

ELEMENTARY

MIDDLE

HIGH

DESIGN GUIDELINES

TABLE OF CONTENTS

DIVISION 1 – GENERAL

Introduction3
DeKalb County School District Guiding Documents.....3
DeKalb County School District Educational Specifications3
GADOE Architectural Review Items.....3
Architectural/Engineering (AE) Contract4
Applicable Codes4
Grades to be Housed4
Building Capacity4
Room Numbers.....4
GADOE Inventory Drawings.....5
Fire Evacuation Drawings.....6
Proprietary Specifications6
Green Considerations/ High Performance Schools.....6
Acoustical Standards.....7
Close-out Documents7
Owner Orientation and Instruction7

DIVISION 2 – SITE

Site Design8
Future Portable Classrooms8
Site Circulation8
Auto Parking and Student Drop-off/Pick-up 9
School Bus Parking, Drives and Loading9
Site Signage (Road, Parking and Entrance).9
Marquee Sign9
Loading Docks.....10
Paving and Surfacing10
Compactor / Dumpster Pads.....10
Fences and Gates.....10
Trees / Plants / Ground Covers.....11
Lawns and Grasses.....11
Landscaping Irrigation System11
Site Design Notes for School Athletic Facilities.....12

DIVISION 3 – CONCRETE

Stadium Seating15

DIVISION 4 – MASONRY

Brick Masonry.....15
Concrete Masonry Units15

DIVISION 5 – METALS

Structural Metal Framing16
Ladders16
Railings16

DIVISION 6 – WOOD & PLASTICS

Plastic Laminates16
Casework16

DIVISION 7 – THERMAL & MOISTURE PROTECTION

Waterproofing and Dampproofing 16
Insulation and Fire-proofing 16
Pre-formed Metal Roofing 17
Membrane Roofing 17
Roof Drains 17
Roof Hatches 17

DIVISION 8 – DOORS & WINDOWS

Doors 17
Hardware 18
Windows 18
Glazing 19

DIVISION 9 – FINISHES

Gypsum Board 19
Resilient Tile Flooring 19
Carpet..... 19
Wood Athletic Flooring 20
Synthetic Athletic Flooring 20
Indoor Track Athletic Flooring..... 20
Weight Room Athletic Flooring 20
Quarry Tile..... 20
Ceramic Tile 20
Terrazzo 20
Sealed Concrete 20
Polished Concrete 20
Suspended Ceiling 20
Non-accessible Ceilings 21
Sound Attenuation Blanket 21
Exterior Painting..... 21
Interior Painting 21

DIVISION 10 – SPECIALTIES

Visual Display Boards..... 21
Metal Storage Shelving..... 22
Room Signage 22
Metal Lockers 22
Restroom Accessories 24
Toilet Compartments & Urinal Screens 24
Fire Extinguishers..... 24
Ground Set Flagpole 24
Canopies 24

DIVISION 11 – EQUIPMENT

Book Theft Protection Equipment 25
Theatrical / Stage Equipment 25
Projection Screens 25
Darkroom Equipment..... 25
Food Service Equipment 26
Custodial Equipment 26
Athletic Equipment..... 26

Scoreboards	28	Data Cabling System	44
Play Equipment	28	Telephone Cabling System	44
Concession Equipment.....	28	Detection Systems	44
DIVISION 12 – FURNISHINGS		Master Television System	44
Science Casework and Equipment	29	Fire Alarm System	45
Darkroom Casework	29	Intercom System	45
Music Casework	29	Public Address Systems	45
Library Shelving and Casework.....	30	Delivery Door Bell	46
Manufactured Casework.....	30	Clocks.....	46
Blinds.....	32	APPENDIX	
Auditorium Seating	32	Proprietary Specifications	46
Telescoping Bleachers	32	Door Hardware	46
Floor Mats and Frames	33	Data Cabling System	51
		Telephone Cabling System	51
DIVISION 13 – SPECIAL CONSTRUCTION		Intercom System	51
Portable Bleachers	33	Fire Alarm System	63
		Security System.....	72
DIVISION 14 – CONVEYING SYSTEMS		Communications	79
Elevators	33	DCSD Access Control System.....	82
Electric Traction Elevators	33		
Mechanical Lifts for AIA Accessibility.....	34		
DIVISION 15 – MECHANICAL			
Pipe and Fittings.....	34		
Reduced Pressure Zone Assemblies.....	35		
Grease Interceptors	35		
Trap Primers	35		
Plumbing Fixtures.....	35		
Fire Protection.....	37		
Heating Ventilation and Air Conditioning ..	37		
Automated Temperature Controls and Energy Management System.....	39		
Roof Top Unit Security	39		
DIVISION 16 – ELECTRICAL			
Solid Front Electrical Panels.....	39		
Future Expandability.....	39		
Conductors and Grounding	40		
Overload Devices for Motor Starters.....	40		
Power Outlets	40		
Light Fixtures	40		
Motion Sensors.....	41		
Gym Lighting	41		
Auditorium Lighting	41		
Exit and Emergency Lighting	41		
Emergency Electrical System	41		
Exterior Lighting Fixtures	42		
Sports Field Lighting	43		

DIVISION 1 – GENERAL

Introduction

These Design Guideline requirements reflect DeKalb County School District's (DCSD) experience in building and operating schools. They are provided to assist Design Professionals in preparing contract documents for new schools, additions, and renovation projects. The aim is to balance the need for instructional functionality with aesthetics, accessibility, operability, and security so that all students, staff, and community members feel welcome and safe.

The Design Guideline requirements are organized in sixteen (16) divisions similar to the Pre-2004 Master Format industry standard specification divisions. Technical specifications for each DCSD project shall be prepared by and be the legal responsibility of the Design Professional of record. The Design Requirements document illustrates DCSD requirements. They are not intended to be complete technical specifications. The Design Professional shall be responsible for incorporating these requirements into the appropriate final contract documents.

All requirements noted shall be assumed to apply to every school type, unless specifically noted. DCSD or its designee shall be solely responsible for establishing and maintaining the DeKalb County School District Design Guidelines.

Design Professionals shall coordinate use of these Design Guideline requirements with related documents and regulations, including, but not limited to:

DeKalb County School District (DCSD) Educational Specifications
Georgia Department of Education (GDOE) Architectural Review Documents
Georgia Department of Education (GDOE) Grants Administration Documents
Architect/Engineer Contract

DeKalb County School District (DCSD) Guiding Documents

These documents are posted on the DCSD website: www.dekalb.k12.ga.us.
Excellence in Education Plan Strategic Plan for 2012 – 2017
Five Year Local Facilities Plan
Vision 2020
Ten-Year Facility Master Plan

DeKalb County School District (DCSD) Educational Specifications

Educational Specifications provide descriptions of typical programmed spaces for each of the three main types of schools: Elementary, Middle and High. These Design Guidelines describes construction requirements applicable to all types of schools.

Georgia Department of Education (GADOE) Architectural Review Items

GADOE requires that Construction Documents for DCSD projects comply with GADOE standards and be submitted for formal review. These standards and review requirements are posted on the GADOE Facilities Services Resources website.

<http://www.GaDOE.org/Finance-and-Business-Operations/Facilities-Services/Pages/Facilities-Services-Resources.aspx>

Drawing submittals require coordination with the current GADOE "Curriculum and Space Needs" form for each project. These forms will be provided by GADOE through the DCSD Program Manager.

At projects where GADOE will provide funding, additional documentation is required. These documents are also posted on the GADOE Facilities Services Resources website.

Architectural/Engineering Contract

The Design Services contract for new schools, additions and major renovations between the DeKalb County Board of Education and the Design Professional provides a detailed description of the scope of work and obligations of the parties to the Contract. These contracts are posted on the DCSD website: www.dekalb.k12.ga.us.

Applicable Codes

The Design Professional is responsible for ensuring that all designs for DCSD projects comply with all applicable building codes.

Grades to be Housed

Typical new schools in the DeKalb County School District shall be designed to house the following grade levels:

Elementary: Kindergarten (K), First (1st), Second (2nd), Third (3rd), Fourth (4th) and Fifth (5th) grades

Middle: Sixth (6th), Seventh (7th) and Eighth (8th) Grades

High: Ninth (9th), Tenth (10th), Eleventh (11th) and Twelfth (12th) Grades

Building Capacity

Typical new schools in the DeKalb County School District shall be designed with the following Full Time Equivalent (FTE) Capacity:

Elementary: 900 FTE

Middle: 1,200 FTE

High: 1,600 FTE

Typical new schools in the DeKalb County School District shall be designed with the following core capacity:

Elementary: 1,300 FTE

Middle: 1,600 FTE

High: 2,000 FTE

The "core" consists of ancillary spaces that support the classroom instructional spaces. These include the Cafeteria, Kitchen and Media Center. The GADOE has issued rules setting forth minimum floor areas for such spaces, based upon FTE. Thus, provision for expansion must begin with planning for a "core" large enough to support the largest practical FTE contemplated for a given site.

In addition, any new design for DCSD facilities should be configured with future growth in mind, to allow for expansion with a minimum amount of alteration of the original structure or site. For new buildings or major additions, indicate area for future expansion on the architectural site plan.

Room Numbers

DeKalb County School District requires incorporation of a single room numbering system for all drawings, schedules and signage installed on the building, including:

Schematic Drawings

Door and Finish Schedules

Design Development Drawings

HVAC Equipment, Automated Temperature

Working Drawings

Controls and Energy System

GADOE Inventory Drawings

Signage on the building

To achieve this, the Architect shall develop a logical building and room numbering system at the Schematic Planning stage. The sequence of room numbers shall be assigned based on ease of locating rooms in the completed building. In order to direct students, staff and visitors, the sequence shall start at the Main Entrance and progress in a logical sequence throughout the building. Random numbering of rooms is not acceptable.

Room numbers shall be all numeric as required for GADOE Inventory. Major room numbers at multi-story buildings shall be 4 digits starting with the floor level, and progress around the building in sequence (Room number 1211 indicates 1st floor, 2nd wing or Corridor, 11th room). Small spaces within major rooms or suites shall be identified with the major room number plus numeric suffix (# 1211.1). Where possible use whole thousands for wings or corridors (1200) and use postal odd-even progressive numbers down corridors (odd on right (1211), even on left (1212). All spaces must be numbered including corridors, stairs, elevators, and service rooms. Stairs, elevator and service rooms may be numbered as a suffix of the corridor leading to them. One story buildings shall be similar, but may use 3 digits when identification of the story is not needed. Room numbers at additions shall extend existing Inventory Drawing numbers without repeats.

Architect shall present building and room numbering system to DCSD for review and approval before incorporating them into the construction documents. After room numbers are approved they shall not be casually altered without specific approval of DCSD Facilities Services Department. See Division 10 - Room Signage.

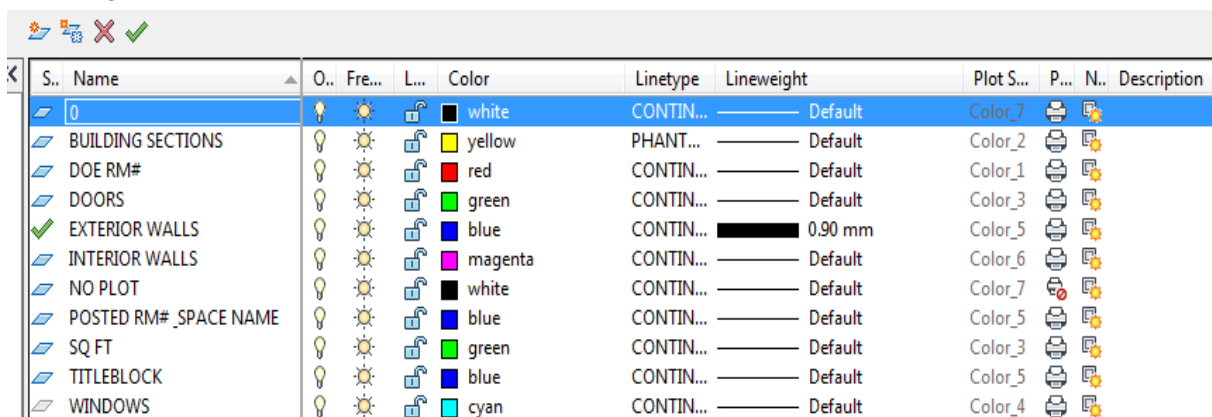
GADOE Inventory Drawings

For all new buildings and additions, the Architect shall prepare AutoCAD Inventory Drawings. These are required by the GADOE for the Local Facility Plan, and are used by DCSD for convenient reference.

Inventory Drawing standards include:

Deliver the Inventory Drawings to DCSD, formatted and saved in AutoCAD 2010.

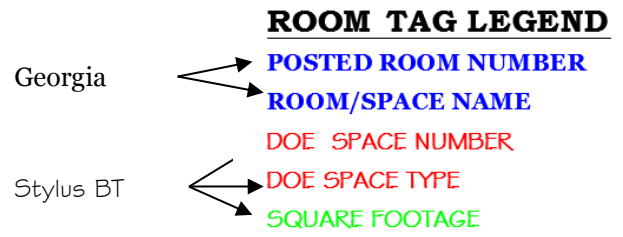
The following layer list should be used:



S..	Name	O..	Fre...	L...	Color	Linetype	Lineweight	Plot S...	P...	N..	Description
0					white	CONTIN...	Default	Color_7			
	BUILDING SECTIONS				yellow	PHANT...	Default	Color_2			
	DOE RM#				red	CONTIN...	Default	Color_1			
	DOORS				green	CONTIN...	Default	Color_3			
	EXTERIOR WALLS				blue	CONTIN...	0.90 mm	Color_5			
	INTERIOR WALLS				magenta	CONTIN...	Default	Color_6			
	NO PLOT				white	CONTIN...	Default	Color_7			
	POSTED RM# _SPACE NAME				blue	CONTIN...	Default	Color_5			
	SQ FT				green	CONTIN...	Default	Color_3			
	TITLEBLOCK				blue	CONTIN...	Default	Color_5			
	WINDOWS				cyan	CONTIN...	Default	Color_4			

- Building walls shall be drawn in a simplified 2-D drawing format using Auto CAD and show only the net exposed surface of walls. (No hatching or interior chases)
- Show windows as a single Cyan Line without spandrels or sills.
- Show doors and swing as single lines similar to walls without thresholds or heads.
- Eliminate unnecessary detail features which may interfere with the readability of text at the prescribed sheet size.
- Identify all spaces, including corridors, stairs, elevators, and service rooms, with room name, room number and net area.
- Standard sheet size = 11" x 17" without border
- Do not use more than one sheet per floor level. Adjust drawing scale as necessary to fit plan on the sheet and also retain readability.
- All text must be readable without magnification when printed on 11" x 17 sheet. Use following Fonts and colors to better distinguish room identification:

Font styles:



- Net Room Areas shall be calculated based on the inside face of walls.
- Gross building areas shall be calculated to the exterior surface of exterior walls. Do not include overhangs.
- Provide separate area calculations for mechanical mezzanines and canopies.
- Text shall be individually positioned for each space for best readability.
- Additions shall be identified with a yellow phantom line border and a title box showing GADOE Building Number, Year when first occupied and Gross Area.
- Refer to typical existing Inventory Drawings for required Schedules, Tables and overall Format.

Fire Evacuation Plans

For all new buildings and additions, the Design Professional shall prepare evacuation plans in accordance with DeKalb County Fire Marshal regulations. Upon construction completion, these plans will be mounted on interior walls throughout the facility to direct building occupants to exits.

For phased projects, intermediate evacuation plans are required for each phase.

Plans shall show simplified floor plan in black, with exit routes in red, on white background.

Deliver the Fire Evacuation Plans to DCSD in .pdf format at 8 ½" x 11".

Proprietary Specifications

- Technical Specifications shall generally be performance-based and include a minimum of 3 acceptable manufacturers actively bidding in Georgia. These shall be reviewed by DCSD or its designee in order to confirm acceptability.
- It is the desire of DeKalb County School District to utilize proprietary specifications for items for which there are less than three acceptable manufacturers or for items for which new purchases must be of the same manufacturer as existing to achieve system wide compatibility and economical use of funds in the maintenance of the systems. The current list of approved items is in the appendix to this document.
- The DCSD designee will furnish a letter of justification for each project, which must be submitted with final documents to the Georgia Department of Education. The Design Professional shall verify that the latest and most current document is used in Contract Documents.

Green Considerations / High Performance Schools

DeKalb County School Board Policy EBL adopted in 2008, defines the District's goal to "establish and maintain an environmentally conscious school system." This policy is available for viewing on our website, www.dekalb.k12.ga.us. It is the District's policy to promote healthy and sustainable educational environments through the design, construction, operations, and maintenance of its facilities. Architects, engineers, and contractors should review, discuss, and work with the District to establish the goals in this respect for each project at the beginning of the design and construction phase. Implementation of sustainable design features found in Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, and Indoor Environmental Quality, along with Innovation and Design Process are to be considered a goal of the District, for both renovation and new construction even if certification is not pursued. All projects should strive to meet sustainable criteria.

All projects should attempt to meet the following prerequisites:

- Construction Activity Pollution Prevention
- Minimum Energy Performance
- Fundamental Refrigerant Management
- Storage & Collection of Recyclables
- Minimum Indoor Air Quality Performance
- Environmental Tobacco Smoke Control

DeKalb County School District recognizes the environmental impact of its buildings and the importance of green design and green building practices. Architects and engineers are encouraged to incorporate energy performance in the design process and design energy efficient buildings to achieve high performance buildings that will lower the schools overall operating and maintenance costs.

Acoustic Standards

The Design Professional shall be responsible for incorporating appropriate acoustic design measures into the Construction Documents. Design considerations include:

Building areas requiring special acoustic attention include stage area, auditorium, gymnasium, cafeteria and Music areas. Sound quality considerations include controlling excessive reverberation, eliminating or minimizing echoes, and shaping rooms to create uniform sound field in audience areas.

Minimizing impact of equipment noise and vibration when locating mechanical equipment.

Maximum noise emissions of equipment shall be specified. To avoid vibration transfer, provide adequate isolation of all equipment with moving parts from the building structure.

Addressing noise intrusion from plumbing and impact noise from lockers, basketball backboards, etc. into acoustically sensitive rooms. Speech privacy shall be provided at offices, conference rooms and speech therapy rooms.

Follow GADOE guidelines and current industry standards such as ASHRAE and ANSI Standard S12.60 guidelines regarding acoustic design of classrooms.

Close-out Documents

The process of closing out a project is of utmost importance to DCSD. Close-out procedures shall be incorporated into the project from the start of design. The Design Professional shall coordinate with the Capital Improvements Program team to establish expectations regarding documentation.

Provide Operation and Maintenance Manual Notebooks for all systems and equipment no later than (30) days prior to Project Substantial Completion Date.

Provide keys, valve schedules, attic stock materials, instruction confirmations and as-built drawings no later than the Project Substantial Completion Date. Deliver keys directly to Owner.

Provide all required warranties, inspection reports, governing certificates and other remaining required items within thirty (30) days following the project Substantial Completion Date.

Provide all warranties in a separate 3-ring binder with warranties organized by CSI designation.

Provide itemized list of Kitchen equipment with brand, model and serial number for each piece along with cost.

Owner Orientation and Instruction

Technical Specifications shall address requirements for training sessions for building equipment and systems. Minimally, these shall include:

- Providing a training schedule spreadsheet for distribution to Owner one week before training.
- Providing a video record on DVD of all trainings for future reference.

DIVISION 2 - SITE

Site Design

For new facilities and major renovations, the Design Professional shall develop a master plan which provides for the programmed needs defined by DeKalb County School District including considerations for future expansion to the core capacity. In addition, classroom areas should be configured so as to allow for expansion with a minimum amount of alteration of the original structure or site. For additions to existing facilities, the Design Professional shall provide DCSD with an overall as-built site plan showing entire extent of site, including all existing and new structures, paving, and site improvements.

Future Portable Classrooms

For new buildings, site design shall include pre-planned level areas for the future location of portable classroom units, in the following minimum quantities:

- Elementary: 12 classrooms
- Middle: 12 classrooms
- High: 24 classrooms

Design of the site shall identify area(s) for placement of portable classroom units without impacting parking, play fields and other required amenities. Portable areas shall be adjacent to classroom wings if site constraints and conditions permit. Coordinate portable location with future building expansion areas to avoid relocation of portables when the building is expanded. Building service utilities (electricity, gas, water) shall not be located under the footprint of future portable locations. Avoid locating site drainage lines and inlet structures under and within portable building sites. A fire hydrant must be located within 400' of all portable classroom building sites.

Portables should be located as close to the school building as permitted by code. Architect shall verify separation requirements with the permitting authority and with DCSD Facility Services Department during the preliminary design phase of each school. Portables are typically located a minimum of 17' apart, face to face to accommodate required stairs, ramps and sidewalks.

Each typical portable is 1,750 sf. in area, 14' wide and 45' long. Portables are built to a Type V-B construction classification and are designed and approved for educational occupancy. Soil bearing capacity in the portable area shall be 3,000 psf minimum.

The building electrical service shall be sized to accommodate the additional portable loads. A "spare" breaker shall be installed to power a future distribution panel near the portable site(s) to provide electrical service to the portables. Conduits of sufficient size, as required to serve the remote future portable classroom distribution panel, shall be installed from the main electrical distribution panel and capped until needed. Intercom, security and other systems shall be expandable for the number of additional portable classrooms noted above.

Site Circulation

Design considerations include:

Every school site shall be designed with a minimum of two (2) vehicular entrances in and out, preferably from two separate streets.

Site traffic circulation shall be designed with separate car and bus traffic routes that should not conflict. Layout shall not require driving service vehicles through parking lots to access the service areas; provide direct access to service area from bus loop or other main site circulation driveway.

Provide walkway access from adjacent streets, parking, bus loading and sports facilities. Walkways at high traffic areas shall be sized and located to avoid trampling of adjacent

lawns and landscaping especially at building entrances and at heavily traveled routes to play areas.

Provide gates or bollards to restrict vehicular access onto entrance and other major walkways. Review specific requirements for traffic gates with DCSD. Consider gates at drives leading to athletic areas, bus parking, marching band practice areas and entrances.

Auto Parking and Student Drop-off / Pick-up

Design considerations include:

The total number of automobile parking spaces provided shall be the number required by local zoning code, or the following, whichever is greater:

ES = 2 parking spaces per Instructional Unit, plus handicapped-accessible spaces per code.

MS = 3 parking spaces per Instructional Unit, plus handicapped-accessible spaces per code.

HS = 6.6 parking spaces per Instructional Unit, plus handicapped-accessible spaces per code.

Where space permits, provide an area without intermediate curbs within the paved parking area for marching band practice, approximately the size of a football field.

Provide a designated separate automobile drive and drop-off / pick-up area with appropriate stacking space for waiting cars. Consider using speed humps at automobile drives to reduce speeding. Review location of proposed speed humps which may impact bus traffic with DCSD Director of Transportation.

Consider placement of a portion of the required number of accessible (HC) parking spaces directly adjacent to main entrance building, so that disabled do not have to traverse traffic lanes to enter building.

Clearly define crosswalks (painted and/or raised) from parking areas to all building entrances.

School Bus Parking, Drives and Loading / Unloading Areas

Design considerations include:

For all new schools, provide covered main bus loading area and covered handicapped-accessible special education bus loading adjacent to appropriate building entrance.

Consider locating special education bus loading area as close to special education classrooms as practicable. Access to and from the Special Education bus area shall be approximately level without extensive ramps or lifts.

Provide curbside bus loading-unloading adjacent to High School Stadiums with appropriate turning radius and grades. Paint auto parking overlay at bus staging area for additional activity parking.

Bus parking, covered loading-unloading areas, and driveway layout shall be reviewed and approved by DCSD Executive Director of Transportation, to ensure appropriate turn radii and grades for bus drives.

Site Signage (Road, Parking, and Drive Entrance)

Appropriate metal signage shall be included in the contract per code and local requirements.

Design considerations include:

Parking and traffic signage shall be included in the site design and Construction Documents.

Provide way-finding signage for major facilities such as visitor parking, building entrance, parent and bus drop-offs, stadium, ball fields, etc. Identify restrictions on use of parking spaces such as handicapped, staff, visitors, students, etc. Provide signage clearance from curbs to prevent bus "tail swing" from damaging signposts. Similar clearance needs to be maintained for bus canopy posts. Mount signage on building walls and columns where possible.

Provide space at entrances for standard building identification sign furnished and installed by DCSD.

Coordinate signage design with DCSD Executive Director of Transportation.

Marquee Sign

Appropriate location for future marquee sign for each new facility shall be determined by Design Professional and indicated on site plan. General contractor shall provide underground conduits for power and data from building to future sign location. Design Professional shall obtain copy of standard Marquee Sign from DCSD.

Loading Docks

Design considerations include:

For new Elementary and Middle Schools, and major kitchen renovations, provide 6" curb loading areas adjacent to Kitchen and General Storage / Receiving area with 36" curb cut and ramp to grade.

For new High Schools, and major kitchen renovations, provide standard height raised loading dock at adjacent to Kitchen and General Storage / Receiving area.

See Division 16 for delivery door bell requirements at receiving areas.

Paving and Surfacing

Design considerations include:

Asphalt paving shall be used in all parking and driveway areas.

Heavy-duty asphalt paving shall be used for bus, container truck delivery and fire lane traffic.

Areas of heavy-duty paving shall be identified on the site, so that buses and heavy vehicles such as garbage trucks will be directed to drive on heavier duty paving.

Medium-duty asphalt paving shall be used for automotive traffic.

Asphalt and graded aggregate base thicknesses shall be standardized and so illustrated in paving cross-sections, detailed in civil engineering design drawings. Final asphalt top shall be in place before bus run through.

Concrete paving with steel reinforcing shall be used at truck loading areas and dumpster pads.

Sidewalks and plazas shall be concrete.

Surfacing at Playgrounds to be black rubber mulch.

Compactor / Dumpster Pads

For new buildings and major renovations to kitchens, concrete pads shall be placed in the service area to accommodate one compactor for garbage and one dumpster for recycling. At new High Schools, these pads can be incorporated into the concrete area at the loading dock. Drains must be provided, and shall be designed in compliance with all applicable codes. Provide reinforced concrete slab that extends a minimum of 40' in front of the dumpster pad to resist wear from garbage trucks turning their wheels to maneuver for dumpster pick up.

Dumpster and compactor areas shall be visually shielded, in a manner compatible with the architectural design of the building.

Dumpster and compactor areas shall be easily accessible by sidewalk so that custodial carts can be used to transport trash to the dumpster. The top of the dumpster shall be accessible, in a location adjacent to a loading area or dock so that trash can be thrown into the top of the dumpster. Where the dumpster is not adjacent to a loading dock, a ramp to the back or sides of the dumpsters shall be provided.

