave and enrollment.
 - o Entire serving line has continuous tray slides with no break
- Ethernet drops for POS terminals at each cashier's station. Two Ethernet drops, one voice, and one analog fax line for Manager's office.
- Consideration should be given to trash flow from kitchen and dining area to outside of building. There must be an easily accessible trash disposal area outside the building.
- Area to wash trash cans should be provided.
- Ample dry storage facilities with a larger portion of dunnage racks vs. shelving.
- Kitchen and serving area to be totally secured off-hours.
- Compactor make (RamJet). Provide a concrete ramp for approach to compactor.
- Provide backflow preventer at steam tables
- Consider recycling opportunities
- Washer and dryer for kitchen use
- Grease trap for smaller buildings. In-ground grease interceptor for larger buildings outside of the building.
- 3-bay pot sink
- A provision of space for vending machines and associated power must be included in the final building design. Location to be coordinated with Food Service department.
- Provide potable water within cafeteria area, accessible to all students

In Pre-kindergarten classrooms, provide the following:

- A NSF approved refrigerator with small freezer compartment sized appropriately to the number of students in the class.
- An age-appropriate height NSF approved hand sink with soap dispenser and paper towel dispenser. (Hot water temperature: 110deg.-115deg.)
- A sink for teachers to rinse serving utensils and pans. (Full washing and sanitizing will occur in the main kitchen.)
- Cabinet storage for some dry food/snack and paper goods.
- Adequate space for trash and recyclables as well as the holding cart. (A receptacle for plugging in the serving cart may be needed.)
- As part of FFE, a Cambro heated cart UPCH1600 SS 2010 or similar should be included for each room. Provide a space for this in the room and in the kitchen area.

11. Science Laboratories

This is a listing of general specifications for science lab construction.

- Gas and compressed air requirements needs to be verified.
- If the use of CCST Gas piping is used, the Electrician will be responsible to bond per NEC 250.70, NEC 250.104(B)
- There should be four electrical outlets beside each lab table. Standard number of electrical outlets for the rest of the room.
- Acid neutralization systems for science rooms. Explore a central acid waste disposal system. Tie eyewash into central acid waste disposal system.
- Oval next to lab tables are sinks with hot & cold water via raised J shaped faucets.
- Emergency shower with eye wash
- All furniture can be movable.
 - o Front Teacher Demonstration Table on wheels
 - o Lab Tables should be heavy with solid epoxy top (looks like slate). The tables should not move easily when run into by a student). Able to be moved by two people. Top surface at least 60" X 30". Provide casters.
 - o Handicapped lab station on wheels if allowable by code.
- Student desks – chair-desks : Solid Plastic; 18" X 24" writing surface; flat bookrack.
- Stools at Lab Tables should have reinforced legs.
- Note: Cork Board and book shelves (12" deep above the desk)
- Note: White Board in front of room and on side in front of teacher's desk.
- Note: Above counters (where there is wall) place cabinets for glassware and equipment storage. These cabinets should have enough glass so that the contents of the cabinets can be seen without opening the cabinets.
- Between rooms should be a prep/storage room. 1) On one wall is a counter. 2) There should be a deep sink for aquarium and large glassware cleaning (rectangle with X through it) and also included should be specialized plumbing for chemical disposal. 3) Refrigerator and coat closet. 4) small Acid cabinet under counter. 5) small flammable cabinet under the counter. 6) Shelves on opposite wall capable of holding heavy kits and equipment. 24" deep and 24" between shelves. 7) Dishwasher for glassware and rack for glassware over sink
- Refrigerator should be explosion proof with safety temperature settings that tie into alarm system.

12. Library Media Center

This is a listing of general specifications for Library Media Center.

- Book stacks (fiction, non-fiction, biography, reference) (good to be movable stacks and not too tall for elementary)
- Newspaper and magazine stacks near reading area (display current issue and storage for back issues)
- Individuals reading area
- Computer catalog search stations
- Computer search stations using Internet and other online programs (preferably near reference area)
- Circulation and check out desk at entrance area
- Office and workroom space
- Classroom section/ worktables

- Classroom computer lab with teacher station
- Presentation or story hour area
- Whiteboard or preferably IWB
- Overhead LCD projector with screen area
- T.V. monitor with DVD
- Video and digital camera
- Locked area for technical equipment
- Video production space
- Meeting room area for 10-20 persons
- Wiring for all technology
- Bulletin display area (near entrance and other site)
- Display area for 3-D models, etc.
- Copy machine and printers
- Materials in the library media center shall have security/anti-theft tags
- *Provisions for an RFID system (conduit, boxes)(1-4-12)*

13. Health Services

Minimum Recommendations for the CREC Health Room (Nurse's Office)

There are no codes for school health rooms: The following are recommendations from the Connecticut State Department of Public Health and Local Department of Public Health and the National School Nurse Association.

