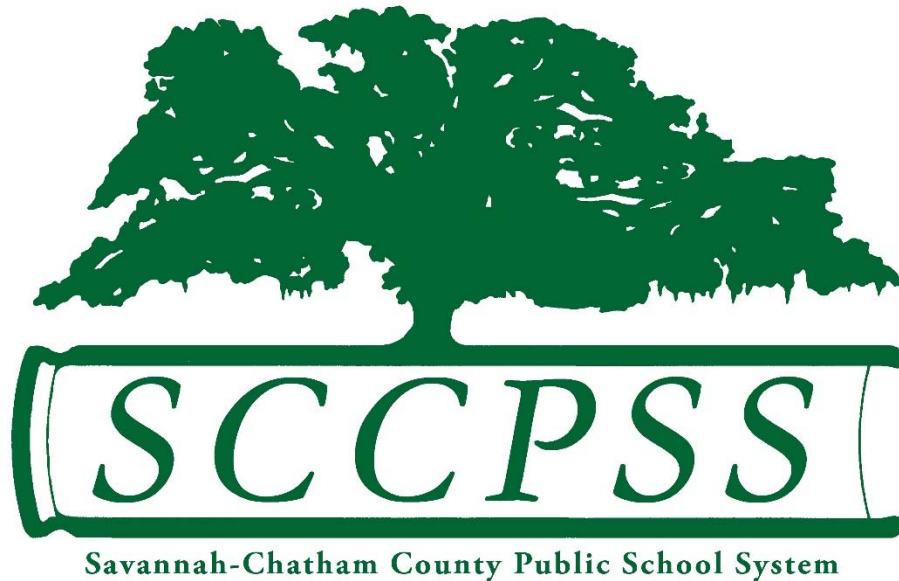


May 5, 2015
Revised April 26, 2017



**CONSTRUCTION
DESIGN GUIDELINES**
Capital Projects Division

Savannah-Chatham County Public School System

Savannah Chatham County Public School System
Construction Design Guidelines

Standards for New Construction, Additions and Renovations

April 26, 2017

General

During all construction design processes, the most recent Construction Design Guidelines shall be reviewed and implemented into each phase of design, unless otherwise informed by Savannah Chatham County Public School System (SCCPSS) or its designated representative.

The Construction Design Guidelines include information from internal departments within the SCCPSS. All items attached, revised, or included within the Construction Design Guidelines shall be considered as one document and used as a *guide* to provide the District with school facilities that comply with these guidelines, as well as all state and local codes and standards.

Comments and suggestions shall be directed to:

MR. MICHAEL COON
SENIOR DIRECTOR
CAPITAL PROJECTS DIVISION
208 BULL STREET – ROOM 305
SAVANNAH, GA 31401

michael.coon@sccpss.com

Purpose

The following construction design guidelines are for incorporation into architectural and engineering standards at individual SCCPSS sites. The purpose of these design guidelines is to provide understanding of the District standards that will enhance the learning environment, reduce maintenance and utility costs, and provide for sustainable construction. Each project is unique and may require modification of the standards and the District reserves the right to alter or modify the standards as necessary to achieve project goals. All deviations by the DP (design professional) must be presented to the District in writing for approval.

Policies and Procedures

Design of all new public school buildings, additions and renovations to all existing school buildings shall be in accordance with all applicable provisions and requirements of the latest editions of State and local codes. Design Professionals shall comply with all Georgia Department of Education Policies and Procedures.

Trade Names and Product Specifications

These guidelines are not intended to restrict the expertise of the Design Professional, but

Savannah Chatham County Public School System
Construction Design Guidelines

rather to prescribe the “Minimum” standards: The following is the Policy of the SCCPSS concerning Trade Names and Product Specifications:

- (a) **No Restriction on Competition:** When reference is made in the Contract Documents to trade names, brand names, or to the names of manufacturers, such references are made solely to indicate that products of that description may be furnished and is not intended to restrict competitive bidding. If it is desired to use products or trade or brand names or manufacturer’s names that are different from those mentioned in the bidding documents, application for the approval of the use of such products must reach the hands of the Design Professional at least ten (10) days prior to the date set for the opening of bids.
This provision applies only to the party making a submittal prior to bid.
If approved by the Design Professional, the Design Professional will issue an addendum to all bidders. This provision does not prevent the District from initiating the addition of trade names, brand names, or names of manufacturers by addendum prior to bid.
- (b) **Request for Approval of Substitute Product:** All requests for approval of substitution of a product that is not listed in the Bidding Documents must be made to the Design Professional in writing. For the Design Professional to prepare an addendum properly, an application for approval of a substitute product must be accompanied by a copy of the published recommendations of the manufacturer for the installation of the product together with a complete schedule of changes in the drawings and specifications, if any, that must be made in other work in order to permit the use and installation of the proposed product in accordance with the recommendations of the manufacturer of the product. The application to the Design Professional for approval of a proposed substitute product must be accompanied by a schedule setting forth in which respects the materials or equipment submitted for consideration differ from the materials or equipment designated in the Bidding Documents and submitted to the Purchasing Department.
- (c) If the Design Professional intends to specify a “Proprietary Product”; i.e., “Sole Source”, the Design professional must obtain written approval from the Director of Purchasing utilizing the process described in the District’s Purchasing Manual.
- (d) **Warranty Management & Reporting:** Design Professionals shall require warranty log to be submitted at end of all warranty periods.

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District Staffing Guidelines

- New facilities and addition projects should meet the following staffing guidelines:
 - 25,000 sf per Custodian
 - 100,000 sf per Maintenance Mechanic
 - 400,000 sf per HVAC Technician
- New facilities and addition projects should include a \$3.00 per square foot increase in operations budget

Building Enrollment Capacity

New schools shall typically be designed within the following range for Full Time Equivalent (FTE) capacity in accordance with Ga DOE Guideline for Square Footage Requirements for Educational Facilities Rule 160-5-4-.16(a) 4:

- Elementary (K-5): 650 to 950 Full Time Equivalent (FTE)
- K-8 (K-8): 800 to 1,200 Full Time Equivalent (FTE)
- Middle (6-8): 650 to 850 Full Time Equivalent (FTE)
- High (9-12): 1,200 to 1,600 Full Time Equivalent (FTE)

Core Capacity

New schools should be designed with the following core capacity to accommodate future classroom additions to the facility:

- Elementary (K-5): 1.25 x FTE
- K-8: 1.25 x FTE
- Middle: 1.25 x FTE
- High: 1.25 x FTE

The “core” consists of ancillary spaces that support classroom instructional units. These include the Cafeteria, Kitchen and Media Center. The Georgia Department of Education has issued rules setting forth minimum floor areas for such spaces based upon FTE (full-time equivalent). Thus, provision for expansion must begin with planning for a “core” large enough to support the largest practical FTE contemplated for a given site.

In addition, classroom areas should be configured so as to allow for expansion with a minimum amount of alteration of the original structure or site. The design of major infrastructure to and in the building should be designed to easily accommodate this future expansion, i.e. HVAC, Electric, Data, Security, Plumbing.

Design Professional shall provide estimate of maximum site potential in the form of:

- Maximized Schematic Floor Plan
- Maximized Schematic Site Plan

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Classroom Square Footage Requirements

Reference Ga DOE Guidelines for Square Footage Requirements for Educational Facilities Rule 160-5-4-.16(a)4; Ga DOE vs. SCCPSS preference for square footage requirements

	DOE Minimum Square Footage	SCCPSS Preference
K-3	750	850
4-8	660	760
9-12	600	700

Note: All SCCPSS areas exclude restrooms within classrooms

Room Numbers

SCCPSS requires incorporation of a single room numbering system for all drawings, schedules and signage installed on the building:

- Schematic Design Phase (Major corridors and core spaces)
- Design Development Phase (Full building)

To achieve this, the Architect shall develop a logical building and room numbering system. The sequence of room numbers shall be assigned based on ease of locating rooms in the completed building.

In order to direct students, staff and visitors, the sequence shall start at the Main Entrance and progress in a logical (clockwise) sequence throughout the building. Random numbering of rooms is not acceptable.

- Room numbers shall be all numeric as required for GaDOE Inventory.
- Major room numbers at multi-story buildings shall be 4 digits starting with the floor level, and progress around the building in sequence (1211 = 1st floor, 2nd wing or Corridor, 11th room). Small spaces within major rooms or suites shall be identified with the major room number plus numeric suffix (1211.1). Where possible use whole thousands for wings or corridors (1200) and use postal odd-even progressive numbers down corridors (odd on right (1211), even on left (1212). All spaces must be numbered including corridors, stairs, elevators, and service rooms. Stairs, elevator and service rooms may be numbered as a suffix of the corridor leading to them.
- One story buildings shall be similar, but may use 3 digits when identification of the story is not needed.
- Room numbers at additions shall extend existing Inventory Drawing numbers without repeats.
- Architect shall present building and room numbering system to SCCPSS for review and approval *before* incorporating them into the Schematic Design Documents. . After room numbers are approved they shall not be casually altered without specific approval of SCCPSS Capital Projects Division.

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Room Signage

- DP shall include a Signage Schedule for all Rooms, Building[s] and Site Signage on the drawings; completed Schedules shall be included on SCCPSS Design Development review documents.
- Room signage shall be provided per the ADA requirements.
- All room numbers shall follow the numbering convention as described in the previous section.
- Obvious and *non-changeable* room names shall be on the plaque with the room number (e.g.: Stair 101, Gymnasium 110, Mechanical Room, Custodial Closet, etc.)
- Standard classrooms and offices shall be provided with a *changeable* name plate; numbers shall be non-changeable.

Building & Site Accessibility Measures For All Buildings:

- All major building entry points for all school types shall be located so they can easily be observed and monitored by school personnel. Visitors shall be required to enter main office area (thru secured door) with separate secured door to school corridor.
- Administration areas shall be adjacent to major entry points and shall provide clear viewing of entry doors, parking areas, lobby and adjoining hallways. Large schools that may require multiple access points shall be designed with similar features at each entrance. Provide separate service connection devices at main entrances, outside all auditoriums, gyms and cafeterias for portable metal detection devices.
- Cameras: Upon final approval of floor plan, design professional shall confirm and coordinate desired locations (and types) of all surveillance cameras with Campus Police. Plans shall include providing conduit from building (to grass areas) for future camera infrastructure. Confirm extent of prewired camera locations (for internal monitoring) required within classrooms with District during review meetings.
- Provide monitoring room in all administration areas; confirm extent of systems to be monitored with District during schematic design phase (e.g. duress alarm system, card reader locations, entry alarm systems, motion detectors and the like).
- Radio repeaters shall be provided inside building for emergency personnel only.
- Adequate lighting shall be provided for all parking areas, bus loading zones, student pick-up & drop-off locations, bicycle parking areas and covered walkways at all schools.
- Fencing: Openings in perimeter fencing shall be kept to a minimum; confirm and

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Construction Design Guidelines

coordinate all opening locations with Campus Police at schematic design review meeting.

High School Design Criterion

Exterior

- High School Track and Field
 - Track and fields shall be laid out in accordance with competition standards of the Georgia High School Association and the National Federation of State High School Associations. Include each of the following:
 - Football, soccer and lacrosse incorporated within (lighted)
 - Triple jump / long jump
 - High jump
 - Pole vault
 - Discus
 - Shot-put
 - Track and field bleachers shall not be less than three sections of aluminum bleachers on concrete pads, each with ten rows and twenty seven foot lengths.
- High School Baseball Field (Lighted)
 - Baseball field shall be laid out in accordance with competition standards of the Georgia High School and the National Federation of State High School Associations.
 - Seating shall be two aluminum bleachers on concrete pad five rows and twenty one foot length, one placed on each base line
- High School Softball Field (Lighted)
 - Softball field shall be laid out in accordance with competition standards of the Georgia High School Association and the National Federation of State High School Associations.
 - Seating shall be two aluminum bleachers on concrete pad five rows and twenty one foot length, one placed on each base line
-
- High School Tennis Courts
 - A minimum of (2) two tennis courts will be required for each site; confirm total number of courts w/ SCCPSS during schematic design phase
 - Tennis courts require high fence enclosure

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- PE Field
 - Multipurpose grassed field to be a minimum of 75 yards by 120 yards
- Fieldhouse
 - Two team rooms (minimum 450 SF each) with restrooms and storage
 - Include separate ADA accessible group men’s restroom
 - Include separate ADA accessible group women’s restroom
 - Concession area with window[s]
 - Electric water coolers (with water bottle filling features)
 - Changing room for referee’s
 - Include separate custodial closet
 - Storage room with 300 sf minimum (with double doors) separate from custodial closet

Interior

- Auditorium
 - Seating shall be 50% of the design FTE but in no case less than 500 seats
 - Slope seating down to stage
 - All seating shall be a minimum of 21-inches wide (measured from center to center of the support legs) and placed 36 inches between row seating backs.
 - Outer backs and armrests shall be plastic.
 - -Backs on Chairs should be full height so that it prevents an occupant from putting their feet on the seat in front of them.
 - -Preferred manufacturers:-----Ducharme, Irwin, Hussey and KI
 - Lobby with adjacent (ADA accessible) restrooms; size based on number of seats
 - Stage to be raised 2,000 sf
 - Curtains and fly-space at stage (provide full fly-space when directed by the District)
 - Back stage shall have the following:
 - Scene shop 750 sf
 - Women’s and Men’s Dressing rooms with adjacent toilets
 - Set storage 200 sf (double doors)
 - Audio Visual system
 - See technology specifications

○ **Music**

<u>DOE Minimum Square Footage</u>	<u>SCCPSS Desired area</u>
Instrumental Music 1,800 SF (1) Office (2-4) Practice rooms	2,000 SF + Adjacent rooms

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- (1) Instrument Storage
- (1) Uniform Storage

Choral Music	1,500 SF	1,700 SF + Adjacent rooms
(1) Office		
(2) Storage rooms		

○ **Gymnasium (18,000 SF+/- for gym proper)**

- Retractable bleacher seating for the max FTE of the school at full build-out. All bleacher sections shall be motorized (no mules).
- Natural diffused light
- Gymnasium to have overlapping layouts of the following:
 - High school basketball court shall be laid out in accordance with competition standards of the Georgia High School Association and the National Federation of State High School Associations with operable baskets
 - Two perpendicular practice basketball courts with operable backboards
 - One high school volleyball court shall be laid out in accordance with competition standards of the Georgia High School Association and the National Federation of State High School Associations with floor hardware for removable nets
 - Two perpendicular practice volleyball courts with floor hardware for removable nets
- Full-height lockers on concrete curbs (Provide additional [replacement stock] locker doors at the rate of 1 door per 25 lockers)
- Boys' Varsity
- Boy's PE Locker room (Visiting team room)
- Girls' Varsity
- Girl's PE Locker room (Visiting team room)
- Boys Football Locker room (exterior access)
- Weight Room (2750 SF minimum)
- Wrestling Room (2750 SF minimum)
- Training Room (include office & restroom)
- (4) Large office areas [2] desks per office area; with shared locker area and restroom; provide clear sight-lines to locker entrances (cameras) and windows with blinds.
- Athletic Storage (sized to store (3) rolled wrestling mats + 200 SF)
- PE Storage (400 SF +/-)
- Laundry Room (w/ commercial equipment)

○ **Cafeteria**

- Provide seating layout for a minimum of 1/3 the max FTE of the school +10%
- Seating of a food court variety (10 seat tables, plus 4-seat round and square tables with standard and high-tops). Provide seating for a minimum of 400

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students; minimum of 4 TV monitors throughout café.

- Loading Dock
- Receiving area with ½ light door to kitchen (doorbell); provide ramp[s] as necessary.
- Walk-in Cooler (with non-digital thermometer)
- Walk-in Freezer (with non-digital thermometer)
- Dry Storage
- Office (provide windows / clear sight-lines to kitchen and delivery area)
- Lockers/Restroom
- Laundry
- Dishwashing (when required by SCCPSS)
- Recycling (provide (6) 42 gallon containers)
- Food Prep
- Serving
- Table and Chair Storage (100%)
- School Store (provide dutch-door w/ shelf (roll-up windows will be considered in certain locations). Middle and High Schools only.

○ **Administration**

- Lobby (Coordinate with SCCPSS and Campus Police security vestibule design criteria).
- Main Reception
- Secretary Office
- Information Specialist
- Principal's Reception
- Principal's Office (with private ADA accessible restroom)
- Conference Room Large (provide casework w/ small sink and on-demand water heater)
- Conference Room Small
- Mail Room (back feed type)
- Book Storage
- School Records Room (appropriate fire rated construction; provide separate keying; coordinate during key review meeting at DD phase)
- Central Supply Storage
- Teacher-Staff Break Room - adjacent to cafeteria with windows to cafeteria (Minimum of 10 feet [upper & lower] casework w/ sink and goose-neck faucet)
- Nurse's Office with sink (foot activated) and roll-in ADA shower
- Infirmary (area for 3 cots) w/ barrier-free restroom
- Book Keeper Office
- Receiving Office
- Two Resource Officers' Offices (one paired w/ AP). Locate near front entrance w/ window to corridor (Minimum of 1 office per floor)

○ **Administration Suite** (some areas may be duplicated as appropriate for size of

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school)

- Waiting Area
- (3) Assistant Principal Suites; include (3) office areas w/ waiting area and windows to corridor[s] for each suite.
- Guidance Counselor Office
- Flexible Office Space
- Conference Room
- Teacher Work Area / Break Area
- Guidance College Counselor
- Faculty Male Toilet (ADA accessible)
- Faculty Female Toilet (ADA accessible)

- **Custodial Closets**
 - One per wing (and floor) minimum
 - One at cafeteria
 - One at gymnasium
 - One at media center
 - One near front office

- **IDF Closets**
 - One per wing minimum
 - Others as needed/approved

- **Storage Rooms (Custodians)**
 - Provide mop sink (and room for cart), charging station for floor cleaners, hose bib above sink and exterior access. Mechanical closets shall have exterior access with double doors. Minimum size: 200 SF).
 - No mechanical units shall be in an inaccessible area (e.g. above ceilings etc.)

- **Classrooms**
 - Submit Program at Schematic Design Phase for approval

Middle School Design Criterion

Exterior

- (1) Multi-purpose grassed field (100 yds. x 150 yds. (or larger). Provide fencing for (1) baseball / softball backstop and sideline fencing 20 feet beyond bases.
 - Storage building (400 SF+/-) with double doors
 - Exterior drinking fountains on main school building near playfields
 - Restroom access from exterior of main building near playfields.
 - Bleachers shall not be less than two sections of aluminum bleachers on concrete pads, each with ten rows and twenty seven foot lengths.

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Interior

○ **Auditorium**

- Seating shall be 50% of the design FTE
 - Slope seating down to stage
 - All seating shall be a minimum of 21-inches wide (measured from center to center of the support legs) and placed 36 inches between row seating backs.
 - Outer backs and armrests shall be plastic.
 - -Backs on Chairs should be full height so that it prevents an occupant from putting their feet on the seat in front of them.
 - -Preferred manufacturers:-----Ducharme, Irwin, Hussey and KI
- Lobby with adjacent (ADA accessible) restrooms; size based on number of seats
- Stage to be raised 2,000 sf
 - Curtains and fly-space at stage
- Back stage shall have the following:
 - Scene shop 750 sf
 - Women's and Men's Dressing rooms with adjacent toilets
 - Set storage 200 sf
- Music / Choral Room
- Audio Visual system
 - See Technology

○ **Gymnasium (10,000 SF +/- for gym proper)**

- Retractable bleacher seating for the design FTE of the school at full build-out.
- Natural diffused light
- Gymnasium to have overlapping layouts as follows:
 - One basketball court shall be laid out in accordance with competition standards of the Georgia High School Association and the National Federation of State High School Associations with operable baskets
 - Two perpendicular practice basketball courts with operable baskets
 - One volleyball court shall be laid out in accordance with competition standards of the Georgia High School Association and the National Federation of State High School Associations with floor hardware for removable nets
 - Two perpendicular practice volleyball courts with floor hardware for removable nets
 - Storage room with perimeter heavy-duty metal shelving (600 SF +/-)

○ **Cafeteria**

- Provide seating layout for a minimum of 1/3 the max FTE of the school +10%
- Seating of a food court variety (10 seat tables plus 4 seat round and square tables with standard and high tops)
- Loading Dock

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- Receiving
 - Walk-in Cooler
 - Walk-in Freezer
 - Dry Storage
 - Office
 - Lockers/Restroom
 - Laundry
 - Dishwashing / Recycling
 - Food Prep
 - Serving
- **Administration**
- Lobby (Coordinate with SCCPSS and Campus Police security vestibule design criteria)
 - Main Reception
 - Secretary Office
 - Information Specialist
 - Principal's Reception
 - Principal's Office (with private ADA restroom)
 - Conference Room Large (provide casework w/ small sink and on-demand water heater)
 - Conference Room Small
 - Mail Room (back feed type)
 - Book Storage
 - School Records Room (appropriate fire rated construction; provide separate keying; coordinate during key review meeting at DD phase)
 - Central Supply Storage
 - Teacher-Staff Break Room - adjacent to cafeteria with windows to cafeteria (Minimum of 10 feet [upper & lower] casework w/ sink and goose-neck faucet)
 - Nurse's Office with sink (foot activated) and roll-in ADA shower
 - Infirmary (area for 3 cots) w/ ADA restroom
 - Book Keeper Office
 - Receiving Office
 - One Resource Officers' Offices (one paired w/ AP). Locate near front entrance w/ window to corridor (Minimum of 1 office per floor)
- **Administration Suite** (some areas may be duplicated as appropriate for size of school)
- Waiting Area
 - Assistant Principal (Provide (1) suite similar to HS)
 - Guidance Counselor Office
 - Flexible Office Space
 - Conference Room

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- Teacher Work Area / Break Area
- Guidance Counselor (academic)
- Faculty Male Toilet
- Faculty Female Toilet

- **Custodial Closets**
 - One per wing (and floor) minimum
 - One at cafeteria
 - One at gymnasium
 - One at media center
 - One near front office

 - **IDF Closets**
 - One per wing minimum
 - Others as needed/approved

- **Mechanical Closets**
 - Provide as necessary per other sections of the Guide Spec
 - No mechanical units shall be in an inaccessible area (e.g. above ceilings etc.)

- **Classrooms**
 - Submit Program at Schematic Design Phase for approval

K-8 Design Criterion

- K-8 schools to have similar design elements as Elementary and Middle Schools as well as playground structures from the elementary school design criterion.
- K-8 schools will have a standard caf-atorium similar to elementary school.
- Confirm separate auditorium or caf-atorium with District at Programming Phase.

Elementary School Design Criterion

Exterior

- Multipurpose grassed field to be a minimum of 75 yard by 120 yards
- Refer to Division 11 – Equipment for additional playground equipment requirements.
- One playground structure for grades K through 1st , equipment to be sized per FTE of the school. Cleanable rubber surface
- One playground structures for grades 2nd through 3rd equipment to be sized per FTE of the school
- One playground structures for grades 4th through 5th equipment to be sized per FTE of the school Include additional 400 sf rubber surface area

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- Restroom access from exterior of main building near playfields.