Trash Compactor basis of design shall be Sturbridge, with the following minimum specifications:

Power Unit (electrical): Operating Power Available: 110 volt A/C, 20 amp; 12 D/C current

Overall Size: Length: 216 " or (18'-0"); Height: 105" or (8'-9"); Width: 95" or (8' - 0")

Compactor/container shall have the capability of being transported from site to site, operating from electrical D/C current provided by a vehicle or 120 volt/30 AMP A/C current provided by a grounded 8 gauge cord no longer than 150 feet.

Review space required for dumpsters and compactors with DCSD Facilities Services Department.

Fences and Gates

Unless otherwise specifically approved by DCSD, all permanent fences and gates shall be black vinyl coated chain link construction. Typical fencing shall be 11 Gauge core wire and 9 gauge finish thickness. Provide appropriate black vinyl coated post and gates, installed in accordance with Chain Link Fabrication Manufacturers Association criteria. General site fencing shall be 6'-0" high with appropriately located gates. Storm retention areas shall be fenced with the same material per local requirements. Gates shall be provided at school driveways to limit access during certain time periods. Perimeter and other fencing shall be installed as needed to provide safety and security of the students, teachers and staff. Exact location of fencing will be determined on-site by DCSD in order to preserve natural areas and undisturbed buffers. Fencing and wind screens at sports fields shall be of the height and locations described in the relevant sections of these guidelines. Fences shall be black vinyl coated chain link construction of appropriate gauge and mesh for the height required with appropriate black vinyl coated post and gates, installed in accordance with Chain Link Fabrication Manufacturers Association criteria. Wind Screens shall be forest green. Provide security fencing around any exterior equipment that is installed at ground level. (I.e. Freezer/Cooler, condensing units, generators, etc.)

Trees/Plants/Ground Cover

In general, use low maintenance ground cover; minimize grass/sod. Landscape designer is encouraged to look at alternatives and use the most practical application for each area. Use mulch around buildings. Provide raised curb or other devices to restrict washing of mulch onto adjacent paved walks and drives. Low maintenance ground covers may be used in low-traffic areas and on slopes as appropriate. Pine straw mulch for adequate coverage, no more than 4" deep, shall be provided at all new tree and shrub plantings. New landscaping shall be maintained by the Contractor for no less than 60 days, prior to a request for inspection and acceptance by DCSD. Comply with tree ordinances and provide additional buffers as may be directed by the municipality or jurisdiction. Review proposed new shrubs and trees with DCSD Facilities Services Department.

Lawns and Grasses

Design considerations include:

All general areas to be grassed shall be hydro-seeded with Common Bermuda or Fescue depending on the planting season. Wood fiber mulch shall be included when hydro-seeding slopes greater than 3:1. Lawns and grass shall be watered and maintained for a period of no less than 60 days, prior to a request for inspection and acceptance by DCSD. Lawns and grass shall be fully established and receive a minimum of 2 cuts prior to inspection. Provide adequate seedbed preparation – 4" tilled topsoil or amended organic soil. Specify rock hounding in two directions to pick up stones greater than 1.5" diameter. Areas to be planted with sod vs. seed need to be identified on the drawings. Typically, all areas close to the building or inside a perimeter drive should be sod.

Architect/Engineer shall consult with DCSD Facilities Services to obtain approval for proposed Lawn specifications prior to issuing final Drawings.
Consider the use of "Terra-mat" or sod on excessive slopes.

Landscaping Irrigation System for Planting

Landscape shall be designed to eliminate the need for landscape planting irrigation.
See Division 15 MECHANICAL, Plumbing Fixtures, for Exterior Hose Bib requirements.

Site Design Notes for School Athletic Facilities

Stadium Synthetic Turf System

All major renovations to stadiums shall include a synthetic turf, rubber infill system. Base system will include single letter logo at midfield; school name in one end zone and mascot name in the other; single letter color; and striping and markings for football (white), soccer (yellow) – reference marks only the six yard end boxes; men's and women's lacrosse (red) – reference marks only.

Acceptable manufacturers are Sprint Turf, Sports Turf, and Matrix Turf.

Stadium Track and Field

All major renovations to stadium track and field shall have layouts in accordance with competition standards of the Georgia High School Association and the national Federation of State High School Associations. Each field shall include the following:

Orientation with long dimension north and south.

Provide areas for field events including paved areas for pole vault, high jump, long jump with sand pit.

Synthetic turf playing field.

Polyurethane surfacing system running track (8 Lanes).

Provide concrete pads for shot put and discus field events.

See Division 11 EQUIPMENT for Athletic Equipment

Field Lighting - See Division 16 ELECTRICAL for Sports Field Lighting

High School Track and Field Surfacing

High school tracks shall be a polyurethane surfacing system similar to Sports Track 300 or Beynon Sports Surfaces, BSS-300. The elastomeric polyurethane shall be red in color with line striping and event markings in accordance with current National Federation of State High School Associations standards and guidelines. Provide minimum of 6 track lanes; 8 where space permits.

Landscaping Irrigation System

Commercial grade sprinkler irrigation system with automatic operation shall be provided for the grass playing and practice fields at Middle and High Schools only. Do not provide irrigation at Elementary School play fields.

Architect/Engineer shall consult with DCSD Facilities Services and obtain approval for proposed irrigation system prior to issuing final drawings.

Include a drilled well in high school specifications for irrigation purposes. The well needs to have a yield of minimum of 100 gallons per minute. If yield is less, provide water storage facility to compensate.

Middle School Track and Field

Middle school track and field areas shall be constructed to appropriate grading and grassing standards but are not required to meet competition standards of the Georgia High School Association and the national Federation of State High School Associations. Each track and field shall include the following:

Irrigated grass field inside running track.

Slope field to area drains at corners.

Asphalt running track with painted lanes.

400 meter track with 6 lanes where space permits.

300 meter track with 5 lanes where space is limited.

Paved H/C access from building.

Paved areas for high jump and long jump with sand pit.

See Division 11 EQUIPMENT for Athletic Equipment.

High School Baseball Field

New High School baseball Field shall have layout in accordance with competition standards of the Georgia High School Association and the national Federation of State High School Associations. Field shall include the following:

- Orientation with home plate at southwest and second base at northeast.
- Field size: 330' long at R / L foul lines x 380' deep at center of outfield, where space permits.
- Outfield and diamond of natural grass turf with irrigation system
- Warning track
- Infield playing surface with 80% sand, 20% clay
- Pitching mound raised 10" with pitching rubber
- Fencing 10' high ; backstop located 60' behind home plate - height as required for safety
- Two concrete block dugouts
- Two bullpens (one at each side, inside fence)
- One batting cage with 110V electrical outlets for pitching machine (outside fence)
- Weather proof water spigot within ground box behind pitcher's mound.
- 110-volt electrical duplex outlet within weatherproof in ground box behind pitcher's mound.
- Scoreboard located between center and left field
- See Division 11 EQUIPMENT for Scoreboard.
- Two sets of bleachers, 5 rows high, 10' deep x 21' long, anchored to concrete pads.
- See Division 13 SPECIAL CONSTRUCTION for Portable Bleachers.
- Field Lighting
- See Division 16 ELECTRICAL for Sports Field Lighting.
- Shared Baseball / Softball Concession / Restrooms / Storage
- See Division 11 EQUIPMENT for Concession Equipment.

Middle School Baseball Field

New High School baseball Field shall have layout in accordance with competition standards of the Georgia High School Association and the national Federation of State High School Associations, to the extent possible. Field shall minimally include the following:

- Orientation with home plate at southwest and second base at northeast.
- Field size: 330' long at R / L foul lines x 380' deep at center of outfield, where space permits.
- Grass outfield with irrigation system
- Appropriate drainage towards outfield
- Skinned earth between bases
- Infield playing surface with 80% sand, 20% clay
- Pitching mound raised 10" with pitching rubber
- Fencing 10' high ; backstop located 60' behind home plate - height as required for safety
- One set of bleachers, 5 rows high, 10' deep x 21' long, anchored to concrete pads.
- See Division 13 SPECIAL CONSTRUCTION for Portable Bleachers.

High School Softball Field

High School softball Field shall be designed in accordance with competition standards of the Georgia High School Association and the national Federation of State High School Associations. Field shall include the following:

- Orientation with home plate at southwest and second base at northeast.
- Field size: 200' long at R / L foul lines x 200' deep at center of outfield
- Outfield of natural grass turf with irrigation system
- Warning track
- Infield playing surface with 80% sand, 20% clay
- Pitching mound level with infield with pitching rubber
- Fencing 10' high; backstop located 25' behind home plate- height as required for safety
- Double first base

- Two concrete block dugouts
- Two bullpens (One at each side, inside fence)
- One batting cage with 110V electrical outlets for pitching machine (Outside fence)
- Water spigot within weather proof in ground box behind pitcher's mound.
- 110-volt electrical duplex outlet within weather proof in ground box behind pitcher's mound.
- Scoreboard located between center and left field
- See Division 11 EQUIPMENT for Scoreboard
- Two sets of bleachers, 5 rows high, 10' deep x 21' long, anchored to concrete pads:
- See Division 13 SPECIAL CONSTRUCTION for Portable Bleachers
- Field Lighting
- See Division 16 ELECTRICAL for Sports Field Lighting
- Shared Baseball / Softball Concession / Restrooms / Storage
- See Division 11 EQUIPMENT for Concession Equipment

Middle School Softball Field

Middle school softball field shall be constructed to appropriate grading and grassing standards but are not required to meet competition standards of the Georgia High School Association and the national Federation of State High School Associations. Field shall include the following:

- Orientation with home plate at south-southwest and second base at north-northeast
- Field size: 200' long at R / L foul lines x 200' deep at center of outfield
- Grass infield and outfield with irrigation system
- Appropriate drainage towards outfield
- Skinned earth between bases
- Pitching mound level with infield
- Fencing, 8' high; backstop located 25' behind home plate, 20' high

High School Practice Field

High school practice field is intended for physical education instruction and used for multiple sports. It shall be constructed to appropriate grading and grassing standards but is not required to meet competition standards of the Georgia High School Association and the national Federation of State High School Associations. Practice field shall include the following:

- Orientation with long dimension north and south
- 78 yards wide x 120 yards long
- Grass turf with irrigation system
- Provide netting where necessary to prevent damage from balls entering adjacent areas.
- Fixed Football goalpost and movable soccer goals
- See Division 11 EQUIPMENT for goalpost and goals.

Middle School Practice Field

Middle school practice field is intended for physical education instruction and used for multiple sports. If site allows, it shall be constructed to appropriate grading and grassing standards but is not required to meet competition standards of the Georgia High School Association and the national Federation of State High School Associations. Practice field shall include the following:

- Orientation with long dimension north and south
- 78 yards wide x 120 yards long
- Grass turf with irrigation system
- Provide netting where necessary to prevent damage from balls entering adjacent areas.
- Fixed Football goalpost and movable soccer goals
- See Division 11 EQUIPMENT for goalpost and goals.

Elementary School Multi-purpose Field

Elementary School multi-purpose field is intended for informal outdoor activities and elementary level sports. It shall be constructed to appropriate grading and grassing standards. The multi-purpose field shall include the following:

Approximately 2 acres adjacent to the gym if site configuration will allow.
Well drained grass turf without irrigation system. Ensure that building and site drainage and/or detention systems do not impact the play area.

High / Middle School Tennis Courts

For new facilities, provide a minimum of two (2) tennis courts at each middle school and a minimum of four (4) at each high school. Tennis courts shall have layouts in accordance with competition standards of the Georgia High School Association and the national Federation of State High School Associations.

Contrasting light and dark green surface between court and remaining play area

Regulation size with orientation with baselines of courts perpendicular to north-south axis.

Fencing 10' high, 20' from baseline, 12' from sidelines

Windscreens except at bleachers

110v duplex electrical outlet at each end of the bank of courts.

At high schools, provide one set of bleachers anchored to a concrete pad at west end of courts.

See Division 13 SPECIAL CONSTRUCTION for Portable Bleachers.

DIVISION 3 CONCRETE

Stadium Seating

Existing structure for stadium bench seating is concrete. For major stadium renovations, existing conditions shall be fully assessed and analyzed by a structural engineer with expertise in concrete prior to design of refurbishment of stadium.

Any work done to refurbish stadium seating, rest rooms, parking access, concession area, etc. shall be ADA compliant. Consideration should be given to providing accessible viewing areas in multiple locations ("Home" and "Visitor") of stadium seating.

DIVISION 4 MASONRY

Brick Masonry

Brick veneer shall be used as the exterior building material of choice. Changes in brick types, sizes, color, texture and orientation shall be kept to a minimum. Color(s) shall be recommended by the Design Professional and approved by DCSD. Only one mortar color will be allowed at each new school.

Concrete Masonry Units

Concrete block is preferred for the interior wall material for new schools. Bull-nosed block shall be used for all outside corners. Split-faced block shall not be used unless specifically requested by the DCSD.

See Division 9 FINISHES for other materials.

CMU partitions are required at:

Vaults and the adjacent Office used for bookkeeping (Extend to roof or cap with concrete slab.)*

Corridors and other high traffic areas

Gymnasium, Auditorium, Stage, Cafeteria and Kitchen

Main Mechanical and Electrical Rooms

Hall restrooms and other high abuse areas

Locker Rooms

Mechanical and electrical closets

*Note: Rated gypsum board partitions may be used in lieu of CMU at Vault and adjacent office area.)

DIVISION 5 METALS

Structural Metal Framing

Structural steel framing systems shall generally be used for new school construction in lieu of load-bearing masonry construction.

Ladders

All low-pitch roofs shall have a permanent means of access; stair access to roof is preferred. Interior ladders provided for roof or mezzanine access shall be a ship's type ladder. Vertical or exterior ladders from the ground are not acceptable for required access to the roof. Limit the use of vertical fixed ladders to small areas projecting above the main roof. Ladders and stairs shall be equipped with appropriate guard and handrails.

Railings

Gates at guard rails between Interior track and bleachers in high school gyms shall be self storing.
All interior and exterior handrails shall be of welded aluminum construction with satin finish.

DIVISION 6 WOOD & PLASTICS

Plastic Laminate

General use counter tops shall be plastic laminate material. One-piece countertops with integral coved backsplash, bull nosed edges and minimal number of seams shall be specified. Color(s) to be selected by the Design Professional and approved by DeKalb County School District.

Basis of design is Wilsonart; acceptable manufacturers are Formica.

Casework

Custom casework shall only be used where manufactured casework will not serve the intended use. Plastic laminate shall be used as appropriate. Do not specify wood or laminate casework or shelving in janitor's closets.

DIVISION 7 THERMAL & MOISTURE PROTECTION

Waterproofing and Dampproofing

Appropriate waterproofing, damp-proofing and vapor retarders shall be specified by the Design Professional.

Avoid parapet wall penetrations.

Use copper, stainless or rubberized asphaltic flashing with an adhesive backing for through wall flashings at sills, beams and lintels. Avoid PVC products unless they are specifically recommended by their manufacturers for through wall flashing applications. Metal flashing products may be laminated with other materials such as asphalt or waterproof papers to reduce galvanic corrosion where necessary. Follow manufacturer's recommendations when specifying through wall flashing and installation accessories.

Specify manufactured mortar nets over the horizontal run of through wall flashing to catch mortar dropping and allow water to filtrate easily downward through the net material to the flashings and out the weeps.

Provide weeps immediately upon the horizontal leg of the through wall flashing at the exterior wall construction element at sills, beams and lintels.

Insulation and Fireproofing

Appropriate insulation and fireproofing shall be specified by the Design Professional to provide a safe, energy efficient, comfortable building, and to meet building codes.

Enclose space under first level of all stairs to prevent misuse of space for storage or misconduct.

Pre-formed Metal Roofing

Metal roofing shall be used on high-slope roofs. Steel is preferred, aluminum is acceptable.

Membrane Roofing

Modified bitumen ("cool roof") roofing shall be used for low slope roofs. The use of parapets should be minimized. Insulation value shall be minimum R-19.

Roof Drains

Internal roof drains should be avoided where possible. Concealed gutters will not be allowed. External gutters shall be used where possible. Use PVC or cast iron downspouts in areas subject to abuse. If exposed, protective boots shall be used to prevent downspout conductors from damage. Downspout transition fittings shall be seamless or welded fittings.

Roof Hatches

Appropriately located roof hatches shall be provided as needed for access to low slope roof areas.

DIVISION 8 DOORS & WINDOWS

Doors

Door Size notes

Unless otherwise specified, doors at new construction shall be 36" wide.

Pairs of 36" doors with removable mullions shall be provided at service entrances, throughout major circulation corridors and for access into large rooms such as the Cafeteria, Stage, Gym and Media Center in order to facilitate delivery of bulky objects.

Single 42" doors shall be provided at Kitchens from the delivery corridor, for access to Bulk Storage Room, Serving Area and Cafeteria. Single 42" doors shall be provided for access into Music Practice and Storage Rooms to facilitate movement of large instruments. Single 42" doors shall be provided for access to all areas with laundry equipment. Consider the use of single 42" doors to provide access into Special Education Suite (Classrooms and Adaptive Toilet), facilitating movement of wheelchairs.

Overhead roll-up doors shall be provided as appropriate for access to Shops, Stage Scenery Areas, Mechanical Rooms and Storage Rooms to facilitate movement of bulky objects. Lock must be accessible from both sides.

Unless otherwise specified, door height at new construction shall be 80" minimum. Door height at renovations shall match existing. Height of doors and frames shall be selected for best value and efficiency.

Removable mullions shall be non-keyed type. Vertical rods shall not be used.

Door Stiles and Rails

All aluminum, hollow metal and wood doors shall be constructed with 6" stiles, 8" top rails and 10" bottom rails. Doors with exit devices shall have center non-keyed, removable mullions.

Door Materials

Wood doors shall be specified for general interior use. No plastic shall be used. Metal doors shall be used on the exterior and interior of the building where appropriate for greater security. Provide heavy duty door and hardware at Vaults and Record Rooms.

Door Lights

Provide factory installed small vertical door lights at typical doors to classrooms and other frequently used doors. Larger door lights and hollow metal sidelights may be used at the following:

- Administration
- Counseling
- Media Center
- Gymnasium
- Cafeteria
- Teacher Work Room

Provide an observation light at the Kitchen delivery door constructed of security glass designed to resist break-ins.

Hollow Metal Frames

Hollow metal frames shall be used throughout except at primary entrances where aluminum storefront systems shall be used.

Entrances and Storefronts

Aluminum storefront systems shall be used at primary entrances to the building. Aluminum doors shall be "wide stile".

Rollup Grilles and Shutters

If used between Serving Lines and Cafeteria:

Provide electrically operated roll-up grilles in lieu of solid roll-up doors to allow for air circulation.

Locate key operated control on Serving Line side.

Do NOT provide supplemental latches or dead-bolts. Grilles shall be secured by the weight of the grille.

Consider use of security grilles across corridors to separate building into zones, limiting access to certain parts of the building after hours. If used:

Provide electrically operated roll-up grilles at corridor separation zones. These shall be in addition to emergency smoke doors that may be required by code.

Locate key operated control on both sides. Provide security latch operated by key, accessible from both sides.

Where required by Educational Specifications, provide manual operated solid roll-up shutters with security latch operated by turn knob on room side.

Hardware

Appropriate finish hardware shall be specified by the Design Professional for review and approval by DeKalb County School District.

See APPENDIX to Design Guidelines – Door Hardware.

Windows

All exterior window frames shall be aluminum. Steel window frames are not acceptable at exterior walls. Current DCSD standards do not allow for operable windows.

Architects are encouraged to incorporate windows for natural lighting into as many building spaces as practical. Architect shall provide a cost-benefit analysis of cost savings provided by proposed window lighting compared to their impact on HVAC installation and operating cost.

Minimum Requirements:

Elementary: Windows are required at all general instruction classrooms.

Middle: Windows are desired at all general instruction classrooms when feasible.

High: Windows are required at all general instruction classrooms adjoining exterior walls.

Interior window frames shall be hollow metal and shall be provided at offices where supervision of adjacent areas is required. Do not provide interior windows at Locker Rooms.

Provide interior window(s) in the Kitchen Manager's Office to allow observation of workers in the Kitchen and vendors during deliveries.

Glazing

General exterior glazing shall be insulated, double thickness. Provide tempered, laminated, and wired glass as required by code. Use tinted glass for sun control in lieu of blinds at large and inaccessible windows at Clerestories, Lobbies, Corridors, Media Centers, Cafeterias, Gymnasiums and similar spaces.

DIVISION 9 FINISHES

Gypsum Board

Gypsum Board wall systems are acceptable for interior partitions at light duty spaces such as offices and partitions between classrooms and labs. Exposed layers shall be abusive resistant type. Use fire code type material as required by code. Bull nose corner beads shall be used at typical outside corners. Corner guards, in lieu of bull nose corners, may be used at the Administrative and Guidance areas. Sound batts shall be used to reduce the sound transmission of the wall system as needed.

Do not use gypsum board wall systems in any wet or damp locations.

Rated gypsum board systems may also be used at firewalls starting 10'-0" above finish floor where the wall will not be susceptible to vandalism or abuse.

Use concrete masonry unit walls in lieu of gypsum board walls whenever possible.

Fiberglass reinforced (FRP) panels are unacceptable for use in kitchens.

Resilient Tile Flooring

Typical floor finish, except where specialized finishes are called for, shall be Vinyl Composition Tile. Size of VCT shall be 12" x 12" x minimum 1/8". Basis of design is Excelon, Imperial Series by Armstrong. Color and patterns shall be specified by the Design Professional and approved by DeKalb County School District. Colors shall be standard manufacturer's colors, chosen with ease of maintenance in mind. Solid colors floor tile shall be used for accent areas only. Consider use of flexible terrazzo tile similar to "Fritztile" in corridors, lobbies, and high traffic areas. To add aesthetic interest to the building, the Design Professional is encouraged to use patterns and color, especially in corridors and lobbies.

Coordinate the sequence for cleaning and waxing VCT floors with DCSD Coordinator of Environmental Services and Coordinator of Warehouse. Schedule cleaning and waxing of VCT floors at Corridors, Cafeteria and other designated areas after furniture is delivered. Base shall be 4" black or very dark color rubber cove base. Provide matching-color transition strips adjacent to other floor materials.

Carpet

At locations where the Educational Specifications call for carpet, tiles are preferred over roll goods. Specify electrostatic backing to eliminate curling of carpet tiles at the edges.

Standard of quality, construction and appearance for carpet tiles is based on "Diffuse" and "Disperse" by Shaw Industries.

Standard of quality, construction and appearance for broadloom carpet is based "Expose" or "Blog" by Shaw Industries.

Standard of quality, construction and appearance for walk-off mat is based on Crayon 01957 Vinyl Cushion Tufted Textile (VCTT) by Tandus Flooring.

Wood Athletic Flooring

High School and Middle School Gym flooring shall be solid maple wood strip athletic flooring system.

Minimum thickness shall be 7/8", No.2 or better grade maple.

The flooring system shall be specifically made for athletic flooring applications.

Flooring shall include multi-purpose court markings and custom designed school logo approved by DCSD.

Provide recessed supports for three volleyball nets at all middle and high school gyms.

Provide event floor covering at wood floors which are also used for auditorium and other assembly functions.

Flooring for new auditorium stages, dance rooms, and drama rooms shall be wooden sprung floors.

Synthetic Athletic Flooring

Synthetic athletic flooring shall be installed in all Elementary School Gyms. Product shall be equal to Mondosport I by Mondo USA or SportGrain Plus by Connor Sports Flooring.

Indoor Track Athletic Flooring

Indoor track flooring shall be polyurethane flooring over Rubberized Base with continuous striping for three lanes.

Basis of design: Robbins Sports Surfaces - Pulastic - 2000

Weight Room Athletic Flooring

Weight Room Athletic Flooring shall be recycled rubber material formed into squares with interlocking tabs, free-laid without adhesive.

Basis of design: Robbins Sports Surfaces - Freeweight

Quarry Tile

Dark Red Quarry Tile with deep charcoal gray grout shall be used at Kitchen, Walk-in Cooler & Freezer, Dry Storage, Serving Courts, Custodial wet areas. Grout joints shall not be sealed in kitchen floors.

Ceramic Tile

At rest rooms, unglazed Ceramic tile is acceptable for use as flooring. Glazed ceramic tile, minimum 54" high on all restroom walls, is preferred for use as wainscot material. To add aesthetic interest, consider accent patterns or strips. Color shall be selected by Design Professional and approved by DeKalb County School District. Colors of tile and grout shall be selected with ease of maintenance and long term appearance in mind. Grout must be sealed.

Terrazzo

For new construction, terrazzo may be considered for high traffic areas such as corridors and lobbies. Consideration must be given to slip prevention at all entrances.

Sealed Concrete

Sealed Concrete flooring is acceptable at large storage, mechanical and electrical rooms.

Polished Concrete

The design professional can consider the use of polished concrete in high traffic locations including corridors and cafeterias.

Suspended Ceilings

Unless noted otherwise, 2' x 2' ceiling grids with 2' x 2' x 5/8" suspended acoustical ceiling tiles shall be used for all general use areas of the building. Standard ceiling tile shall be square edge, non directional, fissured design, 5/8".

Basis of design: Cortega 770 by Armstrong.

Basis of design for ceiling tile in wet areas shall be Ceramaguard 607 by Armstrong.

Cafeteria – hard, washable tile needs to be installed around high HVAC vents in cafeterias, similar material to that used in the kitchen

Suspension System throughout shall be 15/16" exposed tee aluminum system. Basis of design: Prelude XL by Armstrong.

Ceiling system furnished shall include all industry-standard accessories required for installation.

Exposed structure and ductwork may be considered in art labs, stages, and drama rooms.

When determining ceiling heights, consider maintenance of lighting and finishes. Maximum height must be within reach of ladders or lifts readily available to DCSD maintenance staff.

Consider using hard ceilings in student restrooms and locker rooms.

Non-accessible Ceilings

Ceiling access panels need to be installed wherever hard ceilings are installed to access valves, smoke detectors, etc. Minimum size shall be 24" x 24", if personnel access is required (i.e. more than hand access to reach a valve).

Sound Attenuation Blanket

Sound attenuation blankets may be used above suspended ceilings in order to obtain acceptable sound transmission levels. See Acoustical Standards in Division 1 of these Design Guidelines.

Exterior Painting

Exterior painting shall be in accordance with the manufacturer's recommendations for the paint used and the material being painted. Color shall be selected by Design Professional and approved by DeKalb County School District. In general, materials with factory applied paint, coatings, or integral color should be specified in order to reduce maintenance costs.

Basis of Design: Duron "Weather Shield" one coat, flat White paint for exterior painting.

Interior Painting

Interior painting shall be in accordance with the manufacturer's recommendations for the paint used and the material being painted. Semi-gloss shall be used unless otherwise approved. Color shall be selected by Design Professional and approved by DeKalb County School District. In general, materials with factory applied paint, coatings, or integral color should be specified in order to reduce maintenance costs.

Basis of Design: Pittsburgh Pure Performance Interior walls – color: Antique (Porter Paints) Zero VOC – semi gloss. Interior metal doors and frames - Advantage Hi Gloss Exterior (Porter Advantage 900 High Gloss) Low VOC.