- Minimum of 760 sq. feet total, composed of main room, exam room, dental/exam room, and a unisex, handicapped accessible toilet
- Exam, room;
 - o Minimum 100 square feet
 - o Exam table
 - o Sink with **lockable base and wall cabinets**-one faucet, hot and cold together. Eye flushing station with sink faucet.
 - o 2 chairs
- Dental/Exam, room;
 - o Minimum 100 square feet
 - o Sink with **lockable base and wall cabinets**, one faucet, hot and cold water available
 - o 2 chairs
 - o Room must be designed as a full service dental exam room
 - o Additional Power requirements may be needed, coordination during design phase with Owner/Dentist.
- Main Room:
 - o Minimum 520 square feet
 - o 1 desks with PC work station
 - o 2-3 cots screened from view with curtains
 - o Counter with hand sink in cot area
 - o Waiting area at front entrance to main room
 - o Main door will need to be keyed seperatly.
 - o Seating for 4-5 persons dependent on school population
 - o File storage area (at least 3 lockable file cabinets, lateral 5-drawer high, 36"-48" high)all dependent of population count.

- Lockable refrigerator/freezer for medication and immunization storage (does not require ice maker or water dispenser).
- Provide a “College” size refrigerator for specific food items only.
- Note: VCT flooring on all floors in health suite.
- Nurse Office:
 - Minimum 100 sq.ft.
 - One desk, two data drops, one voice drop and one dedicated fax line.
 - Quad outlet located behind nurse desk location.

The School Nurses Office/School Health should be located close to the Main office and have easy access to the main building entrance. Objective is to ensure safety; easy access, confidentiality.

14. Clocks & Bells

Existing conditions must be verified. Provide a centralized system.

15. Public Address

Existing conditions must be verified. Provide a centralized system.

16. Telephone System

CREC has a phone system in place. All communication design needs to support this system and its operation. CREC – Technology Division coordination is required. Refer to Section 8 for standards.

17. Fire Alarm / Sprinkler Systems

Existing conditions must be verified. Must be addressed as per applicable codes. Fire alarm panel must be designed according to Local Municipal Fire Department Standards and compatible with communication loop if present.

Acceptable systems are Gamewell, Firelight and Notifier. Provide attic stock for devices.

Monitoring system is being contemplated for each school. We would not like to use ADT.

It is the desire of CREC to have all buildings to be fully sprinkler.

18. Security

Existing Condition

The existing system must be verified and assessed.

Recommendation

The following are design considerations.

Security Design Considerations

While each school is different, the same design concepts shall apply. When discussing security, four (4) types of systems shall be considered:

- Locks & Keys
- Access Control
- Intrusion Detection
- Video Surveillance

Note: The intrusion system must be integrated with the video system to increase recording levels when a point violation occurs near associated cameras.

Locks & Keys

The security business plan calls for the limited distribution of keys for access to the facility. The Principal, Vice Principal (where applicable), the Facilities staff, and other designated staff shall be assigned entrance door keys. The Principal, Vice Principal, and Facilities staff shall carry master keys to the entire facility. Office staff and faculty shall be assigned standard "change" keys for their respective areas. Lock functionality for doors. Classrooms and offices shall use classroom function knob set locks with a pick strip mounted over the latch to prevent the latch from being picked open. When occupied classroom locks shall be set to the unlocked position. Keying schedule must be developed and coordinated with the Owner with enough time to cover lead times. Storage room shall use storeroom function locks that shall be locked at all times. One grand master key should open all doors in facility (except KABA). District-wide KABA Gemini One Series Keyway – One door at front main entrance, custodial entrances, mechanical, electrical, MDF, and IDFs.

Provide a "lockdown" system for doors/hardware in the building.

