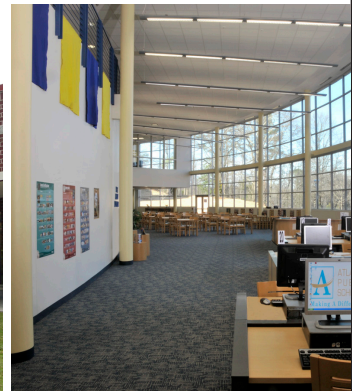


APS Design Guidelines v2.10

A Planning Guide for Construction
and Renovation of School Facilities

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ATLANTA PUBLIC SCHOOLS

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SCHOOLS

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December 1, 2010

To the Reader,

It is essential that the designs and associated construction documents for the construction of new schools and the renovation of existing schools result in a facility that meet the district's current instructional needs, yield high quality learning and teaching environments and require the minimum maintenance and repair effort and expense to sustain them.

This document is intended to guide architects, engineers, educators, project managers and other design professionals and provide an understanding of the requirements and quality standards to be applied in improving the learning environment when renovating existing schools and constructing new schools for the Atlanta Public Schools.

Many of the guidelines follow the minimum standards set forth by the Georgia Department of Education while some exceed those. Others are based on federal, local agency and or trade association standards and recommended practices. Some of the guidelines are based on desired sustainable design, energy conservation and Atlanta Public Schools standardization goals. Finally many of the guidelines were developed based on past experience and exist to prevent the recurrence of known maintenance and or repair problems.

The guidelines are intended to provide direction and consistency to a complex process taking place in a changing environment with a large number of constituents. It is not the intent to attempt to answer all the possible questions that can arise during a renovation or new construction project or limit the outcome of the process to one design solution. Those decisions must be made in context based on a comprehensive understanding of the specific project conditions and requirements through due diligence efforts of the designer and through conversations between the designer and the owner.

These guidelines are a "snap-shot" of the design requirements as of this date and as such are not a static document. They will be regularly reviewed, modified and added to as technology changes, building products are improved and curriculums are adjusted to meet the needs of the students and teachers in the school system. All suggestions for improvement and additions or changes to this document are always welcome.

Sincerely,

Jere J. Smith III, AIA
Director of Capital Improvements

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DIVISION 1

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DIVISION 1 GENERAL REQUIREMENTS

I. ROLE OF THE DESIGN PROFESSIONAL

It is the role of the APS Design Professional to design with aesthetics, quality, durability, and maintenance in mind as the contents of these Design Guidelines are incorporated in the plans for new or renovated school facilities.

II. APS FACILITIES MASTER PLAN ASSUMPTIONS – “BUILT SMART”

Planning Assumptions have been adopted by the Atlanta Public Schools as part of its ongoing Facilities Master Planning process. These Planning Assumptions should be implemented, where applicable, during the design or construction of all renovated or newly constructed Atlanta Public Schools facilities. (See Appendix A – Build Smart Project – Facilities Master Plan, September 30, 1999)

III. DESIGN CONTRACT REQUIREMENTS

- A. General Conditions of Contract – Georgia Department of Education Capital Outlay, current edition, with APS Supplemental General conditions, current edition. (Request the current version of these documents from the APS Project Manager.)
- B. Please note that all technical specifications references are not limited to the industry standards outlined in these Guidelines’ technical divisions.
- C. Each contractual Design Phase of work is to be submitted in accordance with the specific deliverables noted in the contract with sign-off by the APS Project Manager prior to approval to move to the next phase of work. Additionally, A/E should submit each phase of design for approval by State DOE

Below is a general description of the requirements of each phase deliverables:

Pre-Contractual Phase

Minimum Contents of a Design Narrative

- 1. Written Narrative of Project Scope – Design Narrative
- 2. Space Program Summary
- 3. Context City Map
- 4. Site and Floor Plans
- 5. Photo Documentation
- 6. Preliminary Cost Estimate
- 7. Preliminary Schedule
- 8. Pro-Con Study of Alternative (if applicable)
- 9. Sign Off Sheet

Schematic Design Phase

Architectural, Structural, Mechanical, Electrical, and Electronic drawings as defined in Design Contract.

Minimum Contents of the SD Phase Written Report

1. APS SD Phase Review & Approval Form signed by all parties noted on form
2. APS Space Utilization Chart, which confirms the Owner's educational space, needs.
3. Design Factors
4. Contextual/Site Map
5. Summary of Programmed versus Actual Square Footage
6. CCAP Cost Estimate - Project Scope is within the established "Not-to-Exceed Design to Budget"
7. Schedule of Management Plan
8. Submit 4 sets of plans and specs of MEP, low voltage systems and life safety systems to maintenance department for their initial reviews and approvals.

Design Development Phase

Architectural, Structural, Mechanical, Electrical, and Electronic drawings, and accompanying Outline Specifications per the Design Contract.

Minimum Contents of the DD Phase Written Report

1. APS DD Phase Review & Approval Form signed by all parties noted on form
2. APS Space Utilization Chart, which confirms the Owner's educational space needs.
3. Summary of Programmed versus Actual Square Footage Chart
4. Project Team Directory
5. Insert copies of all Project Committee Meeting minutes
6. Documentation of preliminary review from regulatory agencies, such as Building Department, Fire Marshal (state and local), Department of Health, Zoning Commission, Planning Commission and Urban Design Commission
7. Design Factors
8. Results from all test and investigations
9. CCAP Cost Estimate on APS GMP Summary Form.
10. Insert copies of all Project Committee Meeting minutes
11. Project Overview/Information
12. Design Approach – Executive Summary with conclusions and site/block plans
13. Urban Design Commission Presentation: Meeting Minutes.
14. Project Scope is within the established "Not-to-Exceed Design to Budget"
15. Schedule of Management Plan for Design/Phasing/Construction with critical dates noted in scheduling software such as Microsoft Project
16. Written approval for all service connections
17. Code Research results including the GDOE preliminary approval letter

18. Submit 4 sets of plans and specs of MEP, low voltage systems and life safety systems to maintenance department for their initial reviews and approvals.

Construction Documents Phase

Architectural, Structural, Mechanical, Electrical, and Electronic drawings and accompanying Project Manual and Specifications per the Design Contract.

Minimum Contents of the CD Phase Written Report

1. CCAP Cost Estimate on APS GMP Summary Form.
2. Obtain approval from such regulatory agencies, as Building Department, Fire Marshal (state and local), Department of Health, Zoning Commission, Planning Commission and Georgia Department of Education.
3. Apply for all Construction Permits and Approval on behalf of the Owner
4. Provide furniture layouts for Owner approval
5. Provide Finish and Color Boards for Owner approval
6. Prepare any clarifications or addendum during the bidding phase.
7. Attend the Pre-bid and Bid Conferences, assist the Owner in obtaining bids, prepare certified bid tabulation and make recommendation regarding the contract award.
8. Architect to confirm in writing that 1) all the engineering and architectural drawings have been fully coordinated and 2) all applicable codes have been complied with.
9. Final Approval Letter, GDOE
10. Provide at a minimum two (2) mounted copies of a rendering (image size +/- 18" x 30"). APS shall review draft of rendering before the final is produced and mounted. One (1) copy of the rendering should be matted (2 ½ " mat) and framed (simple black frame, size +/- 23" x 35"). An electronic copy of the rendering and floor plans shall also be provided.
11. Provide two (2) dry mounted sets (presentation boards) of the final floor plans with accurate room names and a site plan.
12. Submit 4 sets of plans and specs of MEP, low voltage systems and life safety systems to maintenance department for their initial reviews and approvals.

IV. BUILDING PERMIT FEES

- A. The Atlanta Public Schools is **exempt** from fees for building permits, inspections and associated construction impact assessments per the Georgia State Code section 20-2-261(d) which reads:

A local board of education shall be exempt from county and municipal assessments and fees for county and municipal assessments and fees for county and municipal building permits and inspections and exempt from county and municipal building permits and inspections and exempt from county and municipal impact fees. (Code 1981, Section 2-20-261, enacted by Ga. L. 1985, p. 1657, Section I; Ga. L. 1987 p. 1169, Section I; Ga. L. 1993, p.541, Section I; Ga. L. 1995, p.915, Section 1.)

- B. A Permit Tracking Spread Sheet is attached in Appendix "B" to assist the architect in tracking the requirements and progress of the permit process with the City of Atlanta. The Architect should allow at least 3 months from the time that the final drawings are submitted for review to the issuance of the permit. A preliminary review by a Plan Reviewer is a necessity to ensure that the process will run smoothly and that all code requirements have been addressed. (Refer to Appendix B – City of Atlanta BUILDING PERMITTING PROCEDURES AND GUIDELINES for EDUCATIONAL BUILDINGS.)

V. GEORGIA STATE MINIMUM STANDARD CODES (In Effect 01/01/2008)

- A. The Uniform Codes Act is codified at chapter 2 of title 8 of The Official Code of Georgia Annotated. O.C.G.A. Section 8-2-20(9)(B) identifies the fourteen "state minimum standard codes". Each of these separate codes typically consists of a base code and a set of Georgia amendments to the base code. Georgia law further dictates that eight of these codes are "mandatory" (are applicable to all construction whether or not they are locally enforced) and two are "permissive" (only applicable if a local government chooses to adopt and enforce one or more of these codes). These codes are as follows:

Mandatory Codes:

- International Building Code, 2006 Edition, with Georgia Amendments (2007)
- International Residential Code, 2006 Edition, with Georgia Amendments (2007) (2008)
- International Fire Code, 2006 Edition, with Georgia Amendments (2007)
- International Plumbing Code, 2006 Edition, with Georgia Amendments (2007) (2008)
- International Mechanical Code, 2006 Edition, with Georgia Amendments (2007) (2008)
- International Fuel Gas Code, 2006 Edition, with Georgia Amendments (2007) (2008)
- National Electrical Code, 2005 Edition, with Georgia Amendments (2006)
- International Energy Conservation Code, 2006 Edition, with Georgia Supplements and Amendments (2008)

Note: *It is the responsibility of the Architect to comply with all applicable codes and ordinances.*

VI. BUILDING ACCESSIBILITY

- A. Americans with Disabilities Act (ADA) Standards for Accessibility Design Guidelines of Justice Final Rule for Title III (ADAAG)
These are minimum technical requirements for the design and construction of buildings and facilities enforced by the Department of Justice. *It is important to remember that since the ADA is an anti-discrimination civil rights act, and not a building code, there is more to compliance than the minimum technical requirements.*
- B. New Construction and Additions
Both public and employee-only used spaces must comply with the ADA Standards as defined in ADAAG.
- C. Renovations
1. Any alternations of the existing facilities, both public and employee-only used spaces must comply with ADAAG unless it is “technically infeasible” to do so.
 2. Under Title II, all government facilities must provide accessibility to program locations for the physically challenged. Building modifications are required when administrative program changes are not sufficient to create access.
 3. When parking areas are re-striped, accessible parking spaces must be provided as required by the ADA Standards for Accessible Design.
- D. Alternate Designs
Departures from specified technical and scope guidelines by the use of other designs and technology may be permitted upon request, where the alternative designs and technology used will provide substantially equivalent or greater access, usability, and value to the facility. Any request for deviations to these guidelines shall be made in writing to the project manager listing the deviations and substantiating the reasons why.
- E. Local Access Codes
Where sections of the City of Atlanta access codes may be stricter than ADAAG, the stricter regulation shall always apply.
- F. UFAS (Uniform Federal Accessibility Standards)
UFSA for the Title II facilities may be used as an alternative to ADAAG, provided that only one standard is used in any facility.
- G. Interpretations and Questions
Any questions regarding interpretations of these instructions shall be referred in writing to the Atlanta Public Schools Project Manager.

VII. ENVIRONMENTAL PROGRAM

A. Atlanta Public Schools Board Policy

The Atlanta Board of Education, recognizing the need to conserve energy and natural resources and recognizing that a savings in energy consumption is an actual savings in dollars, authorizes the Superintendent to develop and implement a continuing program of energy conservation that will operate within reasonable limits of health and safety and provide an adequate learning and working environment.

The program shall include appropriate instruction for students in all grade levels; in-service education for teachers, custodians, building mechanics, and engineers; and dissemination of information on the best methods for conserving energy and natural resources.

Long-term goals requiring monetary expenditures shall include redesign and renovation of certain control and operating systems and the eventual conversion to other sources of energy when it is feasible to do so. All new construction shall be designed for efficient use of energy.

VIII. APS HAZARDOUS MATERIALS PROCEDURES

For each project the Architect shall provide an executed copy of the Asbestos Exclusion Certification Form, attached below, to the APS at the completion of construction.

A. Asbestos Abatement

1. Name Of Company Performing Abatement
2. Start And Completion Date Of Abatement
3. Location Of Abated ACBM
4. To avoid conflict of interest, it is recommended that the visual inspection be performed by an inspector not affiliated with the abatement contractor or anyone else financially associated with the conducting of the asbestos response action.
5. Method Used To Perform Abatement
6. Name And Location Of The ACBM Disposal Site
7. Under § 763.95 Of The AHERE Rule, Warning Labels **Must Be Placed Immediately** Adjacent To Any Friable And Non Friable ACBM And **Suspected ACBM** That Is Located In Routine Maintenance Areas (Boiler Rooms) At Each School.
8. For each project the Architect shall provide an executed copy of the Asbestos Exclusion Certification Form, attached below, to the APS at the completion of construction.

B. Final Air Sampling & Analysis

1. Location where samples were collected
2. Date(s) of collection
3. To avoid conflict of interest, sampling operations for airborne asbestos following an asbestos abatement action must be performed by qualified individuals completely independent of the abatement contractor.

4. Name and address of lab analyzing samples
5. Date of analysis
6. Method of analysis
7. Name and signature of person performing analysis
8. Copy of the lab's NVLAP certificate or number or EPA approval

ASBESTOS EXCLUSION CERTIFICATION FORM
(NEW CONSTRUCTION, RENOVATIONS & ADDITIONS ONLY)

In compliance with AHERA Part 763 "Asbestos", Subpart E "Asbestos Containing Materials in Schools", Section 763.99 "Exclusions" paragraph (a) (7), I

(Architect) of record for

(Project Name)

(Substantial Completion Date)

located in _____,

(School System Name)

(State Project Number)

certify that to the best of my knowledge no Asbestos Containing Building Material (ACBM) was specified as a building material in any construction document, nor was any ACBM building material installed in this project.

(Architectural Firm)

(Signature of Architect)

(Date)

(Georgia Architectural License Number)

(Seal and Signature)

IX. BUILDING AND SITE REQUIREMENTS

- A. All APS facilities should be designed and constructed with masonry interior (CMU) and masonry exterior walls (brick) typically two colors unless directed otherwise. The use of high impact gypsum board systems in classrooms are the preferred option, if CMU is not appropriate based on existing conditions. The option to use gypsum board systems must be approved by APS project manager.
- B. The school site and school building should be attractive and inviting to students, teachers and the community. The building shall be positioned for simple summer shading and daylight (primarily north/south windows). The central delivery station and all mechanical rooms must be accessible to service and delivery vehicles.
- C. The architect and engineer team (A/E) is responsible for determining existing site conditions by thorough investigation to ensure that design details will be compatible with the project site. These findings should be incorporated into the design narrative assessment book, of the project, as a part of the pre-design stage. (Refer to APS Design Guidelines, Division 2, Section I – Existing Conditions)

X. TOTAL PROJECT

It is APS expectation to build quality projects and that aesthetics are also important. Quality, durability and constructability for cost savings during each phase of design and construction is what we strive to achieve. Hence “Total Project: which ensures each school’s needs should be met within the parameters of the design standards and guidelines. It is important to use APS preferred materials and equipment focusing on how the building will be maintained after completion. Listed below are some of the areas that need special consideration:

- Accessibility
- Reception Area
- Flooring / Base
- Toilets
- Kitchen / Servery
- Masonry / Paint
- Multipurpose Rooms / Gymnasiums/Auditoriums
- Doors / Hardware
- Lighting
- HVAC Systems
- Security

A. Curb Appeal

One of the goals of the APS Capital Improvement program is to improve the overall exterior appearance or “Curb Appeal” of its facilities. While budget constraints may restrict the final scope of work, the exterior appearance of the

building must be evaluated and the cost of the work necessary to improve the “Curb Appeal” must be estimated so that value conscious decisions can be made in completing renovation program. For example, the following items should be considered during the development of the renovation program:

1. Pressure washing of the building exterior.
2. Pointing and patching of brick or block mortar.
3. Replacing deteriorated caulking
4. Patching, repairing or replacing damaged or deteriorated concrete curbs, ramps, stairs, sidewalks, walls, etc.
5. Re-painting, repairing or replacing exterior miscellaneous metals including handrails, guardrails, coping, gutters, downspouts, chimneys, light poles, doors, etc.
6. Repairing, replacing or the addition of exterior site or building lighting.
7. Repairing or replacing asphalt or concrete pavements.
8. Re-striping and/or resurfacing/re-sealing the parking lots.
9. Repairing, re-painting, or replacing existing concrete, metal or wood canopies.
10. Repairing, replacing or the addition of the exterior building monument sign.
11. Re-painting all previously painted exterior surfaces.
12. Replacing fogged or deteriorated acrylic glazing with tempered tinted glass.
13. Inclusion of drought resistant landscaping including grassing shrubbery, mulching and trees.
14. Pruning and or removal of the existing plant material if needed.
15. Repairing and the correction of site erosion.
16. Repairing, replacing or the addition of site fencing.
17. Repairing, replacing or the addition of a flagpole which includes a new flag (4' x 6').

XI. LEED REQUIREMENTS for NEW SCHOOLS (Leadership in Energy and Environmental Design)

- A. In support of healthy learning sustainable environments and communities, the Atlanta Public Schools recognizes the need to use environmentally sustainable practices in planning, designing, constructing and renovating facilities and in conserving energy and natural and manufactured resources. Atlanta Public Schools facilities shall be designed, constructed, operated and maintained in accordance with these practices, subject to the availability of funds. This initiative shall include appropriate instruction for students in all grade levels, in-service education for teachers, custodians, building mechanics and engineers and the dissemination of information on the best methods for conserving energy and resources to all project stake-holders. However, the design team must not sacrifice student comfort and sound engineering principles to achieve these goals.
- B. The Atlanta Public Schools is committed to incorporating principles of sustainable design and energy efficiency into all of its building projects. APS projects shall be Certified, LEED Silver, unless instructed otherwise by the APS.
- C. The Design Team shall incorporate the following sustainable design objectives into each project:
 - 1. Optimize Energy Use.
 - 2. Protect and Conserve Water.
 - 3. Use Environmentally Preferable Products.
 - 4. Enhance Indoor Environmental Quality (IEQ)
 - 5. Optimize Operational And Maintenance Practices.
- D. Following is a list of recommended items for attaining LEED certification that are normally available on APS projects. Additional LEED items shall be selected as applicable, from the LEED for Schools Registered Project Checklist, to attain the required points for LEED Certification.
 - 1. Sustainable Sites:
 - a. Construction Activity Pollution Prevention (Required)
 - b. Environmental Site Assessment (Required)
 - c. Alternative Transportation
 - d. Light Pollution Reduction
 - e. Partnership Parking (When Available)
 - f. Brownfield Redevelopment (When Applicable)
 - g. Stormwater Design (Quality Control)
 - h. Heat Island Effect (Roof)
 - i. Joint use of Facilities
 - 2. Water Efficiency:
 - a. Water Use Reduction (Low Water Plumbing Fixtures)

- b. Water Efficient Landscaping (No Irrigation)
- 3. Energy & Atmosphere:
 - a. Fundamental Commissioning of the Building Energy Systems (Required)
 - b. Minimum Energy Performance. (Required)
 - c. Fundamental Refrigerant Management. (Required)
 - d. Optimize Energy Performance.
 - e. Measurement and Verification
- 4. Materials and Resources:
 - a. Storage and Collection of Recyclables (Required)
 - b. Building Reuse. (When Applicable)
 - c. Construction Waste Management.
 - d. Recycled Content
 - e. Regional Materials
 - f. Certified Wood
- 5. Indoor Environmental Quality:
 - a. Maximum IAQ Performance. (Required)
 - b. Environmental Tobacco Smoke (ETS) Control. (Required)
 - c. Minimum Acoustical Performance. (Required)
 - d. Low Emitting Materials
 - e. Thermal Comfort for year round student use
 - f. Daylight and Views
 - g. Mold Prevention and humidity control
- 6. Innovation & Design Process:
 - a. LEED Accredited Professional
 - b. School as a teaching Tool

XI. GENERAL SPACE PLANNING GUIDELINES

(Reference Georgia DOE Minimum Space Requirements for Architectural Design)

A. Standard Classrooms

All standard classrooms for grades K – 12 shall be a minimum of 750 sf unless specifically directed otherwise. (*All areas are exclusive of Toilet Areas*)

	Max Students/Core Classroom	Total Sq. Ft.
Pre-K – 5	18	750
Grades 6-8	26	750
Grades 9-12	26	750

1. Acceptable Background Noise Control

When noise levels are too high, the result is reduced speech intelligibility and a reduction in the overall learning capacity of the students. The problem is not one of technical capability; it is one of awareness, understanding and priorities. All acoustical issues affecting speech intelligibility in the classroom including background noise, reverberation and sound isolation from other interior and exterior spaces should be addressed.

Follow guidelines for designing classroom HVAC systems that will achieve lower background noise levels. Placement of HVAC units in classrooms should be avoided because they are inherently noisy, and cannot achieve the recommended NC-30 noise criteria with current technology. Classroom air distribution system should be a low velocity system to minimize flow-generated noise and to minimize static pressure requirements on the supply fan. The system fans should be selected for maximum efficiency, which generally yields minimum noise generation.

B. General: Refer to:

- 1. Elementary School Requirements and program - Section XII.**
- 2. Middle School Requirements and Program - Section XIII.**
- 3. High School Requirements and Program - Section XIV.**
- 4. Custodial/Maintenance Rooms**

- A custodial/maintenance room of not less than 350 sq. ft. shall be provided for single story buildings. A minimum of 150 sq. ft. shall be provided on each floor in multi-story schools and for each major section (12,000 sq. ft.) of the school building. These rooms are located in or near restrooms or in common halls for easy access, and close to the loading dock whenever possible. The room shall be provided with a stainless steel splash plate behind mop hangers and around the mop sink. Cold water, along with

fixed shelving should be provided to accommodate limited custodial maintenance supplies tools and equipment. A center floor drain shall be provided. This room shall be separate from mechanical/electrical equipment rooms. Floors shall be sealed concrete. Do not install water heaters, electrical panels or fire alarm system in these rooms. Provide a minimum of one duplex (20 amp, 120v, GFI protected) in each custodial closet.

- b. At least one flammable storage room shall contain a direct exit at ground level and shall be constructed to meet fire codes for the storage of lawn mowers and associated lawn equipment, fuel and minor quantities of flammable materials.

5. Physical Education Facilities – (See *Division 11 - Equipment*)

- a. It is expected that the community will use the facility after normal school hours, therefore, the design should provide for direct public access to the PE facility and restricted access to the main school area. Specific means of restricting access to the main school areas must be identified during the schematic design phase for approval by APS Project Manager.
- b. The facility shall have an independent heating/cooling system (fully air conditioned) and provide conditioned air flow in accordance with ventilation requirements of ASHRAE 62-1989 to support year round activities in the instruction area.
- c. Acoustical treatment is mandatory to control the sounds of bouncing balls, the use of the public address system, etc. Acoustical CMU shall not be specified. (See Division 9 – Finishes)
- d. Make the maximum use of natural daylight(No skylights are allowed without prior approval of APS Project Manager). Use impact resistant materials. Use appropriate lighting (protected) in the instructional area and fluorescent lighting in all other areas. The minimum unobstructed height shall be equal or higher than the eave height. In the instructional area, electrical outlets shall be installed along the walls at 10 ft. spacing. (See Division 8 – Doors and Windows and Division 26 – Electrical)
- e. All communication and alarm systems shall be interconnected to the main school systems. Coordinate with APS Security System Specifications as to keypad locations. (See Division 27 – Communications and Division 28 – Electronic Safety and Security.)
- f. The facility design specification shall comply with all ADA access requirements. (Division 1, VI – Building Accessibility)

- g. All equipment, heaters, room lights, emergency lights, pull stations, speakers, strobes, grills, speakers, etc., installed, shall be protected from being damaged and/or broken.

6. Kitchen / Cafeteria.

- a. See Georgia State DOE formula for Kitchen and Cafeteria space requirements and comply.
- b. The seating capacity of the Cafeteria should accommodate one third of the student population. Show layout of 16 seat fold-up tables with integral stools on preliminary and final plans for APS review and approval.
- c. Provide locker/dressing room, with toilet facilities for kitchen/cafeteria employees. (Refer to: Division 10 – Specialties)
- d. In the receiving area, access to storage rooms should be direct from the delivery dock. Installation shall include:
 - i. 42” wide door with security view aperture. (Peephole)
 - ii. Fly fan with automatic door switch, (Astral Air, Berner, Mars)
 - iii. Door bell and access control device, AiPhone shall be provided at the door.
- e. Provide a room with space for the following:
 - i. Soak sink
 - ii. Shelving per Design Guidelines Division 10, Section IX - Shelving.
 - iii. Locked chemical storage (chemicals shall not be stored in kitchens or in rooms that open into kitchen area).
 - iv. Provide infrastructure (water, power, vent) for future clothes washer/dryer
- f. HVAC requirements: *Refer to Division 23 - HVAC.*
- g. Easy access to dispose of trash shall be thoroughly and completely addressed. (Refer to: *Division 11 – Equipment, Section VII Trash Disposal Equipment*)
- h. Final Drawings should include layout of space. Architect and APS Project Manager should obtain signed approval from the Nutrition

Department, School Cafeteria Manager, and the School Principal on all final drawings.

- i. A detail assessment of all existing equipment proposed to be re-used should be provided by the Architect in conjunction with the APS Nutrition Department. All existing equipment to be re-used must be included on the equipment schedule, including sizes, electrical and plumbing requirements. (Refer to: *Division 11 – Equipment*)
- j. Two (2) cash registers or Point of Sale (POS) shall be provided in Elementary and Middle Schools Kitchen Serving lines. Four (4) POS shall be provided in the High Schools. Provide electrical outlets and data drops to each POS.
- k. Floors in the serving area shall not be sloped to the drains.
- l. All drains in serving area shall be installed to accommodate equipment and cleaning.
- m. It is recommended that electromagnet devices be installed on all serving line Cafeteria doors where code permits.
- n. Provide a drinking fountain with a glass filler in Cafeteria Area.
- o. Provide 2' x 2' Scrubbable Suspended Ceiling System in all Kitchen, Food Storage and Food Preparation Areas. Scrubbable Ceiling Panels shall be 2' x 2' size, USDA accepted. Vinyl-faced Aluminum in manufacturers standard "white" color. Refer to Division 9 – Finishes.
- p. Exposed Suspended Grid System shall be USDA accepted. Pre-finished Aluminum in manufacturers' standard "white color".
- q. The Cafeteria space shall be treated with absorptive material to reduce noise levels. Open plan kitchen areas may also need to be treated. (Optima by Armstrong, or equal)
- r. Serving line surfaces and tray rails shall be stainless steel.
- s. The floor surface in the kitchen should be quarry tile with dark colored acid resistant grout. Quarry tile shall be sealed with appropriate product.
- t. Provide dry storage room located adjacent to food preparation areas and convenient to receiving. The storage area shall be free of un-insulated steam and water pipes, water heaters, transformers, refrigeration condensing units, steam generators or other heat producing equipment. The area shall be well ventilated and maintained at 50 degrees Fahrenheit to 70 degrees

Fahrenheit. Approved food containers with tight fitting covers and scoops shall be used for storing and dispensing bulk items or broken lots.

7. **Storage Rooms**

Storage space with shelves shall be provided for textbooks, equipment, instructional aids, general supplies and other resource materials. Storage rooms shall be located near teacher workrooms. A minimum of 120 sq. ft. Shelving per Design Guidelines Division 10, Specialties Section IX - Shelving.

8. **Art Rooms:**

a. **Space Requirements: Reference Exhibit _____ (page --)**

The **Art Room** shall be configured so that the **Storage/Office** and **Kiln Rooms** are located along an end wall where possible. These rooms are to be provided with clear glass windows and doors to permit the teacher to view the instructional area from inside the rooms. The Kiln Room should have an exterior wall to allow for direct venting to the atmosphere through a “dryer type”, through-the-wall vent. (Vent, ventilating unit and kiln furnished by contractor). (Refer to APS Design Guideline Division 11, Section IV – Art Room Equipment). The opposite end wall in the Instructional area shall be used for markerboards/display boards and convertible for slide/film projection; this wall should also be the location for a minimum of five (5) computer workstations, with table space for a printer and scanner. A location near the instructional area center and along the markerboard end wall should be provided to secure student-completed work display and storage. Day lighting shall be provided along at least one sidewall when possible. The sidewalls shall be used to provide overhead cabinets, base cabinets with counter tops and sinks.

b. **Art Room – Electrical Requirements**

Provide quad electrical outlets every 10 feet along the walls and above counters. Provide a 240-volt outlet in kiln room. Where 240-volt power is not available provide 208-volt power. Coordinate power availability/requirements with the kiln purchase. Provide fluorescent lighting with parabolic diffusers capable of producing a minimum of 75 foot-candles at all work areas. Provide special track type lighting for display areas as required. All lighting shall be adjustable, capable of dimming or darkening the room.

c. **Art Room – Other Requirements**

Provide two (2) sinks in cabinets or free-standing at opposite sides/ends of the room. Sinks should be deep type stainless steel furnished with hot and cold water and clay and plaster sediment traps. No goose-neck faucets shall be used. Sinks and countertops shall be of the appropriate heights for the students. Provide floor drains near sinks. Provide proper ventilation for the kiln room that is automatically activated when the kiln is operated.

9. Music Rooms.

a. Music Room General Requirements:

- i. Music and Choral education shall be provided at all Elementary Schools and Middle Schools (Two Classrooms). Music, Choral and Instrument Education shall be provided at all High Schools (Three Classrooms).
- ii. The most effective spaces are designed with one overriding goal – flexibility. In an average ½ hour class period, children will be involved in as many as four or five distinct activities.
- iii. Music programs are equipment-intense and sound producing. Activities in the music room include singing, clapping, dancing, playing instruments, learning games, listening to lessons, and rehearsing for performances. They sit on the floor, stand and march around the room.
- iv. Movable risers with flat floors are preferred for multiple uses of music rooms. Built-in Risers may be preferred in some rooms. Consult with the APS Project Manager on each project for direction.
- v. Choral risers, seated risers, music stands, music chairs, equipment and acoustic shells, etc. shall be identified on the drawings, but provided by Atlanta Public Schools via the APS Construction and/or instructional staff.
- vi. The rooms must be designed to be acoustically safe for the teacher and acoustically accurate for the students.
- vii. Provide technology wiring for audio-visual equipment, recording/playback equipment and computers. Consult with the APS Project Manager on each project for direction.
- viii. Provide the ability to disconnect the intercom system in the recording rooms. Main music area intercom should not have the capacity to be interrupted.

- ix. The rooms must be sound-isolated from adjacent classrooms and located near performance areas, such as the cafeteria, auditorium and/or multi-purpose room. They must be made secure and designed to protect expensive equipment from theft, vandalism and humidity.
- x. Due to the importance of acoustical qualities, cubic volume becomes the critical measurement for the music rooms. The planes for ceilings are much higher than those in other areas of the school. Provide sound attenuation through rubber door and window seals. No sand shall be poured into the concrete block and no sheared HVAC vents.
- xi. Use natural daylight as much as possible.
- xii. Floor surfaces should be carpet tile unless noted otherwise.
- xiii. Markerboards are required throughout with staff markings.
- xiv. Robe storage can be combined with the instrument storage for one larger room. Install locked access door from Choral Office to Robe/Instrument storage room to permit extra room for music library storage.
- xv. Assure that all entry doors are oversized (42" doors) for ease of large group and equipment movement. In case of double doors, the use of a keyed removable center mullion with a Best lock core is required.
- xvi. Install glass windows in the office to ensure proper student supervision.
- xvii. If a dance room (studio) is provided, a dressing room must be included. At least two adjacent walls with mirrors and bars should be installed.

b. Band/Orchestra Rooms

- i The ideal facility for a band/orchestra music program incorporates a dedicated rehearsal room. There are several basic elements that make up a functional elementary band/orchestra room:

- ii **Instrumental Music Area Space**

Students need adequate space and instruments need space; enough space for elbows to move, bows to slide back and forth, and a music stand in front of every musician.

iii. **Director Area**

This dedicated area needs to be at least 8' from the front row of the group and provide sufficient space to accommodate a podium with a stool and music stand. Behind that there should be wall space for two markerboards and tackboards with permanent music staves. There should also be room for a piano and stereo equipment in this space.

iv **Offices and Individual Lesson Areas**

Elementary students are often in their first or second year with an instrument, and are in need of significant one-on-one tutoring. This area can also be used for individual lessons in a small sound-isolated room free from distractions. An office with a lock provides a secure area for the band/orchestra directors who usually teach at more than one school. If space permits, the sheet music and lesson books can be secured in this area.

v. **Instrument Storage**

1. Provide secure storage. The best storage will utilize a combination of cabinets, wall hangers and mobile racks. The room should contain two doorways to ease traffic flow in and out of the storage room and students should have ready access to a sink with hot and cold water and counterspace for instrument cleaning.
2. Instrument Storage carts and cabinets shall be shown on plans but be noted as provided by the Atlanta Public Schools.

vi **Space Configuration.**

The study of music is dependent upon the ability to learn and hear differences in intonation, dynamics, articulation and balance. This skill, called critical listening, can be developed only in a learning environment with proper acoustics. Excellent acoustics are essential to any space designated for music.

1. Cubic volume and shape. Every effort must be made to provide enough cubic volume and treat it correctly to handle the sound energy produced. Low ceilings are a common cause of poor music room acoustics.

2. Avoid visual acoustic designs such as curved walls and domes that look attractive and appear to have good acoustical properties but in reality are often disastrous to the music environment. Concave planes and domes reflect sound, creating hot spots of concentrated sound.
3. Square or cube shaped rooms with parallel walls create “standing waves” and “flutter echoes”, that over-emphasize certain frequencies, making them abnormally loud. Creating a rectangular room by varying one dimension 30% or more is a typical solution.
4. Sound isolation between rooms. Provide wall STC ratings appropriate to effectively block the transmission of sound. Specify sealed construction in the design. Use full-height, sound-isolating walls, with an airtight seal to the building structure at both the floor and roof deck. (Include electrical boxes and ventilation openings.
5. Buffer zones, such as offices, corridors and storage rooms, are better sound isolators than single walls.
6. Keep doors and windows to a minimum to reduce sound leakage and specify an acoustical rating equal to the wall construction.
7. Locate practice rooms as far away from the major rehearsal rooms as possible.

c. Acoustical Treatments

- i. Every surface in the music environment has a direct effect on how sound and acoustics work within it.
- ii. Do not depend on carpeting to effectively quiet a loud music room. It is effective at absorbing only high frequencies (approximately middle C and above). By using this material as the primary absorptive treatment, the ability to hear higher frequencies and softer sounds is diminished while the lower frequencies are unaffected.
- iii. Treating the room with only absorber panels will only reduce loudness.
- iv. Diffusive panels are necessary to scatter sound, improve communication from one part of the room to another and create an acoustically balanced environment.

v. Rule-of Thumb for: Ceiling Height/Cubic Volume

Activity	Cubic Volume	Ceiling Height
General Music/Choral	17,000-20,000 cu. ft.	12-16 ft.
Band/Orchestra	19,000-25,000 cu. ft.	14-18 ft.

d. **Music Area - Mechanical and Electrical Systems**

- i. Assure electrical outlets every 12'.
- ii. The music suite has a lighting requirement of 70-100 foot-candles necessary to help musicians read music scores.
- iii. Mechanical and Electrical sounds are annoying and distracting, in the music areas. Mechanical systems are noisy by nature. Heating and air conditioning units, fans, drinking fountains, cooler, toilets, roof drains, fluorescent light ballasts, transformers and other necessities should be eliminated or minimized.
 1. Quiet-rated fluorescent light ballasts will help eliminate the "hum" associated with standard ballasts. The hum is unusually an approximately B-flat musical pitch that can make it impossible for students to tune to concert A or concert B-flat.
 2. Music requires substantial physical exertion, and often involves large groups of students. Because of this, the air exchange required is double that of ordinary classrooms. As a result, it is essential that the supply and return ductwork is large enough to accommodate the exchange rate without creating a "whooshing sound" that masks musical sound.

13. **Technology Area (Computer and Vocational)**

(Refer to APS Design Guidelines, Divisions 6 – Wood and Plastics, APS Design Guidelines, Division 27 - Communications)

14. **Media Center Reference Division 11, Exhibit A**

- a. Media Center space shall be governed by State DOE Standards based on FTE design population. Seating shall be provided in the main reading room for 10% of design FTE. *(Refer to APS Design Guidelines, Divisions 6 – Wood and Plastics and APS Design Guidelines, Division 11 – Equipment, Media Center II)*

- b. Access should be single story, convenient to instructional areas, accessible to administrative suite, convenient to an outside entrance, accessible to elevator in multi-level building, accessible to restrooms, telephone access, capable of expansion, accessible by disabled users.
- c. Mechanics/Engineering should include master light switch, zoned lighting, proper lighting, acoustical control, climate and humidity control, independent from other areas, ample accessible electrical outlets, surge protection where necessary, adequate number of circuits to distribute electrical load, intercom speaker with volume control, warm and cold water sink.
- d. Other considerations should include flexibility in use of space, logical traffic patterns, limited number of entrances/exits, adequate quantity and type of storage, lever-type door handles, thresholds on doors, appropriate locks for doors and windows.
- e. The Interactive Learning Lab shall be located in close proximity to the Media Center.

15. Outdoor Learning Areas

If Outdoor Learning exists or is planned, all spaces and infrastructure shall be made workable and safe, i.e., well lit, secure and fully integrated into the building systems. The Outdoor Learning Center shall have 120V power and intercom service.

13. Additional Requirements

- a. *(See Appendix C – U.S. Safe Schools Requirements)*

XII. ELEMENTARY SPACE PLANNING REQUIREMENTS:

A. Multi-Purpose Rooms

This space shall be provided for all elementary schools. Adequate student and adult restrooms, storage and small office area shall also be provided.

1. Space Requirements

FTE 450	Instructional Open Area	Minimum Required	5000 Sq. Ft.
FTE 675	Instructional Open Area	Minimum Required	6500 Sq. Ft.
FTE 900	Instructional Open Area	Minimum Required	8000 Sq. Ft.

2. **Curriculum Objectives:** The Physical Education (PE) curriculum objectives focus upon primary movement education, gross motor development, and perceptual motor development; fitness development including fitness games; fitness testing and rope skills; use of manipulative skills in developmental games; introductory and basic gymnastics; rhythmic skills, including aerobics, folk dance, square dance, ribbons and wands; and sport skill development and lead-up games.
3. **Instructional Area Design Criteria:** There shall be no ceiling in the instructional area. The minimum unobstructed height of this area shall be 20 feet. At least three walls shall be smooth and flat, (with no protrusions), to a height of 16 ft. There shall be no ledges at the top of these walls, as the children shall use the walls for various games and activities and the ledge may interfere.
4. **Additional Design Criteria:** Provide a raised fixed stage in a multi-purpose room, because unlike an auditorium, the audience is seated on a single level and raising the performers will help to control and project the sound over the audience. When planning the stage area, the platform shall be positioned so that it will not obstruct the balance of the open area for primary movement learning activities. The stage needs to accommodate the expected performers and equipment. Storage on the same level is most desirable. If not practical, then a ramped access to the stage from the storage area is necessary. The raised platform must meet the minimum ADA requirements. Provide a front and back curtain, performance lighting, sound reinforcement system and acoustical treatment.
5. **Flooring:** The floor in the instructional open area shall be a non-slip, sports type flooring, such as Taraflex Sport M, Mondo, or equal. (See *APS Design Guidelines, Division 9, Section IX – Athletic Flooring and Division 9, Section XIII – APS Standard Finishes Chart & Color Board*.)

6. Equipment: Refer to APS Design Guidelines, Division 11, Section I – Athletic Equipment And APS Standard Specification Section 11 66 23 - Gymnasium Equipment.

B. Kitchen/Cafeteria

1. Atlanta Public Schools Nutrition Coordinator shall be contacted by the APS Project Manager to participate in all planning stages for any new, renovated or phased facility. School Nutrition must decide which food service equipment is necessary and provide all necessary information for the architect and contractors. (*Refer to APS Design Guidelines, Division 11, Section VI – School Nutrition Design & Equipment*)
2. Areas
 - a. Preparation Kitchen
 - b. Serving Area
 - c. Dry Storage
 - d. Refrigerator
 - e. Freezer
 - f. Office
 - g. Employee Restrooms
 - h. Chemical Supply
 - i. Hood Size
 - j. Mop Room
 - k. Can Wash Room
 - l. Dish Room

D. Art Room

1. The visual arts program in the elementary schools is designed to benefit all students. A full range of Elementary Visual Arts courses is offered from grade Pre-K through five, and accessible to all grades.
2. The instructional area should be a classroom with a office/storage room and a kiln room. There should be a markerboard and two tackboards on the walls. The kiln should be in a separate room.

E. Music Room/Choral

1. *The music curriculum should provide students the opportunity to express themselves by performing, describing, creating and responding to music. They should learn to understand and appreciate the music expression of the others and to value music.* The music room should be located away from other instructional areas. Key points are to assure silent HVAC, silent ballasts on fluorescent lights, and proper humidity control for piano and wooden equipment. The room must be secure to protect expensive equipment used daily.
 - a. Main activity area
 - b. Instrument playing/set-up area
 - c. Teacher area
 - d. Instrument storage area
 - e. General Storage

- f. Electronic Media work area
- g. Individual Rehearsal Rooms

F. Media Center Reference Division 11, Appendix A for typical layout

1. Media center should allow for different kinds of student use – individual, small groups and large groups. The design should eliminate any area, which cannot be seen for a single location. Shelving along the perimeter should be appropriately sized. Circulation area and the computer area should be near the entrance and visible at all times by the media specialist.
2. Desired Spaces for the Media Center – Elementary Schools
 - a. Main Reading Room with Storytelling area
 - b. Office
 - c. Workroom/Copy Room with sink
 - d. Media Production Room
 - e. Distribution Room
 - f. Conference Room (seats 8)
 - g. Audiovisual equipment storage room
 - h. Nonprint/periodical storage room
 - i. Video production/studio
 - j. Computer Area for 8 computers and 4 printers
 - k. MDF Room

G. Computer/Interactive Learning Lab

The computer lab is a resource tool that allows both teachers and students to complete instructional and non-instructional tasks. The lab should be accessible to all grade levels, pre-K to 5 and adjacent to the Media Center. APS prefers a wall mounted desk /top for the computers and printers. Coordinate heights of receptacles and data drops and wiring grommets.

H. Administrative Area: Reference Division 12, Appendix B for typical layout

1. The administrative area shall be located near the main entrance to the school and shall provide the ability to monitor and control access to the building. The activities conducted in this area include reception of visitors; individual and small group conferences with students, teacher, parents and others; filing and management of student and personnel records; program registration; student discipline; a small clinic and preparation of administrative documents and materials. Provide appropriate data and phone lines for office equipment, computers, and employee/staff check-in (KRONOS system). APS Project Manager to identify two locations.
 - a. Principal's Office: Locate so that a second door, with access to a corridor, is provided. Located near Conference Room.
 - b. Asst. Principal Office/Instructional Specialist: Based on school enrollment, may require 2 @ 140 Sq. Ft. or none. Should not be located together.

- c. Conference Room: Room to be used for group conferences up to 20 Persons.
- d. Secretary/Reception: Administrative space for two/three persons and visitor waiting area.
- e. Faculty Workroom: Provide sink/base cabinet, storage cabinets and counters, space for copier and fax machines. Includes teacher mail slot area
- f. Clinic W/ Restroom: Space for clinical worker, 2 cots, and sink/cabinet, min 40Sq.Ft. of lockable storage. If space is available, add one hand wash sink with hot and cold water. Provide refrigerator with ice maker for medicines.
- g. Student Records Room: Fire Protected.
- h. General Storage: May be combined with Vault or Workroom.
- i. Opportunity Room: General Storage
- j. Adult Restrooms: Provide 2 faculty/staff restrooms within the Administration suite.
- k. PTA Workroom / Parent Center: Locate near Faculty workroom
- l. Main Entrance/Foyer: Provide appropriate area adjacent to Administration /Reception.
- m. Testing Materials Safe Storage Room @ 144 SF for safe storage of testing materials

I. Classrooms

Reference Division 12, Appendix A for typical layouts

1. Classrooms PreK – 5 shall be provided with standard casework packages including:
 - a. Base cabinet with counter and sink. Height of base cabinet is 30" per detail on Appendix A page 12-1.
 - b. Storage case with coat hook unit (Refer to APS Design Guidelines, Division 6, Section III – Casework.)
 - c. Teacher Wardrobe/Storage
2. Room numbering shall be logical when walking in the building and relate to the room's location in the building. For example, odd numbers on left side of corridor and even on right, 101 is on the first floor and 201 is on the second. Four digit numbers may be required in large, multilevel building. Each floor shall be consistent logic. Numbering scheme shall be developed during the schematic phase and shown on design development documents and approved by Project Manager prior to beginning construction documents. This numbering system will be utilized by other vendors and building systems such as the intercom, fire alarm and burglar system therefore it is critical that the system is logical and consistent through out the building. Architect must follow State DOE Guidelines for numbering of buildings and spaces.

“BASIC” ELEMENTARY SCHOOL PROGRAM

*Grades K-5 Capacity 612 Students**

#	Space	Square footage (per space)
CORE INSTRUCTION		
34	Core Classrooms (Grades K thru 5 th)	K-3 = 750 SF each 4-5 = 750 SF each
3	PEC Classrooms (1 w/ Restroom, Washer/Dryer connections & Changing bed area)	750 SF each
1	Pre-K Classroom (with adjacent Toilet)	750 SF
1	Interactive Learning Laboratory	1250 SF
1	Science Laboratory	1000 SF
1	Art Room (including Kiln Room, Office/Storage room)	1350 SF
1	Foreign Language Classroom	750 SF
Support Spaces		
3	Teacher Workrooms w/ Toilet	350 SF each
1	School Reform Suite	2000 SF
2	Book Storage (Minimum one per floor)	100 SF each
2	Janitor Closets	50 SF each
1	General Storage (access to exterior)	400 SF
PHYSICAL EDUCATION / MULTIPURPOSE ROOM		
1	Multi-Purpose Room w / Fixed Stage, adjacent Restrooms, PE Instructor's Office, and General Storage	<i>Comply with APS requirements Section XI – A.1</i>
MUSIC EDUCATION		
1	Band Room (including Director's office, 2 Practice rooms, Storage for instruments and General Storage, and Portable risers)	1900 SF 14-18 ft ceiling
1	Choral Room (including Director's office, Practice rooms, Storage for instruments and General Storage, and Portable risers)	1500 SF 14-18 ft ceiling
INSTRUCTIONAL SUPPORT		
MEDIA CENTER <i>Comply with GDOE requirements</i>		
1	Media Specialist Office	250 SF
1	Workroom with work sink/counter	300 SF
1	Audio/Visual Storage	300 SF
1	Main Distribution Feed Room (MDF)	200 SF (16'x12'-2") minimum
1	Parent Center	500 SF
NUTRITION		
1	Cafeteria (to seat half the school population)	Size as appropriate
1	Kitchen (including Staff lockers & toilet facilities, Manager's Office, & Receiving Area)	<i>Comply with GDOE requirements</i>
1	Faculty Dining	450 SF
ADMINISTRATION SUITE		
1	Reception	500 SF
1	Principal's Office	300 SF
1	Administrative Assistant/Secretary Office	120 SF
1	Staff Toilet in Main Office	200 SF
1	Conference Room	350 SF
1	Faculty Workroom	350 SF
1	Clinic with restroom	300 SF
1	Student Record vault room	150 SF
2	Adult Restrooms	100 SF each
1	Counselor's Office	250 SF
1	Janitorial Closet	150 SF
1	Assistant Principal Office (remote)	200 SF
1	Opportunity Room (near Assist. Principal's office)	150 SF
1	Testing Materials Safe Storage Room	144 SF

Note: * Stated "capacity" is based on the APS adopted Planning Assumptions of a maximum of 18 students per core classroom. The GDOE's FTE will typically be substantially higher, and support spaces should be designed accordingly.

XIII. MIDDLE SCHOOL SPACE PLANNING REQUIREMENTS:

A. Middle School Physical Education Space Requirements

A Gymnasium shall be provided for all Middle Schools. The goal is to provide each student with a comprehensive curriculum emphasizing wellness as a way of life. This concept of wellness is dependent upon healthy attitudes, behaviors, choices and current health knowledge.

1. Space Requirements:

FTE 900	Instructional Open Area	Minimum Required	16,000 Sq. Ft.
FTE 1,200	Instructional Open Area	Minimum Required	22,000 Sq. Ft.

2. Curriculum Objectives:

- b. The Physical Education (PE) curriculum objectives focus upon providing each student with the opportunity to participate in a physical education program geared to his or her needs and abilities, to develop physical fitness, sportsmanship and safety.
- c. In some schools a combined Gymnasium / Auditorium facility shall be provided. In that case the auditorium requirements that follow will apply (without the sloped floor and fixed seating.)

3. Additional Design Criteria:

- a. Competition Facility will hold games.
- b. The floor in the instructional / competition open area shall be hardwood. School logo, game and instructional lines will be included as required. Typical Game lines meeting sport regulations, appropriate for the age group, shall include at a minimum the following games: badminton, volleyball, basketball. (See Division 9, Section IX – Athletic Flooring.)
- c. It should not be located near academic areas because of noise.
- d. It should be close to outside parking lot.
- e. Bleachers: Refer to APS Standard Specification Section 12 66 13 – Telescopic Folding Bleachers
- f. Equipment: Refer to APS Design Guidelines, Division 11, Section I – Athletic Equipment And APS Standard Specification Section 11 66 23 - Gymnasium Equipment.

B. Auditorium

1. The auditorium should be provided with platform for the purpose of presenting music and other performing art programs.
2. The auditorium may be used for instruction in drama, music, debate, plays and various other school activities.
3. Should be located near vocal and instrumental music areas and parking.
4. Spaces should include auditorium platform, projection room and design room. The floor shall slope to the stage.
5. Equipment: Refer to APS Design Guidelines, Division 11, Section III – Theatrical and Stage Equipment. Fixed seating shall be provided in dedicated auditoriums. (Do not provide fixed seating in multipurpose rooms.)