DIVISION 10 SPECIALTIES

Visual Display Boards

Design Professional shall consider display of student work and integrate mounting methods wherever possible into interior design. Visual Display boards and related accessories shall be included in the Construction Contract.

See Educational Specifications for location, quantity and size.

Marker boards shall be factory laminated 3-ply construction with porcelain-enamel low-gloss face sheet, 3/8" particle board core and aluminum sheet backing.

Provide aluminum frame with chalk tray and 1" map rail with accessory clips for flags and maps.

Provide appropriate special graphic at math and music rooms.

Provide manual sliding marker boards at science labs.

Tack boards shall be 1/4" thick, plastic-impregnated cork sheet factory laminated to 1/4" thick particle board backing.

Provide factory applied aluminum trim.

Basis of design – Claridge Products & Equipment, Inc.

Metal Storage Shelving

Specify adjustable industrial heavy duty metal shelving in all Storage and Custodial Rooms.

Typical shelving units shall be 36" wide x 85" high x depth appropriate for the intended use (12", 18" or 24"). Shelves for book storage shall be 12" deep. Provide 7 shelves per unit (including base and top) to allow approximately 12" clear vertically per shelf.

Room Signage

Appropriate signage shall be provided in accordance with code and A.D.A. requirements.

Typical Classrooms, Labs and Multi-purpose rooms shall be identified by room number only, for future flexibility in use.

Permanent special purpose rooms and suites (Administration, Counseling, Media Center, Gymnasiums, Cafeteria, Staff Dining, Kitchen, Restrooms, Electrical, Mechanical, Custodial, IDF, etc) should be identified by name and number, but not individual rooms within suites that may be subject to re-assignment.

Provide easy to read directional signage at Lobbies, Corridors, Stairways, Elevators and other special components to aid students, staff, and visitors in navigating the building.

Cafeteria Serving Lines shall be identified with easy to read graphics as well as functional room number for identification. Submit graphics to Executive Director of School Nutrition for review and approval.

Metal Lockers

Student Lockers at Corridors

For new buildings and major additions, provide metal double tier lockers at middle and high schools corridors for student use.

Basis of design: List Industries, Republic or GSI

Provide number of lockers equal to 110% of the "Design" FTE plus corridor space to increase the number of lockers to the "core" capacity.

Each locker shall be approximately 12" wide x 12" deep x 36" high x double tier (72" total unit height)

Lockers shall be equipped with Multi-point automatically locking spring bolt and built-in key-controlled, three-number dialing combination lock with changes made automatic with a control key. Provide A.D.A. compliant keys locks on 1% of all lockers ordered. Provide master locks.

Utilize welded construction with 16 gauge bodies, 14 gauge doors with stiffeners and 18 gauge backs.

Door shall have piano hinges, fastened with screws, not welded.

Doors and frame (body) of lockers shall be painted one color.

Locker colors may alternate or be different in different parts of the building.

Specify manufacturers standard paint colors unless use of custom colors is requested and specifically approved by DCSD.

Utilize a painted metal "Z" base in lieu of raised concrete (or other material), eliminating the need for resilient base finish.

Extend VCT floor finish below lockers to allow for their future removal if desired.

Enclose sides of lockers with wall piers and tops with wall furring.

Provide additional doors of each color specified for future replacement.

Physical Education Lockers

Provide six-tier and double-tier lockers for new and renovated middle and high schools PE Locker Rooms in the quantities indicated in the DCSD Educational Specifications.

Lockers in six-tier units shall each be approximately 12" wide x 12" deep x 12" high (72" total unit height).

Lockers in double tier units shall each be 12" wide x 12" deep x 36" high (72" total unit height). Sides and intermediate partitions shall be expanded metal for ventilation.

Lockers shall be equipped with Multi-point automatically locking spring bolt and pad-lock lug. Provide three-number dialing combination pad-locks with a master key for 110% of lockers in five tier units.

Utilize welded construction with 16 (13) gauge bodies, 14 (16) gauge doors with stiffeners and 18 gauge backs.

Doors shall have piano hinges, fastened with screws, not welded.

Doors and frame (body) of lockers shall be painted one color selected from manufacturers standard paint colors.

Provide additional doors as attic stock for future replacement.

Provide appropriate number of laminated maple locker room benches.

Athletic Team Lockers

Provide single-tier lockers at each of the Boys and Girls Team Locker Rooms at new or renovated high schools. Coordinate quantity with Principal and Athletic Staff at each school.

Lockers shall be 15" wide x 18" deep x 72" high.

Sides and intermediate partitions shall be expanded metal for ventilation.

Lockers shall be equipped with Multi-point automatically locking spring bolt and pad-lock lug.

Provide three-number dialing combination pad-locks with a master key for 110% of lockers.

Utilize welded construction with 16 gauge bodies, 14 gauge doors with stiffeners and 18 gauge backs.

Doors shall have piano hinges, fastened with screws, not welded.

Doors and frame (body) of lockers shall be painted one color selected from standard paint colors.

Provide additional doors as attic stock for future replacement.

Provide appropriate number of laminated maple locker room benches.

Football Team Lockers

Provide athletic style metal lockers at Football Team Room. Lockers shall be 18" wide x 22" deep x 72" high open front with combination seat and foot locker and 12" Security box.

PE Staff Lockers

Provide lockers for PE Staff. Locker Construction shall be similar to Student Corridor Lockers with built-in combination locks. Provide master locks. Provide the following size lockers:

Middle School PE Staff: single tier lockers 12" wide x 15" deep x 72" high at each Male and Female PE Staff Area.

High School PE Staff: single tier lockers 15" wide x 21" deep x 72" high at each Male and Female PE Staff Area

Custodial Staff Lockers

Provide lockers for Custodial Staff. Each locker shall be approximately 12" wide x 15" deep x 72" high single tier. Locker Construction shall be similar to Student Corridor Lockers with built-in combination locks. Provide master locks.

Kitchen Staff Lockers

Provide lockers for Kitchen Staff. Each locker shall be approximately 12" wide x 12" deep x 36" high x double tier (72" total unit height) similar to Student Corridor Lockers

Theater Dressing Rooms

Provide lockers for new theater dressing rooms in high school auditorium areas. Each locker shall be approximately 12" wide x 12" deep x 36" high x double tier (72" total unit height) similar to Student Corridor Lockers.

Restroom Accessories

Provide surface mounted heavy duty stainless steel commercial quality restroom and bath accessories.

Coordinate toilet paper, paper towel, and soap dispenser requirements with DCSD Environmental Services.

Provide one long mirror per Restroom and one lavatory mirror per lavatory.

Electric hand dryers can only be used in administrators and teacher's restrooms – not student restrooms. Architect shall specify type of Hand Dryers subject to review and approved by DCSD Facility Services before issuing Project Manual.

The following accessories will be Owner-Furnished, Contractor-Installed:

Soap Dispenser: Gojo Model FMX-12. Locate soap dispensers over lavatories.

Paper Towel Dispenser: Continental 630, White or Stainless

Toilet Compartments and Urinal Screens

Toilet partitions and urinal screens shall be provided at multi-person restrooms in all new and renovated restrooms at all grade levels.

Partitions and screens shall be solid phenolic. Partition color to be selected from manufacturer's standard darker colors to better hide graffiti.

Continuous piano hinges shall be used at all stall doors.

Stall doors shall utilize a gap-free interlocking door-stile configuration so that there are no site lines into the toilet stall.

Partitions shall be floor mounted and overhead braced. Avoid cross braces which children could climb on or swing from.

Hardware shall be heavy duty extruded aluminum or stainless steel.

Wall brackets for partitions and screens shall be extruded aluminum, continuous "double T" type.

Floor mounted and overhead braced screens shall be provided between urinals.

Masonry partitions shall not be used.

Consideration must be given to toilet layout. Toilets and urinals shall not be visible from the corridor through an open doorway. This includes reflection of toilets and urinals in mirrors that are visible from the corridor through an open doorway.

Fire Extinguishers

Provide fire extinguishers in sizes and locations as required by code. Provide recessed extinguisher cabinets with door alarms in all locations that are accessible to students.

Ground Set Flagpole

For new schools, provide 30' high aluminum tapered flagpole, with an external halyard, in a prominent location at the front of the building.

Canopies

Appropriate aluminum canopies shall be provided for at bus and auto drop-off areas, and loading areas as needed.

Drainage needs to be controlled and piped to prevent flow across sidewalks.

Provide lighting at Canopies.

Canopy shall be designed to ensure "tail swing" clearances. Height requirements for bus and truck clearances shall be reviewed and approved by DCSD Executive Director of Transportation.

DIVISION 11 EQUIPMENT

Book Theft Protection Equipment

At exit(s) from Library Media Center, provide a complete book theft detection system with alarm, Radio Frequency Identification (RFID) tags, and RFID detuners/deactivators, to assist in preventing unauthorized removal of a library's materials. Utilize manufacturer's specifications during installation for layout and placement of system.

RFID Solution features/requirements:

- RFID solution PROPRIETARY STANDARD OF DESIGN: (Strata EX system by Checkpoint, distributed by 3M) that meets ADA requirements (36" corridor width) and has flexible mounting options (direct mount or base plate)

- Integrated audio and visual alarms to alert staff when an item containing a secured tag is detected

- Integrated digital display to monitor alarm counts, ingoing and outgoing patron traffic, and diagnostics

- Option of real-time access to statistics and aggregated customized reports

- Configurable alarm settings based on direction of travel (in/out)

- Capacity to provide self-checkout stations, security gates, and automated check-in

- 3M Digital Library Assistant, a handheld device that reads RFID tags on books and other materials, and makes collection management (circulation, inventory, shelf reading, re-shelving, sorting, searching, weeding and exception-finding much easier and more efficient.);

- RFID readers located at the circulation desk and self-service kiosk

- Pop-up alarm notification

Theater/Stage Equipment

The Design Professional shall be responsible for employing the services of a qualified professional Stage Equipment Designer to develop appropriate Design and Construction Documents for Auditorium, Drama Labs and other performance studios.

- Provide lighting, sound systems, curtains, stage monitors, projectors and other equipment appropriate for the specific program.

- Provide a Catwalk at High School Auditoriums for access to front overhead stage lighting.

- Drop lighting access is unacceptable.

- Drawings and Specifications shall be submitted to DeKalb County School District Drama Coordinator and Facilities Services for review and approval.

- See Division 16 ELECTRICAL - Theatrical Lighting Systems

Projection Screens

Provide 12' x 16' motorized screen at new auditorium stages.

- Provide additional drop header to set bottom of screen 2'-0" above stage floor.

- Screen shall be mounted immediately in front of the stage curtain.

- Screen shall be designed for rear projection system.

- Provide 8' x 8' motorized screen at new and renovated Elementary, Middle and High School Media Centers.

- Screens shall be recessed in the ceiling suspended from structure above or mounted on CMU wall.

- Basis of design shall be Da-Lite Screen Co. Inc.'s "Cosmopolitan Electrol"

Darkroom Equipment

Provide a darkroom for new High Schools, adjacent to art lab.

- Light blocking revolving door for primary pedestrian access is preferred, in addition to a standard pedestrian door with light-tight gasketing to allow service and ADA access to the area.

Ventilation equipment needs to be designed to handle vapor emissions of the darkroom chemicals.

Enlarger stations shall be provided, with at least one designed for ADA accessibility. Specifications shall be submitted to DCSD Visual Art Coordinator and Facility Services for review and approval.

Food Service Equipment

Kitchen Equipment shall be incorporated into the Scope of Work for all new school projects.

The Design Professional shall be responsible for employing a qualified professional Kitchen Designer to develop appropriate Kitchen Design and Construction Documents.

Drawings, Specifications, and equipment descriptions shall be submitted to DeKalb County School Nutrition Department and DCSD Plant Services for review and approval.

All new kitchens shall have either all natural gas or all electric equipment. Gas-powered appliances shall have electronic ignition only. Standing pilots are not acceptable.

Walk-in freezer and cooler units shall have digital temperature controls and electronically commutated motors (ECM). Outside units shall have scroll compressor with ECM condenser fan motor.

Kitchen Hood shall be a double shell design consisting of an inner exhaust canopy with minimum 86% supply air ratio, constructed of heavy gauge stainless steel exterior. Hood shall be installed per NFPA 96, with 96" clearance from floor to bottom edge of hood. Hood shall have fire suppression ("Ansul") system, wired to the main fire alarm panel, installed in cabinet on end of hood. Complete electrical and gas shut-offs shall be located at hood.

Acceptable Manufacturers: Traulsen, Hobart, and Cleveland.

See DIVISION 15 for further details.

Custodial Equipment

A separate space for floor equipment recharging station/garage shall be provided to keep self-propelled and other custodial equipment from obstructing mechanical rooms. The designated area shall be equipped with electrical service needed to meet the demands of the recharging equipment. Any appropriate fire separation and ventilation shall be provided. Commercial duty, residential sized washer and dryer are needed in each building to wash custodial mop heads, dust mops and cleaning cloths.

Athletic Equipment

The Design Professional shall be responsible for developing appropriate Design and Construction Documents for Middle and High School Athletic Equipment subject to review and approval by DCSD Coordinator of Health and PE and by the Supervisor of Interscholastic Athletic Programs.

Provide a heavy duty commercial grade appliance suited to this application where the project scope includes a washer/dryer for athletic uniforms.

Exterior Equipment:

Bleachers-see Division 12 FURNISHINGS and Division 13 SPECIAL CONSTRUCTION.

Football Goalpost at High School Stadiums and Practice Fields:

Basis of design, Gill Athletics, # F305, 8' off-set, 23'-4" between 20' uprights.

Track and Field Equipment at High School Stadiums:

Long Jump / Triple Jump: Basis of design, Gill Athletics, # 441TS Complete System-Synthetics

Pole Vault Box: Basis of design, Gill Athletics, #500 Box, # 503 Lid

Shot Put Circle Toe Board: Basis of design, Gill Model #360

Discus Circle: Basis of design, Gill Athletics, #367

Soccer Goal at High Schools

Basis of design, Gill Athletics, # 477100, Portable Aluminum Soccer Goal with tie downs and wheels for portability.

Exterior Basketball Goals, Backboards and supports at Middle Schools:

Goals: Heavy-duty, fixed type with nylon net.

Backboard: Heavy-duty rectangular steel.

Minimum 4-1/2" diameter steel pipe with 5'-0" gooseneck extension.

Interior Equipment:

Gymnasium Basketball Backstops and Components at Middle and High Schools:

Provide six electrically operated retractable basketball goals at each gymnasium as required by the Educational Specifications.

Frame assembly:

Type: Overhead supported single center post with sway bracing, forward folding type for main court and cross courts.

Superstructure: Manufacturer's standard design for attachment to building structure with precision die-formed fittings.

Hoist operations: Manufacturer's one HP minimum electric winch; self-locking worm-gear type, capable of holding backstop at any position when raising or lowering. Control by wall mounted key switch.

Safety Lock: Manufacturer's safety lock, inertia sensitive lock type, capable of locking backstop in any position at any time in storage or during raising or lowering cycle due to sudden surge in speed. Provide for all backstops.

Finish on exposed metal components: Manufacturer's powder coat finish. Color selected by Architect from Manufacturer's standard colors and approved by DCSD Facilities Services Department.

Backboards: (Main and Cross Court): Rectangular design, 1/2" thickness tempered glass panel in gasketed extruded aluminum frame with bolt-on padding along bottom edge and up sides 10' minimum; fired vitreous enamel markings conforming to official requirements. 42" high by 72" wide.

Basketball Goals: steel rod rim welded to mounting bracket with enamel finish and nylon netting. Provide breakaway type goals for main court backstops. All goals shall be designed to absorb shock loads due to slam dunking or hanging on the rim.

Wrestling Equipment at Middle and High Schools

Wrestling Mat

Wrestling Mat Storage system

Volleyball and Badminton Equipment, all gyms:

Nets and removable support post

Gym Floor sleeves for Volleyball and Badminton post:

Sleeve diameter: 3-1/2" inside diameter.

Cover plate: Chrome plated cover assembly with swivel type hinge and removable key.

Installation: Cast into concrete footing and floor slab for flush mounting with wood floor system.

Gymnasium wall and column protection, all gyms:

Bonded foam filled over OSB backing board with fire retardant liner and vinyl coated nylon cover.

Panel thickness: Minimum 2 inches.

Wall panel size: 2'-0" wide by 6'-0" high.

Column pad size: Custom fabricated to fit around columns; height to match wall panels.

Color: As selected by the Architect from Manufacturer's standard colors and approved by DCSD Facilities Services Department.

Scoreboards

Provide complete Scoreboard systems, basis of design, Electro-Mech Scoreboard Company, at the following locations:

High School Main Gym: Provide 2, Model #2770

Middle School Gym: Provide 2 , Model #2330

High School Stadium: Provide 1 , Model #3585

High School Baseball and Softball: Provide 1 each at Baseball and at Softball, Model #1580

Play Equipment

Play equipment shall be provided at all new elementary schools. The basis of design is Kid Builders System by Little Tikes Commercial, Play Power Farmington, Inc., and designed to accommodate the indicated number of students. All new play structures shall provide accessibility to users with differing physical abilities. Where possible, this shall include ramps to provide wheelchair access to some upper platforms. Play Equipment installer shall be approved by the equipment manufacturer. Play equipment will be provided in two separate structures.

Kindergarten to Second Grade area: This modular unit contains 22 active components to accommodate approximately 33 users

Third to Fifth Grade area: This modular unit contains 22 active components to accommodate approximately 33 users

Playground surfacing shall be black rubber mulch and be compliant with all applicable codes.

Concession Equipment

Concession facilities shall be provided at the following locations as identified in the Educational Specifications:

Middle School Gym

High School Main Gym

High School Auditorium

High School Stadium

High School Baseball / Softball area

Concessions facilities shall include the following utilities and equipment.

Lockable Serving Room with adjacent Lockable Bulk Storage Room.

Standard overhead florescent lighting.

Ventilation fan with thermostatic control.

Heat at exterior locations to protect pipes from freezing.

Counter with serving window.

Lockable base and wall storage cabinets.

Double sink with hot and cold running water.

Ice machine with 75 pound capacity furnished and installed as part of the construction contract. Drain pipe shall not be located in pathway.

Floor drain, located near ice machine.

200 amp electrical service to support 110V/220V outlets for appliances furnished by others.

Appliances shall be limited to refrigerator, microwave oven, drink cooler, hot dog machine, hot dog warmer, popcorn machine and other light duty appliances. Heavy duty appliances such as cooking ranges and fryers which require hoods and fire protection equipment are specifically prohibited.

DIVISION 12 FURNISHINGS

Science Casework and Equipment

Science Casework and Equipment shall include modular laboratory casework, including casework, tops, ledges, filler panels, knee space panels, supporting structures and miscellaneous items of equipment as specified or scheduled. Casework shall minimally include:

- Demonstration tables
- Student tables
- Storage cabinets

Science Casework and related furniture shall be of oak construction. Base cabinets and case units shall be lipped style construction having drawer heads and hinged doors with radius edges, overlapping cabinet and case openings on all edges. Face frame construction cabinets or cases are not acceptable.

Cabinets shall be constructed with flush interiors having no offsets, to maximize drawer and cupboard space and for ease of maintenance.

Cabinets shall be assembled using blind mortised and tenoned (or rabbeted) joints, glued and screwed together in accordance with best cabinet maker methods. Pinned or doweled construction is not acceptable. All exposed joints shall be closely fitted and tight, showing no open joints.

All exposed corners shall be rounded.

Counter and table tops shall be 1" thick, chemical resistant, solid monolithic molded modified epoxy resins with surface coating; black color.

Hardware shall be stainless steel with satin finish.

Provide manufacturer's standard 5-year warranty against defects in material and workmanship.

The basis of design shall be Kewaunee Scientific Corporation, Signature Series or Leonard Peterson Company, Vanguard Series, or comparable product by the following:

- Campbell Rhea Institutional Casework, Inc.
- Collegedale Casework, LLC.
- Fisher Hamilton, LLC

Equipment shall minimally include:

- Peg boards
- Lockable storage for hazardous materials
- Safety eyewash stations
- Fume hoods, equipped with worktop, base cabinet and specified accessories.
- Utility service outlet accessory fittings, electrical receptacles and switches shall be listed in the Specifications, equipment schedules or shown on Drawings as mounted on the laboratory furniture.
- Laboratory sinks, cup sinks or drains troughs, overflows, and sink outlets with integral tailpieces, which occur above the floor, and where these items are part of the equipment or listed on the Specifications, equipment schedules or shown on the Drawings.

Darkroom Casework

Provide darkroom enlarger stations with drawer dividers to provide light safe drawers. Darkroom enlarger station countertops and table tops shall be 1" thick, chemical resistant, solid monolithic molded modified epoxy resins with surface coating; black color.

Music Casework

Casework shall be designed for appropriate storage of music instruments, stands, sheet music and teaching aids. Casework shall be constructed of industrial grade particle board with plastic

laminate finish selected from manufacturer's standard finishes. Musical instrument storage cabinets and racks shall be specifically designed and engineered for the storage and protection of the instruments stored, shall meet specified minimum performance standards, shall be chip and abrasion resistant under normal usage, and shall protect instruments from damage under normal school use. Each individual compartment shall have a welded steel grill door with non-binding, 180 degree, five knuckle safety tip hinges and a one-piece finger pull / padlock hasp with integral door stop feature and no moving parts. Hardware finish shall be white epoxy powder coat. Provide manufacturer's standard 5-year warranty against defects in material and workmanship.

Basis of Design Product: LSI Corporation of America, Inc. 8200 Series or Musical Instrument Storage System by TMI Systems Design Corporation, or comparable product by one of the following:

- Stevens Industries
- Wenger Corporation
- Case Systems, Inc.

Library Shelving and Casework

Layout shall be presented to the Director of Media Services with a detailed analysis of site lines for security control. Obtain written approval before coordinating related electrical and data outlets.

Provide steel shelving system with wood trim to match other components.

Shelving system shall be constructed with vertical frames connected by horizontal and diagonal supports, thus stabilizing the shelving longitudinally. Steel shelving shall be of a welded perimeter frame design with structural nits in the form of welded rectangular columns and solid galvanized steel members providing maximum column rigidity and minimizing stack movement. No overhead bracing for support shall be accepted.

Provide single and double faced shelving, with adjustable shelves. End Panels shall be constructed of no more than 1" thick 3-ply Beech plywood with square perforations. Panels shall be installed and secured at the top and bottom of the vertical frame with "J" shaped fittings that are slightly extended from the ends of the shelving, which gives the appearance of a "floating" panel.

Include construction of sloping magazine shelves, circulation desk and miscellaneous furniture (See Educational Media for each individual specification section as it pertains to the specific item).

Provide canopy tops at all units 42" high or shorter. Tops shall be no more than 1" thick 3-ply Beech Plywood, top and bottom with 1/4" thick Beech solid wood edge.

Tops shall be assembled in individual lengths for each section of shelving. Corner fillers shall be added to match individual tops for continuous look.

Basis of Design Product: BCI Eurobib (Solid Solutions), or comparable product by one of the following:

- Borroughs
- Estey
- Montel
- Bretford Inc.
- Estey / Tennsco
- Library Bureau Steel
- MJ Industries
- Russwood Library Furniture

Manufactured Casework

Manufactured Casework includes but is not limited to:

Classroom and office vertical storage cabinets, base cabinets with counter tops and wall cabinets.

Miscellaneous specialty cabinets and shelving, such as storage for props in stage and drama areas.

Construction:

Cabinet bodies shall be standard high pressure plastic laminate finish over industrial grade particle board.

Cabinet backs shall be minimum 1/4" commercial standard CS-251 tempered hardboard or minimum 3/8" high performance 47 lb. density particle board.

Cabinet sub-base shall be of a separate and continuous ladder-type platform design, leveled and floor mounted prior to cabinet body placement. Material shall be exterior grade plywood. No cabinet sides to floor will be allowed. Base front shall be finished with 4" high black extruded rubber cove base with pre-molded corners to match room base.

Countertops shall be 1" deeper than base cabinet and 1-1/2" thick with high pressure plastic laminate finish.

Countertops for computers shall be 30" deep and be equipped w/ grommets and wire management below.

Countertops without sinks shall have particle board core and water resistive adhesive.

Countertop with sinks shall be constructed with calibrated plywood and non-soluble glue to thickness indicated.

Counter backsplash shall match countertop construction.

Drawer fronts and hinged doors shall be overlay style with higher pressure laminate exterior and interior liner and matching 3mm PVC edging.

Shelving behind doors shall be high pressure plastic laminate on particle board core with matching 3mm PVC edging. Shelves behind doors up to 27" wide shall be 3/4" thick and 1" thick if over 27" wide up to 36" wide. Open shelving shall be 1" thick. No shelving shall exceed 36" unsupported width.

Shelving shall be adjustable and supported by side panels with concealed fasteners capable of supporting the specified content.

Hardware:

Hinges shall be adjustable 5-knuckle, institutional grade, 2-3/4" overlay type with hospital tip.

Anchor hinges with engineered screws (no wood screws)

Hinges shall be stainless steel with satin finish

Pulls for drawers and swing doors shall be ADA compliant one piece semi-recessed molded contour finger pulls

Catches shall be nylon roller or friction type.

Drawer slides shall be heavy duty, side mounted type, equipped with heavy duty ball bearing nylon wheels and automatic positive stops.

Locks shall be half mortise design with only round cylinder exposed, five tumbler cylinder, keyed separately with master key: satin finish.

Shelf clips shall be heavy duty design to hold shelf in place.

Accessories: Provide accessories appropriate to the cabinet's function.

Warranty: Provide manufacturer's standard 5-year warranty against defects in material and workmanship.

Basis of Design Product: LSI Corporation of America, Inc., New Century Line L44 or TMI Systems Design Corporation, or comparable product by one of the following:

Stevens Industries

Case Systems, Inc.

Cabinets by Design

Southside Manufacturing Corporation

Blinds

Interior blinds shall be 1" aluminum horizontal slats.

Basis of design shall be Levolor Riviera.

Provide blinds at typical classroom and Lab exterior windows.

Use tinted glass for sun control in lieu of blinds at large and inaccessible windows at Clearstories, Lobbies, Corridors, Media Centers, Cafeterias, Gymnasiums and similar spaces.

Interior windows, provided as described in the Educational Specifications for supervision purposes, shall not have blinds except where specifically approved by DCSD.

Auditorium Seating

For new auditoriums, seating shall be fixed upholstered multiple seating with self-raising seat mechanisms. All seating components shall be provided by a single manufacturer. Seating Layout shall be designed with standards spaced laterally in rows so that end standards are in alignment from first to last row, regardless of whether aisles converge or are of constant width, and so that sightlines are optimized. Seating with integral lighting shall not be used. Provide appropriate accommodations for wheelchairs in accordance with ADA.

Basis-of-Design Product: Hussey Seating Company; Quattro Chair System or comparable product by one of the following:

Seating Concepts

KI, Inc.