Access Control

Once school is in session all perimeter doors shall be kept secured. One perimeter door shall be designated the formal entrance. That door shall be equipped with a video intercom and an electrified strike. Video image used for intercom should be able to show full body capture along with high resolution visibility (ie. identify facial features of individual). The intercom and release for the strike shall be wired back to the main office. Visitors shall be challenged by the school secretary using the video intercom, if approved the secretary shall release the door and grant access to the visitor. The monitor and lock release shall be installed in an ergonomically appropriate position for this person to easily use. A 15' coil of wire must be provide at the secretary's desk for future mobility, the unit will not be mounted to the wall.

Provide a card access system compatible to the HID isoprox2 26bit format, the system shall include photo identification, time date stamp, time schedule programming, holiday schedule programming but not limited to. The system must be able to integrate with Intrusion Detection system. The goal is to maintain uniformity throughout all schools.

Intrusion Detection

Each school shall be equipped with a commercial burglar alarm system. The system shall be controlled by keypads strategically located at the main entrance, the facilities entrance, and public entrance for the gymnasium area. Computer laboratories and other high value areas shall be sub-zoned with keypads and other necessary devices. Provide audible system within the building.

All perimeter doors shall be equipped with flush mounted door contacts and concealed wiring. All ground level rooms with windows shall be equipped with Tri-mode motion detectors. Corridors on all floors shall be equipped with Tri-mode detectors. If the school is a multi-story building then upper floors will only have corridor tri-mode. Roof hatch or basement hatch doors shall have door contacts installed on them. The alarm system needs a "POTS" type telephone line associated with the device.

Video Surveillance

Video surveillance requires that perimeter doors, parking areas and ball fields be monitored using Closed Circuit television cameras, location and program will determine exactly what doors and how much coverage will be needed. The system will be IP base. Video signals shall be transmitted using UTP (Unshielded Twisted Pair) wiring. It is acceptable to use Category 6 cable or higher for the video distribution. Recording and archiving capabilities are required with a minimum of 2 terabytes of capacity. Location of archive shall be kept locally within the building. MDF room may be considered. All exterior cameras will be vandal proof. Camera positions (fixed or movable) and where they will be controlled from will be determined during the design process. Within the building, cameras should be visible, but not intrusive, the program will dictate how many and where cameras will be located.

Misc.

- Glass breaking sensors are required on the ground level only.
- Day and night infrared systems – To be used in very dark spots in the back of buildings or where there are concerns for vandalism or people congregating.
- Alarm system shall be remotely monitored by a contracted vendor. Security system will need to have direct communication with Owner's vendor.
- Provide an interior panic button at minimum at the front entrance, receptionist, and administrator's office.
- Dedicated security systems are access controlled.

* As part of the Architectural/Engineering services, the design team will need to design a full security system as per guidelines for the overall renovated/newly constructed facility. All standards need to be confirmed during the design process with the appropriate parties holding jurisdiction.

19. Electrical/Power

- Tiers of Power Generation
- CL&P

- All forms of cogeneration and energy efficiency need to be explored through an energy model (hour by hour, day by day, week by week, month by month, 365 days a year) provided by the design team.
- Diverse forms, systems or plants with the ability to produce energy could be considered pending detailed review and substantiated factually by the design team
- Generators – Required type is Bi-Fuel (natural gas and diesel). Capability for use as emergency power and/or alternate power source.
- Generators should be sized at minimum for emergency lighting and systems with the possible capability for base load.
- Base load generators are also the emergency generators
- Generators to be dual fuel (natural gas/diesel) diesel fuel capacity to meet emergency operation requirements

Lighting

- Ambient lighting integration in classrooms not offices
- Lighting fixtures installed parallel to windows in all classrooms
- Classrooms – offices – Gyms, Dividable gyms shall have sensors in each section Bathroom, Storage and Custodian Closets, Infrared/Motion sensors
- One hour occupancy timer in auditorium for House Lights, 10 minute warning prior to shutting down, override from stage control system
- Corridor lighting 100% on during school hours 50% during off hours, the 50% after hours shall be controlled by motion and infrared sensors with day time by-pass
- Classrooms and offices shall use pendent mounted two (2) light Super "T" -8, Electronic ballasts – up light
- Corridors shall use recessed two (2) light Super "T" -8, Electronic ballasts – up light fixtures
- All Exit signs shall be LED
- Low mounted exit signs shall be self-powered
- Gym lighting shall be compact fluorescent with virgin acrylic lenses and cages.