C. Kitchen/Cafeteria

1. Atlanta Public Schools Food Nutrition Coordinator shall be contacted by the APS Project Manager to participate in all planning stages for any new, renovated or phased facility. Nutrition must decide which food service equipment is necessary and provide all necessary information for the architect and contractor. (Refer to APS Design Guidelines, Division 11, Section VI – School Nutrition Design and Equipment).

2. The area requirements for a Middle school are:

Areas

- a. Preparation Kitchen
- b. Serving Area
- c. Dry Storage
- d. Refrigerator
- e. Freezer
- f. Office
- g. Employee Restrooms
- h. Chemical Supply
- i. Hood Size
- j. Mop Room
- k. Can Wash Room
- l. Dish Room
- m. Washer/Dryer (residential grade) & Locker Room

D. Art Room

Provide vinyl floor with floor drain, area of painting and drawing near sink, area for potters' wheels near sink, marker/tackboards, natural lighting but with blinds, separate kiln/ storage room with exhaust ventilation system for kiln.

E. Music Room/Choral

1. The music curriculum provides students the opportunity to express themselves by performing, describing, creating and responding to music. They learn to understand and appreciate music expression and to value music. The music room should be located away from other instructional areas. Key points for a supportive environment are silent HVAC systems, silent ballasts on fluorescent lights, and proper humidity control for piano and wooden instruments. The room must be secured to protect expensive equipment used daily.
2. Basic Classroom/Band and Orchestra
 - a. Main activity area
 - b. Instrument playing/set-up area
 - c. Storage Rooms for Instruments, choral uniforms, band uniforms
 - d. Large ensemble, small ensemble and individual practice rooms
 - e. Keyboard Lab
 - f. Music Library
 - g. Choral, Band, and Orchestra teachers offices
 - h. Instrument Repair
 - i. Dance Studio
 - j. Theatre Dressing Rooms
 - k. Commons Area

F. Media Center: Reference Division 11, Appendix A for typical layout

1. Activities in the library media center include individual and group instruction, media production, listening, viewing, browsing and computer instruction for all grade levels and all subject areas.
2. Desired Spaces for the Media Center – Middle Schools.
 - a. Main Reading Room
 - b. Office
 - c. Workroom with sink
 - d. Media Production Room
 - e. Distribution Room
 - f. Conference Room
 - g. Audiovisual Equipment Storage Room
 - h. Periodical Storage Room
 - i. Computer Area (minimum of fifteen computers and eight printers)

G. Administrative Area: Reference Division 12, Appendix B for typical layout

1. The administrative area shall be located near the main entrance to the school and shall provide the ability to monitor and control access to the building. The activities conducted in this area include reception of visitors; individual and small group conferences with students, teacher, parents and others; filing and management of student and personnel records; program registration; student discipline; a small clinic and

preparation of administrative documents and materials. Provide appropriate data and phone lines for office equipment, computers, and employee/staff check-in (KRONOS system). Two locations to be identified by APS Project Manager.

2. The area should have a professional but warm and friendly atmosphere.
3. This area should be adjacent to the main entrance and in close proximity to the guidance counseling center, media center and the cafeteria.
4. Space Considerations:
 - a. Principal's Office: Locate so that a second door, with access to a corridor, is provided. Locate near Conference Room and provide private restroom
 - b. Asst. Principal Office: Based on school enrollment. Should not be located together.
 - c. Instructional Specialist: Based on school enrollment.
 - d. Conference Room: Room to be used for group conferences up to 20 Persons.
 - e. Secretary/Reception: Administrative space for two/three persons and visitor waiting area.
 - f. Faculty Workroom: Provide sink/base cabinet, storage cabinets and counters, space for copier and fax machines. Include area for teacher mail slots
 - g. Clinic W/ Restroom: Space for clinical worker, 2 cots, and sink/cabinet, min 40Sq.Ft. storage. Add one hand wash sink with hot and cold water.
 - h. Student Records Room: Fire Protected.
 - i. General Storage: May be combined with Vault or Workroom.
 - j. Opportunity Room: General Storage.
 - k. Adult Restrooms: Provide 2 faculty/staff restrooms within the Administration suite.
 - l. PTA Workroom / Parent Center: Locate near Faculty workroom
 - m. Testing Materials Safe Storage Room Provide secure space approx. 144 SF for safe storage of testing materials

H. Classrooms: Reference Division 12, Appendix A for typical layout

1. Classrooms shall be provided with standard casework packages including:
 - a. Base cabinet with counter and sink with cold water.
 - b. Storage case with coat hook unit
 - c. Teacher wardrobe/storage

- d. (Refer to APS Design Guidelines, Division 6, Section III – Casework.)
 - e. Room numbering shall be logical when walking in the building and relate to the room's location in the building. For example, odd numbers on left side of corridor and even on right, 101 is on the first floor and 201 is on the second. Four digit numbers may be required in large, multilevel building. Each floor shall be consistent logic. Numbering scheme shall be developed during the schematic phase and shown on design development documents and approved by Project Manager prior to beginning construction documents. This numbering system will be utilized by other vendors and building systems such as the intercom, fire alarm and burglar system therefore it is critical that the system is logical and consistent through out the building. Architect must follow State DOE Guidelines for numbering of buildings and spaces.
2. Student corridor lockers, when provided shall have a logical, consistent sequence of numbering as you walk around the building. Four digit numbers may be required for large multi level buildings. Typical sequence: the first number should relate to the floor the locker is on with the final digits noting the locker. (0-99)

H.

“BASIC” MIDDLE SCHOOL PROGRAM

Grades 6-8
Capacity 936 Students*

#	Space	Square footage (per space)
CORE INSTRUCTION		
1	Learning Centers (3 per grade) w/:	
1	English/Language Core Class	750 SF each
1	Mathematics Core Class	750 SF each
1	Social Studies Core Class	750 SF each
1	Science Lab w/ Teacher Demo (Plus Shared 200 SF Storage Room)	1000 SF each
Support Spaces (1 per grade)		
3	Teacher Planning Room w/ toilet	400 SF each
3	A/V Storage Room	150 SF each
3	Janitor closet minimum	50 SF each
	Intermediate Distribution Feed (IDF) Room - # determined by Technology	100 SF (10'x10') minimum
3	Book Storage (Minimum 1 per floor)	100 SF
2	Foreign Language Classroom	750 SF each
1	Exploratory Suite	
1	Business Education Lab	1000 SF
1	Consumer & Family Science Lab	1500 SF
1	Technology Exploration Lab with shared Teaching Theater	2500 SF
1	Interactive Learning Lab	1200 SF
Program for Exceptional Children		
3	PEC Classrooms (1 per grade) distributed in Learning Centers	750 SF each
1	Speech/Therapy Room with restroom, washer/dryer connections and space for changing bed	400 SF
1	Testing	400 SF
1	MOID	750 SF
1	Resource	400 SF
3	Gifted	750 SF
3	ESOL	750 SF
Music / Arts		
1	Choral Room	1000 SF
1	Band Room	1400 SF
1	Dance Room	1500 SF
1	Orchestra Room	1400 SF
2	Instrument Storage (for Band & Orchestra)	<i>per school program</i>
2	Uniform/Robe Storage	100 SF each
1	Music Library	200 SF
3	Faculty Offices (within Band, Choral, Orchestra)	200 SF each
3	Practice Rooms	90 SF
1	Equipment Storage	150 SF
1	Art Room w/Storage/Kiln/Office	1350 SF
1	Auditorium w/stage (Separate Auditorium)	5000 SF
2	Dressing Room	500 SF
HEALTH & PHYSICAL EDUCATION		
2	Health / P.E. Classrooms	750 SF each
2	Faculty Offices w/ shower	400 SF each
1	Gymnasium w / bleachers	Sized for School
1	Equipment Room/Storage	300 SF
1	Boys Locker/Shower Area	Sized for School

1	Girls Locker/Shower Area	Sized for School
1	Laundry Room	300 SF
1	General Storage	300 SF
INSTRUCTIONAL SUPPORT		
MEDIA CENTER		
1	Stacks	<i>Comply with GDOE requirements</i>
1	Computer Area	400 SF
1	Reading Area	1200 SF
1	Circulation Area	300 SF
1	Teacher Workroom	250 SF
1	Equipment Storage	400 SF
1	Media Specialist Office	300 SF
1	Main Distribution Feed (MDF) Room	240 SF
NUTRITION		
1	Cafeteria (Student)	Seat ½ of the Student Population
1	Faculty Dining	450 SF
1	Kitchen	<i>Comply with GDOE requirements</i>
ADMINISTRATION SUITE		
1	Reception Area	500 SF
1	Secretarial work areas (2) (1 -2 people occupy each area)	350 SF
1	Principal's Office w/toilet	300 SF
1	Administrative Assistant/Secretary Office	120 SF
2	Assistant Principal Offices (remote)	200 SF each
1	Staff Toilet in Main Office Area	200 SF
1	Conference Room	300 SF
1	Mail Room/Copier/Work Room	400 SF
1	Instructional Specialist Office	150 SF
2	Counselor Offices	100 SF each
1	Student Records	100 SF
1	Clinic (Office, Storage, separate rooms for boys/girls, Toilet)	450 SF
1	Parent Center	400 SF
1	Supply Storage	100 SF
1	In-School Suspension(near Assist. Principal)	600 SF
1	Testing Materials Safe Storage Room	144 SF

NOTE: * Stated "capacity" is based on the adopted Planning Assumption of a maximum of 26 students per core classroom. In Middle Schools, a Science Classroom is considered a core classroom.

XIV. HIGH SCHOOL SPACE PLANNING REQUIREMENTS

A. High School Physical Education Space Requirements

Gymnasium Space shall be provided for all High Schools. The goal is to provide each student with a comprehensive curriculum emphasizing wellness as a way of life. This concept of wellness is dependent upon healthy attitudes, behaviors, choices and current health knowledge.

1. Space Requirements:

FTE 900	Instructional Open Area	Minimum Required	16,000 Sq. Ft.
FTE 1,200	Instructional Open Area	Minimum Required	22,000 Sq. Ft.

2. Curriculum Objectives:

The Physical Education (PE) curriculum objectives focus upon providing each student with the opportunity to participate in a physical education program geared to his or her needs and abilities, to develop physical fitness, sportsmanship and safety.

3. Additional Design Criteria:

- a. Competition Facility will hold games.
- b. The floor in the instructional / competition open area shall be hardwood. School logo, game and instructional lines will be included as required. Typical Game lines meeting sport regulations, appropriate for the age group, shall include at a minimum the following games: badminton, volleyball, basketball. (See Division 9, Section IX – Athletic Flooring.)
- c. It should not be located near academic areas because of noise.
- d. It should be close to outside parking lot.
- e. Bleachers: Refer to APS Standard Specification Section 12 66 13 – Telescopic Folding Bleachers
- f. Equipment: Refer to APS Design Guidelines, Division 11, Section I – Athletic Equipment And APS Standard Specification Section 11 66 23 - Gymnasium Equipment.

B. Auditorium

1. If required, the auditorium should be provided with stage for the purpose of presenting music and other performing at programs.

2. The auditorium may be used for instruction in drama, music, debate, plays and various other school activities.
3. Should be located near vocal and instrumental music areas.
4. Spaces should include auditorium stage, projection room and design room. The floor should slope near the stage.

C. Kitchen/Cafeteria

1. Atlanta Public Schools Food Nutrition Coordinator shall be contacted by the APS Project Manager to participate in all planning stages for any new, renovated or phased facility. Nutrition must decide which food service equipment is necessary and provide all necessary information for the architect and contractor. (Refer to Division 11, Section VI. School Nutrition Design and Equipment).
2. High School Servery shall be laid out using a food court design. Reference Division 11, Appendix C for typical layout
3. The area requirements for a High School are:

Areas

- a. Preparation Kitchen
- b. Serving Area
- c. Dry Storage
- d. Refrigerator
- e. Freezer
- f. Office
- g. Employee Restrooms
- h. Chemical Supply
- i. Hood Size
- j. Mop Room
- k. Can Wash Room
- l. Dish Wash Collection
- m. Washer/Dryer/Locker Room
- n. Loading Dock
- o. Receiving Area
- p. Vending area

D. Art Room

Provide vinyl floor with floor drain, area of painting and drawing near sink, area for potters' wheels near sink, marker/tackboards, natural lighting but with blinds, separate kiln and storage room with ventilation system for kiln.

E. Music Room/Choral

1. The music curriculum should provide students the opportunity to express themselves by performing, describing, creating and responding to music. They should learn to understand and appreciate the music expression of the others and to value music. The music room should be located away from other instructional areas. Key points are to assure silent HVAC, silent ballasts on fluorescent lights, and proper humidity control for piano and wooden equipment. The room must be secure to protect expensive equipment used daily.
2. **Basic Classroom/Band and Orchestra**
 - a. Main activity area
 - b. Instrument playing/set-up area
 - c. Storage Rooms for Instruments, choral uniforms, band uniforms
 - d. Large ensemble, small ensemble and individual practice rooms
 - e. Keyboard Lab
 - f. Music Library
 - g. Choral, Band, and Orchestra teachers offices
 - h. Instrument Repair
 - i. Dance Studio
 - j. Theatre Dressing Rooms
 - k. Commons Area

F. Media Center

1. Activities in the library media center include individual and group instruction, media production, listening, viewing, browsing and computer instruction for all grade levels and all subject areas.
2. Desired Spaces for the Media Center - High School.
 - a. Main Reading Room
 - b. Office
 - c. Workroom with sink
 - d. Media Production Room
 - e. Distribution Room
 - f. Conference Room
 - g. Audiovisual Equipment Storage Room
 - h. Periodical Storage Room
 - i. Computer Area (minimum fifteen computers and eight printers)

G. Administrative Area

The High School Transformation program will restructure the campus into multiple learning centers, each with their own administrative structure and space. The types of administration spaces will vary based on the High School transformation plan for each project. Provide appropriate data and phone lines for office equipment, computers, and employee/staff check-in (KRONOS system), consult Project Manager to identify two locations.

1. The administrative area shall be located near the main entrance to the school and shall provide the ability to monitor and control access to the building. The activities conducted in this area include reception of visitors; individual and small group conferences with students, teacher, parents and others; filing and management of student and personnel records; program registration; student discipline; a small clinic and preparation of administrative documents and materials.
2. This area should be adjacent to the main entrance and in close proximity to the guidance counseling center, media center and the cafeteria.
3. Space Considerations:
 - a. Principal's Office: Locate so that a second door, with access to a corridor, is provided. Locate near Conference Room.
 - b. Asst. Principal Office: Based on school enrollment. Should not be located together.
 - c. Instructional Specialist: Based on school enrollment.
 - d. Conference Room: Room to be used for group conferences up to 20 Persons.
 - e. Secretary/Reception: Administrative space for two/three persons and visitor waiting area.
 - f. Faculty Workroom: Provide sink/base cabinet, storage cabinets and counters, space for copier and fax machines. Include area for teacher mail slots
 - g. Clinic W/ Restroom: Space for clinical worker, 2 cots, and sink/cabinet, min 40 Sq.Ft. storage. If space is available, add one hand wash sink with hot and cold water.
 - h. Student Records Room: Fire Protected.
 - n. General Storage: May be combined with Vault or Workroom.
 - o. Opportunity Room: General Storage.
 - p. Adult Restrooms: Provide 2 faculty/staff restrooms within the Administration suite.
 - q. PTA Workroom / Parent Center: Locate near Faculty workroom
 - r. Testing Materials Safe Storage Room Provide secure space of 144 SF for storage of testing materials.

H. Classrooms: Reference Division 12, Appendix A

1. Classrooms shall be provided with standard casework packages including:
 - a. Storage case
 - b. Teacher wardrobe/storage

2. (Refer to APS Design Guidelines, Division 6, Section III – Casework.)
 - a. Room numbering shall be logical when walking in the building and relate to the room's location in the building. For example, odd numbers on left side of corridor and even on right, 101 is on the first floor and 201 is on the second. Four digit numbers may be required in large, multilevel building. Each floor shall be consistent logic. Numbering scheme shall be developed during the schematic phase and shown on design development documents and approved by Project Manager prior to beginning construction documents. This numbering system will be utilized by other vendors and building systems such as the intercom, fire alarm and burglar system therefore it is critical that the system is logical and consistent through out the building. Architect must follow State DOE Guidelines for numbering of buildings and spaces.
3. Student corridor lockers, when provided shall have a logical, consistent sequence of numbering as you walk around the building. Four digit numbers may be required for large multi level buildings. Typical sequence: the first number should relate to the floor the locker is on with the final digits noting the locker. (0-99)

I. High School Transformation Program

1. The High School Transformation Program will create smaller 21st century learning centers within the structure of the High School Campus. Research shows that secondary students learn better in smaller, more personalized settings.
2. The High School Transformation Program will restructure the campus into multiple learning centers with their own administrative structure. Building configuration, number of classrooms, classroom relationships, number and types of administration spaces etc. will vary based on the High School transformation plan for each project. Some facilities such as the Cafeteria and Physical Education Programs will be shared among the learning centers. The APS Project Manager will provide detailed program information to the design team on the transformation initiative for each project.
3. Further information on the High School Transformation Program may be accessed at http://www.Atlanta.k12.ga.us/content/hs_transformation.aspx.

“BASIC” HIGH SCHOOL PROGRAM

Grades 9-12

Capacity 1430 Students

#	Space	Comments / Square footage (per space)
CORE CLASSROOM AREAS – Grades 9th, 10th, 11th & 12th 1(Divided among multiple learning centers)		
17	Language Arts Classrooms	750 SF each
13	Mathematics Classrooms	750 SF each
1	Math Lab	1,000 SF
13	Social Sciences Classrooms	750 SF each
8	Foreign Language Classrooms	750 SF each
4	Program for Exceptional Children (PEC)	750 SF each
2	ESOL	750 SF each
1	Foreign Language Lab	750 SF
3	Teacher Planning/Work Area	400 SF each
3	Teacher Storage/Lockers	250 SF each
3	Computer Labs	1000 SF each
SCIENCE CLASSROOMS		
4	General Science Labs	1,000 SF each
4	Biology Labs	1,000 SF each
2	Chemistry Labs	1,000 SF each
1	Physics Lab	1,000 SF each
5	Science Prep/Stock Rooms (Shared between two Labs)	260 SF each
BUSINESS / TECHNOLOGY		
2	Business and Information Technology Labs	1,750 SF each
2	Business Classrooms	1,100 SF each
FINE ARTS		
2	<i>General Art Studios</i>	1,000 SF
1	Kiln Room/3D Art Storage	350 SF
1	Spray Booth	100 SF
1	Supply Room/Storage	250 SF
1	Photography Lab (dark room)	750 SF
1	Chemical Storage	100 SF
1	Multi-Purpose Classroom/Film processing	750 SF
2	Film Loading	50 SF each
1	Gallery	500 SF
1	Teacher Work Areas	150 SF
MUSIC		
1	Band Room	2,000 SF
1	Choral Room	2,000 SF
1	Orchestra Room	2,000 SF
1	Music Director Office	250 SF
1	General Classroom	750 SF
1	Music Workroom	300 SF
5	Practice Rooms	80 SF each
2	Instrument Storage	300 SF each
2	Uniform Storage	300 SF each
1	Music Storage	250 SF
1	Keyboard Lab	750 SF
3	Offices	150 SF each

JUNIOR ROTC		
1	Rifle Range	2,100 SF
1	Training Area	1,200 SF
2	Classrooms	1,000 SF each
2	Offices	150 SF each
1	Storage Room	200 SF
1	Armory	600 SF
MEDIA CENTER - Note: Square footage and equipment requirements should meet GDOE minimum standards.		
1	Circulation Desk	200 SF
1	Reference Collection	120 SF
1	Fiction/Non-Fiction Collection	800 SF
1	Reading Area	2,000 SF
1	Processing/Workroom	250 SF
1	Media Specialist Office	150 SF
1	Periodical Storage	80 SF
1	Conference Room	250 SF
1	AV Storage	300 SF
1	Main Distribution Feed (MDF)	260 SF
1	Media Distribution Center	330 SF
1	Tech Office/Repair	240 SF
1	Student Work Center	120 SF
1	Small Group Study Room	150 SF
1	Interactive Learning Lab	1,200 SF
1	Interactive Learning Lab Office	120 SF
1	Interactive Learning Lab Storage	90 SF
PHYSICAL EDUCATION - Note: Square footage and equipment requirements should meet GDOE minimum standards.		
1	Main Gymnasium (w/ cross courts)	Per GDOE requirements
1	Practice Gymnasium	Per GDOE requirements
1	Weight/Aerobics/Fitness Center	1,000 SF
1	Gym Lobby & Pre-Function Area	TBD based on school need
1	Tickets/Box Office	200 SF
1	Concession/Spirit Store	300 SF
1	Athletic Director Office/Lockers/Shower/Toilet	230 SF
1	Sports & P.E. Equipment Storage	750 SF
1	Uniform Storage	TBD based on school need
2	P.E. Coaches' Office/Lockers/Shower/Toilet	350 SF each
2	Student Locker/Shower Rooms (1 ea. for Girls/Boys)	TBD based on school need
1	Visiting Team Room	500 SF
1	Staff/Coach Showers (officials)	250 SF
1	Laundry Room	150 SF
1	Vending	100 SF
1	Training Room	200 SF
2	P.E. Classrooms	750 SF each
1	Field Equipment Storage	TBD
1	Softball Field	TBD
1	Baseball Field	TBD
1	Practice Field & Track	TBD
1	Tennis Courts	TBD

VARSITY ATHLETICS		
1	Male lockers/Shower/Toilets	1300 SF
1	Female Lockers/Shower/Toilets	1300 SF
2	Team Rooms	300 SF each
1	Weight Room	1,000 SF
2	Coaches' Offices/Shower	200 SF each
PERFORMING ARTS/THEATER		
1	Audience Seating	Varies based on number of seats.
1	Stage	800 SF
1	Lighting Control Booth	100 SF
1	Stage Shop/Storage	800 SF
2	Dressing Rooms	100 SF each
2	Costume/Equipment Storage	150 SF each
1	Dance Room	750 SF
PROGRAM FOR EXCEPTIONAL CHILDREN		
3	Itinerant Teacher Classrooms	750 SF each
3	PEC Classrooms	750 SF each
CAREER ACADEMIES		
Note: These Academies are to be determined by the school instruction/administration and the space and equipment requirements are to be based on the GDOE standards.		
STUDENT CLINIC		
1	Nurse/Reception	140 SF
2	Exam/Sick Room	100 SF each
2	Toilets	50 SF each
TEACHER SUPPORT		
1	Magnet Coordinator Office	120 SF
2	Career Academy Coordinator Offices	120 SF each
6	Departmental Chairperson Offices	120 SF each
4	Resource Rooms	200 SF each
4	Grade Conference Rooms	150 SF each
6	Book Rooms (Minimum 1 per floor)	100 SF each
2	Project Grad Offices	200 SF each
1	Project Grad Classrooms	660 SF
1	Project Grad Storage Rooms	150 SF
NUTRITION.		
1	Cafeteria (Student)	Seat ½ of the Student Population
1	Faculty Dining	450 SF
1	Food Court Servery Stations	1,000 SF
1	Servery Storage/Supply	200 SF
1	Kitchen	Comply with GDOE requirements
ADMINISTRATIVE SUITE		
	<i>High School Transformation will create a separate Administrative Area for each Learning Centers or Small School floor. The APS Project Manager will provide the Program configuration for the Administrative Areas at the start of each project. The following program is for a standard (One Administration Area) High School and shall be modified as directed..</i>	
1	Waiting Area	400 SF
1	Receptionist	150 SF
1	Principal's Office/Restroom	350 SF
1	Administrative Assistant/Secretary Office	120 SF
3	Assistant Principal Offices (remote)	200 SF each
2	Secretarial Workspaces Main Desk area	120 SF each

1	Registrar's Office	180 SF
1	Records Storage / Storage / Supplies Room	300 SF
1	General Storage / Supply Room	200 SF
1	Work Room / Duplications	400 SF
2	Conference Rooms	400 SF each
2	Staff Restrooms	40 SF each
2	Public Restrooms	60 SF each
1	Parent Center	750 SF
1	Opportunity Room/In School Suspension	120 SF
1	Vault Room	75 SF
1	Archives	TBD based on school need
1	Career Center	1000 SF
1	Testing Materials Safe Storage Room	144 SF
COUNSELING SUITE		
1	Waiting Area	200 SF
1	Reception/Staff	150 SF
3	Counselors	150 SF each
3	Intern Offices	60 SF each
1	College Resource	120 SF
1	Career Resource	120 SF
1	Social Worker	150 SF
1	Records Storage	130 SF
FACILITY SUPPORT (maybe intergrated into Small School Main Office)		
1	Building Mechanic Office	150 SF
6	Custodial Closets	35 SF each
2	Custodial Storage	300 SF each

NOTE: * Stated "capacity" is based on the adopted Planning Assumption of a maximum of 26 students per core classroom. In High Schools, specific curriculums/themes dictates specific departmental needs, including the number of labs and types of labs required.

XV. SCHOOL TECHNOLOGY

A. General

Technology for instruction includes a broad spectrum of voice, data and video systems, and equipment. The physical characteristics of a school building and its classroom are unique; therefore, it is virtually impossible to develop a template for all schools. Architect/Engineers will need to work closely with the APS Project Manager to ensure that the Technology infrastructure needs of a school are incorporated in the design. This contact should be initiated during the pre-design phase of any project.

B. Infrastructure

In designing new schools or remodeling existing schools, it is important to provide the proper infrastructure. The needs for building layout and design, communications systems, electrical power systems, mechanical systems, and pathways to support technology needs are changing constantly.

1. **Media Centers** are changing from strictly text libraries to electronic media reference, access and distribution centers.
2. Traditional **Industrial Arts** shops are evolving into tech-prep labs, simulation and CAD/CAM labs.
3. **Science Classes** are digitizing experiment results, analyzing data, and simulating physics and chemistry experiments that were impossible in the past.
4. **Classrooms and independent learning areas** now incorporate technology work areas.
5. **Teachers and Administrators** need work areas that incorporate networked computers and telephones.
6. **Communication System Rooms (MDF room)(IDF room)** are needed to house telephone, paging, intercom systems, computer network bugs, servers and network control systems, and video head-ends. These rooms should be secure, with adequate space for operating and servicing the equipment, proper ventilation, temperature and humidity control, fire suppression, and proper lighting and electrical power.
7. **Electrical Power Systems** should be designed to deal with the non-linear loading that electronic equipment presents to the power system. The electrical power system should also include a bonding and grounding system that meet National Electric Code (NEC) and Electronic Industries Association/Telecommunication Industries Association (EIA/TIA) codes and standards

C. Basic Electrical Requirements

1. Each classroom will require a lightning/surge protected 20-amp circuit for the computers and printer and 4 amps for the TV monitor.
2. The head-end, main equipment room will require 2-20 amp circuits for the first two (2) racks, and 1-20 amp circuits for every rack thereafter for the Video Information Systems.
3. For the telephone system, 1-20 amp circuit and surge protection for all Telephone Trunks entering the school.
4. Provide 4 amps for each File Server, and 1 amp per network component.

D. Pathway Systems provide the support cables from communication rooms and closets to the multitude of outlet locations throughout a school. These systems should be designed to accommodate growth and change.

E. HVAC Design should anticipate that cooling loads would increase by at least 25% for a minimum of five (5) computers in a classroom. The HVAC equipment design should consider the classroom space limitations and ensure that equipment is not placed on the classroom floor. The main equipment room must maintain a temperature in the range of 60⁰ F to 72⁰ F and the design should consider humidity control for equipment.

F. Light Design is critical in classrooms. The system must reduce glare and have the ability to dim, while providing sufficient light to take notes. A combination of independently switched low voltage, fluorescent fixtures, and parabolic louvers should provide approximately 75 foot-candles of light in the classroom.

G. Standards

1. **EIA/TIA 569.** Defines standards for communications rooms, closets, entrance facilities, raceways and conduits for the equipment and cabling systems required for communications connectivity.
2. **EIA/TIA 607.** Defines standards for bonding and grounding of communications cabling infrastructure to ensure human and equipment safety.

H. **Main Distribution Frame (MDF)** room is required in every building. This room is the entry point for communication cables entering the building and the origination point for communications systems within the building.

Space Design Criteria:

1. Minimum area: 324 square feet (18' x 18") (Supports maximum of 90 Comm. Outlets). Space shall be located so that no drop shall be further than 295' to any station. Acoustical tile ceiling will be required. Floor shall be vinyl composition tile with resilient base or sealed concrete..
2. Metal door with grain tech or solid core wood door (1) 42" X 84" with access control hardware is preferred. Doors swing out.

3. Plywood Backboards (3/4" x 8'h) shall be installed 5 inches above finish floor to 12 inches below the ceiling and painted with gray flame retardant latex paint on both sides..Applied to all walls except the entry door wall.
4. Provide (3) three entrance conduit sleeves 4" diameter.
5. Provide seven (7) isolated double duplex power outlets (NEMA 5-20R, 125 VAC) each on its own 20 ampere circuit breaker.
6. Provide (2) isolated 208V 20 amp outlets (1 NEMA L5-30R AMP twist lock and 1 NEMA 30R straight blade)
7. Provide a 1/2" conduit to the building ground. Install a ground bus sized for #6 AWG ground conductors.
8. MDF room temperature shall be maintained between 40-78 degrees Fahrenheit. Relative humidity shall not exceed 60% and expected heat load generated by installed equipment is 50 w/square feet.
9. Minimum lighting level shall be 50 foot-candles measured 3 feet above finished floor.
10. Provide and install portable fire extinguisher (Carbon Dioxide) near door.

- I. **Intermediate Distribution Frame (IDF)** room is an interconnection point and serves as the distribution point for horizontal cable to the communications outlets or lab hubs within a building. The IDF functions are to be used as a secondary communications equipment room to centralize wiring from other areas and distribute to the MDF.

Space Design Criteria:

1. An IDF room shall be provided on each floor. Minimum area is 100 square feet (10' x 10'). Space shall be located such that a communications station cable run shall not exceed 290 feet. Acoustical tile ceiling will be required. Floor shall be vinyl composition tile with resilient base or sealed concrete.
2. Metal door with grain tech or solid core wood doors (2) 30" x 80" with access control hardware is preferred.
3. Plywood Backboards (3/4" x 8'h) shall be installed 4 feet above the floor to 12 inches below the ceiling with minimum height of 6 feet and painted with light colored gray flame retardant latex paint on both sides..
4. Provide an entrance conduit sleeve 4" diameter.
5. Provide seven (7) isolated double duplex power outlets (NEMA 5-20R, 125 VAC) each on its own 20 ampere circuit breaker.
6. Provide (2) isolated 208V 20 amp outlets (1 NEMA L5-30R AMP twist lock and 1 NEMA 30R AMP straight blade)
7. Provide a 1/2" conduit to the building ground. Install a ground bus sized for #6 AWG ground conductors.

8. IDF room temperature shall be maintained between 40-78 degrees Fahrenheit. Relative humidity shall not exceed 60% and expected heat load generated by installed equipment is 50 w/square feet.
9. Minimum lighting level shall be 50 foot-candles measured 3 feet above finished floor.
10. Provide and install portable fire extinguisher (Carbon Dioxide) near door.

J. Communications Panel (CP)

If the area to be served from the IDF is small and floor space is unavailable to construct an IDF, use a Communications Panel (CP) consisting of a floor standing lockable console or wall mounted cabinet as the IDF, provided they are enclosed, accessible and secure.

K. Classroom Technology Infrastructure Support

1. Conduit shall be stubbed at least ¼" inside all classrooms. Install minimum 2 1/2 "conduit sleeve in firewalls; minimum 4" sleeve in floor for risers; minimum ¾" conduit for island drops. Access shall be provided through solid ceilings and atria.
2. Designate a minimum of 15 linear feet wall space for technology use.
3. Install three (3) duplex outlets (or 1 Quad and 1 duplex) for technology and two (2) additional general use duplex outlets on each wall (8); install one (1) duplex outlet near ceiling for video. Total of 14 duplex outlets per classroom.
4. Install sixteen (16) duplex outlets in Computer (Interactive Labs).
5. Communication drops shall not be placed under coat racks, markerboard or tack boards, outside windows or sinks; they shall not be installed behind shelving or under counter tops.
6. Minimum separation between power and communications wiring shall be 12". Outlets shall not be installed near door entrances.
7. Provide power pole outlets for computers and equipment in the labs where access to the walls are not accessible, to prevent conduit and cabling on the floor. Limit the use of power poles.
8. Provide isolated ground outlets for computer outlets.
9. Indicate on drawings as NIC tables with cable trays for computer equipment wiring and outlets.
10. Insure the exiting power supply is sufficient for new computer equipment or technology.
11. Insure that the IDF/MDF rooms are sized properly to accommodate the equipment.

XVI. SAFETY AND SECURITY

- A. Achieving safe and secure learning environments is a priority for the school system. Several terms can be used to describe security through environmental design such as defensible space and items listed on the CPTED (Crime Prevention Through Environmental Design) worksheet. (Refer to Appendix “C” - CPTED Worksheet for additional information).
- B. CPTED Overview and Strategies
CPTED is an acronym for Crime Prevention Through Environmental Design. It is an approach to reducing crime and the fear of crime by teaming planners, designers, architects, landscapers, and law enforcement professionals to create safe surroundings within our constructed environment. The premise of CPTED is that proper design and use of the human environment can create a reduction in the incidence and fear of crime, and an increase in the quality of life. Four basic overlapping premises form the foundation of CPTED. They are defined as natural surveillance, territorial reinforcement, access control and maintenance.
1. Natural Surveillance: Criminals don't want to be seen. Placing physical features, activities, and people in ways that maximize the ability to see what's going on discourages crime. Barriers, such as bushes, sheds, or shadows, make it difficult for people engaged in legitimate use of the property to observe criminal activity. Landscaping and lighting can be planned to promote natural surveillance from inside a home or building and from the outside by neighbors or people passing by. Maximizing the natural surveillance capability of such “gatekeepers” as parking lot attendants and hotel desk clerks is also important. Ex: removal of window signs from stores to elicit surveillance from passersby.
 2. Territorial Reinforcement: This is simply the use of objects such as buildings, fences, signs, walls and pavement to express ownership. Property owners and legitimate users develop a sense of territorial control while potential offenders, perceiving this control, are discouraged. This concept includes features that define property lines and distinguish private spaces from public spaces using landscape plantings, gateway treatments, and signage, Ex: placing a simple 2 foot decorative fence around a front yard to differentiate it from the sidewalk.
 3. Access Control: Access control is a design concept directed primarily at decreasing crime opportunity by denying access to crime targets and creating a perception of risk for offenders. It is the physical guidance of people coming and going from a space by the judicious placement of entrances, exits, fencing, locks, speed bumps, landscaping and lighting. Design elements are used to clearly indicate public routes and discourage access to private areas and structural elements. Ex: the use of retractable crowd guidance ropes and webbing at the front gate of sporting events.

4. Maintenance: The more dilapidated an area, the more likely it is to attract unwanted activities. The maintenance and the “image” of an area can have a major impact on whether it will become victimized. A regular program of maintenance or street clean-ups can go a long way to making an area unattractive to offenders. Ex: The repair of broken windows in a restaurant

C. CPTED and Landscaping Principles

“Like steel attracts to a magnet” improperly planned landscaping can actually create an environment that’s conducive to crime and entice other illegal uses to the property.

1. Covering up parking areas
 - a. Berms, trees and hedges “cover-up” parking spaces. When possible, lots should be flat, with landscaping elements included to break up asphalt and cement areas. Landscaping should be kept low to the ground, to allow for sufficient visibility and surveillance.
2. Landscaping used to cover up unsightly space
 - a. Using landscaping to completely obscure walls, power transformers, fencing, and other unsightly objects.
 - i. Creates personal safety concerns for employees
 - ii. Can create workplace violence incidents
 - iii. Can increase vehicle theft and vandalism
 - iv. Can lead to increase in illegal dumping of waste and toxic waste
 - v. Can allow for increase in company theft/robbery
 - b. Interferes with CCTV surveillance
 - c. Interferes/obstructs proper lighting of property
3. Shrubs and groundcover height
 - a. Shrubs and groundcover should not exceed a maximum of 42 inches in height. Although the height of 36 inches is recommended for better visibility and surveillance purposes. The reason for this is children and smaller adults will have greater visibility.
 - b. Raised planters with plants should not exceed 42 inches in height. Placement and utilization are important to prevent obstruction of surveillance and the creation of concealed spots for hiding.
4. Tree canopy height
 - a. Trees should have a minimum 7 foot canopy
 - b. Trees should be trimmed to allow for proper use of CCTV cameras and all lighting devices.

D. Safe Rooms

1. The Department of Safety and Security is implementing one Safe Room for every Atlanta Public School.
2. The rooms are to be used to store testing materials and portable technology equipment, or other items as deemed appropriate by the building administrator.
3. The purpose of the SAFE ROOM is to provide a heightened-secure storage area for items physically placed in each room.
4. An assessment team was assigned to coordinate with building administrators the actual room to be used within each school.
5. Once room locations were identified, the Department of Safety & Security and Facilities Services Department began installing metal doors, surveillance cameras, motion lighting, keyless access, magnetic locks as added security enhancements.
6. Inappropriate Use
Locations identified as Safe Rooms cannot be:
 - a. located within an MDF or IDF closet.
 - b. a pass-through room (used to enter another location).
 - c. a current media center, library, classroom, office, cafeteria, lab, or other similar space.
 - d. a room used for storage of hazardous or cleaning material.
 - e. a room with more than one entry point, including roof access.
 - f. a room with windows. Use of a room with windows requires the approval of the Director of Security.
7. Room Size
 - a. A physical space of 10'x8' is the ideal space for the intended use of the safe room and applies in cases where a new construction or site renovation scenario exists. Existing safe room designated areas vary in size as selections were made based on available space.
 - b. In existing locations where no build-out is feasible, the safe room locations have been implemented in the spaces made available, and may be smaller than ideal, but functional.
8. Shelving
 - a. No shelves were added to the requirements of the initial Safe Room spaces through the district.

- b. Based on Administrator requests, the addition of shelves to new construction or renovation sites, where feasible, is recommended and offers additional storage for materials stored in the rooms.
- 9. Surveillance Camera Specifications (Installation Responsibility Area: Safety & Security Department)
 - a. Scope - Installation of Bosch IP Flexidome 495 (MWD-495V-0320P Infrared Night Vision) day/night camera and Cat6e cabling and labor to secure one SAFE ROOM per school throughout APS school district. *Please reference APS Standard Specifications for detailed functions, features, quality standards, and more.*
 - b. Camera Locations - All Safe Rooms will include two camera designed to capture video footage internal and external to the safe room.
 - i. One camera is to be mounted in exterior hallway of safe room focused on the external entrance of the safe room door.
 - ii. The second safe room camera must be mounted in the interior safe room with field of view located to maximum view of internal contents of rooms.
 - c. Licensing - Surveillance camera installations require the purchase of one legal license per camera installed.
 - d. Programming - Each camera must be programmed and configured for network access.
- 10. Motion Detector Specifications (Installation Responsibility Area: Safety & Security Department)
 - a. Scope - Each Safe Room is to include the installation of a motion detection device securely mounted at the interior location of the safe room. The motion detector installed is to be equipped with motion sensing technology designed to measure optical changes in the field of view for up to 50–80 feet. *Please reference APS Standard Specifications for detailed functions, features, quality standards, and more.*
 - b. Device Specifications - Current Safe Room Motion Detector specifications call for the installation, cabling, and programming based on the following requirements:
 - i. DS950 Motion Detectors
 - ii. Popit Module w/Tamper Switch
 - iii. 50'x50' PIR/Microwave Tritech w/Anti-Mask
 - iv. 18/4 Conductor Plenum
 - v. Batteries/Conduit/Wiremold

- c. Motion Detector Location - Inside each Safe Rooms there will be one motion detector installed and positioned to achieve optimal field of view of the room's entry point.
 - d. Programming - Each motion detector installed must be programmed and zoned into the existing burglary system.
11. Keyless Access Specifications (Installation Responsibility Area: Safety & Security Department)
- a. Scope - All Safe Rooms will include the cabling and installation of one keyless access card reader and all peripherals required for complete and thorough installation based on current APS design guidelines and specifications. Card Reader: Omni 90, Request-to-Exit (REX): Honeywell IS30, Alarm Controls AC-TS2T. *Please reference APS Standard Specifications for detailed functions, features, quality standards, and more.*
 - b. Device Location - Card Readers shall be located on the exterior of the safe room location for authorized access to the safe room.
 - c. Licensing - Keyless Access installations require the purchase of one lenel license per camera installed.
 - d. Programming - Each camera must be programmed and configured for network access.
12. Magnetic Locks (Installation Responsibility Area: Safety & Security Department)
- a. Scope - Each Safe Room is to include the installation of a magnetic locks device securely mounted at the interior location of the safe room. *Please reference APS Standard Specifications for detailed functions, features, quality standards, and more.*
 - b. Device Specifications - Current Safe Room Magnetic Locking system specifications call for the installation and wiring based on the following device make/model: Security Door Controls EM1511 (Single door mag) Door position switch built in. (24vdc, no substitute) with a Holding Force: 1650 foot lbs.; Dual Voltage (12/24 volts)
13. Doors and Hardware Specs (Installation Responsibility Area: Facilities Services Maintenance & Operations)
- a. Scope - All Safe Room doors will include the removal of the existing storage room and associated hardware. Installation of a safe-room quality replacement door and hardware components per Owners specifications.

- b. Locksets and Latches - Stanley/BEST 40H series Storeroom function Mortise Lockset (626 Finish). (No substitution)
 - c. Door Closers
LCN Model 4040 with 4040-72 st 3596 cover (No substitution)
 - d. Cores and Keys
 - i. Cores shall be of the BEST KK small format patented keyway.
 - ii. Owners will provide BEST with keying instruction.
 - iii. Cores and keys will be delivered to the owner through secure mail.
 - iv. 93K7W15-S3-626 Institutional Lockset; 1C7K1-626 Combined Cores
 - e. Magnetic Door Locks
 - i. Locknetic Model Number 390-626 (24v dc, no substitute)
 - ii. Minimum Holding Force: 1600 lbs.
 - f. Door
 - i. Door will be full hollow metal door sized to fit existing frame
 - ii. Door will be fire-rated compatible to industry standards
 - iii. Steelcraft – Graintech L Series Door
 - g. Hinges
Continuous hinges are required.
14. Motion Lighting Specifications (Installation Responsibility Area: Facilities Services Maintenance & Operations)
- a. Scope - Installation of Motion Lighting Hardware
 - b. Specification (as received from Facilities) - Hubbell Mfr# 12771; part # 54032693

END OF DIVISION 1

DIVISION 1 – APPENDIX A

**ATLANTA PUBLIC SCHOOLS
BUILD SMART PROJECT
FACILITIES MASTER PLAN**

Planning Assumptions & Issues

Updated November 19, 2004

In 1999, the following Planning Assumptions were made to help guide the initial creation of the BuildSmart Facilities Master Plan consistent with the APS instructional vision. As part of current work to prepare a BuildSmart Update, APS Facilities Services seeks to obtain validation/refinement/expansion of the previous BuildSmart Planning Assumptions in order to guide the Update. The original BuildSmart Planning Assumptions are as follows:

1. **What is the MAXIMUM and MINIMUM CLASS SIZE? By class type.**

The class size will be per the APS Policy as stated in the policy document under Descriptor Term: Class Size; Descriptor Code: IEC; Date Issued 4/16/90.

Summary of Existing Policies:

CLASS SIZE: The Atlanta Board of Education has established that classes will not be organized with fewer than 15 students enrolled except with the approval of the superintendent. Maximum class sizes have been established as follows: Kindergarten- 21 students, 1st-3rd- 25 students, 4th-8th- 32 students, 9th-12th- 32 students. (4-16-90)

2. **What is the MAXIMUM and MINIMUM SCHOOL SIZE? By school type.**

Pre-K	No Minimum established
Elementary	450 – 600 Students
Middle	750 - 900 Students
High School	1200 - 2000 Students

3. **Will the system be organized by “NEIGHBORHOOD SCHOOLS” or by “SCHOOL of CHOICE”?**

The Policy of “School of Choice” will remain, but the facilities will be planned on the basis of the Demographic count of students within the attendance zone. The current practice of Administrative Transfers will be limited to the current or planned permanent space.

The facilities will be organized around Elementary School attendance zones. Middle schools will be arranged by the sum of specific Elementary school attendance zones. High schools will be arranged based on the sum of specific Middle school attendance zones. If the population of a middle school must be split to accommodate High school population limits, the split will occur along Elementary School attendance zone boundaries.

Summary of Existing Policies:

SCHOOL ATTENDANCE ZONES & ADMINISTRATIVE TRANSFER: Students are to attend the school in the zone in which is located the bona-fide residence of their parent(s)/legal guardian(s) except in those cases when: (1) appropriate administrative approval to enroll elsewhere is sought and obtained through the provisions of

administrative regulations; or (2) the school system has identified special services that the student needs and those services are available at an Atlanta Public Schools' site other than the student's zone school. (3-13-89) & (4-16-90)

ROLE OF THE COMMUNITY SCHOOL: The role of a community school is broadly defined to encompass the needs of the total community by extending its services around the clock and around the calendar. Its programs include youth enrichment, recreation, adult education, and the solution of general community problems. The Board authorizes the operation of such schools. (12-10-90)

4. What methods will you use to achieve diversity?

The Policy of "School of Choice" (Administrative Transfers) will remain, but the facilities will be planned on the basis of the Demographic count of students within the attendance zone. Any "extra" students will be housed in extra, unused space or in temporary facilities.

5. What is the MINIMUM SITE SIZE? By school type. If this can be answered, skip directly to question 8. If this cannot be answered please answer questions 6 & 7.

Georgia Department of Education Minimum Standards:

Pre-K	Not defined
Elementary	(9.5-11 Acres) 5 acres plus one acre for each 100 children FTE 6 acres APS minimum
Middle	(19.5 – 21 Acres) 12 acres plus one acre for each 100 children FTE 12 acres APS minimum
High	(32 – 40 acres) 20 acres plus one acre for each 100 children FTE 20 acres APS minimum

Summary of Existing Policies:

The acreage meets the minimum requirements of the State Board of Education.
Elementary Schools- five acres plus one acre for each 100 children in FTE.
Middle Schools- 12 acres plus one acre for each additional 100 children in FTE
High Schools- 20 acres plus one acre for each additional student in FTE.

In highly developed areas deviations from minimum acreage may be made by the site approval committee and considered appropriate. Although minimum acreages are established, large acreages are highly desirable. Also, those responsible for selecting sites must remain aware of development limitations imposed by certain physical factors of the acreage being considered. The size of the school may not be the only criterion affecting site size. The possibility of expansion, anticipated community use of the school area and the school program are other factors to consider.

Criteria for Selection of School Sites Georgia Department of Education Facilities Service Unit October 1997.

(GDOE- Facilities Service Unit, Rules and Guidelines Booklet "A Guide to School Site Selection", October 1997.)

6. **What is the minimum APS standard site requirement for Physical Education, by school type?**

Elementary -	Fenced Kindergarten Playground – 500 sf Hard surface play area – 1000 sf Grassed play area – 2 fields soccer/baseball @ 24,300 sf ea.
Middle -	Grassed Play area – 4 fields soccer/football/baseball @ 45,000 sf ea.
High School	Grassed play area – 4 baseballs, 1 softball, 1 soccer, 1 football, Hard surface play area – 8 tennis courts

7. **What is APS's minimum Parking standard, by school type?**

All parking must be accommodated on site.

Elementary-	One Space for each Staff person plus 12 visitor spaces
Middle -	One Space for each Staff person plus 20 visitor spaces
High -	One Space for each Staff person plus 25 visitor spaces and One parking space for every 2.5 students

8. **Can the exterior Physical Education spaces be shared with another school?**

Yes, for Middle and High.
No for Elementary

9. **What minimal adjacency should the exterior Physical Education space have to the school(s)?**

Elementary -	Exterior Spaces may not be shared during school hours. They may be located on the same site as the school, or immediately adjacent to it (across a street).
Middle -	May be shared with another school during school hours and should be in the immediate vicinity, across the street, if not shared or within 1 mile if shared and used on a daily basis.
High -	At least 70% should not be shared by another school. The remainder may be shared with a High school or a Middle School. Should be in the immediate vicinity, across the street if not shared or, within 1 mile if shared and used on a daily basis. Competition facilities may be centralized if they are of sufficient number.

10. **What spaces are devoted to Instructional Technology, by school type?**

Elementary –	One Learning Lab per School sized at standard classroom size. 5 Computers per classroom will be assimilated into the standard sized classroom without adding to the classroom area standard.
Middle –	Not defined.
High -	Not defined.

**Atlanta Public Schools
Facilities Capital Investment Program Technology Plan Summary***

Vision for Schools:

- Every school will have fiber-optic cabling needed for voice, video, and data communication.
- Every school will have sufficient electrical power, HVAC, and other facility components needed to support a technology-rich learning environment.
- Every school will have a minimum multi-media to student ratio of 1:5; until every student has a computer.

- Every school will have a minimum multi-media to staff ratio of 1:2, until every certified staff person has a laptop.
- Every school will have an Automated Media Center, with a minimum of 8 computers connected to the Internet.
- Every school will have 3-5 multimedia computers in each classroom that are connected to the Internet, and at least one computer lab for large group instruction.
- Every school will have a distributed video network with monitors in each class, the Media Center, lobby and other strategic locations for video-on-demand, WBPA and cable TV broadcasts, and communication via the APS Information Network.
- Every school will have varied technology resources needed to support instruction.

Benchmark goals for the next 3 to 5 years:

A minimum computer-to-student ratio of 1:5.