American Seating Company

Telescoping Bleachers

Provide telescoping bleachers at middle and high school Gymnasiums.

The bleacher system shall consist of motor operated, multi-tiered, closed deck seating rows operating on the telescoping principal, and stacking vertically in minimal floor area when not in use.

The structural system shall be engineered to withstand all applicable design loads associated with the intended use.

Provide non-marring rubber tire wheels designed for wood or synthetic floors and sized appropriately for the specific bleacher.

Provide self storing railings at all exposed bank ends and elevated sections.

Coordinate Bleacher layout with ADA requirements for wheelchair seating.

Decking and steps shall be plywood.

Provide vinyl curtains where necessary to restrict access below bleachers.

Motor Operation:

Provide integral automatic electro-mechanical propulsion system engineered specifically for the requirements of the bleacher system.

All wiring within the seating bank, as well as all service wiring to the units shall be provided, including remote control panel or pendent control.

Controls: Start, stop, forward and reverse in a single control unit together with appropriate safety limiting features.

Motors shall be three phase and accessible from the front of the bleachers.

Provide manufacturer's standard 5-year warranty against defects in material and workmanship.

Basis of Design: Hussey Seating Company; Model MAXAM, Model MXM 26 Series.

Acceptable Manufacturers:

Interkal, LLC Telescoping Seating System

Irwin Telescoping Seating Company

Sheridan Gymnasium Equipment Limited

Floor Mats and Frames

For new schools, main entrances shall incorporate flooring designed to increase safety and decrease dirt infiltration. Consider floor grilles in recessed frames, walk-off mats, and/or heavy-duty carpeting in the vestibule and entrance lobby.

DIVISION 13 SPECIAL CONSTRUCTION

Portable Bleachers

Provide aluminum portable bleachers at high school baseball fields, softball fields and tennis courts complete with bench seats, and all related appurtenances, fittings and accessories. Attach bleachers to a concrete slab extending to walkway system.

- 5 rows high, 10' deep x 21' long
- 42" central aisle with steps
- Appropriate guardrails
- Space(s) for wheelchair provided, per ADA.

DIVISION 14 CONVEYING SYSTEMS

Elevators

Provide passenger elevator(s) as needed to comply with A.D.A. requirements. Elevators should be of minimum practical size with basic, easily maintained finishes. Provide key controlled access, cab telephone, and tie-in to fire alarm system.

Acceptable manufacturers: Montgomery Kone, Otis Elevator or Thyssen/Dover Elevator Co. Proposed additional manufacturers must be approved by DCSD Plant Services prior to inclusion in the specifications. Manufacturers that require proprietary tools for maintenance are not acceptable.

- Elevators in school settings are often (mis)used to carry freight, causing frequent break-downs and expensive maintenance. Consider upgrading capacity to account for this reality.
- All controls shall be open access, non-proprietary controls.
- Electric traction or hydraulic elevators are acceptable.

Electric Traction Elevators

General

- When designing for the use of Electric Traction Elevator(s) adhere to all Federal, State, and Local codes, regulations and installation requirements.
- Provide a gearless traction elevator with machine room-less application.
- Provide the number of elevators with a rated capacity of 2500 and a rated speed of 200 fpm as required for the project.
- Main power supply shall be 208, three-Phase, with a separate equipment grounding conductor.
- Car lighting power supply shall be 120 Volts, single-phase, 15 Amp, 60 Hz.
- Machine room-less controller(s) shall be located adjacent to the hoist-way at the top landing in a controller space.

Machine and Governor

- The machine shall be AC, gearless, mounted at the top of the hoist-way.
- Provide a tension type generator.
- In the hoist way, provide an emergency stop watch in the pit and terminal stopping switches.
- In addition, components shall include buffers, car and counter weight, positioning system, guiderails and attachments, coated steel belts, steel governor rope, and hoist-way entrances.

Car Components

Car components shall include: Car frame, steel cab, emergency car lighting, emergency pulsating lighting, fan, handrails, threshold, emergency exit contact, roller guides, platform, and certificate frame.

Finishes for the car front and car door shall be stainless steel.

Provide an aluminum egg crate suspended ceiling.

Submit interior cab finishes to the DeKalb County School District for written approval.

Signal Devices and Fixtures

A car operating panel shall be provided which contains all push buttons, key switches, and message indicators for elevator operation.

The emergency call button shall be connected to a bell that serves as an emergency signal.

Provide buttons with raised numbers and Braille markings.

The help button shall initiate two way communications between the car and a location inside the building and switching over to another location if the call goes unanswered.

Provide hall fixtures with necessary push buttons and key switches for operations.

Provide elevator car position indicator, car lantern, and chime.

Mechanical Lifts for ADA Accessibility

New building design should not include mechanical solutions, other than enclosed elevators, for ADA accessibility. Vertical platform lifts for will be considered for renovations only, if ramps or other ADA acceptable devices are impractical. Inclined stair lifts shall not be used.

When designing for the use of a Wheel Chair Lift(s), adhere to all Federal, State, and Local codes, regulations and installation requirements. Wheel chair lift(s) shall be used to provide interior vertical access where the design of a ramp is not practical.

Provide a vertical platform lift with a rated load of 750 lb. capacity, a travel speed of 9 fpm, lifting height as required by the design condition, and a minimum platform size of 37" X 51" with a non-skid surface.

Design for all electrical service requirements.

Capacity of the motor shall be not less than 3/4 horse power with instant reversing motor.

Colors selection(s) shall be submitted to DCSD.

Control switches shall be provided at accessible locations on the upper and lower elevations.

Install a runway enclosure to prevent obstructions from entering the underside of the platform lift, when the lift is above the lowest elevation. If it is not practical to install a runway enclosure the platform lift shall be equipped with an obstruction panel that will stop the downward travel if an obstruction is encountered.

Provide an illuminated emergency stop alarm switch to signal for assistance in the event of an emergency.

Provide a grab rail on the platform lift.

Provide 42"high gates with a combination mechanical lock and positive opening electric contact at the upper and lower levels. Platform panels must be 42" in height.

DIVISION 15 MECHANICAL

Pipe and Fittings

All mechanical piping and equipment supports exposed to the elements shall be primed, painted, and clearly labeled to mark their service.

Victaulic piping shall be Schedule 40 only, and must be installed by factory-trained installers.

Couplings shall have rubber stops.

All gas piping used in kitchen shall be hard black piping. Flexible connections are acceptable on drops; however, no quick disconnects shall be used.

Vent stacks shall be located sufficiently far away from air intakes of HVAC equipment to prevent drawing odors back into the building.

To prevent sewer gas odors from being pulled into roof top units a 25' separation shall be maintained between sewer vents and HVAC fresh air intakes.

Domestic Water pipe shall be Type L copper with lead-free joints, chrome plated brass or copper where exposed.

Domestic water supply lines from street main / meter to the building shall be copper with propress fittings (preferred) or Schedule 80 ductile cast iron (no PVC) with thrust blocks and tracer wire.

No saddle tees shall be permitted.

Provide T fitting at water supply to Custodial Sinks, Kitchen dish machines, and pot sinks for installation of sanitizing chemicals.

Drain and vent pipes from middle and high school science labs to acid dilution tanks shall be acid resistant polypropylene or CPVC. All other drain pipes shall be cast or ductile iron to resist mechanical cleaning.

In all science lab prep rooms, water taps and electrical service shall be installed for distilled / ionized water production equipment.

A grate with a funnel to prevent splashing shall be provided at floor drains that receive discharge water from sinks that require an air gap, such as food handling sink in the kitchen.

Provide barrier to rodent infiltration where pipes penetrate from the exterior.

Provide pressure reducing valve (PRV) in boiler room.

Reduced Pressure Zone Assemblies

Reduced Pressure Zone assemblies for back-flow prevention shall be installed as required by code for all new facilities and major renovations. Pressure reducing valve and backflow preventer shall be located in the main meter vault.

Design Professionals please note: even if a project's scope of work does not involve plumbing, the DeKalb County code officials may require upgrading existing facilities to meet this requirement in order to obtain a Building Permit or Certificate of Occupancy for any work done at the facility.

Grease Interceptors

For all new or renovated kitchens, grease interceptors shall be installed on the exterior of the building in a readily-accessible location. Minimum acceptable size is 3000 gallon.

Trap Primers

Trap primers shall be solenoid type, with direct digital control by the energy management system. Do NOT use pressure drop primers.

PROPRIETARY Standard of Design: ASCO RedHat Valve #3UL1824, 60-volt, 8210G094, F557939.

Plumbing Fixtures

The following is a list of fixtures currently in use at DeKalb County School District facilities, and kept in warehouse stock by DCSD maintenance. These fixtures should serve as the basis of design for plumbing fixtures at all new facilities and renovations. Proposed additional manufacturers must be approved by DCSD Facilities Services prior to inclusion in the specifications.

American Standard toilets, urinals, and lavatories (no china lavatories-must be cast iron).

2234.015	American Standard
	"Madera" Elongated Flush Valve Toilet
3043.102	American Standard
	"Madera" 17" ht. Elongated Flush Valve Toilet
C106C	Comfort Seats (JSC)
	Commercial Elongated Open Front Toilet Seat
6541132.020	American Standard
	Allbrook Urinal (Waterless urinals shall not be used)

111-XL		Sloan
	Regal Flushometer (New and retrofit toilets)	
186XL		Sloan
	Flushometer – 1" Stop urinal (Retrofit urinals)	
186XL		Sloan
	Flushometer – 3/4" Stop urinal (New urinals)	
V-500-AA		Sloan
	3/4" x 15" Vacuum Breaker (Retrofit urinals)	
0355.012		American Standard
	"Lucerne" Wall-hung Lavatory	
629203C		Watts
		Grid Drains
B-0871		T & S
	Cast Brass Centerset 4" Faucet (Low flow aerators)	
B-0890		T & S
	Cast Brass Centerset 4" Faucet, HC Handles (Low flow aerators)	
102EZ		Lav Guard 2
		Under Sink Pipe Covers
EZS8		Elkay
	Water Cooler – Lt. Granite (Retrofit)	
EZSTL8C		Elkay
	Bi-level Water Cooler – Lt. Granite (New)	

Sinks:

Prefer T&S Brass Kitchen faucets.

Custodial Sinks shall be floor type with hot and cold water and hose connection on mixing valve.

Wash fountains / stations

Basis of design: Bradley Co.

Kitchen hand wash sink shall have touchless, low voltage or foot operated faucet controls.

Basis of design: T&S Brass

Art Room Sinks shall be stainless steel, deep and wide without dividers, equipped with gooseneck faucets, equipped with plaster traps.

Basis of design for trap: Zurn solid interceptor Z-1181.

Hose Bibs:

Interior: Provide a key operated hose bib at each multi stall restroom. Mount on wall below a lavatory.

Exterior: Provide freeze-protected hose bibs in key-access wall boxes spaced approximately 200' around the building perimeter. Provide one bib at each outdoor art lab space.

Exterior Play Fields: Provide freeze-protected hose bibs in key-access ground boxes adjacent to all play fields.

Water Heaters:

Provide hot and cold water at Adult Restrooms, Kitchens, Custodial sinks, Work Room sinks, Gym, "Lab" (Science, Career Tech, and Art) demonstration and clean-up sinks, and all showers.

Provide hot and cold water in all clinic areas and at any sinks where adults are providing diapering and/or toileting assistance for special needs students. Provide anti-scalding devices on all sinks in areas accessible to students. Provide cold water only at student lavatories and Classroom sinks.

Preferred manufacturers are Rheem and Rudd.

Water Fountains:

Provide in locations, quantities and design in compliance with currently adopted accessibility code. Provide water fountains attached to sinks in duplex restrooms in new kindergarten and first grade elementary school classrooms. Water fountains attached to sinks do NOT count towards Georgia Department of Education minimum drinking fountain requirements.

Provide bubbler fountains at sinks in Kindergarten and 1st Grade rest rooms.

Fire Protection

All new school facilities and large additions constructed for DCSD shall be protected with an automatic fire sprinkler system, per currently adopted Life Safety Code, NFPA 13 and Georgia state modifications. Sprinkler system and other fire protection equipment shall be provided in accordance with building codes and local requirements.

Coordinate design of sprinkler system with design of built-in furniture and storage units such as music instrument storage units.

Install pressure reducing stations as required if main water pressure fluctuates and exceeds fire protection system working pressure.

Smoke detector devices need to be installed in a manner that preserves accessibility for maintenance.

For additions, consideration should be given to retrofitting a fire suppression system in the existing structure to integrate protection of the entire facility.

Require in the specifications for the subcontractor to program systems a minimum of two times in coordination with the Owner's direction. Prior to each programming, the subcontractor is to prepare a draft outline of the program for the Owner's review.

Heating Ventilation and Air Conditioning

Due to their ever-increasing complexity, it is imperative that building mechanical systems interface correctly to provide safe and efficient operations for the life of the building. All building mechanical and electrical system construction shall be thoroughly checked for proper operation. Full commissioning is recommended.

Architect and engineers shall design HVAC system with total life cycle costs in mind, using most practical approach for each project. Submit calculations for sizing HVAC units to DCSD for review and approval. DCSD maintenance staff shall fully approve all mechanical components.

HVAC shall be provided in classroom areas by water source heat pumps or self-contained wall mounted units (basis of design: Bard Manufacturing).

Water source heat pumps units shall be resettable from temperature sensor or thermostat, not from disconnects.

Water source heat pumps shall be extended range type with expansion valves. Cap tubes are not acceptable.

Separate packaged units shall provide HVAC at the following spaces:

- Auditorium
- Administrative Offices
- Counseling Offices
- Media Center
- Cafeteria
- Kitchen
- Dry Storage
- Gyms and P.E. Areas, including coaches offices
- Cafeteria manager's office
- Network Server Rooms
- Security Camera End Equipment Room

Other rooms with temperature sensitive equipment (i.e., telephone equipment, Stadium Press Box)

Areas Requiring Special Considerations for HVAC

Locker room air conditioning and ventilation shall be designed to address the special conditions in these spaces.

Media Center HVAC:

Office and work room and conference rooms shall be placed on independently controlled, separate zones.

Active humidity control shall be included in the media center HVAC design. A "moisture miser" or ERU shall be installed in Media Center RTU.

All corridor, stair and elevator HVAC units shall have ducted return air, taking care to pressurize space.

Do not locate telephone, MDF, IDF equipment or security camera head-end racks in Mechanical or Electrical Rooms. Telephone equipment is computer based electronic equipment that should be located in an air conditioned space. Locate telephone equipment in a separate room or in a combination room with MDF, IDF equipment and security camera head-end racks, all of which require similar constant year-round temperature control.

Heating and cooling for these rooms must be capable of maintaining ambient temperatures as required, independently of the operation of the main building HVAC systems. Consider designing this system to accommodate additional heat load (30% more than current load) created by equipment that may be added to these rooms in the future.

Independently controlled, ductless split cooling systems shall be supplied for main server rooms to provide cooling separate from the building system. Power for this system shall be tied to emergency panel for generator back up.

Art Suite Kiln and Dark Room ventilation shall be designed to address the special conditions in these spaces. Where possible, locate these spaces on exterior walls for convenient venting. Art Suite air shall exhaust directly to the exterior and shall not re-circulate into the building return air system.

Acceptable manufacturers: Vent-A-Kiln; Barry Blower; ILG
HVAC Ionization

Acceptable manufacturer: Global Plasma Systems

Equipment

Exhaust fans shall be provided per code.

Acceptable manufacturers: Greenheck, Cook, Jennaire, Gaylord, Halton, CaptiveAire
Kitchen Hood shall be a double shell design, constructed of stainless steel, consisting of an inner exhaust canopy with minimum 86% supply air ratio. (See Division 11)

Cooling Towers must include basin heater; open loop tower with heat exchanger, stainless steel. No sand filters are allowed. Heat tape shall be provided on all make-up water lines.

PROPRIETARY manufacturer: Evapco

Water treatment (include 2 year service agreement)

Preferred provider: Superior Water Services, Inc.

All boilers shall be hot water tube type with factory start-up. Three-way mixing valve must be installed on all boiler loops with the actuator supplied by CCI.

Acceptable manufacturers: Ajax; Rite; Apac

Chillers shall be air-cooled, with factory start-up and 5-year service plan included.

PROPRIETARY manufacturer: Carrier Corporation

Water loop pumps shall be installed in a manner that preserves service access.

Acceptable manufacturers: Bell & Gossett, Flo-Fab, Patterson, Taco, Inc. and Armstrong
Dehumidification Units

PROPRIETARY manufacturer: Munters Corporation

Energy recovery units shall be provided.

PROPRIETARY manufacturer: Munters Corporation

Heat Exchanger shall be plate and frame type and must be located in a mechanical room; no exterior installation is allowed.

PROPRIETARY manufacturer: Sondex Inc.

Flow Controls and Balancing Valves for Supply and Return Line Assemblies

Acceptable manufacturers: Flow Design, Inc., Griswold, Bell & Gossett

Automated Temperature Controls and Energy Management System

Proprietary Product: Direct digital control system sole source is STAEFA TALON. Submit listing of control points for approval by DeKalb County School District.

Building automation system controls shall be Web Control by CCI only.

Media Center shall be equipped with humidity sensors.

See DIVISION 16 ELECTRICAL for non-revenue metering connected to building automation system.

Roof-Top Unit Security

All new roof top units (RTU's) shall be protected by a steel cage constructed of vertical and horizontal support bars with expanded metal reinforcements. The preferred manufacturer and product is AC Armor's Commercial Armor, www.acarmor.net. All RTU Security Cages shall consist of the following:

Custom solutions to fit each individual roof top unit

1-inch, 14-gauge tube steel framing

Fully Mig welded

¾-inch square solid steel stem system

#9 expanded metal mesh covering access to copper coils

Fully serviceable access panels

1/8-inch threaded tabs

3/8-inch theft resistant bolts with access tool to secure unit

1.25-inch theft resistant bolts to secure 5-inch cross anchors

4-inch square steel base plates at each leg to ensure proper load distribution with ¼-inch thick roofing pads under each base plate

There shall be no modification to the roofing system or impact to the roofing warranty

Primed and painted for rust prevention

Watch Dog HVAC Security System shall also be installed on all new exterior HVAC units.

DIVISION 16 ELECTRICAL

Solid Front Electrical Panels

Placement of electrical panels in areas normally accessible to students, particularly corridors, is to be avoided whenever possible. Electrical panels and other devices located at areas normally accessible to students shall have solid front panels without louvers. If ventilation is required by the code, it shall be provided in such a manner as to prevent students from inserting small objects into the electrical panel or device. Such panels or devices shall be located in special purpose locked rooms if possible. The Design Professional shall incorporate this requirement into the Construction Documents and submittal review process.

Future Expandability

The electrical service for the building and overall site shall be designed to accommodate future loads for building expansion and future portable classrooms. (See DIVISION 1 – Core Capacity and DIVISION 2 – Future Portable Classrooms) A "spare" breaker shall be installed to power a future distribution panel near the portable site(s), to provide electrical service to the portables. Conduits of sufficient size, as required to serve the remote future portable classroom distribution panel shall be installed from the main electrical distribution panel and capped until needed.

Intercom, security and other systems shall be expandable for the number of additional portable classrooms noted above.

Conductors and Grounding

Aluminum wiring shall not be used on the building side of the meter. Plenum-rated low-voltage cabling may be used in lieu of conduit, if cost effective. Provide cable tray or hooks at hallways for low voltage cabling.

Plenum rated cabling shall only be used on the interior of buildings where appropriate and approved by Codes. Only products that are rated and intended for use outdoors, shall be used on the exterior of buildings.

Low voltage cable shall be properly suspended throughout with "J" hooks, not allowed to rest on ceiling tile or grid.

Conduit shall be run in a manner that preserves service access to all adjacent equipment.

Provide junction box at center of room with service loop.

Engineered cable management systems such as Reloc are acceptable.

Overload Devices for Motor Starters

Motors shall be equipped with a solid state overload protection device with an adjustable trip point rather than thermal overloads. Phase protection devices shall be provided on all HVAC equipment.

Power Outlets

Provide at least one 110 volt duplex outlet on each wall and an average of one per eight feet of wall.

Provide at least one 110 volt dedicated duplex outlet for each designated computer outlet. (One 4-plex outlet for each pair of computer outlets)

Provide one 110 volt, 20 AMP GFI duplex outlet adjacent to each sink counter.

Provide special voltage outlets for designated equipment such as large printer/copy machines and other special equipment.

Coordinate power connections of appropriate voltage and phase to all electrical equipment.

Provide master power switch at Science, Computer, Business and Career Technology Education Labs.

Provide power outlets in ceiling for drop down lighting in art lab for still life and figure drawing and for small power tools in Engineering Technology lab.

Provide Darkroom outlets at each enlarger station for enlarger and timers.

Light Fixtures

The interior lighting design shall minimize fixture types and incorporate standardized lamp inventory to the extent practicable. DCSD mainly stocks T-8 bulbs.

Light levels shall comply with GADOE standards.

General interior lighting shall be provided by recessed 2' x 4' fluorescent fixtures with T-8 lamps and electronic ballasts, unless noted otherwise. A safety cable should be attached to the fixture, cover reflector and lens.

Alternatively, LED fixtures may be used.

Basis of Design for LED 2'x4' Fixture: Columbia Lighting LJT24-40MLG-FSA-EDU.

Provide standard acrylic lenses, unless noted otherwise.

Polycarbonate lens are recommended for low ceilings in corridors, stairs and locker rooms.

Lighting in gymnasiums, storage areas, mechanical and electrical rooms should have metal cage protection.

Locker rooms near showers and kitchens should have vapor retardant gasket lenses.

"No hold," 6 hour mechanical timers shall be used for mechanical space lighting control.

The use of incandescent fixtures or dimming electronic ballasted fixtures shall be limited to special situations, such as theatrical lighting.

Typical classrooms, labs, Media Centers, other Instructional spaces and Cafeterias shall have standard three-tube fixtures with multilevel switching to allow one, two or three lamps per fixture to be turned on by two switches (not by dimmers) to produce 33%, 66% and 100% lighting levels.

In halls and cafeterias, lighting shall be controlled by key switches (Leviton Key #555-000) not toggle switches.

Tandem wiring of fixtures is encouraged to reduce the number of ballasts.

Avoid light fixtures in hard ceilings.

If project includes new lighting mounted at high ceilings such as in gymnasiums and cafeterias, a mobile scissor lift shall be provided for the school's use, with space provided for storing the lift.

Motion Sensors

Hallways, classrooms, labs and other instructional spaces shall be equipped with motion sensors that will automatically turn the lights off and place the switches in the off position when a hallway or room is not occupied. Connect motion sensors to HVAC control system. Review characteristics of system and possible additional rooms to be included with DCSD Facility Services for review and approval prior to incorporation into the construction documents.

Gym Lighting

Gym lighting fixtures shall be standardized for cost efficiency to the extent possible.

Provide multi-level lighting at all gyms by means of switching, not dimming. High school and middle school gyms shall have multi level lighting for recreational use and competition use at 60 fc, per athletic association requirements.

Gym lighting fixtures shall be T-5 High Output (HO) or induction type with instant-on feature.

Gym lighting fixtures shall have fixture, lens and guard safety chains to prevent these components from falling when damaged by impact.

Auditorium Lighting

Stage, Drama and Broadcast Video Labs shall be equipped with performance lighting which shall be incorporated into the Scope of Work for all new school projects. The Design Professional shall be responsible for employing a qualified professional Lighting Designer to develop appropriate Design and Construction Documents. General lighting in auditorium shall not be positioned over seats; consider wall sconces, or ceiling mounted fixtures positioned over aisles. Drawings and Specifications shall be submitted to DeKalb County School District Drama Coordinator and Facilities Services for review and approval.

Scope of work shall include overhead pipe grid, dimmable theatrical light fixtures, wiring and control system.

Provide separate fluorescent work light system.

High School Auditorium front overhead stage lighting shall be accessible from a catwalk; drop light mounting is unacceptable.

Provide aisle lighting at floor level.

See Division 11 EQUIPMENT- Theatrical/Stage Equipment for Catwalk access for stage lighting.

Exit and Emergency Lighting

Provide exit lights and emergency lighting fixtures required by code. Connect all emergency and exit lighting fixtures to the generator. In large areas without exterior windows, such as an auditorium, consider adding a small number of emergency lights on battery back-up, to provide light during generator start-up time. Provide L.E.D. exit lights on emergency circuits in quantities and locations in compliance with all applicable codes.

Emergency Electrical System

All new DeKalb County Schools shall be equipped with an automatic emergency electrical generation system. New Generator systems shall be included in major renovation projects at school sites that do not have generators. Any existing generators older than 15 years shall be replaced during major renovation projects. The system shall include, but shall not be limited to, a natural gas engine and electrical generator with vibration control, automatic engine starting system with batteries, instrument panel, weather-protective housing, enunciator panel, exhaust silencer and accessories. The generator shall be pad-mounted on the exterior of the building, protected by chain link fence. For elementary schools, the minimum size generator shall be 60 KW, 480/277 volts. For middle and high schools, the minimum size generator shall be 80 KW, 480/277 volts. The system shall be adequately sized for and be connected to the following:

- Emergency exit and emergency lighting fixtures (battery pack fixtures shall not be used unless noted otherwise)
- Minimum of one light fixture in each classroom
- Fire alarm system
- Intercom system
- Telephone system
- Security System including cameras, Intrusion alarm ,access control, and door power supplies
- Main server (MDF) room: All outlets; Air conditioning package unit
- Walk – in freezer/cooler (usually 208 volt, 3 phase)
- One outlet in principal's office to maintain phone and computer

Some of the electronic loads listed above also need to have a small UPS/surge protector to carry the electrical loads from the point of power interruption through start-up of the generator. Specifically, the intercom system, the telephone system switch, and energy management system main panel need to be served in this manner. Normal / Emergency Generator outlets shall be color coded / placarded in accordance with NEC.

Acceptable manufacturers:

- Cummings
- Kohler
- Generac
- Detroit Diesel

Two-year total service warranty contract shall be standard, with three-year extension included.

For generators with KVA loads equal to or greater than 100 KVA, Georgia Power requires the Automatic Transfer Switch (ATS) open transition transfer to have a mechanical interlock; reference Georgia Power's Distribution Bulletin No. 18 – 23, Section 4.2. The following actions are required:

DCSD Project Manager shall prepare following Georgia Power documents, and secure signature of DCSD Executive Director of Facilities:

“Application for Emergency and Standby Generation Installation & Operation”

“Statement of Responsibility for Operation of Emergency or Standby Generation on the Georgia Power Company Distribution System”

DCSD Project Manager shall forward signed forms to the attention of Georgia Power representative, Keith Harley at kharley@southernco.com.

DCSD Project Manager shall notify Georgia Power when ATS is installed.

DCSD Project Manager shall schedule Georgia Power to inspect and photograph the mechanical interlock installation.