Interior

- **Gymnasium**
 - Retractable bleacher seating for the design FTE of the school at full build-out.
 - Natural diffused light
 - Gymnasium to have overlapping layouts as follows:
 - One basketball court shall be laid out in accordance with competition standards of the Georgia High School Association and the National Federation of State High School Associations with operable baskets
 - Two perpendicular practice basketball courts with operable baskets
 - One volleyball court shall be laid out in accordance with competition standards of the Georgia High School Association and the National Federation of State High School Associations with floor hardware for removable nets
 - Two perpendicular practice volleyball courts with floor hardware for removable nets
 - Storage room with perimeter heavy-duty metal shelving (600 SF +/-)
- **Cafeteria**
 - Provide Seating layout for a minimum of 1/3 the max FTE of the school +10%
 - Receiving
 - Walk-in Cooler
 - Walk-in Freezer
 - Dry Storage
 - Office
 - Restroom w/lockers
 - Laundry
 - Dishwashing / Recycling
 - Food Prep
 - Serving
- **Caf-atorium**
 - Natural diffused light
 - 800 sf platform
 - Audio visual system- SCCPSS Technology Design Guidelines (Attachment B)
 - Chair storage (100 percent)
- **Administration**
 - Security lobby
 - Main Reception
 - Secretary Office
 - Information Specialist

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- Principal's Reception
 - Principal's Office
 - Conference Room Large
 - Conference Room Small
 - Mail Room
 - Book Storage
 - School Record
 - Central Supply Storage
 - Teacher-Staff Break Room
 - Nurse's Office with sink and shower
 - Infirmary
 - Receiving Office
 - Resource Officer
- **Administration Suite** (some areas may be duplicated as appropriate for size of school)
- Waiting Area with security control
 - Assistant Principal
 - Guidance Counselor Office
 - Flexible Office Space
 - Conference Room
 - Teacher Work Area / Break Area
 - Faculty Male Toilet
 - Faculty Female Toilet
- **Custodial Closets**
- One per wing
 - One at Cafeteria
 - One at Gymnasium
 - One At Media Center
 - One near front office
- **IDF Closets**
- One per wing minimum
 - Others as needed/approved
- **Mechanical Closets**
- Provide as necessary per other sections of the Guide Spec
 - No mechanical units shall be in an inaccessible area (above ceilings etc.)
- **Classrooms**
- Submit Program at Schematic Design Phase for approval

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Georgia Department of Education Publications:

Designer shall adhere to all Georgia Department of Education requirements which can be referenced at the following:

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

1. Regulations and Procedures to Comply with the Standards and Criteria of the National Flood Insurance Program
2. General Criteria for Public School Construction per GDOE
3. Submittal Requirements for Georgia Public Schools
4. Square Footage Requirements for Use in Developing the Local Facilities Plans and State Capital Outlay Applications for Funding
5. A Guide to School Site Selection
6. Construction Costs
7. Guidelines for Receiving State Capital Outlay Funds

Green Considerations & High Performance Schools

It is the District's policy to promote healthy and sustainable educational environments through the design, construction, operation, and maintenance of its facilities.

Architects, engineers, and contractors should review, discuss, and work with the District to establish goals for each project at the beginning of design and construction.

Facility design shall incorporate sustainable design features found in LEED, ENERGY STAR, Georgia Peach Program, Sustainable Sites Initiatives, Alliance for Water Efficiency and other similar programs although certification may not be pursued.

All projects should meet the following sustainability prerequisites:

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

SCCPSS recognizes the environmental impact of its buildings and the importance of green design and green building practices.

Architects and engineers must incorporate energy performance in the design process and design energy efficient buildings to achieve high performance buildings that will lower overall operating and maintenance costs.

Site Design & Access Standards

Safe and convenient access shall be a priority for pedestrians and cyclists. In constructing a school or renovating an existing school, design and construction shall take into account

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the following:

- Provide or tie-in to existing sidewalks and bikeways to provide access for pedestrians and cyclists. (bikeways shall not have curbs)
- Pedestrian/bike paths should not cross driveways whenever possible. If crossings are necessary pavement markings and signage shall be provided to clearly indicate pedestrian/bike crossings
- Provide bicycle parking, which shall be, to the extent possible: (a) centrally located, for student convenience and to provide visual protection from attack, theft, or vandalism, and (b) protected from the elements; consider feasibility of providing air and commonly used repair tools for shared use.
- Avoid locating waiting zones for school buses, trucks, and so on (as well as garbage areas) near fresh air intake vents for school buildings.
- Parking lots shall be arranged to eliminate or reduce the number of children walking through parking lots. If this is not possible, clearly marked walkways through parking and speed calming treatments should be employed in the parking lots. Provide a minimum of 20 visitor parking spaces near the main entrance of the building; designate parking for Campus Police.
- Provide adequate staff parking in separate, secured area. Confirm anticipated staff-count at schematic design review meeting with SCCPSS (provide 10% additional parking spaces)
- Provide adequate lighting for all parking areas

Coordination with Local Government

The District and contractors will work with the appropriate local jurisdiction(s) to:

- Improve safety and convenience of walking and bicycling routes to school;
- In the vicinity of the school, minimize conflict and interaction between different modes of transportation, calm traffic, and ensure safe crossings;
- Provide direct access to school grounds in new and existing neighborhoods and use trails, bike paths, and sidewalks to connect neighborhoods to schools;
- Revise zoning, subdivision, and land development codes to encourage connectivity and pedestrian and bicycle friendly design.
- All site designs shall comply with Chatham County regulations regarding Flood Damage Prevention (includes Designated Floodways) where applicable.

Acoustic Standards

Architect / Engineer shall be responsible for incorporating appropriate acoustic design measures into construction assemblies for all facilities.

Design Standard: ANSI/ASA S12.60 is mandatory unless specifically waived due to the scope of the project and other considerations.

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Voice Reinforcement

- For classrooms and media centers refer to the SCCPSS Technology Design Guidelines
- Audio enhancement system to be provide in the following locations: Gymnasiums, Cafeteria, Caf-atorium, and Auditorium

Audio system to be integral to building design.

Restrooms: Provide ADA accessible toilet facilities as required by Code.

- Restrooms shall meet all the State of Georgia Department of Educational Guidelines.
- All schools: Provide two single user toilet rooms for boys and girls shared between two classrooms off of a common corridor between the two rooms; commonly referred to as “Jack and Jill toilets”.
- Provide toilet room (accessible from the exterior) at Kindergarten and 1st grade playground area.
- Gymnasiums, cafeterias and front lobbies shall have multi-fixture restroom facilities
- Middle & High restrooms: Standard multi-fixture restroom facilities are acceptable however the Districts’ desire is to minimize group toilet rooms throughout the classroom wings...design professionals are encouraged to provide alternative options [during schematic design review] for middle and high school designs.

Utility Services:

Utility services, gas or electric for building equipment, shall be analyzed considering first cost (equipment), maintenance and servicing cost, and annual operating (consumption) costs with a recommendation presented by the Design Professional. The District has implemented a “Stewardship of Facilities” goal of controlling and reducing utility consumption each year which is recorded and reported by school site. The exception is that all kitchen services equipment shall be electric.

Provide pad with connections for portable generator hook-up (natural gas); once installed, generator shall be capable of running all coolers and freezers, IDF power, and lighting for emergency shelter areas.

Library Media Center Design

Refer to SCCPSS Library Media Center Design Guide, January 2017 (Attachment A)

Coordination with Technology Systems

Refer to SCCPSS Technology Design Guidelines, January 2017 (Attachment B)

- The CM or GC shall provide all prepared wall penetrations and sleeves to

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accommodate all cable runs provided by SCCPSS 3rd party contractors. All penetrations in fire rated partitions shall be sealed and fire-stopped as required to maintain rated partition integrity by the General Contractor/Construction Manager.

- Refer to the Design Guide matrix for procurement and installation responsibility.

Equipment Lists

Design Professional shall include requirements for Contractor[s] to provide equipment lists (Manufacturer, make / model and serial numbers, etc...) for:

- Water source heat pumps
- Circulation pumps
- Filter sizes
- Kitchen equipment
- Water heaters / boilers
- Heat exchangers
- Cooling towers
- And other equipment as directed by the District

Division 00 - Procurement and Contracting

Coordinate with SCCPSS's designated representative to ensure the correct solicitation, contract and other related documents are included.

Division 01 - General Requirements

See Attachment "F" for draft version of General Requirements. Design Professional shall be responsible for the inclusion of all items pertinent to the project. An editable version will be available upon request.

Division 02 - Existing Conditions

Site Surveys

- All surveys shall be performed and sealed by a Georgia Registered Land Surveyor.
- Unless otherwise agreed to by the District, Boundary, Topographic and Subsurface Utility location surveys shall meet the minimum requirements required to satisfy the GSFIC Site Memorandum, latest edition.
- Unless otherwise specified, all surveys shall be performed on the NAD 83 Georgia State Plane Coordinate System and the NGVD 88 Vertical datum.
- All surveys shall include at least two permanent benchmarks.
- All surveys shall include field control points with coordinates.
- Minimum deliverables shall include signed and sealed plats or drawings, electronic files in PDF and DWG formats and an ACCII points file of all topographic data will

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- be made available if requested.
- Wetland delineations

Environmental Assessment

- Environmental Site Assessments and Risk Hazard Assessments shall conform to the requirements of the Georgia Department of Education Facilities Services Unit criteria outlined in the *Guideline for Risk Hazard Assessment of Educational Facility Sites*, 160-5-4-.16 (a) 5.

Geotechnical Investigations

- Geotechnical investigations shall conform to the requirements of the GSFIC Site Memorandum for Stage I and Stage II investigations unless otherwise specified by the District.
- Consultants will coordinate all testing activity with the District Project Manager.

Demolition

- Coordinate all demolition with the District's Maintenance Department prior to commencing work. The District retains the first right of refusal for reusable and serviceable equipment and items.
- Ensure that all items to be salvaged by the District have been removed from the site prior to commencing demolition operations.
- Do not burn or bury demolition debris on site.
- Ensure that all utility services have been properly disconnected prior to commencing demolition operations.
- Identify all demolition items that will be salvaged or recycled by the contractor and provide a summary to the District for information.
- Stop work immediately and notify the DP or the District if hazardous materials are encountered.
- All demolished and removed building materials shall be recycled to the greatest extent possible

Exterior Finishes

- Brick is the preferred exterior finish*
 - All brick and mortar joints to be tooled concave with no voids
- Walls above lower roofs shall be metal wall panels
- All exterior windows shall have a sill height not less than 48" above finished grade except at major building entrances.

*Other exterior finishes as approved by the Superintendent or designated representative. Long term cost of ownership, including life-cycle, maintenance, and replacement costs shall be the primary factor taken into consideration.

Interior Finishes

- Concrete masonry units (CMU) are the preferred finish at interior corridors and major partitions*

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- All exterior corners to be bull-nosed
- Blocks to have no voids or checks
- All CMU mortar joints to be tooled concave with no voids

* Other interior finishes as approved by the Superintendent or designated representative. Long term cost of ownership, including life-cycle, maintenance, and replacement costs shall be the primary factor taken into consideration.

Division 05 - Metals

Ladders

- Access to all low-slope roofs (all levels) shall be provided by either an interior ladder & roof scuttle with spring loaded door (accessible from the front) or permanent exterior ladders.
- Pitched roofs to have personnel permanent weatherproof tie-off points no more than 25 feet apart

Railings and Hand Rails

- Exterior to be welded, stainless steel or powder coated steel with appropriate weather resistant fasteners (no rails shall be painted)
- Interior to be welded painted or powder coated steel
- Expansion joint covers shall be metal

Division 06 - Wood, Plastics, and Composites

Wood Blocking

- Provide solid wood blocking for all FF&E mounted to framed walls.
- Coordinate with Technology Design Guidelines for SCCPSS furnished and installed equipment.

Division 07 - Thermal & Moisture Protection

GENERAL

- Architect shall work directly with roofing manufacturer to generate shop drawings that will meet aesthetics, codes and warranty requirements of the project.
- All coatings or membranes shall be Energy Star compliant.
- All submittals, deviations from original specifications or value engineering changes shall be presented to SCCPSS M & O roofing team for approval prior to installation.
- Roof shall be free of construction debris, clean and in a “new” condition as to achieve maximum reflectivity upon completion. Roof shall be washed (at contractor’s expense) if deemed necessary by owner upon completion.
- Design roof system ES-1, IBC (latest version), NRCA and SMACNA (latest versions) and per ASCE 7 (latest version)

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- All installations must conform to applicable federal, state, and local codes.
- Prefer roof is not designed with parapet walls, internal drains or internal gutters.
- Install permanent safety harness tie-off points on all steep slope roofs to provide safe access for regular maintenance work. Install per OSHA standards.
- All levels of roof shall be accessible by permanent ladder, door or scuttle.
- Mechanical equipment or other equipment requiring a curb shall have minimum 36" clearance on all sides from other equipment or walls. All curbs and wall flashings shall be minimum 8" height from finished roof surface per NRCA. All flashings should be accessible for future repairs.
- Rooftop equipment wires, conduit, refrigerant lines, etc...shall be routed exterior of the unit and penetrate the roof in a method that is warrantable by the roofing manufacturer.
- Ductless HVAC or refrigeration condensing units shall not be installed on curb caps. Units shall be installed on a support frame, penetrating the roof in a method that is warrantable by the roofing manufacturer.
- Mechanical equipment shall not drain onto roof surface. HVAC drain supports shall not be wood blocks. HVAC drains shall be schedule 40 or thicker PVC pipe installed on manufactured adjustable support blocks.
- Ductwork through exterior walls shall be installed with SMACNA designed flashing and counter-flashing.
- Rooftop ductwork shall be aluminum clad; casing shall be water-tight.
- **All curbs shall be set level.**
- All roof penetrations and curb details must be approved by roof manufacturer as to be included in warranty. Coordination of mechanical and roofing details & applications must occur to obtain proper seal of roof and ductwork. All curbs must be set level.
- Roof expansion joints shall be minimum 8" height from finished roof surface per NRCA.
- All unfinished concrete exterior walls shall be coated and sealed.
- No downspouts in front of control joints or expansion joints.
- Gypsum products in roofing assembly are unacceptable.
- Gutters: Design for replacement without demolition of roof membrane or metal panels and with proper expansion joints. Outer elevation of gutter shall be lower than inside.
- Wall terminations should be designed to accommodate future re-roofs.
- Parapet walls: Wrap interior and top of parapet wall with PVC membrane and terminate with an ES-1 certified compression cap edge metal system. (Basis of design – Johns Manville TerminEdge system or equivalent). Kynar coated trim cap. Cast stone coping caps are not preferred.
- Exterior partitions or free standing walls; metal coping caps shall be designed and installed on continuous cleats with drive cleat or standing seam type joints.
- Roofing contractor shall be of current status as a top tier installer of manufacturer. Proof of certification shall be provided by manufacturer to architects. This requirement may only be waived with the expressed consent of the District.
- Roofing contractor's foreman or supervisor must be trained and certified by roofing manufacturer for the specific type of roofing used on the project and must remain

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on site during installation.

- Downspouts are to be installed with cast iron boots when connected directly to storm drains. Cast iron boot and downspout shall be designed to match in shape and size. Cast iron boot shall connect to storm drainage system below grade so that no part of storm drain pipe or connector is exposed. Taller cast iron boots may be necessary where downspouts may be subject to damage such as along a bus ramp, etc.
- Roof, soffits, walls, storefronts, windows and flashing details must be free of voids that would allow the intrusion of bats, etc. All cracks and gaps shall be sealed.
- CM or General Contractor shall be held liable for roof damage caused by roofers or other trades during construction phase or post construction during the correction of non-compliant work. Owner reserves the right to reject entire or sections of roof due to physical damage, spills, and metal filings from saw cutting or unprofessional workmanship at Owner's discretion. Owner reserves the right to reject poor workmanship or damage regardless of manufacturer's acceptance for weather-tightness warranty.
-

INSPECTIONS

- Design Professional shall inspect roof work a minimum of twice per week during installation and provide a written and photographic report to Owner documenting progress and / or problems.
- Pre-construction, mid-term, and final inspection shall be conducted by Manufacturer's certified inspector and be pre-scheduled to include the roofing installer, architect and owner representative.
- Architect and Contractor shall inspect through-wall flashings during installation and provide photographic documentation to Owner.
- Owner may observe and document work in progress at any time and without notice.

WARRANTIES

- Provide 5-year roof and wall bond for new schools.
- All design and work must coincide with manufacturer's requirements as to achieve warranties specified below.
- Manufacturers Guarantee – Non Pro-rated Twenty (20) year "No Dollar Limit" weather-tightness, edge to edge weather tightness material and labor warranty to cover all roof systems.
- Installer's Guarantee – 5-year weather-tightness warranty to include all materials and labor for all roof systems.
-

STANDING SEAM METAL ROOFS

- 22 Ga. welded metal roof deck.
- Rigid polyisocyanurate insulation (per R-rating mandated by code)
- Self-adhering polyethylene faced sheet. ASTM D 1970 40 mils thick minimum. Applied to top side of rigid insulation. Must be approved for use directly underneath standing seam panels. (High Temperature)

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- Mechanically seamed standing seam panel: 16” wide, 2” vertical rib, (no trapezoidal) 360 seam lock (double locked) with factory applied sealant. 24 gauge, grade 50, 50 KSI Galvalume. Smooth surface with standard striations, Kynar 500 coated finish. Concealed fastening system with sliding clips. Panels shall be continuous from ridge to edge (no lap joints). Fastened at ridge and cleated at eaves.
- Finish: Energy Star Qualified Kynar 500 paint coating
- Field forming of panels shall only be permitted in special circumstances where panel length exceeds shipping limitations. Field forming may only be performed by metal roof manufacturers’ employees using manufacturers’ equipment.
- Avoid use of exposed fasteners in system where possible. Utilize premium neoprene washer screws with one-piece cap where exposed fasteners are unavoidable. Avoid use of pop-rivets.
- Butyl tape or caulk shall be applied up and over vertical rib at panel eaves.
- Panels shall be panned at the ridge behind closures.
- Prefer ridge cap sections be lapped and screwed with butyl tape sealant. Ridge shall be supported by stiffeners to prevent collapse. Prefer ridge is cleated or crimped onto zee closures.
- Do not use silicone sealants.
- **WARRANTY FOR ALL METAL ROOF SYSTEMS: Manufacturers must warrant roof system directly to Owner; 3rd party guarantees are prohibited.:** Non Pro-Rated 20-Year “No Dollar Limit” material and labor weather tightness warranty to include: Metal roof panels, vertical seam joints, expansion joints, clips, bearing plates, fasteners, cleats, flashings, curbs, copings (if attached to roof system), valleys and ridge caps.
- Minimum 20-year warranty on paint finish.
- Edge flashings shall remain secure and be included in manufacturer’s 20-year warranty against blow-off up to designed wind speed of system. Rake trim wider than 8” shall be a 2-piece design. Use ES-1 fastening pattern and gauge.

PREFERRED MANUFACTURERS

- Installer must be listed by Manufacturer as a top tier installer of their product.
 1. McElroy Metal Inc.
 2. AMS
 3. MBCI

LOW SLOPE ROOF DECK

- Vermiculite lightweight insulating concrete. Siplast vermiculite based lightweight system or equivalent
- Welded vented metal deck. Slope shall be designed into structure to yield a uniform thickness of lightweight concrete for mechanical attachment to metal deck.

PREFERRED EXPOSED CEILING DECK:

- Installer must be listed by manufacturer as a top tier installer of their product.

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McElroy Metal Inc. (Maxima ADV Panel)
AMS (Loc-Seam 360 panel)
MBCI (SuperLok panel with “sole source” warranty)
Construction Metal Products Inc. (CMP S-2500 panel – double locked)
Peterson Pac-Clad (Tite-Loc Plus panel)

LOW SLOPE ROOF SYSTEMS

PVC

- Installer must be listed by Manufacturer as a top tier installer of their product.
- Minimum thickness 60 mils (nominal $\pm 5\%$) excluding fleece back.
- Mechanically attached unless adhered is required for special circumstances.
- Curbs flashed with PVC clad metal shall include a “slip or skirt” flashing to butt firmly against underside of mechanical unit and fasten into side of curb.
- Curbs flashed with membrane: membrane shall be wrapped over top of curb and self-adhering foam weather stripping shall be installed between membrane and mechanical unit.
- **Warranty for low slope systems:** 20-Year “No Dollar Limit” material and labor weather tightness warranty to include all penetrations, curbs, drains and metal flashings identified as an “Edge to Edge” or “System” warranty.
- Internal drain hubs shall be included in roofing manufacturer’s warranty.
- Manufacturer to provide stamped certification of ES-1 approved edge trim.
- Edge flashings shall remain secure and be included in manufacturer’s 20 yr. warranty against blow off up to designed wind speed of system.
- Walk pads shall be installed on all sides of rooftop equipment requiring maintenance or at points of heavy traffic.

PVC MANUFACTURERS

1. Duro-Last or Duro-Tuff
2. Fiber-Tite
3. Sarnafil
4. Johns-Manville KEE

Division 08 – Openings

Substitutions or Alternates not permitted unless noted below.

Knox-boxes:

All schools shall be provided with (3) knox-boxes per facility (KNOX-BOX® 3200 Series)

- (1) Fire Department (locate near front entrance & remote annunciator panel)
- (2) Local Police Department (1) at front and (1) at rear of building.
- Final location as determined by Firemarshall and SCCPSS

Exterior Openings

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Construction Design Guidelines

- All exterior opening systems shall be impact rated per the IBC

Hollow Metal Door Frames

Manufacturer Series

1. Curries M
2. Ceco SU
3. Steelcraft F

Interior Frames:

- Profile: M / MK / DEM; wrap-around frames at all interior wall assemblies.
- Gauge: 16 @ openings up to and including 4'-0" wide
- 14 @ openings over 4'-0" wide & MK Profile
- Steel: Cold-rolled steel
- Welding: Continuous face welded, dressed and ground smooth, prime paint

Exterior Frames:

- Profile: M
- Gauge: 14
- Steel: A60 galvanized
- Welding: Continuous face welded, dressed and ground smooth, primed frames shall include shipping bar at bottom to insure frame integrity during shipping. All shipping bars shall be removed prior to frame installation. Install frames per manufacturers and SDI (Steel Door Institute) standards and instructions.
- Fire rated frames require metal applied label indicating rating designation.
- Reinforce frames for surface mounted hardware and cut-out, drilled and tapped to receive mortised hardware.
- Electrified Openings: Doors shall be pre-wired with sufficient number of concealed wires to accommodate electric function of specified hardware. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.
- Metal framed doors installed in masonry walls will have jams and lintels completely grouted to the masonry to avoid hollow spaced between masonry and door frames.

Hollow Metal Door

Manufacturer Series

1. Curries* 707
2. Ceco Regent - Imperial
3. Steelcraft L – (Foam Core for Exterior)

Interior Doors

- Series: 707
- Gauge: 18
- Steel: Cold-rolled
- Edges: Seamless - tack weld, grind smooth, fill and touch-up paint

Exterior Doors

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- Series: 707
- Gauge: 16 gauge
- Steel: A60 galvanized
- Edges: Seamless - Continuous weld, grind smooth, fill and touch-up paint
- Completely seal and make flush door top.
- Fire rated doors require metal applied label indicating rating designation.
- Doors shall be internally reinforced for surface mounted hardware and cut-out, drilled and tapped to receive mortised hardware.
- Electrified Openings: Doors shall be pre-wired with sufficient number of concealed wires to accommodate electric function of specified hardware. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.