- A minimum computer-to-staff ratio of 1:2.
- Fiber cabling to all classrooms and instructional spaces.
- Adequate network components to deliver video & data to the desktop (i.e. servers, switches, routers, and hubs).
- Teacher presentation stations in each classroom that include:
 - Notebook computer with docking station
 - Large screen monitor for student viewing (25– 32")
 - Laser disc player
 - VCR
- Three to five multi-media networked computers per classroom.
- An interactive Learning Lab for each school (multiple labs for schools with more than 1200 students).
 - Multi-media projector
 - Smart display Board
 - 20 to 30 Multi-media computers with two-way audio & video
- Large screen monitor, Laser disc, & VCR
- Automated Media Center with:
 - 8 multi-media lookup stations, with Internet access
 - Circulation software & electronic card catalog
 - CD-ROM Tower
 - Bar code Scanners
 - Large screen monitor, Laser disc, VCR, Camcorder, Digital Camera, Document scanner
- Broadcast and cable channel video available throughout the school
- Increased Internet access to classroom

Policy Implications:

- There is a need to develop a long-range financial strategy to fund technology that is budgeted as an ongoing operational expense, and not as a one-time capital outlay.
- There is a need to shift from a purchase to a leasing strategy in acquiring multimedia computers.
- Existing policies impacting the disposal of obsolete computer equipment need to be reviewed and revised as appropriate.
- Performance standards for the effective use of technology should be developed; and policies regarding required competencies for certified and noncertified staff should be considered.
- Acceptable use policies and regulations must be developed and revised as needed.
- The district should consider establishing a desired per pupil allocation for technology acquisition, maintenance, training and use
- The percentage of the budget allocation for staff training should be established.

Challenges in Achieving Our Vision:

- Updating a massive inventory of outdated computer equipment.
- Incorporating technology funding as part of on-going business expenses.
- Computer maintenance.
- Incorporating the effective use of technology into job expectations throughout the system.
- Engineering the system's management and accountability systems.
- Hiring and maintaining skilled information technology staff.
- Improved stakeholders both in and outside the school system.

*(Excerpted from the Atlanta Public Schools Technology Plan Summary 1998-2002)

11. What criteria are to be used to dispose of property?

Elementary school sites will be identified for future sale if within ½ mile of an existing elementary school site and not supported by the population trends for the year 2005. Sites may be exempted if large enough to house a future Elementary School site, or if designated for a specific school support use. All sites identified for future sale will be appraised and recommended to the Board for their consideration before site specific solicitation of community and private developers. High School and Middle School sites will be identified for future sale if and not supported by the population trends for the year 2005.

Summary of Existing Policies:

DISPOSITION OF DISCONTINUED FACILITIES AND OTHER SURPLUS PROPERTIES:

- When it becomes necessary to discontinue the regular instructional use of a school facility, the Atlanta Board of Education shall use or dispose of the facility in accordance with the goals of the school system and in the best interest of the affected neighborhood and community as a whole.
- Surplus properties may be leased to non-profit organizations or governmental agencies for a nominal rent plus reimbursement for any expenses incurred by the school system.
- Surplus properties which are no longer needed by the school system and are not leased to a non-profit organization or governmental entity shall be sold (or leased) to the highest bidder at a public auction. Surplus properties may be sold (or leased) on a negotiated basis if no acceptable bids are received.
- The Board will seek community input, normally through the NPU for the area in which the property is located, before selling or leasing a surplus property to another entity.
(10-08-90)

12. What defines the LIMITS of a DISTRICT?

School Districts will be defined such that every School will have at least the minimum and no more than the maximum attendance as defined in question #2 above, in the year 2005. Neighborhood limits as defined by the NPU limits and geographic boundaries, where available, will be used to create school attendance zones.

13. **What criteria are used to OPEN or CLOSE a school?**
TO OPEN a school either
- to replace an existing school site(s) or
 - to service a new Attendance Zone created due to population growth, which cannot be served at existing school sites.
- TO CLOSE a school either
- the Attendance Zone is too small to deliver the minimum number of students needed to fulfill the minimum school size,
 - the existing site is below the minimum standard, or
 - the deferred maintenance equals or exceeds 50% of the replacement cost.
14. **What changes can be expected in the organizational structure of APS by 2009?**
There will be no changes in organizational structure that has not already been announced.
15. **What is the “Order of Magnitude” growth in staff expected by 2009?**
No staff growth is expected.
16. **What administrative functions need to be “CENTRALIZED” vs. “DECENTRALIZED”?**
Only the administrative functions directly associated with Warehousing, Transportation, Facilities, Training and Athletics will be remote from the Center for Leadership and Learning
17. **What is the “Order of Magnitude” budget for construction?**
There is no Order of Magnitude budget for the construction cycles necessary to maintain equity and minimum APS defined education programs. Are there specific sources of funding we need to consider? Do they have specific funding cycles?
18. **What FUNDING mechanisms should be considered? (Prioritize)**
For construction:
Public/Public Joint Ventures,
Private/Public Joint Ventures,
SPLOST,
Bond Referendum,
COPS,
Others will be prioritized as they are defined
19. **Will the existing breakdown of GRADES per school level be altered?**
Extended to include Pre-K?
They will be maintained as they currently exist: K-5, 6-8, 9-12
APS will add Pre-K centers as separately administered units. All Pre-K students will be housed in Pre-K centers if suitable centers can be located within two miles and on a public transportation route. Pre-K attendance zones will follow the sum of Elementary school districts to achieve attendance within the range listed in question #2 above.

20. **What "COMMUNITY" uses or functions should be considered in the schools?**

SFA Assumptions:

Community uses will be defined on a site by site basis. Strategic alliances are sought with:

- Atlanta Parks and Recreation, for Arts and Recreation sites
- Atlanta Fulton County Public Library for Library sites
- YMCA for Recreation sites
- Boys and Girls Club of Metro Atlanta for Recreation Sites
- Head start for Pre-K sites
- Others as identified by the community

The intent is to allow after-hours access to school facilities staffed by these organizations in exchange for construction funding. In the case of Head Start, APS would provide leaseholds to discontinued school facilities in exchange for full staffing by Head Start. If so, we assume that APS will discontinue their Pre K programs at their existing elementary schools.

21. **Legacy – What do you want to be known/remembered for?**

In determining the nature of the Master Plan we must be guided by the Goals and Values of the Board and the System. So far we have been guided by the goals of increased equity among the APS School facilities, increased efficiency in Facilities usage, and increasingly holistic and proactive approach toward facilities as community assets.

22. **What is the policy for providing office space to non-full time employees?**

Part time staff – Shared workstations where possible

Contractors – "Flex" workstations where possible

ADDITIONAL QUESTIONS (2004):

23. **What special instructional programs are supported by APS and where and how should they be accommodated (PEC, ESOL, etc.)?**

24. **Are any magnet programs/schools planned? Should vocational education programs be concentrated?**

25. **What are the APS policies on planning for charter schools?**

26. **What are the APS policies on providing transportation for students?**

27. **Any additional instructional issues?**

DIVISION 1 – APPENDIX B
CITY OF ATLANTA
BUILDING PERMITTING PROCEDURES AND GUIDELINES
EDUCATIONAL BUILDINGS PUBLIC SCHOOLS PRIVATE SCHOOLS COLLEGE/UNIVERSITY
VOCATIONAL TRAINING MUSEUMS

• [Applications and Requirements New Structures/Additions Site \(Partial\) Permit Interior Alterations](#)
[Demolitions Conversions \(Change of Occupancy\)](#)

- [Intake](#)
- [Permit Fees Certificate of Occupancy Electrical Plumbing HVAC](#)
- [Developmental Impact Fees](#)
- [Contact Information](#)
- [Building Plan Review](#)
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- [Certificate of Occupancy](#)
- [Zoning](#)
- [Site Development](#)

•

[Arborist](#)

- [Affiliated Agencies](#)
- [Frequently Asked Questions](#)
- [Glossary of Terms](#)

•

Applicable Codes

[Return to the Permitting Primer main page](#) [Return to the Commercial Primer main page](#)

COMPLETE PERMIT APPLICATION AND REQUIREMENTS

- All plans must be released for construction, signed and sealed by a Georgia registered architect or engineer on all pages (as appropriate).
- All buildings described in these plans shall be designed in compliance with the current applicable codes along with revisions and amendments.
- Ten (10) separate sets of civil and landscape plans including:

Division 1 – Appendix “B”
CITY OF ATLANTA

- Tree removal, protection and replacement information Visit Arborist Division
- All parking, including parking decks.
- Two (2) copies of hydrology study
- Two (2) copies of any pertinent ordinances (rezoning), special use permits, special administrative permits, variances or other documents relating to zoning approval, if applicable.
- Three (3) separate copies of plans showing water service with backflow prevention at meter
- Three (3) separate copies of plans showing general site plan, grading plan and a utilities plan indicating fire hydrants
- Six (6) separate sets of architectural and structural plans
- Three (3) separate sets of mechanical/HVAC plans
- Four (4) separate sets of electrical plans
- Three (3) separate sets of plumbing plans
- One (1) copy of specifications
- Two (2) copies of seating layout (or floor /accelagis/map/viewer.jsp/default.htmplan if there is no seating)

SITE (partial) PERMIT SUBMISSION REQUIREMENTS

All civil plans must be released

- All buildings described in these plans shall be designed in compliance with the current applicable codes along with revisions and amendments.
- Ten (10) separate sets of civil and landscape plans including:
 - Tree removal, protection and replacement information Visit Arborist Division
 - All parking, including parking decks
 - Two (2) copies of hydrology study
 - Two (2) copies of any pertinent ordinances (rezoning), special use permits, special administrative permits, variances or other documents relating to zoning approval, if applicable.
 - Three (3) separate copies of plans showing water service with backflow prevention at meter
 - Three (3) separate copies of plans showing general site plan, grading plan and a utilities plan indicating fire hydrants
 - Five (5) separate sets of either final architectural plans *or* preliminary architectural plans

Preliminary architectural plans are required for information to evaluate zoning conditions, impact fees and other matters and do not have to be sealed.

Preliminary architectural plans must include (at a minimum)

- Complete floor plans with dimensions
- Elevations
- Building occupancy
- Construction type
- Height and appropriate means of egress

INTERIOR ALTERATIONS APPLICATION REQUIREMENTS LARGE EDUCATIONAL BUILDING SUBMISSION REQUIREMENTS:

- All plans must be released for construction, signed and sealed by a Georgia registered architect or engineer on all pages (as appropriate).
- All buildings described in these plans shall be designed in compliance with the current applicable codes along with revisions and amendments.
- Two (2) copies of any pertinent ordinances (rezoning), special use permits, special administrative permits, variances or other documents relating to zoning approval, if applicable.

If the plans submitted include mechanical/HVAC, electrical and/or plumbing plans, add the following:

- Four (4) separate sets of architectural and structural plans
- Three (3) separate sets of mechanical/HVAC plans
- Four (4) separate sets of electrical plans
- Three (3) separate sets of plumbing plans
- Two (2) copies of seating layout (or floor plan if there is no seating)

If the project involves a change of use of occupancy, add three (3) copies of plans showing water service with backflow prevention at meter

SMALL EDUCATIONAL BUILDING SUBMISSION REQUIREMENTS:

- All plans must be released for construction, signed and sealed by a Georgia registered architect or engineer on all Pages (as appropriate).
- All buildings described in these plans shall be designed in compliance with the current applicable codes along with revisions and amendments.
- Four (4) separate sets of architectural and structural plans, if appropriate.

DEMOLITION APPLICATION REQUIREMENTS:

- Rodent Letter - A letter from a licensed pest control company stating a proper inspection has been conducted on the property that will be demolished.
- Two (2) site plans showing buildings, trees, roads and driveways for lots less than one (1) acre.

- a. Tree protection fence **MUST** be installed prior to any land disturbance activity.
- b. If trees will not be impacted (as defined by the City of Atlanta Tree Ordinance), applicant needs to submit a signed No Trees Impacted Statement and two photographs.
- Detail sheets provided by the Bureau of Buildings to the applicant will illustrate installation of silt fencing at the perimeter of the land disturbance activity along with construction entrance/exit details and tree protection
- Notation to be placed on the plans by the Bureau of Buildings staff will state: “Silt fencing and construction entrance/exit shall prohibit soil from exiting the site. This permit is not valid if any existing stream is located on the property. A separate plan review and approval is required from Site Development and Arborist.”
- Seven (7) site plans with erosion control must be submitted for any lot greater than one (1) acre.
- In some cases an inspection prior to demolition may be necessary .
- A Sewer Tap Permit is required from the Bureau of Buildings’ Plumbing Division.

CONVERSION (CHANGE OF OCCUPANCY) APPLICATION REQUIREMENTS LARGE EDUCATIONAL BUILDING SUBMISSION REQUIREMENTS:

- All plans must be released for construction, signed and sealed by a Georgia registered architect or engineer on all pages (as appropriate).
- All buildings described in these plans shall be designed in compliance with the current applicable codes along with revisions and amendments.
- Two (2) copies of any pertinent ordinances (rezoning), special use permits, special administrative permits, variances or other documents relating to zoning approval, if applicable.

If the plans submitted include mechanical/HVAC, electrical and/or plumbing plans, add the following:

- Four (4) separate sets of architectural and structural plans
- Three (3) separate sets of mechanical/HVAC plans
- Four (4) separate sets of electrical plans
- Three (3) separate sets of plumbing plans
- Two (2) copies of seating layout (or floor plan if there is no seating)

If the project involves a change of use of occupancy, add three (3) copies of plans showing water service with backflow prevention at meter.

SMALL EDUCATIONAL SUBMISSION REQUIREMENTS:

- All plans must be released for construction, signed and sealed by a Georgia registered architect or engineer on all pages (as appropriate).

- All buildings described in these plans shall be designed in compliance with the current applicable codes along with revisions and amendments.
- Four (4) separate sets of architectural and structural plans, If appropriate

INTAKE

The intake process is the stage in which the permit application is created. During this stage all drawings are submitted for review and approval.

The following link includes the checklist for new commercial construction new commercial construction checklist

PERMIT FEES A permit fee of \$5.00 per \$1,000.00 of valuation, or \$50.00 whichever is greater, shall be paid. No permit is valid until such fees have been paid to the City of Atlanta and validated by Bureau of Treasury.

- **A re-inspection fee** of \$50.00 shall be imposed for each re-inspection after the initial inspection when a written notice has been issued requiring the correction of inferior work.
- **A fee of \$1.00 per square for signs** or \$50.00, whichever is greater, will be charged.
- **All building construction without a permit** will be assessed a fee of double the usual permit fee will be charged for. However, in no case shall the penalty portion of said fee exceed \$1,000.00.
- **Change of contractor fee** shall be \$50.00.

DIVISION 1 – APPENDIX C

**SECURITY
CPTED WORKSHEET**

**Security
CPTED Worksheet**

ITEM	OWNER	CUSTOMER	REVIEW REQUIRED (BY Security Rep)	Initial Review (Security Rep Initials)	Criteria
Front office location		Security/Admin	Security/Admin	Pre-planning	Front of building with open site lines through careful placement of landscaping and lighting.
Parent-student drop off		Security/Admin	Security/Admin	Pre-planning	Separate from bus loop/control speeding, avoid accidents, blind spots and traffic conflicts/pedestrian traffic is addressed with well designed crossing areas and separated from vehicle traffic.
Bus loop		Security/Admin	Security/Admin	Pre-planning	Free of pedestrian and vehicular traffic/separate from other drop-offs, control speeding/avoid accidents, blind spots and traffic conflicts/no double parking.
Curb lanes		Security/Admin	Security/Admin	Pre-planning	Clearly marked.
Interior Signage		Security/Admin	Security/Admin	30 days-1st day	Highly visible, clear lettering, easy to follow, relevant languages, illustrations.
Exterior Signage		Security/Admin	Security/Admin	30 days-1st day	Highly visible, clear lettering, easy to follow, relevant languages, illustrations.
Evacuation routes		Security/Admin	Security/Admin	Pre-planning	Evacuation sites are 300 to 500ft from at risk building.
Shelter-in-place areas		Security/Admin	Security/Admin	Pre-planning	Must be able to safely shelter building capacity.
Lockdown available		Security/Admin	Security/Admin	Pre-planning	Must be able to safely lockdown any portion of the building- consider cafeteria, auditorium/gyms.
Landscaping		Security/Admin	Security/Admin	Pre-planning	Trees located far enough away from building and or trimmed appropriately and regularly to avoid providing roof, window access/should not interfere with cameras.

**Security
CPTED Worksheet**

ITEM	OWNER	CUSTOMER	REVIEW REQUIRED (BY Security Rep)	Initial Review (Security Rep Initials)	Criteria
IT Labs		Security/Admin	Security/Admin/Tech	Pre-planning	Highest elevations in building, limited or no windows, motion sensors & cameras, cords & outlets are secured.
Locker rooms		Security/Admin	Security/Admin	Pre-planning	Designed to maintain natural surveillance, hard ceiling.
Hall lockers		Security/Admin	Security/Admin	Pre-planning	Flush against the wall- corridors wide enough not to present over crowdedness
Interior lighting		Security/Admin	Security/Admin	Pre-planning	Should be well lit inside entire building
Exterior lighting		Security/Admin	Security/Admin	Pre-planning	Should be well lit around entire building/vandal resistant protected by cages or other means/uniform to eliminate pockets of shadow or glare/enhance natural surveillance.
Cameras		Security/Admin	Security/Admin	Pre-planning	IT labs, cafeteria, hallways, music rooms, chemical storage, shops, offices vandal resistant.
Motion sensors/door contacts		Security/Admin	Security/Admin	Pre-planning	Hallways, IT Labs, exterior doors.
Keyless access		Security/Admin	Security/Admin	Pre-planning	Site is secured at a level that prevents unauthorized pedestrians from entering access is 100% controllable/music rooms, IT labs, chemical storage rooms, shops/ back-up & redundant reporting.
Fire alarm		Security/Admin	Security/Admin	Pre-planning	Flush w/walls, panel not accessible to unauthorized personnel, redundant reporting/doors meet fire code standard.
Burglar alarm		Security/Admin	Security/Admin	Pre-planning	Back-up system, comprehensive zoning, testing protocol.

**Security
CPTED Worksheet**

ITEM	OWNER	CUSTOMER	REVIEW REQUIRED (BY Security Rep)	Initial Review (Security Rep Initials)	Criteria
Door locks		Security/Admin	Security/Admin	Pre-planning	Vandal resistant heavy duty locks.
Door windows		Security/Admin	Security/Admin	Pre-planning	Vandal proof when possible, front of school and wherever there is costly equipment, doors, ground level rooms.
Roll gates		Security/Admin	Security/Admin	Pre-planning	Secure portions of building from free flowing traffic/access is limited to selected controlled entries.
Stairwells		Security/Admin	Security/Admin	Pre-planning	Cameras, well lit, handrails/guardrails, exit signs.
Restrooms		Security/Admin	Security/Admin	Pre-planning	Open, well lit & easy to supervise, located to maximize visual surveillance, lockable from the outside only, vandal proof covers, hard ceilings, clear trash cans/appliances.
Intercoms/External PA systems		Security/Admin	Security/Admin	Pre-planning	Operable in all areas of the school to include, bus/parking lots, playgrounds and ball fields.
Alternative phone lines		Security/Admin	Security/Admin/Tech	Pre-planning	Enhanced security measure.
Room numbers		Security/Admin	Security/Admin	30 days-1st day	Enhanced security measure.
Door numbers		Security/Admin	Security/Admin	30 days-1st day	Enhanced security measure
Parking for staff		Security/Admin	Security/Admin	Pre-planning	Visible & separate from students/clearly marked.

**Security
CPTED Worksheet**

ITEM	OWNER	CUSTOMER	REVIEW REQUIRED (BY Security Rep)	Initial Review (Security Rep Initials)	Criteria
Parking for visitors		Security/Admin	Security/Admin	Pre-planning	Visible, near main building entrance/clearly marked.
Parking for students		Security/Admin	Security/Admin	Pre-planning	Visible and separate from staff when possible/clearly marked/reserve space for part-time students.
Courtyards		Security/Admin	Security/Admin	Pre-planning	Away from roadway, secured/fenced with natural surveillance & intercom.
Playgrounds		Security/Admin	Security/Admin	Pre-planning	Away from roadway, secured/fenced with natural surveillance & intercom/minimum depth of one foot of sand, safety tested rubber or rubber like mats.
Gates		Security/Admin	Security/Admin	Pre-planning	Secure portions of building from free flowing traffic permitting control entry/ability to inspect vehicles if necessary/entry points kept to a minimum.
Exterior Fencing		Security/Admin	Security/Admin	Pre-planning	Target hardening, deterrence, visible barrier that reinforces security measures, property lines are clearly marked especially where there are joint-use areas.
Canopies/roof access		Security/Admin	Security/Admin	Pre-planning	Not easily accessible.
Police Officers		Administration	Administration	30 days-1st day	Physical security, deterrent, intervention.
Security Guards		Administration	Administration	30 days-1st day	Physical security, deterrent, customer service.
Metal Detectors		Administration	Administration	30 days- 1st day	Security measure enhancement.

**Security
CPTED Worksheet**

ITEM	OWNER	CUSTOMER	REVIEW REQUIRED (BY Security Rep)	Initial Review (Security Rep Initials)	Criteria
Handheld Devices		Administration	Administration	30 days- 1st day	Security measure enhancement.
AEDs		Administration	Administration	30 days- 1st day	Life safety.
Radios		Administration	Administration	30 days-1st day	Security communications enhancement.
Crossing Guards		Administration	Administration	30 days-1st day	Physical security.

DIVISION 2

EXISTING CONDITIONS

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I. EXISTING CONDITIONS

- A. The architect and engineer team (A/E) is responsible for determining existing site conditions by thorough investigation to ensure that design details will be compatible with the project site. These findings should be incorporated into the design narrative assessment book of the project as a part of the pre-design stage.
- B. The A/E is responsible for providing written verification of all interfaces between new and existing facilities through review of “as built” drawings and on-site visits.
 - 1. Architects shall verify the adequacy of all existing utilities (e.g. natural gas service, water service, sanitary sewer service, cable TV service, etc.) and their compatibility with new or existing equipment and new or existing systems.
 - 2. Architect shall provide all inspection, evaluation and testing of all existing utilities, as necessary for verification of their acceptability for the final intended use. The cost of testing shall be reimbursed to the Architect.
 - 3. The renovation or upgrade of existing utilities shall be included in the project scope of work to assure proper function of all equipment and system at the completion of the project.
- C. All required engineering testing (as identified in C2 and C3), including soil tests shall be specified by the A/E during pre-design and completed by separate independent contractors. All costs for specified tests shall be submitted for separate payment and segregated from other project costs.
- D. The existing specifications of all utilities must be checked to insure that the capacities are adequate to meet existing and/or proposed service additions, renovations or new constructions. Any changes must be specified in writing to Atlanta Public Schools by the A/E prior to the pre-design phase. The A/E shall specify that all utilities connections and disconnects will be coordinated by the contractor, with Atlanta Public Schools and the utility providers.

II. ABANDONED SYSTEMS REMOVAL

- A. All abandoned or unused system devices and cabling shall be removed from all areas of the buildings during renovation projects.
- B. This should include, but not limited to: thermostats, temperature sensors, clocks, bells, fire alarm horns, strobes, pull stations, antenna or cable TV system components, fans, louvers, data system components, mechanical system control components, speakers, call buttons, electrical panels, switches, lights, etc.
- C. Patch or repair penetrations or damage to walls, ceilings and floors caused by the removal of these devices.

END OF DIVISION 2

DIVISION 3

CONCRETE

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DIVISION 3 CONCRETE

I. REFERENCES

- A. All work related to forms, cast-in-place concrete and reinforcing steel should meet the requirements of the following standards and procedures:
 - 1. American Concrete Institute (ACI)
 - 2. American Society for Testing and Materials (ASTM)
 - 3. Concrete Reinforcing Steel Institute (CRSI)
 - 4. City and Local Codes and Standards

II. GENERAL

Use minimum 3,000 PSI for all concrete, unless specifically noted on structural drawings and specifications.

III. CONCRETE FORMWORK

- A. Formwork shall consist of new materials and be constructed in accordance with the shape, lines, grade and dimensions as indicated on the drawings and shall be so constructed as to insure that concrete surfaces will conform to the tolerances outlined in ACI 374-R, Paragraph 3.3.
- B. The design and construction of all formwork shall be the responsibility of the contractor and forms shall be inspected and approved by the design professional before placing any concrete.
- C. Provide key-way connections at all vertical and horizontal joints.

IV. CONCRETE TESTING

- A. Concrete Testing shall be completed by a testing agency, qualified and experienced in the industry. The agency shall be selected by the APS Construction Project Manager from responses to a RFP for the specific scope of work.
- B. One set of four (4) cylinders shall be provided for the same batch for each 150 cubic yards of 5,000 square feet of concrete placed for each day's work.

- C. One cylinder shall be tested at seven (7) days. Two cylinders shall be tested at twenty-eight (28) days and one cylinder held in reserve.
- D. One slump test shall be taken for each 150 cubic yards or 5,000 square feet of concrete placed for each day's work.
- E. The testing agency shall distribute one copy of all test results to the following: Atlanta Public Schools/Director of Construction and the APS Construction Project Manager, Design Architect, Architect's Structural Engineer, Contractor and Concrete Ready Mix Plant.
- F. Test results that fail shall be immediately evaluated by the Architect and Engineer. The Design Architect along with consultation with the testing agency, if appropriate, shall provide required corrective actions to the Contractor. The Architect shall provide in writing to Atlanta Public Schools all action plans and scheduled dates for corrective measures as determined by the Structural Engineer. The contractor will be responsible for paying all costs associated with retesting and corrective actions.

V. CAST-IN-PLACE FINISHES

- A. All floor slabs, except where dropped for finish, shall be given a "steel trowel finish" that will produce a plain, hard, dense surface. Dropped floor slabs will be given a coarse "broom finish". All concrete stairs, exterior and interior, except, when covered with our finishing materials, shall receive a light broom finish. Interior stairs and landings will have stained finish. Color to be approved by APS Project Manager. Where specified an abrasive aggregate finish shall be applied. Rub and patch all exposed concrete.

VI. OTHER

The use of colored concrete shall be discussed with and approved by the APS Project Manager prior to including this type of concrete into the scope of the project.

END OF DIVISION 3

DIVISION 4

MASONRY

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I. REFERENCES

All work related shall meet the requirements of the following standards and procedures:

1. ACI 530.1/ASCE 6, "Specifications for Masonry Structures"
2. ASTM Standards Specifications for Brick
3. ASTM C216 Specification for Spacing Brick
4. ASTM C652 Specification for Hollow Brick
5. ASTM C902 Specification for pedestrian and Light Traffic Paving Brick
6. ASTM C67 Test Methods for Sampling/Testing Brick and Structural Clay Tile
7. ASTM Standard Specifications for CMU's
8. ASTM C90, Grade N for Hollow Loading Bearing
9. ASTM C145, Grade N for Solid Load Bearing

II. GENERAL

- A. Materials and construction assemblies, whose fire resistance codes have been determined by a testing agency, shall be provided in accordance with ASTM E119.
- B. Unit masonry that develops compressive strengths at 28 days shall be provided as follows:

Brick - 1,500 psi
Concrete Masonry Units – 1,900 psi
- C. Cavity wall systems provide water penetration resistance, fire and sound ratings, structural abilities and vast flexibility in design. Cavity space shall be a minimum of 2" and not more than 4 ½ " wide. Each cavity space shall be kept essentially free of mortar droppings and debris that may impede proper drainage of the wall.
- D. Provide a mock-up for each type of masonry work (new, renovated, infill, etc.) to be approved by APS. Mock up to remain in place throughout construction.
- E. Avoid or minimize the use of pre-cast concrete.

- F. All weep holes to have wicks trimmed to the face of the brick upon completion of point and patch or open head joints located immediately above the flashing. Use a maximum of two (2) colors masonry and one (1) color mortar.
- G. When pointing and patching existing masonry, match adjacent masonry area.

III. BRICK

A. Process of Selection:

1. Refer to the Brick Institute of America (BIA) series of technical notes for design and detailing of brick masonry walls.
2. Use non-corrosive ties to prevent spalling of brick veneer.
3. Detail flashing against parapets under copings, gravel stops, over shelf angles, windows, doors, horizontal relief joints, and at changes from horizontal to vertical plane.
4. Bituminous damp proofing the interior wythe of the cavity wall is acceptable.
5. Do not rely upon water repellent coating to improve water tightness of wall assembly.
6. Select brick based on physical properties and not just color and texture. Select brick by Type. ASTM C216 lists three types. Each type of brick has different tolerances:

Type FBS – Brick for general use in masonry

Type FBX – Brick with higher precision and lower variation in size

Type FBA – Brick with Architectural effects from the non-uniformity in size and texture

7. Specify brick by actual size, not nominal size. Specifying units by actual dimensions clarifies the intent of the design and can impact the masonry estimate significantly.
8. Specify brick shall “not efflorescence”, Grade SW and with the chippage requirements for the project.

B. Color

1. The Architect shall provide samples of brick and mortar color when drawings are 95% complete. A mortar sample area of the existing area shall be done and observed by the owner/architect prior to completing work. Limit to two (2) colors of masonry and one (1) color of mortar.

2. Renovation and addition projects shall match existing brick exactly. (If necessary, stain to match). Stain brick and mortar to match existing conditions, when masonry is patched. Additions shall match or compliment the existing brick. The selection of brick and mortar for new construction or additions shall be limited to two colors of brick and one color of mortar. The existing building under renovations shall be pressure washed. A "mock-up" or sample area must be done and approved by the Architect and APS Project Manager.
3. Sample panels that are approved shall be marked and maintained until the building is completed.
4. The sample panels are then used as standard to judge the masonry of the actual construction.

C. Cleaning

All cleaning shall be in accordance with manufacturer's written instructions and guidelines. "Test" cleaning shall be performed thirty (30) days prior to "scheduled" cleaning date. Proposed cleaning solutions shall be applied to a sample panel and observed for discoloration, staining or efflorescence. When such reactions occur, the owner/architect shall be notified before scheduled cleaning begins.

IV. CONCRETE MASONRY UNITS

- A. Refer to the National Concrete Masonry Association for design and detailing of block walls.
- B. Particular attention should be paid to details and joints to minimize contraction cracks. Clearly indicate where control joints are necessary.
- C. Concrete masonry units shall be used for new "high-use" interior walls and restroom partitions. Consideration should be given to glazed finished/colored concrete block or block tile where economically feasible when approved in advance by APS Project Manager.
- D. All exterior corners of CMU shall be "bull nose". Where resilient floor base is to be installed, first course of CMU shall not be bullnosed in order to allow full contact of base to wall. Minimum thickness of CMU shall be six (6) inches. Acoustical CMU shall not be specified for use in Atlanta Public Schools facilities.

END OF DIVISION 4

DIVISION 5

METALS

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SECTION 05120 - STRUCTURAL STEEL

GENERAL CONSIDERATIONS FOR METALS

CODES:

- a. Comply with provisions of following, except as otherwise indicated: American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges."
American Welding Society (AWS) D1.1 "Structural Welding Code - Steel."

COORDINATION:

- a. The Architect shall not assume the duties of a Structural Engineer.
- b. Design of all structural elements and Construction Contract Administration (with field reports) shall be performed by an Georgia-licensed Structural Engineer.

TESTING:

- a. Owner-selected & Owner-paid Independent Testing Lab to check welded and bolted connections per ASTM & AISC criteria.
- b. Product data or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
- c. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.

LOCATION:

- a. See Architectural Drawings

DESIGN PROCEDURES

STRUCTURAL ENGINEERING:

- b. The Architect shall not assume the duties of a Structural Engineer.
- c. Design of all structural elements and Construction Contract Administration (with field reports) shall be performed by an Georgia-licensed Structural Engineer.
- d. Stamp & signature required on Drawings & Project Manual Spec cover.
- e. Design for all required Live Loads, Dead Loads, Concentrated Loads, Wind Loads, and other stresses.
- f. Design for Seismic Zone 2.
- g. Structure shall slope minimum 3/8" per foot for roof steel on new buildings.

ARCHITECTURAL COORDINATION:

- a. Show alpha/numeric column grid on all Plan Drawings.
- b. Vertical control joint locations & details.
- c. Footing & base plate elevations with depressed slabs.
- d. Avoid column isolation diamonds at terrazzo, hard tile, & VCT floors.
- e. Roof framing bearing heights to agree with roof slopes. Show actual bearing heights in feet-and-inches AFF (relative bearing heights unacceptable). Minimum completed roof slope 3/8" per foot required; remember to consider actual camber on long-span roof framing to avoid ponding water.

- f. Actual column sizes compared with actual CMU sizes to accomplish necessary fire-rated column envelopment and/or finish details.
- g. Lintel schedule to suit project; show special end-bearing details.
- h. All exterior ferrous metal items shall be fully primed after fabrication.
- i. Exposed-to-view structural items shall have all welds ground smooth.
- j. Tagging, orientation marks, and piece marking shall be concealed from view in all normally visible finished work.
- k. Primer: LEAD-FREE, compatible with finish paint where exposed-to-view; coordinate with FINISH PAINTING criteria.

MECHANICAL DESIGN COORDINATION:

- a. Detail and dimension framed openings to suit specified equipment.
- b. Indicate specified rooftop equipment weights on roof framing plan.
- c. Roof framing heights to consider overhead duct sizes & routes AND damper, VVT, detector, & control accessibility for maintenance.
- d. Mechanical Plans to show alpha/numeric column grid designations.

PLUMBING DESIGN COORDINATION:

- a. Detail roof drain body support framing.
- b. Consider underground pipe bends & inverts at column locations when determining footing elevations, column lengths, and/or angles of influence affecting structure. Civil Engineering underground storm, sanitary, and rain manifold piping also to be considered.
- c. Framing supports for rooftop gas piping.
- d. Roof framing heights to consider overhead sprinkler piping, roof drain laterals, valves, and maintenance access.
- e. Plumbing Plans to show alpha/numeric column grid designations.

ELECTRICAL DESIGN COORDINATION:

- a. Framing heights to consider light fixture clearances & maintenance access, particularly high-hat type.
- b. Design to carry light fixture weights & rooftop item loads.
- c. Electrical plans to show alpha/numeric column grid designations.

PRODUCTS:

MANUFACTURER:

- a. Metal Surfaces, General: For fabrication of work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks.

DETAILS:

- a. Metal Surfaces, General: For fabrication of work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.
- b. Structural Steel Shapes, ASTM A573 Grade 36-50 A929
- c. Steel Pipe: ASTM A53, Type E or S, Grade B; or ASTM A 501.

- 1. Finish: Black, except where indicated to be galvanized
- d. Steel plates, shapes, and bars: Minimum ASTM A-36
- e. Bolts & Nuts: ASTM A-307, Grade A; bolt lengths to accomplish full thread engagement of nuts.
- f. Steel Castings: ASTM A 27, Grade 65-35, medium-strength carbon steel.
- g. Electrodes for Welding: Comply with AWS Code – use E&)XX unless noted otherwise.
- h. Primer paint: LEAD-FREE, compatible with finish paint at exposed-to-view conditions. The factory primer shall be used only as protection for the structural steel from the factory through installation.
- i. Galvanizing: Hot-dipped after fabrication; chemically treated for paint bond in finish conditions.
- j. Hot-Formed Steel Tubing: ASTM A 501

EXECUTION:

FABRICATION:

- a. Shop paint all steel EXCEPT where scheduled for fireproofing and areas within 2 inches of scheduled field welds.
- b. Locate all piece markings and orientation marks to be concealed from view in the finished work.

ERECTION:

- a. Set column anchor bolts with templates to proper elevations.
- b. Grout column bases & bearing plates solid with non-shrink grout.
- c. Provide all temporary erection bracing.
- d. Perform bolting and field welding to secure structural elements; all welding by AWS-certified personnel.

PAINTING:

- a. Touch-up shop-applied painting with identical primer material and/or galvanizing with recommended "cold galvanizing" compound for full material coverage.

FIREPROOFING:

- a. Apply on members where required by governing code criteria.

END OF SECTION

SECTION 05220 - STEEL JOISTS

GENERAL

CODES:

- a. Provide joists fabricated in compliance with Steel Joist Institute (SJI) "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."
- b. Comply with SJI "Specifications" for chord and web sections.
- c. Qualification of Field Welding: Qualify welding processes and welding operators in accordance with American Welding Society (AWS) "Structural Welding Code - Steel," AWS D1.1.
- d. Comply with ASTM "Specifications."

COORDINATION:

- a. The Architect shall not assume the duties of a Structural Engineer.
- b. Deliver, store and handle steel joists as recommended in SJI "Specifications." Handle and store joists in a manner to avoid deforming members and to avoid excessive stresses.
- c. Include manufacturer's certification that joists comply with SJI "Specifications."

TESTING:

- a. Owner-selected & Owner-paid Independent Testing Lab to check all welded and bolted connections per ASTM & AISC criteria.
- b. Inspect joists and girders in accordance with SJI "Specifications."

LOCATION:

- a. This Section includes steel joists and joist girders for floor and roof framing. Types of joists required include the following:
 1. K-Series Open Web Steel Joists.
 2. VS-Series Steel Joists
- b. Provide templates or location drawings for installation of anchor bolts and metal bearing plates.
- c. See Architectural drawings and submittals

DESIGN PROCEDURES:

STRUCTURAL ENGINEERING:

- a. The Architect shall not assume the duties of a Structural Engineer.
- b. Design of all structural elements and Construction Contract Administration (with field reports) shall be performed by a Georgia-licensed Structural Engineer.
- c. Stamp & signature required on Drawings & Project Manual Spec cover.
- d. Design for all required Live Loads, Dead Loads, Concentrated Loads, Wind Loads, and other stresses.
- e. Design for Seismic Zone 2.
- f. Drawings shall show joist types, sizes, bridging criteria, details & spacing, and connections.
- g. Structure shall slope minimum 3/8" per foot for roof steel on new buildings.

ARCHITECTURAL COORDINATION:

- a. Show alpha/numeric column grid on all Plan Drawings.

- b. Minimum completed roof slope 3/8" per foot required; consider actual camber on joists (especially long-span types) to avoid ponding water.
- c. Tagging, orientation marks, and piece marking shall be concealed from view in the finished work.
- d. Primer: LEAD-FREE, compatible with finish paint where exposed-to-view; coordinate with FINISH PAINTING Spec Section. The factory primer shall be used only as protection for the structural steel from the factory through installation, and shall not replace the paint primer specified in division 09900 – Painting.
- e. Roof Plan items (e.g. expansion joints & penetrations).
- f. Joists parallel to "walls-to-deck" shall be dimensionally located to offset (thus avoid conflicting with) full-thickness masonry work.

MECHANICAL, PLUMBING & ELECTRICAL DESIGN COORDINATION:

- a. Joist depths, spacing, & bridging designed to consider overhead piping, conduit, cable trays, and duct sizes, all routing & bends PLUS maintenance access for dampers, detectors, VVTs, & controls.
- b. Consider routing piping thru joist webs to attain clearances if necessary.

PRODUCTS:

MANUFACTURER:

- a. Manufacture: By member of SJI or AISC, OR, a non-member who, prior to bids, can submit certifications of equality to SJI & AISC criteria for approval by the Structural Engineer.

SIZES:

- a. See Architectural drawings and Shop submittals

DETAILS:

- a. Shop paint all steel EXCEPT where scheduled for fireproofing and areas within 2 inches of scheduled field welds.
- b. Special fabrication attention to uniformity, weld dressing, & overall neatness for joist units, which will be exposed to public view.
- c. Shop primer: LEAD-FREE, compatible with specified finish paint where joists are exposed-to-view in finished work. The factory primer shall be used only as protection for the structural steel from the factory through installation, and shall not replace the paint primer specified by district.

EXECUTION

FABRICATION:

- a. General: Fabricate steel joists in accordance with SJI "Specification."
- b. Shop paint all steel EXCEPT where scheduled for fireproofing and areas within 2 inches of scheduled field welds.
- c. Locate all piece markings and orientation marks to be concealed from view in the finished work in public areas.

ERECTION:

- a. Place and secure steel joists in accordance with SJI "Specifications," final shop drawings, and as herein specified. Provide all necessary temporary erection bracing.

- b. Perform bolting, bridging, & field welding to secure structural elements; all welding by AWS-certified personnel.
- c. Provide field-applied bottom-chord ceiling extenders to within one inch of abutting walls on all joists above areas to receive finish ceilings and/or sub ceiling fireproofing.
- d. Do not stack construction materials in concentrated areas of erected joists.
- e. Anchors: Furnish anchor bolts, steel bearing plates, and other devices to be built into concrete and masonry construction.
- f. Provide unfinished threaded fasteners for anchor bolts, unless high strength bolts indicated.
- g. Placing Joists: Do not start placement of steel joists until supporting work is in place and secured. Place joists on supporting work, adjust and align in accurate locations and spacing before permanently fastening.
 - 1. Provide temporary bridging, connections, and anchors to ensure lateral stability during construction.
 - 2. Where "open-web" joist lengths are 40 feet and longer, install a center row of bolted bridging to provide lateral stability before slackening of hoisting lines.
- h. Bridging: Install bridging simultaneously with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.
- i. Fastening Joists: Comply with the following:
 - 1. Field weld joists to supporting steel framework and steel bearing plates where indicated in accordance with SJI "Specifications" for type of joists used. Coordinate welding sequence and procedure with placing of joists.
- j. Touch-Up Painting: After joist installation, wire brush welded areas, abraded or rusty surfaces, and clean with solvent. Paint field-applied bolt heads and nuts and prepared surfaces on joists and steel supporting members. Use same type of paint as used for shop painting.

FIRESTOPPING:

- a. Apply on members where required by governing code criteria.

SUPPLEMENTAL INFORMATION

STRUCTURAL STEEL

- a. Structural steel shall be coated with a rust inhibiting primer. Exposed structural steel shall receive paint finish. Steel in hidden areas, such as above ceilings, do not require painting.
- b. Avoid designs requiring full moment connections.
- c. Select beams for economy of section, however, maintain web thickness as necessary to facilitate detailing.
- d. Structural steel specifications shall comply with ASTM standards.

MISCELLANEOUS METALS

- a. Miscellaneous metal fabrications should utilize readily available local sections.
- b. Exterior ferrous metals used for handrails, bollards, bike racks, etc. are to have rust inhibited primer and paint finish.

- c. Exterior ferrous metals that are part of the building elements shall be hot piped galvanized and painted subject to job specific directions.
- d. Roof drain bowls shall be metal. NO PLASTIC dome covers.

END OF SECTION

SECTION 05310 - STEEL DECK

GENERAL

STRUCTURAL ENGINEERING:

- a. The Architect shall not assume the duties of a Structural Engineer.
- b. Design of all structural elements and Construction Contract Administration (with field reports) shall be performed by a Georgia-licensed Structural Engineer.
- c. Stamp & signature required on Drawings & Project Manual Spec cover.
- d. Design for all required Live Loads, Dead Loads, Concentrated Loads, Wind Loads, and other stresses.
- e. Design for Seismic Zone 2.
- f. Dimensionally illustrate welding (attachment) patterns on Drawings.
- g. Stipulate design/dimension requirements for minimum deck bearing, side laps, and end laps. All deck shall be designed to span a minimum of 3 supports.
- h. All roof-supported items shall bear on structural support framing, not merely the deck itself.
- i. Perimeter edges supported by structural framing; design continuous angle (or bent plate) supports, particularly between joists.

ARCHITECTURAL COORDINATION:

- a. Show alpha/numeric column grid on all Plan Drawings.
- b. Roof Plan items (e.g. expansion joints & penetrations).
- c. Perimeter support member coordination with roof & flashing details.

TESTING:

- a. Owner-selected & Owner-paid Independent Testing Lab to check all deck attachments to structural framing per ASTM & AISC criteria.

PRODUCTS:

ROOF DECK:

- a. Minimum 22-gauge **galvanized** (painted deck is not acceptable except when exposed to view, minimum 1-1/2" depth. Lengths to accomplish designed bearing dimensions and end conditions over a minimum of 3 supports.

WELDING WASHERS:

- a. Minimum 14-gauge, profile to match deck valley flutes.

EXECUTION

STAGING:

- a. Store materials above ground, slope to drain. Avoid concentrating loads on steel framing & joists.

ATTACHMENT:

- a. Use of properly designed welding, self-drilling, or self-tapping screw fasteners are permitted to secure deck to structure. Regardless of method designed (used), attachment shall be with the use of welding washers to strengthen attachment stresses; in no case shall attachments be made thru merely the decking itself without use of washers. Layout attachments per designed pattern; satisfactorily repair misallocated attachments visible from undersides of public exposed-to-view areas (no welding attachment allowed in exposed-to-view areas.)

FIELD PAINTING:

- a. Touch-up all welded connections with LEAD-FREE rust inhibitive paint or galvanizing paint.

METAL ROOF DECKING

- a. Galvanized metal roof decking, with the appropriate gauge for the span, shall be specified.
- b. Provide proper detailing to limit the amount of exposed steel.
- c. Coordinate required deck gauge with roof system.
- d. Metal decks with mechanically fastened insulation boards must be 22 gauge or heavier.
- e. Follow FM loss prevention guidelines for local area and building height, including decreased weld spacing at corners and perimeters.
- f. Metal decking used for concrete slab forms should be of sufficient gauge to support concrete placement without buckling or deforming from wheelbarrow or other such traffic.
- g. Flutes of metal decking supporting rigid insulation should be of proper size to accommodate the span capability of the specified insulation.

END OF SECTION

SECTION 05500 - METAL FABRICATIONS

GENERAL

- a. For certain uses of exterior ferrous metal items, A/E shall consider use of material which is hot-dipped galvanized after fabrication; this may include, but not necessarily limited to, downspout guards, roof ladders, gas pipe supports, loading dock edge angles, and

antenna guy wire brackets PLUS their attachments; consider using stainless steel attachments at high-wear, high-use items.

- b. Shop fabricated items to the greatest extent possible; minimize field assembly and attachments. All welds ground smooth for uniform appearance.
- c. Submit shop drawings for Architect's approval based on Contractor's field-verified dimensions.

PRODUCTS:

HANDRAILS:

- a. Welded nominal 1-1/2" o.d. (confirm acceptability with ADA) **aluminum** pipe. Posts set in minimum 4" long sleeves with non-shrink, non-metallic grout; top of sleeves flush with adjacent surfaces. Ends of rails bull nosed and closed.

VERTICAL LADDERS:

- a. 2-1/2" X 3/8" hot-rolled steel rails; 3/4" diameter deformed steel rungs (#6 rebar) at 12" o.c.; fabricate 24" wide. Provide non-skid open grate landing over parapet coping conditions and 42" tall handrail extensions for roof ladders; position for rungs to be 7" from wall & bottom rungs 12" above floor (or roof) surface. Parapet roof ladders shall be anchored only to CMU back up, not the brick veneer or the roof surface; design attachments to hold loads and not stress veneer.

BOLLARDS:

- a. Minimum 6" diameter, schedule 40 pipe; set plumb & aligned per Drawings; embed 2'-6" into 18" diameter X 3'-0" deep 3000 psi concrete; leave 3'-6" exposed height; fill pipe with concrete and dome top smooth.

DOWNSPOUT GUARDS:

- a. All exposed metal downspouts shall terminate in 18" high cast iron or cast aluminum or PVC Schedule 80 boots above finish grade where locations are adjacent to vehicular and/or pedestrian traffic. Secure to building.

LINTELS:

- a. Also see Structural Steel criteria.

EXECUTION

- a. Coordinate required concrete/masonry inserts & attachment preparations.
- b. Touch-up all field-welded connections and/or rusted areas with LEAD-FREE rust inhibitive paint. Remove rust to bare metal with fish-oil base materials, immediately clean & reprime (cold-galvanizing compound on appropriate exterior items), and finish paint as required.

END OF SECTION

DIVISION 6

WOOD AND PLASTICS

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DIVISION 6 WOOD AND PLASTICS

I. GENERAL

- A. Since Atlanta Public Schools work involves new, as well as renovated construction, special care should be taken to completely coordinate the “Technology Wall” with all other new and existing equipment and furnishings to be installed.
- B. Provide rubber base around all casework.
- C. Provide rounded corners around all casework.
- D. Install floor finish material (VCT, carpet, wood, etc.) under all casework whether contractor or owner furnished unless directed otherwise by APS.
- E. No particleboard is allowed.

II. FINISH CARPENTRY

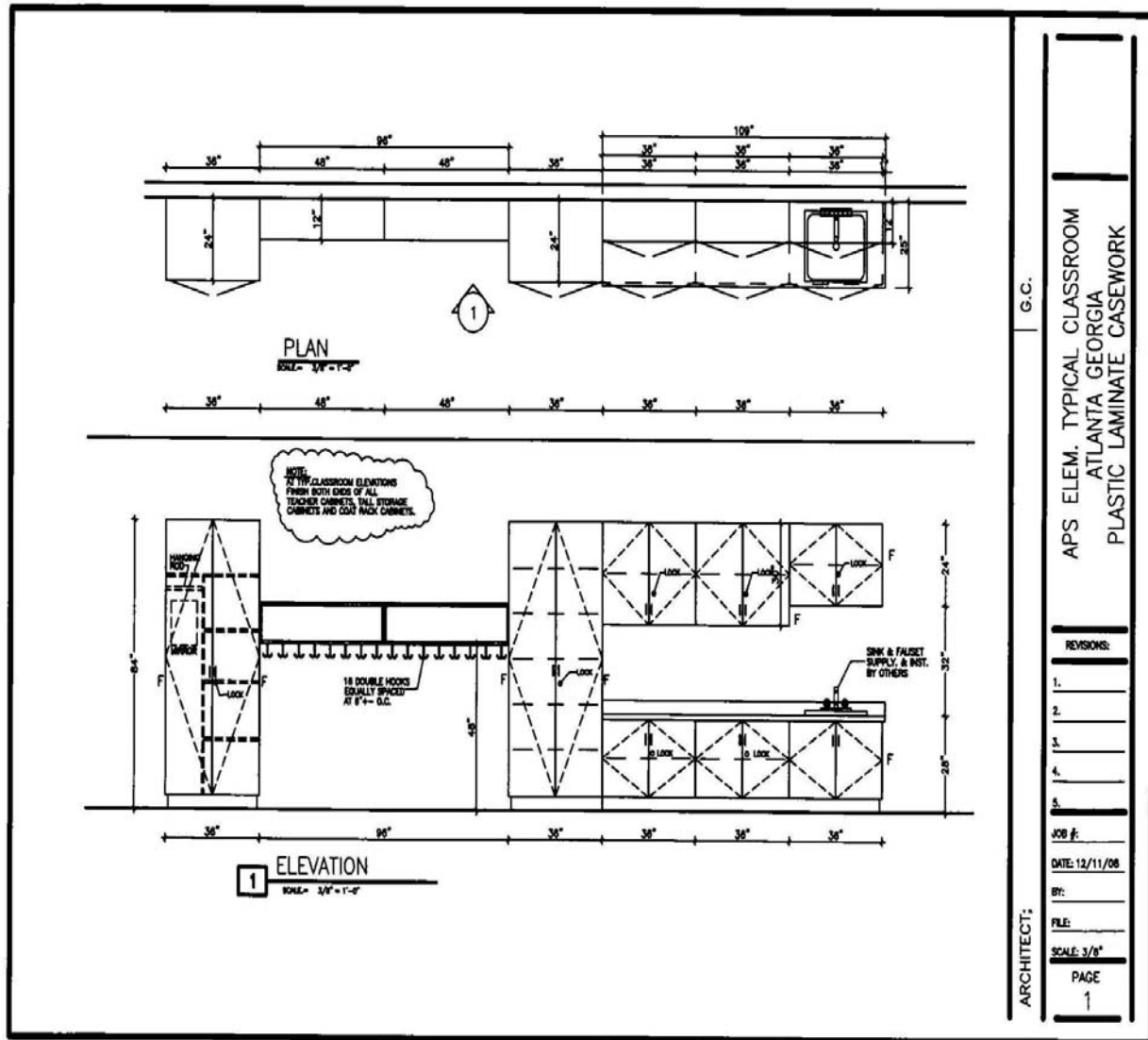
- A. Interior Wood Finishes
 - 1. Unless dictated otherwise by the Project Manager or existing project conditions, all interior wood finishes shall be “a natural oak finish” similar to WilsonArt International, Inc. or Formica “Natural Oak” matte finish.
 - 2. The interior wood finishes will be selected from the available manufacturers’ standard finishes.
 - 3. This includes, but is not limited to, the following:
 - a. Flush Wood Doors
 - b. Casework (vertical surfaces)
 - c. Classroom Furniture
 - d. Administration Furniture
- B. Laminates

All “general use” counter tops shall be a high-pressure plastic laminate material. Colors to be Birch (matte finish) 921-5B from the APS Standard Color palette by the Architect approved by the Atlanta Public Schools.