Georgia Power representative shall forward both documents (items 1 and 2) along with photographs, to the DCSD Project Manager.

Exterior Lighting Fixtures

Provide adequate exterior lighting at building parking and walkway areas for security to employees and building. Fixtures shall be energy efficient, vandal resistant, 277 volt metal halide. Building wall packs shall be 250 watt or LED or compact fluorescent; parking lot lights shall be 400 watt. Exterior fixtures shall be controlled by building automation system with local override and photocells.

All exterior lighting shall be controlled by an energy management system with astronomical clock and local override switch.

Divide controls for site lighting into zones that can be operated independently. Submit design for zones to DCSD for review and approval.

Local override shall be momentary contact switch tied to building automation system.

Consider outside lighting at Art Patio for evening events.

Sports Field Lighting

The Design Professional shall develop complete drawings and specifications to describe sports field lighting similar to those currently installed at existing DeKalb County High Schools. Specifications shall be equal or above GHSA spec lighting manual, available at www.ghsa.net.

Sports lighting shall be provided at the following fields:

Football / Track Stadium: 360'x 160'

Baseball Field: 330' x 380' x 330' plus batting cage area

Softball Field: 200' x 200' x 200' plus batting cage area

Sports lighting shall provide environmental light control, with the primary goal to not negatively impact the adjacent community with excessive spill light and glare. Design lighting system to provide maximum spill and glare control. The specifications shall require a photometric report from an independent or certified testing lab certifying that the luminous intensity from any one fixture does not exceed the following criteria:

– Football / Track Stadium:	12,000 candelas at 84 degrees above nadir
Baseball Field:	12,000 candelas at 83 degrees above nadir
Softball Field:	12,000 candelas at 83 degrees above nadir

Lighting system shall be designed with life cycle costs in mind. It shall be energy efficient and cost effective to operate. Maximum energy consumption based on 5,000 hour operating cycle:

Football / Track Stadium:	105.0 kWh or less
Baseball Field:	77.0 kWh or less
Softball Field:	33.0 kWh or less

The lighting system shall be designed such that the light levels are guaranteed for a period of 25 years. Each manufacturer shall provide, along with bid, a recommended lamp maintenance schedule required to provide guaranteed light levels for 25 years:

Football / Track Stadium:	50 foot candles
Baseball Field (Infield):	50 foot candles
Baseball Field (Outfield):	30 foot candles
Softball Field (Infield):	50 foot candles
Softball Field (Outfield):	30 foot candles

The Design Professional shall develop detailed specifications for measuring the uniformity of these basic standards.

Lighting system must be designed to comply with current applicable building codes and minimum 100 mph wind speed. Cross arms shall be designed to withstand minimum 150 mph

winds and maintain luminaire aiming alignment. All components shall be designed as a system and shall include, but not be limited to:

Galvanized steel poles with climbing steps and safety harness. Poles shall have pre-cast concrete foundation with concrete backfill or concrete anchor bolt type foundation. Exposed steel shall be a minimum of 18" above grade; direct buried steel poles will not be permitted. Concrete or other single piece poles requiring use of heavy equipment that may damage the site will not be permitted.

All exposed components shall be designed of appropriate corrosion resistant materials. Die-cast aluminum housing shall be used for luminaire reflector system.

Remote ballast, capacitors, fusing and safety disconnects for luminaires shall be located in an aluminum enclosure on each pole approximately 10' above grade.

Wire harness system shall be designed for trouble-free installation.

System shall include lightning protection.

All components shall be UL listed.

Momentary power interruption illumination system shall be provided to provide coverage during failure of primary system.

Specifications shall describe an appropriate standard for measuring compliance of the installed system and requirements for correcting non-compliance.

Include in the bid one set of replacement lamps rated at 5,000 hours or two sets if rated at 3,000 hours. Also include preventative and spot maintenance (parts and labor) for 25 years.

Coordinate details of DeKalb County School District requirements for remote controls and incorporate those requirements into the specifications.

Data Cabling System

Provide Data Cabling System for computer network and equipment in accordance with the current DeKalb County School's Technology Plan. See APPENDIX to Design Guidelines – Data Cabling System.

Telephone Cabling System

DeKalb County School District will provide the telephone switch and individual phones for each required location. Construction contract shall provide telephone cabling and equipment. See APPENDIX to Design Guidelines – Telephone Cabling System.

Detection Systems

Security alarm and Security Surveillance Camera Systems will be furnished by DeKalb County School District under contracts separate from building contracts for new schools and additions.

Coordination between the separate contractors will be required to maintain occupancy schedules.

Designer for Security Surveillance System shall coordinate design of security systems with DCSD Director of Safety / Security.

Front desk design at Elementary Schools shall allow 2 Monitors to be mounted out of view of visitors.

See APPENDIX to Design Guidelines – Security System for general requirements of Security System and the specific Video Surveillance Specification prepared for each project.

Master Television Systems

Scope of Work:

Media centers shall have broadcast capabilities to provide video programming throughout the building.

Provide drops in all spaces except storage mechanical, custodial and kitchen areas.

Coordinate Master TV Systems with DCSD MIS.

Cable TV signal shall be provided to the media center distribution center from the local cable TV vendor.

Provide a complete Master Television Cable System for distribution of "In-House" and local "Cable" channels. Provide two sets of audio / video jacks on front panel for direct insertion of

customer equipment. The system shall be wired to allow tuning selected "cable" channels through VCRs for recording or distribution throughout the system and direct distribution of cable channels through system demodulators. Receiver / monitors shall be furnished to provide direct monitoring of programs.

A one line drawing of the entire Television System shall be included in the submittal showing the signal levels in dBmV at the input and output of each device at the head end, tap-off, splitters, and room outlets. The model numbers of all components shall be included in the one line drawing. A detailed drawing of the equipment cabinets, their components, special panels and equipment layout must be furnished for approval (no exceptions).

The television Contractor shall be an authorized distributor for the equipment supplied and maintain his own service organization capable of furnishing all warranty service. A letter shall be included in the submittal stating the above is valid.

The system shall be designed for 50 db signal-to-noise ratio and shall provide a signal level of a minimal of +6dbmv and a maximum of +12dbmv at each outlet.

The system shall be designed to allow program originating and distribution from outlets throughout the system by the addition of proper equipment.

The Design Professional shall be responsible for specifying appropriate equipment, testing and certification.

Acceptable manufacturers:

Blonder Tongue
Drake / Dracom
Scientific Atlanta
Jerald

Fire Alarm System

See APPENDIX to Design Guidelines – Fire Alarm System.

Intercom System

Proprietary PRODUCT: Central Control Center: Rauland Telecenter VoIP System

Intercom system shall be incorporated into the Scope of Work for all new school projects, and shall include a master clock to control bells.

Provide intercom call-back system with master station in administrative office and call stations in each normally occupied space. Design Professional to submit detailed catalog information to DeKalb County School District for approval.

See APPENDIX to Design Guidelines – Intercom System

Public Address System

Sound systems shall be incorporated into the Scope of Work for all new school projects.

Provide public address systems at the following locations:

Cafeterias
Gymnasiums
Auditoriums
Drama Labs
Football Stadiums

Architects shall be responsible for employing qualified professionals to design and develop Construction Documents for public address systems. Design of public address systems shall be appropriate for the acoustical conditions and volume of each space.

Drawings and Specifications shall be submitted to DCSD Facilities Services Department; the Supervisor of Interscholastic Athletic Programs, and to the Coordinators of Health and PE, Music and Drama for review and approval.

Features and functions shall include:

- Solid state in-wall type amplifier
- Built-in speakers
- Microphones designed especially for music pickup, recording and excellent speech reproduction
- Remote microphone outlets appropriate for the type of space
- Auxiliary input for future program sources
- Input for school wide intercom program and system announcements
- Fire alarm override if required.

Delivery Door Bell

Provide a door bell system at the exterior delivery door(s) to alert kitchen and/or custodial staff when deliveries have arrived. The appropriate location for the bell will be a function of the service area layout. The Design Professional shall propose and obtain approval for the bell location(s).

Clocks

- Centrally controlled digital clocks and bell system shall be provided in halls (except for Elementary Schools), Cafeteria, Media Center, main Office, and Gym.
- Provide electrical connection in each classroom and other instructional areas for DeKalb County School District provided electrically operated wall mounted clocks where required.

APPENDIX

Proprietary Specifications

The following items were approved by DeKalb County Board of Education, as of 11/29/11 (refer to specific divisions within these Design Guidelines for manufacturers):

- Door Hardware
- Book Theft Book Security
- Plumbing:
- Trap Primers
- HVAC:
- Cooling Towers
- Chillers
- Heat Pumps
- Roof Top Units
- Dehumidification Units
- Energy Recovery
- Heat Exchanger
- Automated Temperature Controls/Energy Management System
- Intercom
- Fire Alarm

Door Hardware

PROPRIETARY Standard of Design:

- Exit Devices: Von Duprin 98/99 Series:
- Dummy Trim 98DT, 99DT
- Night Latch 98NL, 99NL
- Lever 98L, 99L
- Lever Blank Escutcheon 98L-BE, 99L-BE
- Lockset: Best Access Systems, 93K-7-(AB, D, R)-14C-STK

Rim Cylinders: Best Access Systems, 1E-72-C4-RP3

Cylinders: Hardware must be heavy duty type and accept the proprietary "Best" removable core system. Mortise locksets are not acceptable.

Fire and Smoke Doors: All fire and smoke doors shall have magnetic hold-open devices interfaced with the fire alarm system. *BASIS OF DESIGN*: Glynn Johnson, Rixson Firemark (Assa Abloy)

Overhead Fire and Smoke Doors: Doors shall be equipped with easily tested and re-set mechanisms.

Power Assisted Door Openers: Power assisted door openers shall be Dormer or approved equal. The use of Power assisted door openers shall be avoided and shall not be used on interior doors of new facilities, unless approved by DCSD.

Note: The following manufacturers are **not** acceptable:

Sargent
Yale
Monarch

PART 1: GENERAL

1.01 Section Includes

- A. Provide and install all items known commercially as builder's hardware or door hardware. This shall include, but is not limited to, hinges, pivots, locks, latches, exit devices, cylinders, cores, keys, automatic or manual flush or surface bolts, door closers, overhead door stops/holders, floor stops and holders, wall stops, thresholds, weather stripping, door coordinators and silencers.

1.02 Products Furnished But Not Installed Under This Section

- A. Permanent cores shall be installed by D.H. Pace for the Owner. Refer to Article 2.01C. Keying.

1.03 Coordination

- A. Coordinate work in this Section with other directly affected Sections involving the manufacture of any internal reinforcement for hardware.

1.04 Qualifications

- A. Hardware Supplier: A recognized firm specializing in the supply of commercial door hardware with warehousing facilities and documented experience in a fifty mile radius from DeKalb County for a period of three (3) years and an Architectural Hardware Consultant (AHC) to properly handle, detail and service hardware in a satisfactory manner.
- B. Manufacturer: Companies specializing in manufacturing door hardware with a minimum of ten (10) years' experience.

1.05 Certifications

- A. Prior to building occupancy an Architectural Hardware Consultant shall inspect and certify that all hardware has been furnished and installed in accordance with manufacturer's instructions and is functioning properly. Results of said inspection should be reported in writing to the Architect.

1.06 Submittals

- A. Submit hardware schedule, product data, shop drawings, and keying schedule in accordance with Section 01300. Include product data on each type of hardware listed in hardware schedule.
 - 1. Upon return of the reviewed finish hardware schedule, arrange for a meeting with the Owner and representatives of [D.H. Pace](#). A keying schedule will be established and submitted to the DeKalb County Board of Education. After review, the keying schedule will be returned to representatives of Best Access Systems so that permanent cores and keys can be prepared on a timely basis. The master key system shall be a factory-registered system to assure the propriety of the codes and avoid duplication or crosskeying.

1.07 Warranty

- A. Provide three (3) year warranty for all hardware items with the exception of door closers. Include coverage of door closers for ten (10) year period.

PART 2: PRODUCTS

2.01 Acceptable Manufacturers

- A. Hinges & Pivots: Hager, Stanley, Lawrence, McKinney, Bommer
 - 1. Provide only template produced units.
 - 2. Provide Phillips flat head or machine screws for installation of units, except furnish Phillips flat-head wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.
 - 3. Hinge pins, except as noted, are to be provided as follows:
 - Steel Hinges: Steel pins
 - Non-ferrous Hinges: Stainless steel pins
 - Exterior Doors: Use continuous hinges
 - Interior Doors: Non-rising pins
 - Electric Hinges: Non-removable pins
 - 4. Tips shall be flat button and matching plug, finished to match leaves.
 - 5. Provide number of hinges indicated but not less than three (3) hinges for door leaf of 90" or less in height and one additional hinge for each 30" of additional height.
 - 6. Utilize hinge-reinforcing plates when half-surface hinges are used in conjunction with kalmein filled wood doors.
 - 7. Provide ball bearing hinges of the type and weight suggested by the hinge manufacturer for each type of door application.
- B. Continuous Hinges: Hager Roton, Markar, Select, Zero
 - 1. Provide heavy-duty continuous hinges for exterior doors, high traffic cross-corridor doors and other applications where the doors might be susceptible to abuse.
 - 2. Provide only concealed leaf continuous hinges for applications involving new doors.
 - 3. Use of full surface or half-surface continuous hinges will be acceptable for applications involving existing doors and/or frames.

- C. Lock Cylinders & Keying: Best Core Max (No Substitution)
 - 1. Best Access Systems of Georgia will meet with Owner to finalize keying requirements and obtain final instructions in writing, as per 1.09.A.1 of this section.
 - 2. Best Core Max interchangeable core keying system shall be used throughout. Furnish the standard temporary construction core system for the construction period, and remove when permanent cores arrive. Construction cores are the property of the manufacturer and are to be returned when permanent cores are installed.
 - 3. Construct lock cylinder and interchangeable cores from brass, bronze, stainless steel or nickel silver.
 - 4. Permanent cores and cylinders shall match the lock set finish.
 - 5. Provide keys of nickel silver material only.
 - 6. All interchangeable cores shall be seven (7) pin, interchangeable among all locks in this section, without modification, and keyed into a Grand Master Key System capable of over 16,000 change combinations.
 - 7. Provide four (4) change keys per keyed lock set.
 - *Additional keys:
 - 4 for each individual classroom
 - 6 each sub master keys

- D. Locksets Latchsets: Best, Schlage, Corbin/Russwin
 - 1. Base specifications: Best Access Systems components as listed in Schedule per Article 3.05.
 - 2. Lock sets and latch sets of other manufacturers must conform to the requirements of Subparagraphs 3 and 4, and be approved by the DeKalb County Board of Education.
 - 3. Cylindrical Type:
 - a. Lock sets and latch sets must be extra-heavy duty cylindrical type with 2 ¾ inch backset, or greater as specified, with a 9/16 inch throw latchbolt.
 - b. Provide lock sets with Best 7 – pin interchangeable core.
 - c. Lock sets and latch sets must conform to ANSI A156.2, Series 4000, Grade 1, and be UL listed.
 - d. Trim is to be Best Access System's 14C with 626 (US26D) satin chrome finish.
 - e. Use of this type lock is permitted in office suites where office doors are protected from public corridors by a locking door with mortise lock set.

- E. Exit Devices: Von Duprin, Precision - Apex Series 1100.
 - 1. All exit devices to be of one manufacturer.
 - 2. Provide sex nuts and bolts for attachment of surface applied items to doors.
 - 3. Devices shall be UL listed. Devices for fire openings shall bear factory installed UL markings that indicate approval for fire rated openings.
 - 4. All exit devices shall be touch-bar type design and manufactured of stainless steel. Grooved aluminum extrusions are not allowed. Extrusions shall be smooth.
 - 5. All exit devices shall comply with ANSI A156.3, Grade 1.

- F. Closers: LCN – 4040/1, Fire Mark/Rixson, Ryobi – 4550/1
1. Size of units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit, depending upon size of door, exposure to weather and anticipated frequency of use.
 - a. Where parallel arms are indicated for closers, provide closer unit one size larger than recommended for use with standard arms.
 2. Where manual closers are indicated for doors required being accessible to the physically handicapped, providing adjustable units, ANSI opening force and delayed action closing.
 3. Provide concealed closers that are fully concealed when doors are closed. Concealed closers are to have full rack and pinion hydraulic operation with separate controls for closing and latching speeds. Closer to have high strength cast cylinder and all temperature fluid.
 4. Provide manual closers (using sex bolts) that are certified to exceed one million (1,000,000) full load-operating cycles by a recognized independent testing laboratory. Closers are to be fully hydraulic, rack and pinion action with high strength cast cylinders and one piece forged steel pistons. Hydraulic fluid to be of a type requiring no seasonal adjustments for temperature. Hydraulic regulation to be controlled by tamper-proof, non-critical screw valves, adjustable with a hex wrench. Separate adjustments for back check, general speed, and latch speed. Where detailed on double lever arm closers, provide a delayed action feature to delay closing up to one minute for maximum opening to approximately 75°. Back check shall be properly located for protection of the door, frame and applied hardware.
 5. Use of closers with built-in spring or cushion stops will be allowed in lieu of overhead stops.
 6. All door closers shall comply with ANSI A156.4, Grade 1 and meet the standards of ANSI A117.1 for barrier-free accessibility.
- G. Push/Pulls, Protection Plates: Ives VR910 X TB Exterior Pull, Quality, Burns, Trimco
1. Provide manufacturers standard exposed fasteners for installation, through bolted for matched pairs, but not single units.
 2. Provide 16 gauge minimum thickness for plates.
 3. Bevel protection plates on four (4) sides.
 4. Provide offset pulls on exterior doors with exit devices of the following design: Rockwood 159
 5. Provide push plates, where door stiles permit, of 8" x 16".
 6. In locations where locks are used with cylinder but no outside trim and door is reverse bevel, provide cylinder pull similar to Rockwood 90.
- H. Threshold, Weather Stripping & Gasketing: Zero, Pemko, National Guard, Reese
1. Provide continuous weather stripping at each edge of every exterior door leaf, except as otherwise indicated.
 2. Provide type, size and profile shown as scheduled.
 3. Provide non-corrosive fasteners as recommended by manufacturer for application indicated. Do not specify adhesive backed weather strip of gasket material.
 4. Where replaceable seal strips are scheduled, provide only those units where resilient or flexible seal strip is easily replaceable from stocks maintained by manufacturer.
 5. Provide standard metal threshold unit of type, size and profile shown as scheduled.
 6. Provide bottom door sweep at all exterior doors.

I. Mullion: VonDuprin 4954

2.02 Finishes

A. Finish of all hardware shall be consistent throughout project, selected from manufacturer's standard finishes and approved by DCSD.

Note: Key setup shall be cross referenced by Door Number and Room Number in Key Box. Contractor to furnish, install & set up Key Box.

Data Cabling System

NOTE: This specification will be revised from time to time as the technology evolves. Design Professional shall obtain confirmation from DCSD representative that Data Cabling System Guideline is current.

The contractor shall provide a 5-year warranty on all contractor provided material and workmanship. Owner will also receive a 20-year manufacturer's warranty. There shall be a 20-year, 250 MHz transmission warranty.

All participants in any network-wiring project must be Simon certified. In addition all patch panels, data outlets, fiber connectors and other hardware items must be manufactured by the Simon's company.

These cabling specifications apply to all construction projects. Where renovations are done and existing equipment is replaced, testing of the entire network at the facility must be performed in accordance with these specifications to ensure continuity between existing and new construction.

A pre-construction meeting involving the data cabling contractor and DCBOE Information Technology shall be stipulated in the project manual.

Periodic meetings and site visits should be conducted during the installation of all cabling systems.

A post-construction meeting involving the data cabling contractor and DCBOE Information Technology shall be stipulated in the project manual.

All products must be purchased from an authorized distributor of each manufacturer.

Telephone Cabling System

NOTE: These Guidelines will be revised from time to time as the technology evolves. Design Professional shall obtain confirmation from DCSD representative that Telephone Cabling System Guidelines is current.

DeKalb County School District will provide the telephone switch and individual phones for each required location. Construction contract shall provide all other telephone cabling and equipment.

Intercom System

PART 1: GENERAL

1. RELATED DOCUMENTS

(a) Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

2. SUMMARY

- (a) Select type of system from two paragraphs below.
- (b) This Section includes the Central Sound/Communications Control Center which shall be a Rauland Telecenter Five/Director System, offering the combined features and functions of both systems. Systems not providing these specified features will not be considered. Furnish all labor, materials, tools and equipment necessary for complete installation and checkout of the system as outlined in these specifications. The equipment shall be Rauland equipment (NO EXCEPTIONS) as furnished by SWC-Richardson Technology Systems.
- (c) The administrative telephone communication system shall be a Rauland Telecenter V providing at least the following features and functions:
 - 1) The Administrative Control Center shall be a standard pushbutton dialing telephone complete with solid-state pre-tuned tone oscillators identical to those employed by the public telephone companies.
 - 2) The Central Switching Exchange shall be a Global Switching System, that is, there shall be no linking within the system that would restrict or block telephone communications.
 - 3) Direct dialing private two-way telephone communications between all locations equipped with administrative telephone and staff telephone shall also be provided.
 - 4) The Central Switching Exchange shall have facilities for 32 full duplex unrestricted simultaneous private telephone conversations between administrative telephones and between administrative telephones and staff telephones.
 - 5) Facilities for automatically sounding a warning tone signal over any loudspeaker selected for two-way "amplified voice" communication. The warning tone signal shall sound as soon as the station is selected, and shall be automatically repeated at regular intervals.
 - 6) Direct-dialing, two-way "amplified voice" communications between all locations equipped with administrative telephones and staff (classroom) loudspeakers without the use of a press-to-talk or talk-listen switch.
 - a) The Central Switching Exchange shall have facilities for multiple (12) watt two-way "amplified voice" communication channel(s), providing simultaneous communication on each channel from administrative telephones. Provide one channel under this contract.
 - b) Automatic Queuing shall be provided for the two-way amplified voice communication channels. A call waiting shall be automatically connected when a channel becomes available. The amplified voice communication channel shall have automatic level control on return speech to assure a constant return speech level.
 - 7) Capacity to call staff (classroom) stations having both telephones and loudspeakers, either by ringing the telephone or by a loudspeaker for two-way amplified voice communications. It shall be possible to program each staff location to be called either by speaker first or by ringing the telephone first. Only one station number to be used for the loud speaker and telephone. (Systems requiring a number for telephone and separate number for the speaker are not acceptable).
 - a) Ability to change the mode of communication during a call, i.e., change from amplified voice communications to phone-to-phone communications.
 - b) During the course of a call, the conversation may be continued over the telephone by lifting the telephone handset. The conversation shall automatically be switched from the speaker the handset.
 - 8) Capability for any administrative telephone to transfer a "call" from another administrative telephone or any staff (classroom) telephone to any other telephone.
 - 9) Facilities for conference calls between administrative telephones and between administrative telephones and staff (classroom) telephone or loudspeaker stations. Facilities for two-way communications between any staff (classroom) telephone and any classroom loudspeaker station.

- 10) Provide the capability of assigning speaker locations to any one or more of eight (8) software programmable zones for zone paging or time signal reception. Through programming, it shall be possible to exclude selected speakers from the reception of paging announcements.
- 11) Provisions for restricting access to the Emergency Announcements, paging or tone signal origination to certain administrative telephones. This shall be accomplished by the use of an authorized administrative telephone.
 - a) The system shall provide Personal Identification Numbers (PIN) for selected administrators. By dialing their PIN from any telephone, regardless of that phone's restrictions, they shall have all the capabilities of their office telephone.
 - b) If a telephone which is associated with a speaker originates a "paging announcement", the speaker shall automatically be muted to prevent feedback.
- 12) Facilities to easily change the dial code number of any circuit. The assignment of the architectural numbers shall be accomplished by the use of any authorized administrative telephone.
- 13) The system shall provide facilities for up to twelve (12) independent digital readout displays upon which incoming calls are identified by their designated numbers. The display shall show visually, in the order received, three (3) calls at a time. Emergency calls shall override normal calls and shall be identified as "EMER" and the station number.
 - a) Originating calls from any staff/classroom location may be directed to any or all of the twelve independent displays via programming from a designated administrative phone.
- 14) Provide a minimum of four (4) independent program memory sets. The choice of time of service change and active memory set selected shall be completely programmable. This feature shall allow selected stations to operate with different functions depending on the time of day.
- 15) The system shall be expandable up to 500 telephone and/or speaker circuits. Combining separate systems is not acceptable.
- 16) It shall be possible to review all calls stored, in groups of three in order received.
- 17) Facilities for answering calls registered in the readout merely by pressing a single "response" button.
- 18) Provide an All-Cancel function from an administrative telephone to cancel all classroom annunciated calls.
- 19) The system should have complete interconnect capabilities to central office lines. It shall be possible to transfer central office lines to any station in the system. Access to outside lines can be limited to certain authorized administrative telephones. Provide space for five CO modules.
- 20) Diagnostic functions shall be provided to simplify maintenance. An RS-232C serial data port shall be provided for connection to a computer for "on site" or via a modem for to remote computer diagnostic functions by distributor or maintenance personnel. Provide modem with system.
- 21) The system shall provide standard classroom communication and emergency capabilities independent of the microprocessor equipment. Should the microprocessor fail communication functions shall be accomplished from the main console? (No Exceptions)
- 22) The entire equipment cabinet with its electronics shall be factory wired and tested in the United States. (No Exceptions)
- 23) The system shall be equipped with one (1) telephone intercom channel, 32 communication links, (1) "manual" console intercom channel (capable of communicating with any classroom simultaneously with the telephone intercom channel), 1 program channel, 1 channel for zone functions, sufficient classroom speaker lines with twenty spare circuits and administrative lines as shown on the

- drawings. Furnish the quantity of administrative stations, administrative stations with digital readouts as indicated. Provide connection for customer's telephone system.
- 24) Common corridor or area circuits of multiple speakers shall be limited to twelve speakers per circuit.
 - 25) Exterior speaker circuits shall be limited to six speakers.
- (d) The Emergency Sound/Communications system shall provide at least the following features and functions:
- 1) Direct 2-way voice communications between the Control Center and any classroom or any other speaker-equipped location.
 - 2) Adequate power (15 watts minimum) to over-ride high noise levels in such areas as shops, gymnasiums, natatoriums, bus loading points and playing fields.
 - 3) Facilities for automatically sounding a warning tone signal (beep) over any loudspeakers selected for 2-way communications, to prevent unauthorized monitoring. The warning tone signal shall sound whenever the classroom is being monitored, and shall automatically repeat at regular intervals.
 - 4) Selective distribution of program material to any or all classrooms.
 - 5) Ability to transmit a program or announcement simultaneously to all classrooms and locations by the simple operation of a single color-coded All-Call pushbutton switch.
 - 6) Built-in facilities for the following provided they have been described in other sections of this specification or indicated on plans:
 - a) Reception of AM and FM broadcasts from built-in tuner, and their distribution to any or all speakers.
 - b) Reproduction of recorded music and other program material from built-in CD player and its distribution to any or all speakers.
 - c) Distribution of programs originating at remotely located microphones with provisions for volume control at the remote location.
 - d) Pickup and broadcast of live programs from remote locations. Program selection shall be easily accomplished by simply pressing the appropriately labeled pushbutton.
 - 7) Distribution of announcements from the Control Center microphone to any or all speakers.
 - 8) Provisions for the instantaneous distribution from the Control Center of emergency messages to all locations equipped with loudspeakers, simply by pressing a single red pushbutton. This action shall bypass all other controls, over-ride all other programs, and transmit the emergency message at a preset volume level.
 - 9) Input facilities for 2 low-impedance microphones and 3 auxiliary program sources.
 - 10) Distribution of a tone-signal (pushbutton activated) to any or all classrooms as a pre-announcement alert signal or, for other signaling purposes.
 - 11) Aural and visual monitoring facilities for each program channel.
 - 12) Distribution of repeating chime signal (activated by master clock) through system.
 - 13) Distribution of emergency, alert and clear signals through system (manually).
 - 14) Facilities for emergency call switches in specified locations to originate an emergency call to the Control Center.
 - 15) The system shall provide standard classroom communication and emergency capabilities independent of the microprocessor equipment. Should the microprocessor fail communication functions shall be accomplished from the main console?
 - 16) Provide interconnection from the fire alarm system to the communication system for alarm tones.
 - 17) Color-keyed pushbuttons and colored guidelines shall be provided for each of the system's functions. The communications channel shall be identified by orange guidelines. The program channel shall be identified by green pushbuttons and guidelines on the Master Program panel

3. SUBMITTALS

- (a) Product Data: For the following:
 - 1) Adjust list below to suit Project.
 - 2) Master stations.
 - 3) Speaker-microphone stations.
 - 4) Call-switch units.
 - 5) All-call amplifier.
 - 6) Intercommunication amplifier.
 - 7) Paging amplifier.
 - 8) Loudspeakers/speaker microphones.
 - 9) All items listed under section 2, Products
- (b) Retain paragraph and subparagraphs below if products are required to withstand specific design loads and Architect either has delegated design responsibility to Contractor or wants to review structural data as another way to verify products' compliance with performance requirements. Professional engineer qualifications are specified in Division 1 Section "Quality Requirements."
- (c) Shop Drawings: Shall be prepared under supervision of a qualified Professional Engineer, and submitted to Architect for review.
 - 1) Design Calculations: Calculate requirements for selecting seismic restraints for central control cabinets.
 - 2) Equipment Details: Detail equipment assemblies and indicate dimensions, weights, required clearances, method of field assembly, components, and location of each field connection.
 - 3) Delete subparagraphs and associated subparagraphs below if not required. Delete first subparagraph for systems with no built-in equipment.
 - 4) Master-Station Details: Scaled drawings for built-in equipment.
 - 5) Wiring Diagrams: Power, signal, and control wiring. Include the following:
 - a) Identify terminals to facilitate installation, operation, and maintenance.
 - b) Single-line diagram showing interconnection of components.
 - c) Cabling diagram showing cable routing.
- (d) Retain paragraph and subparagraph below if Drawings do not include detailed plans or if Project involves unusual coordination requirements.
- (e) Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1) Edit subparagraph below to suit Project.
 - 2) Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
- (f) Retain paragraph and subparagraphs below if required by seismic criteria applicable to Project. Coordinate with Division 16 Section "Electrical Supports and Seismic Restraints."
- (g) Manufacturer Seismic Qualification Certification: Submit certification that central control cabinets, accessories, and components will withstand seismic forces defined in Division 16 Section "Electrical Supports and Seismic Restraints." Include the following:
 - 1) Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a) The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 - 2) Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3) Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- (h) Coordinate paragraph below with qualification requirements in Division 1 Section "Quality Requirements" and as supplemented in "Quality Assurance" Article.