Wood Doors

Manufacturer Series

1. Graham* GPD
2. Marshfield DPC/DFM

Product Notes and Applications:

- Construction: 5 or 7 ply
- Core: Particleboard @ non-rated and 20-minute rated openings
- Face veneer: White Birch, Premium Grade, Rotary Cut,
- Edges: Same as face veneer
- Matching: Pairs within the same opening
- Warranty: Lifetime of installation
- Doors shall be factory pre-finished to match existing facility standard.
- Finish shall be type TR-6 / UV cured catalyzed polyurethane.
- Pre-fit for opening size and pre-machine for hardware as specified.
- Fire rated doors require metal applied label indicating rating designation.
- Doors shall be internally reinforced for attachment of hardware without the use of through bolts.
- Electrified Openings: Doors shall be pre-wired with sufficient number of concealed wires to accommodate electric function of specified hardware. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.

Door Hardware (All classrooms shall be equipped with locksets that allow door to be locked from either side).

Hinges

Manufacturer Series

1. McKinney* TA2714, TA2314, T4A3786, T4A3386, TA2772
2. Bommer BB5000, BB5001, BB5004, BB5005, BB5300
3. Hager BB1279, BB1191, BB1168, BB1199, BB1173

Product Notes and Applications

- Half surface hinges on all interior wood doors
- Interior and exterior hollow metal doors shall have mortise hinges.

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- Out-swinging lockable doors shall have NRP hinges.
- Exterior lockable doors shall have NRP and SSF hinges.
- Width of hinges shall be sufficient to clear trim and wall conditions as shown on the drawings.
- Size: 4 ½" x 4 ½" for doors up to 3'- 0" in width, 5" x 4 ½" for doors over 3'- 0" in width. Provide heavy weight hinges (.180) at high traffic doors.
- Continuous hinges preferred on all aluminum storefront doors
- *Electric Hinges: Provide sufficient number of concealed wires to accommodate electric function of specified hardware. Locate electric hinge at center location. Provide McKinney MG-16 mortar guard for each electric hinge specified. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.
- All access control hardware to be installed by manufacturer certified personnel.

Continuous Hinge

Manufacturer Series

1. McKinney* MCK-12HD, MCK-25HD
2. Markar FM-2000, FM-2011
3. Roton 780-112HD, 780-224HD

Product notes and applications

- Exterior Aluminum and FRP doors: Use continuous hinges.
- When retrofitting new doors in existing frames and frame hinge preparations are compromised: Use continuous hinges.

Power Transfers

Manufacturer Series

1. Securitron EPT
2. Corbin/Ruswin EPTL
3. Von Duprin EPT

Product notes and applications

- Use at heavy use electrical openings to transfer power from frame to door. Provide at all electrical applications using continuous hinges.

Flush Bolts

Manufacturer Series

1. McKinney* FB M / FB W Manual and Automatic Flush Bolts
DPS Dust Proof Strike
2. Rockwood 555/557 Manual Flush Bolts
1842/1942 Automatic Flush Bolts
570 Dust Proof Strike
3810/3815 Automatic Flush Bolts
3910 Dust Proof Strike

Product notes and applications:

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- Manual or automatic flush bolts as necessary for code compliance. Install with dust-proof strike.
- Provide extended top rod for oversized doors when using manual flush bolts.

Cylinders & Keying (Door / Frame Schedule shall be completed for review during Design Development Presentation Phase). Owner shall at that time provide recommendations for access control locations and other door security criteria). Workroom doors shall be keyed to match classroom doors.

Manufacturer Series

1. Sargent* Signature exterior, "C" conventional interior

Product notes and applications:

- Cylinders shall be keyed to an existing grand master key system.
- Keying requirements to be coordinated and completed by the owner to protect the integrity of the system.
- Furnish construction keying for use during the construction period. Keys will be furnished by the owner.
- Contractor installs permanent cores and sets up key box with tagged keys and key schedule.
- Keying coordination and distribution shall include casework.

Mortise Locksets

Manufacturer Series

1. Sargent* 8200 x LNL trim design
2. Schlage L9000 x 06A trim design
3. Corbin Russwin ML2000 x NSA trim design

Magnetic Locks

Manufacturer Series

1. Securitron Magnalock

Electric Strikes

Manufacturer Series

1. HES
2. Folger Adam
3. Von Duprin

Exit Devices

Manufacturer Series

1. Sargent* 80 Series
2. Corbin Russwin ED5000 Series
3. Von Duprin 98 Series

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Product notes and applications:

- Single doors: Use rim exit device.
- Pairs of doors: Use rim exit devices with keyed removable mullion.
- Cross corridor doors / Interior: Use rim exit devices.
- Exit device dogging: Hex key dogging in rail shall hold latch retracted to allow door to function as push-pull. Omit on fire rated doors and when width of door is too narrow.
- Exterior doors: PTB Pull trim is to be used, lever handles are not to be used.
- Exterior gates (where applicable)

Removable Mullions

Manufacturer

1. Sargent*
2. Von Duprin
3. Corbin/Russwin

Product notes and applications:

- Types: Lockable, steel and key removable. Key is not required to reinstall the mullion.
- Provide multi wire connectors when electric or monitor strikes are used. This allows mullion removal without damaging electrical connections.
- Preferred method of securing exterior pairs of doors when using rim exit devices.
- Provide key removable mullions by same manufacturer as exit device. Provide fire rated key removable mullions at labeled openings.

Push/Pulls

Manufacturer Series

1. McKinney* P053 Push Plates
OP4514 Door Pulls
PB812 Push/Pull Bars
2. Rockwood 70C Push Plates
BF168 Door Pulls
BF15847 Push/Pull Bars
3. Trimco 1001 Push Plates
7191-3 Door Pulls
1660 Push/Pull Bars

Product notes and applications:

- Mounting methods to be concealed type wherever possible.
- Provide decorative thru bolts at free ends of push / pull bars and pulls when used with exit devices.
- Push plate size: 4" x 16" minimum, except when limited by door stile.

Coordinators

Manufacturer Series

1. McKinney* CSM

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2. Rockwood 1600
3. Trimco 3094

Product notes and applications:

- Provide filler bars for total opening width, closer mounting brackets, carry bars, and special preparation for top latches where applicable.

Door Closers

Manufacturer Series

1. Sargent* 351
2. LCN 4040
3. Corbin/Ruswin DC8000

Product notes and applications:

- Closers shall have non-ferrous covers, heavy duty forged steel arms, and separate valves for adjusting back check, delayed action, closing and latching cycles and adjustable spring to provide sizes 1 through 6.
- Provide non-sized closers, adjustable to meet maximum opening force requirements of ADA.
- Provide drop plates, brackets, or adapters for arms as required to suit details.
- Mount closers on room side of corridor doors and inside of exterior doors. Where possible install closers on door for optimum aesthetics.
- Provide forged heavy duty parallel arms. Non-hold open types.
- Coordinate exterior gate closers on Schedule

Low Energy Operators

Manufacturer Series

1. Sargent MP3000
2. Norton LEO
3. LCN Senior Swing

Product notes and applications:

- Provide wall-mounted actuator switches by the same manufacturer as the operator. Provide weather-resistant types at exterior applications. Locate in accordance with ANSI A117.1.
- Conform to ANSI/BHMA standard A156.19 and meet UL requirements for fire rated openings.

Protection Plates

Manufacturer Series

1. McKinney* KP50
EG01 Edge Guards
2. Rockwood K1050
300ge Guards
3. Trimco K0050

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KE31-1 Edge Guards

Product notes and applications:

- Size: Kick plates 8" high, Mop plates 6" high, Armor plates 36" high.
- Width: 2" less door width (LDW) at single doors when mounted on push side. 1" LDW at pairs and when mounted on pull side.

Material:

- Stainless steel 0.050" thick with countersunk holes, beveled four edges (B4E).

Overhead Stops / Holders

Manufacturer Series

1. Sargent* 590, 690, 1540
2. Rixon 9
3. Glynn Johnson 900, 100, 450

Product notes and applications:

- Install overhead stops where conditions limit the use of wall stops and floor stops would be a tripping hazard.
- Use special template closers to allow offset arms for surface applied stops..
- Use at all exterior openings where closers are not used.

Wall & Floor Stops

Manufacturer Series

1. McKinney WS03 Wall Stop
FS01 Floor Stop
ADH01 Door Stop/Holder
2. Rockwood 400 Wall Stop
441 Floor Stop
490 Door Stop/Holder
3. Trimco 1270 Wall Stop
1200 Floor Stop
1254 Door Stop/Holder

Product notes and applications:

- All stops shall be cast. Wrought stops are not acceptable.

Magnetic Holders

Manufacturer Series

1. Sargent 1561
2. Rixson FM-998

Product notes and applications:

- Wired to release upon activation of fire alarm. Verify required voltage.

Thresholds & Weather Stripping

Manufacturer Series

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1. McKinney* MCK2005 Threshold
MCKS303 Gasket
MCK18062 Door Sweep
MCK346 Rain Drip
2. Pemko 2005_T Threshold
303 Gasket
18062CNB Door Sweep
346C Rain Drip
3. Reese S482APR Threshold
797B Gasket
964C Door Sweep
R201A Rain Drip

Finishes and Base Materials:

Base Metals:

- Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness.
- Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes.

Finishes: Verify requirements for individual projects

- Standard: Comply with BHMA A156.18.
- BHMA Designations: Comply with base material and finish requirements indicated by the following:
 - BHMA 600 (USP): Primed for painting, over steel base metal.
 - BHMA 626 (US26D): Satin chromium plated over nickel, over brass or bronze base metal.
 - BHMA 628 (US28): Satin aluminum, clear anodized, over aluminum base metal.
 - BHMA 630 (US32D): Satin stainless steel, over stainless-steel base metal.
 - BHMA 652 (US26D): Satin chromium plated over nickel, over steel base metal.
 - BHMA 689 (ALUM): Aluminum painted, over any base metal.

Finish Schedule:

- Exterior Butt Hinges: BHMA 626 (US26D)
- Interior Butt Hinges: BHMA 652 (US26D)
- Continuous Gear Hinges: BHMA 628 (US28)
- Pivot Sets: BHMA 626 (US26D)
- Flush Bolts: BHMA 626 (US26D)
- Locks and Latches: BHMA 626 (US26D)
- Cylinders: BHMA 626 (US26D)
- Exit Devices BHMA 630 (US32D)
- Removable Mullions BHMA 600 (USP)
- Push/Pulls: BHMA 630 (US32D)
- Closers: BHMA 689 (ALUM)

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- Automatic Operators: BHMA 689 (ALUM)
- Protection Plates: BHMA 630 (US32D)
- Overhead Stops/holders: BHMA 626 (US26D)
- Wall and Floor Stops: BHMA 626 (US26D)
- Magnetic Holders: BHMA 689 (US28)
- Thresholds and Gasketing: BHMA 628 (US28)
- Key Cabinet: BHMA 600 (USP)
- Electric Strikes: BHMA 630 (US32D)
- Magnetic Locks: BHMA 630 (US32D)

Access Control Devices and Hardware

Coordinate with SCCPSS Technology Design Guidelines (Attachment B)

General

- All electrical drawings shall show placement of power supplies, cable pathway, and low voltage wiring for door access control.
- All door details and schedule shall be coordinated with electrical and data drawings.
- Protect all wiring from sharp edges and to use protective shielding when passing through openings.
- Electrified Openings: Doors shall be pre-wired with sufficient number of concealed wires to accommodate electric function of specified hardware. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.
- Electric Hinges: Provide sufficient number of concealed wires to accommodate electric function of specified hardware. Locate electric hinge at center location. Provide McKinney MG-16 mortar guard for each electric hinge specified. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.
- Access Control: The CM or GC will provide and install door hardware and wiring to drop ceiling. Control systems (network nodes) are district provided and final wiring are handled by the district.
- Electrified Openings: Doors shall be pre-wired with sufficient number of concealed wires to accommodate electric function of specified hardware. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.
 - Electric Hinges: Provide sufficient number of concealed wires to accommodate electric function of specified hardware. Locate electric hinge at center location. Provide McKinney MG-16 mortar guard for each electric hinge specified.
 - Electric lock/latch power shall terminate at the power supply.
 - DPS, REX, and reader wiring shall terminate at the nearest network IDF and be labeled with the appropriate door number.
 - District wide management platform is Cisco Physical Access Manager (PAM).
 - Control Modules: Cisco Physical Access Gateway, Reader, Input, and Output modules.
 - Power Supplies:

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- Basis of Design is the Securitron AccuPower AQD5 with PDB-8C8R relay.
- The power supply shall have an input matching that of the load it is powering. In addition, the power supply shall have eight (8) independently configured inputs with each input having its own individual input.
- The power supply shall have filters, regulators, and a Fire Alarm trigger.
- The terminal end of the cable that connects the load to the power supply shall not exceed 50 feet.
- Door Hardware: Sargent Harmony or fully compatible devices that support HID 125KHz proximity.

Entrances, Storefronts, and Curtain Walls:

- Aluminum entrances shall include exterior doors and frames, including hardware and operators, as a part of the assembly.
- All door systems to be 50M type (high traffic) or approved equal.
 - KAWNEER Company, Inc
 - TUBELITE DIV., INDAL. Inc.
 - YKK AP America
 - OLD CASTLE
- All exterior entrances to be impact resistant glass
- All double doors to have center jamb with push-bar latch (no exposed vertical rods)
- Doors with no center jamb shall not be accepted unless expressly approved by the District.
- Concealed top and bottom locking bolts will not be accepted unless expressly approved by the District.
- Air infiltration rate: provide doors with an air infiltration rate of not more than 0.50 cfm for single doors and 1.0 cfm for pairs of doors when tested in accordance with ASTM E 283 at an inward test pressure differential of 1.567 psf.
- Condensation resistance: Entrance doors shall be tested for thermal performance in accordance with AAMA 1502 showing condensation resistance factor (crf) of not less than 48.
- Thermal transmittance: Provide doors that have an overall u-value of not more than 0.51 btu/(hr. x sq. ft.x deg. F) at 15 mph exterior wind velocity when tested in accordance with AAMA 1503.
- Single Source responsibility: Provide entrance assembly, , by a single source manufacturer capable of showing prior production of units similar to those specified. Manufacturer shall have not less than 5 years successful experience in the fabrication of assemblies of the type and quality specified. The installer shall have no less than 5 years' experience in the installation of similar systems specified.
- Hardware: Provide manufacturer's heavy duty hardware required for operation of each door, including: Offset pivot seats, overhead closers, door stops, keyed cylinders, panic hardware, pull handles, and thresholds.

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- Installer shall be required to adjust and ensure operating functions for smooth operation and weather tightness after 90 days of acceptance and use by the school personnel. This requires a site visit after building acceptance.

Windows

- Windows shall be impact resistant glass and meet the requirements of the IBC
- Windows will be a storefront type unless approved specifically by the District or a replacement to a specific matching type.
 - KAWNEER Company, Inc
 - TUBELITE DIV., INDAL. Inc.
 - YKK AP America
 - OLD CASTLE
- Windows shall only be operable in classrooms if needed for emergency egress.
- Window sills shall not be less than 48 inches above grade except at major building entrances.

Glazing

- All exterior window and storefront glazing shall be double-paned insulated, low - e, impact rated glazing, and shall meet the requirements of the IBC. All glass films (when provided) shall be of a 'readily available type' for ease of window replacement by District.
- All Interior glazing shall meet the requirements of the IBC
- No polycarbonate glazing

Division 09 - Finishes

Interior Paint

- All interior wall surfaces shall be semi-gloss finish (DP to coordinate Level of Finishes I-V as applicable to the location)
- Utilize high quality, low VOC, latex paint.

Ceiling Tile

- All interior finished ceilings to be 2x2 acoustic tile ceiling
 - Panels to be square edged flush white with humidity resistance "humigard" or equivalent in all locations unless otherwise approved by the District.
 - Kitchen tiles to be Food Service Grade and washable

Flooring Typical Finishes Per Space (DP shall provide Schedule of Installed Finishes at completion of project). Finishes shall include but are not limited to floor tiles (all materials), paints and other coatings typically replaced / stored by SCCPSS Maintenance Dept.).

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Construction Design Guidelines

- * Consider lower lifecycle cost flooring options in all locations
1. Classrooms
 - VCT Flooring
 2. Media Centers
 - Carpet Tile Flooring
 - LVT in high traffic areas
 3. Administration
 - Carpet Tile Flooring
 - LVT
 4. General or Common areas
 - Terrazo (provide attic-stock material for patch / repair of floors)
 - Ceramic Tile
 - Polished / Stained Concrete
 - VCT
 5. Corridors
 - Terrazo (provide attic-stock material for patch / repair of floors)
 - Ceramic Tile
 - Polished / Stained Concrete
 - VCT
 6. Bathrooms
 - Ceramic Tile (Provide minimum 6-ft high wainscot on all wet-walls ; provide 4-ft return on adjacent walls where fixtures are present).
 7. Specialty Floors
 - A. Laboratory
 - Elementary Schools – VCT Flooring
 - K-8 Schools – VCT Flooring
 - Middle Schools – VCT Flooring
 - High School – VCT Flooring
 - B. Gymnasium
 - Elementary Schools – Rubber Flooring
 - K-8 Schools – Hardwood Flooring
 - Middle Schools – Hardwood Flooring
 - High School – Hardwood Flooring (Confirm Grade of wood with District)
 - C. Stage
 - Elementary Schools – VCT Flooring
 - K-8 Schools – VCT Flooring
 - Middle Schools – VCT Flooring
 - High School – matt black painted $\frac{3}{4}$ " exterior grade plywood and shall be approved by the District

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Construction Design Guidelines

- D. Kitchen: Non- Slip quarry tile with Industrial-Grade Epoxy dark grout
 - 1. Epoxy flooring will not be accepted
- E. Serving Lines: Non-slip quarry tile with Industrial-Grade Epoxy dark grout
- F. Weight Lifting: Rubber
- G. Dance Room: VCT, (spring board wooden floor if budget allows)
- H. Entrances, Lobbies, Corridors: Terrazzo

Tiling

- Ceramic tile is the preferred floor treatment in lavatory.
- A tile wainscoting should be installed in restrooms on all wet wall/s and side wall/s of sink and toilet per SCCPSS request at a Minimum height of 6’.
- Tile in all bathrooms
- In remodels or renovations the ceramic floor tile in the restrooms should be installed on a diagonal to offset any walls that are not square.
- Use cementitious backer board for all wall tile on framed walls

Wood Flooring

- Wood flooring shall be installed in the gym for K-8, middle & high schools
- Wood spring board floors for dance rooms for schools with performance arts dance program, this application will only be applicable in limited applications contingent upon budget and SCCPSS request.

VCT Flooring

- Typical floor finish, except where specialized finishes are called for, shall be Vinyl Composition Tile. Color and patterns shall be specified by the Design Professional and approved by SCCPSS. Colors shall be standard manufacturer’s colors.
- At Elementary and Middle School Corridors, the floor pattern should incorporate a contrasting strip of tile set 24” clear of each wall in order to define an emergency safety zone for students. Corridor patterns shall be submitted to SCCPSS for review and approval.
- Base shall be 4” vinyl cove base with neutral color for ease of repair. Provide vinyl transition strips adjacent to other floor materials. Coordinate the sequence for cleaning and waxing VCT floors with SCCPSS director of operations. Schedule cleaning and waxing of VCT floors at Corridors, Cafeteria and other designated areas after furniture is delivered.
- Installations
 - The VCT tile floors in the new schools shall be properly protected before the building is released to the School System.
 - A scrubbing machine should be used to scrub and clean the VCT tile before applying finish.
 - Provide five coats of high gloss 21% - 25% floor finish (coordinate with SCCPSS Maintenance Dept). Finish shall be applied to all new VCT tile floors by the Contractor before the floor is released to the School System.

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Gypsum Board

- High impact board shall be utilized in all areas to a height of 8 feet where CMU is not utilized. Coordinate drywall finish level requirements at accent walls (e.g. Administration and media centers)
- Utilize moisture and mold resistant board for all humid or wet areas in which CMU is not utilized.

Division 10 - Specialties

Visual Display Units

A total of 16' linear feet of white board is required in all IU's. Differing white board sizes based on room size to be reviewed and approved by SCCPSS. Visual Display boards and related accessories shall be included in the Construction Contract. Coordinate with Technology Design Guidelines (Attachment B) for classroom layouts.

- Marker boards shall be factory laminated 3-ply construction with porcelain-enamel low-gloss face sheet, 3/8" particleboard core and aluminum sheet backing.
- Provide aluminum frame with chalk tray and map rail.
- Provide appropriate special graphic at math and music rooms.
- Provide manual sliding marker boards at science labs.
- Tack boards shall be 1/4" thick, plastic-impregnated cork sheet factory laminated to 1/4" thick particleboard backing.
- Provide factory applied aluminum trim.

Restroom Partitions

- One inch thick HDPE (Star Board) securely fastened at wall and floor mounts, they shall also be installed with gravity close hinges (no spring loaded closers).
- Doors to have continuous piano type hinges

Brackets shall be aluminum (2-ear) with stainless steel fasteners.**Wall and Corner Guards**

- Wall and corner guards (90 degree outside corners) shall be stainless steel in kitchen areas and color matched in all other areas for exposed GWB corners to a height of 48 inches.

Toilet, Bath, and Laundry Accessories

Toilet Accessories

The following products are supported by the District's standardized purchasing systems. Any alternate accessories must support the specified systems. Verify all equipment manufacturers are under current District contract.

- Tissue Dispenser: VONDREHEHLE 3253 twin jumbo roll dispenser
- Soap Dispenser: SPATAN 975600 Lit N Foamy White
- Napkin Disposal Surface Mount BOBRICK B 270 (Adult Female Areas)
- Paper Towel dispenser. Wausau Paper (Bay West) OptiServ Roll Towel Dispenser Model # 86800 Black Translucent.

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Construction Design Guidelines

Toilet Accessories

- All accessories should be surface mounted.
- Glass mirrors are prohibited within the district; all mirrors shall be unbreakable.
- Electrical hand dryers shall be installed in all group restrooms.
- Electric Hand Dryers shall be Xlerator with noise reducer nozzle or equivalent; sensors only, no push-button start)

Student Metal Lockers

- Student lockers (non-athletic) shall be provided in High Schools, Middle Schools, and K-8 (middle grades) schools in interior corridors.
- When requested by the District, provide lockers equal to the “Design” FTE plus space to increase the number of lockers to the “core” capacity.
- Each locker shall be approximately 12” wide x 12” deep x 36” high x double tier (72” total unit height) Provide (1) attic-stock door of each color for every 100 lockers.
- Lockers shall be equipped with multi-point automatically locking spring bolt and pad-lock lug.
- Lockers shall be equipped with separate master keyed combination locks.
- Utilize welded construction with 16 gauge bodies, 14 gauge doors with stiffeners and 18 gauge backs.
- Door shall have piano hinges, fastened with screws, not welded.
- Doors and frame (body) of lockers shall be painted one color.
- Paint shall be standard enamel finish 1 mil thickness min
- Paint color shall be from manufacturer’s standard colors
- Locker colors may alternate or be different in different parts of the building.
- Specify manufacturers standard paint colors unless use of custom colors is requested and specifically approved by SCCPSS.
- Utilize a painted metal “Z” base in lieu of raised concrete (or other material), eliminating the need for resilient base finish.
- Extend floor finish below lockers to allow for their future removal if desired.
- Enclose sides of lockers with wall piers and tops with wall furring.
- Provide ten additional doors of each color specified for future replacement.