III. CASEWORK

- A. Mounting Heights
(See *Division 10 – Specialties, Division 12 – Furnishings*)
1. Casework shall be provided in accordance with Atlanta Public Schools standard specifications, in designated areas. Standard pre-manufactured furniture components shall be provided, except where only custom-built items will serve the intended use.
 2. All classroom casework (base cabinets with sinks) in grades K-5 should be installed with the counter top at 30" above finished floor.
 3. In addition to shop drawings, casework vendors must supply a "casework mock-up" for approval. The mock-up drawing must provide samples of the plastic laminate, core materials, plastic laminate interior lining and hardware per the APS Casework Specification Sections 06 41 13 and 06 41 16.
- B. Standard Classrooms:
1. All primary classrooms in elementary schools shall have immediate accessibility to a work counter (minimum 8 ft.) with stainless steel sink, and a fixed gooseneck faucet.. The installation of a water bubbler at the sink (typically in elementary classrooms) shall be determined by the APS Project manager.
 2. Each instructional classroom shall be furnished with one (1) teacher's wardrobe cabinet and one (1) storage/utility cabinet. For elementary schools also include eight (8) feet of coat hooks (32 hooks) in two (2), four (4) foot sections (16 hooks per section), with open books/bag wood shelving above.
 3. Normal installation shall consist of the two cabinets separated by the 8-ft. coat/bag rack along one wall, as close to the classroom door as possible. Where sufficient wall space is not available to accommodate the grouping, the units shall be installed to fit the available space. In some instances, the size of the coat rack may need to be reduced.
- C. Special Classrooms:
Casework for special classrooms such as Science, Technology, Art, Music, Family Consumer Science, Media Center, etc., shall be specified, supplied and installed by the Atlanta Public Schools.
- D. Precautions
Do not schedule delivery or installation of casework/architectural woodwork until the building is enclosed, the permanent heating and cooling systems are in operation and residual moisture from plaster, concrete, masonry, or terrazzo has dissipated.

III. STANDARD CASEWORK PLAN AND ELEVATION



END OF DIVISION 6

DIVISION 7

THERMAL AND MOISTURE PROTECTION

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DIVISION 7 THERMAL AND MOISTURE PROTECTION

I. CODES AND REFERENCES

- A. Building Codes establish minimum standards; therefore, if the design intent is to “just meet code”, it becomes the least adequate roof that can be installed. Atlanta Public Schools desires to “exceed” code requirements in the quest for a long lasting roof.
- B. Other codes, such as the Fire Code, Electrical Code, Mechanical Code, etc. shall be consulted during the design process for effect on fire ratings, and other design parameters.
- C. The following additional references shall be reviewed and recommendations complied with:
 - 1. National Roofing Contractors Association (NRCA) Roofing Materials Guide.
 - 2. Underwriters Laboratories (UL)
 - 3. Factory Mutual System (FM)
 - 4. Standards of the American Society for testing and Materials (ASTM) (1) D5076.
 - 5. Federal Asbestos Regulations
 - 6. State of Georgia, EPA, and local building codes.

II. WATERPROOFING AND MOISTURE-PROOFING

Architects shall specify appropriate waterproofing, moisture-proofing and vapor retardation roofing, to assure a “dry” building environment.

III. INSULATION AND FIREPROOFING

Architects shall specify appropriate insulation and fireproofing to provide a safe, energy efficient, comfortable and quiet school environment, which meets or exceeds code requirements. Insulation factor shall be at least equal to those listed in the Energy Code. Where possible and at a reasonable cost, these factors shall be approved upon. Copies of the energy requirements shall be provided to the Owner during the Design Development Phase of the project.

IV. ROOFING

A. Objectives

Atlanta Public Schools requires Replacement Roofs that meet the highest standards of longevity, energy efficiency and will demand the minimum maintenance from APS workforces, through the warranty period. The desired roofing warranty of APS is a 20 year, no dollar limit warranty that covers roofing, insulation, metal flashings, etc.

B. Preferences

Atlanta Public Schools prefers low sloped hybrid roof system of 4-ply built-up roof with ceramic granular “white” color cap sheet. Other roof systems, e.g. standing seam metal, single ply, etc., may be acceptable based on the building design and project conditions, and must be approved by APS.

C. Methodology

1. Select a nationally established roofing product manufacturer with a history of fiscal responsibility.
2. Review location of roof access with APS Project Manager. There is to be no access to the roof where such access is available to students.
3. Number of mechanical ventilation and plumbing penetrations through the roof shall be minimized.
4. No A/C units or equipment is to be on roof except necessary exhaust fans, vents and outside air intakes. (All above penetrations to be located in vertical walls whenever possible).
5. Roofing membrane system selected shall meet Factory Mutual (FM) requirements I-90 for wind uplift.
6. All roofing materials and components comprising the total roof system shall be compatible with each other.
7. Low-slope or pitched roofs shall be used in lieu of flat roofs.
8. Roof areas must be sloped sufficiently (1/4” or more per foot minimum) to produce good and complete drainage to the outlets. Sloping structure/deck, not insulation, shall attain roof slope.
9. A single subcontractor shall be responsible for the entire roof system.
10. Analyze the existing roof condition.

- a. When existing roofs are noted to remain, Architect shall prepare and present an estimate of the life expectancy remaining in that roofing system to Atlanta Public Schools.
 - b. Conduct a failure analysis. Look for signs of standing water, wrinkles and splits in flashing or membrane materials.
 - ii. Atlanta Public Schools (APS) shall perform an asbestos sampling test and provide the architect with the test results prior to pre-design.
 - ii. The contractor submitting a bid for the project agrees that he/she is knowledgeable of the hazards associated with the work as it relates to Asbestos Containing Materials (ACMs).
 - iii. The successful contractor shall be responsible for the legal removal and disposal of all Asbestos Containing Material (ACM) in roofing and related materials. The work shall be performed in accordance with all applicable rules and regulations of government agencies, concerning removal/disposal of ACMs removed or demolished as part of a roof "tear-off".
 - iv. The contractor shall notify the Atlanta Public Schools Hazardous Material Office and the Project Manager of the start date for the removal project. APS shall make spot inspections during the project.
- 11. The following documentation shall be submitted to Atlanta Public Schools Hazardous Materials Office by the contractor:
 - a. Copy of "Notification to the Georgia Environment Protection Department (EPD)". The copy shall clearly show the stamped receipt by the EDP.
 - b. Copy of the "Waste manifest" from a state-approved landfill.
 - c. Copy of the "Receipt of Payment" from a state approved landfill.
 - d. Copy of the "Completion Notification" to the Georgia EPD.
 - e. Final payment shall not be approved until receipt of the above documentation.
- 12. Determine requirement characteristics of new roof material
 - a. Consider slope and drainage requirements.
 - b. Check for evidence of movement of the structure.

- c. Consider climatic effects on the replacement roofing materials being considered.
 - d. Review codes and insurance requirements.
 - e. Determine the best method of fastening insulation and membrane by type of deck.
 - f. Consider energy saving materials for maximum building efficiency.
 - g. Consider building size, shape, and configuration, i.e. wide, open spaces and roof penetrations.
 - h. Consider material's ability to withstand abuse, vandalism and high foot traffic.
13. Tear off the existing roof
- a. Recovering an existing roof is not acceptable.
 - b. An exception is granted when the installation of a new roof is above an existing roof (such as a metal roof) and the installation does not disturb the existing roof.
 - c. In all instances, Atlanta Public Schools requires a 20-year, no dollar limit Roof Warranty with any new roof that covers the entire roofing assembly.

D. The Roof Team

- 1. A preliminary meeting shall be convened after the design professional has completed a site investigation and before the preparation of detail specifications.
- 2. The purpose of the meeting is to form a team to review the results, conclusions and recommendations of the design professionals with regards to the final design.
- 3. The following team members shall be convened:
 - a. Atlanta Public Schools. Initiates the project and expects a watertight roof for the long term.
 - b. Architect/Engineer. The design professional and provides construction documents.

Conduct roof failure analysis and provide a written report with predicted life expectancy for existing roofs.

- c. Materials Manufacturer. (Several may be invited) Expected to provide a quality product that shall meet/exceed the contract documents requirements.

Roof manufacturer shall provide warranty roof inspection annually for 20 years.

- d. Contractor/Roofing Contractor. (Recommended by team) Must have trained, skilled, personnel to install the roof in accordance with the contract.

V. ROOFING SYSTEMS AND MATERIALS

A. Atlanta Public Schools preferred roof system is:

- 1. Hybrid Asphalt Built Up Roofing (BUR) with ceramic granular “white” color Cap Sheet – APS prefers a roofing system that is built up with several plies of roofing materials a topped with a ballast cap sheet. A slope greater than 3” to the foot does not lend itself well to mop-applied asphalt systems, whether modified bitumen or built up.

Other roofing systems that may be considered for use with prior APS approval are:

- 2. Single Ply membrane – APS prefers not to use Single Ply Membrane roofing systems unless fully substantiated as most appropriate for the specific conditions at the school (very large wide, open areas where asphalt installation may be a problem). This type of roof may be economically installed utilizing wide rolls of material. A large roof is prone to thermal movement; therefore, a more elastic roofing system may be the proper choice. Control joints that break up the area into smaller sections are not desirable since they have a tendency to block water access to roof drains.
- 3. Metal Standing Seam – APS prefers not to use Metal Standing Seam roofing systems unless fully substantiated as most appropriate for the specific conditions at the school (steep or sloped roofs to conceal equipment may be a problem).
- 4. Modified Bitumen – Modified Bitumen systems combine the desirable features of asphalt built-up roofing (redundancy of plies) with the desirable physical characteristics of single ply roofing. They can be installed on roofs with high slopes and complicated geometry.
- 5. Felts – APS prefers glass-fiber felts to organic felts. Glass-fiber will not absorb water and is stronger than organic-fiber felt. Glass-fiber felts are available in two basic types, depending on strength required. Type VI felt is the strongest. Multiple plies of felt add redundancy, reduce the effect of

installation errors and increase the strength and mass of the built up system. A four-ply built-up roof will have approximately 280 mils of thickness compared with 60 mils or less, in other systems.

6. Roofing Asphalt – Choosing the correct grade of asphalt is important for good performance of the membrane system. Types II and I are used for roofs with relatively flat slopes; Type III, is most commonly used for steeper-slopes roofs; Type IV is used for special applications because it has the highest softening temperature. The Equiviscous Temperature (EVT), the specific temperature and viscosity at which asphalt should be applied to obtain proper adhesion and coverage – at the point of asphalt application, is crucial to roof system performance.
7. Flashing – Granular-surfaced, reinforced, Modified Bitumen Flashing, (available in rolls) provides improved performance for exposed Flashing of the Built-up Roof (BUR) at roof perimeters and penetrations. The factory-adhered granular surfacing protects the asphalt in these sheets from the deteriorating effects of the Ultra Violet (UV) rays and eliminates the need for regular flashing recoating.
8. Surface Coatings – A BUR system protective surfacing must be applied after the felts are laid to protect the felts from UV degradation and fire. Although varieties of cold-applied surface coatings are available, they will not necessarily last as long as the roof below them and must be maintained or recoated to protect the roof. Aggregate imbedded in a solid flood coat of hot asphalt is the most common and provides additional protection against impact and traffic damage.
9. Rigid-Board Insulation – Rigid board insulation is recommended to improve *energy efficiency*. Choices compatible with asphalt roofing systems include:
 - a. Lower R-Value per inch boards such as Perlite, fiberglass and wood fiber.
 - b. Higher R-Value per inch boards such as Polyisocyanurate (preferred).
10. Drainage – Good drainage is mandatory. Ponding will cause premature deterioration of roofing systems and even a small pinhole in a ponded area will cause a massive leak; therefore, water must be kept from ponding. The preferred options are tapered rigid board insulation, tapered lightweight concrete and/or additional drains. Tapered fills and insulation may end up causing more problems with heights of flashing, mechanical equipment and doorsills. Tapered solutions may just divert the pond to another location on the roof. ASCE/ANSI 7-95 now requires that a secondary “overflow” drain be installed if a roof drains to the interior, rather than over an edge. The roof must be designed as if all primary drains are blocked. Flashing materials that, when properly

installed, will build enough thickness to prohibit free flow of water, are not recommended.

11. Other

- a. Items such as drains, plumbing vents, air conditioning units, antennae, smoke hatches, skylights and ventilators add to the complexity of the roof design and may be the deciding factor on the roof type to be installed.
- b. Roof Curbs – A roof automatically demands new curbs to keep the structure watertight. Curbs must be designed to follow the slope of the roof to let water run off and to keep mounted equipment level. They must be structurally sound so that fewer angles are required to support the weight. Curbs should be insulated and a minimum of 8" above the finished roof.

12. Roof Plan – The architect/design professional shall submit a complete roof drawing indicating type of roof, insulation, flow patterns and storm water, location of all protected walkways and pads, mechanical equipment and all roof penetrations. The plan shall include a work schedule and any special procedures or work practices. Provisions must be made in the plan for disposal of all debris and protection of vehicles and other personnel in the vicinity of the work area during the actual roofing work.

VI. SAFETY

Architect's roof design should ensure the building security is maintained during and after construction. The roof should be inaccessible and off-limits to students and other unauthorized personnel. Appropriate walk boards/walkways acceptable to the roofing manufacturer shall be provided for access to and around all rooftop equipment that requires service. Roof access hatches shall be provided as required to access different roof levels.

VII. WARRANTIES

- A. Provide a minimum of 20 years, no dollar limit quality assurance roof warranty.
- B. All warranty conditions for owner-provided maintenance shall be included with warranty documents prior to final APS closeout.
- C. Finish warranty period for factory applies exterior finish on roof panels, gutters and coping shall be 20 years. Performance warranty for manufacturer, installer, or contractor agreeing to repair or replace work with defects in materials or workmanship for a period of five (5) years shall be included.

- D. As new technologies widen the choices of roofing systems, materials and application methods and procedures, the design of a replacement roof becomes more complex and demanding.
- E. If the roof is well design and properly installed, a warranty is extraneous. Atlanta Public Schools does not want to choose a roof system based solely on the Warranty. An advantage of a warranted system is that the manufacturer takes more of an interest in the quality of the installation and may even perform a complete independent inspection of the work.
- F. Refer to “The National Roofing Contractors Association – Commercial Roofing Materials Guide” to quickly and efficiently compare 27 different aspects of warranties for competing manufacturers.
- G. Roofing warranties clearly outline owner/manufacturer/contractor responsibilities after completion and during the roof warranty period. The architect shall establish points of contact for use by the owner and the conduct of joint periodic inspections. This documentation shall be included with the roof warranty.

VIII. DETAILING

- A. Consult National Roofing Contractors Association (NRCA) Manual (latest edition) for roofing design and detail recommendations.
- B. Avoid use of uncapped pitch pockets. Limit the use of pitch pockets.
- C. Gutters are utilized for all sloped roofs. Interior gutters shall not be used.
- D. All new roof expansion joints shall be detailed in accordance with the existing expansion joint conditions for each tasked site.
- E. All joint conditions between roof and side or parapet walls shall be detailed.
- F. Minimize roof penetrations. Roof flashings at each type of roof penetrations shall be detailed.
- G. All penetrations through roof shall be indicated on Roof Plan.
- H. Show all roof ventilators and any other types of APS approved equipment to scale on Roof Plan.
- I. Walk protection pads shall be shown on the Roof Plan.
- J. Details of all applicable primary drain installations shall be shown.
- K. Provide pre-finished aluminum coping cap on parapet tops.

DIVISION 8

DOORS AND WINDOWS

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DIVISION 8 DOORS AND WINDOWS

I. GENERAL

- A. Window design plays a major role in the learning environment. Atlanta Public Schools encourages design that provide for the controlled use of daylight. This feature can significantly enhance the visual environment in the classroom. The ocular perception that promotes and accounts for most learning must find expression in the visual environment. The use of daylight must be clearly integrated with the interior lighting system, the architectural details, the interior walls, and with the ceiling and floor finishes. A continuous fenestration design with windows parallel to the long axis of the space, beginning near the ceiling, is recommended for the best utilization of daylight. Controlled shading devices are essential to control sunlight and to reduce brightness and glare.
- B. In order to maintain the significant architectural features of our existing school facilities, APS encourages designs that retain, wherever possible, the existing window/masonry openings if they contribute to the overall character of the building.
- C. The architect should investigate alternatives that will serve to improve energy efficiency in the classrooms and provide for heating, ventilation and cooling system, without sacrificing the amount of natural light available to the classroom. According to EPA, window films can be retrofitted to existing windows to reduce heat gain due to solar radiation, and to provide a low-cost cooling load reduction. Window films are acceptable when accompanied with a material and installation guarantee of five (5) to ten (10) years.
- D. Research published in the Journal of Environmental Psychology states, "*windowless classrooms should be avoided for permanent use*". Medical doctors who, in the Archives of Internal medicine, report a biological need for windows support this premise. When vandalism is a potential problem, classrooms can be designed to focus inward toward an interior courtyard and protected from the street. Skylights located on the far side of the room from the windows can supplement light from the windows if, desired.
- E. Specify clear anodized finish for all storefront and window systems.

II. ENTRANCE SYSTEMS

Aluminum storefront systems with clear anodized finishes may be used at all primary entrances. Aluminum entry doors shall be wide style design, for durability, with 5-inch styles, 5-inch heads rail, and a 10-inch sill rail. Aluminum Doors shall be internally gusseted and fully welded. Door Pulls shall be thru bolted.

III. DOORS AND FRAMES

A. Exterior Doors

1. The standard exterior door for Atlanta Public Schools Renovation and New Construction projects should be an insulated composite metal door, Grade 3, 16 gauge, extra heavy duty, seamless, 1 ¾" thickness with polyurethane core. The Safe School Surveys call for the use of an FRP (fiberglass) exterior door. These FRP doors may be used as an alternate to standard metal door if project conditions warrant. This should be coordinated with APS Security.
2. Coordinate glazed opening in doors with panic hardware.
3. Use continuous hinges at all exterior doors. Use spray in foam at back of frame where hinge is being mounted when frames receive grout fill.
4. All exterior doors without canopy above to have drip cap.
5. Door from kitchen to loading dock to be 42" wide with peephole and doorbell.
6. Metal Doors and Frames. Fire rated hollow metal frames of the "wraparound" design and metal doors shall be used on the exterior of the building and the interior. The use of "knockdown" type metal frames shall not be permitted.

B. Interior Doors

1. Wood Doors. Solid-core wood doors, factory finished shall be used for general interior use. All solid-core wood doors shall be warranted for life against warpage. Acceptable Solid-Core Wood doors shall be a composite door with wood veneers on both faces and a variety of infill in between. Acceptable core material includes TimberStrand, stave cores, glued particleboard or equal. All cores shall comply with maximum industry requirements for strength, and warp resistance.. Exterior wood doors are not acceptable.
2. Steel Doors may be used in certain areas such as mechanical rooms, janitor/custodial rooms or other high traffic/high abuse rooms. All interior steel doors shall be Steelcraft and will be from the GrainTech Series doors.(L-18 with full mortise lock and continuous hinge).

2. Group toilet entries should have adequate privacy screening that does not depend on doors; doors at these locations are strongly discouraged.
3. Seal tops and bottoms of all wood doors.
4. Doors Heights. Atlanta Public Schools prefer to standardize door heights where possible. Standard height shall be seven (7) feet. (See Division 9 – Door Finishes)

IV. HARDWARE – APS STANDARDS

A. General

Any specific hardware necessary to address the conditions identified in the APS Security design reviews should be included in the project specifications as one of the three acceptable listed manufacturers.

B. Door Hardware

Door hardware shall be reversible, to accommodate left and right hand doors.

C. Locking System

The Atlanta Public Schools has standardized its hardware using the “Best” Lock System. Other manufacturers are acceptable if they can use a “Best” 7-pin removable lock core and contain acceptable vandal resistant features. All hardware must comply with current ADA requirements for accessibility. Final replacement cores and keys to be furnished by Atlanta Public Schools. Keyless entry for specific designated entry points will require the use of “BEST” lock only (see APS Safety and Communication).

D. Hinges

Use pivot and butt hinges. Continuous hinges should be used at all exterior doors and in heavy traffic areas, including corridors and restroom partitions.

E. Door Closures

Refer APS Hardware Specification.

F. Floor Closures

Refer APS Hardware Specification.

G. Panic Devices

Do not use any vertical locking rods in conjunction with panic devices. Refer APS Hardware Specification. Trims shall be pull handle type. Lever handle trim is not acceptable.

H. Metal Kick Plates

Metal kick plates shall be specified for all classroom doors and other high traffic.

I. Astragal / Mullions

Provide keyed removal mullions at all exterior corridor double doors. Do not install astragals at double doors to storage rooms.

J. Self tapping screws are not an acceptable installation method for door hardware.

V. WINDOWS

A. All windows in the school are to be non-operable, fixed windows.

B. Window sections shall conform to current American Architectural Manufacturers Association (AAMA) standards for commercial or heavy commercial aluminum windows. Windows shall be clear anodized finished.

C. Wood or steel-framed windows shall not be used.

D. Institutional grade hardware that will withstand the heavy use shall be provided.

E. Take care to prevent projection-type windows from projecting into walkway path.

F. Each ground floor classroom shall have at least one window that shall be large enough and fitted with appropriate hardware to be used as an emergency escape route when required by codes.

VI. GLAZING

A. General exterior glazing shall be tinted insulating glass and glazing for fixed aluminum windows: Exterior glass: Low E ¼" tinted plate; Interior glass: ¼" clear plate; ½" sealed air space.

B. Provide clear plate, tempered, laminated, and polished wire glass as required by fire and building codes.

C. Windows installed in wood doors shall be installed using metal window kits with non-reversible screws. Wood stops with screws or nails will not be allowed

END OF DIVISION 8

DIVISION 9

FINISHES

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DIVISION 9 FINISHES

I. GENERAL

- A. All floors shall be tested for moisture content prior to the installation of the finish floor. Do not install flooring material when the moisture content exceeds the manufacturers recommendations. All test reports shall be submitted to the APS Project Manager prior to installation of flooring material.
- B. Provide sealant in all areas tested positive for level of moisture content above finish floor manufacturers' requirements.
- C. Use approved Atlanta Public Schools Color Board for approved colors and manufacturers. (Refer to: APS Standard *Finishes Schedule*)
- D. Do not install tile or carpet over drains.
- E. Do not install tile or carpet over exposed joints.
- F. Floor to be clean and free of debris prior to floor finish installation.
- G. The Architect is responsible for reviewing the Asbestos Abatement Management Awareness Plan (provided by Atlanta Public Schools).
- H. The APS Project Manager is also responsible for incorporating any asbestos abatement into the overall project schedule and will coordinate removal by APS vendor.
- I. After construction is completed, a certified letter must be given to the project manager from the architect, (a standard letter is provided by the APS Abatement Team), that no new materials used have asbestos in them. (Refer to: *Division 1 – General Requirements, Section VII*)
- J. The Architect and project managers should make every effort to assure that all asbestos containing materials is removed from the buildings prior to or during the renovation process. This effort should be coordinated with the Atlanta Public Schools Project Manager and the CM Project Manager during the renovations.
- K. All abandoned or unused system devices and cabling shall be removed from all areas of buildings during renovation projects. This should include but not be limited to thermostats, temperature sensors, clocks, bells, fire alarm horns, strobes, pull stations, antenna or cable TV system components, fans, louvers, data system components, mechanical system control components, abandoned steam radiator systems, boilers, speakers, call buttons, electrical panels, switches, lights etc.
- L. Patch or repair penetrations or damage to walls, ceilings and floors caused by the removal of these devices noted in item K above..

II. LATH, PLASTER AND GYPSUM BOARD

- A. Gypsum board wall systems are approved in accordance with UL fire ratings and ASTM/ANSI standards for interior partitions and firewalls where it is not likely to be subject to vandalism or abuse and in most elementary schools. All finishing to be done in accordance with latest edition of USG GA 214-96 Publication on Level of Gypsum Board Finish. Gypsum board wall systems shall be attached to metal stud framing and furring. A Level 5 finish shall be specified.
- B. In instructional areas where gypsum board wall systems must be utilized, only "Heavy duty impact resistant gypsum. board" shall be specified utilizing one layer of High Impact XP wall board with fiberglass mesh reinforcing. In multiboard assemblies use High Impact board for the top layer.
- C. Outside corners: Shall be $\frac{3}{4}$ " bull nose corner beads.
- D. Completely cover wet walls of all restrooms with ceramic tile.
- E. Install an appropriate water/moisture resistant backer-board system for tile installations.
- F. Painted Gypsum wallboard shall only be utilized on student restroom ceilings not on vertical surfaces in student restrooms or in the kitchen.

III. CERAMIC TILE

- A. Ceramic tile (background with mosaic accents) shall be used for all "wet" walls for the full heights of the walls in restrooms.
- B. Use large dark-colored ceramic tile that is impervious to soil and stains to reduce the amount of grout and to facilitate easy cleaning. Refer to APS Finish Schedule for appropriate colors.
- C. Use epoxy adhesive and dark colored acid resistant grout for all restrooms. Floor tile products shall be sealed.
- D. Colors shall be selected by Architect from the APS Standard Color Palette and approved by Atlanta Public Schools. (See APS Guidelines Division 9, Appendix "A" APS Standard Finishes Chart)

IV. RESILIENT TILE FLOORING (Use APS Standard Specification 09 65 19)

- A. General – Vinyl Composition Tile (VCT) shall be the predominant floor covering material in the school.
- B. Colors – The Architect shall select color, from Atlanta Public Schools standard color boards. (See APS Guidelines Division 9, Appendix "A" APS Standard Finishes Chart)

- C. Contractor to apply eight (8) coats of wax in the corridors and (6) coats of wax in classrooms to finish floor using Atlanta Public Schools approved wax. The final two (2) coats are to be applied after the school move. All waxing shall be performed by the APS site contracted custodial firm and this cost shall be included in the contractors/CM firms bids.

V. RESILIENT BASE (RUBBER) (Use APS Standard Specification 09 65 13)

- A. Standard cove base, 4" high, 1/8" thick, shall be installed where resilient tile or carpet is installed. (See APS Guidelines Division 9, Appendix "A" APS Standard Finishes Chart)
- B. Six-inch (6") base may be used when approved by APS for special installations.
- C. Factory pre-molded external corners and end stops shall match base materials.
- D. Rubber base corners – use manufacturer's instructions, use prefabricated corners in lieu of job built at all corners.
- E. For renovated projects, match existing base height, for new construction use, 4" base.
- F. Prepare all new and renovated walls prior to installation of wall base material.

VI. CARPET TILES (Use APS Standard Specification 09 68 16)

- A. General – Carpet tiles shall be used in administrative offices, conferences rooms, media centers, teacher workrooms, auditorium aisles and other specially designated areas.
- B. Colors – The Architect shall select colors, from Atlanta Public Schools standard color board. (See APS Guidelines Division 9, Appendix "A" APS Standard Finishes Chart)
- C. Approved manufacturers are : InterfaceFLOR The Standard Style # 1467302500 Aegean 9371, InterfaceFLOR The Standard Style #1467302500 Guava 9359 and Tandus C&A Crayon #01957 Outside the Lines 48005, Tandus C&A Applause II 02803 Marine 28517; Tandus Flooring Aftermath II 03026 – Lapis/Marine 23517 & Farrago 23505
- D. Warranties:
 - 1. Carpet Tile Manufacturer – The manufacturer shall issue the following sole source responsibility warranties:
 - a. Excessive surface wear and stain removal for lifetime.

- b. Lifetime Delaminating of backing and edge ravel, yarn pulls, zippering
 - c. Lifetime static control and moisture barrier
- 2. Special Project Warranty. The Contractor, installer and manufacturer (Carpet Mill) shall provide a signed special warranty, agreeing to repair/replace defective materials and carpet tile defects caused by improper workmanship for a period of one (1) year from substantial completion.
- 3. Installer/Contractor. Provide an additional written guarantee to relay, re-stretch or replace any carpet that may have suffered a lack of adhesion, seam separation, raveling or is wrinkled in any way, within 90 days of acceptance and use by Atlanta Public Schools.

F. Maintenance and Training

- 1. Atlanta Public Schools desires a written certificate for carpet tile maintenance program for a period of not less than two (2) years after substantial completion. This program should involve an alliance with the Carpet Manufacturer, the installer and Atlanta Public Schools.
- 2. During the specified period, training shall be provided to designated APS personnel, in the proper care and maintenance of the carpet, to insure continued long-term care during the remaining warranty period.

VII. SEAMLESS EPOXY FLOORING (Use APS Standard Specification 09 67 23)

- A. Seamless epoxy flooring with base may be used in for kitchens, student toilets and work rooms as directed and/or approved by APS Project Manager.
- B. Prefer the use of a 3/16" thick system comprised of a penetrating two-component epoxy primer, three component mortar consisting of epoxy resin, curing agent and finely graded silica aggregate, three component, epoxy undercoat, brightly colored, quartz silica aggregate broadcast and a high performance, two component, clear epoxy sealer.
- C. Insure positive flow to drains in "kitchen and battery toilets" when seamless flooring occurs with minimal floor slopes.

VIII. TERRAZZO

- A. Detail and specify terrazzo as required by the National Terrazzo and Mosaic Association for design and detailing of terrazzo floors.

- B. Corridors and Main Lobby: Terrazzo floors with rubber base may be used in these areas as approved by APS.

IX. ATHLETIC FLOORING

- A. Floors in Elementary Multi-purpose rooms to be "Taraflex" Sport M or "Mondo" athletic flooring or approved equal.
- B. Hardwood athletic floors to be used in Middle and High School gymnasiums. Preferred running track surface preferred products include SportsTrack 2000 ST-55, Plexitrac Accelerator by Plexipave or equal.
- C. School logo, game and instructional lines will be included as required.
- D. Use premium grade wood for primary playing surface. Use lower grade wood for gaming and bleacher areas.

X. CEILINGS

- A. Suspended ceilings with metal grids and 2' x 2' acoustical ceiling tile shall be used in classrooms and other general areas.
- B. Solid, washable ceiling tiles shall be used in adult public restrooms and kitchen and food prep areas.
- C. Do not use recessed grid ceiling tile.
- D. Use fissured non-directional ceiling tile per APS Standard Color Board. (See APS Guidelines Division 9, Appendix "A" APS Standard Finishes Chart)
- E. Use gypsum wallboard for all student restroom ceilings.
- F. Require attic stock of two boxes of each type of ceiling tile.
- G. Kitchen: Ceilings shall be flat lay-in tile. Finish should be vinyl-covered meeting Health Department standards. Scrubable ceiling panels shall be 2' x 2' size. USDA accepted, vinyl-faced aluminum in manufacturers' standard "white" color. Grid to be aluminum finished white. (See APS Guidelines Division 9, Appendix "A" APS Standard Finishes Chart)
- H. Corridors and Main Lobby: Flat, lay-in acoustical panels. Gypsum wallboard may be used as an accent.
- J. Provide 2' x 2' "square edge" acoustical ceiling tiles equal to "Armstrong Minaboard, Cortega design" in all classrooms and general use areas. Do not use "tegular" or "revealed edge" ceiling tiles.

XI. ACOUSTICAL TREATMENT

A. Uncontrolled Sounds

Uncontrolled sound affects a person's mental health and subsequent actions over a period of time, resulting in annoyed, frustrated and tired individuals. Sound control should allow individuals to move freely without distracting others, speak and be heard to the extent intended and to generate sound appropriate to the activities.

B. Sound Attenuation

Special acoustical treatment is required in music and choral rooms, auditoriums, multi-purpose and physical education areas, and cafeteria. (*Refer to Division 1 – Music Room, Multi-purpose Space Guidelines*)

XII. PAINTING AND WALLCOVERING

A. General Painting Guidelines

1. Colors shall be selected from APS standard colors palettes. (See APS Guidelines Division 9, Appendix "A" APS Standard Finishes Chart). Refer to color selection recommendations in carpet and floor tile sections for further color coordination guidance.
2. Interior walls, doors, trim and other normally painted surfaces shall be repaired, properly primed and painted with at least two (2) coats of paint.
3. Wood doors shall be stained with a light oak or birch stain. Dark stains shall not be permitted.
4. Approved accent colors are limited to 5% of the standard color.
5. "School Colors" shall be limited to specified areas in lobbies, cafeterias, auditoriums, multi-purposes rooms and gymnasiums.
6. All exterior surfaces of facilities shall be repaired, cleaned and finished to present a neat and aesthetically pleasing appearance. High-pressure steam cleaning and/or sandblasting and sealing of porous surfaces may be necessary. Brick may require tuck-pointing prior to application of waterproofing. New masonry shall be cleaned with products as recommended by the brick manufacturer. Exterior painting shall be performed as specified using approved exterior type paint in colors selected by the Architect and approved by Atlanta Public Schools. In general, materials with factory applied paint, coating or integral color shall be used to minimize exterior maintenance costs.
7. Provide a test to identify existing paint type to ensure compatibility with new paint.

8. Prepare a three (3) minute paint application to test a minimum four feet by four feet (4' x 4') area at random locations for inspection by the Architect, Engineer and APS to determine proper preparation and application of paint finish.
9. The use of chemical paint remover is recommended to remove oil, lead and latex base paints.
10. Recommended use of "Peel Away 21" – Remover and "400 Clean/Bond" – Primer, if deemed appropriate for surface.
11. Properly prepare all existing surfaces to receive new paint. Insure that manufacturer's conditions are met.
12. Require attic stock of one (1) gallon of each type of paint used.
13. Unless otherwise specified, all wall surfaces in new and renovated APS facilities are to receive two (2) finish coats of semi-gloss latex paint over a properly prepared and primed surface. This includes areas of high traffic and or abuse such as Kitchens, restrooms, Corridors, etc. First coat shall be tint coat with different color than final coat of paint.
14. Surfaces in most existing APS facilities have been painted many times with multiple types of paints (e.g. latex, oil, epoxy, etc.) and have deteriorated over time. Specifications should be clearly written to require the contractor/construction manager to prepare existing surfaces scheduled to receive new paint as recommended by the paint manufacturer and by any other means necessary (e.g. chemical, mechanical, primers, etc.).
15. Paint in existing APS facilities may contain lead. Paint specifications should clearly spell out that during their execution the contractor/construction manager is responsible for preparing surfaces which may be coated with lead paint and that he is responsible for the protection of the public and his workers during the execution of these specifications.

B. Classrooms

The color of classroom walls, ceilings and floors has an important effect on classroom lighting. Colors can create feelings of warmth and coolness, cause difficulty in focusing the eyes and illusions of change in size, weight or distance. Students and teachers tend to utilize the space to the maximum when colors are properly selected.

1. Elementary Classrooms: Durable paint in bright, warm colors that convey vitality without overwhelming the room.

2. Middle-High Classrooms: Calming environment with colors in the light to mid-value range.
3. Color schemes should not distract students from learning.
4. Light and color are inherently linked. Consider light reflectance values of major color selections throughout the school and the impact those shades have on surroundings.
5. Office Spaces. Light colors create the illusion of space and can give employees an emotional boost. Dark saturated colors tend to make surroundings appear cramped and should be confined to small background areas where contrast is needed. Cool colors tend to calm, can ease tension in work areas with highly detailed activity. Warm colors placed in non-productive areas can dispel boredom and stimulate conversation.
6. Standard Color Palettes
 - a. Atlanta Public Schools has selected a number of color palettes from the Duron/Sherwin Williams Paint Co. (Refer to: Division 9, Appendix "A" *APS Standard Finishes Chart*)
 - b. Atlanta Public Schools prefers semi-gloss latex paint.
7. Painting and Finishing Materials
 - a. Paint (Latex/oil based), varnish, stain, enamel, lacquer and fillers. (Types and brands manufactured by Duron/Sherwin Williams (basis of standard).
 - b. Paint accessory materials such as linseed oil, shellac, and turpentine shall be of high quality and approved manufacturer.
 - c. Wall coverings (vinyl, cloth and paneling) shall be restricted to special applications and approved by the APS Project Manager.
 - d. Special treatment materials such as "Glid-Wall" or other similar products, shall be specified for surfaces with high moisture content. Epoxy type paints shall not be used.
8. Lighting Reflectance Values

The following reflectance values are recommended for large surface areas in instructional spaces:

<u>Interior Surface</u>	<u>Reflection Value</u>	<u>Finish</u>
Ceilings	80% - 90%	Flat
Walls	50% - 60%	Flat
Wainscoting	40% - 60%	Flat
Floors	20% - 50%	Variable
Chalkboards	10% - 20%	Flat
Furniture	40% - up	Flat

XIII. APS Standard Finishes Chart

- A. APS Standard Finishes Schedule – Refer to Division 9, Appendix “A”.

END OF DIVISION 9

DIVISION 9 – APPENDIX “A” – APS STANDARD FINISHES CHART

Key	Standard
CEILING FINISHES	
01 Lay-in ceiling	Lay-in Ceiling Armstrong Cortega #770 USG Radar #2110
02 Painted Ceiling	Duron/Sherwin Williams SW 7005 Pure White
03 Kitchen Lay-in	Sheetrock Brand – ClimaPlus Vinyl
CARPET FINISHES	
04 carpet option 1	InterfaceFLOR The Standard Style #1467302500 Aegean 9371
05 carpet option 2	InterfaceFLOR The Standard Style #1467302500 Guava 9359
07 carpet option 3	Tandus Flooring Aftermath II 03026 – Lapis/Marine 23517
08 carpet option 4	Tandus Flooring Aftermath II 03026 – Farrago 23505
09 carpet option 5	Tandus Flooring Applause II – Marine 28517
10 carpet option 6	Tandus Flooring Style: 01957 Crayon Outside the lines 48005
11 carpet option 7	J&J Impulse #2435: Call an Old Flame 3408
12 carpet option 8	J&J Impulse #2435: Take a Trip 8400
CARPET BASE FINISH	
13 vinyl base	Allstate #48
FLOORING	
14 Athletic Flooring	Taraflex Sport M Plus – Maple Design 6381
WINDOW TREATMENT	
15 Mini Blinds –option 1	Springs Window Fashion – Brushed Aluminum 112
Mini Blinds – option 2	Springs Window Fashion – Alabaster 121
CABINETS/CASEWORK/FURNITURE	
16 Casework – cabinets	Formica – Natural Oak 346-58
17 Casework – countertops	Formica – Birch (matte Finish) 921-58
18 Furniture – option 1	Virco – Navy Blue
19 Furniture – option 2	Virco – Burgundy
BATHROOM FINISHES	
20 Wall tile	Dal-tile – Almond D0135
21 Wall Tile Accent – option 1	Dal-tile – Oak Moss D0195
22 Wall Tile Accent – option 2	Dal-tile – Mustard Q012
23 Wall Tile Accent – option 3	Dal-tile – Chianti Q092
24 Wall Tile Accent – option 4	Dal-tile – Navy K189
25 Floor Tile – option 1	Dal-tile – Uptown Taupe D132 2x2 Mosaic
26 Floor Tile – option 2	Dal-tile – Almond/porcelain D335 2x2 Mosaic
KITCHEN WALL & FLOOR FINISHES	
27 Wall Finish	Duron/Sherwin Williams SW 7011 Natural Choice (waterbourne acrylic semi-gloss)
28 Floor Finish – option 1	Dal-tile – Tempest Gray – 0Q44 (quarry tile)
29 Floor Finish – option 2	Dal-tile – Gray Suretread – 0Q76 (quarry tile)

DIVISION 9 – APPENDIX “A” – APS STANDARD FINISHES CHART

WALL PAINT FINISHES	
30 Primary Wall Finish	Duron/Sherwin Williams – SW 7011 Natural Choice
31 Wall Paint/Accent – option 1 - Green	Duron/Sherwin Williams – SW 6461 Isle of Pines Duron/Sherwin Williams – SW 6460 Kale Green Duron/Sherwin Williams – SW 6458 Restful
32 Wall Paint/Accent – option 2– Blue	Duron/Sherwin Williams – SW 6531 Indigo Duron/Sherwin Williams – SW 6810 Lupine Duron/Sherwin Williams – SW 6808 Celestial
33 Wall Paint Accent – option 3 – Yellow	Duron/Sherwin Williams – SW 6683 Bee Duron/Sherwin Williams – SW 6682 June Day Duron/Sherwin Williams – SW 6681 Butter Up
34 Wall Paint/Accent – option 4 – Red	Duron/Sherwin Williams – SW 6306 Cordial
FLOOR TILE & BASE FINISHES	
35 Primary Floor Tile	Armstrong, Standard Excelon Imperial Texture Taupe 51901 Washed Linen 51810
36 Base Finish	Allstate - #48
37 Floor Tile Accent – option 1	Pomegranate 51814
38 Floor Tile Accent – option 2	Basil Green 51947
39 Floor Tile Accent – option 3	Gentian Blue 51946
40 Floor Tile Accent – option 4	Golden 51878
41 Floor Tile Accent – option 5	Classic Black 51910
FLOOR TILE FINISHES (GREEN PRODUCTS)	
42 Primary Floor Tile	Armstrong Migrations Bio-Based Tile Mushroom Beige T3509 Natural Beige T3510
43 Floor Tile Accent – option 1	Straw Yellow T3515
44 Floor Tile Accent – option 2	Pepper Red T3517
45 Floor Tile Accent – option 3	Summer Green T3521
46 Floor Tile Accent – option 4	Washed Indigo T3519
47 Floor Tile Accent – option 5	Basalt Black T3500

DIVISION 10

SPECIALTIES

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DIVISION 10 SPECIALTIES

I. MARKERBOARDS AND TACKBOARDS

(Use APS Standard Specification Section 10 11 00 – Markerboard, Tackboard and Accessories)

- A. Markerboards (lined/unlined) shall be similar and equal in design to Aarco Products, Inc., Greensteel, Claridge, Carolina and Alliance Wall, and shall meet or exceed all specifications stated herein. The following surfaces are not acceptable: low fired organic coatings (paint), porcelain coatings of less than .005" minimum thickness on writing side and .003" on reverse side or porcelain coatings on one side only. All markerboard accessories such as clips, map rack and flag holder should be included.
- B. Tackboards and white erasable markerboards shall be installed as follows: for all grades, provide one (1) tackboard 4' x 16'; and three(3) markerboards, 4' x 6'. Tackboards should be installed on computer walls. The drawings should identify the markerboard/tackboard location. A typical classroom layout shall include the location and size of the markerboard/tackboard. Coordinate marker board locations with the location of "Smart Board".
- C. All markerboards and tackboards shall be placed 2'-6" above finish floor and coordinated with the location of all devices including fire strobe.
- D. In school with music rooms, markerboards with music lines should be provided as noted in the markerboard specifications. All markerboards should be located in the front of the classroom unless otherwise specified.
- E. One (1) 4' x 8' tackboard shall be located outside each classroom adjacent to the door in corridors for displaying work and projects. The tackboard installed on the corridor wall is in addition to one (1) 4' x 16" tackboard installed inside the classroom. Project Manager should coordinate locations with school principals.
- F. Markerboards and tackboards should be mounted directly to the wall. No mounting standard or chalkboards are to be used unless determined by APS.

II. FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

- A. Acceptable Manufacturers:
 - 1. Elkhart Brass Manufacturing Company
 - 2. J. L. Industries, Inc.
 - 3. Larsen Manufacturing Company
 - 4. Norris Industries
 - 5. Standard Fire Equipment Division/Zurn Industries, Inc.

B. Dry Chemical Extinguisher:

Provide recessed wall cabinets with extinguishers complete with nozzle and pressure gauge. Dry extinguisher should be five (5) pounds, rated 4A-60B:C.

C. Provide new extinguishers only in existing cabinets where needed.

D. Fire extinguishers and cabinets to be included in contractor's contract.

E. Cabinets to be 12 inches wide, 27 inches high, and 8 inches deep.

F. Do not use plastic bubble type door

III. TOILET PARTITIONS, ACCESSORIES AND PRIVACY SCREENS

A. Toilet Partitions and Urinal Screens.

1. All toilet partitions and urinal screens to be installed per ADA and DOE Codes and Guidelines.
2. The privacy of students shall be protected with adequate privacy screening in all toilet rooms.
3. Provide black, solid phenolic doors for all toilet compartments and concrete block partitions between all toilets.
4. Toilet partitions shall be mounted and securely braced at the wall, floor, and to the structure above the ceiling.
5. Partitions shall be CMU block . Partitions of CMU block with solid phenolic doors and locking hardware is preferred, where space permits.
6. Urinal screens to be attached with continuous angle on both sides and other anchorage to insure secure installation.
7. All toilet partition doors are to be provided with continuous hinges. For floors and walls, refer to Division 9. All colors should be coordinated with the Atlanta Public Schools Standard Finishes Chart.

B. Lavatory Screening.

1. Wash fountains or lavatories may be located in a corridor recess without privacy screening provided. It is requested that at least one lavatory with privacy screening is located inside the toilet room.
2. Lavatories shall be screened from adjacent urinals.

C Restroom Accessories

1. Provide commercial quality stainless steel restroom accessories as specified by the Architect.
2. APS will provide the following accessories to the contractor/CM for installation: toilet paper dispensers, paper towel dispensers and soap dispensers.
3. Provide and install one (1) surface mounted electric hand dryer (XLERATOR Model XL-W - www.exceldryer.com). In each restroom with more than two toilet fixtures, in all renovated and newly constructed elementary, middle, high or administrative facilities. The installation of this electric hand dryer is in addition to the surface mounted paper towel dispenser to be installed in each restroom specified elsewhere. The electric hand dryer shall be mounted on a tile wall or other nonporous surface. Provide and install an acrylic or washable surface material under hand dryer to protect wall.
4. Avoid dispensers that have sharp edges or require separate or multiple keys to open.
5. Avoid built-in dispensers that are expensive and difficult to use and refill.
6. Install APS supplied jumbo-roll, covered toilet-tissue dispensers to reduce service frequency. Mount at appropriate height on partitions.
7. All toilet accessories to be equal to or better than Bobrick Industries (www.bobrick.com). Install one (1) surface mounted paper towel dispenser (Bobrick B-262) in each restroom. Install one (1) toilet tissue dispenser (Bobrick B-2888) at each water closet. Provide appropriate accessories for Adult and/or public restrooms (feminine disposal receptacles etc). APS has contracted with vendors who supply, and maintain several toilet accessory items, consultation with Project Manager will identify these specific items and contractor shall be responsible to provide items not included in this scope. All appropriate items shall be shown on the contract documents. Architect shall show all APS provided accessories on plans.
8. All mirrors shall be polished stainless steel. Provide one (1) mirror above each lavatory.
9. All accessories should be mounted per standard ADA and DOE local and state codes and guidelines.

IV. EXTERIOR FLAGPOLES AND FLAGS

A. School Flagpole

Provide and install a thirty-foot (30') aluminum flagpole set in a concrete pad, with a tilting shoe base, complete with appropriate flagpole hardware, in a prominent location, designated by the Architect and approved by Atlanta Public Schools.

B. School Flag

Flag should be 5'-0" by 8'-0", exclusively 100% 2-ply spun woven polyester fabric, able to resist high winds, open weave and fade-resistant.

C. Other

Coordinate delivery and installation with all required sitework activities.

V. PROTECTIVE WALKWAYS AND CANOPIES

Appropriate, properly prepared to receive paint, aluminum alloy, galvanized steel (color matching existing metal roofs, if used on main building) painted steel walkway canopies shall be provided at:

- A. Student bus and automobile loading and drop-off areas. Recommended standard height of 14' over driveways.
- B. Between multi-purpose building and main school building, if applicable.
- C. As specified by the Architect and approved by Atlanta Public Schools, total area not to exceed 2,000 square feet.

VI. SIGNAGE (EXTERIOR AND INTERIOR)

- A. Exterior Signage (See Division 32- Exterior Improvements; VII exterior signage)
 - 1. *School Identification and Activities Information:* School name signs and exterior bulletin boards shall be provided per APS Standard Specification Sections 10 14 19 , and approved by Atlanta Public Schools. Placement and location should be coordinated with Architect and Project Manager
 - 2. Provide for one exterior illuminated electric LED monumental sign per APS Standard Specification Section 10 14 63 Electronic Message Signage.
 - 3. Provide per APS Standard Specification Section 10 14 19 – Exterior Signage.
 - 4. *Vehicle/Pedestrian Traffic Control.* Appropriate signage, including pavement markings, shall be provided as required by ADA for proper access and as required by other codes to safely control vehicle and pedestrian traffic in the school area.

5. *Building Plaque.* The building plaque should be provided for all new schools, renovations and additions. See APS Standard Specification 10 14 19 – Exterior Signage, for specifications, installation and instructions.