Electrical Panels

- Lighting/Intelligent lighting Panels (all lighting) Shall be G.E. or Square "D" only compatible
- Power (receptacles)
- Power Panels (food service, motor controls, HVAC) Shall be G.E. or Square "D" only
- Main switch gear shall have remote monitoring capability
- All Main switch gear shall be G.E. or Square "D" only

Electric motors shall be premium-efficient motors

- VFDs shall be Square D or ABB drives

Power/data – Interactive White Boards (IWB)

- Provide electrical power outlet for speakers and projector
- Below IWB and adjacent to teacher desk where computer station is located, provide a quad electrical for computer, monitor, printer and video splitter. Very location of quad during design.

- Installation of any warning, safety, fire alarm devices, etc. must be sufficiently far away from the IWB to meet code as well as to be clearly visible.

Misc. Power

- All computer network drops should have a corresponding duplex electrical receptacle box as a minimum. If cost and aesthetics allow, upgrade to quad electrical outlets whenever possible for computer stations.

20. HVAC / Controls

Building Automation Systems

- BAC Net in accordance with ASHRAE 135 (building automated control) must be Certified Natural BACnet. BACnet open protocol standard. Stay away from Johnson Controls.
- Full integration to the existing CREC front end software is NOT required, icon based integration is requested at the existing front end. Owner desires to have icon for each of the control systems installed at existing workstation, once this icon is activated that system shall be displayed on screen. If one control vendor is to install a control system in more than one school icon shall be capable of displaying all schools graphics.
- In addition to providing an icon at the existing CREC front end workstation it is desired that each of the schools is supplied with its own workstation which will be used by the facilities staff located within that school to access the control system.
- Animated graphics are required.

Energy Management System – Explore having a controlled sequence for load shedding

Heating and Cooling Standards

- 4 Pipe System only
- DX Units - 5 ton or less, single area application only (MDF – IDF – Computer rooms etc.
- Standard boiler/chiller plant
- Rooftop units are preferred. Non-proprietary.
- Classroom ceiling mounted water source heat pumps or fan coil units. If heat recovery units are utilized, then they should have heating and cooling capabilities.
- VAV distribution 1 per classroom, temp sensor at discharge
- All inside rooms have separate VAV units
- Exterior rooms, other then classrooms may share a common VAV
- All rooms must have temp sensors
- Bar sensors across coils in place of standard sensor
- Identification markings for all VAV's locations, pumps, valves. Mark ceiling tile Grid and access panels where devices are located
- Color Code using ASHRAE standards
- Boilers – sectional cast iron-wall to wall design. HP Smith, Well, and McClain are acceptable.
- Burners – Prefer dual fuel (natural gas and oil)
- On-site oil storage tank

- Carbon monoxide detection in every room. Should be tied to the system.
- Air handling units – Trane, Carrier, AAon with CO2 sensors

Chilled Water/Glycol Sensors

- In systems where glycol is used measure % of Glycol

Damper Systems (make-up air, exhaust and smoke dampers)

- End switches to report open and closed state
- Auto reset for dampers

21. Plumbing

If the facility is an existing one, existing conditions need to be evaluated for ADA code violations, redistribution of interior spaces via renovation and relocation of fixtures, fixtures that do not meet current efficiencies and required fixture counts required by code.

- PV faucets shall be used in all lavatories. Must be powered conventionally. No alternative power use encouraged.
- Auto flush toilets and urinal shall be used. Must be powered conventionally. No alternative power use encouraged. Flush valves to be recessed in wall.
- All valves up to 4" shall be ball valves
- Valves over 6' high shall have chain operation
- Outside hose bibs shall be 1 every 200' or as required by facility
- Investigate use of rainwater for landscape irrigation
- For lavatories, the preference is Bradley.
- Use of waterless urinals is discouraged.
- Research dual flush technology. Limits are 1.6 gallons/flush for toilets and 1.0gallons/flush for urinals.
- Trap primers in floor drains

22. Elevator

If there is an existing elevator, the condition must be assessed.