Physical Education / Athletic Lockers

- Physical education / athletic lockers shall be provided in middle, K8 and high schools. High schools shall also have lockers in sport team locker rooms.
 - Lockers in five tier units shall each be approximately 12” wide x 12” deep x 12” high (60” total unit height).
 - Lockers in double tier units shall each be 12” wide x 12” deep x 30” high (60” total unit height).
 - Sides and intermediate partitions shall be expanded metal for ventilation.
 - Other specifications similar to hall lockers
 - Provide continuous built-in poured concrete combination bench and base for lockers, 18” AFF and extending 12 to 14” from face of lockers.

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Construction Design Guidelines

- Provide (1) attic-stock door of each color for every 25 lockers

Approved Manufacturers:

1. Excalibur
2. Lundia
3. Palmetto Shelving System Inc., White Rock, SC.

Extruded Aluminum Systems

Appropriate aluminum canopies shall be provided for at bus and auto drop-off areas, and loading areas as needed. Custom features like cantilevered trusses or excessive coverage distance should be avoided.

- All buildings must be connected by covered walkways
- Drainage needs to be controlled & piped so as not to flow across sidewalks.
- Curb/bus set-back for posts to insure bus “tail swing” clearances.
- Provide lighting at Canopies.
- Height requirements for bus and truck clearances shall be reviewed and approved by SCCPSS Executive Director of Transportation.
- Individual door canopies: Install lighting on wall in lieu of attaching to canopy.
- Prefer canopy lighting is installed with wiring in a chase to eliminate screwing conduit to aluminum panels.
- If conduit is used, screws or bolts to attach conduit or lights shall be stainless steel.
- No penetrations in bottom pan of panels.
- Baked enamel finish. No anodized finishes.
- Utilize roll locked panel assembly. No crimped panel assembly.
- .060 minimum gauge panels.

Approved Manufacturers:

1. Mitchell Metals
2. Perfections
3. Dittmer Architectural Aluminum
4. Peachtree

Flag Pole

- Flag poles shall be 30 ft tall, tapered aluminum poles
- Pole and foundations to meet IBC wind speed and design

Division 11 - Equipment

Food Service Equipment

- See Attachment C for equipment.

Refrigerated Food Storage Cases

- See Attachment C for equipment.

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Walk-In Coolers

- See Attachment C for equipment.
- Walk-In Coolers shall be connected to the Intrusion Alarm. Cooler functions shall be monitored by the building control system. No other controls system is acceptable.

Walk-In Freezers

- See Attachment C for equipment.
- Walk-In Freezers shall be connected to the Intrusion Alarm. Cooler functions shall be monitored by the building control system. No other controls system is acceptable.

Playground Equipment

- Playground equipment for the Pre-Kindergarten students may be installed by the District. Design professional shall verify with project manager. If installed by the District, site preparations for the Pre-K playground area shall be the responsibility of the design firm. DP shall incorporate a level, graded pad to accommodate each play-set. Coordinate play-set locations, designs with District.
- Verify responsibility for purchase and installation of playground equipment with District.
- Provide age appropriate playground equipment for all other grade as part of the project coordinated and approved by the District.
- Utilize commercial grade (cleanable) rubber finish material at Pre-K and 1st grade playground areas. Thickness is dependent on design fall height.
- Utilize engineered wood-fiber base (manufactured for playground) with weed barrier fabric and perimeter containment border (consider water drainage) at all other playground areas. Thickness is dependent on design fall height.

Waste Compactors

- Architect will confirm with District's standard compactor.
- Provide fenced concrete pad of adequate size for compactor; location shall be coordinate to avoid all air-intake vents.
- Provide adequate space for waste pick up
- Provide AC Power 120 volt and dedicated circuit for compactor:
- Provide fenced concrete pad of adequate size for (6) residential size recycling containers.

Signage

- Contact the SCCPSS for a digital copy of the security, weapons prohibition and dedication signs.
- School signage must be in accordance with Georgia Law and local SCCPSS special standards. (Attachments D1-D4)

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Electronic message signage located at the front of each school (monument type)

- To be constructed primarily of brick to compliment the building design. Sign shall incorporate Daktronics Galaxy Monochrome Outdoor LED matrix: 8 Lines by 48 columns, or approved equivalent.,,coordinate with local AHJ for color and operational limitations.

Toilet Partitions

- One inch thick HDPE (Star Board); alternative materials must be approved in writing by SCCPSS at Schematic Design review meeting.
- Partitions shall be floor mounted, over-head braced (with tamper resistant, stainless steel fasteners)
- Gravity close hinges

Storage Specialties

- Music Storage to be casework type
- Music Instrument Storage shall be metal shelving 72" max attached to walls
- Athletic Storage shall be metal shelving 72" max attached to walls

Telephone Specialties

- Refer to SCCPSS Technology Design Guidelines (Attachment B)

Division 12 - Furnishings

Casework

Manufactured Casework All casework shall be lockable

Manufactured Casework includes but is not limited to: Typical classroom teacher wardrobe / storage cabinet (36" wide X 24" deep X 80" high)

- Classroom and office vertical storage cabinets, base cabinets with counter tops and wall cabinets.
- Miscellaneous specialty cabinets and shelving.
- Construction: Cabinet bodies shall be Standard high pressure plastic laminate finish over industrial grade particleboard with no exposed edges.
- Cabinet backs shall be minimum ¼" commercial standard CS-251 tempered hardboard or minimum 3/8" high performance 47 lb. density particleboard.
- Cabinet sub-base shall be of a separate and continuous ladder-type platform design, leveled and floor mounted prior to cabinet body placement. Material shall be exterior grade plywood.. Base front / toe-kick shall be finished with 4" high black extruded rubber cove base with pre-molded corners to match room base.
- Counter tops shall be 1-inch deeper than base cabinet with solid surface material.
- Counter tops for computers shall be 30" deep and be equipped w/ grommets and wire management below. Provide plastic laminate finish in areas approved by the District.
- Counter backsplash shall match countertop construction.
- Drawer fronts and hinged doors shall be overlay style with higher pressure

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Construction Design Guidelines

- laminate on all exposed surfaces with matching 3mm PVC edging.
- Shelving behind doors shall be high pressure plastic laminate on particle board core with matching 3mm PVC edging. Shelves behind doors up to 27" wide shall be ¾" thick and 1" thick if over 27' wide up to 36" wide. Open shelving shall be 1" thick. No shelving shall exceed 36" unsupported width.
 - Shelving shall be adjustable and supported by side panels with concealed fasteners capable of supporting the specified content.
 - Hardware: Hinges shall be adjustable 5-knuckle, institutional grade, 2-3/4" overlay type with hospital tip with minimum load capacity of 310 lbs./pair. Anchor hinges with engineered screws (no wood screws)
 - Hinges shall be stainless steel.
 - Pulls for drawers and swing doors shall be ADA compliant one piece semi-recessed molded contour finger pulls
 - Catches shall be nylon roller or friction type.
 - Drawer slides shall be heavy duty, side mounted type, equipped with heavy duty ball bearing nylon wheels and automatic positive stops.
 - Locks shall be half mortise design with only round cylinder exposed, five tumbler cylinder, keyed separately with master key: Coordinate during key review meeting. All casework shall be lockable.
 - Shelf clips shall be heavy duty design to hold shelf in place. Submit sample which includes every typical component including hardware and shelf retaining clips.
 - Accessories: Provide accessories appropriate to the cabinet's function.
 - Warranty: Provide manufacturer's standard 5-year warranty against defects in material and workmanship.
 - Basis of Design: Mott Manufacturing

Window Blinds

- Interior blinds shall be 1" aluminum horizontal slats.
- Basis of design shall be Levelor Metal Blinds or approved equivalent.
- Provide blinds at typical classroom and Lab exterior windows.
- Use of **tinted glass** for sun control in lieu of blinds at large and inaccessible windows at Lobbies, Corridors, Media Centers, Kitchens, Cafeterias, Gymnasiums and similar spaces shall be approved in writing by the District.
- Interior windows provided for supervision purposes in certain areas and shall not have blinds except where specifically approved by SCCPSS.
- All window treatments with a window sill height over six feet (or as appropriate for the location) shall have motorized mechanism to open and close the blinds, shades, or curtains.

Multiple Seating

Auditorium Seating (See school type section for additional requirements)

- Auditorium Seating shall be as described below.
- All seating components shall be provided by a single manufacturer.
- Seating Layout shall be designed with standards spaced laterally in rows so that end standards are in alignment from first to last row, regardless of whether aisles converge or are of constant width, and so that sightlines are optimized.

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- Provide appropriate accommodations for wheelchairs in accordance with ADA. Basis of design shall comply with BIFMA Standards.
- **-Seats** should be a minimum of 21" wide. 24" is the largest a seat size.
- **-Outer backs** should be plastic. Options include laminate.
- **-Seat outer covers** are plastic.
- **-Armrests** are normally plastic. Wood or laminate are acceptable when approved by the District.
- **-Foam thickness** on seats and backs should be 3" thick. 2" thickness should not be acceptable. Foam is polyurethane.
- *Serpentine springs are NOT ACCEPTBLE on the seats.*
- **-Fabric on Upholstered Chairs** should include standard grade fabric unless specified otherwise.
- **-Back height** should be 33" high. High backs can be used as an option.
- **-Back design** should be soft squared.
- **-Backs on Chairs** should be full height. In other words the back height must be built so that it prevents an occupant from putting their feet on the seat in front of them
- **-BIFMA Safety and Performance Standards**.....the manufacturer should comply with BIFMA standards.
- **-Support Standards** (Legs) should be steel.
- **-Automatic Seat Return**.....should include a gravity counterweight system that causes the unoccupied seat to rise automatically and quietly to the upright position.
- **-End Panels** are on chairs on the aisles. Standard end panels are laminate or wood and are available in different sizes
- **-Options for chairs should include**.....aisle lights, tablet arms, high backs on chairs, upgrade on fabric, etc.
- **-Approved manufacturers**-----First Class Seating Ducharme, Irwin, Hussey , and KI

Division 14 - Conveying Equipment

Hydraulic Elevators

- Shall be provided with a 2-year warranty
- 3500 # Capacity
- Required to fit a stretcher
- Provide card-reader with key over-ride capability.
- DP shall include interior finishes on Finish Schedule. Finishes shall be durable and 'service' elevator grade quality.
- **Manufacturers:**
 1. Otis
 2. Schindler
 3. Thyssen Krupp

Division 22 - Plumbing

Plumbing Piping Pipe and Fittings

Vent stacks shall be located sufficiently far away from air intakes of HVAC equipment to

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Construction Design Guidelines

prevent drawing odors back into the building.

- Domestic Hot Water to be provided to the following sink locations: Nurses Station, Staff Restrooms, Break Rooms, Kitchen, Kitchen Restrooms, Janitor Closet, Laundry, Locker Rooms, Special Needs Classrooms, and CTAE Labs as approved by the District. DP to provide electric on-demand (tankless) units where appropriate for the demand and location. Tankless gas units for large demand locations are acceptable with District approval.
- Domestic water pipe shall be Type L copper with lead-free joints, chrome plated brass or copper where exposed.
- Domestic water supply lines from meter to the building shall be Schedule 80 PVC with tracer wire.
- No saddle tees shall be permitted.
- Provide acid resistant materials in labs.
- Provide barrier to prevent rodent infiltration where pipes penetrate from the exterior.
- Clean outs at all group bathrooms at highest end of the run placed in wall with lockable access door.
- All bathrooms receive floor drains.
- Ceiling grid to be marked to show valves, WSHP units, filters, etc. Ideally use riveted plate **on ceiling grid** to describe what is up above.
- Prefer bathroom sinks which are supported by carriers w/ arms.
- Multi-Fixture Bathrooms need hose bibs recessed into wall with locking door cabinet.
- Unless walls are block contractor will tile up no lower than 6' from finished floor.
- Utilize Spring loaded self-metering faucets; no infrared.
- Foot actuated on/off valves at Nurse's sink at kitchens and other 'group' type wash-fountains as approved by the District.
- Hose bibs (and exterior grade outlet) within 125' of EVERY mechanical unit regardless of location on site, in building or on rooftop. Hose bibs shall also be installed about perimeter of building (24" above grade) with a maximum separation distance of 125 ft.. All hose-bibs shall be fully recessed with locking door cabinet.
- Backflow preventers need to be housed in approved enclosures and protected from freezing. Wrapping exposed devices is not acceptable. Provide underground (in box) wherever possible.
- Water and Sewer Mains shall be installed in easements or Rights of Way to allow for maintenance by the utility provider whenever possible.
- Fire Hydrants shall be installed in easements or right of ways to allow for maintenance by the utility provider whenever possible.
- Two way cleanout where waste lines exit each wing. Make sure cleanouts are not in door swing and have sufficient distance from door to not be a hazard when exiting building.
- 110v outlet within 50' of all cleanouts, both interior and exterior.
- Flush valves are Sloan or approved equivalent.
- Contractor to video camera all lines 3" or larger to a distance of 10-ft. beyond exterior of building. Record and turn over to District in DVD form with labels as appropriate for the facility and location.

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- Plate and frame heat exchangers must have isolation and by-pass valve with taps to allow chemical flushing without removal of the unit, they must also have a spare pack for quick change out for cleaning.
- Low flow wall mounted manual flush urinals shall be installed in male restrooms
- Low flow floor mounted manual flush toilets in all restrooms; flush valves shall match capacity of fixture.

Division 23 - Heating Ventilating and Air Conditioning

General:

- Contractor to provide a two-year warranty to start at material completion date on all parts and labor.
- Five year minimum manufacturer's warranty on all compressors.
- Manufacturer's Warranty period to begin at material completion.
- It is the District's request that all equipment be easily accessible and that all equipment be located in areas of accessibility that will not disturb the education of students during maintenance and repair.
- Equipment should be located in closets or mezzanine. Ceiling mounted equipment is not acceptable.
- The mechanical room must be adequately sized for maintenance and replacement of all equipment; including sizing of door.
- Minimize rooftop installation.
- Floor drain required in all mechanical room/closet and mezzanines.
- All equipment must be able to be replaced or maintained without altering building structure.
- For any systems requiring software for access, require copy of software and any required hardware or firmware to access the system through the program and **provide sufficient training** for District technicians to be able to access.
- Prefer collapsible duct for exposed overhead duct in gyms and other suitable areas.
- Provide a list of filter size and quantity by unit and room number.
- Label all units with room number & electrical panel data.
- Provide spread sheet with model number, serial number and room number.
- Cooling tower fans to be variable speed type. Direct-drive pumps (with coupling) are preferred.
- Mechanical systems components such as cooling towers shall be 150% redundant and pumps shall be fully redundant.
- Analogue temperature gauges required on loop at heat exchangers, pressure gauges required at loop pumps.
- Provide traditional water treatment loop (no sonic wave)

Water Source Heat Pump

- Preferred mechanical system is the Water Source Heat Pump with individual self-contained units per class room.
- The administration area, auditorium, cafeteria, gym and media center systems

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- should be independent of the water source loop.
- Provide separate and adjustable humidity control in Media Center and Media Storage
- Prefer individual mini splits in administration area.
- One hundred percent redundancy on all critical components to avoid loss of heating and cooling capability in classrooms and administrative areas.
- Require one set of spare heat exchanger plates.
- Require hinged, unobstructed filter door and filter track provided by manufacturer.

Approved Manufacturers for Water Source Heat Pumps:

1. Trane
2. Carrier
3. Dakin

Energy Recovery Ventilation Units

- Ionization units are preferred.
- Underground duct is not acceptable
- See roof penetration concerns in division 07

Approved Manufactures for ERU:

1. Aeon
2. Valent
3. Munsters

Boilers

- Take necessary precautions to prevent pipe sweat when boilers are not operating.

Approved Manufactures for Boilers:

1. Lochinvar
2. Raypack
3. Teledyne

Division 25- Integrated Automation

- All controls shall be ALC or Siemens Talon.
- The following apply to both systems:
 - Specifications shall require system installer to provide on-site response within 24 hours during start-up and warranty period.
 - If more than one area is served by specific HVAC unit, Use one RS pro temperature sensor for control, and put a RS temperature Sensor in each remaining area served for monitoring only.
 - All Space Temperature Sensors to have slide-bar control only indicating warm/cool or blue/red; no numerical readout
 - Individual unit controllers to be ALC or Siemens Talon on all heat pumps,

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Construction Design Guidelines

package units, and other mechanical equipment to the greatest extent practicable. Units that are only available with factory controllers shall be monitored and controlled by the building control system.

- Each Main Panel is to have laminated “As Built” placed in panel to identify equipment and points and Input/Outputs location identified on Module.
 - Mark all Wires in Panel
 - Place Phenolic tags on each panel
- The following points of control are for the identified equipment:

Wall Hung Heat Pumps:

Fan Start/Stop	Digital Output (DO)
Fan Status (CT)	Digital Input (DI)
Reversing Valve	DO
Compressor	DO
Emergency Heat	DO
Reheat or Hot Gas Bypass (option)	DO
Supply Air Temp.	Analog Input (AI)
Space Temp W/reset & override	AI & DI
Space Humidity (if required)	AI

Water Source Heat Pumps:

Fan Start/Stop	DO
Fan Status (CT)	DI
Reversing Valve	DO
Compressor	DO
Reheat or Hot Gas Bypass (option)	DO
Water Flow Solenoid Valves	DO
Supply Air Temp.	AI
Space Temp W/reset & override	AI & DI
Space Humidity (if required)	AI

Note: Mount Module just above ceiling grid in Hallway with tag to identify location ***on ceiling grid.***

Roof Top Units:

Fan Start/Stop	DO
Fan Status (CT)	DI
Cooling Stages 1 or 2	DO(s)
Heat Stages 1 or 2	DO(s)
Economizer Enable	DO
Dehumidification (if available)	DO
Supply Air Temp.	AI
Space Temp W/reset & override	AI & DI
Space Humidity (If Needed)	AI

Note: Use SE Controller and Mount on unit.

Energy Recovery Units:

Supply Fan Start/Stop	DO
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Exhaust Fan Start/Stop	DO	
Fan Status (CT)	2 DI	
Exhaust Temperature	AI	
Exhaust Humidity	AI	
Supply Air Temperature	AI	
Exhaust Air CO2	AI	
Chillers:		
Start/Stop	DO	
Chilled Water Reset		Analog Output (AO)
Chiller Status	DI	
Chilled Water Supply Temp.	AI	
Chilled Water Return Temp.	AI	
Chilled Water Pumps	DO	
Variable Speed Drives (Option)	AO	
VSD Status	DI	
Chilled Water Pump Status (CT)		DI
By Pass Valve		DO
Boilers; (points for each Boiler if more than one)		
Start/Stop	DO	
Alarm Status (from Boiler)		DI
Hot Water Supply Temp.	AI	
Hot Water Return Temp.	AI	
Hot Water Mixing Valve	AO	
Hot Water By-pass Valve	DO	
Cooling Towers (Points for Each C.T. if more than one)		
Fan Start/Stop (per fan)	DO	
Fan Status (per fan)		DI
C.T. Water Supply Temp.		AI
C.T. Water Return Temp.	AI	
Variable Speed Drive (option)		AO
Variable Speed Drive Status	DI	
CW Mixing Valve	AO	
C.T. By-pass Valve		DO
Loop Water Supply Temp.	AI	
Loop Water Return Temp.	AI	
Condenser Water Pumps Start/Stop		DO
CW Pump Variable Speed Drive	AO	
CW Pump Status (CT)	DI	
Loop Water Pumps Start/Stop	DO	
LW Pump Variable Speed Drive	AO	
Variable Speed Drive Status		DI
Water Differential Pressure		AI

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Heat Exchanger Supply Temp	AI	
Heat Exchanger Return Temp		AI
Unit Heaters Gas or Electric		
Fan Start/Stop	DO	
Space Temp.		AI
Exhaust Fans Controlled by Temp>		
Fan Start/Stop	DO	
Space Temp.		AI
Interlocks as Necessary		
Small Exhaust Fans & Toilet Exhaust		
Group together on Start/Stop	DO	
Small Wall Heaters with Internal Thermostat		
Group Together on Start/Stop	DO	
Domestic Water Heaters: Large (Café & Gym)		
DWH Start/Stop	DO	
Pump	DO	
DWH Temp.		AI
Freezer/Coolers		
Disconnect CT (Each)	DI	
Temperature (Each)		AI
Ductless Split Systems (Mitsubishi Type)		
Unit Start/Stop	DO	
Space Temperature		AI
Supply Air Temperature	AT	
Global Items:		
C/O Sensor on Outside Air	AI	
Outside Air Temperature	AI	
Outside Air Humidity		AI
Emergency Generator		
Run and Over-crank Status		2 DI

Division 26 - Electrical

General

- All electrical rooms with transformers shall have ductless mini split of sufficient size

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to handle heat load.

- Transformers shall be floor mounted on pad; not hung from the ceiling.
- Emergency lights in stairwells shall be LED wall packs.
- All lighting shall be accessible via a ladder or lift; or be installed with remote control drop mechanism.
- No computerized lighting system.
- Power stations shall be provided in common areas such as the Library Media Center and Cafeteria, consisting of quad outlets, for student access for charging portable devices.
- Provide generator connections and transfer switch.
 - Freezer / Cooler
 - Milk coolers
 - Lights in kitchen and cafeteria
 - Cafeteria power outlets
 - Other items as directed by the District

Solid Front Electrical Panels

- Electrical panels and other devices shall be located in special purpose locked rooms if possible.
- Electrical panels and other devices locate at corridors or other areas normally accessible to students shall be lockable and shall have solid front panels without louvers.
- If ventilation is required by the code, it shall be provided in such a manner as to prevent students from inserting small objects into the electrical panel or device. (e.g. heavy gauge wire mesh inside cover).
- Architect/Engineer shall incorporate these requirements into their submittal review process.

Conductors and Grounding

- Aluminum wiring shall not be used on the building side of the meter.
- MC Cable shall be allowed above removable ceilings and in accessible areas, if approved by the Design professional.
- Plenum-rated low-voltage cabling may be used in lieu of conduit, if cost effective.
- Provide cable tray or hooks at hallways for low voltage cabling.
- Low voltage cable shall not be installed resting on ceiling tile and grid.
- Conduit shall be run in a manner that preserves service access to all adjacent equipment.
- No BX cable allowed in inaccessible areas such as wall cavity.
- Label all junction boxes back to the original panel.
- Surge protection on all service entrance power.
- All three phase power coming into the building shall be phased protected.
- All three phase equipment should have phase monitoring.

Power Outlets

- All power outlets to be tamper resistant (child proof)

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- Provide a minimum of one 110 volt duplex outlet on each wall greater than 4 ft. in length and an average of one per twelve feet of wall and one at every data drop.
- Provide one 110 volt GFI duplex outlet adjacent to each sink counter.
- Provide one 110 volt (exterior grade) duplex outlet about exterior perimeter of all buildings (minimum of 1 per side of building but shall not exceed 125 ft. maximum spacing).
- Provide master power switch at Science, Computer, Business and Career Technology Education Labs.
- All mechanical rooms and closets must have duplex convenience outlet. Coordinate additional requirements with charging requirements for floor finish machines.
- No floor outlets where floor requires waxing; other floor-type locations shall be discussed on a case-by-case basis.