- (i) Qualification Data: For Installer and testing agency.
- (j) Retain first paragraph below if Contractor is responsible for field quality-control testing.
- (k) Field quality-control test reports.
- (l) Factory Training: Provide factory certification for personnel
- (m) Service facilities: Available to owner/using agency of a duly authorized distributor of the equipment manufacturer, which shall stock the manufacturer's standard parts.
- (n) Operation and Maintenance Data: For intercommunication equipment to include in emergency, operation, and maintenance manuals.
 - 1) In addition to items specified in Division 1 Section "Operation and Maintenance Data," include a record of Owner's equipment-programming option decisions.
 - 2) (3) Copies as minimal.
 - 3) Shall include internal schematics and wiring diagrams, detailed to allow a technician to install, operate, maintain, calibrate and repair equipment.

4. QUALITY ASSURANCE

- (a) Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
 - 1) Maintenance Proximity: Not more than 4 hours' normal travel time from Installer's place of business to Project site.
- (b) Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
 - 1) Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- (c) Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- (d) Comply with NFPA 70.
- (e) Comply with UL 50.

5. COORDINATION

- (f) Coordinate layout and installation of ceiling-mounted speaker microphones with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2: PRODUCTS

1. MANUFACTURERS

- (a) Available Manufacturers: The equipment shall be Rauland equipment as furnished by SWC-Richardson Technology Systems who shall perform the warranty as herein specified.

2. EQUIPMENT CABINET

- (a) Rauland Model RP1103B equipment shall be contained in an upright rack of modern design, constructed of at least 16 gauge cold-rolled steel, heavily re-enforced for maximum strength and durability. It shall have a hinged and key-locking rear door providing authorized personnel with easy access to components. It shall be no more than 65 7/16" high, 22 3/8" wide, and 18 1/2" deep, with 61" total panel mounting space, designed for the installation of standard 19" professional equipment, finished in ebony black baked enamel. Provide two cabinets with three inch casters and frame for the cabinets.

3. CENTRAL CONTROL UNIT

- (a) Rauland Model TC4002 specifically designed for use with modern dual-tone telephones and switching networks. It shall provide two-wire balanced transmission complete with dial tone, automatic ringing and busy signal. It shall be of advanced microcomputer design, modular plug-in construction, non-volatile software, and user-programmable.
 - (b) The TC4002 Central Control shall provide telephone circuits as shown on the drawings and thirty-two (32) links for thirty-two unrestricted simultaneous conversations. It shall be possible to expand the system up to 500 telephones and/or speaker lines without modification of the Central Control. A 12 watt voice-controlled amplifier shall be included to permit hands-free conversation with staff stations and provisions shall be available for additional voice-controlled amplifiers so that simultaneous multi-channel hands-free conversation may be accommodated. Provide one (1) amplifier.
 - (c) It shall incorporate dual crystal-controlled receivers to provide maximum accessibility to the system with maximum reliability.
 - (d) The TC4002 Central Control shall be available for mounting in a standard 19" rack and the overall dimensions shall not exceed 19" wide, 8.75" high, and 12" deep.
4. CONTROL PANEL
 - (a) Rauland Model MCZ300, a complete program pre-amplifier providing a minimum of four (4) switchable microphone or program inputs, each selected by fluorescent color display pushbutton; a 15 watt communications amplifier with balanced 25V output, and separate incoming and outgoing level controls; full aural and visual monitoring facilities by a built-in monitor speaker and LED output level indicators; separate "All-Call" and "Emergency" facilities. Communications channel shall include a supervisory tone generator which shall sound a tone signal in any classroom being monitored for voice call origination from classrooms and shall include a "system-clear" tone signal when the call-in switch is activated. The Master Control Panel shall also include a pushbutton operated tone signal suitable for use as a pre-announcement alert signal, or for other signaling purpose, such as class change or to call custodial personnel. All Program channel fluorescent display pushbuttons and associated guidelines and instructions shall be Green; all Communications channel controls and guidelines shall be Orange.
5. AM/FM CD PLAYER
 - (a) RAULAND MODEL MCX325 shall be designed for continuous duty service in institutional and industrial sound systems. It shall be completely solid state, including transistors and integrated circuitry. The AM portion shall cover the entire broadcast range of 530 to 1620 KHz. The FM section shall have a tuning range of 85.5 – 108 MHz. Unit shall have a built-in front panel monitor speaker. Controls on instrument front panel shall include AM-FM button, on/off volume control, automatic search & manual tuning buttons, preset & store buttons, autos store button, clock button, tone control, balance control, fader control, fast-forward, fast-rewind, eject/reverse direction 4-position monitor/send switch. The unit shall have a back-lit digital readout display and indicate whether AM or FM, and shall indicate stereo status. It shall alternately display time. The system should also include a single disk CD player.
 - (b) The AM/FM Antenna shall be rack mounted at the console location.
6. POWER AMPLIFIER
 - (a) Shall be capable of delivering an audio output of 325 watts RMS per channel into 4 ohms or 650 watts into 8 ohms. Frequency response shall be plus/minus .5 dB, 20-20,000Hz. The amplifier shall operate continuously from 120VAC. The amplifier shall include fused outputs protective circuit to safeguard against damage from prolonged overloads and from extreme overloads, such as shorted output line. Controls shall be provided for level control. An LED pilot indicator shall be incorporated. The amplifier shall be capable of delivering full rated power to 25V or 70V constant voltage lines VIA a companion transformer. Provide (1)

7. ALARM SIGNAL CONTROL PANEL

(a) Rauland Model RX1027 shall provide for 3 separate alarm signals for quick pushbutton activation. It shall have 4 locking pushbuttons labeled "ALERT", "TAKE COVER", "CLEAR", and "OFF", mounted on charcoal gray panel. Operation of any of the alarm pushbuttons shall by-pass all other controls and automatically distribute the appropriate signal to all speakers at a pre-determined level. Switches shall be self-wiping with precious metal contacts. Dimension of panel, 19" wide, 1 3/4" high, 2 3/4" deep.

8. ROOM SELECTOR PANEL

(a) Rauland Model SW25 shall contain 25 lever action 3-position four-pole selector switches of the positive detent type, designed for maximum reliability and a life expectancy of over 250,000 operations. Switch positions shall be legibly identified as Program "A", "Off" and Intercom "C". The Program "A" channel shall be identified by a Green guideline, Intercom channel "C" by Orange, and accordance with the "Follow the Color" operating method used in the Director Series System positions. Provide with multi-conductor cable with connectors on each end and split terminal blocks with connectors and bridging clips. Furnish selector panels, cables and terminal blocks for individual circuits and a minimum of 20 spares.

9. SPEAKER CONTROL

(a) Rauland Model TC4110 shall easily mount to the rear of its associated selector switch panel. It shall contain 26 24-volt DC DPDT relays. Each relay shall be hermetically sealed to prevent contamination and shall have a life expectancy of 1,000,000 operations. Relays shall have precious metal contacts for minimum contact resistance, and shall carry at least a 1 amp rating. "Normally open" contacts and remaining side of each relay are permanently "bussed" together and then terminated. The time zone panel shall be a printed circuit board of G-10 epoxy. Furnish with selector panels.

10. MICROPHONE

(a) Rauland Model 1295, omnidirectional dynamic, desk type public address or paging type with base constructed of die-cast zinc alloy with durable molded cyclac body in matching black. Dynamic moving coil incorporates a special diaphragm of mylar, resulting in excellent sensitivity and smooth wide-range peak-free response of 50-12,000 Hz. Shall have press-to-talk and lock-to-talk switching, complete with 7'cord, concealed Hi-Lo switch, and non-skid molded feet. Height 9 3/8", width 4 3/4", depth 5 7/8".

11. SPEAKERS

(a) Rauland Model USO188 shall be an 8" permanent magnet cone type having viscous-damped cone and a ceramic (Indox 5) magnet weighing 5 oz. It shall have a frequency response of at least 55-18,000Hz, a 10 watt program power-handling capacity and an axial spl of at least 97.6db. Voice coil shall be 3/4" diameter with 8 ohm impedance. The speaker shall be equipped with Model TML25 multi-tap transformer 1/2, 1, 2 and 4 watts, 25V. (Lowell equal)

(b) FLUSH CEILING GRILLE

1) Speaker ceiling grille shall be Rauland ACC1000 constructed of steel and have a white baked epoxy finish. It shall include matched hardware for mounting a standard 8" speaker. Its overall diameter shall be 12 7/8" with center perforation of 7 5/8". (Lowell WB8 equal)

(c) CEILING SPEAKER BACKBOX

1) Model ACC1101 shall be a round one-piece backbox for flush mounting a standard 8 inch speaker. The enclosure shall be of painted, one-piece 22 gauge drawn steel and shall have applied in its interior a fire retardant resonance damping material. It shall

have four perforated steel mounting brackets and four knockouts for conduit. Dimensions, 9 3/4" diameter with flange diameter of 12 2/16", mounting centers 11 1/4", depth 4 1/16". (Lowell 8XD4 equal)

(d) SPEAKER SUPPORT BRIDGE

- 1) Rauland Model ACC1104 shall be a single piece unit constructed of 24 gauge galvanized rust-resistant cold rolled steel, 23 3/4" long and 14 1/2" wide. The unit is designed for firm support of ceiling speaker, grille, and backbox. (Lowell LBS8R equal)

(e) FLUSH WALL SPEAKER BAFFLE

- 1) Rauland Model ACC1003 constructed of heavy gauge CRS and shall have a white epoxy finish. It shall have a square grille opening with a separate subplate for mounting speaker baffle to the ACC1105 backbox. Its dimensions are 11 1/2" square by 3/16". (Lowell equal)

(f) SURFACE MOUNTED BAFFLE

- 1) Rauland Model ACC1004 constructed of heavy gauge CRS and shall have a white epoxy finish. It shall have a square grille opening with a separate subplate for mounting speaker baffle to the ACC1102 surface backbox. The backbox shall be 12 1/2" square by 4" deep with white epoxy finish. (Lowell equal)

(g) TAMPERPROOF SPEAKER GRILLE

- 1) Rauland Model ACC1008 vandal proof baffle is designed for mounting a standard 8 inch speaker. It shall be constructed of a special self-aging aluminum alloy with tensile strength of 44,000 psi and shall be backed up with a heavy gauge cold rolled steel perforated screen to protect speaker. Each unit shall include tamperproof hardware to prevent entry into interior. It shall be finished in textured white baked enamel and have overall dimensions of 10 3/4" square by 3/4" projection. Provide MISCO #FC8WP weatherproof speaker and ACC1108 back box. Provide for Exterior Areas. (Lowell SGVP/8C10MR/TLM25 equal)

- (h) CEILING SPEAKER ASSEMBLY – The ceiling speaker assembly shall be a Rauland BAFKIT1X2S Lay-In Tile Speaker. The speaker shall be an 8-inch speaker with a 25 volt transformer. The speaker shall be rated at 8 Watts RMS and have a Frequency Response of 65 to 17 KHz. The speaker baffle shall have dimensions of 23 3/4" Width, 11 3/4" Length and 3 3/8" Depth. The total weight of the speaker shall be 4 lbs. 14 oz. Refer to the plans for quantities and locations of speakers. (Lowell Equal)

12. SPEAKER/CALL STATION

- (a) Rauland Model HSS1 shall interface with the Rauland Telecenter and Director Series systems. Two-way communications shall be accomplished by the built-in speaker-microphone. A call-in momentary pushbutton switch shall be provided. The complete unit shall be vandal-proof in design and construction, protected externally by an 11 gauge stainless steel plate with brushed finish. Actuator shall be flush with face plate and completely isolated from the push-button, and movement shall be coupled through a coil spring to prevent damage. Speaker-microphone shall be protected against tampering as well as by flame or liquids. Unit shall mount in a standard three-gang electrical box. Surface mount requires ACC1119 box.

13. CALL STATION

- (a) Rauland Model 2305CS, call origination switch shall be mounted on a stainless steel plate and require one momentary depressing of the button to activate a "call in". Provide additional "Emergency" call button where indicated.

14. VOLUME CONTROLS

- (a) Provide volume controls where indicated. These controls shall not have an off position.

15. ADMINISTRATIVE MASTER

- (a) Rauland Model TC6204 shall be a desk type high quality touch dial telephone, dual-tone instrument suitable for desk use or wall mounting, complete with call buzzer, 5 1/2' retractable cord with plug. It shall conform to public utility specifications. The dial shall be a standard 12 pushbutton type with solid-state pretuned oscillators. The instrument housing and handset shall be of high impact plastic, finished in gray color. Furnish desk or wall type stations as required.

16. LCD DESK DISPLAY

- (a) Rauland Model TC4221TG shall display up to four three digit station numbers simultaneously; the first three shall be registered calls and the fourth shall indicate the last number called. An audible tone shall be provided and the display shall be equipped with a dip switch for selecting its own addressable code to allow routing calls to it independently of other displays. Provide where indicated.

17. MASTER CONTROL CLOCK

- (a) Rauland 2524 ChronoCom Master Control Clock System shall be microprocessor-based, and shall be easily programmable by the user through electronic means. A simple step-by-step guide shall be provided to enable the user to accomplish the programming quickly and correctly. Master control clocks which are not microprocessor-based and/or which require a technician or programmer to perform the initial and subsequent changes in program, at additional cost, shall not be considered.

- (b) This Program Clock shall be mounted in, and connected to the Intercom Console.

(c) FUNCTIONS A:

- 1) Ability to operate solely as a master clock.
- 2) Capacity of storing 350 events and up to 100 holidays in non-volatile memory
- 3) Ability to review, edit and delete events.
- 4) Review events from any time of day.
- 5) Events shall be programmable to any one or all of eight zones.
- 6) Selection of any one of eight schedules.
- 7) Fully automatic holiday scheduling.
- 8) User programmable Automatic Daylight Savings Time.

18. SECONDARY CLOCKS

- (a) RAULAND MODEL 2500 SERIES – The Secondary Clock shall operate from 24vac, controlled from the Master Clock at the Central Cabinet. Furnish single dial digital and double dial digital clocks as shown on drawings. Furnish a clear heavy duty guard for the gymnasium. Single dial clocks shall be flush mounted. Double dial clocks shall be wall mounted. The display shall be 4 characters; seven segment red LEDs 2.5" high. The clock shall measure 12" in length, 2.9" deep and 6" high.

- (b) A 24 VAC power supply shall be provided with solid state buffers for the clock circuits.

19. UPS/LINE CONDITIONER

- (a) Model UP-51500

20. LIGHTNING PROTECTION

- (a) DITEK lightning protectors shall be provide for any copper cables that are installed between buildings.

21. CABLE

- (a) Conductors: Jacketed, twisted pair and twisted multipair, untinned solid copper. Sizes as recommended by system manufacturer, but not smaller than No. 22 AWG.

- (b) Insulation: Thermoplastic, not less than 1/32 inch thick.

- (c) Shielding: For speaker-microphone leads and elsewhere where recommended by manufacturer; No. 34 AWG tinned, soft-copper strands formed into a braid or equivalent foil.
 - 1) Minimum Shielding Coverage on Conductors: 60 percent.
- (d) Plenum Cable: Listed and labeled for plenum installation.
- (e) Classroom Cable
 - 1) West Penn 25357BBLUE
- (f) Cable to Speaker from Call Station
 - 1) West Penn 25291BBLUE
- (g) Cable for Administrative Stations
 - 1) West Penn 25292BBLUE

PART 3: EXECUTION

1. INSTALLATION

- (a) Wiring Method: Install wiring in raceways except within consoles, desks, and counters. Conceal cables and raceways except in unfinished spaces.
- (b) Select paragraph above or below.
- (c) Wiring Method: Install wiring in raceways except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces and in gypsum-board partitions where cable wiring method may be used. Use plenum cable in environmental air spaces, including plenum ceilings. Conceal cables and raceways except in unfinished spaces. Conceal cables in raceway sleeves through wall partitions from corridors to rooms.
- (d) Revise remaining paragraphs below to suit Project.
- (e) Install exposed cables parallel and perpendicular to surfaces or exposed structural members, and follow surface contours. Secure and support cables by straps, staples, or similar fittings designed and installed to avoid damage to cables. Secure cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, or fittings.
- (f) Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess. Use lacing bars in cabinets.
- (g) Control-Circuit Wiring: Install number and size of conductors as recommended by system manufacturer for control functions indicated.
- (h) Separation of Wires: Separate speaker-microphone, line-level, speaker-level, and power wiring runs. Install in separate raceways or, where exposed or in same enclosure, separate conductors at least 12 inches for speaker microphones and adjacent parallel power and telephone wiring. Separate other intercommunication equipment conductors as recommended by equipment manufacturer.
- (i) Splices, Taps, and Terminations: Arrange on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.
- (j) Match input and output impedances and signal levels at signal interfaces. Provide matching networks where required.
- (k) Identification of Conductors and Cables: Color-code conductors and apply wire and cable marking tape to designate wires and cables so they identify media in coordination with system wiring diagrams.
- (l) Weatherproof Equipment: For units that are mounted outdoors, in damp locations, or where exposed to weather, install consistent with requirements of weatherproof rating.
- (m) Connect wiring according to Division 16 Section "Conductors and Cables."

2. GROUNDING

- (n) Ground cable shields and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.
- (o) Signal Ground Terminal: Locate at main equipment cabinet. Isolate from power system and equipment grounding.

(p) Install grounding electrodes as specified in Division 16 Section "Grounding and Bonding."

3. SYSTEM PROGRAMMING

(a) Programming: Fully brief Owner on available programming options. Record Owner's decisions and set up initial system program. Prepare a written record of decisions, implementation methodology, and final results.

4. FIELD QUALITY CONTROL

(a) Retain paragraph below to require a factory-authorized service representative to perform, or assist Contractor with, field inspections, tests, and adjustments. Retain one of two options to suit Project; delete both to require only an inspection before field testing.

(b) Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

(c) Retain one of three paragraphs below.

(d) Testing Agency: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

(e) Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:

(f) Perform the following field tests and inspections and prepare test reports:

1) Retain subparagraphs below with either of last two paragraphs above. Edit to suit Project. Delete subparagraphs if testing will be performed by Owner-engaged testing and inspecting agency.

2) Schedule tests with at least seven days' advance notice of test performance.

3) After installing intercommunication equipment and after electrical circuitry has been energized, test for compliance with requirements.

4) Revise test requirements in subparagraphs below if all-call or paging is not specified.

5) Operational Test: Test originating station-to-station, all-call, and page messages at each intercommunication station. Verify proper routing and volume levels and that system is free of noise and distortion. Test each available message path from each station on system.

6) Check each speaker line for correct impedance: the load shall not be larger than the amplifier output.

7) Tap each speaker for proper volume in area to be served. The system supplier's authorized representative shall be on hand for final hook-up and test, and shall certify, in writing, that the system is fully operational and meets the requirements of this section.

8) Signal Ground Test: Measure and report ground resistance at system signal ground. Comply with testing requirements in Division 16 Section "Grounding and Bonding."

(g) Retesting: Correct deficiencies and retest. Prepare a written record of tests.

(h) Inspection: Verify that units and controls are properly labeled and interconnecting wires and terminals are identified. Prepare a list of final tap settings of paging speaker-line matching transformers.

(i) Prepare written test reports.

1) Include a record of final speaker-line matching transformer-tap settings, and signal ground-resistance measurement certified by Installer.

5. STARTUP SERVICE

(a) Delete first paragraph below if factory-authorized service representative is not required. Retain option for microprocessor-switched systems.

(b) Engage a factory-authorized service representative to perform startup service and initial system programming.

(c) Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements.

- (d) Complete installation and startup checks according to manufacturer's written instructions.
- (e) Richardson Associates shall provide a one year warranty on parts and labor. An additional four year warranty shall be provided on parts by Richardson Associates and the Rauland Corporation. The systems shall be demonstrated to the proper authorities and a letter of certification from the authorized supplier stating that the systems are operating as herein specified shall be forwarded to the Architect.

6. ADJUSTING

- (a) On-Site Assistance: Engage a factory-authorized service representative to provide on-site assistance in adjusting sound levels, resetting transformer taps, and adjusting controls to meet occupancy conditions.
- (b) Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose, without additional cost.

7. DEMONSTRATION

- (a) Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain intercommunication equipment. Refer to Division 1 Section "Demonstration and Training." Train Owner's maintenance personnel on programming equipment for starting up and shutting down, troubleshooting, servicing, and maintaining equipment.

Fire Alarm System

GENERAL

Summary:

This Section covers fire alarm systems, including initiating devices, notification appliances, controls, and supervisory devices. Work covered by this section includes the furnishing of labor, equipment, and materials for installation of the fire alarm system as indicated on the drawings and specifications. The Fire Alarm System shall consist of all necessary hardware equipment and software programming to perform the following functions:

- Fire alarm system detection and notification operations.
- Control and monitoring of elevators, smoke control equipment, door hold-open devices, fire suppression systems, and other equipment as indicated in the drawings and specifications.
- One-way supervised automatic voice alarm operations.

SCOPE OF WORK

Provide fully addressable digital fire alarm system complying with NFPA requirements. Provide separate intercom system providing two-way communication

- Fire alarm systems shall be addressable alarm systems.
- No proprietary tools or equipment shall be required to service the installed system.
- A complete log of all device addresses and devices shall be provided as part of the close-out documentation.
- Demonstrate accuracy of log and device locations to DCSD Facilities staff as part of building turn-over process.
- Maintain service access to all devices.
- Fire Alarm cabling shall be plenum rated with red tint.
- Provide surge protection on all cabling upon entry and exits to building.
- All fire alarm devices must be labeled.
- Communication by IP-DACT over WAN.

- Devices shall be ceiling mounted wherever possible.
 - Pull stations shall be provided with protective covers with horns

Acceptable Equipment and Service Providers:

Preferred Manufacturer: SimplexGrinnell.

Alternate Manufacturers: Firelight, Notifier or Staefa-Talon

Related Documents

Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this section. The work covered by this section is to be coordinated with related work as specified elsewhere in the specifications.

The system and all associated operations shall be in accordance with the following:

- NFPA 72, National Fire Alarm Code
- NFPA 70, National Electrical Code
- NFPA 101, Life Safety Code
- NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems
- Georgia Accessibility Code
- All other applicable Federal, State, and Local codes and ordinances.