- Where space provides elevator shall be 8' x 8'
- Elevator shall be equipped with removable moving pads
- Otis Model Gen 2 shall be considered for projects
- Koenig and Schindler acceptable manufacturers also.
- The elevator cab shall have a card reader to ensure use by appropriate individuals

23. Gas Service

Gas service is vital. Gas shall be considered for cogeneration applications, generator, and HVAC operations. Service needs to be tested to ensure that it is sufficient for the intended operations.

- Gas shall be used for all heating and hot water systems

24. Hazardous Material / Environmentally Impacted Soils

Building – If any hazardous material (ie. asbestos) is contained within the existing facility, a full survey must be completed by an environmental engineering firm and a full plan for abatement must be prepared. The intent of the district is to abate all hazardous environmental issues as practicable. Radon tests must also be performed according to applicable laws and regulations, including in meeting reimbursement requirements for BSF.

Site – For site, a Phase 1 and full Phase 2 Environmental Site Assessment must be completed, including a boring program to collect sufficient field data for proper assessment. Based on the findings of the Phase 2, a Phase 3 and pre-characterization may be required along with other associated remediation work and procedures. If site remediation needs to take place, proper documentation and clear direction for bidding purposes shall be prepared by a qualified professional and licensed environmental engineering firm acting on behalf of the Owner.

25. Commissioning Services

The following is provided as a guideline and will need to be confirmed through the design phase of the project:

The primary role of the CxA is to develop, coordinate and execute a testing plan, observe and document system performance and determine whether systems are functioning in accordance with Contract Documents. Responsibilities of the CxA are as outlined below.

- Document the owner’s criteria for the systems’ functioning, performance and maintainability. Assist in preparing the Owner’s Project Requirements, including Energy Efficient Systems and Building Automation Systems programming.
- Review compliance with the most current state regulations
- Develop commissioning specifications for all commissioned equipment.
- Verify and document compliance with owners criteria throughout the design, construction, start-up and initial period of operation and determine whether systems are functioning in accordance with Contract Documents
- To be involved throughout the project from design through the warranty phase. Make recommendations on system design and/or Owners Project Requirements and Operation to improve efficiency and building operation (including HVAC & Building Automation Systems)
- To provide documented confirmation that the systems of the facility fulfill the functional and performance requirements of the building owner, occupants, operators and the design plans and specifications. Including LEED (Leadership in Energy & Environmental Design) Commissioning and Enhanced Commissioning as required.
- To ensure that all new buildings and new renovation/addition projects achieve the United States Green Building Council (USGBC) LEED silver level of certification at minimum.
- To develop and coordinate the execution of a testing plan during construction, including all observation and documenting of all system’s performance to ensure that systems are functioning in accordance with the owner’s objectives and the associated construction plans and specifications.

- To review and approve complete operation and maintenance (O&M) manuals, as well as the training plan, as prepared by the contractors, on system operations to the building operators, to ensure the building continues to operate as intended.
- To be available for problem solving and/or resolution of non-conformance issues of deficiencies. (The Commissioning Agent (CxA) is not responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating, or construction management.)
- To return in ten months from substantial completion date for final commissioning review of the facilities.

26. LEED Certification

All school buildings shall be LEED Silver certified and/or equivalent according to State requirements and reimbursement guidelines unless otherwise specified by the Owner. Actual pursuit of LEED Certification will need to be approved by the CREC School Building Committee.

27. Performance Criteria

Quality requirements of materials and construction –the level of quality of the HVACR materials is defined by:

- Durability – high durability with resistance to damage by ambient conditions, users or operation and maintenance personnel.
- Time expectancy between failures – no equipment failures during the first five years of operation.
- Time expectancy between replacement – 25 years.
- Owner general expectations of quality of construction – above average.

Acoustical requirements – no noise generated from the HVACR or electrical system that results in distraction of the occupants, including central systems, ductwork, unitary units, and room air distribution. Must conform to ASHRAE School Standards

Vibration – vibration from the HVACR components shall not be transmitted where it is felt by the occupants. Must conform to ASHRAE Standards.

Accessibility – the accessibility issues for the owner include:

- Operations and maintenance staff – the maintenance space shall be 20% greater than manufacturer recommendations. Stairs shall be used (not vertical ladders) for access to major equipment. All gauges shall be clearly visible from floor level and all test ports, shut-off valves, and items required for maintenance shall be accessible by a 6', 250 pound person.