B. Interior Signage

1. Use APS Standard Specification Section 10 14 23 - Interior Signage.
2. All signage information should match room numbers identified on the drawings, fire alarm, intercom and DDC Control. Storage areas located inside rooms are not required to have a separate sign. Room numbering and space identification shall comply with State DOE requirements.
3. Signage should be welded plastic laminate 6" x 6" with radius corners. Colors to be selected by Architect from Atlanta Public Schools approved color board.
4. Verify the exact number of interior room signs with APS Project Manager.

VII. LOCKERS

A. General

Use APS Standard Specification Sections 10 51 13 Metal Lockers and Section 10 51 14 Athletic Lockers

B. Corridors: Student Lockers –Use APS Standard Specifications Section 10 51 13.

Metal double-tiered louvered-type lockers with built in combination locks are to be provided in all student areas. All lockers are to have continuous piano hinges and be padlock and/or combination lock acceptable. If there are existing lockers, they should be examined for reuse. If painting is required, they should be refinished to a like new condition. A sample must be provided and accepted by the APS Project Manager. A coat hook and three prong wall hook should be provided. One locker should be provided for each student.

C. Kitchens

Provide full-length louvered metal lockers (one for each employee), for kitchen staff. Lockers should be in a separate room adjacent to the kitchen, near the restroom and washer/dryer room. All lockers are to have continuous piano hinges and be padlock acceptable.

D. Locker Rooms: Athletic Lockers – Use APS Specification Section 10 51 14.

Provide open-mesh type lockers for the locker rooms. Provide approximately one each for 1/3 of the school's population, but this number should be verified

with each school prior to specifying. All lockers are to have continuous piano hinges and be padlock acceptable.

E. Locker Accessories

1. Furnish each locker with one (1) double-prong ceiling hook and not fewer than two (2) single-prong wall hook.
2. Number Plates: Manufacturer's standard polished aluminum, etched, embossed or stamped, nonferrous-metal number plates, with numbers not less than 3/8-inch (9 mm) high. Number lockers in sequence indicated. Attach plates to each locker door, near top, centered, with at least two (2) fasteners of same finish as number plate.
3. Continuous metal base, continuously sloping tops, recess trim and filler panels.

F. Locker Benches

1. Bench Tops: Manufacturer's standard one-piece units with laminated maple top approximately 9-1/2 inches (240 mm) wide by 1-1/4 inches (32 mm) thick. Round all corners, sand smooth, and apply manufacturer's standard transparent sealer coating.
2. Pedestals: Manufacturer's standard steel pedestal supports. Furnish all fastenings and anchorages. Apply manufacturer's standard baked-enamel finish to pedestals.
 - a. Type: Manufacturer's standard tabular pedestal with top flange and base floor anchored.
 - b. Color: To match locker units.

G. Finishes – General

1. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
2. Touch up marred finishes, or replace locker units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer

H. Adjusting, Cleaning and Protection

1. Adjust doors and latches to operate easily without bending. Verify that integral locking devices are operating properly.
2. Clean interior and exposed exterior surfaces and polish stainless steel and nonferrous metal surfaces.

3. Protect lockers from damage, abuse, dust, dirt, stain or paint. Do not permit locker use during construction.

VIII. OPERABLE PARTITIONS

- A. Wherever possible, all folding partitions between existing classrooms shall be removed.
- B. Partitions to be supported independent of the roof structure or joists of the floor above (do not use floor-supported partitions). Verify structural requirements to ensure that the mid-span deflection will not impede movement of the operable partition or affect the performance of acoustic seals. Include the supporting miscellaneous steel required as a part of the general construction contract.
- C. Operable partitions shall have a pass door and frame.
- D. Partitions to include mechanically operated top and bottom sound seals.
- E. Single-lead partitions are less expensive and have many operational advantages.
- F. Field sound rating of Class 35 required.
- G. Finished surface to be fireproof or fire-resist with a flame-spread of at least 25. Finish surface to be selected by Architect and approved by Owner.
- H. Electric operated partitions may be bid as an alternate.
- I. Approval of partition system from the APS Project Manager is required before the partitions are specified.

IX. STORAGE SHELVING

Storage Shelving

- A. Stainless steel open shelving shall be provided for kitchen goods storage areas. Metal and/or pre-finished wood shelving for Media Center, and the multi-purpose storage rooms shall be provided as specified by the Atlanta Public Schools. (Refer to Division 11).
- B. Shelving shall be provided in **all types of storage areas**, including but not limited to Janitor's Closet, PE Storage, Book Storage, Janitor's Storage and Multi-purpose Storage Areas, etc. Shelving should be heavy-duty industrial metal shelving, not wood or plastic laminate casework. (Use APS Standard Specification Section 10 56 13 – Metal Shelving)
- C. Acceptable Products: Rigid frame shelving meeting or exceeding the design characteristics listed below:

1. All units shall be freestanding requiring four (4) upright posts. Posts in common area are not acceptable. Upright angle posts shall be 14 gauge.
2. Shelving units shall be constructed so that individual units can be moved.
3. Top and bottom shelves to be 18 gauge prime steel, triple bent on all four (4) sides, 2" face, ½ inch return and ½ inch return again.
4. Each top and bottom shelf shall be 16 bolting points for attachment to upright posts. Clipping system on top and bottom shelves is not acceptable.
5. Intermediate shelves shall be 18-gauge prime steel, triple bent front and rear, 1-1/4 inch face and ½ inch returns.
6. Shelf clips on intermediate shelves shall be compression type and adjustable without the use of tools.
7. Shelf unit shall be rigid type so that the use of cross bracing is not required.
8. Finish shall be iron-phosphated, electrostatically painted and baked to full cure (with the exception of the nuts, bolts and clips).
9. Color shall be available in at least five (5) standard selections at no additional cost.

D. Shelving unit sizes:

Type A: 87"H x 36"Wx12"D

Type B: 87"H x 48"Wx12"D

Type C: 87"H x 36"Wx18"D

Type D: 87"H x 48"Wx18"D

Type E: 87"H x 36"Wx24"D

Type F: 87"H x 48"Wx24"D

All units to have top and bottom shelf and five (5) intermediate shelves.

E. Installation:

1. Assemble shelving in accordance with manufacturers instructions.
2. Secure shelving with anchor devices to suite substrate materials.
3. Bolt adjoining shelving units together to provide rigid installation.

END OF DIVISION 10

DIVISION 11

EQUIPMENT

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APPENDIX “A” – TYPICAL MEDIA CENTER PLAN (Elementary School)
TYPICAL MEDIA CENTER PLAN (Middle School)
TYPICAL MEDIA CENTER PLAN (High School)

APPENDIX “B” - TYPICAL SCIENCE LAB PLAN (Elementary School)
TYPICAL SCIENCE LAB PLAN (Middle School)
TYPICAL SCIENCE LAB PLAN (High School)

APPENDIX “C” - FOOD SERVICE EQUIPMENT
TYPICAL HIGH SCHOOL SERVING LINE LAYOUT

I. SCHOOL ATHLETIC DESIGN AND EQUIPMENT

- A. Athletic Equipment should be coordinated with the Project Manager and approved by Atlanta Public Schools.
- B. Basketball goals and scoreboards, and other permanently installed sports equipment should be included in the projects and coordinated through the school. Power and data shall be provided as needed in the design. Reference APS Standard Specifications, Section 11 66 43 Multisport Scoreboard and Section 11 68 48 Basketball Scoreboard,
- C. Gym floor covers, for playing floor surface games, shall be included in the design and Contractor's scope of work.
- D. Laundry Room: Provide a laundry room adjacent to the Gym/Locker Rooms for Middle and High Schools – A separate room with an exterior wall should be provided. Vents should be specified on the exterior wall. Plumbing and electrical should be provided for commercial rated washer and dryer. Basis of design to be considered: Belco Athletic Laundry Equipment or equivalent. Provide appropriate washer with gas dryer; confirm capacity & size with project manager.

Physical Education Facilities Requirements

Elementary School: (Multi-purpose room per GDOE requirements)

- Metal shelving in secured storage
- Office space that includes a restroom
- Outlets for sound systems throughout multi-purpose room
- Sound proof walls
- Synthetic rubber flooring with game markings
- Water fountain with adjacent floor drain

Middle School

- Commercial Washer and Dryer with available gas service.
- Lockers for Physical Education classes
- Lockers for Athletics-programming to include locker sizes that will accommodate football equipment
- Secured storage with metal shelves for physical education and athletics
- Coaches/ teacher office space to include restroom and shower facilities
- Ice machine for injury management.

High School

- Bathrooms with showers

- Fieldhouse (storage of football equipment, track and field)
- Extension water fountains
- Commercial Washer and Dryer with available gas service
- Lockers for Physical Education classes
- Lockers for Athletics (both varsity and junior varsity)-programming to include locker sizes that will accommodate football equipment
- Secured storage with metal shelves for physical education and athletics
- Coaches/ teacher office space to include restroom and showers facilities
- Classroom for health education
- Concessions stand and storage programming to include electrical and water supply for ice machine and other concession stand items
- Ice machine for injury management

II. MEDIA CENTER DESIGN AND EQUIPMENT

- A. Architect should comply with Georgia Department of Education requirements for Media Centers.
- B. Media Center shelving, casework, furniture, and equipment shall be installed as specified by the Architect and in accordance with Atlanta Public Schools Furniture/Furnishings Performance Specifications.
- C. As soon as the plans for the Media Center are completed and accepted by the Atlanta Public Schools, the Architect should provide the Atlanta Public School Project Manager and (APS furniture vendor) with electronic plans for the design and layout of the Media Center Furniture. This furniture layout should be coordinated with the building infrastructure (MEP) as required.
- D. Provide automated projection screen, 60" x 70", recessed in ceiling, with wall-mounted controls. Controls shall include lighting dimming capability.
- E. The Media Center should allow for different kinds of student use – individual, small group, and large groups. The design should eliminate any areas that cannot be seen from a single location. Shelving along the perimeter should not exceed 30" high or otherwise easily supervisable. Circulation area and computers should be located near the entrance(s). For Elementary School provide eight (8) computers and four (4) printers, for Middle/High Schools provide fifteen (15) computers and eight (8) printers. The equipment storage should be near or have hallway access.
- F. As APS prepares for renovations, redesigns and restructuring media centers that maximize students opportunity for instruction, research and independent learning, the following perimeters are to assist designers in developing environments conducive to learning, developing skills and loving literature. Both print and non-print resources are the hub for all media programs; and warrant a design that will enhance student interaction with information/literature.

ELEMENTARY SCHOOL MEDIA CENTERS

Print Collection

- Shelves should accommodate school's student population. Standard is 10 books per student (SACS) -- Projection of 10 years should be factored. Shelves with 35"width will house 60-65 picture books.
- Avoid using shelves higher than 42' (height). Unless used against back walls for staff usage.
- Magazine/periodical display.
- The collection is wheel-chair accessible.
- Area designated for Staff collection/references.
- Device for offsetting humidity. This controls damage (mildew) to books.

Technology:

- 8 desktop computers and 4 printers(with printer/scanner table near).
- Mounted LCD projector and screen, (flexible teacher/student presentation station that houses various technology equipment).
- Mounted TV
- Data/Network drops
- Phone jack/outlet (VOIP)
- Cable drops (Coaxial).

Standard Furniture and Space:

- Circulation desk with built-in book drop and carts to catch books (return slot). Desk should be flexible (in moving) for future redesigns.
- Area large enough to tell stories/provide live demonstrations (author, illustrator, special interest visits) for settings accommodating up to 30 students.
- Possible storage bins created at ends of shelves for items that enhance the collection (puppets, hands-on items, etc.).

- Amphitheatre seating for small groups that sit in circular round for literature activities (creative re-enactments-staging), workshops.
- Accessible to faucets/sinks for cleanup within media center. Preferably with bathrooms too.
- Shelving that can be moved over time for flexibly redesigning the media center.
- Some areas non-carpeted (colorful tiling, like mosaics or rubber) for creating art/community pieces involving paint, glue, etc.
- Tables should be rounded (soft edges) for safety purposes. Adjustable
- Soft 'fun but functional furniture' and benches, slightly arched and stackable.

MIDDLE SCHOOL MEDIA CENTERS

Print Collection:

- Same SACS ruling for student population. Shelves can be as high as 60", but not placed in locations that hinder viewing of students.
- Magazine/periodical display.
- Wheel chair accessible.
- Area designated for Staff collection/references.
- Device for offsetting or determining levels of humidity. This controls damage (mildew) to books.

Technology:

- 15 desktop computers with 8 printers (with printer/scanner table near).
- Mounted LCD projector and screen, (flexible teacher/student presentation station that houses various technology equipment).
- Mounted TV
- Data/Network drops
- Phone jack/outlet (VOIP)
- Cable drops (Coaxial).

- Storage for laptop carts, TV's, recording devices, and other electrical outputs.

Standard Furniture and Space:

- Storage bins at end and/or under shelves and benches.
- Circulation desk with built-in book drop and carts to catch books (return slot). Desk should be flexible (in moving) for future redesigns.
- Area large enough to tell stories/provide live demonstrations (author, illustrator, special interest visits) for settings accommodating up to 30 students.
- Accessible to faucets/sinks for cleanup within media center. Preferably with bathrooms too.
- Shelving that can be moved over time for flexibly redesigning the media center.
- Some areas non-carpeted (colorful tiling, like mosaics or rubber) for creating art/community pieces involving paint, glue, etc.

HIGH SCHOOL MEDIA CENTERS

Print Collection:

- Same SACS ruling for student population. Shelves can be as high as 72" (keep that height against the wall); no shelving (or its placement) should hinder viewing students.
- Magazine/periodical display.
- Wheel chair accessible.
- Area designated for Staff collection/references.
- Device for offsetting or determining levels of humidity. This controls damage (mildew) to books.

Technology:

- 15 desktop computers and 8 printers (with printer/scanner table near).
- Mounted LCD projector and screen, (flexible teacher/student presentation station that houses various technology equipment).
- Mounted TV

- Data/Network drops
- Phone jack/outlet (VOIP)
- Cable drops (Coaxial).
- Storage for laptop carts, TV's, recording devices, and other electrical outputs.

Standard Furniture and Space:

- Circulation desk with built-in book drop and carts to catch books (return slot). Desk should be flexible (in moving) for future redesigns.
- Couches and/or fabricated chairs for leisure reading.
- Space designated for large audience participation, like author talks, poetry cafés, etc.
- **Refer to Division 11 – Appendix “A” Typical Media Center Plans for Elementary, Middle and High Schools**

III. THEATRICAL AND STAGE EQUIPMENT

- A. Each location shall be equipped with special lighting, including stage lighting, and sound systems equipment as specified by the Architect and approved by the Atlanta Public Schools.
- B. Stage curtains should be specified by the Architect and approved by the Atlanta Public Schools. Stage curtains must be fireproof. Backdrop curtains need to rise up. Tracking system should be ball bearing for curtains that rise up.
- C. Stage Flooring
 - 1. Elementary School should use VCT Tile selected from the Atlanta Public Schools Color Board.
 - 2. Middle Schools/High Schools should use hardwood maple, Grade 3 or better over plywood deck.
- D. Auditorium Seating

Provide cloth seats to hide soiling. In some renovated spaces, the Architect should determine if refurbishing the seats is an option.

IV. ART ROOM EQUIPMENT.

- A. A Kiln shall be located in a separate Kiln Room. The Kiln Room should have an exterior wall to allow for direct venting to the atmosphere through a “dryer type”, through-the-wall vent. (Vent, ventilating unit and kiln furnished by contractor).
1. Kiln: SKUTT Model KS-1027 or equal manual kiln. 240V. 48A, 11,520W, Provide with a NEMA 6-50 Receptacle.
 2. Ventilating Unit: ENVIROVENT 2; 115V electric motor ventilating unit. The EnviroVent 2 unit attaches to the kiln and comes with an 18” long stainless steel exit duct which is connected to a 4” aluminum flexible dryer duct. Discharge may be horizontal or vertical with the exit located a minimum of 4’ from any opening in the building. The new wall mounted EnviroVent 2 design is a negative pressure system which prevents fumes from leaking into the room if the duct is damaged.

V. SCIENCE LABORATORIES DESIGN AND EQUIPMENT

As APS prepares for renovations, re-designs and restructuring science laboratories that maximize students opportunity for instruction, research, and independent learning, the following parameters are to assist designers in developing environments conducive to learning, developing skills, and loving science:

ELEMENTARY SCHOOL SCIENCE LAB

- Lab should be 1,000 square feet minimum.
- Plastic laminate veneer solid plywood base and wall cabinets on two (2) walls minimum.
- Plastic laminate “Chem-surf” by WilsonArt acid resistant counter tops with three (3) sinks, one per wall.
- Raceway with electrical outlets and provisions for technology above counter.
- Teacher’s demonstration table with sink, emergency eye wash station and desk at front of room.
- No gas service, acid resistant piping, fume hoods, eyewash and emergency shower.
- Data, voice and video per standard classroom requirements.
- Student “science” tables and chairs.
- Provide for typical classroom storage unit and teacher’s wardrobe cabinets.

MIDDLE SCHOOL SCIENCE LAB

- Lab should be 1,000 square feet minimum.
- Plastic laminate veneer solid plywood base and wall cabinets on two (2) walls minimum.
- Plastic laminate “Chem-surf” acid resistant counter tops with three (3) sinks, one per wall.
- Raceway with electrical outlets and provisions for technology above counter.
- Teacher’s demonstration table with sink, emergency eye wash station and desk at front of room.
- No gas service, acid resistant piping, fume hoods, eyewash and emergency shower.
- Data, voice and video per standard classroom requirements.
- Student “science” tables and chairs.
- Provide for typical classroom storage unit and teacher’s wardrobe cabinets.
- Provide lockable chemical storage cabinet.
- **Refer to Division 11 – Appendix “B” Typical Science Lab Plans for Elementary, Middle and High Schools**

HIGH SCHOOL SCIENCE LAB

- Lab should be 1,000 square feet minimum.
- Plastic laminate veneer solid plywood base and wall cabinets on two (2) walls minimum.
- Phenolic, acid resistant, counter tops
- Raceway with electrical outlets and provisions for technology above counter.
- Teacher’s demonstration table with sink and desk at front of room.
- Provide gas service, acid resistant piping, fume hoods, eyewash and emergency shower.
- Provide emergency shut off switch for gas service and power to lab stations.

- Data, voice and video per standard classroom requirements.
- Student “science” tables and chairs and/or stools.
- Provide for typical classroom storage unit and teacher’s wardrobe cabinets.
- Provide lockable chemical storage cabinet.
- **Refer to Division 11 – Appendix “B” Typical Science Lab Plans for Elementary, Middle & High Schools**

HIGH SCHOOL SCIENCE LABORATORIES INDICATORS

- A. Adequate Floor Space – 45 square feet minimum per student for laboratory; 60 square feet minimum for combination laboratory/classroom; sufficient space between desks and 4 foot aisles.
- B. Adequate Space for the Teachers – Teacher's space with secure storage and desk, not in shared classroom.
- C. Adequate Power Supply – Ground-fault interrupters; sufficient circuits and outlets to serve program and technology needs.
- D. Adequate Lighting – Directed and diffused to avoid glare; 50 foot-candles, minimum per square feet; 75-100 foot-candles at work surface.
- E. Lighting Levels can be Controlled – Separate switches for rows of lights. Room-darkening shades or blinds.
- F. Safe Adequate Storage and a Secure Place for Chemicals – Ten (10) square feet per student for teacher’s storage and preparation space. Separate, lockable room or closet. Adequate space for separation of incompatible chemicals.
- G. Adequate and Secure Preparation Space – Lockable preparation room, preferably 8’ by 16’.
- H. Good Infrastructure for Communications – Telephones for emergencies, network wiring for computers and cable for video communication television.
- I. Counters or Tables for Investigations – Adult-height counters and tables, movable lab tables or fixed lab stations and epoxy resin work surfaces.
- J. Natural Gas or Other Heat Source Availability – Natural gas or hot plates, one (1) per four (4) students and safety shutoff in classroom.
- K. Suitable Water Supply for Investigation – At least one (1) sink per four (4) students, one (1) large sink, swivel and high-arched faucets and deep bowls.

- L. Adequate Space for Displays – Shelves and display cabinets.
- M. Separate Space for Small Group and Individual Student Projects – Room with view window or adequate space arranged to facilitate supervision GFI-protected outlets.
- N. Space for Long-term Investigation – Student project room with holding space for long-term projects and space in the classroom.
- O. Space Requirements for ADA – At least one wheelchair-accessible workstation. Accessible safety equipment, doorways and passages.
- P. Fire and Safety Measures – Fire and safety equipment, adequate exits and adequate ventilation. Exhausts vented to outside of building.
- Q. Fume Hood Requirement – Fume hood required if hazardous chemicals are used. Fume hood vented to outside o building.
- R. Safety Shower and Eyewash Availability – Dual eyewash within 25 feet of every workstation if hazardous chemicals are used. Eyewash and shower are available for simultaneous use.
- S. Provide electrical outlet for APS provided safety glass sanitizer/sterilizer.

VI. SCHOOL NUTRITION DESIGN AND EQUIPMENT

- A. Comply with Georgia Department of Education requirements re: square footage, etc. Architect to review and provide a list of existing equipment, sizes, brand and electrical requirements in areas to be renovated. The Architect should provide a list of existing equipment to be reused and electrical requirements.
- B. Food preparation, servicing equipment and refrigerated storage equipment as specified by the Architect should be in accordance with Atlanta Public Schools Nutrition Department requirements. The Architect should provide a detailed layout plan and schedule for APS approval. Removal, storage and reinstallation should be included in the contractor's scope of work.
- C. Elementary school kitchens should include task lighting for steam tables for servings. No self-serve equipment should be specified for serving lines except milk box.
- D. Provide a water fountain with glass filler and hand washers in the cafeteria.
- E. Countertops stainless steel (only).
- F. Door entrance to dish room from dining room should lead to back exit.
- G. Direct entrance from dining room to dumpster without walking through the kitchen.

- H. Condiments counter between each serving line.
- I. Move steamer to position between fryer and the range in middle and high schools.
- J. Use six-burner range.
- K. Separate entrance doors to walk-in cooler and freezer with floor drain for condensate drain
- L. Four (4) hot food warmers (mobile units).
- M. Free standing display cooler – (example: Beverage Air Model MT35) to replace milk storage coolers.
- N. Point of Sales (POS) cart with solid tray rail on both sides. Provide appropriate data and/or other technology requirements to support the POS stations at each serving line.
- O. **REFER TO DIVISION 11 – APPENDIX “C” FOOD SERVICE EQUIPMENT FOR ELEMENTARY, MIDDLE AND HIGH SCHOOLS**

VII TRASH DISPOSAL EQUIPMENT:

- A. Refuse and Trash Disposal Equipment – All new and renovated schools will be provided with key driven compactors provided by Atlanta Public Schools. Minimum size for Middle School is 15 cubic yards, and High School is 25 cubic yards. Review with APS Project Manager required size of trash compactor to be provided by APS.
- B. Provide a keyed hose bibb and fire hydrant nearby. Access to compactor shall be directly from loading dock or provide a ramp to compactor for easy loading from the top. No lift should be considered. A electrical safety disconnect for service shall be within view of the device. Provide a keyed switch to operate the compactor, when the switch is in the off position the compactor shall not operate.
- C. The preferred compactor is Marathon Equipment Company Model RJ-250 SC Ultra self-contained compactor/container with a 15-34 Cubic Yard capacity.
- D. Design Team to provide at a minimum 60 feet clear front access to compactor. Comply with all Fulton County Health Department requirements.
- E. All trash compactors are to be located on minimum 6 inch reinforced 3000 psi concrete slab. Electrical requirements: 30 amp dedicated breaker and 120V service outlet. Consult with Project Manager to confirm all requirements.

- F. Dumpster Pads (where applicable). Make dumpster pads 12' x 32' minimum with drainage. Make accessible to a 35' – 40' long truck. Use 4000-PSI steel reinforced concrete for the dumpster pads.
1. Provide concrete filled iron pipe bollards in front of the dumpster, end of loading dock, etc., as necessary to prevent damaged.
 2. Enclosed dumpster with screen walls, as designed by the Architect and approved by the APS Project Manager.
 3. Provide a trench drain at the end of the dumpster pad.

END OF DIVISION 11

WKRM.
1139
12x60 12x60
PERIODICALS

OFF.
1138
10x60 10x60 10x60

3036 LIB. BOOK DROP
3036 LIB.
3072 LIB.
3030 CORNER

MEDIA CENTER
1137
24x42 24x42 24x42
PICTURE BOOKS
20x42 20x42 20x42
20x42 20x42 20x42
10x60 10x60

CONF.
1136
10x60 10x60

AV STOR.
1135
10x60 10x60

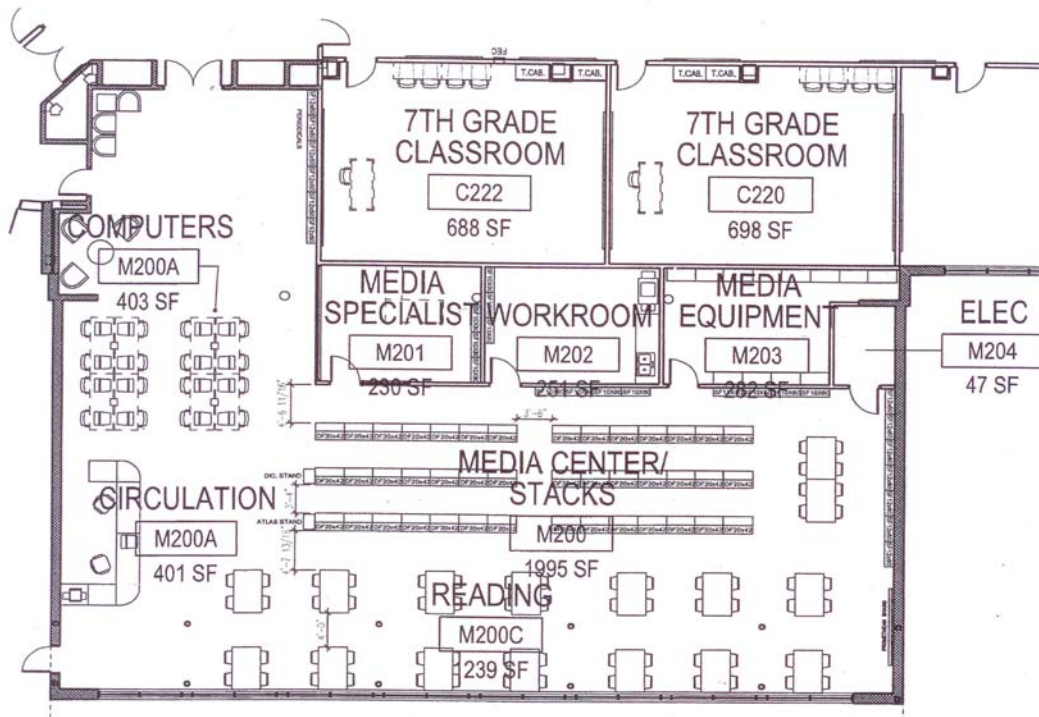
MDF
1134
10x60 10x60

CORR.
1008

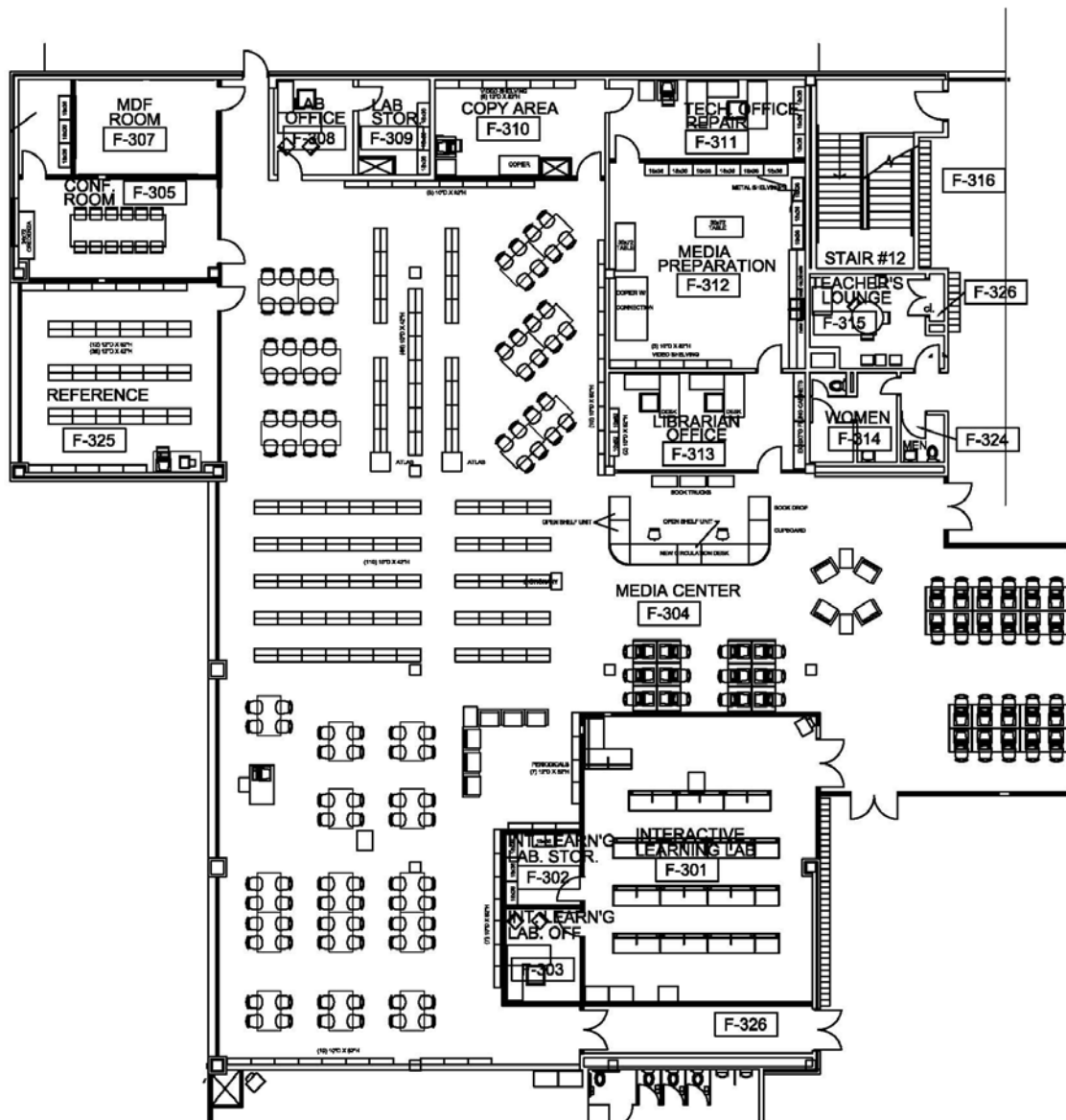
CORR.
1009
12x60 12x60

PROMETHEAN BOARD

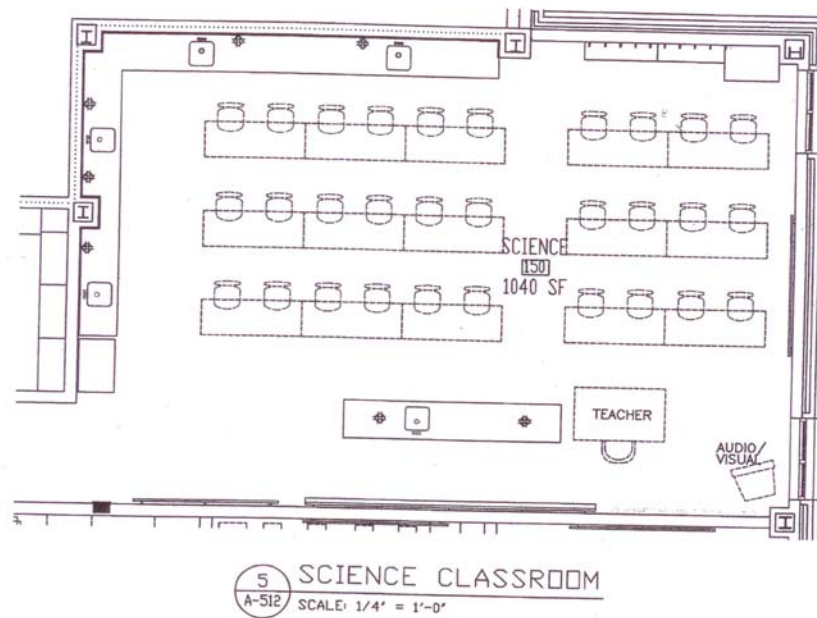
DIVISION 11 - APPENDIX "A" **TYPICAL MEDIA CENTER PLAN (Middle School)**



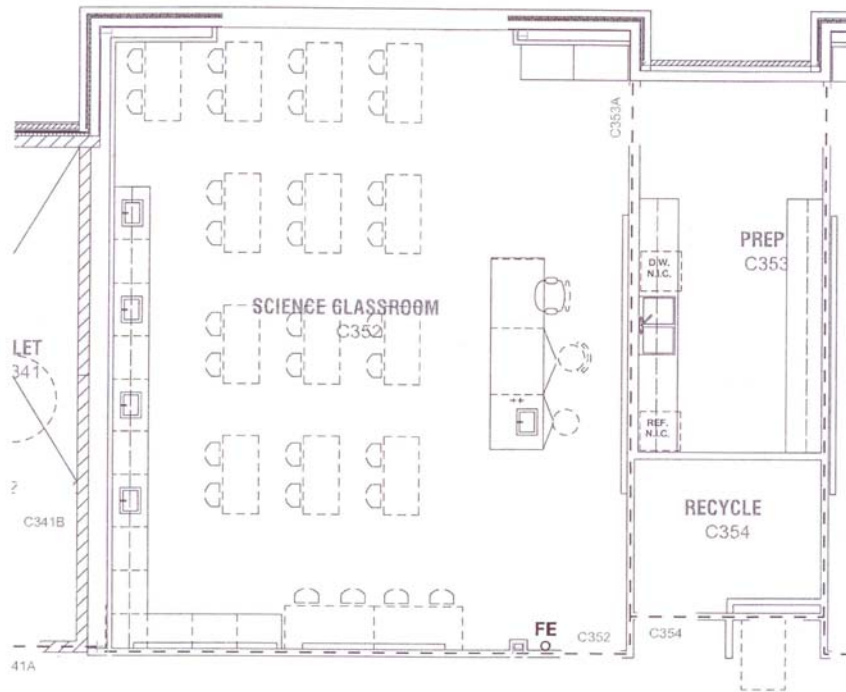
DIVISION 11 - APPENDIX "A" **TYPICAL MEDIA CENTER PLAN (High School)**



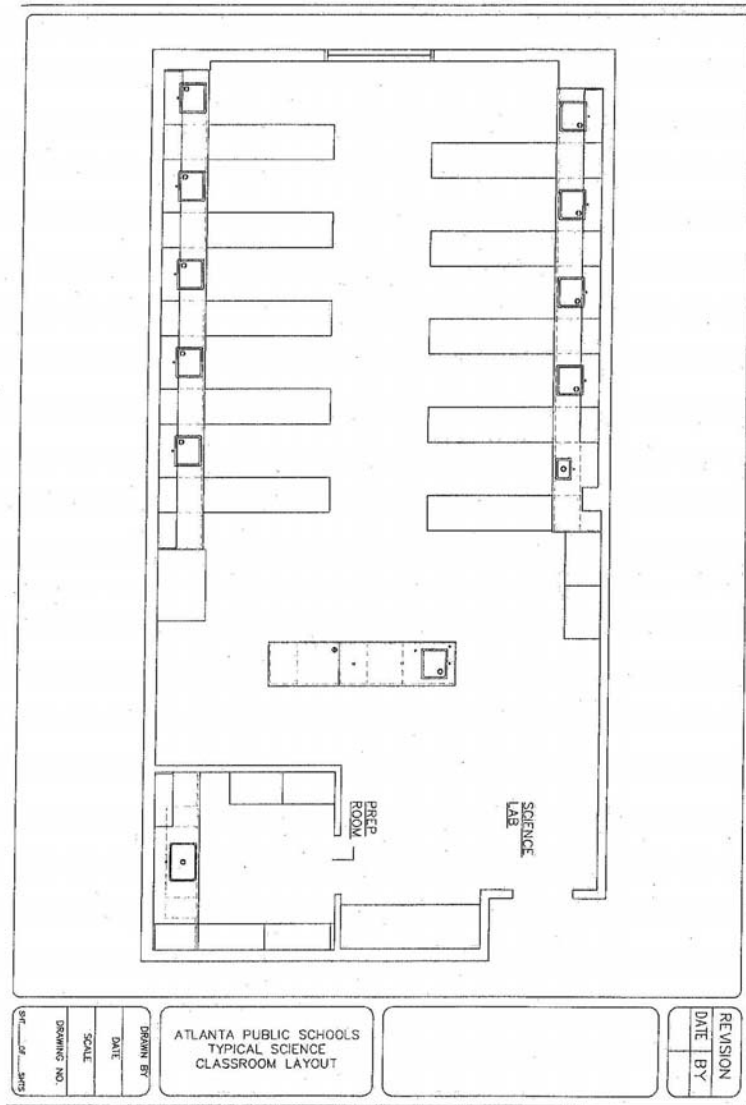
DIVISION 11 - APPENDIX "B"
TYPICAL SCIENCE LAB PLAN (Elementary School)



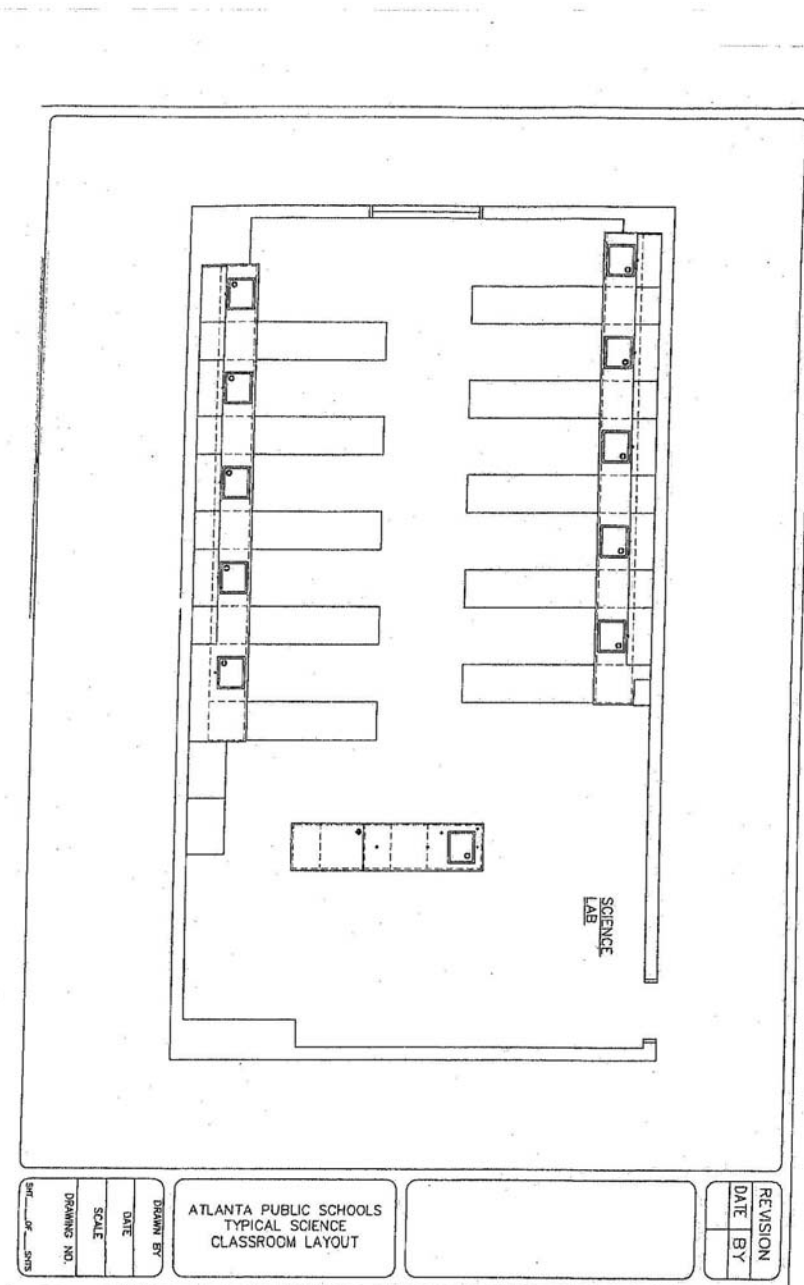
DIVISION 11 - APPENDIX "B"
TYPICAL SCIENCE LAB PLAN (Middle School)



DIVISION 11 - APPENDIX "B" **TYPICAL SCIENCE LAB PLAN (High School)**



DIVISION 11 - APPENDIX "B" **TYPICAL SCIENCE LAB PLAN (High School)**



DIVISION 11 - APPENDIX “C” TYPICAL FOOD SERVICE EQUIPMENT MATRIX

Food Service Equipment Specification for Atlanta Public School
(10/1/08)

ITEM #	LOCATION	ITEM DESCRIPTION	SPECIFICATIONS	PREFERRED MANUFACTURER	Elementary	Middle	High
	Serving Line Area						
1		Hot and Cold Pass-Thru, stainless steel w/ locking casters	Each Line (hot and cold units)	1. Traulsen (H) RHF132WP-FHS (C) RHT132WPUT-FHS 2. Norlake	2	2	2 to 4
2		Cashier Cart (point of sales) w/ solid V tray rail on both sides	Each line, cable ready, drawer w/lock Elementary tray rails at 27 inches Middle & High tray rails at 35 inches	1. Shellyglas KCS-30 2. Color Point 3. Randall	2	2	0
3		Media Cart	Metal w/ locking casters	1. Apollo			2 to 4
4		Point of Sales		1. HP & Elo Touch 2. Dell & Elo Touch	As needed	As needed	As needed
5		Stools	adjustable legs		As needed	As needed	As needed
6		Milk Cooler w/ locking casters	All stainless steel 12 case/ 600 capacity	1. True TMC-49-S-SS 2. Norlake 3. Beverage - Aire	2	2	2 to 4
7		Heated Buffet Table w/ sneeze guards and drain, solid V- tray rail, w/ locking casters	5 wells unit. Elementary tray rails at 27 inches Middle & High tray rails at 35 inches	1. Shellyglas KH5-NUH 2. Color Point 3. Randall	2	2	2 to 4

DIVISION 11 - APPENDIX "C"

TYPICAL FOOD SERVICE EQUIPMENT MATRIX

Food Service Equipment Specification for Atlanta Public School
(10/1/08)

ITEM #	LOCATION	ITEM DESCRIPTION	SPECIFICATIONS	PREFERRED MANUFACTURER	Elementary	Middle	High
8		Refrigerated Buffet Table w/ sneeze guards and drain, solid V- tray rail, w/ locking casters	w/ slotted wells, Elementary tray rails at 27 inches Middle & High tray rails at 35 inches	1. Shellyglas KCFT-50H 2. Color Point 3. Randall	2	2	2 to 4
9		One-side self serve salad bar w/ single buffet shield and drain, solid V- tray rail, w/ locking casters	Elementary tray rails at 27 inches Middle & High tray rails at 35 inches	1. Shellyglas 2. Color Point 3. Randall	2	2	2 to 4
10		Dispenser and Tray Cart		1. Color Point	2	2	2 to 4
11		Pizza Oven			0	0	1
12		Deep Fryer		1. Frymaster FPGL330 2. Pitco- Frialator 3. Keating	0	0	2
13		Grill			0	0	1
14		Exhaust Vent Hood	To cover all cooking equipment		0	0	1
15		Safety floor Mat		1. Rubber Maid	8	8	10
16		Hand sink w/foot pedal and wall mounted Paper towel dispenser	Stainless steel Z-fold (serving Line)		1	1	1
17		Crowd Control Device	Movable w/ metal base, w/ schools name and color	1. Lawrence Metal 889 Tensabarrier			40

DIVISION 11 - APPENDIX “C”

TYPICAL FOOD SERVICE EQUIPMENT MATRIX

Food Service Equipment Specification for Atlanta Public School
(10/1/08)

ITEM #	LOCATION	ITEM DESCRIPTION	SPECIFICATIONS	PREFERRED MANUFACTURER	Elementary	Middle	High
	Dish/Tray Washing Area						
18		Pot Scrubber Dish Machine	One person operated	1. Hobart UW-50	1	1	1
19		Water Booster Heater	For Pot scrubber machine	1. Hatco	1	1	2
20		Table, Solid Dish w/ overhead pre-rinse unit	Stainless steel		1	1	1
21		Table, clean dish	Stainless steel		1	1	1
22		Hand Sink w/foot pedal & mounted Paper towel dispenser	Stainless steel Z-fold (Kitchen)		1	1	1
	Cooking Area						
23		Range, 6 Burners w/ Oven / No casters		1. South Bend P32D-BBB 2. U S Range 3. Vulcan - Hart	1	1	1
24		Skillet, Tilt w/ water and drain (Floor Trough)	40 gallons	1. Cleveland SEL-40-T1 2. Blodgett	1	1	1 to 2
25		Kettle, Gas, Floor mounted w/ water, lid, stirring paddle & Floor trough	Elementary: 20 gals. Middle & High: 40 gals.	1. Cleveland KET-12-T 2. Southbend 3. Blodgett	1	1	2
26		Steamer, convection w/ drain line		1. Cleveland 21CGA5 2. Blodgett	1	1	2

DIVISION 11 - APPENDIX "C"

TYPICAL FOOD SERVICE EQUIPMENT MATRIX

Food Service Equipment Specification for Atlanta Public School
(10/1/08)

ITEM #	LOCATION	ITEM DESCRIPTION	SPECIFICATIONS	PREFERRED MANUFACTURER	Elementary	Middle	High
27		Stand for Steamer	Stainless steel	1. Cleveland Unistand 34 2. Blodgett	1	1	2
28		Hand Sink w/foot Pedal & mounted Paper towel dispenser	Stainless steel Z-fold (Kitchen)		1	1	1
29		Veg. / Fruit Sink	2 compartment w/ drain		1	1	1
30		Garbage Disposal		1. In-Sink Erator SS20-29 AS101 2. Salvajor	1	1	1
31		Meat Sink	2 compartment w/ drain		1	1	1
32		Ice Maker w/ storage bin	300 lb. capacity	1. Scotsman C0330 2. Ice-O-Matic 3. Manitowac	1	1	1
	Baking Area						
33		Exhaust Vent Hood	Utility distribution system Gas		1	1	1
34		Combi-Oven	Steam-on- Demand	1. Blodgett BCX-14G	1	1	1
35		Oven, Convection double stacked	Gas w/ electric ignition	1. Blodgett DFG-100 2. Garland	2	2	2
36		60 qt. Mixer	w/ bowl (SS) and attachments, bowl truck	1. Hobart HL600 2. Welbuilt	1	1	1
37		Vertical cutter/mixer w/ water supply	with attachments	1. Hobart UW-50	1	1	1
38		Deep Fryer w/ oil filter, baskets and cover for wells		1. Frymaster FPGL330 2. Pitco- Frialator 3. Keating	0	2	3 to 4

DIVISION 11 - APPENDIX "C"

TYPICAL FOOD SERVICE EQUIPMENT MATRIX

Food Service Equipment Specification for Atlanta Public School
(10/1/08)

ITEM #	LOCATION	ITEM DESCRIPTION	SPECIFICATIONS	PREFERRED MANUFACTURER	Elementary	Middle	High
39		Bakers Table w/3 drawer storage, back splash, over head shelf w/ drip gutter	Stainless steel		1	1	1
40		Upright Warmer (insulated mobile food warmer)	w/ drain & locking casters	1. Crescor H-137-UA-12C	2	2	3
41		Work Table, stainless steel w/ Pot Rack	w/ hooks & drawers		1	1 to 2	1 to 2
42		Work Table, stainless steel	w/ drawer shelf below		3	3	4 to 5
43		Shelf Utility Cart, Super Erecta, chrome wire	300 lb. capacity, w/ casters	1. Metro 3SP SERIES	4	4	6
44		Utility Cart/ heavy duty, stainless steel	400lb. capacity, w/ casters	1. Wilder	2	2	2
45		Universal Angle Utility Rack		1. Crescor 207 - UA - 13	1	1	1
46		Steam Table Pan Rack		1. Crescor	1	1	1
47		Work Table w/ drawer	Stainless steel		1	1	1
48		Industrial Can Opener, table mounted	w/ gear and knife		1	1	1
49	Kitchen Area						
50		Walk-in Freezer and Cooler w/ separate entrance doors w/ dual compressor units	w/ 12 frost rack shelving, (SS) quarry tile floor, preferred	1. Koplak Norlake	2. 1	1	1
51		Install Cool / Freezer Monitoring System	Mounted on outside wall units near ceiling	1. Lenel	1	1	1
52		Upright Refrigerator, 2 doors	w/ locking casters	1. True TM-52 Victory	2. 1	1	1
53		Food Processor	w/ attachments	1. Robot Coupe R6VN 2. Hobart 3. Dean	1	1	1

DIVISION 11 - APPENDIX “C” TYPICAL FOOD SERVICE EQUIPMENT MATRIX

Food Service Equipment Specification for Atlanta Public School (10/1/08)

ITEM #	LOCATION	ITEM DESCRIPTION	SPECIFICATIONS	PREFERRED MANUFACTURER	Elementary	Middle	High
54		Meat Slicer		1. Hobart 2712	1	1	1
55		Meat Cutter Automatic, on mobile stand	w/ pan storage (Buffalo Chopper)	1. Hobart 84186	1	1	
56		Fruit Sectionizer	Sectionizer w/ 4 wedge and single blade cutters	1. Sunkist S-101 S-35	1	1	
57		Hand Sink, stainless steel	w/ paper towel dispenser Z-fold (Kitchen)		1	1	1
58		Four Compartment Sink, stainless steel	w/ water agitator in first compartment /w drain, Spray hose and 2 HP Pump	1. Aqua Scrubber	1	1	1
	Pantry Area						
59		Open Wire Shelving, SS w/ microban antimicrobial protection	800 lbs. shelf capacity	1. Metro Seal 3	As needed	As needed	As needed
60		Can Storage Rack		1. Metro	1	2	2
61		Dunnage Racks	12 inch, 2100 lb. capacity w/ locking caster	1. Metro	3	3	3 to 4
62		Step Ladder	4 ft. Min. w/ 300 lbs capacity		1	1	1
63		Hand Truck	Convertible, light aluminum (alloy)	1. Magliner	1	1	1
64		Ingredient Bins w/ casters	Under counter w/ casters		4	4	4
65							
66		Sheet Pan Rack (cooking)		1. Crescor	As needed	As needed	As needed
67		Pot Rack Shelf		1. Metro	1	1	1
	Sanitation						

DIVISION 11 - APPENDIX “C” TYPICAL FOOD SERVICE EQUIPMENT MATRIX

Food Service Equipment Specification for Atlanta Public School (10/1/08)

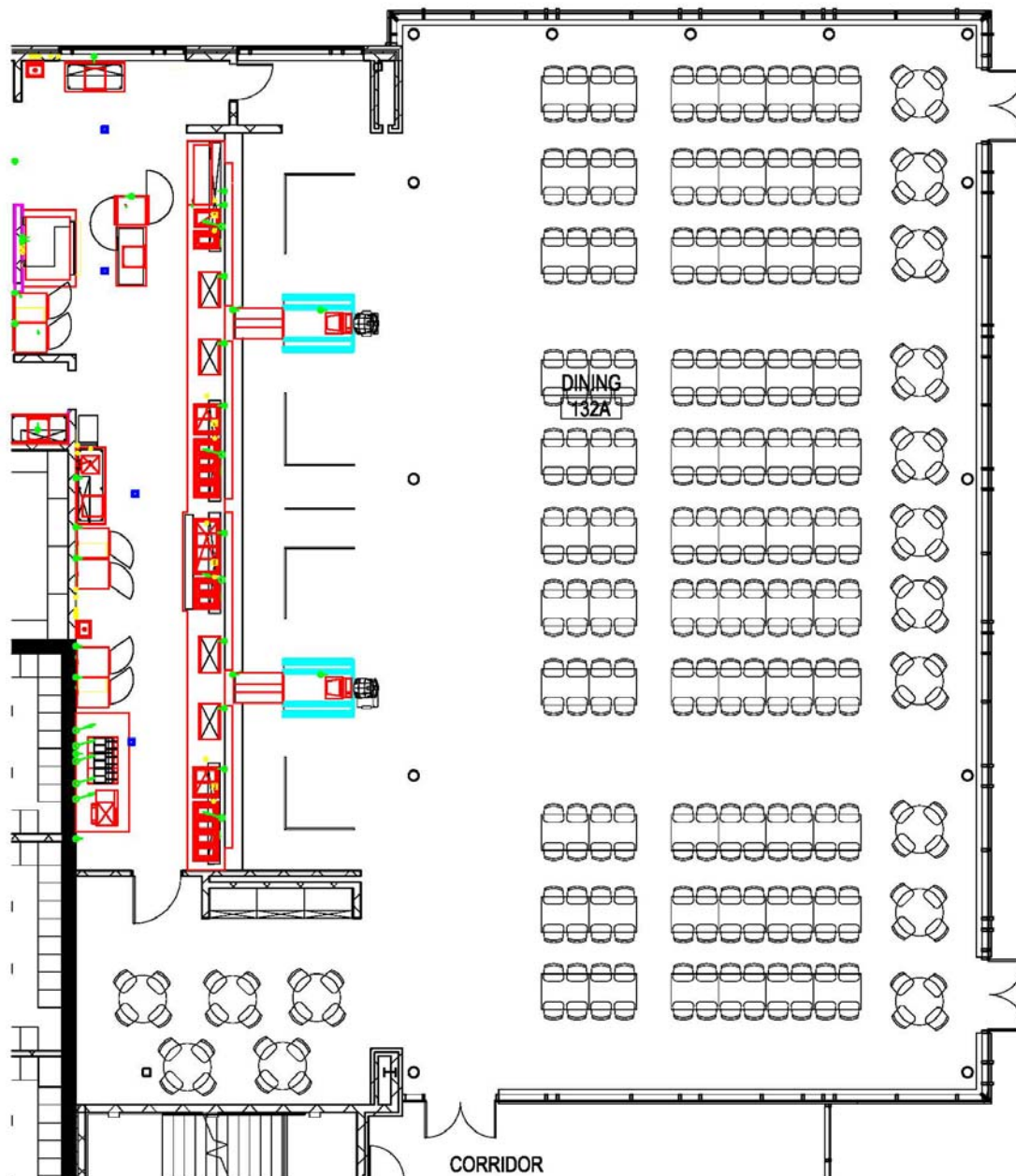
ITEM #	LOCATION	ITEM DESCRIPTION	SPECIFICATIONS	PREFERRED MANUFACTURER	Elementary	Middle	High
68		Waste container w/ Lid on casters	30 Gallons		6	6	6
69		Mop Bucket and Wringer w/locking casters	Plastic product	1. Rubbermaid products	2	2	2
70		Dust Pan w/ handle			2	2	4
71		Commercial Mop	16 oz. Wet Mop head	1. Cotton/Synthetic	2	2	2
		Commercial Mop Handle	Quick change	1. Unisan	2	2	2
72		Commercial Broom	Plastic bristles	1. Unisan	2	2	2
	Mop Closet						
		Chemical Shelf					
73		Mop Hanger/Mop Sink			1	1	1
74		Industrial Wall Mounted Pressure Washer	2.2 GPM 1100-psi Food Service Package	1. Spray Master Technologies	1	1	1
75		Fly Fan	Over exterior door		1	1	1
	Security						
76		Security System and Key Pad	Install near managers office or inside entrance wall				
77		I-Phone	I-Phone w/ door bell system, install in manager office				
	Manager Office						
78		Desk	w/ drawers		1	1	1
79		Desk Chair	w/ casters		1	1	1
80		Book Shelf			1	1	1
81		Filing Cabinet			1	1	1
82		Chair			3	3	3
83		Phone			1	1	1

DIVISION 11 - APPENDIX “C” TYPICAL FOOD SERVICE EQUIPMENT MATRIX

Food Service Equipment Specification for Atlanta Public School
(10/1/08)

ITEM #	LOCATION	ITEM DESCRIPTION	SPECIFICATIONS	PREFERRED MANUFACTURER	Elementary	Middle	High
84		Computer		1. Hp 2. Dell	1	1	1
85		Printer			1	1	1
86		Fax			1	1	1

DIVISION 11 - APPENDIX "C"
TYPICAL FOOD SERVICE – HIGH SCHOOL SERVING LINE



DIVISION 12

FURNISHINGS

	<u>Page</u>
I. Window Treatment	12 - 2
II. Furniture / Fixtures / Equipment – Owner Supplied	12 - 2
III. Furniture Matrix - Classroom Furniture	12 - 3
IV. Furniture Matrix – Administrative Furniture	12 - 4
V. Furniture Matrix – Other Spaces	12 - 5

APPENDIX “A” TYPICAL ELEMENTARY CLASSROOM LAYOUT

APPENDIX “B” TYPICAL ADMINISTRATIVE AREA (Elementary) TYPICAL ADMINISTRATIVE AREA (Middle) TYPICAL ADMINISTRATIVE AREA (High)

DIVISION 12 FURNISHING

I. WINDOW TREATMENT

- A. Window Blinds. Provide 1-inch aluminum alloy, horizontal window blinds, as the preferred window treatment in administrative offices, media centers, classrooms and auditoriums. Other areas may be designated by the Architect and approved by Atlanta Public Schools. See the Atlanta Public Schools color finishes chart for approved colors.
- B. Window blinds should not be installed in hallways or kitchens.