System Description

- General: Provide a complete, non-coded addressable microprocessor-based fire alarm system with initiating devices, notification appliances, and monitoring and control devices as indicated on the drawings and as specified herein.
- Software: The fire alarm system shall allow for loading and editing instructions and operating sequences as necessary.
 - o The system shall be capable of on-site programming to accommodate system expansion and facilitate changes in operation.
 - o All software operations shall be stored in a non-volatile programmable memory within the fire alarm control unit. Loss of primary and secondary power shall not erase the instructions stored in memory.
 - o Panels shall provide electronic file storage with a means to retrieve a record copy of the site-specific software and up to 9 previous revisions. Sufficient file storage shall be provided for other related system documentation such as record drawings, record of completion, owner's manuals, testing and maintenance records, etc.
 - o The media used to store the record copy of site-specific software and other related system documentation shall be electrically supervised. If the media is removed a trouble shall be reported on the fire alarm control panel.
- History Logs: The system shall provide a means to recall alarms and trouble conditions in chronological order for the purpose of recreating an event history. A separate alarm and trouble log shall be provided.
- Recording of Events: Record all alarm, supervisory, and trouble events by means of system printer. The printout shall include the type of signal (alarm, supervisory, or trouble) the device identification, date and time of the occurrence. The printout differentiates alarm signals from all other printed indications.
- Wiring/Signal Transmission:
 - o System connections for initiating device circuits shall be Class B, Style D, signaling line circuits shall be Class B, Style 4 and notification appliance circuits shall be Class B, Style Y.
- Circuit Supervision: Circuit faults shall be indicated by a trouble signal at the FACP. Provide a distinctive indicating audible tone and alphanumeric annunciation.
- Required Functions: The following are required system functions and operating features:

- Priority of Signals: Fire alarm events have highest priority. Subsequent alarm events are queued in the order received and do not affect existing alarm conditions. Priority Two, Supervisory and Trouble events have second-, third-, and fourth-level priority, respectively. Signals of a higher-level priority take precedence over signals of lower priority even though the lower-priority condition occurred first. Annunciate all events regardless of priority or order received.
- Noninterfering: An event on one zone does not prevent the receipt of signals from any other zone. All zones are manually resettable from the FACP after the initiating device or devices are restored to normal. The activation of an addressable device does not prevent the receipt of signals from subsequent addressable device activations.
 - o Transmission to an approved Supervising Station: Automatically route alarm, supervisory, and trouble signals via an IP communicator to the Dekalb County School System supervising station and monitoring service provider.
 - o FACP shall have the capability to provide remote access via an Internet/Intranet Interface. The Internet interface shall provide an alternative access to system information using the familiar interface of a standard Internet browser. A remotely located fire professional can use this access to analyze control panel status during non-alarm conditions and can also use this information to assist local fire responders during alarm conditions.
- Annunciation: Operation of alarm and supervisory initiating devices shall be annunciated at the FACP and the remote annunciator, indicating the type of device, the operational state of the device (i.e alarm, trouble or supervisory) and shall display the custom label associated with the device.
- General Alarm: A system general alarm shall include:
 - o Indication of alarm condition at the FACP and the annunciator(s).
 - o Identification of the device /zone that is the source of the alarm at the FACP and the annunciator(s).
 - o Operation of audible and visible notification appliances until silenced at FACP.
 - o Closing doors normally held open by magnetic door holders.
 - o Unlocking designated doors.
 - o Shutting down supply and return fans serving zone where alarm is initiated.
 - o Closing smoke dampers on system serving zone where alarm is initiated.
 - o Initiation of smoke control sequence.
 - o Transmission of signal to the supervising station.
- Initiation of elevator Phase I functions (recall, shunt trip, illumination of indicator in cab, etc.) in accordance with ASME/ANSI A17.1, when specified detectors or sensors are activated, as appropriate.
- Supervisory Operations: Upon activation of a supervisory device such as a [fire pump power failure,] [low air pressure switch, and][none] tamper switch, the system shall operate as follows:
 - o Activate the system supervisory service audible signal and illuminate the LED at the control unit and the remote annunciator.
 - o Pressing the Supervisory Acknowledge Key will silence the supervisory audible signal while maintaining the Supervisory LED "on" indicating off-normal condition.
 - o Record the event in the FACP historical log.
 - o Transmission of supervisory signal to the supervising station.
 - o Restoring the condition shall cause the Supervisory LED to clear and restore the system to normal.
 - o Alarm Silencing: If the "Alarm Silence" button is pressed, all audible [and visible][none] alarm signals shall cease operation.
- System Reset:
 - o The "System Reset" button shall be used to return the system to its normal state. Display messages shall provide operator assurance of the sequential steps ("IN PROGRESS", "RESET COMPLETED") as they occur. The system shall verify all circuits or

devices are restored prior to resetting the system to avoid the potential for re-
alarming the system. The display message shall indicate "ALARM PRESENT, SYSTEM
RESET ABORTED."

- Should an alarm condition continue, the system will remain in an alarmed state.
- WALKTEST: The system shall have the capacity of 8 programmable passcode protected one person testing groups, such that only a portion of the system need be disabled during testing. The actuation of the "enable one person test" program at the control unit shall activate the "One Person Testing" mode of the system as follows:
- Install Mode: The system shall have provide the capability to group all non-commissioned points and devices into a single "Install Mode" trouble condition allowing an operator to more clearly identify event activations from commissioned points and devices and in occupied areas.
- Analog Smoke Sensors:
 - Monitoring: FACP shall individually monitor sensors for calibration, sensitivity, and alarm condition, and shall individually adjust for sensitivity. The control unit shall determine the condition of each sensor by comparing the sensor value to the stored values.
 - Environmental Compensation: The FACP shall maintain a moving average of the sensor's smoke chamber value to automatically compensate for dust, dirt, and other conditions that could affect detection operations.
 - Programmable Sensitivity: Photoelectric Smoke Sensors shall have 7 selectable sensitivity levels ranging from 0.2% to 3.7%, programmed and monitored from the FACP.
 - Sensitivity Testing Reports: The FACP shall provide sensor reports that meet NFPA 72 calibrated test method requirements. The reports shall be viewed on a CRT Display or printed for annual recording and logging of the calibration maintenance schedule.
 - The FACP shall automatically indicate when an individual sensor needs cleaning. The system shall provide a means to automatically indicate when a sensor requires cleaning. When a sensor's average value reaches a predetermined value, (3) progressive levels of reporting are provided. The first level shall indicate if a sensor is close to a trouble reporting condition and will be indicated on the FACP as "ALMOST DIRTY." This condition provides a means to alert maintenance staff of a sensor approaching dirty without creating a trouble in the system. If this indicator is ignored and the second level is reached, a "DIRTY SENSOR" condition shall be indicated at the FACP and subsequently a system trouble is reported [to the Supervising Station][none]. The sensor base LED shall glow steady giving a visible indication at the sensor location. The "DIRTY SENSOR" condition shall not affect the sensitivity level required to alarm the sensor. If a "DIRTY SENSOR" is left unattended, and its average value increases to a third predetermined value, an "EXCESSIVELY DIRTY SENSOR" trouble condition shall be indicated at the control unit.
- Audible Alarm Notification: By voice evacuation and tone signals on loudspeakers in areas as indicated on drawings.
- Automatic Voice Evacuation Sequence:
 - The audio alarm signal shall consist of an alarm tone for a maximum of five seconds followed by an automatic digital voice message. At the end of the voice message, the alarm tone shall resume. This sequence shall sound continuously until the "Alarm Silence" switch is activated.
 - All audio operations shall be activated by the system software so that any required future changes can be facilitated by authorized personnel without any component rewiring or hardware additions. Speaker: Speaker notification appliances shall be listed to UL 1480.

- The speaker shall operate on a standard 25VRMS or 70.7VRMS NAC using twisted/shielded wire.
- The following taps are available: 0.25W, 0.50W, 1.0W and 2.0W. At the 1.0W tap, the speaker has minimum UL rated sound pressure level of 84dBA at 10 feet.
- The speaker shall have a frequency response of 400 to 4000 Hz for Fire Alarm and 125 to 12kHz for General Signaling.
- Manual Voice Paging
 - The system shall be configured to allow voice paging. Upon activation of any speaker manual control switch, the alarm tone shall be sounded over all speakers in that group.
 - The control panel operator shall be able to make announcements via the push-to-talk paging microphone over the pre-selected speakers.
 - Total building paging shall be accomplished by the means of an "All Call" switch.
- Fire Suppression Monitoring:
 - Water flow: Activation of a water flow switch shall initiate general alarm operations.
 - Sprinkler valve tamper switch: The activation of any valve tamper switch shall activate system supervisory operations.
 - Hood suppression systems shall be monitored for initiation.
 - Power Requirements
 - The control unit shall receive AC power via a dedicated fused disconnect circuit.
 - The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal AC power in a normal supervisory mode for a period of 24 hours with 5 minutes of alarm operation at the end of this period. The system shall automatically transfer to battery standby upon power failure. All battery charging and recharging operations shall be automatic.

Quality Assurance

- Installer Qualifications: A factory authorized installer is to perform the work of this section.
- Each and every item of the Fire Alarm System shall be listed under the appropriate category by Underwriters Laboratories, Inc. (UL), and shall bear the "UL" label.
- Warranty: Provide maintenance of fire alarm systems and equipment for a period of 12 months, using factory-authorized service representatives.

EXTRA MATERIALS

- General: Furnish extra materials, packaged with protective covering for storage, and identified with labels clearly describing contents as follows:
- Manual Stations: Furnish quantity equal to 10 percent of the number of manual stations installed; minimum of 1.
- Notification Appliances: Furnish quantity equal to 10 percent of each type and number of units installed, but not less than one of each type.
- Smoke Detectors or Sensors, Fire Detectors, and Flame Detectors: Furnish quantity equal to 10 percent of each type and number of units installed but not less than one of each type.
- Detector or Sensor Bases: Furnish quantity equal to 2 percent of each type and number of units installed but not less than one of each type.

PRODUCTS

Fire Alarm Control Panel (FACP)

- General: Comply with UL 864, "Control Units and Accessories for Fire Alarm Systems".
- The following FACP hardware shall be provided:
 - 2,000 point capacity where (1) point equals (1) monitor (input) or (1) control (output).

- Auxiliary electronically resettable fused 2A @24VDC Output, with programmable disconnect operation for 4-wire detector reset.
- Auxiliary Relay, SPDT 2A @32VDC, programmable as a trouble relay, either as normally energized or de-energized, or as an auxiliary control.
- Three (3) Class B Notification Appliance Circuits .
- Programmable DACT for Point Reporting.
- Alphanumeric Display and System Controls: Panel shall include an 80 character LCD display to indicate alarm, supervisory, and component status messages and shall include a keypad for use in entering and executing control commands.
- Voice Alarm: Provide an emergency communication system, integral with the FACP, including voice alarm system components, microphones, amplifiers, and tone generators. Features include:
 - Amplifiers comply with UL 1711, "Amplifiers for Fire Protective Signaling Systems." Amplifiers shall provide an onboard local mode temporal coded horn tone as a default backup tone. Test switches on the amplifier shall be provided to test and observe amplifier backup switchover. Each amplifier shall communicate to the host panel amplifier and NAC circuit voltage and current levels for display on the user interface. Each amplifier shall be capable of performing constant supervision for non-alarm audio functions such as background music and general paging.
 - Emergency voice communication audio controller module shall provide up to 32 minutes of message memory for digitally stored messages. Provide supervised connections for master microphone and up to 5 remote microphones.
 - Status annunciator indicating the status of the various voice alarm speaker zones.

Remote LCD Annunciator

- Provide a remote LCD Annunciator, where required, with the same "look and feel" as the FACP operator interface. The Remote LCD Annunciator shall use the same Primary Acknowledge, Silence, and Reset Keys; Status LEDs and LCD Display as the FACP.
- Should an abnormal condition be detected the appropriate LED (Alarm, Supervisory or Trouble) shall flash. The unit audible signal shall pulse for alarm conditions and sound steady for trouble and supervisory conditions.
- Operator keys shall be key switch enabled to prevent unauthorized use. The key shall only be removable in the disabled position. Acknowledge, Silence and Reset operation shall be the same as the FACP.

Addressable Manual Pull Stations

- Description: Addressable single- or double-action type, red LEXAN, with molded, raised-letter operating instructions of contrasting color. Station will mechanically latch upon operation and remain so until manually reset by opening with a key common with the control units.
- Protective Shield: Provide a tamperproof, clear LEXAN shield and red frame that easily fits over manual pull stations. When shield is lifted to gain access to the station, a battery powered piercing warning horn shall be activated. The horn shall be silenced by lowering and realigning the shield. The horn shall provide 85dB at 10 feet and shall be powered by a 9 VDC battery.

Smoke Sensors

- General: Comply with UL 268, "Smoke Detectors for Fire Protective Signaling Systems." Include the following features:
 - Operating Voltage: 24 VDC, nominal.
 - Each sensor base shall contain an LED that will flash each time it is scanned by the Control Unit. In alarm condition, the sensor base LED shall be on steady.

- Each sensor base shall contain a magnetically actuated test switch to provide for easy alarm testing at the sensor location.
- Each sensor shall be scanned by the Control Unit for its type identification to prevent inadvertent substitution of another sensor type. Upon detection of a "wrong device", the control unit shall operate with the installed device at the default alarm settings for that sensor; 2.5% obscuration for photoelectric sensor, 135-deg F and 15-deg F rate-of-rise for the heat sensor, but shall indicate a "Wrong Device" trouble condition.
- Sensors include a communication transmitter and receiver in the mounting base having a unique identification and capability for status reporting to the FACP. Sensor address shall be located in base to eliminate false addressing when replacing sensors.
- Removal of the sensor head for cleaning shall not require the setting of addresses.
- Type: Smoke sensors shall be of the photoelectric or combination photoelectric / heat type.
- Bases: Relay output, sounder and isolator bases shall be supported alternatives to the standard base.
- Duct Smoke Sensor: Photoelectric type, with sampling tube of design and dimensions as recommended by the manufacturer for the specific duct size and installation conditions where applied. Sensor includes relay as required for fan shutdown.
- Environmental compensation, programmable sensitivity settings, status testing, and monitoring of sensor dirt accumulation for the duct smoke sensor shall be provided by the FACP.
- The Duct Housing shall provide a supervised relay driver circuit for driving up to 15 relays with a single "Form C" contact rated at 7A@ 28VDC or 10A@ 120VAC. This auxiliary relay output shall be fully programmable. Relay shall be mounted within 3 feet of HVAC control circuit.
- Duct Housing shall provide two (2) Test Ports for measuring airflow and for testing. These ports will allow aerosol injection in order to test the activation of the duct smoke sensor.
- For maintenance purposes, it shall be possible to clean the duct housing sampling tubes by accessing them through the duct housing front cover.
- Each duct smoke sensor shall have a Remote Test Station with an alarm LED and test switch.
- Where indicated provide a NEMA 4X weatherproof duct housing enclosure that shall provide for the circulation of conditioned air around the internally mounted addressable duct sensor housing to maintain the sensor housing at its rated temperature range. The housing shall be UL Listed to Standard 268A.

Heat Sensors

- Thermal Sensor: Combination fixed-temperature and rate-of-rise unit with plug-in base and alarm indication lamp; 135-deg F fixed-temperature setting except as indicated.
- Sensor fixed temperature sensing shall be independent of rate-of-rise sensing and] programmable to operate at 135-deg F or 155-deg F. Sensor rate-of-rise temperature detection shall be selectable at the FACP for either 15-deg F or 20-deg F per minute.

Addressable Circuit Interface Modules

- Addressable Circuit Interface Modules: Arrange to monitor or control one or more system components that are not otherwise equipped for addressable communication. Modules shall be used for monitoring of water flow, valve tamper, non-addressable devices, and for control of AHU systems.
- All Circuit Interface Modules shall be supervised and uniquely identified by the control unit. Module identification shall be transmitted to the control unit for processing according to the program instructions. Modules shall have an on-board LED to provide an indication that the module is powered and communicating with the FACP. The LEDs shall provide a troubleshooting aid since the LED blinks on poll whenever the peripheral is powered and communicating.

Magnetic Door Holders

- Description: Units shall be listed to UL 228. Units are equipped for wall or floor mounting as indicated and are complete with matching door plate. Unit shall operate from a 120VAC, a 24VAC or a 24VDC source, and develop a minimum of 25 lbs. holding force.
- Material and Finish: All Metal Exterior Construction to match door hardware.

Standard Alarm Notification Appliances

- Visible/Only: Strobe shall be listed to UL 1971. The V/O shall consist of a xenon flash tube and associated lens/reflector system. The V/O enclosure shall mount directly to standard single gang, double gang or 4" square electrical box, without the use of special adapters or trim rings. V/O appliances shall be provided with different minimum flash intensities of 15cd, 75cd and 110cd. Provide a label inside the strobe lens to indicate the listed candela rating of the specific Visible/Only appliance.
- Speaker/Visible: Combination Speaker/Visible (S/V) units combine the speaker and visible functions into a common housing. The S/V shall be listed to UL 1971 and UL 1480.
- Twisted/shielded wire is required for speaker connections on a standard 25VRMS or 70.7VRMS NAC.
- The following taps are available: 0.25W, 0.50W, 1.0W and 2.0W. At the 1.0W tap, the speaker has minimum UL rated sound pressure level of 84dBA at 10 feet.
- The S/V shall have a frequency response of 400 to 4000 Hz for Fire Alarm and 125 to 12 kHz for General Signaling.
- Notification Appliance Circuit provides synchronization of strobes at a rate of 1Hz and operates horns with a Temporal Code Pattern operation. The circuit shall provide the capability to silence the audible signals, while the strobes continue to flash, over a single pair of wires. The capability to synchronize multiple notification appliance circuits shall be provided.

NAC Power Extender

- The IDNet NAC Power Extender panel shall be a stand-alone panel capable of powering a minimum of 4 notification appliance circuits. Notification appliance circuits shall be Class B, Style Y rated at 2 amps each. Panel shall provide capability to be expanded to 8 notification appliance circuits.
- The internal power supply & battery charger shall be capable of charging up 12.7 Ah batteries internally mounted or 18Ah batteries mounted in an external cabinet.
- Alarms from the host fire alarm control panel shall signal the NAC power extender panel to activate. The panel shall monitor itself and each of its NACs for trouble conditions and shall report trouble conditions to the host panel.

EXECUTION

Installation, General

- Install system components and all associated devices in accordance with applicable NFPA Standards and manufacturer's recommendations.
- Installation personnel shall be supervised by persons who are qualified and experienced in the installation, inspection, and testing of fire alarm systems. Examples of qualified personnel shall include, but not be limited to, the following:
 - Factory trained and certified personnel.
 - National Institute of Certification in Engineering Technologies (NICET) fire alarm level II certified personnel.
 - Personnel licensed or certified by state or local authority.

Equipment Installation

- Furnish and install a complete Fire Alarm System as described herein and as shown on the plans. Include sufficient control unit(s), annunciator(s), manual stations, automatic fire

detectors, smoke detectors, audible and visible notification appliances, wiring, terminations, electrical boxes, Ethernet drops, and all other necessary material for a complete operating system.

- Water-Flow and Valve Supervisory Switches: Connect for each sprinkler valve required to be supervised.
- Device Location-Indicating Lights: Locate in the public space immediately adjacent to the device they monitor.
- Install manual station with operating handle 48 inches (1.22 m) above floor. Install wall mounted audible and visual notification appliances not less than 80 inches (2.03 m) above floor to bottom of lens and not greater than 96 inches (2.44 m) above floor to bottom of lens.
- Mount outlet box for electric door holder to withstand 80 pounds pulling force.
- Automatic Detector Installation: Conform to NFPA 72.
- Ethernet Drop: A standard RJ-45 Ethernet connection to the owner's Ethernet network shall be provided at each fire alarm control panel as part of the contract.

Wiring Installation

- System Wiring: Wire and cable shall be a type listed for its intended use by an approval agency acceptable to the Authority Having Jurisdiction and shall be installed in accordance with the appropriate articles from the current approved edition of NFPA 70: National Electric Code (NEC).
- Contractor shall obtain from the Fire Alarm System Manufacturer written instruction regarding the appropriate wire/cable to be used for this installation. No deviation from the written instruction shall be made by the Contractor without the prior written approval of the Fire Alarm System Manufacturer.
- Color Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color code for alarm initiating device circuits wiring and a different color code for supervisory circuits. Color-code notification appliance circuits differently from alarm-initiating circuits. Paint fire alarm system junction boxes and covers red.
- Fire Alarm Control Panel

Field Quality Control

- Manufacturer's Field Services: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pretesting, testing, and adjustment of the system.
- Service personnel shall be qualified and experienced in the inspection, testing, and maintenance of fire alarm systems. Examples of qualified personnel shall be permitted to include, but shall not be limited to, individuals with the following qualifications:
 - Factory trained and certified.
 - National Institute for Certification in Engineering Technologies (NICET) fire alarm certified.
 - International Municipal Signal Association (IMSA) fire alarm certified.
 - Certified by a state or local authority.
 - Trained and qualified personnel employed by an organization listed by a national testing laboratory for the servicing of fire alarm systems.
- Pretesting: Determine, through pretesting, the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning

Inspection:

- Inspect equipment installation, interconnection with system devices, mounting locations, and mounting methods.
- Verify that units and controls are properly installed, connected, and labeled and that interconnecting wires and terminals are identified.
- Acceptance Operational Tests:

- Perform operational system tests to verify conformance with specifications:
 - o Each alarm initiating device installed shall be operationally tested. Each device shall be tested for alarm and trouble conditions. Contractor shall submit a written certification that the Fire Alarm System installation is complete including all punch-list items. Test battery operated emergency power supply. Test emergency power supply to minimum durations specified. Test Supervising Station Signal Transmitter. Coordinate testing with Supervising Station monitoring firm/entity.
 - o Test each Notification Appliance installed for proper operation.
 - o Test Fire Alarm Control Panel and Remote Annunciator.
- Provide minimum 10 days notice of acceptance test performance schedule to Owner, and local Authority Having Jurisdiction.
- Retesting: Correct deficiencies indicated by tests and completely retest work affected by such deficiencies. Verify by the system test that the total system meets the Specifications and complies with applicable standards.
- Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log. Use NFPA 72 Forms for documentation.
- Final Test, Record of Completion, and Certificate of Occupancy:
- Test the system as required by the Authority Having Jurisdiction in order to obtain a certificate of occupancy. Provide completed NFPA 72 Record of Completion form to Owner and AHJ.

Training

- Provide the services of a factory-authorized service representative to demonstrate the system and train Owner's maintenance personnel as specified below.
- Train Owner's maintenance personnel in the procedures and schedules involved in operating, troubleshooting, servicing, and preventive maintaining of the system. Provide a minimum of 8 hours' training.
- Schedule training with the Owner at least seven days in advance.

Security System

PART 1: GENERAL

1.01 General:

- (a) Provide and install all security system components as indicated on the approved drawings and/or as specified herein in the specifications. The work in this section shall include, but not be limited to, furnishing all equipment, materials, labor to install, test and place into approved operation complete systems for the following. The work shall consist of, but not be limited to the following systems:
1. Provide and install complete Supervised Security Intrusion Alarm System including all components and devices as indicated on the Drawings. The system shall be complete with all required wiring and programming needed to make a complete system.
 2. Provide and install complete Access Control System including all components and devices as indicated on the Drawings. The system shall be complete with all required wiring and programming needed to make a complete system.
 3. Provide and install complete Integrated Audio and Video Security Communication system including all components and devices as indicated on the Drawings. The system shall be complete with all required wiring and programming needed to make a complete system.
 4. Provide and install complete CCTV System including all components and devices as indicated on the Drawings. The system shall be complete with all required wiring and programming needed to make a complete system.

1.02 System Features:

(a) Supervised Security Intrusion Alarm System shall consist of motion detectors, door contacts and burglar panel providing alarm notification via telephone dialer capture device in ContactID format over the DCSS wide area network.

1. Provide motion detectors in all first floor rooms with exterior windows or exterior doors. Provide wire guards for all devices installed in Gymnasiums or enclosed PE Areas.
2. Provide motion detectors at all doors leading to the outside and interior stairwells on all levels.
3. Provide industrial type door contacts for all exterior doors at Boiler Rooms with exterior doors, roof hatches, Mechanical/Electrical Rooms with exterior doors and at all exterior storage or multipurpose buildings.
4. Provide motion detectors with long range lens in each corridor on all floors.
5. Provide three (3) key pads; one at the main front door, kitchen door, gymnasium door and any other designation located on the drawing by the DeKalb County School System, Security Systems Department.
6. Provide blue strobe light in the Main Front Lobby ceiling and interior sirens located throughout the building on the first floor to provide full sound coverage to the building if the system is activated.

(b) Access Control System shall be a card access system.

1. Provide card access/integrated audio and video door station communication system components and devices as indicated on the Drawings. The Integrated audio and video door station card access reader in the door station specification will be wired to the card access controller for keyless entry. Install master station in the reception/front office area, rack mount the Central exchange unit in the CCTV rack located in the MDF room.
2. Refer to the attached Security Door Details. PDF for card access drawings 1 and 2 and for non card access drawings 3 and 4 for specific details for each type of door requiring access control hardware or security door contact.
3. Card Access controller will log who enters and exits the building.
4. Card access controller will be connected via the DeKalb County Schools wide area network to the card access 3000 server located at the Sam A Moss Service Center.

(c) The CCTV system will be a Network Video Recorder system with megapixel cameras that are powered and connected to the DCSS network by a Power Over Ethernet network switch. The NVR, POE hardware will be installed in an approved hardware rack. The NVR, POE will be powered from a rack mounted uninterruptible power supply that is plugged into a back up generator circuit receptacle. Approved DCSS network users will have the capability to maintain, view, search, and export video from any camera with a DCSS workstation with the video management system/client software PC requirements.

1. Provide a Network Video Recorder (NVR) with the following specifications: 280 Mbps to support as many as 128 video channels, optimized to support pre installed network video software, expandable by networking an unlimited number of servers and encoders depending on available network bandwidth, can be used as a standalone system or as part of a network of servers, NVR monitoring from a video management system/client software, i7 processor and 8GB of RAM, two gigabit network ports, two DVI video output ports, five USB ports, up to 24 TB storage in Raid 5 or JBOD, DVD RW, optional SCSI card, network health and event monitoring support.
2. Provide indoor/outdoor vandal resistant megapixel dome cameras with low light, wide dynamic range, day/night, auto focus varifocal 2.8-10mm megapixel lens, Power Over Ethernet, audio in/out, H.264 and MJPEG compression, up to two simultaneous video streams, web interface, built in analytics, window blanking. Provide the

appropriate optional accessories for ceiling/wall mount for inside/outside camera mounting. Cameras will be placed at locations as indicated on the Drawings. The number of cameras to be installed will vary by school layout.

3. Provide a POE network switch which will provide camera power and a network connection. This hardware will need to be approved by the DCSS MIS department to meet the DCSS network hardware specifications.
4. Provide rack mounted UPS for power to the NVR and POE hardware.
5. Provide 19" Wall mounted rack (Swivel type and black) for remote CCTV equipment located in IDF rooms and 19" floor rack (black) with top ladder cable support (walk behind for service) for head end CCTV equipment located in MDF room.