Sustainability – LEED™ certification (Silver minimum or equivalent) is desired for projects. In pursuit of this certification, the following sustainability items are to

be the focus:

- Use of low energy system components – utilize high efficient components for installed and occupant items.
- Build specific to the site – integrate site conditions to building layout and systems.
- Accomplish research of real needs of project – develop comprehensive Owner’s Project Requirements document.
- Minimize adverse impact on the environment – utilize benchmarks for impact on the environment.
- 2% of building energy use comes from renewable sources – purchase renewable power.
- Use fixtures and equipment with water and energy conservation – low water and energy fixtures.
- Use of renewable resources (solar, wind, and geothermal) – use renewable resources on- site.
- Daylighting and energy efficient lighting systems – flexibility in lighting system and maximize use of daylighting.
- Ensure design of building minimizes energy loss – building envelope has very good thermal properties.
- Reuse materials – reuse materials when possible.
- Do not compromise building quality with LEED™ – certification is not the goal, a more sustainable facility is.
- Establish and evaluate the options (LCC) – use a life cycle cost approach in evaluating options.
- Produce less waste – minimize waste from construction and manufacturing.
- Install automatic controls on mechanical systems – use of good controls.
- Lowest lifecycle cost – the lowest 30-year life cycle cost options are adopted and implemented on the project.

Warranty Requirements – all HVACR warranties are to begin at substantial completion, regardless of when the component is delivered, installed, or started-up. For small components (those under \$100,000 in first cost) the warranty shall be for one year. For large components (those over or equal to \$100,000 in first cost) the warranty shall be for five years and include all labor costs, and parts. Any item required to be accomplished by the operations and maintenance personnel must be clearly documented and provided prior to the start of warranties.

Equipment and system maintainability expectations – all equipment must be easily accessible, locatable, and clearly labeled. The system documentation must be accurate and consistent with actual installed components and operation. The requirements for the system documentation include but are not limited to:

- As-builts are accurate (include TAB) – the record documentation has been verified to be accurate and is provided in a usable format.
- Trouble shooting – a troubleshooting matrix is provided for typical issues anticipated for the system relative to the OPR.

- Accurate start-up and shut-down procedures – easy to find and follow start-up and shut-down procedures are available to the O&M staff.
- Detailed how-to manuals – manuals provide clear and concise how-to guidance.
- Detailed sequence of operation – detailed sequence of operations on any low voltage system with software logic diagrams.
- Technical support numbers – easily located technical support telephone numbers and contact information.
- Valve chart – a chart that details where each valve is located, its number and its operation.
- How system is intended to work/be used – review of the OPR/BoD prior to any other training to provide context and content to the trainees
- Training requirements for owner’s personnel – the owner will be utilizing in-house operations and maintenance resources. These personnel will have between 10 and 25 years experience and it is assumed they are conversant in basic maintenance techniques and are computer proficient.
- Warranty – prior to any changes to components, the warranty requirements summary will be reviewed to avoid voiding of warranties.

Sound performance – The school facility will need to comply with sound performance criteria as required by the State Department of Education, Bureau of School Facilities and State Statutes.

Appendix A – Toilet Accessory Standard

The specifications for all the CREC restrooms are as follows:

- ADS200B Hands free Cormatic towel dispenser – Black
14.3" W x 9.1" L x 15.5" H
- 56790 Compact Coreless Toilet Tissue Dispenser – Black
11.75" L x 5.25" W x 12.5" H
- 6140 Rubbermaid Sanitary Receptacle – White
10.75" L x 5.25" W x 12.5" H
- DAA501501 Simoniz Foam Soap Dispenser – Black
5.5" W x 3.75" D x 11" H
- Toilet partitions shall be phenolic
- Air blowing system for drying hands (only in staff toilets)

All items will be included by Architect in design documents and purchased by Construction Manager.



Appendix B – School Building Program

Appendix C – Student Enrollment Projections

School Year	Hartford Students	Suburban Students	Total
2012-2013	92	92	184
2013-2014	155	155	310
2014-2015	165	165	330
2015-2016	165	165	330
2016-2017	165	165	330
2017-2018	220	220	440
2018-2019	275	275	550
2019-2020	330	330	660