II. FURNITURE / FIXTURES / EQUIPMENT – OWNER SUPPLIED

Furniture items are basic to every school. For classrooms, it would include furniture such as teacher desks and chairs, student desks and chairs, bookcases, worktables and computer tables. For Media Centers furniture includes tables, chairs, bookcases, PC stations, and circulation desks. Administrative furniture consists of desks, chairs, credenzas, bookcases, file cabinets and PC tables and conference tables.

- A. Loose, moveable, unattached furniture and equipment whether instructional or administrative will be provided by Atlanta Public Schools as required and should be indicated on drawings by the Architect.

Architectural and engineering drawings should include a typical classroom layout.

III. FURNITURE MATRIX – CLASSROOM FURNITURE



FURNITURE MATRIX
Standard Classroom Furniture

Space/Class	Quantity per Space/Class														Comments
	Furniture Item	14" Student Chair	16" Student Chair	18" Student Chair	Student Table, 30X72	Student Desk, 18"	Combination Desk/Chair	Teacher Chair	Teacher Desk, 30X46	Teacher Table, 24X48	Teacher Table, 30X72	Round Table, 48" Dia.	Bookcase, 48" H 3 sq. shelves	4 Dwr Vertical File, Letter	
Pre-K		27			4			1	1	1	1	1	2	1	
Kindergarten		27			4			1	1	1	1	1	2	1	
1st Grade			28		4			1	1	1	1	1	2	1	
2nd Grade*			32			26		1	1	1	1	1	2	1	
3rd Grade*				32		26		1	1	1	1	1	2	1	Option: tables or desks for students
4th Grade*				34		28		1	1	1	1	1	2	1	
5th Grade*				34		28		1	1	1	1	1	2	1	
6th Grade*				34			28	1	1	1	1	1	2	1	
7th Grade*				34			28	1	1	1	1	1	2	1	
8th Grade*				34			28	1	1	1	1	1	2	1	
9th Grade*				34			28	1	1	1	1	1	2	1	
10th Grade*				34			28	1	1	1	1	1	2	1	
11th Grade*				34			28	1	1	1	1	1	2	1	
12th Grade*				34			28	1	1	1	1	1	2	1	
Special Ed - Reading Rcv.			10-15		10-15			1	1	1	1	1	2	1	2
Special Ed - Int. Related			10-15		10-15			1	1	1	1	1	2	1	2
Special Ed - PEC			10-15		10-15			1	1	1	1	1	2	1	2
Science* ES & MS			36					1	1	1	1	1	2	1	2
Science HS								1	1	1	1	1	2	1	2
Art* ES & MS			6					1	1	1	1	1	2	1	2
Art HS								1	1	1	1	1	2	1	2
Language Lab*			6			Opt.	Opt.	1	1	1	1	1	2	1	2
Music/Band/Choir ES & MS			30-50					1	1	1	1	1	2	1	2
Band/Orchestra/Choir HS								1	1	1	1	1	2	1	2
Interactive Lab ES & MS			30					1	1	1	1	1	2	1	15
Computer Lab HS			30					1	1	1	1	1	2	1	
Staff Breakroom			12-16									4			
Teacher Work Room			8								2				
Parent Center			8								1		2		

Vocational, technical and other labs will be reviewed on a case by case basis.

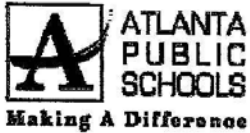
* 6 additional chairs are included for use with the computer tables.

Revised: 2/11

1

APS FACILITIES

IV. FURNITURE MATRIX – ADMINISTRATIVE FURNITURE



FURNITURE MATRIX Standard Administrative Furniture

Making A Difference				Size	Quantity per Space/Office															
Item Description	D	W	H	Space/Office	Principal Office	Asst. Principal	Instructional Specialist	General Staff/ Admin Office	Clinic Office	Nutrition Office	Counselor	Art Office	Music Office (Band/Choir)	Custodial Office	Physical Ed Office	Parent Center	Secretary	Clerk	Main Office	Comments
Traditional Double Pedestal Executive Desk w/ Center Drawer	36	72	30		1															
Traditional Double Pedestal Credenza w/ Kneespace and Keyboard Platform	20	72	30		1															
Traditional Hutch Unit; sits on Credenza	14	72	40		1															
Traditional Conference Table, Round 42" Dia.			30		1															
High Back Executive Desk Chair, Vinyl					1															
High Back Guest Chair, Vinyl					2															
Guest Chair, Conference					4															
Lateral File, 2 Drawer	20	36	30		1-2	1	1													Principal - Bookcase or Lateral File - Choice of 3 pieces
Bookcase, 3 Shelf	15	36	48		1-2	1	1	1	1	1	1	1	1	1	1					
Double Pedestal Desk w/ Center Drawer	30	60	30			1	1													
Guest Chair						2	2	2	2	2	2	2	2	2	2					
Computer Table	30	36	30			1	1													
High Back Desk Chair, Fabric						1	1	1	1	1	1	1	1	1	1					
Single Pedestal Desk w/ Right Hand Return and Keyboard Platform	30	66	30					1	1	1	1	1	1	1	1		1	1		Staff Offices & Admin
or																				
Single Pedestal Desk w/ Left Hand Return and Keyboard Platform	24	48	30																	Staff Offices & Admin
Return is:	30	66	30																	
Task Chair w/ Arms																		1	1	
4 Drawer Vertical File, Letter, w/ Lock	26.5	15	52					1	1	1	1	1	1	1	1					
4 Drawer Vertical File, Legal, w/ Lock	26.5	18	52																	
Storage Cabinet w/ Lock	18	36	72																	
Clinic Cot								1												
Visitor Seating								2												
End or Corner Table																			4-8	
																			1-2	

Revised: 2/11

2

APS FACILITIES

V. OTHER SPACES:



FURNITURE MATRIX Standard Administrative Furniture

Other Spaces:

Conference Room, Large

(1) 12' Rectangular Wood Conference Table, 48"W; (12) Conference Chairs; (1) Credenza, 20"DX72"WX30"H

Conference Room, Medium

(1) 8' Rectangular Wood Conference Table; 48"W, (8) Conference Chairs; (1) Credenza, 20"DX72"WX30"H

Multipurpose Room

Padded Folding Chairs and Storage Carts (dependent on storage space available)

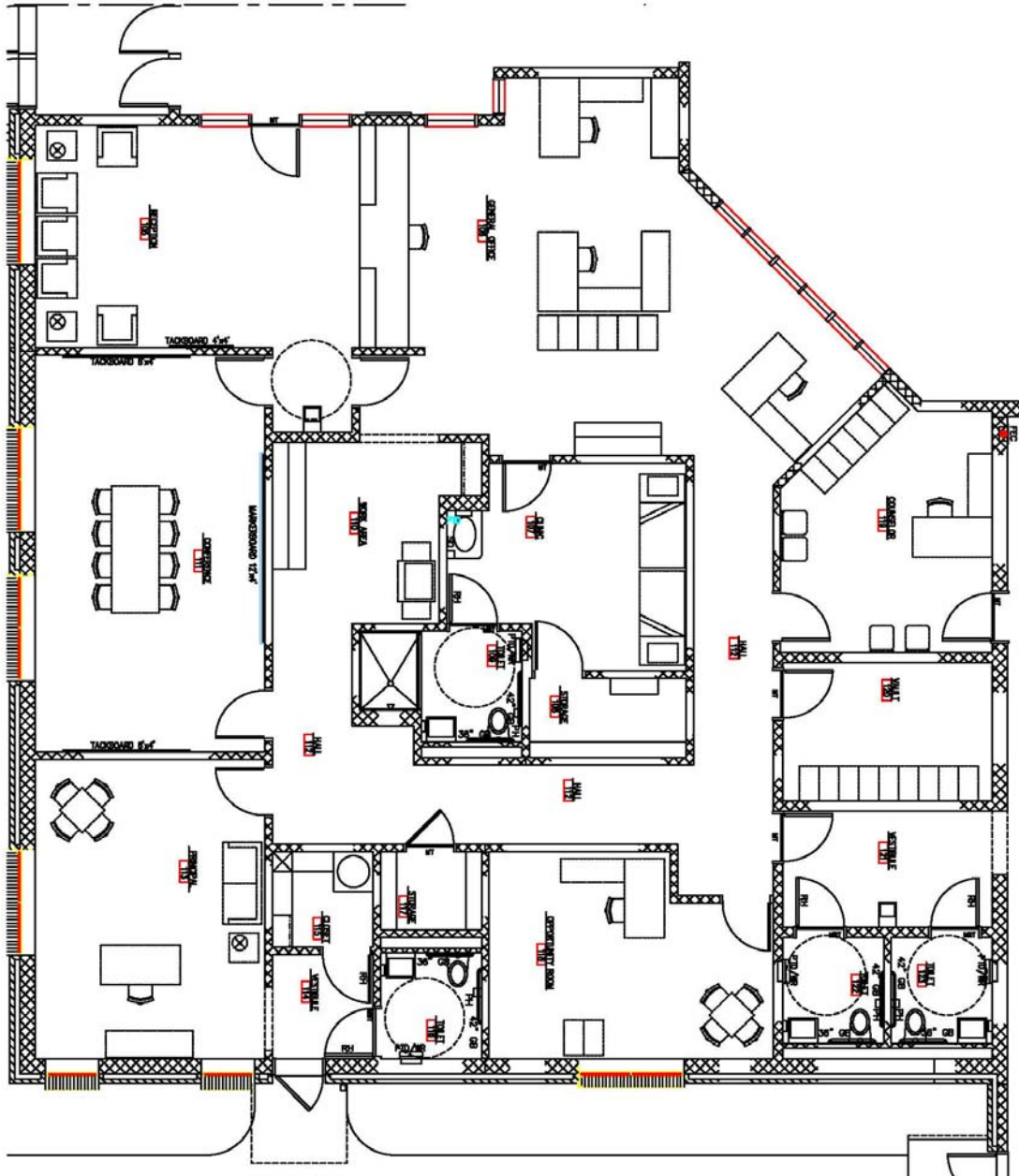
Elementary School (300 - 400) Chairs and (4 - 5) Storage Carts, or Enrollment Quantity

Middle School (400 - 600) Chairs and (5 - 8) Storage Carts, or Enrollment Quantity

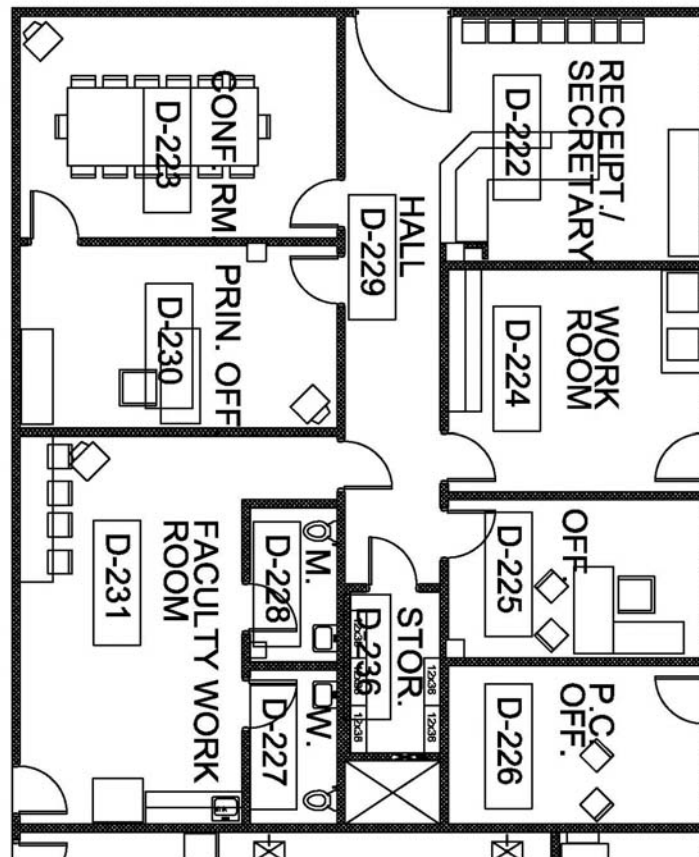
High School (500 - 700) Chairs and (6 - 9) Storage Carts, or Enrollment Quantity

END OF DIVISION 12

DIVISION 12 - APPENDIX "B" **TYPICAL ELEMENTARY & MIDDLE SCHOOL** **ADMINISTRATIVE AREA LAYOUT**



**DIVISION 12 - APPENDIX “B”
TYPICAL HIGH SCHOOL
ADMINISTRATIVE AREA LAYOUT**



DIVISION 13

SPECIAL CONSTRUCTION

- I. Division reserved for future use.

DIVISION 14

CONVEYING SYSTEMS

	<u>Page</u>
I. Elevators	14 - 2
II. Wheelchair Lifts	14 - 3
III. Load Ratings and Safety Factors	14 - 4

DIVISION 14 CONVEYING SYSTEMS

I. ELEVATORS

- A. Install passenger elevators and chair lifts as required to provide access to all APS programs for disabled persons in accordance with the standards set forth in the Americans with Disabilities Act Accessibility Guidelines (ADAAG). (*See also Division 1 - Building Accessibility, in these Guidelines*).
- B. Where installing a traditional elevator to handle a limited number of passengers is too costly or space consuming, refer to the Limited Use/Limited Application (LU/LA) elevator code for a scaled down, and less expensive elevator for multi-storied building where elevator usage will be limited. (Flexi-Lift, from Access Industries is a roped hydrated drive system that has a 12 to 18 square foot car, 1,400 pounds lifting capacity and can service up to five stops).
- C. Provide a keyed barrier operating switch that will disable or override the conventional "push button" operating switch at each renovated or newly installed elevator in all facilities. Twenty (20) keys are required for APS use at project close out.
- D. Elevator should be a ThyssenKrupp Access (www.tkaccess.com), Otis Elevator (www.otis.com) or equal.
- E. Elevator manufacturer should provide emergency signage.
- F. New schools with more than two floors need a freight elevator.
- G. Building Renovations: Existing Elevators shall be assessed for condition, operability and obsolescence. An evaluation and recommendation shall be made to the APS Project Manager to recondition or replace the entire elevator. If reconditioning is recommended, the cab finishes should be replaced to like new condition and controls should conform with ADA regulations.
- H. Elevators shall have appropriate phone line for life safety requirements. Consult APS Project Manager for monitoring requirements.
 - a. Kings III Emergency Communications is the APS designated elevator monitoring services company.
 - i. During the warranty period (one year after substantial completion) the CM/Subcontractor shall be the first point of contact for issues related to the elevator, following this period; APS Facilities Elevator Service Provider will be the first contact and provide all services. APS Security (404 802-2000) shall always be the second point of emergency contact.
 - ii. Phone shall be programmed and provided by Kings III; phone installed with live seizure of the HVAC control phone line.

II. WHEELCHAIR LIFTS

- A. A motorized inclined platform-lifting device for mobility-impaired persons shall be installed adjacent to straight stairways where an elevator is not accessible. Chairlifts shall have the capacity to lift 450 pounds (205 kg) up and down straight stairs with intermediate landings on custom fabricated rails that install along an inside wall. No motor room or motor housings at landings shall be permitted. Motor and gearbox shall be an integral part of the lift assembly and platform.
- B. An inclined platform lift shall be electrically operated with a battery backup, and completely self-contained to provide a smooth silent ride on custom-installed rails along the inside wall. When the lift is resting on the bottom or top landing, the batteries shall be automatically recharged so that the unit is always ready for use.
- C. Where space permits and height is limited, a motorized vertical platform lift shall be installed with a 750 pound rated load capacity and travel height of a minimum of 12 feet. The lifting platform shall be installed within an enclosed lifting tower.
- D. All chair lifts shall be equipped with an audible or visual warning device while in operation.
- E. All wiring shall be in rigid conduit and if exposed, anchor every 12 inches for security.
- F. All electrical controls and supplies shall be secured in a locked box for security.
- G. Install camera in chair lift areas.
- H. Use elevator with a minimum 3,500 pounds capacity in lieu of chair lifts when physically possible.
- I. Wheelchair lifts shall be Inclinator (www.inclinator.com), Garaventa (www.garaventa.ca), Wheel-o-vator (www.wheelovator.com) or equal.
- J. Wheel Chairlifts shall have appropriate phone line for life safety requirements. Consult APS Project Manager for monitoring requirements.
 - b. Kings III Emergency Communications is the APS designated wheelchair lift monitoring services company.
 - i. During the warranty period (one year after substantial completion) the CM/Subcontractor shall be the first point of contact for issues related to the wheelchair lift, following this period; APS Facilities Elevator Service Provider will be the first contact and provide all services. APS Security (404 802-2000) shall always be the second point of emergency contact.
 - ii. Phone shall be programmed and provided by Kings III; phone installed with live seizure of the HVAC control phone line.

III. LOADING RATING AND SAFETY FACTORS

All loading ratings and safety factors for elevators and lifts are to be certified by a professional engineer and designed, tested and installed in compliance with applicable regulations of all governing agencies and in accordance with ASME/ANSI A17.5 standards.

END OF DIVISION 14

DIVISION 21

FIRE SUPPRESSION

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DIVISION 21 FIRE SUPPRESSION

I. FIRE PROTECTION SYSTEM

A. Automatic Fire Sprinkler System

New schools, administrative buildings and/or renovated schools shall be protected with a heat activated, automatic, and water sprinkler system. Sprinkler systems shall be installed in accordance with NFPA and local code requirements.

B. Kitchen Hood, Automatic Extinguishing Systems

All school kitchen hoods shall be provided with an approved automatic Dry Extinguishing System. During major renovations, the existing systems shall be upgraded to meet this requirement.

C. Renovations and Additions:

When starting a renovation project and/or a building addition project, a study shall be performed to evaluate the Pros and Cons of whether to sprinkle the existing building(s) and how to integrate the sprinkler systems. The study with recommendations will be submitted to the APS Project Manager for direction.

D. All exposed sprinkler piping in public areas shall be painted. Color shall be determined by Owner.

II. WARRANTIES AND GUARANTEES

A. General

1. The materials of the fire protection systems shall have the Manufacturer's and/or supplier's Guarantee or Warranty put into effect by execution and filing of any and all related papers. For one (1) year from date of acceptance, obtain service or repair under the terms of any said Guarantee or Warranty in behalf of Atlanta Public Schools.
2. The fire protection systems installed shall be left to Atlanta Public Schools in proper working order. The contractor shall for a period of one (1) year replace any work or material which develops defects, excluding normal wear and tear, from the date of beneficial acceptance by Atlanta Public Schools.

END OF DIVISION 21

DIVISION 22

PLUMBING

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22 05 00 PIPING SYSTEM REQUIREMENTS

A. General

1. Freeze Protection and Insulation:

- a. Domestic water lines shall be located so as to not be exposed to freezing temperatures.
- b. All hot- and cold-water piping shall be insulated with 1-inch thick, high-density, molded glass fiber insulation.
- c. Insulate fittings and elbows with pre-formed fitting insulation of the same type as the adjacent piping.
- d. Butt-joint sealing strips shall be used at section joints and all ends shall be sealed with vapor barrier mastic.
- e. All piping insulation at points of support shall be protected with galvanized sheet metal saddles.

B. Testing Piping Systems

1. Concealed and/or insulated piping shall be thoroughly tested before covering or concealing.
2. Piping located underground shall be tested before backfilling.
3. Equipment, materials and instruments for testing shall be furnished at no additional cost to Atlanta Public Schools.
4. A certificate of completeness and a video of plumbing lines shall be provided.
5. Notification – The Architect shall notify the Atlanta Public Schools Project Manager (PM) at least two working days prior to each test. The Atlanta Public Schools PM has the right to witness such test as necessary. A certificate of completeness and video of plumbing lines shall be provided.
6. Sanitary Waste and Vent Systems – The hydrostatic test shall be performed before installation of fixtures. Fill all traps with water and then introducing smoke into the entire system. The peppermint test shall be made by introducing two (2) ounces of oil of peppermint into the roof vent terminal of every line to be tested, and then followed immediately by 10 quarts of hot water, at least 160 degrees Fahrenheit.
7. Roof Drainage System – The hydrostatic test shall be applied to the drainage system in its entirety or section-by-section. In no case shall any section be tested with less than a 10-foot head pressure.

8. Domestic Water System – The hydrostatic test shall be made upon completion of the rough-in and before setting any fixtures. The entire domestic cold water, hot water and hot water circulating system shall be tested at 100 psig for not less than 30 minutes.
9. HVAC Piping System – All chilled water, hot water, condensation drain piping and make-up water piping shall be tested hydrostatically at 100 psig for two (2) hours
10. Natural Gas System – All natural gas piping shall be tested pneumatically at a pressure of 100 psig for two (2) hours.
11. Exterior Sanitary and Storm Sewer System – The underground sanitary and storm sewer systems shall be tested for leakage by infiltration or exfiltration tests, as appropriate. Leakage by either test method shall not exceed 0.4 gallons per inch diameter per 100 feet of pipe per hour.

C. Training

1. All training sessions shall be videotaped. Attendance list shall be provided to APS Project Manager at the time of training and included in close-out information

D. Warranties and Guarantees

1. The materials of the plumbing systems shall have the Manufacturer's and/or supplier's Guarantee or Warranty put into effect by execution and filing of any and all related papers.
2. Minimum warranty shall be for one (1) year from date of substantial completion. If the manufactures standard warranty is for a longer period, it shall apply.
3. Obtain service or repair under the terms of any said Guaranty or Warranty in behalf of Atlanta Public Schools.
4. APS requires that the contractor shall warranty the plumbing system for a period of two (2) years, replace any work or material, which develops defects, excluding normal wear and tear, from the date of substantial completion

E. Notification of design changes

1. All systems require the acceptance of APS during the each design phase. No design changes shall be made at any time without the written approval of APS Project Manager. If design changes are required, notification prior to installation must be made and APS must approve.

22 11 00 Facility Water Distribution

A. General

1. Shut-off Valves:

- a. shall be provided at all toilet batteries, kitchens, exterior wall hydrants, and other areas where it may be necessary to isolate the fixtures for maintenance and/or replacement.
- b. The valves shall be clearly and permanently marked and accessible to school maintenance personnel in safe and secure locations.
- c. Located in Areas above ceilings or in locked cabinets should address vandalism concerns. Individual fixture supply stops are required and should have removable key-operated stop actuators to prohibit tampering.
- d. Where cut-off valves are above ceilings, the locations shall be marked (via some type of label) directly below the ceiling.
- e. Special attention shall be given to insure that **ball Valves** and Globe Valves are installed with the valve stem pointing upward.
Preferred Valve Manufacturers: Milwaukee, Stockham, Nibco, American or equal.
- f. In instances where two or more water heaters are required, each water heater shall have isolation valves installed
- g. Science Labs: Gas and water main feeds shall be provided and installed in locked vaults.

2. Water Hammer Arresters:

- a. Water hammer arresters shall be installed at the top of each riser and on each fixture branch in accordance with International Plumbing Code.
- b. Straight piping runs of 100 feet or more shall include an expansion loop or other provisions to compensate for natural mechanical expansion and contraction.
- c. *Preferred manufacturers: J.R. Smith, Watts, Zurn or equal.*

3. Backflow Preventer:

- a. Double check-valve assembly backflow preventers shall be installed as required ANSI/ASSE 11015.
- b. Follow City of Atlanta Requirements.
- c. *Preferred Manufacturers: Watts, Hersey, Clayton or equal.*

4. Hose Bibbs are required in:

- a. student toilets and in the kitchen area.
- c. An exterior coldwater hose bib shall be provided on each exterior wall.
- d. A hot and coldwater hydrant shall be installed within 50 feet of any dumpster/compactor location.
- e. Provide water shut off valve immediately inside of the building at each wall hydrant location.

- f. Refer to APS Guidelines, Division 32, Section III, Paragraph E for exterior Irrigation requirements. Hose bibbs for exterior Hose

B. Water Distribution Piping (Hot/Cold)

1. Water Piping and Fitting (Above ground, 2½ inches and smaller):
 - a. Type “L” hard drawn copper piping. ASTM B-88.
 - b. Wrought copper sweat type fittings for copper pipe.
 - c. Sweat-to-screwed pipe adapters shall be Cast Brass ASA B16.18
 - d. Soldered joints to be made using 95-5 tin-antimony and compatible flux.
 - e. Unions for 2 ½ inches pipe shall be cast brass or bronze and shall be flanged; for 2 inches and smaller shall be ground joint.
2. Water Piping and Fittings (3 inches and larger):
 - a. Cast iron piping: ANSI/AWWA C151.
 - b. Ductile iron fittings of standard thickness.
 - c. Cast brass or bronze flanged unions.
 - d. Rubber gasket with ¾-inch rods at all joints. ANSI/AWWA C111.
 - e. Soft copper tube ASTM B-88, Type E; cast copper alloy fittings, ASTM B16.18.
3. Hot Water Supply (HWS) A central, circulating, hot water supply system shall provide hot water to:
 - a. classroom demonstrations areas,
 - b. Middle and High School Science Labs,
 - c. custodial rooms,
 - d. mechanical rooms,
 - e. administrative areas
 - f. kitchen areas
 - g. PEC and/or special needs classrooms
4. Distribution temperature shall be appropriate for the location.
 - a. Provide tempered hot water in Elementary, Middle and High School restrooms.
 - b. Locker rooms and shower facilities shall be supplied with tempered hot water when designed and approved by Atlanta Public Schools.

C. Plastic Piping

1. Plastic piping shall not be used for domestic water supply or service lines.

22 13 00 Sanitary Sewer System Piping

A. General

1. Underground Soil, Waste and Vent Pipe:

- a. Shall be minimum four-inch cast iron, service weight coated, ASTM 474 with cast iron fittings.
 - b. Joints shall be Hub-and-Spigot CISI HSN compression type with neoprene gaskets, ASTM C564.
 - c. If installation is in shallow ground of less than 30 inches or if installation must be protected from H-20 or higher highway loading, then ductile iron pipe shall be specified.
 - d. Replace all sanitary lines in renovated kitchens and other renovated areas.
 - e. Video inspect and rod all sanitary lines exiting the buildings out to the street to insure the lines are free and clear of debris.
 - f. Sewer pipe extending at least 5 feet out from structure shall be ductile iron pipe ANSI / AWWA standard A21 / C151 class 50 minimum. Existing sewer pipe shall be inspected via video.
- 2. Above Grade Interior Sanitary Sewer Piping:
 - a. Shall be hubless cast-iron or PVC
 - i. No PVC in return air plenums
 - b. High School Science Lab sink drains require acid resistant piping (non-glass) (Conforming to CISPI 301).
 - c. Preferred Manufacturer: Pipe – U.S. Cast Iron Pipe Co., Charlotte Pipe and Foundry.
 - d. No Hub Couplings: Husky Clamp Charlotte Foundry
- 3. Critical Pipe Sizing:
 - a. To minimize blockages, horizontal drain runs shall be no less than 2 inches in diameter, even if only one lavatory is connected.
 - b. The minimum size shall be 3 inches where more than two sinks are connected.
 - c. Use a 4 inch connecting to a single closet bend or group of fixtures.
 - d. This exceeds most current code requirements but is a requirement for APS
- 4. Floor Drains:
 - a. Floor drains shall be provided
 - i. in all restrooms,
 - ii. custodial rooms,
 - iii. mechanical equipments rooms,
 - iv. at all electric water coolers,
 - v. shops and
 - vi. locker rooms.
 - vii. Drains at refuse container locations shall be open trench type with removable iron grids.
 - b. Review all existing floor drains to determine if they operate appropriately (required slope, etc). Note any alterations required to meet standard requirements for typical floor drains.
 - c. *Preferred Manufacturers: J.R. Smith, Josam, Zurn or equal.*
- 5. Traps and Primers:

- a. All fixtures and drains shall be provided with vented traps.
 - b. Install automatic trap primers in all floor drains. Locate primer valve in an accessible concealed location.
 - c. *Plaster traps shall be installed in all Art Room sinks, demonstration classroom sinks and other locations where debris blockages may be likely.*
6. Cleanouts :
- a. Cleanouts shall be provided at the base of each stack and at each change of direction greater than 45 degrees.
 - b. The cleanout shall be of the same nominal size as the pipe, up to 4 inches, not less than 4 inches for larger pipe.
 - c. All cleanouts shall be made with a caulking ferrule and a Cast Brass screw plug with raised nut, less than 1 inch high.
 - d. Cleanouts for underground piping shall extend through and end flush with the slab.
 - e. A Manhole shall not be substituted for a cleanout.
 - f. Cleanouts shall be located so they are accessible for maintenance. Access panels shall be provided.
 - g. Locate floor-mounted cleanouts carefully so they are accessible but not obtrusive.
 - h. Exterior cleanouts shall be installed within a concrete apron, 18 inches by 18 inches by 6 inches
 - i. *Preferred Manufacturers: J.R. Smith, Josam, Zurn or equal.*
7. Grease Traps:
- a. Install all grease traps outside the kitchen.
 - b. Coordinate location with kitchen equipment layout.
 - c. Follow City of Atlanta Specifications for grease trap design.
 - d. Clean out all grease in existing facilities.
8. Condensate Drain Piping:
- a. Condensate drain piping from mechanical equipment shall be minimum 1 inch type "L" hard drawn copper;
 - b. Installed with a positive slope, properly supported, provided with "P" traps with air vents and connected to a condensate main and not discharged through the exterior wall.
 - c. Condensate mains shall be connected to the sanitary sewer system.
9. Exterior "French" drains to receive condensate discharge from classroom unit ventilators shall not be permitted.

22 14 00 Storm Sewer and Roof Drain Piping

A. General:

- 1. All interior roof drain piping shall be Cast Iron.

2. Gutters and downspouts shall be provided in locations as specified by the Architect.
 3. Gutters and downspouts shall be fabricated from formed aluminum sheeting no less than 0.032 inches thick.
 4. All exposed downspouts shall connect to underground cast iron soil piping through cast iron "downspout boots". The boot shall be a minimum length of 27 inches.
 5. If tying into an existing storm drain system, verify system capacity and performance.
- B. Do not run waterlines, drain lines or roof drains over IT Rooms, Phone Rooms, Computer labs, etc. If lines are unavoidable or existing provide drain pans to protect the equipment.

22 30 00 Plumbing Equipment

A. General

1. Consider "Point-of-Use" electric or gas water heaters for remote locations and separate functional areas such as:
 - a. gymnasiums,
 - b. art rooms,
 - c. multi-purpose rooms and kitchens.
 - d. Point of use water heaters shall be mounted up out of the way. But shall not be installed above or in ceilings.
 - e. These units (t water heaters) shall not be located in electrical closets.

22 43 00 Plumbing Fixtures

A. Age-Appropriate Design:

1. Elementary, Middle and High school occupancies each pose unique challenges for engineers. Exposed flushometers are acceptable in elementary schools, K through 5th grades. These work best as specified, 24 inches high or more, to allow the handle to be placed above the height where someone could kick it. Middle and high schools require more vandal-proof installations. Designers in these projects should consider concealed type units. A real issue at these use points is sanitation and potential spread of disease.
2. Use wall-hung fixtures on "chair carriers" concealed behind chase walls.

- a. Water closets and urinals may feature concealed flushing devices. If concealed flush devices are used provide chase maintenance access.
- b. Lavatories should incorporate two (2) handles faucets on 4-inch center **Chicago Faucets: Manual Faucets 802-VE2805-665CP.**
- c. Urinals shall have extended lips and extended side shields for better collection and cleaner floors.
- d. No external P traps on urinals.

B. Fixture Colors:

- 1. Fixtures shall be white in color and all spaces between the fixture and the wall shall be filled with white non-hardening silicone caulking.

C. Cold Water Valve-Location:

- 1. The cold-water valve shall be located on the right side of the fixture for both hot and cold or cold water only sinks.

D. Flush Valves:

- 1. Flush valves shall contain vacuum breakers, cover cap on angle stop, and flushing volume adjustment.
 - a. Do NOT use non-touch faucets, urinals and toilets in elementary, middle and high schools.
 - b. Do Not use automatic or dual action flushing devices.
- 2. Toilets must use no more than 1.3 gallons per flush (gpf), and urinals no more than 0.7 gpf. Site specific evaluation of existing waste lines, water pressure, distance, usage, settling, and types of users may reveal retrofits may not be feasible.
- 3. Toilet Flush Valves: Sloan Regal XL, Model # 111XL (1.6 GPF)
 Urinal Flush Valves: Sloan Regal XL, Model # 186-1 (1.0 GPF)

E. Water Closets:

- 1. Wall-mounted water closets with blowout design and concealed flush valve assemblies are recommended for better sanitation. Floor outlet water closets shall be connected to the soil pipe by means of cast iron closet flange or collar. The connection shall be bolted, with wax closet setting seal between the closet and the connection. Water closets should not be floor mounted.

F. Hose Bibbs and Exterior Hydrants:

- 1. Hose bibbs and wall hydrants shall be vandal proof "key type" with vacuum breaker backflow preventer. Exterior wall hydrants shall be freeze proof. *Preferred manufacturers: J. R. Smith, Josam, T&S Brass, Woodford or equal.*

G. Facets & Showerheads:

1. Faucets must use no more than 0.5 gallons per minute (gpm), showerheads no more than 2.0 gpm. Use “non-touch”, automatic shut off faucets. Post water awareness information to encourage conservation from users.
2. Chicago single handle single stem faucets: Model 333-665 PSHCP .5 GPM
3. Chicago double handle double stem 802-V665CP
4. Chicago bubble 748-665CP
5. Chicago single handle double stem 3400-CP

22 47 00 Water Coolers/Drinking Fountains

- A. Sufficient stainless steel finished water coolers/drinking fountains shall be installed to meet the State of Georgia DOE requirements and shall be handicapped accessible. Provide drinking fountains in the cafeteria, multi-purpose room, gymnasium, etc. as well as near student battery toilets.
- B. There should be at least one water fountain provided for every 75 elementary students and each 100 to 125 middle and high school students, or fraction thereof in the area to be served. Fountains shall be exclusive of playground water fountains, cafeteria water fountains, or other special purpose fountains (State of Georgia DOE requirements). Architect is to insure that State Plumbing code requirements are met.
- C. Fixture Mounting Heights:
1. All fixtures shall be mounted in accordance with ADA requirements (ANSI A117.1), and local Plumbing Codes and the State of Georgia DOE requirements. The following are recommended fixture-mounting heights for various grade levels:

	Toilets	Urinals	Lavatories / Worksinks in Counters	Drinking Fountains
Pre-K through 5 th	15"	20"	28"	28"
6 th through 12 th	17"	24"	36"	36"

- These are standard Fixture heights.
- ADA compliant accessible fixtures shall also be provided.

D. Fixture Manufacturers:

1. Atlanta Public Schools acceptable fixture manufacturers: *American Standard is preferred, will accept Eljer, Elkay, Kohler, National, and as equals*
2. Water coolers—Oasis P8AC Versacooler II

E. APS Furnished Equipment:

1. Connections, both “rough-in” and “final” shall be provided for all noted Atlanta Public Schools kitchen food service and food preparation equipment and other equipment, as specified by the architect. Temporary sewer caps and water stops shall be provided as required.

F. Custodial Rooms (Refer also to APS Design Guideline Division 1, Section XI, General Space Planning Guidelines, Paragraph B.4)

1. Designated Custodial Maintenance Rooms shall be provided with adequate lockable space and shelving for storage of equipment and custodial supplies. Install floor type mop sinks with drain with at least a 6-inch curb, to minimize overflows when cleaning equipment.
2. Provide hot and cold water faucets and floor drains.
3. Provide tool hangers to hold mops, etc. over drain while drying.
4. Provide at least one duplex (GFCI) outlet.
5. Provide adequate ventilation and lighting.
6. Doors should open out.

22 63 00 Gas Piping

- A. All gas piping shall be welded black steel on main; drops to fixtures shall be threaded black iron..
- B. Approved plastic gas piping may be used underground.

END OF DIVISION 22

DIVISION 23

HEATING, VENTILATING & AIR CONDITIONING

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GENERAL

A. Objectives

1. Reliability – The systems must be designed to operate under a wide range of weather, occupancy, and building use conditions to continually provide the optimum learning and teaching environment for students and faculty. Systems must include a full complement of controls and safety devices to protect operators and the equipment. The system must operate with minimum preventive maintenance and intervention by Atlanta Public Schools personnel at the schools.
2. Maintainability – To insure proper maintenance for systems maintained by Atlanta Public Schools mechanics, equipment must be installed so that it can be readily accessed and rapidly serviced with minimum disruption and/or interference with the teaching and learning process.
3. Performance – The system must be able to meet specified design parameters under actual seasonal load conditions. *The HVAC system shall be commissioned by a third party Commissioning Authority, using the guidelines for Commissioning of HVAC Systems as set forth in ASHRAE Guidelines 1--2005 (as revised).* The Commissioning process must begin with the Pre-Design phase of construction/renovation.
4. Energy Efficiency – The system and equipment must be designed with concern for total energy consumption of all components, while still meeting the requirements for proper Indoor Air Quality, Ventilation and Humidity Control. Design must conform to guidelines contained in ASHRAE 62.1-2010 Ventilation for Acceptable Indoor Air Quality.

B. HVAC General Requirements

1. Philosophy – Atlanta Public Schools is committed to providing its Education Facilities with HVAC systems that are simple; operate efficiently; are easily maintained and accessible for service; and reliably provide the proper occupant comfort to facilitate the learning and teaching process in our schools.
2. Goals:
 - a. The overall goal for environmental control systems is to continually maintain environmental conditions as specified by the designed parameters of every controlled space, and do so at optimum operating, energy and maintenance cost.
 - b. The overall goal for the Building Automation System (BAS) is to provide the highest level of automation for the building and its HVAC systems, to provide alarm and management reporting, control monitoring adjustments, simplicity and to interface with other APS installed automation systems.

3. Code and Standards – Codes and Standards establish only the minimum requirements for the work. If the Contract Documents exceed requirements of the Codes and Standards, do not reduce the quality of the design, or eliminate future capacity/options without review and acceptance by the Atlanta Public Schools PM. Unless otherwise indicated, all mechanical work shall comply with the latest editions of the Standard Specifications, Design Guidelines and listings of the following organizations:
- a. Underwriters Laboratories, Inc. (UL).
 - b. National Fire Protection Association (NFPA Gas Standards, NFPA 90A; NFPA 96).
 - c. American National Standards Institute (ANSI).
 - d. American Society of Heating, Refrigerating and Air Conditioning engineers (ASHRAE).
 - e. ASHRAE 62.1-2010 Ventilation for Acceptable Indoor Air Quality
 - f. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
 - g. AGA –Natural Fuel Gas Code and Regulations of the Gas Company.
 - h. International Building Code with Georgia amendments.
 - i. International Plumbing Code with Georgia amendments.
 - j. International Mechanical Code with Georgia amendments.
 - k. National Electric Code with Georgia amendments.
 - l. Georgia State Energy Code for Buildings.
 - m. All applicable federal, state and local laws, ordinances and rulings of Government Officials having jurisdiction.
4. Special Areas:
- a. Provide air conditioning system that should be on a 24-hour temperature control system and designed with a future load consideration determined by APS for;
 - i. Administrative
 - ii. Media Center
 - iii. Multi-purpose or Gym
 - iv. Cafeteria
 - v. IDF and MDF rooms shall be on separate Dx units with 24/7 operation and under DDC control.
 - b. HVAC designs must consider the new technology heat load requirements of school classrooms, Media Center, Kitchen, and other areas which impact on electrical and HVAC systems.
 - c. Mark ceilings with location of HVAC equipment and valves including automation multipliers and junctions.
 - d. Dry storage area.
 - i. *Location.* The dry storage area shall be located adjacent to food preparation areas and convenient to receiving.
 - ii. *Environment.* The storage area shall be free of un-insulated steam and water pipes, water heaters, transformers, refrigeration condensing units, steam generators or other heat producing equipment. The area should be well ventilated and maintained at 50 degrees

Fahrenheit (10 degrees Celsius) to 70 degrees Fahrenheit (21 degrees Celsius).

- iii. *Containers.* Approved food containers with tight fitting covers and scoops shall be used for storing and dispensing bulk items or broken lots.

- 5. Air Conditioning Equipment Sound Levels – Within the Air Conditioning Industry, ARI Standard 270-84, “Sound Rating of Outdoor Unitary Equipment” and ARI Standard 275-84 are widely accepted procedures for sound rating of equipment and conversion of sound rating to sound pressure levels. The procedure accounts for major acoustical factors such as distance, reflecting walls and sound barriers. Several alternate locations for equipment shall be evaluated, for the impact of sound on neighbors, before actual installation of equipment. If there appears to be a problem during the planning stage, then the options still include choosing an alternate location, quieter equipment, and/or the application of several methods of noise control. To comply with the “Excessive Noise” requirements, refer to Atlanta City Code Section 74-133. Exceeding ambient sound level by 10-15dB could be considered a nuisance. Non-compliance to the City Code is not acceptable to Atlanta Public Schools and an action plan is required to improve the situation.

- 6. Energy Efficient Mechanical Systems:

- a. *Design for “Average Load”* – Heating and cooling equipment is most efficient when sized for the “average load” condition, not the “peak” or extreme condition. It is therefore; best to use modular unit boilers, chillers, pumps and fans in series so that the “average” operating load can be met.
- b. *Design for “Predominant Load”* – The distribution system should be designed for the predominant load, not the sum of the peak loads. The distribution system should be zoned to meet varying and different loads based on location, hours of use, and type of activity.
- c. *Decentralized Air Handling Units (AHU)* – Decentralized air handling units have smaller trunk lines and duct losses. Dispersed AHUs located close to the end of the point-of-use can be reduced in size if hot and chilled water is piped to them.

- 7. Energy Use Target:

- a. Total Energy Use Target – The total energy use target shall be between 30 and 70 BTU/SF/YR.
- b. Educational Buildings Energy Load Targets:
 - 40% Heating Load
 - 20% Cooling Load
 - 30% Lighting Load
 - 05% Fan Load
 - 05% Other Loads
 - 100 %

8. Humidity control shall be provided for all areas except toilet rooms, janitors closets and kitchens.
9. Electric heaters in toilet rooms shall be ceiling mounted and/or out of reach of students.
10. Outside air shall be delivered by either demand controlled by CO2 monitoring or >15 cfm per occupant per ASHRAE 62.1-2010.
11. Provide energy recovery units for all OA delivery. Include factory installed automation system controls (Trane or ALC).
12. Provide pool dehumidification units for all facilities with indoor swimming pools.
13. Design condition should meet ASHRA 2.5% conditions
14. Indoor design conditions:
 - a. 50% RH
 - b. Heating 70 deg F
 - c. Cooling 74 deg F
 - d. Room Thermostats/ sensors w/ +/- 3 deg F occupant adjustable range w/ unoccupied mode override (lockable from front end)
 - e. CO2 sensors

23 00 00 WARRANTIES AND GUARANTEES

A. General

1. The materials of the HVAC systems shall have the Manufacturer's and/or supplier's Guarantee or Warranty put into effect by execution and filing of any and all related papers. For one (1) year from date of acceptance, obtain service or repair under the terms of any said Guarantee or Warranty in behalf of Atlanta Public Schools. One year from customer occupancy
2. The HVAC System installed shall be left to Atlanta Public Schools in proper working order. The contractor shall for a period of one (1) year replace any work or material which develops defects, excluding normal wear and tear, from the date of beneficial acceptance by Atlanta Public Schools.
3. The HVAC Warranty shall begin after a full cycle of cooling and a full cycle of heating after the owner occupies the building.