○

Lighting

Light fixtures for ancillary spaces, corridors, classrooms, media centers, cafeterias and gymnasiums shall be LED type fixtures furnished by SCCPSS (contractor installed). DP to contact SCCPSS's project manager for fixture cut sheets

- All room's lighting to be switched with occupancy sensors with manual override in classrooms.
- The interior lighting design shall minimize fixture types and incorporate standardize lamp inventory to the extent practicable.
- Light levels shall comply with Georgia Department of Education standards.
- General interior lighting shall be provided by recessed 2' x 4' fixtures with LED lamps..
- Polycarbonate lens are recommended for low ceilings in corridors, stairs and locker rooms.
- Storage areas, mechanical and electrical rooms should have metal cage protection.
- Mechanical rooms should be on toggle switch. No motion sensors.
- The use of incandescent fixtures or dimming electronic ballasted fixtures shall be limited to special uses, such as theatrical lighting.
- Typical classrooms, labs, media centers, and other instructional spaces shall have dimming capabilities.
- Install any photo cell on the roof or the building no higher than ten feet off the ground.

Gym Lighting

- Provide multi-level lighting in all gyms by means of dimming.
- Competition Gyms shall have multilevel lighting for recreational use and competition use at light levels per state athletic association requirements.
- Gym lighting fixtures shall be provided by SCCPSS (contractor installed)
- Gym lighting fixtures shall be standardized for cost efficiency to the extent possible.
- Gym lighting fixtures shall have fixture, lens, guards and safety chains to prevent

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these components from falling when damaged by impact.

- All light switch devices in gyms shall be of the keyed type (no toggle switches).

Theatrical Lighting Systems

- Architects shall be responsible for employing a qualified professional Lighting Designer to develop appropriate Design and Construction Documents.
- Drawings and Specifications shall be submitted to SCCPSS Drama Coordinator and Facilities Services for review and approval at the Schematic Design Phase.
- Scope of work shall include overhead pipe grid, dimmable theatrical light fixtures, wiring and control system.
- Provide separate LED work light system.
- High School Auditorium front overhead stage lighting shall be drop light mounted, and easily accessible. .

Division 27 - Technology Design Guidelines

- Refer to Technology Design Guidelines (Attachment B) for additional information.

27 40 10 Intercom

The Intercom system shall provide two way communications between the administrative front desk, all other instructional rooms and common areas and include all equipment, devices and wiring required to form a complete code compliant intercom communication system.

The system will be network based but separate from the data network and can be activated by a hands-free call switch located in the instructional room and a handset located in the administrative front desk to communicate via ceiling mounted speaker/microphone. Communication may be initiated by either party. The system shall be fully networked, addressable, and have the capacity of distributing public address, class change tones and audio programs. A programmable pre-announce tone shall sound immediately before the intercom path is opened and a supervisory tone shall continue to sound at regular intervals when speaker monitoring is active, complying fully with all privacy legislation.

The intercom system shall utilize global switching and shall annunciate all instructional room emergency calls at the top of the call queue. The system shall provide for an emergency all-call feature. The intercom system shall be compliant with Georgia State and local code requirements, NFPA-70, EIA, NEC, UL, NEMA, ADA and be within the guidelines of IBC.

Major system elements are: cabling, speakers, surge suppression, microphones, handset, hands-free call switches, master clock.

The Intercom system shall be grounded by direct attachment to the closest point in the buildings electric service grounding electrode using #6 copper. *Final training shall be scheduled with Owner prior to Material Completion.*

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SCCPSS is currently using the following Systems:

1. Rauland
2. Bogan

Division 28 - Electronic Safety and Security

Emergency Responder Communications (ERC)

- New buildings and additions shall comply with all Codes related to ERC
- Design Professional to provide confirmation of signal strength and coverage as part of Close-Out documents.

Camera and Access Control

- Design Professional to coordinate device locations with District staff.
- Installation of pathways (e.g. conduit, door frames, etc...) for surveillance and access control to be included in contract documents
- Typical installation is by District's contractor

28 31 00 Fire Detection and Alarm

- The fire alarm system shall provide fire protection and warning to the entire facility and include all equipment, devices and wiring required to form a complete code-compliant fire alarm system. The system shall signal all system alarm, trouble and supervisory conditions to the Owner's designated remote monitoring station.
- Fire alarm system shall be compliant with Georgia State and local code requirements, NFPA-96 (Ventilation Control and Fire Protection of Commercial Cooking Operations), NFPA 70 (NEC), NFPA 72 (National Fire Alarm Code), NFPA 90A (Installation of Air Conditioning and Ventilating Systems), NFPA 101 (Code for Safety to Life from Fire in Buildings and Structures), UL, NEMA, ADA and be within the guidelines of IBC.
- The system shall be fully networked, addressable, and programmable and have the capacity of devices being disabled or enabled individually. Addressable devices are to be uniquely identified.
- Major system elements are: [dedicated] system control panels with back-up power, power supplies, fire detection and control modules, input and output devices, indicators with bypass capabilities, audible and visual alarm circuit zone control, equipment enclosures and evacuation signals.
All fire alarm systems shall be configured to delay the signaling of building trouble conditions signaling for 180 seconds from the moment any trouble condition is detected (to avoid nuisance signaling during short term power failures, short term brown-out conditions, etc.).
- All fire alarm system trouble conditions of duration of less than 180 seconds shall

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be considered as transient and shall not signal the Owner's designated remote monitoring station.

- All supervisory conditions detected by the fire alarm system shall signal Owner's designated District Command Center (DCC) immediately.
- All alarm conditions detected by the fire alarm system shall signal the Owner's designated remote monitoring station immediately.
 - Final training shall be scheduled with Owner prior to Material Completion.

Approved Manufactures:

1. Notifier
2. EDS/Edwards
3. Simplex

Division 31- Earthwork

- Earthwork operations shall be performed in accordance with the applicable portions of City of Savannah Specifications Section 2200 and GDOT Standard Specifications in addition to the project specifications.
- All areas to be paved shall be tested for adequate compaction and proof rolled prior to placement of base or asphalt pavement.
- Areas where unsuitable material is expected based on subsurface investigations shall be identified on the plans and quantified.
- Identify acceptable alternatives to improve subgrade conditions and provide cost considerations to the District prior to preparation of Final Construction Documents.
- Grade the site such that earthwork will balance to the greatest extent practicable.
- Identify onsite borrow areas and evaluate detention ponds for borrow opportunities as a cost savings measure.
- Avoid placing fill in flood plain and wetland areas. If unavoidable, obtain the appropriate permits. Allow adequate time in the schedule for permitting.
- Slopes should not be set steeper than 4:1 under normal circumstances. Where space is limited 3:1 slope may be used sparingly. Slope steeper than 2:1 require District approval.
- Longitudinal grades of swales and ditches should be 1% or greater. In special situations flatter slopes may be approved on a case by case basis.
- Topsoil should be excavated and stockpiled on site for placement in landscape areas. Organic materials and stripping should be removed from the site.
- Soil in grassed areas to be amended as necessary to grow permanent stand of grass meeting City of Savannah standards.
- All silt and erosion must be controlled in accordance with the Georgia Erosion Sediment and Erosion Control Act and the NPDES General Storm Water Permit and NRCS approvals.
- Grading plans shall include 1-foot contours for existing and proposed conditions.
- Grading plans shall include spot elevations on all pavements, walks radius points, grade breaks at a minimum. List the proposed finished floor elevation of each building and the finished grade at the face of the building and within 10' of the

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building, at a minimum.

Division 32 - Exterior Improvements

- **City of Savannah Water and Sewer Specs/Details** latest edition, supplemented as necessary (E)
- Provide all details as it relates to conditions of the design

Fencing

- Fencing requirements: (Attachment F)
-

Bases, Ballasts, and Paving

- Base and paving shall conform to the applicable portions of the City of Savannah Standard Specifications Section 2600 and GDOT Standard Specifications Sections 310 & 400.
- All pavement systems shall be designed by a geotechnical engineer based on soil conditions and anticipated traffic loadings.
- All pavements in bus loops, driveways and high traffic areas shall consist of a graded aggregate base course, asphaltic concrete binder course and wearing surface at a minimum.
- All pavements in car parking areas shall consist of a graded aggregate base course and an asphaltic concrete wearing surface at a minimum.

- Pavement in loading docks, dumpster pads and trash compactors shall be minimum 6" concrete.
- Include joint layout plans and details with all concrete paving plans.
- All pavement subbases shall consist of 24" of suitable soil material compacted to 100% Standard Proctor Density in accordance with ASTM Test D-698 in the upper 12".
- Minimum slopes on asphalt pavement shall be 1% unless approved otherwise by the District.
- Minimum Slopes on Concrete pavement shall be 0.5% unless approved otherwise by the District.
- Avoid the use of inverted crowns in roadways.
- Pavements should generally slope away from building

Irrigation

- Xeriscape landscaping and indigenous vegetation is encouraged in all areas
- Irrigation shall be placed in the following locations:
 - Regulation Sports and multi-purpose fields; K-12 grades

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- Front entrances and featured design elements
- All sodded areas
- Provide separate irrigation meter if it provides a cost benefit

Attachments

- A- Library Media Center Design Guide
- B- Technology Design Guidelines
- C- Food Service Equipment
- D- Special Signage
- E- City of Savannah Water and Sewer Specifications
- F- Fencing Requirements
- G- Division 01 – General Requirements

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**Savannah Chatham County Public Schools
New Learning Commons Design Guide
2017**

Jan 2016



LEARNING COMMONS DESIGN GUIDE

(FORMERLY KNOWN AS LIBRARY MEDIA CENTERS)



Learning Commons Design Guide

This document describes Savannah Chatham County Public Schools design guides for Learning Commons (LC) standards and guidelines necessary to create a welcoming learning environment that is flexible and meets the needs of the student, faculty, and community. LC exist to develop and support lifelong learners. They are the center of school life, driving a passion for reading and learning to all.

All renovations and new buildings shall follow this plan for updating and designing LC. All LC standards and procedures shall be documented, adopted, and enforced by the Data and Accountability Division and the Library Media Technology Specialists.

The Learning Commons is an information village supported and promoted by our Library Media Technology Specialists. It includes and accommodates activities and interactions between students, teachers, administrators, parents, and community members. The LC focuses on information literacy, digital literacy, and visual literacy to enhance student teaching and learning. The center provides access to a wealth of resources and applications in order to support diversity in learning style.

Revision History

DATE	PERSON	VERSION	DESCRIPTION
1/27/2013	David Feliciano	2013.1	Original Release
2/1/2013	David Feliciano	2013.2	Final Release
12/5/2013	David Feliciano	2014.1	Reviewed and updated
1/26/2016	Wendy Marshall	2016.1	Reviewed and Updated
1/26/2016	David Feliciano	2016.1	Reviewed and Updated

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 - 11.13. [Professional Resources Room](#)
 - 11.14. [Cyber Cafe Area](#)
 - 11.15. [Learning Lab](#)
 - 11.16. [Restrooms](#)
 - 11.17. [Computer Lab](#)
 - 11.18. [Main Print Collection Area](#)

2. Procurement / Installation Responsibilities

Item	Funding Source	Furnish	Install
LC Design	Construction	Architect	Contractor
LC furnishings	Construction	Owner	Board Sub-Contractor
LC technology, learning devices, and digital resources	Construction	Owner	Board Sub-Contractor
LC books and materials	Startup Funds	Owner	Board Sub-Contractor

3. General Design of the Learning Commons (LC)

The physical design of the LC plays a major factor in the efficient and effective use of resources by students. The LC is the central point of access to information and resources for students and staff. A collection of technology learning devices, print, and electronic resources are maintained in this center. The center's learning space is required to accommodate collaborative work spaces for students. Creating flexible learning spaces (walls, lighting, and mobile furniture) is essential in order to accommodate emerging technologies, curricular changes, and evolving instructional materials.

The LC should be centrally located within the building. This placement will provide easy access from all classrooms and learning areas. This will support the movement of materials and technology equipment to and from the Learning Commons and the ease of access by all students and staff. LC should include a minimum of 6200 square feet.

The LC needs to be one story for security and management. The design needs to be round or square in order to maximize line of sight and eliminate unsafe areas. Columns in the space should be minimized to avoid obstructing line of sight. All listed and required rooms are to be located around the perimeter of the center and have windows (exception on windows is the equipment storage room). Security mirrors will be required where blind spots exist to ensure the safety of students and staff. The LC should be keyed separately from the rest of the school, when possible, and rooms housing expensive equipment need to lock and not be accessible with a master key.

The LC needs to be located on the first floor, whenever possible, particularly if Pre-K - 2nd grade children are being served. The design needs to provide flexible space to support creative use throughout and beyond the traditional school day. The LC needs to be designed to support expanded hours. Easy access is needed from the outside to accommodate early morning and evening learning events, community activities, and for the delivery of building materials and technology resources.

The LC needs to be well lit and conducive to learning. Natural lighting is acceptable only if the lighting is controlled through a window shade system and does not render instructional technology displays (projectors and monitors) unusable. The design should take into account acoustics control to limit the travel of noise throughout the center. Color schemes for the LC should match school colors.

The LC needs to be designed to support multiple activities simultaneously. Appropriate traffic patterns needs to be taken into consideration in order to allow individuals, small groups, and entire classes to enter, exist, and work with minimal disruption to other areas. Space within the center is required for formal instruction of a full class while individuals and small groups can work in adjacent areas.

4. HVAC System

1.1.1.1 The LC requires an independent HVAC system for year-round operation in order to protect equipment, materials, books, and resources. Relative humidity should be maintained under 50% to protect books, materials, and technology.

5. Walls

1.1.1.2 Wherever possible, walls of rooms are to be all glass or to have glass above 3 ½ feet from the floor. Solid walls will also be required in the LC for the option of mounting digital/interactive displays and posters. Where shelves are to be fixed to walls, the construction must be either concrete block or have metal supports added behind sheetrock walls to attach suspended bookcase systems as needed. There should be no “nooks” created by placement of shelving, structural columns, or walls.

6. Floors

1.1.1.3 A combination of carpet and non-carpet floors are to be used. Non-carpet floors for high traffic area, learning labs, and social/cyber center areas.

7. Lights and Windows

1.1.1.4 Lighting and windows can affect the instructional environment within the center. Flexibility and control in lighting is essential. Separate lighting is necessary for individual areas, so lighting should be individually controlled and may be dimmed or turned off independently. There are three types of lighting that need to be addressed and taken into consideration on the design: Natural lighting, artificial direct and indirect lighting. The optimum lighting design is to provide multiple zones with dimming capability and using a combination of direct and indirect lighting.

1.1.1.4.1 Natural Lighting

This type of lighting is welcomed in the LC, provided that it can be controlled. Southern windows will provide the brightest light while northern windows will provide consistent lighting throughout the day. Because of the interference natural lighting can have, the ability to limit or block sunlight on demand is essential, especially in areas where video displays are present.

Blinds or louvers must be provided in order to control the outside light and must be easily controlled by the media specialist. Windows higher than 6' that provide direct sunlight require sun block or diffusers. A balance of windows with wall space for shelving is necessary.

1.1.1.4.2 Artificial and Indirect Lighting

Direct lighting should be located along the stacks shelving, display cases, and wall arts. Indirect lighting should be located over the computers and projection areas. Diffusers will ensure staff can provide the right lighting over the computers and projection area.

8. Electrical and Data Networkings

1.1.1.5 Multiple power stations/outlets with surge protection should be placed along available wall space at 6 foot intervals and throughout the LC to support school and student-provided technology devices. Floor power, in addition to wall power is necessary, placed at a minimum of 12 ft. intervals, and at counter/table height level as the furniture design requires.

1.1.1.6 A combination of wired and wireless is required throughout the entire center and adjoining rooms, such as the equipment room, learning labs, and technical processing spaces.

9. Shelf Design

In order to provide good visibility and space utilization, tall stacks of shelves are to be placed along the perimeter walls and lower stacks of shelves are to be placed throughout the center. All free-standing shelves will have locking casters to support flexibility in the center to accommodate a variety of activities.

Shelves for books are to be no more than 2/3 full or plan to provide 120% of the collection size. Picture book shelving is to be 200% of the picture book collection size. Free standing bookcases are to have 3 adjustable shelves with open view and book stops on each level. Shelves to be (12" or 18") deep and no more than 36" wide.

Free-standing shelves no more than 72" in length (2x36"). Free-standing shelves are to be double-sided and have finished ends to support displays and signage purposes. Sloping shelves will provide space for periodicals

(one magazine per foot) or for book display. All shelves are to be smoothly finished and standardized in design and color.

ES and K8 - Double-sided mobile book bins for picture books should be no longer than 72” long and of a height appropriate for K- 2 students.

ES and K8 – Bookshelves no more than 42” high but able to accommodate three shelves for picture books (approximately 12-13” high). Wall shelving no more than 60” high

MS - Shelves no more than 42” high. Wall shelving no more than 72” high

HS - Shelves no more than 48” high. Wall shelving no more than 72” high

Shelving Formula:

Volume Type	Recommended Depth (inches)	Volumes per Linear Foot of Shelf
Fiction	10	8
Nonfiction	12	10
Young Adult	10	12
Picture Books	12	20
Juvenile Fiction	10	13
Juvenile Nonfiction	12	13

The target size and type of the book collection for a new Learning Commons needs to be obtained from the school’s Library Media Technology Specialist and shelving ordered to accommodate the collection at the new site.

10. Furniture and Computers

1.1.1.7 Furniture

Furniture chosen should be designed to last more than 20 years. Durability and warranty are important. Tables are to be mobile, of flexible design to promote collaboration, and may be a mixture of desk and bar height. Narrow tables can also be used to support assessments, testing, and direct instruction. Furniture to be natural oak or maple. We prefer wood for bookshelves. We prefer laminate for table tops. Furniture needs to be easily movable and come in a

variety of styles. Chairs are required for a variety of seating arrangements and are to be sturdy enough to accommodate all users. Upholstered or comfortable leisure seating is required.

- 1.1.1.7.1 Minimum desk height - 27.5"
- 1.1.1.7.2 Square Table: 36 sq ft (42" table) or 9 sq ft needed per student.

1.1.1.8 Computers

- 1.1.1.8.1 Adequate number of portable devices provided for students to conduct research, collaborate, create, read, etc.
- 1.1.1.8.2 Stationary look-up devices
 - 1.1.1.8.2.1 Minimum Ratio 1:100 for <500 students
 - 1.1.1.8.2.2 Minimum Ratio 1:200 for >500 students

11. Required Functional Areas

11.1. *Entrance Area*

A single main entrance space requires double doors to allow one dedicated for inflow of traffic and the other for outflow of traffic. The entrance is to have as much glass as possible. A secondary door entrance with a window and a blind is also required into the center; however, it will be restricted for staff use only. This will prevent students from using the LC as a hallway.

11.2. *Display Area*

This space needs to be located on an available wall near the entrance. There are two sections to the display area. One is to have direct light for highlighting books and student work. The other has diffused light to support digital interactive displays. (Power and data are required for digital displays).

11.3. *Media Administrative Office*

This office space is for the Library Media Technology Specialist (LMTS) and support staff to work with minimal distractions. This area is used for previewing and processing materials, generating orders, and reports. In the design, this office is to be close to the circulation desk in order to minimize back and forth movement of staff. An office desk, locking file cabinet, an adjustable office chair, and 2 guest chairs should be supplied. A hard-wired phone line and phone is required. There should be enough space for 60" tall shelving.

11.4. *Processing/Workroom (Elementary and K-8 Schools Only)*

This work space holds supplies and materials waiting for processing and also is an area for technical support and for teachers to work. This area is used to unpack

new materials and books requiring repair. Work counter space requires power and data 6" above the counters. Cabinets should also be located above the counter space for additional storage. Sink with hot and cold water is required for material cleanup. Splash guard is required if the sink is located next to work counter.

11.5. *Lookup Stations*

A minimum of 3 lookup stations should be located in the general area of the circulation desk, preferably against a wall. Data and power capabilities need to be provided.

11.6. *Small Group and Independent Work Area*

This space is for research, writing, and learning. Students will be able to work in groups collaboratively or independently. Furniture needs to be on casters, include electrical outlets for charging, if affordable, and reconfigurable, depending upon the needs of the students.

11.7. *Equipment Storage Room*

This secured space holds portable learning devices and equipment. It is required to be accessible from the LC and directly from the hallway. Locking storage cabinets and shelving are needed. Power should be placed along the entire perimeter of the room to support the storage and charging of portable learning devices and other technology devices. Typically these devices are maintained in mobile charging carts. Solid security doors are required. Phone and data connection required. Due to the openness of the LC, this room will serve as a security room for the staff and students. The walls of the storage room are to have no windows. The door will require keyed deadbolt access from both sides. A phone line and phone also need to be installed in this room, for security purposes.

11.8. *Circulation / Help Desk Area*

It is important for this space to be located near the entrance of the LC and where line of sight is available to all areas of the LC for supervision and student safety. It requires one mobile phone, two desktop computers, and 2 laptops for check-in/check-out. The area will need adequate space for two people to conduct material check-in, check-out, and monitoring the activities around the LC. There needs to be access from two sides and not attached to any walls. It should include a mobile book cart for book returns. The furniture will require storage space and drawers that lock. Two surface height levels are required, a service-height counter and a desk-height counter. The counter is required to be smooth and without raised joints. Sufficient power and data are required for two workstations and one mobile phone. A networked printer needs to be accessible from the circulation area.

11.9. *Multimedia Production / Video Studio Room*

This space houses a television production studio, control area, and digital editing equipment. It is used for the production of building broadcasts and for the creation of students' multimedia projects. The space requires a high ceiling for grid lights and soundproofing to minimize noise. At least one wall will be Chromakey green or blue (depending upon school colors and preferences) on a smooth surface, not on a cinder block wall. Except for elementary schools, there needs to be a divider wall with a window to separate the studio from the control room. There also needs to be at least 6 data drops in the room. Extra power for specialized equipment is required (lights, camera, teleprompter, etc.).

11.10. *Instructional Area*

This space is where students can be accommodated for the delivery of instruction. The space will need to accommodate at least a 70" mobile, flat panel on a rolling stand. Power and data need to be available in this space, as well. Include several floor outlets spaced, at a minimum of every 12 feet, to accommodate charging of devices and other electrical needs. The area should also be able to accommodate one to two classes comfortably. This area can also serve for staff and community service learning.

11.11. *Storytelling Area*

This is specifically for elementary and K-8 schools. This space is where students can be accommodated for the delivery of instruction, book talks, or story time using a variety of tools. Additional designated space is required for a reading chair and floor space for a storytelling rug.

11.12. *Soft Seating / Reading Area*

This space is where students can read books, ebooks, and periodicals. It can also be considered a reading nook and should include soft seating that can be rearranged. The space will need to be designed to support 1% of total students. Electrical outlets need to be located in this area, as well, for students to charge devices, if possible. Gaming chairs that rock can also be considered, if space and funding permit.

11.13. *Instructional/Professional Resources Room (Elementary and K-8 Schools Only)*

This space is for staff to access professional books and materials for instructional research and use. It is also the room to store sets of Guided Readers, if necessary. Single-sided 60" tall book cases should line three walls of this room. Counter height tables with power accessible at table height and wireless Internet access should be available.

11.14. *Cyber Cafe Area*

This space is for schools which house students in grades 6 - 12 and is provided for student socialization and collaboration. Non-carpet floor is required to support

students having food and drink in the area, if permitted. Outdoor Cyber Cafes can also be provided with controlled access through the LC, with security cameras, if possible, for monitoring purposes.