PART 2 – PRODUCTS

2.01 SECURITY INTRUSION ALARM SYSTEM:

(a) The Supervised Security Intrusion Alarm System shall be a system of motion detectors and door contacts that report to a central station receiver which shall provide alarm notification via telephone capture device over the DCSS wide area network. The system shall consist at a minimum of the following components:

- o Supervised Security Intrusion Alarm System Main Control Panel shall be Controller/Communicator Panel as indicated on the Documents. Provide complete with DTK-120HW Surge Suppressor, two DTKMRJ31SCW Telephone Line Surge Suppressors, Telephone Communication Cords, power supply and battery backup (minimum of 24 hours of Standby and 10 minutes of Alarm). The Security Control Panel shall be capable of supervising and controlling up to eight (8) user defined partitions and up to sixteen (16) keypad consoles. System shall be capable of utilizing wired, multiplexed and wireless devices to provide minimum of 208 zones. System shall provide a minimum of 99 user codes. Provide dual phone line and LAN network module for connection to local LAN Network. Each input Module installed must be mounted in a separate cabinet, powered by a separate power source and battery backup (minimum of 24 hours of Standby and 10 minutes of Alarm) per the manufacturer's specifications. The Contractor shall verify the circuit breaker that feeds the Main Control Panel, note on the Panel Schedule that this breaker serves the Security System Control Panel and provide and install "Lock On" device onto the circuit breaker(s).
- o Acceptable Products:
 - M1G Control Panel M1GKS
 - Ethernet Module ELKM1XEP
 - Output Expander ELKM1XOVR
 - Input Expander ELKM1XIN
 - Data Bus Hub ELK M1DBHR
 - Relay Board ELKM1RB
 - STRW 28"H Box ELKSWB28
 - Altronix SMP5PMCTX
 - Burglary IP Communicator (Teldat 9T-ALMPH108)

(b) Motion Detectors: Intrusion detection devices as shown on the drawings with a minimum of 50' X 50' coverage with standard lens or minimum 10' X 100' coverage with long range lens. Motion detectors located in Gym Areas will require wire guards. Wire Guards to be STI #9620.

- o Acceptable Products:
 - Optex (Wall mount CX-502 CX-702) (Ceiling FX360)
 - Optex wireless CX-702RSi BX-80NRi

(c) Wireless zone expansion:

- Acceptable Products:
 - Inovonics Wireless EN4232MR Receiver
- (d) Keypad: Keypad to be Addressable Alphanumeric Keypad Console, surface mounted as shown on the Drawings. Install in STI # 6560 surface mounted keypad cover with lock.
 - Acceptable Products:
 - ELKM1KP2
 - ELK-M1KPNV
- (e) Blue Security Strobe, ceiling or wall mounted, located in the Main Front Lobby. Connect the strobe to the Supervised/Addressable Security Intrusion System.
 - Acceptable Products:
 - ELK-SLB1 ELK-1RT
- (f) Provide interior Security Siren, flush ceiling mounted, connected to the Supervised/Addressable Security Intrusion System. Locate throughout the building for full coverage.
 - Acceptable Products:
 - ELK – SS36
- (g) Security System Cables: All wiring shall be installed with yellow cable.
 - All wiring and cables exposed in mechanical/boiler rooms, concealed inside walls, concealed above non-accessible ceilings or underground outside the building shall be installed in conduit. All line voltage wiring shall be installed in a conduit. All low voltage wiring installed above accessible ceiling may be installed without conduit by using cable with a jacket that is U.L. listed for installation in a return air plenum.
 - Plenum rated cable installed in corridors and other accessible ceiling areas shall be installed in existing cable hangers/tray or the Contractor shall provide cable hangers or cable tray, typical to the existing hangers or tray presently installed in the school.
 - All cable ties shall be plenum rated.
 - All devices shall be installed with a back box for cable terminations and cable splices. All back boxes shall be sized for the device mounted onto the back box. All back boxes that are surface mounted (exposed) shall have no conduit knockouts on the sides of the box, all conduits shall be terminated via threaded hubs. Use Wire mold back boxes and Wire mold Series V700 One-Piece Surface Steel Raceway for all surface mounted installations in public areas and use conduits with cast boxes in all Non-Public Areas. Paint the Wire mold back boxes and raceway the same color as the wall it is mounted onto.

2.02 ACCESS CONTROL SYSTEM:

- (a) Access Control System shall consist of a main controller, door panic hardware, electric power transfer (EPT), door power supply, card reader, "Request to Exit" PIR units, and door contact at specific doors as indicated on the documents. The system shall communicate via the school's wide area network. The system shall consist of the following components:
 - Access Control System Main Control Panel: Control Panel shall be complete Cabinet, Accelerator board, Network module, Power Supplies and Battery Backup (minimum of 24 hours) and Power Supplies for electric door lock power with Battery Backup (minimum of 24hours). Provide complete with DTK-120HW Surge Suppressor, all input/output cards and door expander panels as required. The Contractor shall verify the circuit breaker that feeds the Main Control Panel, Note on the Panel Schedule that this breaker serves the Control Access System Control Panel and provide and install "Lock On" device onto the circuit breaker(s). The Contractor shall run the local area network cable that connects the Main Control

Panel to the local area network router by labeling the router cable "Card Access-Security" in the MDF or IDF room. The Card Access static IP VLAN number, router bank and port will be determined by the DCSS MIS department.

- Acceptable Products:
 - Continental Instrument Turbo 8-door intelligent controller (CICP1800T), Accelerator Board(CICP18ACCB), NIC Module (CICP18ACCNBD)
 - Super Two 2-door intelligent controller(CICP1300), NIC Module (CICP1300NETBD)
- (b) Card Reader: All approved card access doors will have a Multi-Technology Reader with the capability of reading all types/technologies of cards.
 - Acceptable Products:
 - XCEED ID ISO Multi-technology Reader XF1500P-B, XF1100
 - HID ProxPoint Proximity reader Model# 6005bkb00 (for use in AX Aiphone Door station ONLY)
- (c) Door Panic Hardware: Hardware to be Electric Latch Retraction type with heavy duty Fail Secure Solenoids, and an Electrical Power Transfer unit to get power from door jamb to door hardware. Contractor must size door hardware frame hinge and box rough in for card access doors. Contractor must size door hardware Power supply as required complete with adequate panic device control boards as required.
 - Acceptable Products:
 - Von Duprin # EL99NL
 - Von Duprin Electrical Power Transfer # EPT-10
 - Von Duprin # PS914 Power Supply
 - Von Duprin # PS900-2RS Relay EL Panic device control board
- (d) "Request to Exit" PIR: Egress Motion Sensor to be ceiling/wall mounted type with adjustable pattern and two (2) Form C output relays with sounder.
 - Acceptable Products:
 - GE # RCR-REX-W and single gang wall plate #RCR-WP-W (18/6 stranded, shielded plenum cable from controller to REX).
 - Honeywell # IS320WH and trim plate # IS310WHTP # (5-531-395-01) (18/6 stranded, shielded plenum cable from controller to REX).
- (e) Door Contacts: Door Contacts to be recessed type with minimum of 3/4" Contact with minimum 3/4" Magnet and 7/8" Gap. Run cable back to the door controller as required. Match door contact to door frame color.
 - Acceptable Products:
 - GE # SR-1078C
 - Honeywell # 947-75T
- (f) Integrated Audio & Video System: Central Exchange Unit (located in MDF room), Master Station (located in the front office/reception Area), Door Station (located by main front door and or any other door that will be determined on drawings by DCSS, Security Systems Department). The system shall have a hands free or PTT communication, Video with minimum 3 1/2" LCD Screen (Master station end), selective door release (Master station end), and HID ProxPoint card reader (Door station end) to work with separate Card Access system controller. The Door station is to be vandal resistant, flush mount (new building), surface mount (existing building), and stainless steel faceplate type with built in HID Smart Card Reader. Run cable to the AX integrated audio & video system as required using plenum rated category 6 cable.
 - Acceptable Products:

- Central Exchange Station - Aiphone # AX-084C including (2) PS-2420UL Power Supply (one for Audio, one for Video).
- Master Station - Aiphone # AX-8MV.
- Door Station - Aiphone # AX-DVF-P. (Use this model for new building construction Install/flush mount).
- Door Station - Aiphone # AX-DV-P. (Use this model for existing building install/surface mount).
- Category 6 (23 AWG) plenum rated cable (Yellow).

(g) Control Access System Cables shall be plenum rated. Install the number of conductors and conductor size as required by the equipment manufacturer.

(h) All devices shall be installed with a backbox for cable terminations and cable splices. All back boxes shall be sized for the device mounted onto the back box. All back boxes that are surface mounted (exposed) shall have no conduit knockouts on the sides of the box, all conduits shall be terminated via threaded hubs. Use Wire mold back boxes and Wire mold Series V700 One-Piece Surface Steel Raceway for all surface mounted installations in public areas and use conduits with cast boxes in all non-public areas. Paint the Wire mold back boxes and raceway the same color as the wall it is mounted onto.

2.03 CCTV SYSTEM:

(a) The CCTV System shall be a Network Video Recorder Ethernet ready system with the ability to be connected to the DCSS wide area network for viewing via a workstation with a web browser or NVR video management system/client software. The Contractor shall run the local area network cable that connects the NVR to the local area network POE switch by labeling the router cable "CCTV-Security". The CCTV NVR and IP cameras static IP VLAN number, router bank and ports will be determined by the DCSS Security/MIS Department. The system shall consist of the following components:

- Indoor/outdoor vandal resistant megapixel dome cameras with low light, wide dynamic range, day/night, auto focus varifocal 2.8-10mm megapixel lens, Power Over Ethernet, audio in/out, H.264 and MJPEG compression, up to two simultaneous video streams, web interface, built in analytics, window blanking. Provide the appropriate optional accessories for ceiling/wall mount for inside/outside camera mounting. Focus and aim the cameras with the approval by the owner.
- Required Products:
 - IP Megapixel Camera
 - Appropriate optional accessories for wall/ceiling mount hardware applications.

(b) POE switch to camera cable connection/power: The approved camera shall be connected via green plenum rated Category 6 cable RJ45 connectors to provide single channel video and power over the standard EIA/TIA 568B structured building wiring. All cable runs need to be determined by POE location not to exceed IP limits to IDF, MDF locations.

- Approved Products:
 - Green Plenum CAT 6 cable, RJ45 Connector
 - Power Over Ethernet switch (TBD with DCSS MIS Dept.)

(c) Network Video Recorder (NVR) with the following specifications: 280 Mbps to support as many as 128 video channels, optimized to support pre installed network video software, expandable by networking an unlimited number of servers and encoders depending on available network bandwidth, can be used as a **standalone** system or as part of a network of servers, NVR monitoring from a video management/client software, 2nd

generation i7 processors and 8GB of RAM, two gigabit network ports, two DVI video output ports, **five USB** ports, up to 24 TB storage in Raid 5 or JBOD, DVD RW, optional SCSI card, network health and event monitoring support.

- Required Products:
 - Server Recorder, 18 TB - includes 8 IP camera license
 - IP camera one time license fee per camera
 - Server Recorder internal raid card

- (d) UPS: UPS to be 120volt input and 120 Volt output rack mounted. The Contractor shall verify the required breaker amperage and receptacle type. The Contractor shall verify the circuit breaker that feeds the UPS and note on the panel schedule that this breaker serves the CCTV UPS and provide and install "Lock On" device onto the circuit breaker(s).
 - Acceptable Products:
 - APC

- (e) Provide and install 19" wall mounted racks in all IDF rooms. Provide and install 19" floor mounted full height racks in the MDF Room * NOTE: All accessories needed to accommodate CCTV equipment needs to be added to the rack purchase (Example: rack fan assembly, power strips, ladder rack runway/angles/mounting plates/cable management). Racks must be approved by the Dekalb County Schools Security Department. Coordinate location of rack and power requirements with the DCSS MIS/Security Dept.
 - Approved Products:
 - Wall Mounted Racks – Hoffman, Chatsworth, West Penn.
 - Floor Mounted Racks - Hoffman, Chatsworth, West Penn.

- (f) Provide and install LCD flat panel monitors complete with wall mount bracket and power receptacles in place as needed for CCTV viewing. Meet with Dekalb County School System, Department of Security Systems on CCTV monitor information.
 - Acceptable Product:
 - High Definition Flat Panel Monitor with tilt wall mount bracket. *Note: Discuss monitor approval with owner.

PART 3 – EXECUTION

3.01 MANUFACTURER'S RECOMMENDATIONS:

- (a) All equipment shall be installed as per the Manufacturer's Recommendations and as required by the Specifications.

3.02 INSTALLATION:

- (a) Provide all equipment, wiring, conduit and outlet boxes required for the installation of a complete and operating system in accordance with applicable local, state and national codes, the manufacturer's recommendations and the Contract Documents.
- (b) The manufacturer's authorized representative/installer shall provide supervision of final system panel connections, perform a complete functional test of the system and submit a written report to the contractor/DeKalb County School System attesting to the proper operation of the system.
- (c) All equipment and wiring shall be guaranteed against defects in materials and workmanship for a minimum of one-year period from the acceptance and beneficial use of the system. Emergency repairs, programming changes and additions to the system made by owner's personnel shall not invalidate this warranty.
- (d) Upon completion of the installation, the electrical contractor shall provide to the Engineer with a copy to the manufacturer's representative, signed written statement attesting that all system equipment was installed in accordance with these specifications and in

accordance with wiring diagrams, instructions and directions provided to the contractor by the manufacturer.

- (e) Contractor will furnish upon completion a complete as-built diagram of new system for final walk through and acceptance by the owner. Drawings shall be provided, both hard copy and electronic copy in AutoCAD 2009 format and PDF.
- (f) All system devices shall be mounted on wall surfaces so as to provide maximum coverage and use of the device. All devices shall be marked with an indelible marker on their surface indicating their zone identifications.
- (g) Installer shall provide the DeKalb County School System with the outgoing phone line number used by the panels.
- (h) All work shall be performed using licensed installers with current licenses as required by the State of Georgia for this type of work. Provide copies of all licensed personnel to the owner for his review at the shop drawing stage of the project. The licensed personnel shall be on site at all times when the work is being performed at the school.
- (i) The Owner will provide final CCTV camera aiming instructions once the system is operational and can be viewed by the owner. The Contractor shall provide all required personnel and materials needed to re-aim any camera in the system at the instructions of the owner.
- (j) All cables shall be labeled at all termination points within the system with the IP Address or name of the device the cable serves.

3.03 OWNER'S ACCEPTANCE OF SYSTEM:

- (a) Walk through testing of system shall be completed prior to putting on line to the reporting office and shall be conducted at a time when students are not present and there are no activities at the school.
- (b) Walk through testing shall include arming of system and activation of each zone device to insure proper operation, programming and installation of the device.
- (c) Walk through testing shall include but not limited to the following persons: system installer, the Contractor's representative, Dekalb County School System personnel (Job site Project Manager and Security Systems Department).
- (d) Installer shall coordinate the walk through with all parties concerned and provide adequate notice to schedule all parties.
- (e) The contractor will provide the DeKalb County School System cut sheets for equipment installed, detail drawings of each system including all names, serial numbers, zone numbers, IP Addresses, etc. for each system device indicating the exact location of the device or component and a description of the device or component for the owners' use. Drawings will be in AutoCAD format, and PDF. The contractor will provide both a hard copy of the drawings along with electronic copies of all drawings on disk to the owner prior to the final acceptance.
- (f) The contractor shall provide adequate training on each system for each school. Training will be provided at both the school and at other locations as directed by the owner. Training will consist of, but not limited to the following: detailed instructions of how each system operates, programming of the system and system operations in both normal state and activated or alarm states.
- (g) The owner reserves the right to modify the equipment or specifications in order to meet their desired goals.

COMMUNICATIONS

Refer to the IT Design Guidelines and Required Specifications, dated July 25, 2013 for additional information regarding data and communication systems. Where there is a conflict between the information below and information found in the IT Design Guidelines, the IT Design Guidelines shall take precedence.

Data Closets

1. Provide a Main Distribution Facility (MDF) and Intermediate Distribution Facilities (IDFs) as needed to support the structured cable system. Data closets will be located in a way and in sufficient numbers to keep the horizontal distance from any data drop or device (wireless access point, camera, etc.) to the nearest data closet under the maximum 290 feet. The items in this section are to be provided by the Electrical Contractor and the General Contractor.
2. The MDF will be at least 10' by 16' and IDF's will be at least 9' by 9' in size and have finished (i.e., tile) floors and drop ceilings.
3. The MDF will be provided with 6 dedicated 20-amp quad power outlets and one 30-amp dedicated circuit with a L6-30 locking receptacle. Each IDF will be provided with 2 dedicated 20-amp quad power outlets. Additional receptacles can be provided to conform to building codes. The location of the quad outlets will be coordinated with DCSD IT prior to installation. All circuits in the MDF and IDFs will be connected to the school's emergency (generator) panel(s).
4. The MDF and all IDF's will be provided with dedicated HVAC systems (split systems) that are to be connected to the school's emergency (generator) panel(s). The minimum capacity of the unit will be 2 Tons (2400 Btu). These HVAC systems should remain on at all times and should not be controlled by the building management system.
5. At least one wall in the MDF and all IDF's will be lined with ¾" plywood painted with fire retardant paint.
6. Every data cabinet will be provided with a local ground bar (the MDF requires 2 individually grounded bars). The grounding bar will be mounted to the plywood backboard.

Data Cabling Pathway Conduit, Cable Trays and Supports

1. Provide all conduit, cable trays, J-hooks, etc. necessary to deliver structured data and telephone cabling from the MDF to each IDF and from the MDF & IDF's to the individual rooms. The items in this section are to be provided by the Electrical Contractor and the General Contractor.
2. Cable Supports - 4 options
 - a. Wire basket cable tray above ceiling - trapeze' style supported with threaded rod and associated hardware
 - b. Without wire basket using threaded rod and f-Hooks
 - c. Grid wire and J-Hooks
 - i. J-Hooks placed every 4-5 feet. Follow manufacturer's guidelines.
 - ii. Number of cables per J-Hook is based upon J-Hook size. Follow manufacturer's guidelines.
 - iii. Support method must not exceed support or cable manufacturer's required weight and or cable quantity limits
 - d. Rigid conduit is to be used through hard ceilings and wherever the path is otherwise inaccessible for the purpose of pulling cable.
3. Surface mount raceway for horizontal (station) cables
 - a. Size of surface mount raceway will depend on number of cables.
 - b. Surface mounted raceway to be secured neatly to all surfaces - cut to length.
 - c. Must be installed per the manufacturer's recommendations.
4. Where data cables are to penetrate fire rated walls, floors and ceilings fireproof the opening. Provide conduit sleeves for cables that penetrate fire rated walls. Install fire proofing material around all conduit sleeves and openings. Install fireproofing material thoroughly and neatly. Seal all floor, wall and ceiling penetrations. When installing in existing installations all breached

fire stopped openings must be returned to original condition.

DATA and TELEPHONE CABLING SYSTEM

1. Overview: Data and telephone cabling and all other items in this section will be installed by the DCSD IT designated low voltage contractor.
2. Installation Practices: All installation techniques employed in this project conform to industry standards and manufacturer recommended installation procedures. Installation practices must be in compliance with the adopted National Electric Codes (NEC) edition. Other standards include: IEEE 802.3ab 1000BASE-TX Standards
 - a. American National Standards Association (ANSI)/Electronic Industries Association/Telecommunications Industry Standards (EIA/TIA) 568 (designation T-568B), Category 5 and Category 6 Data and Voice, Commercial Building Telecommunications Wiring Standard
 - b. EIA/TIA-569, Commercial Building Standard for Telecommunications Pathways and Spaces
 - c. ANSI/ICEA 2-83-596-1988 Standard for Fiber Optic Premises Distribution Cable
 - d. EIA/TIA PN - 2327, Grounding and Bonding Requirements for Telecommunications in Commercial Buildings
 - e. FOIRL Standards
3. Data Cabinets: The MDF will be equipped with a minimum of one full height data cabinet 24" wide by 32" deep. The cabinet will be placed parallel to the short wall furthest from the door. Spacing will be 24" from the wall from the side and 30" from the rear wall. IDFs will be equipped with a similar full height cabinet. Wall mount cabinets will be used only if there is not sufficient room for a full size cabinet. Full size cabinets will be provided with a ladder kit which will be attached to the cabinet and the wall. All cabinets will be grounded to the ground bar provided using #6 AWG copper wire.
4. MDF /IDF Interconnects: For data all IDFs will be connected to the MDF using armored 12-strand multimode 62.5/125 or 50/125 micron fiber rated to support at least 400 MHz at 1310 nm terminated per DCSD request (i.e. SC, LC, MTRJ, ST). All cables will be properly installed with strain relief. If unarmored cable is used this cable must be run through a 2" innerduct. Each IDF should be connected with a dedicated cable going directly to the MDF (no daisy chaining) forming a true star network. If fusion splices are used the loss will be less than .2 dB. If field connectors are used the connector loss will be less than .6 dB. For voice each IDF will have a tie cable run back to the MDF of sufficient size (25, 50-pair or larger) to meet the need. Voice tie cables are to be terminated on 110 blocks that will be mounted to the backer board on both ends. All cabling must come with a 25-year manufacturer's warranty.
5. Data Cabling: Data cabling will be of a fire-retardant "open air plenum" type meeting all federal and state fire codes. The data cable will be four-pair, 24 AWG cable compliant with UL lab certification program for Category 6 or better wiring. The cable will comply with EIA/TIA 568A standards and terminate using 568B commercial building wiring standards for UTP cable. Cable sheath will be plainly marked with UL approved cable surface markings. Data cables will be terminated on a 48 port Category 6 RJ45 modular patch panel in the data closed and on RJ45 jacks in information faceplates on the remote end. All four-pair will be terminated using 1000BASE-TX standards. Cables will be neatly dressed and labeled (printed, no handwritten labels). The labeling will be sufficient to identify the location of both the near and remote ends of the run. While the cable labeling schemes should be consistent across all sites in the county, the scheme may vary if exceptional conditions exist at a site, as approved by the DCSD MIS contact. The cable number must be placed on the outside faceplate. Each number must be clearly typed. Data cables will be blue, wireless cables will be yellow, IP CCTV cables will be green. All cabling must come with a 25-year manufacturer's warranty.
6. Voice Cabling: Telephone cabling will be UL Category 5e cable. It will be fire-retardant "open air plenum" type meeting all federal and state fire codes. The cable will be four-pair, 24 AWG cable compliant with UL lab certification program for Category 5e wiring. Cable sheath will be plainly marked with UL approved cable surface markings. All four-pair will be terminated. Cables will be neatly dressed and labeled (printed, no hand written labels). Voice cables will

be white. All cabling must come with a 25-year manufacturer's warranty.

7. Cable Test and Certification:

- a. Data certification will include the individual UTP connector (Jack), cable, cross-connect blocks, transition connectors, and patch panels. The selected offeror will utilize equipment (network analyzer), which has the capability to meet or exceed requirements for Category 6 cable, qualified to sweep and measure bandwidth of at least 1 MHz to 250 MHz. The test result shall be delivered to DCSD and shall include the following:
 - i. Length
 - ii. Attenuation on all pairs
 - iii. Near-end crosstalk
 - iv. Loop loss

Ensure that noise does not exceed industry standards.

- b. All individual fibers of each terminated cable segment must be tested using a power meter to determine the actual loss. The fibers must also be tested for length. These readings will be taken at 850 nm and 1300 nm for multimode fiber. These readings must not be higher than the "Optimal Attenuation Loss." The OAL must be calculated using the manufacturer's factory certified test results, (db/km) converted to the actual installed lengths plus the manufacturer's published attenuation loss for the connectors. The maximum allowable attenuation should not exceed 3.0 db. DCSD will not accept the installation of multimode fibers that contain a splice. The test result shall be delivered to DCSD and must include the following:
 - i. Length
 - ii. Attenuation on all pairs
- c. Voice certification will include the individual UTP (Jack) connector, cable and cross-connect blocks. The equipment must be capable of meeting the requirements for Category 5e. The test result shall be delivered to DCSD and include:
 - i. Continuity check
 - ii. Checking for cross-connects

8. Documentation: Upon completion "red-line" as-built sketches must be provided of any deviations, modifications or additions to the engineering drawing package. In addition to the as-built drawings a digital set of as-built plans indicating the location and drop number of each drop must be provided. The results of all test results including the drop number, cable origin, cable destination, certified PASS test result and the date of the test must be provided. These test results will be provided in digital format. The normal means of transmitting the digital submittals will be to a designated DCSD SharePoint site.

DCSD Access Control System

- A. Access Control System shall consist of a main controller, door panic hardware, electric power transfer (EPT), door power supply, card reader, "Request to Exit" PIR units, and door contact at specific doors as indicated on the documents. The system shall communicate via the school's wide area network. The system shall consist of the following components:
1. Access Control System Main Control Panel: Control Panel shall be complete Cabinet, Accelerator board, Network module, Power Supplies and Battery Backup (minimum of 24 hours) and Power Supplies for electric door lock power with Battery Backup (minimum of 24hours). Provide complete with DTK-120HW Surge Suppressor, all input/output cards and door expander panels as required. The Contractor shall verify the circuit breaker that feeds the Main Control Panel, Note on the Panel Schedule that this breaker serves the Control Access System Control Panel and provide and install "Lock On" device onto the circuit breaker(s). The Contractor shall run the local area network cable that connects the Main

Control Panel to the local area network router by labeling the router cable "Card Access-Security" in the MDF or IDF room. The Card Access static IP VLAN number, router bank and port will be determined by the DCSS MIS department.

Acceptable Products:

- a. Continental Instrument Turbo 8-door intelligent controller (CICP1800T), Accelerator Board(CICP18ACCB), NIC Module (CICP18ACCNBD)
 - b. Super Two 2-door intelligent controller(CICP1300), NIC Module (CICP1300NETBD)
2. Card Reader: All approved card access doors will have a Multi-Technology Reader with the capability of reading all types/technologies of cards.
- Acceptable Products:
- a. XCEED ID ISO Multi-technology Reader XF1500P-B, XF1100
 - b. HID ProxPoint Proximity reader Model# 6005bkb00 (for use in AX Aiphone Door station ONLY)
3. Door Panic Hardware: Hardware to be Electric Latch Retraction type with heavy duty Fail Secure Solenoids, and an Electrical Power Transfer unit to get power from door jamb to door hardware. Contractor must size door hardware frame hinge and box rough in for card access doors. Contractor must size door hardware Power supply as required complete with adequate panic device control boards as required.
- Acceptable Products:
- a. Von Duprin # EL99NL
 - b. Von Duprin Electrical Power Transfer # EPT-10
 - c. Von Duprin # PS914 Power Supply
 - d. Von Duprin # PS900-2RS Relay EL Panic device control board
4. "Request to Exit" PIR: Egress Motion Sensor to be ceiling/wall mounted type with adjustable pattern and two (2) Form C output relays with sounder.
- Acceptable Products:
- a. GE # RCR-REX-W and single gang wall plate #RCR-WP-W (18/6 stranded, shielded plenum cable from controller to REX).
 - b. Honeywell # IS320WH and trim plate # IS310WHTP # (5-531-395-01) (18/6 stranded, shielded plenum cable from controller to REX).
5. Door Contacts: Door Contacts to be recessed type with minimum of 3/4" Contact with minimum 3/4" Magnet and 7/8" Gap. Run cable back to the door controller as required. Match door contact to door frame color.
- Acceptable Products:
- a. GE # SR-1078C
 - b. Honeywell # 947-75T

END OF DESIGN GUIDELINES