B. Refrigeration/Air Conditioning Compressor Warranty

1. Each air conditioning compressor shall have a five (5) year manufacturer's guarantee against defective parts and labor after date of substantial completion.

23 01 00 HVAC TRAINING

A. Formal Classroom Training

1. Classroom sessions will be scheduled to introduce the HVAC operation, maintenance and management personnel to the O & M manuals, drawings, and other documents and aids available to operate and maintain the HVAC equipment and systems.
2. Factory specialists for major equipment (WSHP, boilers, pumps, chillers, etc) and systems will present sessions on their specific equipment and/or systems.
3. Automatic Temperature Controls sessions should be scheduled in conjunction with equipment items. *All OEM training sessions shall be recorded on videotape and two copies of the videotaped training shall be furnished to Atlanta Public Schools for use in training additional APS personnel and new hires.*
4. At least three similar sessions, of 8 hours each, shall be conducted for mechanical Equipment and systems. The first session shall be conducted at the time of start-up and checkout. The second session shall occur no later than the beginning of the next seasonal changeover or within four (4) months, whichever is earliest.
5. DDC System training by manufacturer-trained personnel shall consist of a minimum of two 8-hour sessions, for three (3) operators per session.
6. The Training Power description shall be submitted to APS as soon as practical to allow the scheduling and designation of personnel in a timely manner. The information contained in the program shall include how the training will be conducted; when and where the sessions will be held; names and company affiliation of trainers; recommended reference materials; outside reading, etc. Atlanta Public Schools will furnish the lists of APS personnel for each training session. (See b. above concerning Video Taping of all training sessions.

B. Hands-on Training

1. Extensive hands-on type training will be conducted during the HVAC preliminary commissioning so that actual operation and maintenance of

the HVAC equipment and systems can become their responsibility at the completion of the commissioning.

2. The building operator and designated maintenance personnel will be required to visit the site periodically during the construction phase, particularly during equipment installation and start-up.

C. Typical HVAC Training Agenda

1. Description of HVAC Systems:
 - a. Air Side
 - b. Cooling
 - c. Heating
 - d. Ventilation
 - e. Life Safety
2. Wet Side:
 - a. Cooling
 - b. Heating
 - c. Water treatment
3. Description of Equipment and Systems Installed:
 - a. Chiller(s)/Refrigeration Equipment
 - b. Condenser Water System (condenser maintenance frequencies)
 - c. Chilled Water System
 - d. Boiler(s) and Accessories (maintenance frequencies)
 - e. Insulation
 - f. Air Handling Units (AHUs) (maintenance of coils)
 - g. Terminal Boxes
 - h. Duct System
 - i. Filters and Replacement Procedure
 - j. Controls Equipment and Systems
 - k. Programming controls and downloading software to control devices.
4. Walk-through of building
5. Start-up Procedure
6. Operating Procedures:
 - a. Seasonal
 - b. Manual/Automatic (change over process)
 - c. Emergency Actions (stop buttons)
7. Shut-Down Procedures
8. Maintenance Schedules and Requirements
9. Warranties and Call Procedures

10. Spare Parts and Sources
11. Tools/Troubleshooting (BAS/and self driven equipment screens)
12. Hands-on operation instruction of HVAC equipment and systems during HVAC preliminary commissioning.

23 05 00 COMMON WORK RESULTS FOR HVAC

A. General

1. Equipment

- a. Ensure optimum use of available space for materials and equipment installed above ceilings. Allocate space in the order of priority as listed below except as otherwise detailed. Items are listed in the order of priority, with items of equal importance listed under a single priority number.
 - i. Gravity flow piping systems (no condensate pumps)
 - ii. Vent piping systems
 - iii. Recessed lighting fixtures
 - iv. Concealed HVAC terminals and equipment
 - v. Air duct systems
 - vi. Sprinkler piping systems
 - vii. Pressurized piping systems
 - viii. Electrical conduit, wiring, control air tubing
- b. Order of space priority does not dictate installation sequence. Installation sequence shall be as required to install all affected trades.
- c. The work of this Division 23 shall not obstruct access for installation, operation and maintenance of the work of any other Division.
- d. All major items of equipment shall be arranged so as to provide a minimum of 28" clear aisle space. Additional space shall be provided between and around equipment for maintenance and proper operation as shown in the equipment manufacturer's literature.

2. Coordination

- a. Coordinate all work under this Division 23 with work under all other Divisions, providing adjustment as necessary.
- b. Coordination of space requirements with respect to Division 16 shall be performed such that:

- i. No equipment, piping or ductwork, other than electrical, shall be installed within 42" of switchboards or panelboards.
 - ii. No piping or ductwork which ever operates at a temperature in excess of 120 degrees F. shall be installed within 3" of any electrical conductor.
 - c. All items mounted in or below the ceiling, and all items penetrating the ceiling, shall be coordinated with the architectural reflected ceiling plans. If any items are not shown on these plans, or any items need to be relocated for coordination purposes, prepare a reflected ceiling plan and submit it to the Owner for approval.
- 3. Code Compliance
 - a. All workmanship and materials provided under this Division 23 shall comply with all laws, ordinances, codes and regulations of all Federal, State and Local Authorities having jurisdiction.
 - b. All fire suppression, plumbing, heating, ventilating, and air conditioning materials and workmanship shall comply with all applicable state and local codes and standards as minimum requirement.
 - c. Secure and pay all fees associated with all permits and licenses required for execution of the Contract. Arrange for all inspections required by city, county, state and other authorities having jurisdiction, and deliver certificates of approval to the Owner.
 - d. The code requirements are strictly a minimum and shall be met without incurring additions to the Contract. Where requirements of the drawings or specifications exceed the code requirements, the work shall be provided in accordance with these drawings or specifications. In the event of conflict or ambiguity between the various codes, the most stringent requirement shall govern.
- 4. Electrical Compliance and Interface
 - a. All electrical equipment and wiring provided under this Division 23 shall comply with the electrical system characteristics indicated on the electrical drawings and specified in Division 16.
 - b. Electric controls, contactors, starters, pilot lights, push buttons, etc., shall be provided complete as part of the motor, heater or other equipment which it operates. All electrical components shall be in conformance with the requirements of the National Electrical Code and Division 16. Reference Division 16 and the electrical engineering drawings for those motor starters provided under that Division 16. All starters not shown shall be provided under this Division 15. Unless specified otherwise under other individual equipment Sections, motor starters shall conform to the following minimum requirements:

- i. Starters for motors 1/3 horsepower or smaller shall be manual unless remote or automatic starting is required, in which case the starters shall be magnetic, full voltage, non-reversing, single-speed, unless otherwise indicated. All other starters shall be magnetic.
 - ii. Each starter for a three-phase motor shall be furnished with three (3) overload relays sized for the full load running current of the motor actually provided. Provide an external "HAND-OFF-AUTO" selector switch with red "RUNNING" light. Provide a green pilot light to indicate motor "STOPPED". Each pilot light shall have a legend plate indicating reason for signal.
 - iii. Each overload relay shall have a normally open alarm contact which will close only when actuated by an overload (not to be confused with N.O. or N.C. auxiliary contacts). These contacts shall be properly wired to their respective blue pilot light provided on the starter front cover and having a "TRIPPED" legend plate.
 - iv. Individually mounted motor starters shall be in a NEMA Type 1 general purpose enclosure in unfinished areas and shall be flush mounted in all finished areas. All starters mounted in exterior areas shall have a NEMA 3R enclosure. Each starter shall have a laminated nameplate to indicate equipment unit number, function and circuit number.
 - v. All motor starters, push buttons and pilot lights shall be of the same manufacturer as the switchboard and shall be General Electric, Square D, Siemens I.T.E., or Westinghouse.
- c. Motor starters for the following equipment shall be provided under this Division 23 by the manufacturer of the equipment:
 - i. Packaged air conditioning equipment
 - ii. Other equipment hereinafter specified in other Sections to be provided with integral starters.
- d. Unless otherwise noted or specified in individual Sections, all 3-phase motors shall be standard NEMA continuous duty "B" type, with Class B insulation, open drip-proof frame for indoor service, TEFC for outdoor service and a service factor of 1.15. All motors 5 HP and larger shall be U.S. Motors Hi-Efficiency Model or Reliance XE Hi-Efficiency Model.
- e. All power wiring and final connections to equipment shall be provided under Division 16.
- f. Control components, all interlocks (motor-operated dampers, fire alarm motors, etc.) and control wiring (120 volt, single phase and less) shall be provided under this Division 23 as required to achieve the specified control sequences.

- g. All control wiring over 30 volts shall be installed by a Licensed Electrician working under this Division 15.

5. Sleeves, Seals and Escutcheons

- a. Sleeves shall be provided through all pipe penetrations of concrete or masonry walls, elevated floors and roofs, except those plumbing piping penetrations for fixtures, vents, etc.
- b. Sleeves shall be fabricated from Schedule 40 steel pipe through 10" and Standard Wall steel pipe for sleeve sizes 12" and larger. All sleeves penetrating exterior walls, underground walls, pit or vault walls shall be provided with a 3" x 3/8" thick waterstop ring welded completely to the midpoint of the sleeve.
- c. All sleeves penetrating exterior walls, underground walls, pit or vault walls and elevated floors shall be packed and sealed watertight.
- d. Sleeves through roofs shall extend above the roof surface and be flashed watertight.
- e. Sleeves through walls shall be cut and finished flush with each surface of the wall in which they are installed.
- f. Sleeves shall be sized to provide a minimum of 1/2" clearance between the inside surface of the sleeve and the outside finished surface of the pipe plus any insulation specified.
- g. Fire-stops shall be provided as specified herein. All annular spaces between piping and sleeves which do not require fire-stops shall be packed with mineral wool and caulked.
- h. Provide round, chrome-plated escutcheons on all exposed piping penetrations passing through walls, floors, partitions and ceilings.

6. Fire stops

- a. Where ductwork, piping, conduit, etc. pass through fire partitions, fire walls and floors, a fire-stop shall be provided that will ensure an effective barrier against the spread of fire, smoke and gases. Fire-stop material shall be packed tight and completely fill gaps between the ductwork, piping, conduit, etc. and the perimeter of their rough openings.
- b. Fire-stopping material shall maintain its dimensions and integrity while preventing the passage of flame, smoke and gases under conditions of installation and use when exposed to the ASTM E119 time-temperature curve for a time period equivalent to the rating of the assembly penetrated. Fire-stopping material shall be noncombustible as defined by ASTM E136; and, for insulation

materials, melt point shall be a minimum of 1700 degrees F. for 1-hour protection and 1850 degrees F. for 2-hour protection. Fire-stopping material shall be Dow-Corning RTV Foam or 3M Fire Barrier Products or Sohio Carborundum Fyre Putty.

7. Core Drillings

- a. Cutting of holes through concrete and masonry shall be by diamond core or concrete saw. Pneumatic hammer, impact electric and hand or manual hammer type drills will not be allowed, except as permitted by the Architect where required by limited working space. Locate holes such that they will not affect structural sections such as ribs or beams. Holes shall be laid out well in advance of the installation. These layout locations shall be approved by the Owner prior to drilling.

B. Products

1. Bid basis and substitution procedures

- a. Manufacturers names, series and model numbers, as noted or specified, are for the purpose of describing type, capacity, and quality of equipment, materials and products to be used. Unless "or equal" is specifically stated, bids shall be based only on the specified "basis of design" manufacturer. The listing of a particular manufacturer as an "equal" or "acceptable substitute" manufacturer shall not be misconstrued as approving nor allowing the substitution of that manufacturer's standard product in place of the basis of design. No consideration will be given to a product which would require dimensional, spatial or aesthetic changes to the project. "Acceptable substitute" and "equal" manufacturers shall only bid those products which exactly match the size and other characteristics of the specified basis of design. Any changes to other disciplines and trades of work required by an "or equal" or "substitute" product shall be duly considered and priced accordingly prior to bidding or pricing. The decision as to whether or not a proposed substitute or "equal" product is actually equal to that specified shall rest solely with the Owner.
- b. Requests to provide "equal" products in lieu of those specified shall be submitted to the Owner in writing at least five (5) days prior to final pricing and execution of the Contract. No consideration will be given to substitute products after final pricing and execution of the Contract.
- c. Any "or equal" product or proposed product substitution which will cause a change in the appearance, dimensions or design of any part of the building, its structure, electrical system or any other engineered systems shall be accompanied by a scaled drawing and written description of the required change(s) for approval by the Owner. If deemed necessary by the Owner, design changes shall be signed and sealed by a registered Professional Engineer, currently licensed in this State.

2. Minimum Standards

- a. Every piece of energy consuming equipment, all fire suppression products and life safety equipment shall comply with the following standards as applicable; especially in regard to prevailing codes:
 - i. Factory Mutual Laboratories (FM)
 - ii. Industrial Risk Insurers (IRI)
 - iii. Underwriters Laboratories, Inc. (UL)
 - iv. ADC: Air Diffusion Council
 - v. AGA: American Gas Association
 - vi. AMCA: Air Moving and Conditioning Association, Inc.
 - vii. ANSI: American National Standards Institute
 - viii. API: American Petroleum Institute
 - ix. ARI: American Refrigeration Institute
 - x. ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers
 - xi. ASME: American Society of Mechanical Engineers
 - xii. ASTM: American Society of Testing and Materials
 - xiii. AWWA: American Water Works Association
 - xiv. IBR: Institute of Boiler and Radiator Manufacturers
 - xv. MSS: Manufacturers Standardization Society
 - xvi. NBBPVI: National Board of Boiler and Pressure Vessel Inspectors
 - xvii. NEMA: National Electrical Manufacturer's Association
 - xviii. OSHA: Occupational Safety & Health Administration
 - xix. PDI: Plumbing Drainage Institute
 - xx. PPI: Plastic Pipe Institute
 - xxi. SMACNA: Sheet Metal and Air Conditioning Contractors National Association, Inc.

C. Execution

1. Submittals

- a. Before preparing submittals, study all Contract Drawings and specifications in detail, obtain manufacturer's recommended instructions, and have submittals prepared based on specific equipment and material proposed for installation. An officer of the contracting firm shall sign all shop drawings (certifying conformance with plans and specifications) before submitting to the Architect or releasing to the field.
- b. The submittal process shall not be utilized as an avenue to substitute products after the execution of the contract. Should an unspecified or unequal product be submitted, it will be rejected. If a second attempt at substitution is made during the resubmittal of the same product, then no more reviews of that product will be performed without direct compensation to the Engineer being paid

for the additional services required for the third review and any further reviews.

- c. No more than four (4) copies of submittal data will be reviewed. Any additional copies will be returned unmarked. The responsibility of copying review comments on any additional copies will rest solely with the Contractor.
- d. Submittals will not be accepted for review unless they:
 - i. Comply with the requirements of Division 1.
 - ii. Include complete information pertaining to all appurtenances and accessories.
 - iii. Are submitted as complete packages which pertain to all related items in Division 15. Separate packages shall be submitted as follows:
 - (a) All HVAC equipment and components.
 - (b) All plumbing equipment and components.
 - (c) The automatic controls and EMS .
 - iv. Are properly marked with equipment, service or function identification as related to the project and are marked with pertinent specification paragraph number.
- e. Submit catalog information, factory assembly drawings, field installation drawings and certifications as required for complete explanation and description of all items of equipment. The submittal data shall provide ample, unquestionable compliance with the Contract Documents.
- f. Review of submittals shall not be construed as authorizing any deviations from the plans and specifications unless such deviations are clearly identified and separately submitted in the form of a letter that is enclosed with the submittals.
- g. Submittals are required on all manufactured equipment, especially energy consuming equipment

D. Excavation, Trenching and Backfilling

- 1. Perform all excavation, trenching and backfilling for underground work under this Division 15. During excavation, the excavated material shall be piled back from the banks of the trench to avoid overloading, slides or cave-ins. Do not exceed the angle of repose unless written approval is obtained in advance from the Owner for shoring, bracing or other alternate excavation methods. All excavated material not used for backfilling shall be removed from the building and disposed of as indicated or directed by the Owner. Take measures to prevent surface water from flowing into trenches and other excavations and any water accumulating therein shall be removed by pumping. All excavation shall be made by open cut. Tunneling shall not be allowed.

2. The bottom of all trenches shall be evenly graded to provide firm support and an even bearing surface. Pipe shall be laid on firm soil, laid in straight lines and on uniform grades. Provide bell holes so that the barrel of the pipe rests evenly on the bottom of the trench along the entire length of the pipe.
3. Pipe shall be inspected and tested prior to backfilling. Trench shall be handfilled to a minimum of 12" above the top of pipe with suitable earth (free of rocks, trash, large clods and organic material) and compacted to a minimum 95% proctor. After the first layer is completed, subsequent layers shall be filled and compacted the same as the first layer. Settling the backfill with water shall not be permitted.

E. Installation Requirements

1. All equipment shall be installed in strict conformance with the recommendations of the equipment manufacturer, as indicated on the Drawings and as specified.
2. Provide installation manuals for each piece of equipment. Submit in separately bound volumes after review of submittals.
3. Provide supplementary steel framing and welded steel equipment support stands as required for proper hanging and support of the mechanical systems. Steel angles, channels and tubing utilized for such framing shall be selected for a maximum deflection of 1/360th of the span.
4. All roof curbs shall be a minimum of 12" high above the finish roof line and selected for the various roof pitches. Curbs installed on roofs having pitches of not more than 1/4" per foot may be standard curbs shimmed level with steel channels or Zs to provide suitable support and flashing surfaces.

F. Cleaning, Lubrication and Adjustment

1. The exterior surfaces of all mechanical equipment, piping, ductwork, conduit, etc., shall be cleaned and free of all dirt, grease, oil, paint splatter, and other construction debris.
2. Ducts, plenums, and air unit casings shall be cleaned of all debris and either vacuumed or blown free of all rubbish, dirt, and dust before installing grilles, registers or diffusers.
3. Bearings that require lubrication shall be lubricated in strict accordance with the manufacturer's recommendations.
4. All control equipment shall be adjusted to the settings required for the performance specified.

5. Fans shall be adjusted to the speed indicated by the manufacturer to meet the installed final system pressure at the airflows indicated. Any additional sheaves and belts required for final adjustments shall be provided with no increase in the Contract amount.
6. Any fans operated during construction shall have temporary filters. Temporary filters shall be changed regularly to minimize contamination of the equipment and duct systems. Permanent filters shall be installed prior to final inspection.
7. All coils shall be thoroughly cleaned and combed prior to final inspection.

G. Painting

1. All uncoated and uninsulated steel surfaces exposed to sight inside the building, such as piping, equipment hangers and supports which are not provided with factory prime coat or galvanizing, shall be cleaned and painted with one coat of rust inhibiting primer. In addition, all surfaces in finished spaces shall also be painted with two coats of finish paint in a color selected by the Owner.
2. All ductwork surfaces visible through grilles, registers and diffusers in finished areas shall be painted flat black.
3. Steel items exposed outside the building, such as equipment supports, insulated piping and hangers which are not factory painted or galvanized shall be cleaned and painted with one coat of rust inhibiting primer and two coats of asphaltic base aluminum paint. Insulated steel pipes outside the building shall be cleaned and painted with one coat of rust inhibiting primer before installing insulation.
4. Factory painted equipment that has been scratched or marred shall be repainted to match the original factory color.

H. Ductwork and Piping Leak Testing

1. Underground, concealed and insulated ductwork and piping shall be tested for leaks in place before backfilling, concealing or covering. Tests shall be conducted in the presence of the Owner or his designated representative.
2. All low-pressure ductwork (design operating pressure of 1.0" W.C. E.S.P. or less) shall be tested by the operation of the system to which it is connected.
3. All medium and high pressure ductwork (operating pressure of more than 1.0" W.C. E.S.P.) shall be tested at 1.5 times the design operating pressure of the system to which it is connected, or at the total fan pressure at shutoff, whichever is greater.

4. All visible and audible air leaks from the ductwork systems shall be repaired.
5. All gas piping shall be tested pneumatically and proved tight at a pressure of not less than 30 psi for a period of not less than two (2) hours. No loss in pressure will be permitted.
6. All refrigerant piping shall be 100% tested with a halide torch leak detector.
7. All leaks shall be repaired by tightening, remaking joints, or replacing pipe and fittings. Caulking of joints shall not be permitted.

I. Record (As-Built) Drawings

1. At the completion of the project, provide CADD drawings in most recent AutoCadd format to the Owner which reflects all changes, deviations and revisions made to the original design documents. Locations of all underground piping and utilities shall be clearly shown and dimensioned from permanent reference points such as building column lines.

J. Coordination Drawings

1. The sheet metal Contractor shall be responsible for the preparation of 1/4" per foot scale sheet metal drawings of all building levels.

K. Operating and Maintenance Manuals and Instructions

1. Complete operating and maintenance manuals shall be provided to the Owner. Four copies shall be provided. Each copy shall be bound in a separate 3-ring, loose-leaf notebook. Operating instructions shall be provided for each mechanical system, and shall each include a brief system description, a simple schematic and a sequence of operation. Operating and maintenance instructions shall be provided for each piece of equipment. A control system wiring diagram shall be included in each operating and maintenance manual.
2. Prior to final acceptance or beneficial occupancy, provide the services of a competent technician for not less than three (3) days to instruct the Owner in the operation of the mechanical systems.

L. Asset Tagging

1. Each piece of equipment shall be tagged with a unique serial number and bar code. All work shall be performed by Asset Works. No Exceptions. Contact Asset Works at [770-605-8594](tel:770-605-8594). Provide a copy of assest list and coordinate distribution with APS Project Manager.

23 05 93 TEST AND BALANCE

A. General

1. Testing and balancing shall be performed by a fully certified Independent, Test and Balance Agency, approved by the design engineer acting for the Atlanta Public Schools. Certification shall be from AABC or NEBB. Final test and balance shall be determined by a “real time” full load of occupancy.
2. The Test and Balance Agency shall, as part of its contract, act as the authorized inspection agent for the Design engineer and Atlanta Public Schools. Include as part of its work, the Test and Balance Agency shall list:
3. Test and Balancing shall be performed in accordance with the AABC national Standards, 6th Edition or latest version.
4. Architects shall provide project specific detailed specifications for the Testing, Balancing and Adjusting of entire Mechanical Systems as described below. This work shall be clearly indicated to be included in the Contractor/Construction Manager’s scope of work.
5. Specifications shall be clearly written to require Contractors and Construction Managers to provide the Testing, Adjusting and Balancing of Mechanical Systems by a firm certified by the National Environmental Balancing Bureau (NEBB) or the Associated Air Balance Council (AABC) in testing and balancing disciplines for the subject type of project.
6. Submit the names of three (3) qualified firms as described above to the APS Project manager for selection.
7. The firms proposed shall not be associated in any way with any other work on this project.

B. Minimum Test and Balance Requirements

1. Initial Test and Balance – This test shall be performed immediately after equipment has been started and before the building is occupied.
2. Re-Balance and Re-Test – This test shall be performed after the building has been occupied for a period not to exceed 30 days to rebalance the system to meet required space temperatures based on actual occupied conditions.
3. Seasonal Adjustments – Following the final testing and Test and Balance Agency shall be required to schedule two additional visits to make

seasonal adjustments as necessary. One visit each shall be scheduled for the following summer/winter.

4. Final Approval – The installation shall not be considered complete until a final report has been submitted by the Test and Balance Agency and approved by the design engineer. Refer to “Start-up and Commissioning” section of this guideline for other requirements.

C. Scope

1. Upon the completion of the T&B work, the Agency shall submit four copies of the complete HVAC Test and Balance Report directly to the Architect. Test and balance report shall identify unit manufacturer, model number, serial number and location of the equipment.
2. The Agency shall plainly mark the settings of all valves, dampers and other adjustable devices. If a balancing device is provided with a memory stop, it shall be set, locked and marked.
3. These systems include, but are not limited to, the following:
 - a. Supply distribution systems
 - b. Return and exhaust air systems
 - c. Heating, ventilating and air conditioning equipment (all scheduled equipment)

D. Submittals

1. The name and certification of the Agency, along with the name and certification of the Certified Test and Balance Engineer, shall be submitted to the Architect for review within 30 days after the award of the general contract.
2. The selected Agency shall submit to the Owner:
 - a. Procedural Manual
 - b. Report Forms
 - c. AABC or NEBB Performance Guaranty
 - d. Instrument List and Calibration Dates
 - e. Schedule
3. A reviewed copy of each of the above shall be returned to the Agency before the HVAC Test and Balance begin.
4. If a complete submittal in accordance with these requirements is not received within 60 days from award of the general contract, then the Architect reserves the right to select the Agency.

E. Executions

1. The Contractor shall start-up and maintain the HVAC systems and shall continue the operation of the HVAC systems during each day of testing

and balancing. Start-up and operation shall include, as a minimum, the following:

- a. All equipment operable and in safe condition.
- b. Temperature control system complete.
- c. Proper thermal overload protection in place for electrical equipment.
- d. Ductwork leakage rates not exceeding those specified and all duct systems clean of debris.
- e. Air transfer systems shall have:
 - i. Correct fan rotation and RPM.
 - ii. Coil fins cleaned and combed.
 - iii. Filters clean and in place.
 - iv. Access doors closed.
 - v. All dampers in place and open.
 - vi. All grilles, registers and diffusers installed

23 08 00 COMMISSIONING

A. Definition of Commissioning

1. Commissioning is a systematic process of ensuring that all building systems perform interactively according to the Owner's Project Requirements and Performance Criteria. This is achieved by beginning in the design phase and documenting the Owner's Project Requirements and Performance Criteria and continuing through construction, acceptance and the warranty period with actual verification of performance. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment start-up, control system calibration, testing and balancing, as well as performance testing and training.

B. Commissioning Scope

1. Commissioning during the design phase includes the following specific tasks:
 - a. Schematic design review
 - b. 100% Construction document review for constructability, code compliance and conformance with owner's program requirements
2. Commissioning during the construction phase includes the following specific tasks:
 - a. Identify requirements of each mechanical and electrical trade during commissioning process.
 - b. Identify requirements for system and equipment testing as required by local code authorities.
 - c. Identify system and equipment tests required by the contract design documents.
 - d. Identify documentations and submittals required by contract documents.

- e. Formulation of training program for operation and maintenance personnel.
 - f. Perform periodic quality control site inspections of installed equipment for compliance with contract documents, accessibility and safety.
 - g. Participate in scheduling meetings to integrate commissioning activities into master construction schedule.
 - h. Inspect and confirm that equipment and systems have been properly installed in accordance with the contract documents and manufacturer's written installation instructions (CxAnd Contractor).
 - i. Inspect and confirm that HVAC equipment has been placed into operation with manufacturer's oversight and approval (CxAnd Contractor).
 - j. Verify and document all required system and equipment tests.
 - k. Assist in documentation of the indoor air quality during construction phase
 - l. Verify and document that all systems and equipment perform according to contract design documents.
 - m. Review operation and maintenance documents for clarity and thoroughness.
 - n. Supervise training sessions for Owner's personnel in the proper operation of each piece of equipment and each system (Contractor and CxA).
 - o. Document warranty start and end dates (Contractor).
 - p. Identify, document and report all deficiencies of the Work versus Contract specifications and performance requirements
3. Commissioning during the warranty phase includes the following specific tasks:
- a. Perform seasonal check of major building systems.
 - b. Conduct meeting with owners and operators prior to end of warranty period (ten months) for their assessment of building performance.

D. Commissioning Process

- 1. Commissioning during construction begins with a pre-commissioning meeting conducted by the CxA where the commissioning process is reviewed with the commissioning team members.
- 2. Additional meetings will be required throughout construction, scheduled by the CxA with necessary parties attending to plan, scope, coordinate, schedule future activities and resolve problems.
- 3. Equipment documentation is submitted to the CxA during normal submittals, including detailed start-up procedures.

4. The Contractor develops start-up plans for review and approval by checklists to the CxA who will use them to develop PC's the contractors' will complete prior to functional testing.
5. In general, the checkout and performance verification proceeds from simple to complex, from component level to equipment to systems and intersystem levels with PCs being completed before FPT.
6. The Contractor and Subs, under their own direction, execute and document the PCs and perform start-up and initial checkout. The CxA documents that the checklists and start-up were completed according to the approved plans. This may include the CxA witnessing start-up of selected equipment.
7. The CxA performs periodic construction observations.
8. The CxA develops specific equipment and system FPT procedures. The contractors' and A/E review the procedures and provide appropriate comments.
9. The procedures are executed by the Contractor and Subs, under the direction of, and documented by the CxA.
10. Items of non-compliance in material, installation or setup are corrected at the contractors' expense and the system re-tested.
11. The CxA reviews the O&M documentation for completeness.
12. Commissioning is completed before substantial completion except for trend log monitoring, seasonal testing, near-warranty end activities, and verification of training sessions.
14. The CxA reviews, pre-approves, coordinates and conducts the training provided by the Contractor and Subs and verifies that it was completed and in sufficient detail to allow the owner's engineer to adequately maintain the building systems.

E. Commissioning Authority

1. The CxA is not responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating, or construction management. The CxA may assist with problem solving, non-conformance or deficiencies, but ultimately that responsibility resides with the GC and the A/E. The primary role of the CxA is to develop and coordinate the execution of a testing plan, observe and document performance - which systems are functioning in accordance with the documented Owner's Project Requirements and Performance Criteria and in accordance with the Contract Documents. The contractors will provide all tools or the use of tools to start, access equipment, check-out and functionally test equipment and systems,

except for specified testing with portable data-loggers, which shall be supplied and installed by the CxA.

2. Coordinates and directs the commissioning activities in a logical, sequential and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules and technical expertise.
3. Coordinate the commissioning work and, with the GC and PM, ensure that commissioning activities are being scheduled into the master schedule.
4. Revise, as necessary, Commissioning Plan—Construction Phase.
5. Plan and conduct a commissioning kickoff and scope meetings.
6. Review normal contractor submittals applicable to systems being commissioned concurrent with the A/E reviews for compliance with commissioning, O & M needs, and coordination issues.
7. Write and distribute prerequisite checklists for commissioned equipment.
8. Develop an enhanced start-up and initial systems checkout plan with contractors for selected equipment.
9. Perform site visits, as necessary, to observe component and system installations.
10. Attend selected planning and job-site meetings to obtain information on construction progress.
11. Review construction meeting minutes for revisions/substitutions relating to the commissioning process.
12. Assist in resolving discrepancies.
13. Coordinate with the project sustainable design to verify that any sustainable design requirements affected by system performance or commissioning are addressed.
14. Document construction checklist completion by reviewing completed construction checklists and by selected site observation
15. Witness all or part of the HVAC piping test and flushing procedure, sufficient to be confident that proper procedures were followed. Document this testing and include the documentation in O&M manuals.

16. Witness all or part of any ductwork testing and cleaning procedures, sufficient to be confident that proper procedures were followed. Document this testing and include the documentation in O&M manuals.
17. Document systems start-up by reviewing start-up reports and by selected site observation.
18. Write functional performance test procedures for equipment and systems. This will include manual functional testing, energy management control system trending and may include stand-alone data-logger monitoring. The CxA will write detailed test procedures for all commissioned equipment, systems and assemblies, and submit to PM, contractors' and A/E for review and approval unless noted otherwise in the specifications
19. Review TAB execution plan.
20. Witness sufficient functional testing of the control system to verify it may be used for TAB, before TAB is executed.
21. Verify air and water systems balancing by spot testing, by reviewing completed reports and by selected site observation.
22. Analyze functional performance trend logs and monitoring data to verify performance.
23. Coordinate through GC and PM, witness and verify manual FPTs performed by Installing Contractors. Coordinate re-testing as necessary until satisfactory performances achieved.
24. Maintain a master deficiency and resolution log and a separate testing record. Provide the PM and A/E with written progress reports and test results with recommended actions.
25. Review equipment warranties to ensure that the Owner's responsibilities are clearly defined.
26. Oversee and verify the training of the Owner's operating personnel.
27. Compile and maintain a Commissioning Record and Building Systems book.
28. Review and verify the preparation of the O&M manuals.
29. Provide a final commissioning report

F. Report and Documentation Requirements

1. The CxA will provide regular reports of all issues and progress directly to the PM with increasing frequency as construction and commissioning

progresses. Issues that are in the schedule critical path or which significantly affect budget or building performance will be reported within 2 days of identification.

2. The CxA will regularly communicate with all members of the commissioning team, keeping them apprised of commissioning progress and scheduling changes through memos, progress reports, etc.
3. The CxA shall witness and document the results of all functional and performance tests using the specific procedural forms developed for that purpose. The CxA will include the filled out forms in the Commissioning Record.
4. Commissioning Record. The CxA is responsible to compile, organize and index commissioning data by equipment and assembly into labeled, indexed and tabbed, three-ring binders and deliver it to the PM, to be included with the O&M manuals. Three copies of the manuals will be provided. The record will contain for all systems and assemblies together: the Summary Report, Issues Log, Commissioning Plan, progress reports, submittal reviews, construction observation reports, O&M manual reviews, summary training record, functional testing schedule. Then for each system or assembly: the sequence of operation, construction checklist, start-up report, and functional and regulatory test and inspection records, training record. And finally, the indexed and fully labeled trend log analysis of all systems.
5. Summary Report. The summary commissioning report shall include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods. For each piece of commissioned equipment or assembly, the report should contain the disposition of the CxA regarding the adequacy of the equipment, documentation and training meeting the contract documents in the following areas: 1) Meeting the equipment specifications, 2) Installation, 3, Functional performance and efficiency, 4) Equipment O&M manual documentation, and 5) Operator training. All outstanding non-compliance items shall be specifically listed. Recommendations for improvement to equipment or operations, future actions, commissioning process changes, etc. shall also be listed. Each non-compliance issue shall be referenced to the specific functional test, inspection, trend log, etc. where the deficiency is documented. The functional performance and efficiency section for each piece of equipment shall include a brief description of the verification method used (manual testing, BAS trend logs, data loggers, etc.) and include observations and conclusions from the testing.

G. Operation and Maintenance Manuals

1. Initial preparation shall be the responsibility of the HVAC and Electrical Trade Representative as per contract bid document

2. CxA shall review manual for completeness of required and necessary maintenance information, diagrams and descriptions of equipment and/or system.
3. CxA shall meet with Owner's engineer to jointly inspect manual.
4. Deficiencies noted shall be transmitted to the GC/CM for correction

H. Training of Owner's Personnel

1. The Owners shall be given comprehensive training in the understanding of the systems and the operation and maintenance of each major piece of equipment
2. TSCx, in cooperation with the Contractor, will be responsible for scheduling the training sessions which shall start with classroom sessions followed by hands on training on each piece of equipment. Hands on training shall include start-up, operation in all modes possible, shut-down and emergency procedures
3. The training portion shall be conducted after completion of this work.
4. The classroom training session shall be followed by an inspection, explanation and demonstration of the equipment. The start-up and shut-down modes of operation shall also be demonstrated
5. The Contractor or his Representative shall conduct all sessions, under the supervision of the CxA, and shall add to each session any special information relating to details of the installation of the equipment that might impact the operation and maintenance

I. Verification of Performance

1. Verification of performance will take place after certification of the completion of the construction. Performance demonstration shall be done by the HVAC and Electrical Systems Trade Representatives and shall be witnessed by CxA and the Owner's Representative.
2. Verification will include demonstration of performance listed in the Data Schedules. The specified, submitted and other data will be entered on the attached Commissioning Data Sheets prior to the verification. The witnessed performance data shall be added to the data sheet at the time of verification.

23 08 10 EQUIPMENT STARTUP

A. General

1. Equipment start-up shall be performed by factory trained technicians authorized to perform these duties.
2. Start-up documentation shall be included in both the Operations and Maintenance Manual and the Commissioning Report
3. Controls contractor shall test and document the design sequence of operations for each piece of equipment in system
4. Commissioning Agent shall then be notified that the equipment has been started up and sequences verified and ready for commissioning.

23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC

A. General

1. Atlanta Public Schools (APS) has Building Management Systems (BMS) installed in all school facilities for the purpose of controlling and monitoring HVAC systems and for energy conservation and utility recording. Standalone panels at BMS schools, communicate with PC workstations at the APS Central Utilities Office via Internet connections. The goal of APS is upgrade all schools on BMS (Building Management Systems).

B. New Schools and Renovated Schools

1. New and/or renovated school facilities shall be designed with an EMS/BAS (Building Automation System) including the appropriate sensors, actuators, panels, and software as a standalone system with the ability to interface with the APS central office for remote controlling and monitoring energy using equipment and systems. When a school is to be renovated that contains an active BAS (for the complete school or part of the school), the renovated area shall be designed to utilize a BAS of the same, or compatible, manufacturer, as an extension of the existing system. When another manufacturer is selected, the new system must be capable of operating the existing system and to provide an interface that will result in a single Internet connection as a combined system, except as directed by Atlanta Public Schools. The replacement system must be able to pick up all control points and request new control points.

- C. Each school will have a computer dedicated to operating the Energy Management System.
- D. The Building Automation System for new installations shall be the "Trane Tracer System" a product of The Trane Company, Automated Logic or Johnson Controls. No others will be accepted..

E. Minimum BAS Functions

1. Building automation is the process of controlling and monitoring the connected building systems in the most economical way, providing real-time information on building operation and on its controlled parameters, and assisting in troubleshooting of building environmental controls-related problems. The system shall be capable of the following:
 - a. Monitor/control HVAC zone and space temperatures for a central remote location workstation. The remote operator shall be able to view equipment graphics and locations floor plans and adjust equipment as required, to meet changing conditions.
 - b. Start/Stop all energy consuming equipment and accurately monitor status (includes interior/exterior lighting).
 - c. Monitor/record building electricity usage and demand and perform demand control routines.
 - d. Monitor/record outdoor temperature and Relative Humidity.
 - e. Monitor/record fire alarm system activities.
 - f. Monitor/control chiller and boiler plant equipment (includes hot water temperature control/reset).
 - g. Initiate local and remote alarms when monitored equipment status changes from set parameters, and in emergencies.
 - h. Monitor/control economizer and ventilation controls.
 - i. Record major equipment operating hours and trends.
 - j. Provide manual override with security password at the school site for emergency operations.
 - k. Monitor discharge temperature control and monitor outside air, Co2, enthalpy and temperature for space comfort.

F. Other Requirements

1. Provide a full service contract for two (2) years after acceptance by APS. Year one (1) shall run concurrent with the warranty period followed by a second year full service contract. For all HVAC projects (renovations and new construction)
2. Provide ability for remote central control workstation to perform global notifications to school facilities for equipment scheduling and operation. Provide web-based, blade server, Windows XP or latest version

- G. Trane and ALC shall be acceptable manufacturers of Direct Digital Control (DDC) Building Automation Systems (BAS using an open protocol system (BACNET) and compatible with existing APS systems. Consultation with APS Project Manager and Maintenance Department is required, to determine appropriate DDC system if the existing DDC Controls are not Trane Tracer or Johnson Controls. Automated logic as an acceptable BAS

- H. Successful DDC applications are characterized by control of the desired building parameters with high accuracy and reliability and with minimal operating and maintenance costs.

- I. To have a successful DDC installation, three engineering expertises must interact: Facilities Engineering, HVAC Engineering and DDC Applications Engineering.
- J. The engineers should work within the boundaries of a defined project, and operate and maintain the system to meet safety and occupancy requirements.
- K. The three engineering expertise are essential in every stage of the project to provide the desired degree of automation and a quality system that meets the owners expectation

Scope Definition

Definition of:	HVAC system, DDC Systems, level of facilities automation, architectural requirements.
Design of:	HVAC System, Architecture, Control and Alarm Logic, Networking, report generation.
Installation of:	HVAC System, DDC hardware, software, OWS, Presentation, interfaces, communications, and as-built documentation.
Start-up Commissioning:	HVAC, TAB, DDC validation, calibration, application SW verification, end-to-end testing, operation under normal conditions, operation under fault conditions, documentation and verification of specified system.
Documentation Turnover:	Final turnover to the owner, documentation, test and validate all mechanical systems through automation view and function, operation, training and review of system performance.
Continuous Operation:	Performance verification, DDC upgrades services.

- L. System Management shall consist of networked stand-alone DDC panels; Stand-alone Application Specific Controllers (ASCs); Portable Operator Terminals (Laptop Computer); System must be web-based.
 - 1. Specific computer requirements:
 - a. HP Elitebook 8540P notebook
 - b. CORE I5 560M 2.66GHZ 2GB 320GB
 - c. DVDRW 15.6" WIN7 PRO
 - d. HP 2GB memory
 - e. Targus side access roller case
 - f. Kensington optical mouse
 - 2.. Server requirements:
 - a. HP DL380 2U rack mounted server
- M. The BAS shall be capable of control and management of multiple building functions, such as HVAC equipment, alarm systems, lighting, energy management, historical data collection and archiving; monitor coolers/freezers, walk-ins; capable of stand-alone or remote control through networking.

- N. The BAS shall be modular and shall permit modular expansion of both capacity and functionality through the addition of sensors, actuators, stand-alone DDC panels and other devices.
- O. Direct Digital Controls shall be used at all individual HVAC equipment items and/or systems and networked into the Building Automation System. The system shall be able to operate independently after programming from the Central EMS. Where sensors are located in ductwork, loop piping and mixed air stations, access panels shall be provided for service and maintenance.
- P. The design professional shall include the following in a detailed HVAC Control System plan as part of the final contract documents:
 - 1. Heating Mode System Diagram.
 - 2. Cooling Mode System Diagram.
 - 3. Control System Diagram
 - 4. A detailed description of the Sequence of Operation separately for heating and cooling, including system start-up procedures, temperature control strategies for various climate/weather conditions, change over operation and system shutdown procedures. Evidence of the approved sequence of operation shall be exhibited prior to the complete installation.
 - 5. Fire Emergency Mode System Diagram, together with a detailed description of the Sequence of Operation during a fire or other Emergency condition.
 - 6. A total Energy Management System Diagram for the individual on-site building(s) and the Central remote Station Interface. Diagram shall include exact location of device controllers; i.e. Room Numbers.
- Q. General
 - 1. The Facility Management System shall be fully installed as a complete package by the Facility Management contractor. The system shall include all wiring, installation of devices, calibrations, adjustments that are necessary for a complete and fully operational system.
 - 2. The Facility Management System shall provide a complete graphic floor plan showing all areas of the facility including room numbers and space temperatures and AHU associated with each room.
 - 3. The Facility Management System shall be connected and operable via the APS LAN. The system shall also provide a modem backup via a dedicated telephone line.

4. Products – The Facility Management System shall be the product of either of the following approved vendors: Johnson Controls, Automated Logic ALC and Trane. No others accepted.
 5. All DDC components shall be of the same manufacturer with the FMS Contractor being responsible for any devices connected to the DDC system.
- R. Performance – The FMS contractor shall provide a DDC system with the minimum standards as outlined:
1. BAC Net compliant per ASHRAW/ANSI standard 135.
 2. The FMS shall be capable of controlling multiple building function such as lighting alarm systems, HVAC equipment, and HVAC Equipment alarms.
 3. The FMS shall be modular and shall permit modular expansion of both capacity and functionality through the addition of sensors, actuators, valves and stand-alone DDC panels.
 4. The system Architect shall eliminate dependence on any single device for alarm reporting and control execution.
 5. The DDC shall be used at all individual HVAC equipment components and/or systems and networked into the FMS, web based ready, if requested and capable of operation after programming from the central site located at 1631 LaFrance Street.
 6. The FMS contractor shall comply with all other requirements as determined by the design officials.
 7. The system shall provide global set point and schedule modifications and popup operation sequence for any mechanical device shown by graphic.
 - a. Graphics shall be consistent with other graphic design on same vendors systems with any new upgrades presented to APS in the planning stage.
- S. Other Requirements
1. Provide global modification of schedules and set points to all linked devices within the structure.
 2. Provide space temperature sensors:
 - a. Classroom – with software controllable adjustment band of 1-3 degrees
 - b. Common spaces – non-adjustable

3. Provide thermostat guards:
 - a. Wire protective grill type for adjustable sensors
 - b. Enclosed cover type or non-adjustable sensors.
 - c. If key type, provide an extra set. Keys shall be supplied to the APS HVAC shop during building turnover and closeout.

- T. BAS Minimum Points List – Listed below are the control points minimum requirements:
 1. Outside air temperature and relative humidity
 2. Chill water/hot water supply and return temperature
 3. Condenser water supply and return temperature
 4. Chill water/condenser water pump status
 5. Discharge/return air temperature
 6. Space temperature
 7. Change over value position and economizer position
 8. Co2 sensors

- U. BAS Minimum Control Points Water Source Heat Pump – Listed below are the control point requirements:
 1. Fan operation status
 2. Operation mode status
 3. Reversing valve position
 4. Compressor operation command
 5. Discharge/return air temperature
 6. High low temperature shut down
 7. Overflow condensate mode
 8. High low pressure shut down
 9. Co2 Sensors
 10. Dual Humidity and temperature thermostats

V. BAS minimum Points List-Mechanical Room – Listed below are control points for Mechanical Room equipment associated with water source heat pumps:

1. Outside air temperature
2. Temperature water flow/temperature
3. Loop water flow
4. Cooling Tower fan status
5. Cooling Tower pump status
6. Cooling Tower pump selection
7. Cooling Tower water temperature, entering and leaving
8. Change over valve position and VFD percent of ramp operation

W. BAS supplemental requirements:

1. Web based system with analog phone line back-up
2. Full building floor plan and equipment graphics on computer at APS site
3. Must show discharge air temperatures
4. Training (32 hours in increments as required) for operational personnel
5. Trane equipment must get Trane controls
6. Same day warranty response time (within eight (8) hours)
7. Surge protection and UPS backup
8. Equipment identification tags located on ceilings or adjacent surfaces
9. Equipment room and graphic numbers must coordinate
10. A copy of all necessary diagnostic software must be provided
11. Old systems and new systems must fully integrate and communicate
12. Provide rover training and rover on lap top (16 hours)
13. Provide additional training to allow APS techs to install and download programs inhouse directly to control devices.

X. Installation:

1. The FMS contractor shall install all system components as specified and in accordance with all applicable standards and codes; i.e., UL-916-PAZ X products, NFPA70, FCC-Part J, ASHRAW/ANSI 135- (BAC Net).
2. Sensor Space and Temperature – Space temperature sensors shall be installed within the controlled space remote from the mechanical equipment device at the code recommended height.
3. Space temperature sensors shall be provided with a 1-3 degree controllable adjustment.
4. Shielded sensors shall be installed in middle and high school hallways, and common areas.

Y. System Acceptance

1. The FMS shall be connected to operate at the APS Central Site for a period of 48 hours, and have a demo conducted by the FMS contractor with the following representatives present: FMS Contractor, Mechanical Contractor, Project Engineer, APS Project Manager and APS Maintenance.

Z. System Point Lists

Continued on next page.

1. Chilled Water System

SYSTEM POINT LIST																	
SYSTEM POINT DESCRIPTION CONSTANT VOLUME AIR-COOLED CHILLER PLANT		GRAPHIC		POINT TYPE				ALARMS						NOTES:			
				HARDW. INPUT	HARDW. OUTPUT	SOFTWARE POINT	DEFAULT VALUE	HIGH ANALOG	LOW ANALOG	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMM. FAIL		DIAGNOSTICS		
Chilled Water System		UNIT CONTROLLER COMMUNICATIONS															
		CHILLED WATER SETPOINT			X												
		CHILLED WATER TEMP: ENT	X														
		CHILLED WATER TEMP: LVG	X														
		CHILLER DESIGN CAPACITY															
		CHILLED WATER FLOW STATUS	X		X					X							USED FOR TEMPERATURE BASED SUBTRACTION
		CURRENT LIMIT SETPOINT			X												
		COMPRESSOR CURRENT DRAW	X														
		COMPRESSOR POWER			X												
		CHILLER ENABLE/DISABLE			X												
		CHILLER STATUS			X					X							INDICATION THAT CHILLER IS RUNNING
		CHILLER AVAILABLE			X												
		CHILLER FAILURE 1			X					X							
		CHILLER FAILURE 2			X					X							
		CHILLER UNLOAD AT START (ENABLE/DISABLE)			X												
		CHILLER UNLOAD CURRENT LIMIT			X												
		CHILLER SEQUENCE NUMBER			X												
		CHILLER MODE (HEAT RECOVERY)			X												
		CHILLER OPERATING MODE			X												
		COMMUNICATION STATUS			X					X							
		CHILLER CHILLED WATER STPT: MIN			X												
		CHILLED WATER PUMP STATUS	X								X						
		CHILLED WATER PUMP S/S: OUTPUT		X													
		CHILLED WATER PUMP FAILURE			X							X					
		SYSTEM CHILLED WATER SUPPLY TEMP	X														
		SYSTEM CHILLED WATER SUPPLY SETPOINT			X												
		SYSTEM CHILLED WATER RETURN TEMP	X														
		DESIGN SYSTEM CHILLED WATER TEMP DIFFERENCE			X												
		AMBIENT DRY BULB TEMP (LOCKOUT)	X														
SYSTEM ENABLE REFERENCER			X														
SOFT START DEADBAND			X														
ADD TEMP DEADBAND			X														
MINIMUM COOL DOWN RATE			X														
FLOW TYPE (VARIABLE OR CONSTANT)			X														
ADD DELAY INTERVAL			X														
ADD DELAY TIME			X														
SUBTRACT TEMP DEADBAND			X														
SUBTRACT DELAY TIME			X														
SUBTRACT DELAY INTERVAL			X														

[illegible]

2. Packaged Rooftop Units

SYSTEM POINT LIST													
SYSTEM POINT DESCRIPTION	POINT TYPE						ALARMS						
	GRAPHIC	HARDW. INPUT	HARDW. OUTPUT	SOFTWARE POINT	DEFAULT VALUE	HIGH ANALOG	LOW ANALOG	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMM. FAIL	DIAGNOSTICS	NOTES:
Package Rooftop Unit													
UNIT CONTROLLER COMMUNICATIONS	X												
SUPPLY AIR CFM		AI											
SUPPLY FAN STATUS	X	BI								X		FAN FAIL	
SUPPLY FAN MODULATION	X												
COMPRESSOR CONTROL			BO										
HEAT STATUS				X									EACH STAGE
MODE: HEAT/COOL	X			X									
HEATING SETPOINT				AV	68°F								
EMERGENCY HEAT MODE				BV									HEAT PUMP UNITS ONLY
EXHAUST FAN STATUS		BI								X		FAN FAIL	
EXHAUST MODE				BV									
CONDENSER FAN STATUS		BI											CONDENSER FANS A & B
SPACE TEMPERATURE	X	AI								X		SPACE TEMP. SENSOR FAIL	
OCCUPIED COOLING SETPOINT	X			AV	72°F								
SUPPLY AIR TEMPERATURE	X	AI								X			NOTE 2
COND COIL DEFROST MODE		BI						X					HEAT PUMP UNITS ONLY
EVAP COIL DEFROST MODE		BI						X					3 TO 25-TON UNITS ONLY
COOLING STAGES ACTIVE	X			X									
ECONOMIZER DAMPER POSITION	X	AI											NOTE 3
ECONOMIZER MIN POSITION				AV	15%								NOTE 3
OUTDOOR AIR TEMP		AI								X			OA SENSOR IS OPTIONAL
OUTDOOR AIR HUMIDITY		AI								X			NOTE 3
RETURN AIR ENTHALPY		AI											
RETURN AIR HUMIDITY		AI								X			NOTE 3
RETURN AIR TEMPERATURE		AI								X			NOTE 3
TIMED OVERRIDE REQUEST		BI											
TIMED OVERRIDE REQUEST CANCEL		BI											
OCCUPY/UNOCCUPY	X												
PRIORITY SHUTDOWN	X							X					
DIRTY FILTER	X							X					
MANUAL RESET REQUIRED	X								X				
GENERAL NOTES:													
1. Software programs require a building management system.													
2. Supply air temperature sensor is available only on units with economizer controllers installed.													
3. Valid only on units with economizer.													