11.15. *Learning Lab*

This is to be used for students to work collaboratively and individually in a separate space. At least one wall of the learning lab will be composed of floor to ceiling glass for easy visibility. It should contain multiple outlets for student devices, including some embedded in the tables. Digital displays and whiteboards will be provided for students to collaborate and display their work.

11.16. *Restrooms*

One male and one female restroom is required. These will also serve to support school functions and community events.

11.17. *Computer Lab*

A computer lab needs to be accessible from the LC. The room will have two access doors, one leading to the outside hallway and the other accessible through the Learning Commons. The wall from the Learning Commons will be solid glass windows to provide visibility and light. Shades or screens will need to be provided to reduce glare on the display screens from any natural light from outside windows. This general purpose lab is available for instruction, student research, work assignments, and projects.

11.18. *Main Print Collection Area*

Adequate space needs to be provided for the shelves containing the main print collection of the LC. All bookshelves in this space will be on casters or fixed to the perimeter walls. All schools with a Pre-K - 2 population will have an area to contain the book bins specified previously in item #9 Shelf Designs.

11.19. *Professional Resources/Processing/Work Area (Middle and High School Only)*

This work space holds supplies and materials waiting for processing and also is an area for technical support. This area is used to unpack new materials and books requiring repair. Work counter space requires power and data 6" above the counters. Cabinets should also be located above the counter space for additional storage. Sink with hot and cold water is required for material cleanup. Splash guard is required if the sink is located next to work counter. This space is also for staff to access professional books and materials for instructional research and use. Single-sided 60" tall book cases should line one wall of this room. Counter height tables with power accessible at table height and wireless Internet access should be available.

12/22/2015



SCCPSS

TECHNOLOGY DESIGN GUIDELINES –
ATTACHMENT B

Savannah-Chatham County Public School System

Technology Design Plan

This document describes Savannah Chatham County Public Schools minimum design parameters, standards, and guidelines for technology supported by the Data and Information Division. It contains current requirements and strategic direction. All renovations and new buildings shall follow this plan for deploying technology. Technology specifications are required to be placed in Division 27. All district technology standards and procedures shall be documented, adopted, and enforced by the Data and Information Division.

Revision History

DATE	PERSON	VERSION	DESCRIPTION
11/21/2008	Carl Eller	2008.11.21	Original Release
2/12/2009	Patricia Branison	2009.2.12	Updated format to use new item numbering screen.
3/9/2009	Carl Eller	2009.3.9	Update content with better descriptions. Added procurement/installation responsibilities.
1/6/2010	Carl Eller	2010.1.6	Added data and wireless for gym
4/9/2010	Carl Eller	2010.4.9	Standardized format for all defined areas. Reduced data drops for classrooms from 13 to 10. Clarified data drops for wireless and for LCD projectors. Added projector and AV control standards. Changed copier standard to Ricoh. Added media center standards and updated specifications for media centers. Added specification for projector and screen installation as well as lighting and ceiling tile plan.
4/14/2010	Carl Eller	2010.4.14	Added lighting and computer lab diagrams.
4/15/2010	Carl Eller	2010.4.15	Changed data labeling for rooms to, "IDF# - Room# - Port#".
12/7/2010	Carl Eller	2010.12.7	Updated data patch cable requirements
5/20/2011	Carl Eller	2011.5.20	Added access control components. Added conduit for AT&T phone lines.

9/2/2011	Carl Eller	2011.9.2	Updated MDF and IDF to be finished spaces. Updated the responsibilities matrix and add sample from an existing project. Updated IDF/MDF racks to include cable management. Updates to classrooms, labs, and media center for projectors and data. Updated height for power and data for mounted TV's.
10/4/2011	Carl Eller	2011.10.4	Updated cable management for MDF and IDF racks. Updated patch cable colors, sizes, and quantities. Added sample elevations for classrooms.
4/18/2013	Carl Eller	2013.4.18	Updated "Procurement / Installation Responsibilities". Updated section 2.1 "Hardware Standards". Updated section 2.5 to update system specifications and indicate contractor installation of projector mount. Updated classroom drawings. Updated projector system and installation specifications.
12/6/2013	Carl Eller	2013.12.6	Updated EAC door hardware procurement responsibilities.
5/22/2014	Carl Eller	2014.5.22	Updated Classroom Presentation System standards (2.5), Classroom 5.2.5-6 and Computer Lab 6.2.5-6, Appendix E & F, sample classroom elevations. Updated Appendix D to remove door contacts from intrusion system. Updated wireless drop details in 4.5.
5/11/2015	Carl Eller	2015.5.11	Updated owner/contractor responsibilities. Replaced projector systems in media center and conference rooms with lower cost 55" and 65" displays. Updated classroom audio specification. Updated auditorium projection screen specifications.
7/27/2015	Carl Eller	2015.7.27	Updated owner/contractor responsibilities. Updated standards. Updates to power needs for projectors and displays in classrooms, media center, and administrative areas.
12/21/2015	Carl Eller & Edra Buckles	2015.12.21	Changed UPS requirement in MDF and IDF's. Revised quantity of network jacks required and teacher's workstation and student workstations in classrooms. Changed rack type in IDF's.

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1. Procurement / Installation Responsibilities

See Appendix D for sample

Item	Funding Source	Furnish	Install
Workstations	Construction	Owner	Owner
Laptops	Construction	Owner	Owner
Printers	Construction	Owner	Owner
Servers	Construction	Owner	Owner
Copiers	Construction	Owner	Owner
Video Distribution	Construction	Owner	Owner
Network Electronics	Construction	Owner	Owner
Auditorium / Cafeteria Projection Screen	Construction	Contractor	Contractor
Classroom and Computer Lab Projection Screen/Board	Construction	Owner	Owner
Multimedia Presentation – Universal Projector Mount with 4 power outlets	Construction	Owner	Owner
Multimedia Presentation – LCD DLP Projectors	Construction	Owner	Owner
Multimedia Presentation – Audio Systems	Construction	Owner	Owner
Multimedia Presentation – Interactive Device	Construction	Owner	Owner
Multimedia Presentation – Wall mounted controller.	Construction	Owner	Owner
Multimedia LED Displays	Construction	Owner	Owner
UPS Devices	Construction	Owner	Owner
Data Cabling Systems; includes cable, connectors, electronic racks, splice trays, Comcast fiber Wan connection, and patch cables according to specifications below.	Construction	Owner	Owner
Conduit and junction boxes for data cabling and other low voltage wiring	Construction	Contractor	Contractor
Telecommunications equipment; phones and related equipment	Construction	Owner	Owner
Cisco Access Control components	Construction	Owner	Owner
Security Camera hardware, cabling, software	Construction	Owner	Owner
Access Control Door Hardware; Card Readers, Electric Locks, Electric Latch, DPS, and other related door hardware for electrified doors.	Construction	Construction	Construction

2. Categories of Standards

2.1. Hardware Standards

- 2.1.1. Workstations: Intel based workstations; small form factor; running Windows 10 Professional
- 2.1.2. Laptops: Intel based, 14" LCD display, running Windows 10 Professional
- 2.1.3. Printers: Laser printer that support networking with a universal print driver
- 2.1.4. Servers: Intel based servers with lights out remote management capabilities. Operating system is Windows 2012 R2.
- 2.1.5. Copier/MFD: Network connected devices using proximity cards
- 2.1.6. Power protection: American Power Corporation (APC)
- 2.1.7. Video distribution: Safari Montage

2.2. Network Standards

- 2.2.1. Network protocol: TCP/IP Suite with IP4 addressing
- 2.2.2. Network electronics: Cisco
- 2.2.3. Telecommunications/VOIP: Cisco
- 2.2.4. Distance learning equipment: Cisco
- 2.2.5. All twisted pair components and installation from the wall jack to the patch panel must meet category 6 cable standards

2.3. Software Standards

- 2.3.1. Desktop operating system: Microsoft Windows
- 2.3.2. Server operating system: Microsoft Windows Server
- 2.3.3. Office productivity: Microsoft Office

2.4. District Standards

- 2.4.1. Student to computer ratio: 3 students per computer

2.5. Classroom Multimedia Presentation System Standards

- 2.5.1. DLP projector: ViewSonic PJD7525W
 - 2.5.1.1. Brightness: 3,200 or greater
 - 2.5.1.2. Contrast Ratio: 22,000:1
 - 2.5.1.3. Resolution: 1280x800
 - 2.5.1.4. RJ-45 Network port
 - 2.5.1.5. 3.5mm mini jack audio in (2)
 - 2.5.1.6. VGA Input (2)
 - 2.5.1.7. Built-in 10W amplifier
 - 2.5.1.8. HDMI input
 - 2.5.1.9. RS 232 port
- 2.5.2. A/V Cabling System and Projector A/V controls: RapidRun supporting VGA, HDMI, and 3.5mm audio and SP Contrls Pixie+ panel using RS-232 for control signaling.
 - 2.5.2.1. Requires electrical contractor to provide a 6” square outlet box with three gang trim ring, 48” off the floor at the teacher desk location with (2)-1 ½” conduit to above the drop ceiling.
- 2.5.3. Projection Screen: Da-Lite IDEA Screen Model 28271 or equivalent
 - 2.5.3.1. Size: 49” x 84¾” (viewing area 46” x 81¾”)
- 2.5.4. Projector Mount: A-V Mounts (www.a-vmounts.com)
 - 2.5.4.1. Model AVM PRO-DCP or equivalent with 16” to extension tube
 - 2.5.4.2. Mount must be installed by electrical contractor
 - 2.5.4.3. Two duplex power outlets installed in projector mount plate with flexibility to move the plate within two ceiling tiles.
 - 2.5.4.4. Mount plate must allow for projector lens to be 4 feet 2 inches from the projection screen.
- 2.5.5. Ceiling Mounted Speakers:
 - 2.5.5.1. AudioEnhancement CS-12 or equivalent
 - 2.5.5.2. Frequency Range: 70 Hz to 15 kHz (-10dB)
 - 2.5.5.3. Frequency Response: 100 Hz to 14 kHz +/- 2dB
 - 2.5.5.4. Power Handling: 50 Watts continuous pink noise
 - 2.5.5.5. Impedance: 8 Ohms nominal
- 2.5.6. Amplification – AudioEnhancement GL-300 or equivalent
 - 2.5.6.1. Power Output: 2 x 20Watts (4Ohms)
 - 2.5.6.2. Line Output: Unbalanced 3.5 mm, internal network audio
 - 2.5.6.3. Line Input: 3 3.5mm, internal network audio, 1 balanced/unbalanced (Euroblock), 1 IR-Satellite/TLD100(RJ45)
 - 2.5.6.4. Equalizer: 5-band equalizer
 - 2.5.6.5. Speaker output: 2 channels at 16 watts per channel
 - 2.5.6.6. RS-232 control

2.6. Interactive Device

- 2.6.1. Mimio Teach interactive used with Da-Lite IDEA screen. Screen provided and installed by CMR. (See section 2.5.4)

2.7. Access Control

- 2.7.1. All electrical drawings shall show placement of power supplies, cable pathway, and low voltage wiring for door access control systems
- 2.7.2. Electric lock/latch power shall terminate at the power supply.
- 2.7.3. DPS, REX, and reader wiring shall terminate at the nearest network IDF and be labeled with the appropriate door number.
- 2.7.4. District-wide management platform: Cisco Physical Access Manager (PAM)
- 2.7.5. Control modules: Cisco Physical Access Gateway, Reader, Input, and Output Modules
- 2.7.6. Power supplies:
 - 2.7.6.1. Basis of design is the Securitron AccuPower AQD5 with a PDB-8C8R relay.
 - 2.7.6.2. The power supply shall have an output matching that of the load it is powering. In addition, the power supply shall have eight independently configurable inputs with each input having its own individual output.
 - 2.7.6.3. It shall have filters and regulators. It shall also have a fire alarm trigger.
 - 2.7.6.4. The terminal end of the cable that connects the load to the power supply, shall not exceed 50 feet.
- 2.7.7. Door Hardware: Sargent Harmony or full compatible devices that support HID 125 KHz proximity.

3. Head-end Room (MDF)

3.1. Room Layout

- 3.1.1. Room dimensions must be a minimum of 10 feet by 15 feet
- 3.1.2. The MDF must be a dedicated room for AV, data network and intercom
- 3.1.3. The MDF shall not be intended for storage or any other purpose not specified above
- 3.1.4. The MDF shall be a finished space with flooring and drop ceilings
- 3.1.5. Racks (24"x30"x84") must be centered in the MDF room with a minimum clearance of three feet on each side of the connected racks.
- 3.1.6. See Appendix C for layout
- 3.1.7. Each rack must be accessible from the front and back for service
- 3.1.8. The MDF door must be four feet wide and secured with a deadbolt lock or access control system
- 3.1.9. HVAC to the MDF room must be maintained 24/7 year round to ensure that temperature and humidity are maintained within operating equipment standards
- 3.1.10. Per building, all IDF rooms must be numbered sequentially from one, such as, "IDF1, IDF2 ...," and so forth

3.2. Data Requirements

- 3.2.1. The fiber must be 12 strands of 50 micron multimode fiber
- 3.2.2. Fiber must be terminated with SC terminations
- 3.2.3. A four inch conduit with pull cable must be installed underground from the Comcast utility pole/box to the MDF to allow for single-mode fiber for WAN connectivity
- 3.2.4. A four inch conduit with pull cable must be installed, per AT&T's requirements, underground from the AT&T utility pole/box to the telecom demark to allow for telephone service
- 3.2.5. Rack 2 must be adjacent to rack 1 and must contain all copper data cabling
- 3.2.6. Rack 3 must be adjacent to rack 2 and must contain all fiber data cabling
- 3.2.7. Telecom demark must be located in the MDF
- 3.2.8. All twisted pair components and installation from the wall jack to the patch panel must meet category 6 cable standards
- 3.2.9. A minimum of **five** POTS lines must be installed in the demark to accommodate the following:
 - 3.2.9.1. Emergency 911 backup lines (2)
 - 3.2.9.2. Fire alarm (1)
 - 3.2.9.3. Burglar alarms (1)
 - 3.2.9.4. Elevator, if applicable (1)

- 3.2.10. Provide four SC to LC patch cables for each IDF. Two of the patch cables shall be two meters and the other two shall be three meters.

3.3. *Electrical Requirements*

- 3.3.1. Each rack shall have two 20-amp duplex receptacles on dedicated circuits installed in the rack/cabinet
- 3.3.2. All electrical systems for technology equipment must be designed with surge and lightning protection

3.4. *FF&E Requirements*

- 3.4.1. Three APC 4-post racks with cable management options for vertical and horizontal cable management. Panduit NCMH2 or equivalent shall be used for horizontal cable management. Panduit WMPV45E or equivalent shall be used for vertical cable management.
- 3.4.2. Ladder rack shall run from the penetration point to the cabinet or rack
- 3.4.3. The MDF requires video surveillance
- 3.4.4. Reference diagram Rack 1 shall contain fiber to the IDF's and a single mode fiber connection to the WAN. It will also have the Cisco 3850 gigabit layer 3 switch.
- 3.4.5. Rack 2 shall contain a Cisco POE switch and multiple Cisco layer-2 switches to accommodate the number of data jacks in rack 2
- 3.4.6.
- 3.4.7. Rack 3 is reserved for servers
- 3.4.8. UPS – APC Smart-UPS SMX1500RM2UNC in racks 1 and 2.

4. IDF

4.1. Room Layout

- 4.1.1. Per building, all IDF rooms must be numbered sequentially from 1, such as, “IDF1, IDF2 ...,” and so forth
- 4.1.2. The placement of IDFs must be sufficient to ensure that data cable length to rooms is kept within 270 feet
- 4.1.3. The IDF rooms shall be finished spaces with flooring and drop ceilings
- 4.1.4. Multi-floor buildings must have IDFs stacked vertically when possible
- 4.1.5. Racks (24”x30”x84”) must be centered in the IDF room with a minimum clearance of 2 feet on the front and sides
- 4.1.6. Rooms must be large enough to contain the number of racks needed with a maximum of 144 drops per rack.
- 4.1.7. HVAC to each IDF room shall be maintained 24/7 year round to ensure that temperature and humidity are maintained within operating equipment standards
- 4.1.8. Transformers/sinks/flammable items are not to be placed within the same room as the IDF
- 4.1.9. Service spacing to be provided in front and behind racks

4.2. Data Requirements

- 4.2.1. Maximum 144 data ports per rack
- 4.2.2. Patch panels shall be 48 port
- 4.2.3. Cable management
- 4.2.4. The patch panel must be labeled, “Room # - Jack #”
- 4.2.5. Cable pathways must follow “ANSI/TIA/EIA-568-B Commercial Building Standards for Telecommunications Pathways and Spaces”
- 4.2.6. Cable trays must be installed in ceilings along all hallways
- 4.2.7. All twisted pair components and installation from the wall jack to the patch panel must meet category 6 cable standards
- 4.2.8. Provide category 6 patch cables for each data drop as follows:
 - 4.2.8.1. 3’ blue – 60% of total drops
 - 4.2.8.2. 3’ purple – 5% of total drops
 - 4.2.8.3. 3’ orange – 5% of total drops
 - 4.2.8.4. 3’ green – 10% of total drops
 - 4.2.8.5. 3’ gray – 5% of total drops
 - 4.2.8.6. 5’ blue – 15% of total drops
 - 4.2.8.7. 10’ blue – 80% of total drops
 - 4.2.8.8. 14’ blue – 10% of total drops
 - 4.2.8.9. 25’ blue – 10% of total drops
- 4.2.9. Patch cable colors
 - 4.2.9.1. Yellow – cameras, doors, projectors, and wireless
 - 4.2.9.2. Green - printers
 - 4.2.9.3. Blue - data

4.3. *Electrical Requirements*

- 4.3.1. A 1x20 amp dedicated duplex circuit must be provided per rack and installed in the rack
- 4.3.2. All electrical systems for technology equipment must be designed with surge and lightning protection

4.4. *FF&E Requirements*

- 4.4.1. APC 2-post racks with cable management options for vertical and horizontal cable management. Panduit NCMH2 or equivalent shall be used for horizontal cable management. Panduit WMPV45E or equivalent shall be used for vertical cable management.
- 4.4.2. Ladder rack shall run from the penetration point to the cabinet or rack
- 4.4.3. One Cisco WS-C3560G-24TS-S switch per rack
- 4.4.4. One Cisco 2960-24PC-L switch per rack
- 4.4.5. Additional Cisco 2960-24TT-L switches to meet data needs
- 4.4.6. APC Smart-UPS SMX1500RM2UNC (one per IDF).
- 4.4.7. Security control access to room

4.5. *Wireless network*

- 4.5.1. One data drop centered in every classroom and common areas. Large common areas such as gyms, cafeterias, and auditoriums should have a 2 drops. Coordinate location with SCCPSS IT.

5. Classroom (Sized to meet maximum class size for the areas served)

5.1. Room Layout (See Appendix E and F for drawings)

- 5.1.1. Room shall support flexible use of the instructional space
- 5.1.2. Room numbers must adhere to the final room number plan
- 5.1.3. Windows must have full light blocking screens or shades
- 5.1.4. Teacher work area must be near one of the two data wall plates
- 5.1.5. Lighting layout needs to allow that the two centermost rows are 3' off the center axis (See appendix B)
- 5.1.6. Ceiling panels must be set up so that projector & screen can be installed right on that center axis (See appendix B)
- 5.1.7. Screen and projector mount shall be provided and installed by contractor as described in section 2.5
- 5.1.8. Dry erase boards shall not be placed in the center of the front wall to allow for installation of interactive boards and/or screens
- 5.1.9. The center of the projector mount must be placed 10 - 12 feet from the screen

5.2. Data Requirements

- 5.2.1. The wall plate must be labeled, "IDF# - Room# - Port#"
- 5.2.2. Wall jacks for data must be blue
- 5.2.3. Patch cables provided for rooms shall be equally divided between seven foot and ten foot lengths
- 5.2.4. A/V Cabling & Controls: Electrical contractor to provide a 6" square outlet box with three gang trim ring, 48" off the floor at the teacher desk location with (2) 1 ½" conduit to above the drop ceiling.
- 5.2.5. Data drops shall not be placed on the front wall if at all possible
- 5.2.6. Two category 6 drops in a single wall plate at teacher's desk and four Category 6 drops in a single plate on one of the four walls to allow cable access to any location without crossing door openings.

5.3. Electrical Requirements

- 5.3.1. A NEMA 5-20 double duplex receptacle within 24" to 36" of data jacks
- 5.3.2. Two NEMA 5-20 duplex receptacles installed in the projector mount
- 5.3.3. In instructional rooms with high ceilings or no ceilings, projector will be wall mounted, short throw type. The two duplex receptacles shown above shall be mounted on wall at projector height.