3. ASC WSHP with Outside Air Damper

SYSTEM POINT LIST														
SYSTEM POINT DESCRIPTION UVCL20_2P_CWHW		POINT TYPE						ALARMS						NOTES:
		GRAPHIC	HARDW. INPUT	HARDW. OUTPUT	SOFTWARE POINT	DEFAULT VALUE	HIGH ANALOG	LOW ANALOG	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMM. FAIL	DIAGNOSTICS	
ASC WSHP with Outside Air Damper	Space Sensor	Temperature Setpoint	X	AI						X	X		Temp Sensor Fail	Required
		Fan Switch	X	AI							X		Local Setpoint Failure	
		On/Cancel		BI									Local Fan Mode Failure	
		Fan reversing Valve												
	Outside Air Damper			BO										
			X	BO										
	Fan Status		X	BI						X	X			2 position only
														Fan output monitoring
	Leaving Water Temperature			AI									CRT 1 Low Water Coil	Use a Termistor at the leaving pipe of the coaxial heat exchanger
											X		Detection	Use a Freezestat at the secondary coil
Low Coil temperature Detector			BI									CRT 2 Low Water Coil		
	Condensate Overflow Switch		BI						X	X		Detection	Condensate Overflow	
Occupied Cooling Setpoint		X		AV	74°F	110°F	40°F							
	Occupied Heating Setpoint		X		AV	71°F	105°F	40°F						
Occupied Standby Cooling Setpoint				AV	78°F	110°F	40°F							
	Occupied Standby Heating Setpoint			AV	60°F	105°F	40°F							
Unoccupied Cooling Setpoint				AV	85°F									
	Unoccupied Heating Setpoint			AV	60°F									
Leaving Water Temperature Low Limit				AV	35 °F	45°F	30°F							
	Occupied By-pass Time Override			AV	2 Hours								Note 3.	
BAS Communication State		X		BV							X	Maintenance Required	Note 3.	
	Maintenance Required			BV	2000 Hours									
OPTIONAL POINTS														
Discharge Air Temp Sensor		X	AI								X		Note 1	
	Occupancy Sensor		BI										Note 1	
Generic Binary Output				BO									Note 1	
	Generic Binary Input		BI										Note 1	
GENERAL NOTES:														
1. Optional feature.														
2. Can be a communicated value														
3. Displayed at the BAS user interface														

23 21 00 PUMPS

- A. Atlanta Public Schools prefers to use pumps, fans and motors manufactured by the following companies: Bell and Gossett, Armstrong, Taco or equal.
- B. Pumps shall be based mounted closed coupled where applicable
- C. All motors shall be high efficiency and inverter duty rated.
- D. Grout pump bases to housekeeping pads
- E. Vibration isolation from piping
- F. Pump manufacturer to provide VFD for pumps
- G. Pumps shall be floor mounted where applicable.
- H. Pumps shall use awarded automation control installed by manufacturer.

23 34 00 FANS

- A. General
 - 1. Direct drive fans shall come with factory mounted speed controller
 - 2. Kitchen hood exhaust fans shall be mounted 42" above roof
 - 3. Motors shall all be high efficiency
- B. Special Ventilation and Humidity Control Areas
 - 1. School Kitchens:
 - a. In most instances, school kitchens are open to the cafeteria areas and thereby have an effect on the proper condition of the cafeteria.
 - b. The kitchens shall be provided with effective heating, air conditioning and ventilation to insure a proper working environment, while not affecting the ability to maintain proper hot food temperatures.
 - c. Unconditioned Make-up air shall be provided inside the hood to compensate for range hood exhaust and other vented heat producing equipment.
 - 2. Cafeteria Administrative Office:
 - a. Cafeteria offices shall be infused with conditioned air, separately from the kitchen area With a PTAC or small dx split system.

3. Multi-Purpose Rooms/Buildings:
 - a. Equipment Access – Special Conditions: Provide provisions for the access to all equipment in gyms, multi-purpose rooms, theaters and auditoriums installed 20 feet or over.
 - b. All A/C equipment should be roof or ground mounted
4. Classrooms and Corridors
 - a. Humidity stats shall be installed in classroom return plenums and corridors.

23 52 00 BOILER

- A. ONLY Gas-fired hot water boilers are acceptable; manufactured by the following companies: Cleaverbrooks, Lochinvar, Patterson-Kelly, or manufacturer approved by APS
- B. All water source heat pump applications shall have condensing boilers.
- C. No draft induced powered fans will be acceptable

23 64 00 CHILLERS

- A. All chillers and/or compressors 15-20 years old shall be replaced.
- B. All chillers shall be equipped with a monorail, chain hoist, etc., to permit compressor removal. All chillers shall have a self diagnostic monitor. Chiller panels shall be equipped to read and monitor the following:
 1. Entering/leaving chilled water and condenser water temperatures.
 2. Evaporator and condenser refrigerant pressure.
 3. Evaporator and condenser entering/leaving water pressure.
 4. Oil pressure and sump oil temperature.
 5. Motor amperage.
 6. Read faults.
- C. The following product manufacturers are preferred:

1. Centrifugal, Electric 200 Ton plus. (Trane, Carrier)
2. Reciprocating, all sizes; and/or screw less than 200 tons; (Trane, Carrier)
3. For tonnages less than 150 tons, air cooled scroll chillers are acceptable. (Trane and Carrier are acceptable manufacturers of this product.)
4. All substitutions must be approved by APS.

23 65 00 COOLING TOWERS

A. Location & type

1. Cooling towers shall be located at least 50 feet from any trees or major planting areas and installed at a minimum of 42 inches above grade.
2. The preferred location of the towers is on ground level. Roof location is as a last resort.
 - a. Towers shall be located minimum of 2 feet above pump suction
3. No tower heat exchangers are allowed; only mechanical room installed plate frame heat exchangers.

B. Freeze Protection

1. Immersion heaters shall be installed and connected in tower basins.
2. Heat tape shall be installed on all make-up water piping.
3. An inside shut-off valve shall be installed at the lowest point on the make-up water piping.
4. All exposed piping and underground piping to a depth of 18 inches shall be insulated against freezing to -20F (minus 20 degrees).
5. Provide automatic temperature controls for Immersion Heaters).
6. Stainless steel cold and hot water basins.
7. Tower ladders and walkways must be provided for servicing the cooling towers. Must be manufacturer installed.
8. DDC system shall monitor:
 - a. Make-up water meter
 - b. Blowdown water meter
 - c. Basin heater status

- d. Basin level
- e. Heat tape status
- f. Manufacturer: The following cooling tower manufactures are preferred: Marley, Evapco, Baltimore Air Coil or approved equal by APS Facilities. (Acceptable equals shall be approved by APS prior to purchase and fabrication). Unit fan design shall be quiet fan technology.

23 70 00 HVAC SYSTEM EQUIPMENT

A. General: Preferred manufacturers: Trane or Carrier

1. Water Source Heat Pumps/Corridor Mezzanine:
 - a. Individual room water source heat pump/unit ventilators located on mezzanine above corridors.
 - b. Distributes conditioned air to classrooms, through flexible ducts above the ceiling, to room diffusers.
 - c. Condensate drain piping from each unit shall be trapped and connected to a condensate main, then to the sanitary sewer system.
 - d. In no circumstances shall condensate piping be discharged through the exterior wall at each unit location.
 - e. Secondary drain overflow lines where provided, shall also be directly connected to the condensate main.
2. Water Source Heat Pumps/Classrooms:
 - a. Individual room water source heat pump/unit ventilators located inside mechanical closets in the classrooms.
 - b. Where possible, locate units in hallway ceilings.
 - c. Units may use dx reheat for dehumidification.
 - d. Units located in ceilings shall be mounted no higher than 12 AFF.
 - e. All units shall have secondary drain pans.
 - f. All units shall have minimum of 2' clearance for maintenance.
 - g. Provide means of access for maintenance and unit removal for ceiling mounted units.
 - h. Provide adequate clearance for filter removal.
 - i. Provide filter racks and access doors.
 - j. Condensate pumps shall not be utilized; gravity only.
3. Rooftop energy recovery:
 - a. ERU's shall have mechanical cooling capabilities to condition OA Provide direct DDC control of Energy Recovery Units. The Trane or ALC controller shall enable compressors, modulate winter time & dehumidification heating, enable/control dehumidifier, start/stop fans, and open/close dampers. The controller shall receive temperature, humidity and scheduling inputs. Using the ERU equipment providers DDC controller is NOT acceptable with or with out an interface (such as Lon, BACnet or Modbus). The ERU

- graphics shall show all monitoring and control points including but not limited to fan status, unit LAT, unit leaving dew point temp, return temp, return dew point, OA temp, and OA dewpoint.
- b. DX cooling and natural gas preheat, energy recovery units shall be provided for ventilation and humidity control. Units may be water cooled air cooled (packaged or split). The preferred winter heating shall be heat pump reverse cycle. The dehumidification reheat shall be provided by a sensible wheel. Preferred manufacturers are Trane, Carrier, Annexair, DesChamps or Aaon
4. Packaged HVAC Units for Separate Functions – Separate packaged air conditioning and heating units are required for:
- a. administrative offices
 - b. theater
 - c. cafeteria
 - d. auditorium
 - e. Multi-Media Center
 - f. Other areas that may need to be occupied after regular school hours without having to operate the main plant equipment. Rooftop units, other than direct gas-fired units are acceptable.
 - g. Preferred Manufacturers: Trane, Carrier
5. All AHUs/Unit Ventilators piping and valve packages shall be insulated to prevent condensation. The insulation shall be installed so that it does not obstruct access to service panels. Insulate external surfaces of ductwork and use double wall construction on air handling units. Terminal equipment such as fan coils, unit ventilators and VA terminals can be lined with either closed-cell foam or Foilfaced insulation.
6. Air Source Heat Pumps (not acceptable) - Air source heat pumps are not to be considered for classroom use.

23 73 00 AIR HANDLING EQUIPMENT

- A. Freeze Protection – FreezeStats and pre-heat coils shall be installed at mixed-air plenums and outside-air intakes. This system shall be monitored by the DDC system.
- B. Valves and Drains – Fluid Control Valves and Floor Drains shall be installed at Air Handling Units.
- C. Condensate Drain Pans – ASHRAE Standard 62.1 requires the condensate drain pans be designed for self-drainage to preclude buildup of microbial slime. Atlanta Public Schools requires that condensate drain pans on all new equipment with cooling coils be sloped, in two directions, to assure positive drainage. . The pans shall be constructed of stainless steel or polymer to resist corrosion and pooling of water. Sprayed foam on drain pans is not acceptable. The surface must be cleanable and not capable of harboring microbial growth. Follow manufacturer's trapping instructions to assure correct drainage under all

operating conditions. Exposed internal insulation shall not be used — from the exit of the coil to the downstream end of the drain pan. Provide drain pans under water valves.

- D. Cleanable Surfaces – The materials used on the interior of HVAC equipment and air delivery systems shall be cleanable. Porous insulation shall not be used for thermal and acoustical attenuation purposes.
- E. Clearance and Access – Sufficient clearance must be provided to allow removal and replacement of filters, coils, fan wheels, bearings and shafts. All areas of the HVAC equipment and duct systems shall be totally accessible for inspection, cleaning and maintenance. Central air handling equipment shall be provided with hinged doors and/or removable panels. Filter and cooling coils sections shall be equipped with access doors. Less frequently accessed areas may have removable panels. Access to the ductwork interior shall be provided at areas where dirt is likely to accumulate, such as at turns and before and after any duct-mounted devices, such as fire dampers. Sufficient clearance must be provided to allow removal and replacement of filters, coils, fan wheels bearings and shafts.
- F. Filter Replacement – All filters shall be replaced immediately prior to final acceptance and operational turnover to Atlanta Public Schools.
- G. Manufacturers – The following air handling equipment manufacturers are preferred. All substitutions must be approved by Atlanta Public Schools.
 - 1. Central Station – Single/Multi-Zone AHUs (Trane, Carrier)
 - 2. Unit Ventilators/Fan Coil Units (Trane, Carrier)
 - 3. Variable air Volume Units (Trane, Titus or equal)

END OF DIVISION

DIVISION 26

ELECTRICAL

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DIVISION 26 ELECTRICAL

I. GENERAL

- A. A complete Electrical System shall be provided in accordance with the 2005 Edition, National Electrical Code (NEC) with Georgia Amendments, the 2006 Edition, International Fire Code with Georgia Amendments, 2000 Edition, International Energy Conservation Code (IECC) with Georgia Amendments and all other applicable codes and regulations. (Refer also to Division 13 – Special Construction).
- B. Drawings shall indicate locations of fixtures, equipment, raceways, etc. Changes in their locations to accommodate building conditions shall be made prior to initial installation, without additional cost to Atlanta Public Schools, and as approved by the Architect and the Project Manager.
- C. Locations of motors, starters, and equipment as indicated on the drawings are approximate. Connections shall be made to subject items as actually installed.
- D. Provide access to equipment requiring operation, service, and/or maintenance throughout the life of the equipment.
- E. Do not install switchboard, switchgear, panels, motor control centers or transformers within forty-two (42) inches horizontal of piping, ductwork and/or mechanical equipment. Minimum horizontal distance shall be increased to sixty inches (60") for equipment rated over 600V.
- F. Wiring installation in environmental air-handling spaces shall comply with the NEC-2005.
- G. Serving line equipment shall be powered from wall-mounted receptacles or from suspended service outlets with GFI protection. Boxes stubbed up on conduit from the floor or tombstones are prone to damage and are not acceptable.
- H. Outlets in corridors near janitor's closets shall be GFI protected.
- I. Wiring Schematics for Computer Rooms shall be four circuits, 3 + 1: In the four-circuit 3 + 1 schematic, circuits 1, 2, and 3 are distributed from the first circuit panel and are supported with one shared neutral and one shared ground. Circuit 4 is distributed from a second circuit panel and is supported with a separate neutral and ground.

II Electrical

- A. System Characteristics
 - 1. The system shall include the following:
 - a. Primary building service, being at the site boundary, including any required underground enclosures.
 - b. Transformers, pads, etc.

- c. Main switchgear.
- d. All conductors other than service entrance shall be cooper. Service entrance conductors only may be aluminum.
- e. Distribution system 480/277v to all equipment as required.
- f. Transformers and distribution system 208/120v to equipment and Outlets.
- g. Emergency power system.
- h. Approved grounding system.
- i. Convenience outlets and lighting as required.
- j. Communications and data systems.
- k. Fire alarm and security alarm systems.

B. Underground Service Cable

- 1. Buried power cable shall be installed in rigid steel conduit, at least four (4) feet below finish grade, with a warning tape installed not less than two (2) feet above the afore mentioned conduit. High voltage power cable above 120 volts shall have its conduit encased in concrete. The concrete shall cover the entirety of the conduit, so that the conduit is totally enwrapped.

C. Wiring Systems, Devices and Raceway Material

- 1. Comply with NFPA 70, "NEC", for components and installation. Use only products that are listed and labeled by a "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulations 1910.7. Use a solid single cooper conductor of No. 10 AWG and smaller. Stranded copper conductors must be used when larger than No. 10 AWG is required. Coordinate layout and installation with the construction components. Apply identification, warning and instruction signs and/or labels to the wiring and to the items to which they connect. This eases the maintenance and repair of such systems.

D. Switching and Distribution Equipment

- 1. Front connected, front accessible with panel mounted main devise, panel mounted braches and sections rear aligned.
- 2. Nominal System Voltage: 480/277, 60 Hz.
- 3. Main-bus continuous: 1200A.
- 4. Unobstructed top mounted pull-box.
- 5. Three (3) Phase, four (4) wire buses and connections.
- 6. Appropriated Over Current Protection Devices.
- 7. All in compliance with NEMA PB 2 and NFPA 70 from the following Manufacturers:
 - Square D
 - GE
 - ITE
 - Cutler Hammer

- E. Grounding
 - 1. Install equipment-grounding conductors with circuit conductors that comply with NEC Article 250 for the items below in addition to those required by code.
 - a. Feeders and Branch Circuits
 - b. Lighting Circuits
 - c. Receptacle Circuits
 - d. Single-Phase motor or appliance branch circuits
 - e. Three-Phase motor or appliance branch circuits
 - f. Flexible Raceway runs.
- F. Transformers and Panels
 - 1. Install general-purpose Dry-Type Transformers where required in accordance with NEMA TP-1. Install transformers in dedicated Electrical Rooms. Do not install transformers in Janitors Closets.
 - 2. Install panel boards and accessory items according to NEMA PB 1.1. Perform insulation resistance test for each panel board, bus component, connecting supply, feeder and control circuits. Make continuity test for each circuit.

III. Packaged Generator Assemblies

- A. Provide for a stand-by engine generator at each school facility. The generator shall be a natural gas supplied fuel system with a propane day tank capable of operating the generator at full load for 3 hours. The generator shall consist of the following general features:
 - 1. The generator shall be rated for continuous stand-by service.
 - 2. A radiator with blower type fan shall be sized to maintain safe operation.
 - 3. Housing shall consist of a weatherproof enclosure to completely enclose the engine generator and accessories.
 - 4. Exhaust muffler mounted on top of housing.
- B. Automatic Starting Systems:
 - 1. Starting Motor – A DC electric starting system with positive engagement shall be furnished. The motor voltage shall be as recommended by the engine manufacturer.
 - 2. Automatic Control – A fully automatic generator set start-stop controls in the generator control panel shall be provided. Controls shall provide shutdown for low oil pressure, high water temperature, over speed, over crank. Controls shall include a 30 second single cranking cycle limit with lockout.
 - 3. Jacket Water Heater – A unit mounted thermal circulation type water heater incorporating a thermostatic switch shall be furnished to maintain engine jacket water to 70 degrees Fahrenheit; the heater shall be 120 volt, single phase, and 60 hertz. Provide pressure switch actuated by oil

pressure to shut down heater when oil pressure reaches running pressure.

4. Battery Charging Alternator – A belt driven battery-charging alternator rated 24 volts, 35 amps DC shall be provided with transistorized voltage regulator.
 5. Batteries – A lead-acid storage battery set of the heavy-duty starting type shall be provided. Battery voltage shall be compatible with the starting system. The battery set shall be rated no less than 220 amp-hours. Necessary cables and clamps shall be provided.
 6. Battery Racks – Battery racks shall be provided for each battery and shall conform to NEC 480 – 7(a) (1). They shall be constructed of metal and so treated as to be resistant to deteriorating action by battery electrolyte. Further, construction shall be such that non-conducting insulation material directly supports the cells.
 7. Battery Charger – A current limiting battery charger shall be furnished to automatically recharge batteries. Chargers shall float at 2.17 volts per cell. It shall include overload protection, silicon diode full wave rectifiers, voltage surge suppressor, DC ammeter, DC voltmeter, and fused AC input. AC input voltage shall be 120 volts, single phase. Amperage output shall be not less than 6 amperes.
- C. Generator Control Panel – A generator mounted NEMA 3R type vibration isolated 14 gauges steel control panel shall be provided.
- D. Main Line Circuit Breakers – Type A main line, molded case circuit breakers mounted upon and sized to the output of the generator shall be installed as a load circuit interrupting and protection device.
- E. Automatic Load Transfer Switch(es) – Automatic transfer switch(es) mechanically held on both the emergency and the normal side, and rated for continuous duty in an unventilated enclosure.
- F. Annunciator Panel – A flush recessed panel provided for remote mounting in the Administrative Area or as shown on the drawings to give audible and visual warning of fault or alarm conditions in the generator set.
- G. Transient voltage surge protection shall be provided protecting all low voltage circuits serving the transfer switch and the Annunciator.
- H. Manufacturing – The engine, including engine block, oil pan, and cylinder heads, generator and all major items of auxiliary equipment shall be manufactured in the U. S. by manufacturers currently engaged in the production of such equipment.
- I. Warranty – The complete stand-by electrical system furnished under this Section shall be guaranteed against defective parts and workmanship under terms of the manufacturer's and dealer's standard warranty. But, in no event shall it be for a

period of less than five (5) years or 3,000 hours from date of final testing and acceptance of the system and shall include labor, parts and travel time for necessary repairs at the job site.

IV. Lighting

A. General

1. The principle of providing an optimum visual classroom environment is soundly based on research. The first general concept to keep in mind is that brightness difference of the various surfaces must be kept within recommended limits. Extremes in surface brightness are factors in personal discomfort and loss of efficiency. Glare is a factor in the decline of overall accuracy of alignment and affects a subject's perception. Good lighting reduces fatigue and helps create a cheerful and pleasant atmosphere.
 - a. The goal of classroom lighting is to allow students and the teaching staff to see comfortably and without undue distraction. This goal may only be obtained by careful coordination of all items having affect on the overall lighting. This is to include, but not be limited to, lighting, daylight, interior painting, wall and floor finishes, and the type of the light fixtures (full color spectrum) selected with planning and coordination. Lighting in all instructional areas needs to be controlled to achieve optimum conditions.
 - b. Follow the Department of Energy (DOE) Guidelines for school lighting.

V. Exterior Lighting

- A. Parking and Driveway Lighting, shall be pole mounted with HID fixtures and ballast to conform to UL 1572, UL 1029 and ANSI C82.4; designed to maintain a minimum of five (5) foot-candle.
- B. **Energy for all parking and driveway lighting shall be provided from the Georgia Power Company (GPC) distribution system.**
- C. **Building mounted light fixtures** shall be located to provide *COMPLETE* building perimeter lighting for safety and security. Fixtures shall be protected with vandal guards and be accessible for lamp replacement, cleaning and repair.
- D. All building mounted outside lighting shall have a time-clock and photoelectric eye control so that the light automatically turns on at dusk and turns off at dawn or a predetermined time. Lighting should also be connected to the Building Automation System. An override key –type switch shall be located in the lighting panel for maintenance safety.
- E. To prevent light pollution spilling over onto adjacent properties cut off lighting fixtures shall be utilized.

VI. Emergency Lighting

- A. An emergency lighting system shall be installed to provide safe minimum lighting along routes of emergency egress during power outages and blackout conditions. Use an emergency electric generator for emergency lighting circuits and florescent fixtures in lieu of a battery-operated system. If the project situation does not support a generator the engineer can specify a battery-operated with APS Project Manager approval.

VII. Interior Lighting

- A. Illumination Levels and Color Definition Standards

SPACE	AVERAGE FOOTCANDLES	COLOR TEMP
Sewing Room	100	4100 Kelvin
Drafting Room	100	4100
Classroom Primary/Elementary	70	4100
Classrooms Middle/High	70	4100
Hearing Impaired Room	70	4100
Laboratories	70	4100
Library/Media Center	70	4100
Lecture Room	70	4100
Music Rooms	70	4100
Offices	70	4100
Study Room	70	4100
Typing Room	70	4100
Visually Impaired Room	70	4100
Vocational Lab	70	4100
Vocational Shop	70	4100
Auditorium/Theater	40-70	4100
Cafeteria/Multi-purpose	50	4100
Multi-purpose Rooms	40-70	4100
Kitchen	50	4100
Cafeteria	40	4100
Game Room	40	4100
Swimming Pool	40	4100
Toilet Restrooms	40	4100
Corridor/Stairwells	10	4100
Locker Rooms	10	4100
Storage Rooms	30	4100

The energy input of the lighting system shall not exceed 1.2 watts per square foot in accordance with IECC 2000.

- B. Brightness Levels
1. The surrounding surfaces at the task should produce less brightness than the task; a ratio of 1:3 is recommended.
 2. The highest acceptable brightness of remote surfaces shall not exceed 10 times the tasks brightness, where a 50-foot candles is recommended.

- a. Each fluorescent luminary proposed for classroom type instructional areas, general reading areas and media centers, should meet the following requirements.
 - i. Overall, efficiency shall be a minimum of 55% of bare lamp output.
 - ii. A minimum of 70 VCP shall be furnished in accordance with the IES *LM-42 method*.
 - b. Areas such as corridors, cafeteria, storage areas, etc. are exempt from the above criteria.
- 3. Interior Lighting Control
 - a. Provide automatic lighting controls to shut off lighting on a scheduled basis using time of day and/or occupant intervention (i.e. occupancy sensor) meeting energy code requirements.
- 4. Interior Fixture, Ballast and Lamps
 - a. Each lighting fixture shall be listed and labeled by the Underwriters Laboratories.
 - b. The following interior lighting fixtures/ballast/lamp combinations are recommended for **classrooms, media centers and offices**.
 - i. Three Lamp, 18 cell, 3" deep, parabolic louver fixtures, electronic **programmable** ballast and **32 watt T-8 lamps**. This is the standard for classrooms. 4100 degree lamps/cool white typical. **Ballast should have a factor of 0.71 (Refer to Chart for foot candle output)**
 - ii. Pendant style, parabolic louvered fixtures, electronic ballast and **32 watt T-8 lamps**. Ballast should have a factor of 0.71 **(Refer to Chart for foot candle output)**. Use of pendant lights must be approved by APS Project Manager.
 - iii. Surface mounted or recessed fixtures with standard pattern, A19 (.156" thickness) prismatic lenses, electronic ballast and energy saving T-8 lamps. This option is not to be used in spaces where computers are used.
 - iv. Metal Halide direct/indirect as specified by the architect and approved by Atlanta Public Schools.
 - v. Controlled lighting applications such as strategic load management, task dimming and daylight "harvesting" shall require dimmable type ballast.
 - c. **The following interior lighting fixtures/ballast/lamp combinations are recommended for corridors and stairwells.**
 - i. **Two (2) lamp luminaires with an electronic instant start ballast and 32 watt T-8 lamps. Ballast should have a factor of 0.71 (refer to chart for foot candle output).**
 - d. Minimize the use of inefficient/short life incandescent fixtures.
 - e. Exit Signs shall conform to UL 924 and local codes, using 70,000 hours, minimum rated life, light-emitting diodes (LED).

- f. Battery operated Emergency Lighting units, if specified, shall be self-contained, with self-sealed batteries, chargers and automatic relay conforming to UL 924.
 - g. Fluorescent U-Tube, incandescent and mercury vapor fixtures should be avoided where and when possible. Use of these items shall require the specific approval of Atlanta Public Schools.
 - C. Indirect Interior Lighting
 - 1. Indirect lighting shall be suspended 18" to 24" below the ceiling and in rows spaced ten (10) feet apart. The bottom of the fixture shall be a minimum of 8" (feet) above the floor.

VIII. Special Purpose Lighting

- A. Specify lighting systems for use in Gymnasiums, Auditoriums and Multi-Purpose Rooms. Vandal proof fixtures and/or fixture covers must be specified for restrooms, locker rooms, gymnasiums, multi-purpose rooms and other related areas as deemed necessary.

END OF DIVISION 26

DIVISION 27

COMMUNICATIONS

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DIVISION 27 COMMUNICATIONS

I. GENERAL

A complete Electrical System shall be provided in accordance with the 2005 Edition, National Electrical Code (NEC with Georgia Amendments), the 2006 Edition, International Fire Code with Georgia Amendments, 2000 Edition, International Energy Conservation Code (IECC) with Georgia Amendments, and all other applicable codes and regulations. (Refer also to Division 13 – Special Construction).

Drawings shall indicate locations of fixtures, equipment, raceways, etc. Changes in their locations to accommodate building conditions shall be made prior to initial installation, without additional cost to Atlanta Public Schools, and as approved by the Architect and the Project Manager.

Locations of panels and equipment as indicated on the drawings are approximate. Connections shall be made to subject items as actually installed.

Provide access to equipment requiring operation, service, and/or maintenance throughout the life of the equipment.

Do not install panels within forty-two (42) inches horizontal of piping, ductwork and/or mechanical equipment.

Wiring installation in environmental air-handling spaces shall comply with the NEC-2005.

II. TELEPHONE FEATURES

A. The purpose of this section is to provide specific information for procedures involving the installation of the main telephone lines for new construction and for renovations.

1. Specifications for Street Application:

- a. Telephone line must be enclosed by a two (2) inch (minimum) rigid pipe extending up the pole no less than fifteen (15) feet from the ground
- b. A second rigid pipe is also to be installed at the same time for future use.
- c. The rigid pipe must extend three (3) feet into the ground allowing a continuous underground delivery to the facility.

- d. The rigid pipe must be constructed of one (1) piece and have sufficient strapping to the pole to prevent access to vandalism or violent weather conditions.
- 2. Specifications for Inside Applications”
 - a. A dedicated telephone line must be supplied to the location of Burglar Alarm, whose location is to be indicated on drawings and reviewed/approved by Safety and Communications, Atlanta Public Schools.
 - b. Two (2) dedicated telephone lines must be supplied to the location of the Fire Alarm panel, locations are to be indicated on drawings, and reviewed /approved by Atlanta Public Schools.
 - c. All telephone lines dedicated to the specific use of the Security and Fire alarms must be permanently labeled for immediate recognition.

III. DATA, VOICE, VIDEO AND WIRELESS COMMUNICATION SYSTEM

A. REQUIREMENTS

Provide all labor, materials, tools and equipment necessary to complete installation and test of a data, voice, video and wireless communication system over unshielded twisted pair, wireless as outlined in the Specifications. Project construction documents shall be the basis of the design and shall delineate project specific requirements and responsibilities of each vendor. (Refer to APS Standard Specification 27 00 00 Technology Specification).

IV. INTERCOMMUNICATIONS SYSTEM AND CLOCK SYSTEM.

A. REQUIREMENTS

Provide all labor, materials, tools and equipment necessary for complete installation and checkout of the Intercom system and clock system. (Refer to APS Standard specification Section 27 50 00 Intercommunication and Program Clock System.

END OF DIVISION 27

DIVISION 28

ELECTRONIC SAFETY AND SECURITY

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DIVISION 28

ELECTRONIC SAFETY AND SECURITY

I. GENERAL

A complete Electrical System shall be provided in accordance with the 2005 Edition, National Electrical Code, the 2006 International Fire Code, 2006, Life Safety Code NFPA and all other applicable codes and regulations. (Refer also to Division 13 – Special Construction).

Drawings shall indicate locations of fixtures, equipment, raceways, etc. Changes in their locations to accommodate building conditions shall be made prior to initial installation, without additional cost to Atlanta Public Schools, and as approved by the Architect and the Project Manager.

Location of equipment indicated on the drawings is approximate. Connections shall be made to subject items as actually installed.

Provide access to equipment requiring operation, service, and/or maintenance throughout the life of the equipment.

Do not install panels within forty-two (42) inches horizontal of piping, ductwork and/or mechanical equipment.

Wiring installation in environmental air-handling spaces shall comply with the NEC-2005.

II. ACCESS CONTROL SYSTEM

A. REQUIREMENTS.

The exterior doors and selected interior doors of all Schools will be secured using electronic door hardware. (Refer to APS Specification 28 13 00 Access Control System.) Consult with APS Project Manager and APS Security to identify doors that will have secured electronic door hardware. Identified doors shall be shown on the construction documents.

III. BURGLAR ALARM SYSTEM

A. REQUIREMENTS.

A complete zoned security alarm system shall be provided in accordance with all codes and regulations. There shall be a single integrated system that shall connect all buildings and additions on the school site. Existing systems must be matched in any new additions or new construction. During renovations, the

system in the renovated area that is being replaced must match the system that is in current operation and become an integral part thereof. Consult with APS Project Manager and APS Security in the final identification of the appropriate system for the site. (Refer to APS Specification 28 16 00 Burglar Alarm System.)

IV. FIRE DETECTION AND ALARM SYSTEM

A. REQUIREMENTS

A complete, intelligent fire alarm system shall be provided in accordance with all codes and regulations. There shall be a single integrated system that shall connect all buildings and additions on the school site. Existing systems must be matched in all new additions and new construction. During renovations, the system in the renovated area that is being replaced must match the system in current operation and become an integral part thereof. In clarification, there should be only one fire system in the school. Consult with APS Project Manager and APS Security in the final identification of the appropriate system for the site (Refer to APS Specification 28 31 00 Fire Detection and Alarm System.)

V. WEB-BASED CCTV SECURITY

A. REQUIREMENTS:

A complete CCTV monitoring system shall include the provision of all closed circuit television (CCTV) security equipment including all cables, other equipment and necessary connections for a complete system. Consult with APS Project Manager and APS Security in the final identification of the appropriate system for the site (Refer to APS Specification 28 23 00 Web-Based CCTV Video Surveillance System)

END OF DIVISION 28

DIVISION 31

EARTHWORK

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DIVISION 31 EARTHWORK

I. EXISTING CONDITIONS / SUBSURFACE INVESTIGATION

- A. Preserve existing landscape and natural vegetation whenever possible, especially trees larger than six (6) inches trunk diameter measured at four (4) feet above grade. Do not conflict with local ordinances.
- B. Include in the documents the removal of trees and underbrush that is poisonous or otherwise harmful to children or staff.
- C. Identify wetland areas requiring preservation.
- D. Identify/review flood plain areas.
- E. Subsurface geo-technical investigations will be completed for each construction and/or addition project. This investigation will be completed by a firm experienced in the industry and approved by Atlanta Public Schools.

II. GRADING / EROSION CONTROL

- A. Architect shall develop a cost-effective grading plan, which minimizes earthwork, (cuts and fills) to preclude the need for additional fill-in or for disposal of excess soil. Topsoil shall be stockpiled and properly re-used as required. The minimum buffer specifications shall comply with local ordinances. The grading plan should consider areas required for future expansion. Whenever ground improvements or tree removal are specified, a landscape/grading and vehicle traffic plan shall be submitted for review and approval by Atlanta Public Schools.
- B. Give special attention to obtain appropriate ground slopes in order to eliminate the occurrences of temporary ponding during heavy rain and prevent runoff from entering the building. Prevent conflicts with storm water requirements. There shall be no standing water twelve (12) hours after rain ceases.
- C. Where slopes are too steep to mow, provide low maintenance ground cover.
- D. If drainage is required, collect to storm drainage; drain storm water under walk not over.
- E. Ditch and swale side slopes are to be no steeper than 4:1.
- F. Sod areas, except for retention ponds, shall have a minimum slope of 1% and a maximum slope of 4:1.
- G. Provide stabilized mesh at bottom of all ditches and steep swales.

- H. All erosion control barriers, stakes, etc. must be removed by the CM at the end of the warranty period unless directed otherwise by the APS Project Manager.
- I. All drain covers, drop inlets, grates, etc. shall be free of evidence of silt infiltration at the time of substantial completion and inspection at building closeout.

III. EARTHWORK

- A. All earthwork shall be on an “unclassified” basis and shall include all required excavation to the designed elevations regardless of the character of the subgrade material. Excavation work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of that work, regardless of the type, character, composition or condition thereof.
- B. Soil. Topsoil shall be classifiable as a friable loam, sandy loam, silt loam, sandy clay loam, silty clay loam, or clam loam as determined from the U. S. Department of Agriculture Triangular Soil Chart. Topsoil and subsoil shall have a pH between 5.5 and 6.0. Organic matter content (“humic mater”) shall be greater than 1.5% but less than 20%. Topsoil and subsoil shall contain adequate nutrient level index between 26 and 50. Topsoil shall be free of subsoil, roots, clods, stones, brush, weeds, or other debris and shall not contain any material toxic to plant growth. The depth of material meeting the above qualifications shall not be less than two (2) inches at any location. Contractor shall have representative depth of installed topsoil measured by an independent soil testing services.
- C. Ground Water Conditions. All requirements to control ground water conditions shall be provided based on recommendations and design requirements as directed and reported by the Geo-technical Engineers responsible for the subsurface investigations.
- D. Rock. Specifications shall include, as required, for “**Mass Rock**”, “**Trench Rock**”, and “**Muck**”, to include removal, fill replacement, methods for measuring, parties responsible for measurements, methods for payment for removal and replacement, and a provision for any “unit cost” requirements.

END OF DIVISION 31

DIVISION 32

EXTERIOR IMPROVEMENTS

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DIVISION 32 EXTERIOR IMPROVEMENTS

I. PARKING AND VEHICULAR CIRCULATION AND REQUIREMENTS

- A. Vehicle Access Location. The safety of students shall be the primary consideration in designing vehicular circulation of the school site. Vehicle entrances and exits at the school site shall be located such that they facilitate safe access to and from the school; they should not be designed with severe grade level changes, blind curves and on hills.
- B. School Bus Driveways and Bus Loading Zones
 - 1. Provide separate exit/entrance drive for bus parking and drop-off and visitors loading and drop-off. Separate Student loading shall be provided for individual pickup and should not interfere with bus loading and drop-off
 - 2. Provide maneuvering for delivery trucks to loading docks even when parking area (bus or auto) is occupied.
 - 3. Student drop-off/pick-up from bus and visitor not to require crossing of parking areas or drives.
 - 4. Bus parking/loading not to require backing to maneuver.
 - 5. Driveways shall be designed to accommodate school buses that are non-articulating and up to 40 feet long. Entrances, exits, and curves should be designed with a minimum turning radius of 41 feet. Travel lanes shall be a minimum of 12 feet wide and allow right side curb pick-up and drop-off without obstructions from walkway canopies or other building projections, or interference from other vehicles. A clear line-of-sight shall be provided throughout the loading zone areas.
- C. Parking Areas
 - 1. Visitor parking spaces to be near the main entrance of the building and closer to the building than staff parking.
 - 2. Provide stacking for peak flow (during pick-up, drop-off) of students.
 - 3. Provide parking spaces for the disabled near the public entrance and a major staff entrance.
 - 4. Architect to consult with APS Director of Transportation for review of vehicular control.

5. Verify number and location of assigned parking spaces for school staff. Signage shall be included to identify the spaces.
6. Verify if speed bumps are to be included in project.
7. Minimum parking standard by school type shall be provided for school personnel as follows:
 - a. Elementary – One space for each classroom plus 15 for staff plus 12 visitor spaces.
 - b. Middle – One space for each classroom plus 20 for staff plus 20 visitor spaces.
 - c. High – One space for each classroom plus 30 for staff plus 25 visitor spaces and one parking space for every 2.5 students. This requirement shall be adjusted to accommodate the high school transformation theme (small learning communities or academies).
 - d. One (1) in every eight accessible spaces (but not less than one) shall be served by an access aisle 96' wide minimum and shall be designed "Van Accessible".
 - e. Signage – (See *Division 10 – Specialties*) Accessible parking spaces for the physically disabled shall be designated as reserved by appropriate unobscured signs displaying the symbol of reserved accessibility. (ADAAG, 4.30.7 and 4.1.2(5)(b)).

II. BUILDING APPROACH / ENTRY

- A. Provide a major entrance to the school building for students who arrive and leave by bus.
- B. Provide loading and unloading of cars and buses close to the building with cover from elements and with concrete walk.
- C. Use continuous flow circulation layouts; no dead-ends.

III, ASPHALTIC AND CONCRETE PAVING

- A. Asphalt paving shall be provided for parking and driveways. Heavy duty asphalt paving shall be used for heavily used areas such as bus loading, refuse truck drives and delivery drives.
- B. A six-inch thick **reinforced** concrete refuse container pad with a turned down edge shall be provided on all compactor pads with the front apron extending a

minimum of **48" (Forty-eight inches)** in front of the refuse container. Refer to APS Design Guidelines, Division 22, Section I.C.5 for trench drain requirements.

- C. Reinforced concrete shall be used for all sidewalks. Use control joints to prevent uncontrolled cracking.

IV. LANDSCAPING / IRRIGATION

A. General:

1. Architect shall provide a Landscape Plan for every project. Landscaping designs shall be submitted to the Atlanta Public Schools for review and approval. Landscaping is to be included in all new and renovated projects.
2. Landscape design shall preserve and enhance existing resources, improve overall environmental quality, minimize maintenance requirements and improve the visual quality of the site.
3. A one-year maintenance contract should be included in all new landscape installation projects. This includes watering, mulching, weed control, pruning, grass cutting and fertilization plus a one-year plant guarantee.
4. Use low maintenance, native plant material.
5. All areas of the site shall be studied and included in the landscape plan.
6. Do not plant heavy cover or trees close to the buildings to avoid creating unsafe areas.
7. Provide minimum buffers as needed to comply with local ordinances.
8. All plant materials to comply with the recommendations and requirements of ANSI 260.1 "American Standard for Nursery Stock".

B. Lawns and Grasses:

1. All areas to be improved with grass shall be hydro-seeded or sodded with common Bermuda or fescue grasses per the landscape plan. Wood fiber mulch shall be applied to seeded slopes with an incline greater than 3:1.
2. Sod all grass areas around new or renovated buildings unless otherwise approved by the Landscape Architect. Sod all banks, swales, and any area that poses a serious erosion problem. Cover all disturbed areas with topsoil.

3. Low-maintenance ground covers may be used on slopes and low-traffic areas. Non-mowable slope to be covered with ground cover with non-eroding mesh.
4. Pine straw mulch shall be applied 6" deep for all new tree and shrub plantings.
5. Grass seed to be either 90% Turf Type Tall Fescue blend with 10% Kentucky Bluegrass or hulled common Bermuda grass mixed with a nurse grass of Kentucky 31 Fescue as local site situations require.
6. Sow grass seed at a minimum rate of 5-8 pounds per 1,000 square feet. Assess each project for over seeding in spring as part of the base bid.
7. Existing stockpiled topsoil or new topsoil must be spread and fine graded prior to seeding.
8. Provide soil amendments such as lime, organic matter, and fertilizer in accordance with soil test recommendations.
9. Provide clauses in specifications alerting the contractor that the topsoil shall be free from rocks & debris prior to seeding and sodding. Prior to seeding and sodding the contractor shall rake and pick up rocks, roots & debris larger than 3/8" in diameter and remove from the top soil. Notify the APS Project Manager when the soil is "clean" and ready for inspection prior to installing seed and sod.

C. Trees and Plantings:

1. All shade trees planted on the site shall be 2 ½ caliper or larger.
2. All shrubs planted on site shall be a minimum 3-gallon size or larger.
3. Select trees that will provide fall color, spring bloom, or trees that are evergreen for winter interest. Provide an even mixture of the above for each site.
4. Landscape plants selected shall require a minimum amount of maintenance.
5. Do not use invasive plants.
6. Do not use poisonous plants or plants with sharp thorns or foliage.
7. Do not specify or locate planting material that will cause security problems, i.e. create "hiding places".
8. Do not plant trees or shrubs in locations that will interfere with security cameras, overhead or underground utilities.

9. Trees and shrubs to be readily available, locally if possible.
10. Trees and shrubs to be native or hardy to the site area.
11. Trees and shrubs shall have a warranty of one year after date of final completion, against defects including death and unsatisfactory growth.
12. The mature height and spread of all trees and shrubs to be considered during the design process. Trees are not to be too close together or too close to buildings. Avoid the “overgrown” look when plantings are mature.

D. IRRIGATION:

For Grounds irrigation: Exterior freeze-protected key type vandal proof hose bibs shall be provided where designated. Hose bibs shall be provided for exterior irrigation at an interval of 150 feet around the perimeter of the buildings. More locations may be necessary. Automatic, commercial underground sprinkler systems should only be installed as directed by the APS Project Manager.

V. SIDEWALKS AND PLAZAS

- A. Review safety surveillance during the design of plazas and parking with APS Project Manager. Special attention to be given to provide adequate visual control to the bus load/unloading, staff, student parking, and visitor parking area to prevent potential concealed spaces near these and other drives.
- B. Surfaces shall be slip resistant under wet and dry conditions and shall drain away from building.
- C. Pedestrian areas at major entrances shall have a minimum pavement width of 15 feet.
- D. The width of walkways at minor entrances shall be three (3) feet wider than the entrance door(s).
- E. The designated crosswalk zone to be provided at all pedestrian walks and crossing drives shall be a minimum of six (6) feet wide.
- F. Curb-drops shall be used for handicapped access at pedestrian walk cross curbs.
- G. Sidewalks shall be concrete and six (6) feet wide minimum (widths shall be determined by pedestrian usage).
- H. Provide appropriate control joints and expansion joints in sidewalks and plazas to control cracking.

- I. Locate sidewalk where pedestrians are most likely to walk in direct routes. (Flair concrete walks at intersection).
- J. There are to be no outside exits without concrete stoops.
- K. Provide a minimum cross slope of ¼-inch per feet, not to exceed ADA requirements, at walks and paths.
- L. Plazas shall have a minimum slope of 2%, with a uniform surface that prevents puddling/ponding.

VI. SITE LIGHTING

- A. Architect is responsible for determining existing exterior lighting conditions by thorough investigations to ensure that the design details these findings. There shall be adequate lighting throughout the site, i.e., parking lots, back of buildings, isolated areas, blind spots, etc. to maintain an adequately secure environment. Refer to the US Safe School recommendations for further consideration and inclusions.
- B. All site lighting and signage lighting is to be controlled by a photocell/timer. Timer to be located in administration area.
- C. Do an analysis of the cost of using Georgia Power leased site lighting compared to APS ownership of the site lighting.
- D. Site lighting shall be vandal-proof.
- E. To prevent light pollution spilling onto adjacent properties consider the use of cut off lights where needed.

VII. EXTERIOR SIGNAGE

- A. The marquee entry sign shall be free-standing or placed on a decorative wall.
- B. The marquee entry sign shall not obstruct the view of a motorist.
- C. A LED school sign/message board shall be provided at a location near road, and as coordinated with Owner. It is the intent that all projects will have a LED message board. Utilize APS Standard Specification 10 14 63 – LED Marque Sign, Electronic Message Signage for additional information.
- D. Directional signs are to be located at intersections or key points throughout the campus. The signs shall contain arrows to direct traffic to individual buildings and designated parking lots.

- E. Traffic signs shall be the standard signs used by the local government or the Georgia DOT. Traffic signs shall have reflective graphics.
- F. A building identification sign should be located at or next to the main entrance walk of the building.

VIII. FENCING

- A. Fencing may be used for perimeter security, enclosing playgrounds, and as required for the safety and security of students, teachers, and staff. Gates may be installed to limit access to school property during certain time periods. The Atlanta Public Schools Project Manager in consultation with Security will identify and approve areas requiring fencing. Fencing shall be decorative metal fences or chain link depending on location and purpose.
- B. Chain link fencing material shall be nine (9) gauge, galvanized or, black/brown vinyl coated, chain link. Height shall be dictated by the use of the fence. Posts and top rails shall be fence weight, thick wall. Generally chain link fencing shall be used to fence storm retention areas.
- C. Decorative metal fences may be used as directed by the APS Project Manager. (Refer to APS Standard Specification 32 31 19 – Decorative Metal Fences and Gates.)

IX. FLAGPOLE

- A. One aluminum flagpole with a maximum height of 30 feet shall be provided in a prominent location near the primary building entrance. Refer to Division 10, Section IV - Exterior Flagpole and Flag.
- B. The flagpole shall be illuminated continuously, i.e., not on time clock, but shall be photo-controlled.

X. WASTE RECEPTACLES

- A. Exterior waste receptacles shall be:
 - a. Manufacture: Dumor (WWW.dumor.com) or equal.
 - b. Model: Model 84 Trash Receptacle - 32 Gallon Capacity. Required Option: Hinged Bonnet lid. Receptacle is steel construction with powder coat finish.
 - c. Colors: Recommended colors are black, bronze, green and Argento (silver) for durability and colorfastness.
 - d. Anchor to sidewalk or flatwork with manufacturer provided ½" x 3 ¾" expansion bolts.

END OF DIVISION 32

DIVISION 33

UTILITIES

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I. UTILITIES

A. Utility Distribution.

1. Water, natural gas, sanitary sewage, storm water, telephone, cable television and distribution piping shall be provided in accordance with applicable codes and utility company requirements. (*See Division 22 – Plumbing*).
2. Architect shall verify the adequacy of all existing utilities (e.g. natural gas services, water service, sanitary sewer service, cable TV service, etc.) and their compatibility with new or existing equipment and new or existing systems.
3. Architects shall provide all inspections, evaluations and testing, of all existing utilities, as necessary for verification of their acceptability for the final intended use. The cost of testing shall be reimbursed to the Architect.
4. After all inspection and evaluation have been done; the renovation and/or upgrade of existing utilities shall be included in the project scope of work to assure proper function of all equipment and systems at the completion of the project.
5. Designer should review site for available utilities and their requirements for each utility prior to the schematic design submittal.

B. Sewage and Storm Water Drainage Systems

1. Underground sanitary sewer pipes shall be minimum 4" cast iron pipe. Clean-outs shall be as required by Health Department. (*See Division 22 - Plumbing*).
2. Dumpster Pad Drains. Provide a trench drain at the end of the dumpster pad. Slope Dumpster pads to the drains. (where applicable). (Refer APS Design Guidelines, Division 11, Section VI – Trash Disposal Equipment.)
3. Within the building footprint, all Underground Sanitary Sewer Piping shall be Cast Iron Pipe ANSI/AWWA Standard A21/C151 Class 50 minimum. Sanitary and storms sewer systems shall be provided per code and local requirements. Outside of the building footprint, all Underground Sanitary Sewer Piping shall be Ductile Iron Pipe. (*See Division 22 - Plumbing*)
4. All downspouts from the building should be connected to an underground drainage system that empties directly into the water detention system or storm sewer.

END OF DIVISION 33