- 5.3.4. All lighting must have two zones to allow darkening the lights in front of the room
- 5.3.5. All electrical systems for technology equipment shall be designed with surge and lightning protection
- 5.3.6. There must be a minimum of 2x20 amp circuits per classroom dedicated for technology

5.4. FF&E Requirements (See section 2 for standard equipment make)

- 5.4.1. VOIP phone
- 5.4.2. One network laser printer
- 5.4.3. Teacher workstation
- 5.4.4. Multimedia classroom presentation system
- 5.4.5. Student workstations
- 5.4.6. Flexible surface space for workstations/laptops
 - 5.4.6.1. 36”w x 30” per workstation
 - 5.4.6.2. Solution shall allow for easy reconfiguration of the room to meet instructional needs
 - 5.4.6.3. Avoid use of built-in computer furniture

6. Computer Lab (Sized to meet maximum class size for the areas served)

6.1. Room Layout

- 6.1.1. Room shall support flexible use of the instructional space
- 6.1.2. Room numbers must adhere to the final room number plan
- 6.1.3. Windows must have full light blocking screens or shades
- 6.1.4. Computers shall be arranged in rows of four along the two longest walls (See appendix A)
- 6.1.5. The HVAC system must be sized to handle the removal of the heat produced by 35+ computers and peripherals
- 6.1.6. Lighting layout needs to allow that the two centermost rows are 3’ off the center axis (See appendix B)
- 6.1.7. Ceiling panels must be set up so that projector & screen can be installed right on that center axis (See appendix B)
- 6.1.8. Screen and projector mount shall be provided and installed by contractor as described in section 2.5
- 6.1.9. Dry erase boards shall not be placed in the center of the front wall to allow for installation of interactive boards and/or screens
- 6.1.10. The center of the projector mount must be placed 3 feet 10” from the screen

6.2. Data Requirements

- 6.2.1. The wall plate must be labeled, “IDF# - Room# - Port#”
- 6.2.2. Wall jacks for data must be blue

- 6.2.3. Patch cables provided for rooms shall be equally divided between seven foot and ten foot lengths
- 6.2.4. A/V Cabling & Controls: Electrical contractor to provide a 6" square outlet box with three gang trim ring, 48" off the floor at the teacher desk location with (2) 1 1/2" conduit to above the drop ceiling.
- 6.2.5. Data drops shall not be placed on the front wall if at all possible
- 6.2.6. Labs must have sufficient data drops to support maximum class size plus four data drops for the teacher, phone, and printers

6.3. *Electrical Requirements*

- 6.3.1. A NEMA 5-20 double duplex receptacle within 24" to 36" of data jacks
- 6.3.2. Two NEMA 5-20 double duplex receptacles installed in the projector mount
- 6.3.3. All lighting must have two zones to allow darkening the lights in front of the room
- 6.3.4. All electrical systems for technology equipment shall be designed with surge and lightning protection
- 6.3.5. Minimum of 7x20 amp circuits per lab dedicated for technology

6.4. *FF&E Requirements*

- 6.4.1. Cisco 7942 VOIP phone
- 6.4.2. One network laser printer
- 6.4.3. Multimedia classroom presentation system
- 6.4.4. Teacher workstation
- 6.4.5. 30 Student workstations
- 6.4.6. Flexible surface space for workstations/laptops
 - 6.4.6.1. 36" w x 30" per workstation
 - 6.4.6.2. Solution shall allow for easy reconfiguration of the room to meet instructional needs
 - 6.4.6.3. Avoid use of built-in computer furniture

7. Media Center

7.1. Room Layout

- 7.1.1. Broadcast studio
 - 7.1.1.1. Soundproof room
 - 7.1.1.2. Back wall needs to have Chroma green paint for “green screen technology
 - 7.1.1.3. Multimedia editing workstation

7.2. Data Requirements

- 7.2.1. The wall plate must be labeled, “IDF# - Room# - Port#”
- 7.2.2. Wall jacks for data must be blue
- 7.2.3. Patch cables provided for rooms shall be equally divided between seven foot and ten foot lengths
- 7.2.4. Category 6 data drops for four lookup kiosks
- 7.2.5. Category 6 data drops to meet need for media center workstations; 10 elementary, 15 middle, 20 high
- 7.2.6. Category 6 data drops for LCD TV at main entrance at 72”
- 7.2.7. Category 6 data drops for 65” LCD TV in media center teaching area at 72”
- 7.2.8. Category 6 data drops for 55” LCD TV in the two media center learning rooms/conference rooms at 72”.
- 7.2.9. Two category 6 data drops in the ceiling at opposite ends of media center for wireless access points
- 7.2.10. Three category 6 data drops for broadcast studio
- 7.2.11. Four category 6 data drops at circulation desk
- 7.2.12. Category 6 data drop in teaching area
- 7.2.13. Four category 6 data drop in media center office

7.3. Electrical Requirements

- 7.3.1. NEMA 5-20 within 24” to 36” of data jacks
- 7.3.2. NEMA 5-20 double duplex receptacle every 20 feet
- 7.3.3. All electrical systems for technology equipment must be designed with surge and lightning protection
- 7.3.4. NEMA 5-20 duplex receptacle at 72” for LCD TV at main entrance with backing at 72” for display mount
- 7.3.5. NEMA 5-20 duplex receptacle at 72” for 65” LCD TV in the media center teaching area with backing at 72” for display mount
- 7.3.6. NEMA 5-20 duplex receptacle at 72” for 55” LCD TV in the two media center learning rooms/conference rooms with backing at 72” for display mount
- 7.3.7. NEMA 5-20 double duplex receptacle on each wall of broadcast studio
- 7.3.8. NEMA 5-20 double duplex receptacle for circulation area
- 7.3.9. NEMA 5-20 double duplex receptacle for teaching area
- 7.3.10. Adjustable lighting in teaching area

7.4. FF&E Requirements

- 7.4.1. Circulation area
 - 7.4.1.1. Cisco 7942 VOIP phone
 - 7.4.1.2. 10 workstations – FTE 1-499
 - 7.4.1.3. 15 workstations – FTE 500-999
 - 7.4.1.4. 20 workstations – FTE 1000+
 - 7.4.1.5. Two Cisco 802.11a/g/n access points
 - 7.4.1.6. SLIP printer for circulation area
 - 7.4.1.7. Networked color printer
 - 7.4.1.8. Networked multifunctional printer
 - 7.4.1.9. Staff workstation
 - 7.4.1.10. District standard library automation system
 - 7.4.1.11. Two bar code scanners on stands for self-checkout
 - 7.4.1.12. Portable bar code scanner for inventory
- 7.4.2. Broadcast studio
 - 7.4.2.1. Two digital camcorders for broadcast studio
 - 7.4.2.2. One Safari HD live broadcast cart for remote live presentations
 - 7.4.2.3. One Safari HD portable encoder for stationary broadcasts

8. Administrative Areas

8.1. Room Layout

- 8.1.1. Room shall support flexible use of the space

8.2. Data Requirements

- 8.2.1. Two category 6 data jacks must be located in two locations on opposing walls
- 8.2.2. Category 6 data jack for 55" LCD TV in conference room at 72" with backing
- 8.2.3. Two category 6 data jacks for network-based laser printer/copier in main office

8.3. Electrical Requirements

- 8.3.1. NEMA 5-20 within 24" to 36" of data jacks
- 8.3.2. NEMA 5-20 receptacle on one wall for mounted TV for 55" LCD TV in conference room at 72" with backing
- 8.3.3. NEMA 5-20 Duplex Receptacle for printer / copier in main office
- 8.3.4. All electrical systems for technology equipment must be designed with surge and lightning protection

8.4. FF&E Requirements

- 8.4.1. Cisco 7942 VOIP phone per office
- 8.4.2. Staff workstation per office
- 8.4.3. Mounted 55" flat-panel LCD TV for conference room
- 8.4.4. Cisco 7936 conference phone for conference room

9. Welcoming Room - Family/Parent Waiting Room

9.1. Room Layout

- 9.1.1. Room shall support flexible use of the space

9.2. Data Requirements

- 9.2.1. Category 6 data drop for LCD TV at 72"
- 9.2.2. Three category 6 data drops on one wall

9.3. Electrical Requirements

- 9.3.1. NEMA 5-20 within 24" to 36" of data jacks
- 9.3.2. NEMA 5-20 Duplex Receptacle for LCD TV at 72" with backing for display mount
- 9.3.3. All electrical systems for technology equipment must be designed with surge and lightning protection

9.4. FF&E Requirements

- 9.4.1. Mounted 42" flat-panel LCD TV

10. Commons Areas

10.1. Room Layout

- 10.1.1. Room shall support flexible use of the space

10.2. Data Requirements

- 10.2.1. Four category 6 data jacks every 100 feet in the hallways to allow for connectivity of wireless access points and security cameras

10.3. Electrical Requirements

- 10.3.1. NEMA 5-20 within 24" to 36" of data jacks
- 10.3.2. NEMA 5-20 duplex receptacle for LCD TV at 72" with backing for display mount
- 10.3.3. All electrical systems for technology equipment must be designed with surge and lightning protection

10.4. FF&E Requirements

- 10.4.1. Cisco Aironet 802.11 a/b/g/n wireless access points must be strategically placed throughout the school to all provide areas with wireless connectivity
- 10.4.2. Mounted 42" flat-panel LCD TV

11. Cafeteria

11.1. Room Layout

11.1.1. Room shall support flexible use of the instructional space

11.2. Data Requirements

11.2.1. Two category 6 data drops for the manager's office

11.2.2. Two category 6 data drops for each POS

11.2.3. One category 6 data drop by each LCD TV at 72"

11.2.4. One category 6 data drop run from each POS to the manager's office

11.2.5. Two category 6 data drops on opposite sides of the cafeteria to support wireless access points and security cameras

11.3. Electrical Requirements

11.3.1. NEMA 5-20 receptacles within 24" to 36" of data jacks

11.3.2. NEMA 5-20 receptacles at 72" for LCD TVs with backing for display mount

11.3.3. All electrical systems for technology equipment must be designed with surge and lightning protection

11.4. FF&E Requirements

11.4.1. Two Cisco 7942 VOIP phones

11.4.2. Workstation for manager's office

11.4.3. Multiple mounted LCD TVs to provide optimal viewing for the cafeteria

11.4.4. Cisco Aironet 802.11 a/b/g/n wireless access points must be strategically placed throughout the school to all provide areas with wireless connectivity

11.4.5. Audio-enhancement system with wireless microphone

12. Gym

12.1. Room Layout

- 12.1.1. Room shall support flexible use of the instructional space
- 12.1.2. All equipment, including wireless access points, must be protected from possible athletic projectiles

12.2. Data Requirements

- 12.2.1. Two category 6 data drops on opposite sides of the gym to support wireless access points and security cameras
- 12.2.2. Two category 6 data drops in office

12.3. Electrical Requirements

- 12.3.1. NEMA 5-20 receptacles within 24” to 36” of data jacks
- 12.3.2. All electrical systems for technology equipment must be designed with surge and lightning protection

12.4. FF&E Requirements

- 12.4.1. Audio-enhancement system
- 12.4.2. Cisco Aironet 802.11 a/b/g/n wireless access points must be strategically placed throughout the school to all provide areas with wireless connectivity

13. Teacher Workroom

13.1. Room Layout

- 13.1.1. Room shall support flexible use of the space

13.2. Data Requirements

- 13.2.1. Two category 6 data jacks must be located in two locations on opposing walls

13.3. Electrical Requirements

- 13.3.1. NEMA 5-20 receptacles within 24” to 36” of data jacks
- 13.3.2. Power to accommodate copier
- 13.3.3. All electrical systems for technology equipment must be designed with surge and lightning protection

14. Auditorium/Theater room/Multipurpose Room

14.1. Room Layout

- 14.1.1. Room shall support flexible use of the instructional space.
- 14.1.2. 120" x 192", 226" 16:10 diagonal electric screen, provided and installed by contractor

14.2. Data Requirements

- 14.2.1. Two category 6 data drops on opposite sides of the gym to support wireless access points and security cameras
- 14.2.2. Two category 6 data drops in the ticket room

14.3. Electrical Requirements

- 14.3.1. NEMA 5-20 within 24" to 36" of data jacks
- 14.3.2. NEMA 5-20 receptacle in ceiling within 12" of projector
- 14.3.3. All electrical systems for technology equipment must be designed with surge and lightning protection.

14.4. FF&E Requirements

- 14.4.1. Audio-enhancement system with wireless microphone
- 14.4.2. Ceiling-mounted DLP projector with one data jack provided within 12" of mount

15. Building Marquee

- 15.1. *Digital school marquee updateable via the data network*

16. Access Control (Reference standards 2.7)

16.1. Door / Hardware Installation

- 16.1.1. Access control shall be used on all exterior doors. All doors shall have door position sensors at a minimum. One external door on each side of the building shall have card reader access. Student entry doors shall have electronic latch or electric lock for scheduled openings.
- 16.1.2. Card reader devices must support HID 125 KHz proximity cards.

16.2. Power supply Installation

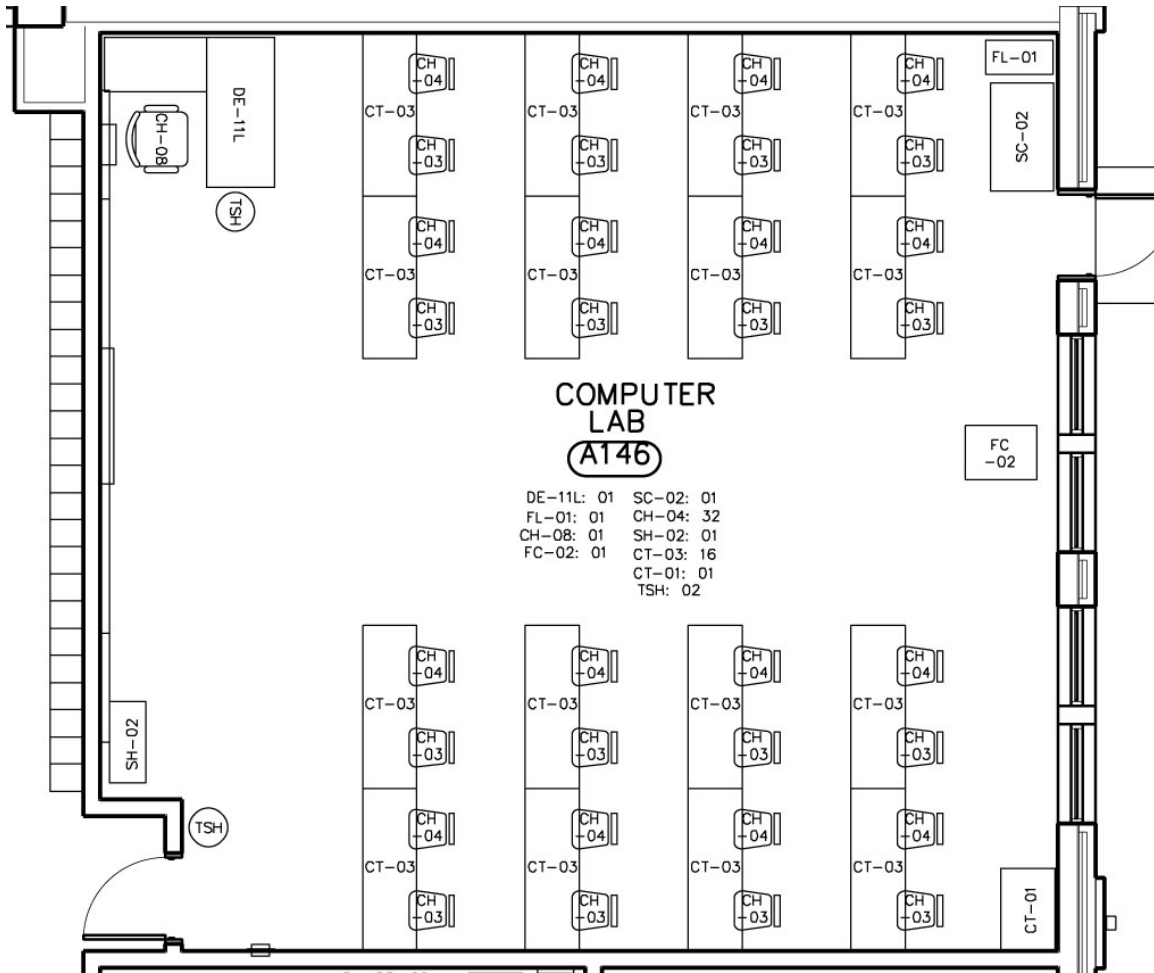
- 16.2.1. Power supplies must be provided within 75 feet of doors with electric latch retraction and/or electric lock.
- 16.2.2. Power supplies must be installed in low voltage wiring closets or in areas with ceilings no higher than 9 feet

- 16.2.3. Doors must be grouped together to share power supplies wherever possible

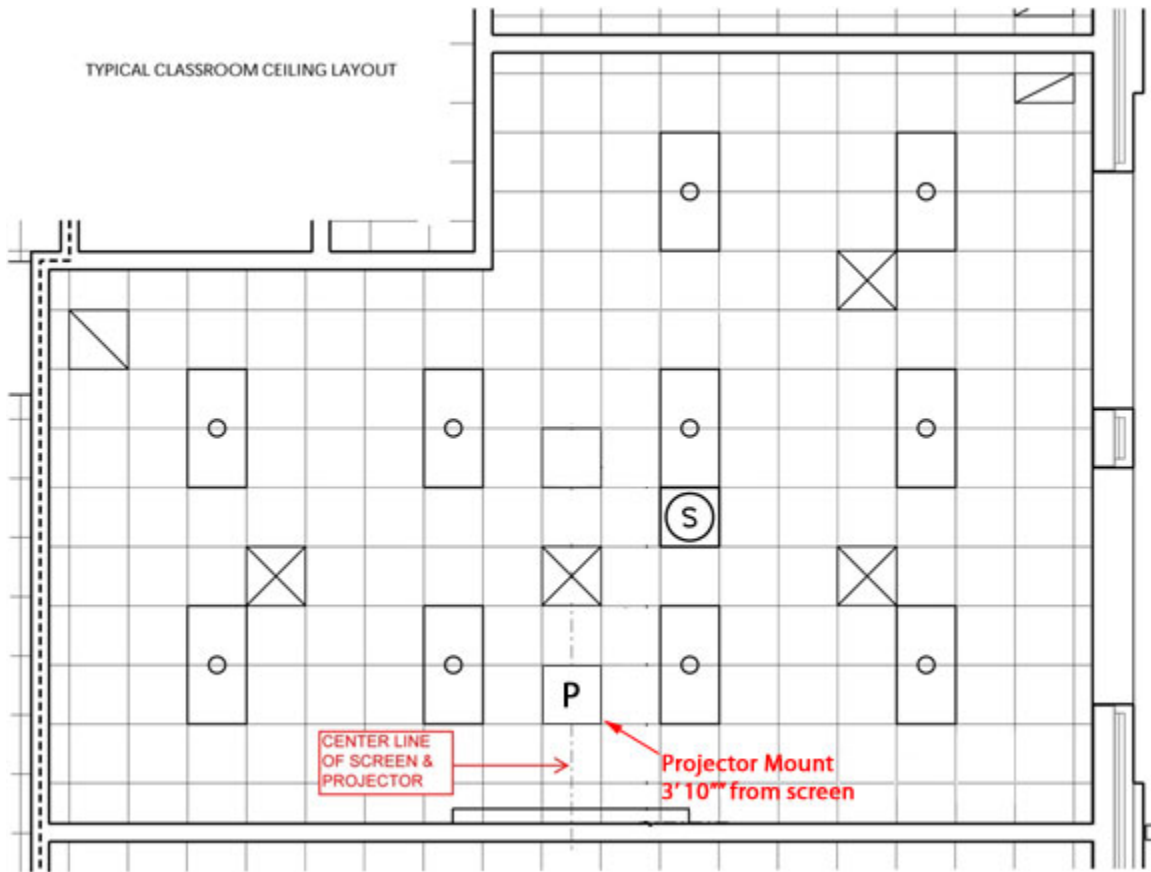
16.3. *Cabling Installation*

- 16.3.1. Cabling for access control devices shall be terminated at the power supply closest to their associated
- 16.3.2. Doors with card readers require a 12 conductor 20 gauge wire with the following colors; black, red, white, green, orange, blue, brown, yellow, pink, gray, tan, and violet
- 16.3.3. Doors with DPS only shall use 2 conductor 20 gauge wire with black and red conductors
- 16.3.4. Cabling must be run in conduit and/or grommet to protect cabling from rough edges
- 16.3.5. Cabling for electric lock and electronic latch retraction cannot exceed 75 feet
- 16.3.6. Doors must be grouped together to share power supplies wherever possible

17. Appendix A – Lab layout

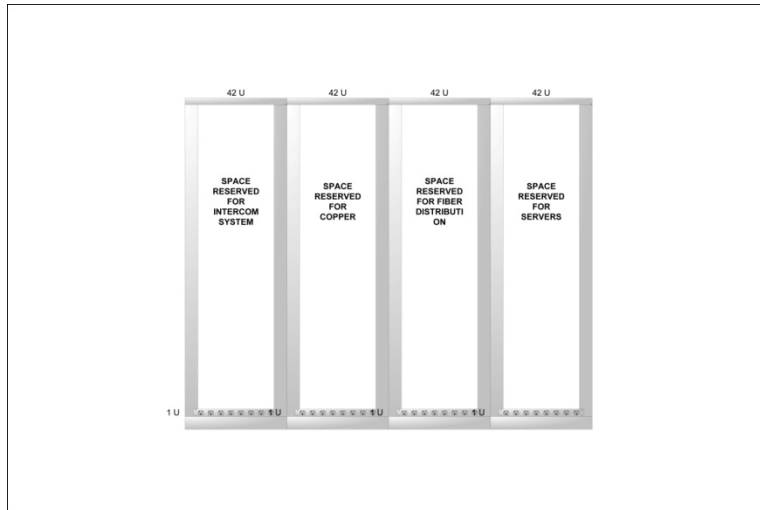


18. Appendix B – Room lighting layout

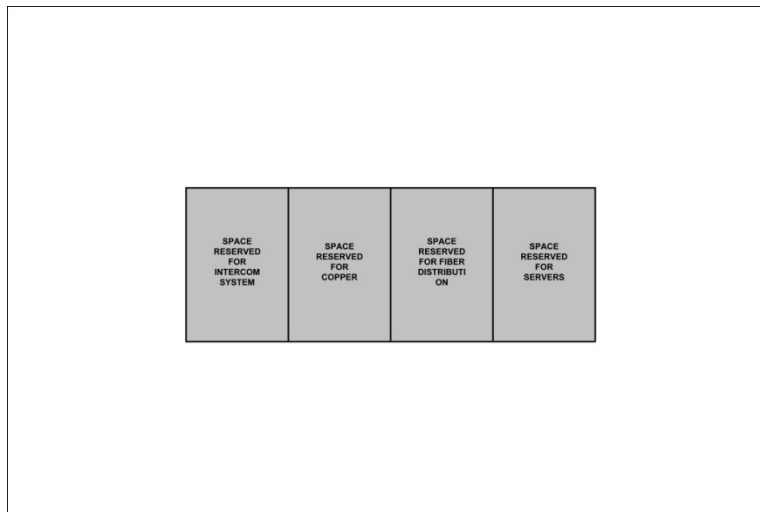


19. Appendix C – MDF Layout

(Front View)



(Floor Layout View)



20. Appendix D – Sample Contractor Vs. Owner Responsible

Sample School Communications Scope - 9-15-11 FINAL

* This list indicates which party is responsible for providing system specific items

Division 27	Description	Contractor	Owner
27 05 36	CABLE TRAYS FOR COMMUNICATIONS SYSTEMS Cable tray and ladder rack systems	X	
27 10 00	STRUCTURED CABLING SYSTEM Cabling		X
	Racks		X
	Patch Panels		X
	Racks/Cabinets		X
	Patch Cords (Both ends)		X
	Network Electronics		X
	Access Points		X
	UPS's		X
27 51 23.50	EDUCATIONAL INTERCOMMUNICATIONS AND PROGRAM SYSTEMS Speakers	X	
	Cabling	X	
	Electronic Control Equipment	X	
	Cabinet		X
	Cisco Voice Interface Module		X
DIVISION 28	Description	Contractor	Owner
28 16 00	INTRUSION DETECTION Control Panel	X	
	Motion Detectors	X	
	Keypad	X	
	Cabling	X	
28 23 00	VIDEO SURVEILLANCE (CCTV) *cabling, patch panels and patch cords are included in 27 10 00 above Cameras		X
	Cabling		X
	CCTV Network Equipment and Server		X
	CCTV Software		X

* Other

Cabling for Access Control system provided by communications contractor.

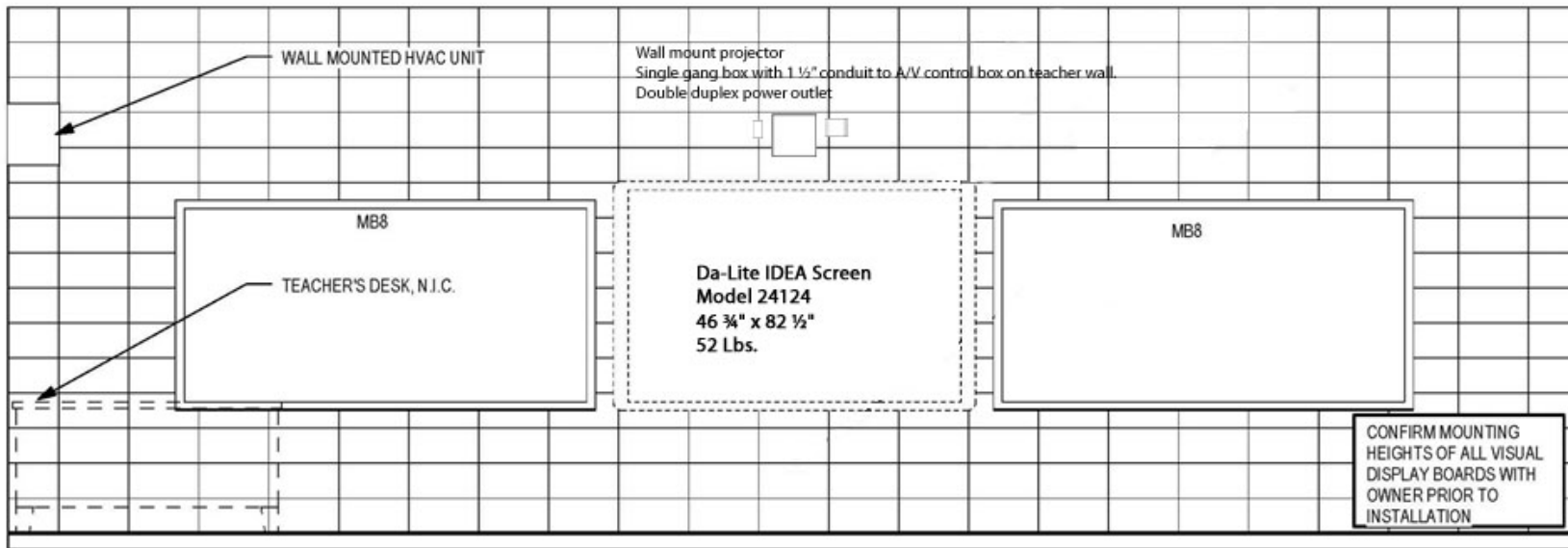
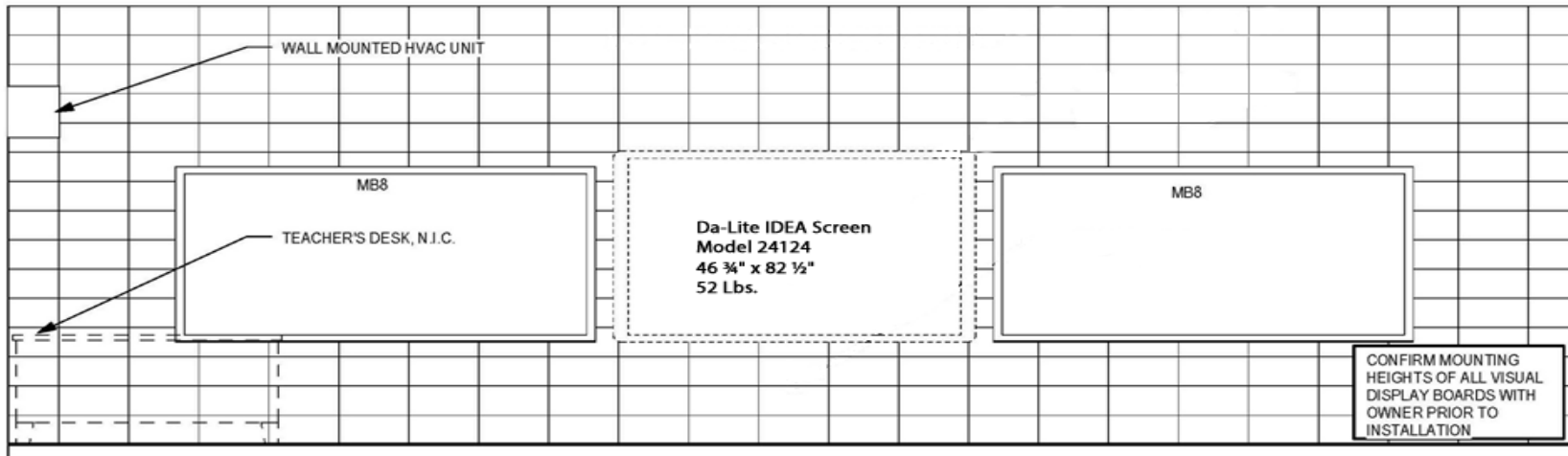
All system equipment and devices provided by Door Hardware Contractor. Cisco interface module supplied by owner.

All CCTV scope being handled by owner.

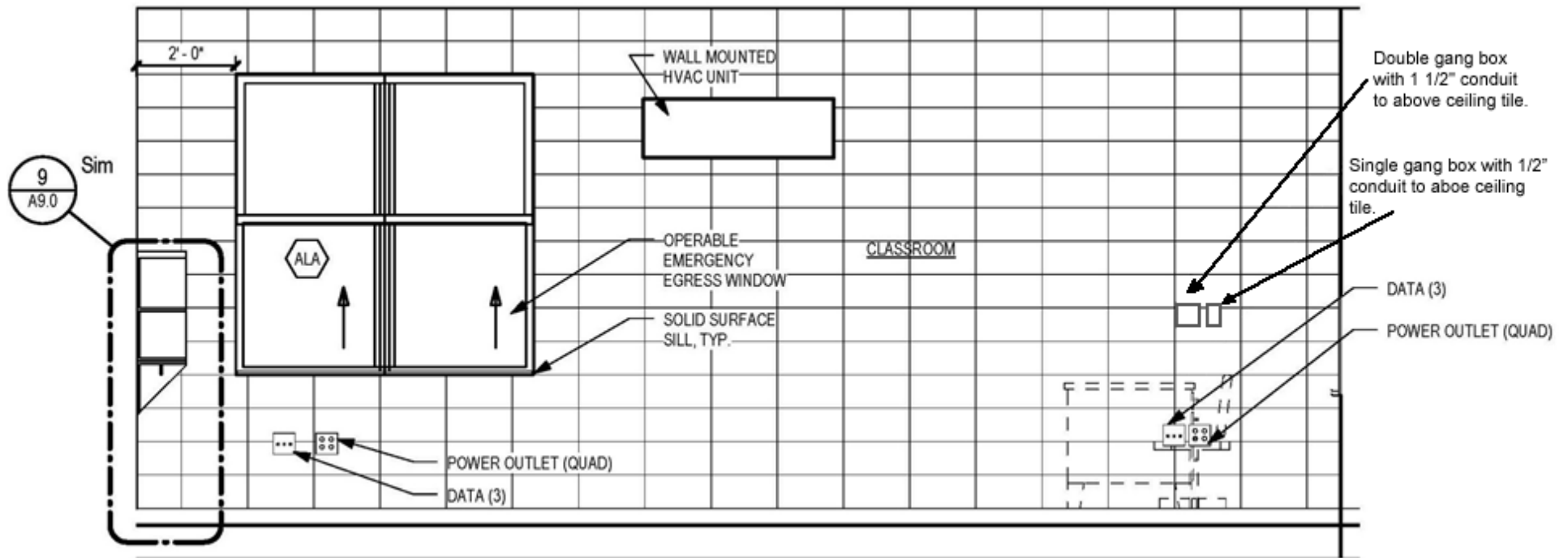
All structured cabling scope is the Owner's responsibility.

Projection screen/board provided and installed by the contractor.

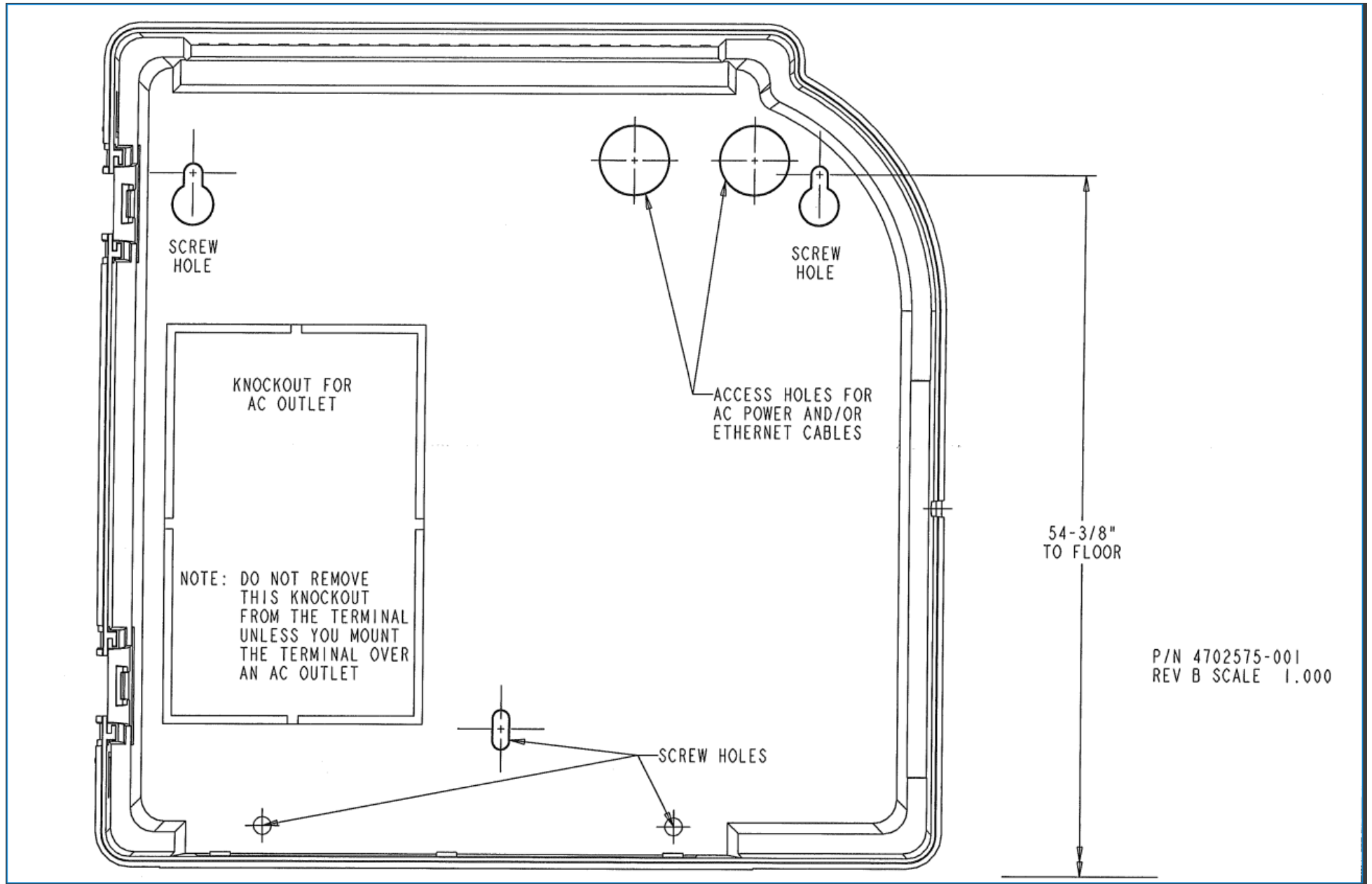
21. Appendix E – Sample Elevation of Front Classroom Wall – Wall mount versus Ceiling Mount



22. Appendix F – Sample Elevation of Teacher Desk Wall



23. Appendix G – Kronos Time Clock Template





Attachment C

Design Guide and Checklist for Assessing Large Equipment Needs

Equipment	Specifications	Number of Lunches Served Per Day		
		501-750	751-1000	1001-1250
Food Machines (Mixers, VCM, Cutters, Slicers)				
60 quart with attachments #1, #2, #3, and #4 Attachments: 1. High speed drive, 2. Whisk 3. Dough Hook, 4. Bowl Truck		1	1	1
Food Processor with attachments (2 1/2 quart)		1	1	1
Vertical Cutter Mixer - 40 quart		1	1	1
Food Slicer: Electirc (automatic)	13" non-removable knife, Removable ring guard cover, 1/2 HP 7 amp motor, Can be disengaged for manual operation, Home position start, No volt release, Kickstand, compliant with NSF/ANSI 8, Heavy gauge stainless steel	1	1	1
Tables - food preparation: stainless steel, movable, shelves and drawers depending upon use				
Baker's Tables 6-8'		1	1	1
Cook's Table 8'		1	1	1
Work Table 6-8'		1	1	1
Cooking Equipment: Ovens and Ranges				
Convection Ovens Double Stack		1	2	2
Combination Oven/Steamer	Electric Boilerless (minimum 75,000 BTU output), Half Size, programmable, holds 8 12" x 20" x 1/2" pans, 120v/60/1 phase, Stainless Steel interior and exterior, Fully welded stainless steel frame, Fully insulated cooking chamber, Fixed drain bottom center of cavity, Dual pane tempered viewing window, Electronic programmable digital controls for temperature, timer and core probe, Cooking modes: hot air, steam, combi, retherm, cook & hold, slow cooking, crisping, Built in automatic cleaning system, Rinse system with hose, Disappearing Door (Sliding Door), Energy Star Certified, NSF listed	1	2	2
Ranges- Utility 12" to 18" Top Cooking Only (2-Burners or 1 Rectangular Hot Plate)		1	1	1
Hood, Ducts, Air Movement, and Fire Protection Equipment As Required by state Law		As Required		
Cooking Equipment: Tilt Skilletes				
Tilt Skillet 40 gallon tilting braising pan		1	1	2
Cooking Equipment: Steam Equipment				
Steamer	Boilerless, convection steamer, Cooking capacity for up to six 12" x 20" x 2.5 " deep steam table pans, 14 gauge, Stainless Steel cooking compartment and latch, Removable stainless steel pan racks, Steamer cavity shall have a self-contained, atmospheric, electric-heated steam generating reservoir, Automatic drain, Automatic water level controls, unit shuts off if water levels are low or pressure is too high, Steam and fan shut off control when compartment door is open, Heavy duty 4" skid resistant adjustable legs, NSF listed	1	2	2
Steam Jacketed Kettle 30 gallon		1	1	1
Pot and Kettle filler - Swining Faucet for steam kettle		1	1	1
Refrigerated and Low-Temperature Storage Equipment				
Refrigerators: Reach-in (number of sections)		1	2	2
Pass-through should have one section per serving counter		2	2	3
Freezer Reach-in (number of sections)		1	1	1
Walk-In Refrigerator		1	1	1
Walk-in Freezer Freezer - Minimum 8' x 10'		1	1	1
Vinyl strip curtains for walk-in freezers, refrigerators		As needed		
Ice Machine		1	1	1
Serving Equipment				
Cashier's Stands		2	2	3

Cold food section	Portable, Self-contained, Stainless steel, Frost top to be one piece of die-formed 16 gauge stainless steel, Open base, HFC – 404a refrigerant, "CFC free", 4 swivel casters, 2 locking, Cold wall construction with refrigeration lines insulated with high-density polyurethane insulation, Galvanized underbody, Condensing unit, expansion valve, and thermostatic control for operator adjustability	2	2	3
Hot food section	One piece unit top, 16 gauge stainless steel with 1 1/2", 90° nosing on all sides, Five 12" x 12" x 6 1/2" electrically heated food wells, Individually and thermostatically controlled, 1" drain manifold, Body frame to be all welded construction, Equipped with 4 swivel casters, 2 locking, Cafeteria style with dry storage below, 10" wide stainless steel tray slide with fold-down brackets	2	2	3
Hot food section for pizza line - High School				1
Milk Cooler	8 case capacity, Single access drop front style, Stainless steel interior and exterior, Welded steel construction, The cabinet is insulated with 2 inches of foamed-in-place polyurethane insulation. Self-contained R-134A refrigeration system, 115 volt, 60 Hz, 1 phase with cord and plug. Four swivel casters, two locking, Gasketed locking doors, Heavy duty epoxy coated floor racks, Interior galvanized steel, Key locks, NSF listed thermometer, NSF listed drain, Operating temperature: 38°F, Energy Star Rated	2	2	3
Salad Bar		High School Only		
Pass-through holding cabinet		2	2	3
Cleaning Equipment - Dishwashers, Sinks and Related Equipment				
Dishwasher - Double tank conveyor with pre-wash		1	1	1
Clean Dish Table 100 inches in a straight line is recommended before making a turn.		1	1	1
Soiled Dish Table - Minimum length of 100 inches includes area for receiving soiled table service, disposal, racking, etc.		1	1	1
Booster Heater - Minimum Size to Maintain 150 degree F Wash and 180 degrees F Rinse		1	1	1
Sinks:				
Vegetable preparation		1	1	1
Disposers - 3/4 - 1 1/4 HP units having no floor supports: Vegetable preparation or pot and pan sink		1	1	1
Hand - the exact number of hand sinks and compartment sinks will depend upon local health codes and whether there are partitioned areas specifically designated for baking, vegetable preparation, pre-preparation, cooking, etc., plus the overall dimensions of the various food preparation areas.		*	*	*
2-compartment (vegetable sink) with integral drainboards		1	1	1
4-compartment sink with integral drain boards		1	1	1
Water Softener		As Needed		
Water Heater - Minimum Size to Maintain 150 degree F Wash and 180 degrees F Rinse		1	1	1
Flooring				
Toilet/Lockers	VCT			
Offices	VCT			
Dry Storage	Quarry			
Refrigeration	Quarry			
Prep/Cooking	Quarry			
Pot/Pan	Quarry			
Dining	VCT			
Dish/Tray Washing	Quarry			
Receiving	Quarry			
Square Footage				
Can Wash/Dry		75-100		150-160
Toilets/Lockers		200		250
Janitor/Chemical Storage		60-75		100-125
Offices		80-100		150-160
Dry Storage		300-400		600-700
Refrigeration		200-300		600-750

Prep/Cooking		600-700		1000-1250
Pot/Pan Washing		85-100		125-150
Dining		1600-2400		3600-4500
Dish/Tray Washing		150-200		350-400
Receiving		60-75		100-125



Attachment D



ALL VISITORS

**MUST REPORT TO THE MAIN OFFICE.
FAILURE TO DO SO COULD RESULT
IN CRIMINAL CHARGES BEING
FILED PURSUANT TO
GEORGIA LAWS.**



**AUTH:
GEORGIA CODE 20-2-1180**

SAVANNAH-CHATHAM COUNTY
PUBLIC SCHOOL SYSTEM LOGO

SIGN TYPE 1
METAL - WALL MOUNTED

1/4" LETTERS - BLACK

1/8" LETTERS - BLACK

BLACK BORDER

1/2" LETTERS - BLACK

1'-6"

1'-3"
1'-2"

1/4"

2'-4"



SAVANNAH-CHATHAM COUNTY
PUBLIC SCHOOLS SYSTEM LOGO

NOTICE

BLACK BORDER

**WEAPONS FREE - VIOLENCE FREE - DRUG FREE
SCHOOL SAFETY ZONE**

**POSSESSION OF A WEAPON ON
SCHOOL GROUNDS OR TRANSPORTATION
PROHIBITED BY LAW**

O.C.G.A. 16-11-127.1

1/2" LETTERS - BLACK

**POSSESSION OF ALCOHOLIC BEVERAGES,
MANUFACTURING, DISTRIBUTING, DISPENSING, OR
POSSESSING CONTROLLED SUBSTANCES IN, ON, OR NEAR
A PUBLIC SCHOOL IS PROHIBITED**

O.C.G.A. 3-3-21.1 & O.C.G.A. 16-13-32.4

1/2" LETTERS - BLACK

USE OF ALL TOBACCO PRODUCTS ARE PROHIBITED

O.C.G.A. 20-2-59

1/2" LETTERS - BLACK

3/8" LETTERS - BLACK (spical)

3/8" LETTERS - BLACK (spical)

3/8" LETTERS - BLACK (spical)

2'-0"
1'-11 1/4"

3/8"
3/8"

SIGN TYPE 2
METAL - WALL MOUNTED

ALFRED ELY BEACH HIGH SCHOOL

AUGUST 2013

SAVANNAH - CHATHAM COUNTY
PUBLIC SCHOOL SYSTEM
BOARD OF EDUCATION

THOMAS B. LOCKAMY, JR. Ed.D.
SUPERINTENDENT

Dr. Joe A. Buck, III
PRESIDENT

JULIE M. WADE	1 ST DISTRICT
DR. DIONNE L. HOSKINS	2 ND DISTRICT
CORNELIA H. HALL	3 RD DISTRICT
SHAWN A. KACHMAR	4 TH DISTRICT
IRENE G. HINES	5 TH DISTRICT
LARRY LOWER	6 TH DISTRICT
JENNIFER B. LAMBETH	7 TH DISTRICT
RUBY D. JONES	8 TH DISTRICT

ARCHITECT
HUSSEY, GAY, BELL & DEYOUNG

CONSTRUCTION MANAGER
GILBANE BUILDING CO.
J. L. WALLACE, Inc.

2' - 4"

1' - 6"

Future Site of Hodge Elementary School



WWW.SCCPSS.COM

Another project funded by:

ESPLOST

The Board of Public Education for the City of Savannah and the County of Chatham

Dr. Joe Buck	President
Julie M. Wade	District 1
Dr. Dionne L. Hoskins	District 2
Cornelia H. Hall	District 3
Shawn A. Kachmar	District 4
Irene G. Hines	District 5
Larry Lower	District 6
Jennifer B. Lambeth	District 7
Ruby D. Jones	District 8

Superintendent of Schools
Thomas B. Lockamy, Jr. Ed.D.




Attachment E



MEMORANDUM

TO: Engineering Consultants & Construction Contractors that design / build projects with W&S improvements in the City of Savannah Service Area

FROM: Ebrahim Ghazi, P.E., Water & Sewer Planning & Engineering (WSPE) Director 


CC: John Sawyer, P.E., Water Resources & Public Works Bureau Chief
Jim Laplander, P.E., Sanitary Conveyance & Water Distribution Director
Heath Lloyd, P.E., Public Works & Water Resources Operations Director
Julie McClean, P.E., Development Services Department Director, City Engineer
Cristy Lawrence, P.E., Development Services Department Administrator
Kathy Maggioni, Contract. Analyst, Water Res. & Public Works Bureau
Cesar Laureano, P.E., WSPE Senior Civil Engineer
Chuck Tessmer, P.E., WSPE Senior Civil Engineer
Daslin Garcon, P.E., WSPE Senior Civil Engineer
Tre Wilkins, P.E., WSPE Senior Civil Engineer

DATE: October 18, 2013

SUBJECT: Revised Water & Sanitary Sewer Specifications and Details

The City's water and sanitary sewer construction details and specifications have been updated. The revised specifications have a September 2013 revision date, found in the bottom right-hand corner of the first page of each specification. The revised details have a new title block, also with a September 2013 revision date.

These revisions were made to more accurately depict the standard design, construction, inspection, and testing procedures required by the City for new water distribution and sanitary sewer collection and pumping facilities. The revised specifications include:

- 
- Section 02550 – Water Distribution System
 - Section 02554 – Sanitary Collection System
 - Section 02555 – Protective Coating for Existing and New Concrete and Masonry Sanitary Sewer Structures
 - Section 02558 – Sewage Pumping Station
 - Section 11100 – Submersible Wastewater Pumps 5 to 25 HP Duplex Across the Line Magnetic
 - Section 13401 - Flow Measurement Equipment
 - Section 16482 – Variable Frequency Drive Controllers
 - Section 16620 – Sanitary Sewer Pump Station Emergency Standby Power System
 - Section 16912 – Submersible Pump Station Control Panels

Similarly, all water and sanitary sewer details have been reformatted and most include revised content.

We at WSPE suggest that all interested parties review the specifications and details to familiarize themselves with the changes and to offer suggestions for future revisions. **Furthermore, beginning November 1, 2013, all water and sewer improvement projects in the City service area shall be designed and built according to the revised standards.** This directive does not pertain to plans and specifications approved by the City prior to this date, or currently under City review. WSPE also suggests viewing the latest version of these details and specifications on the City website to confirm that the latest versions are included in your submittals.

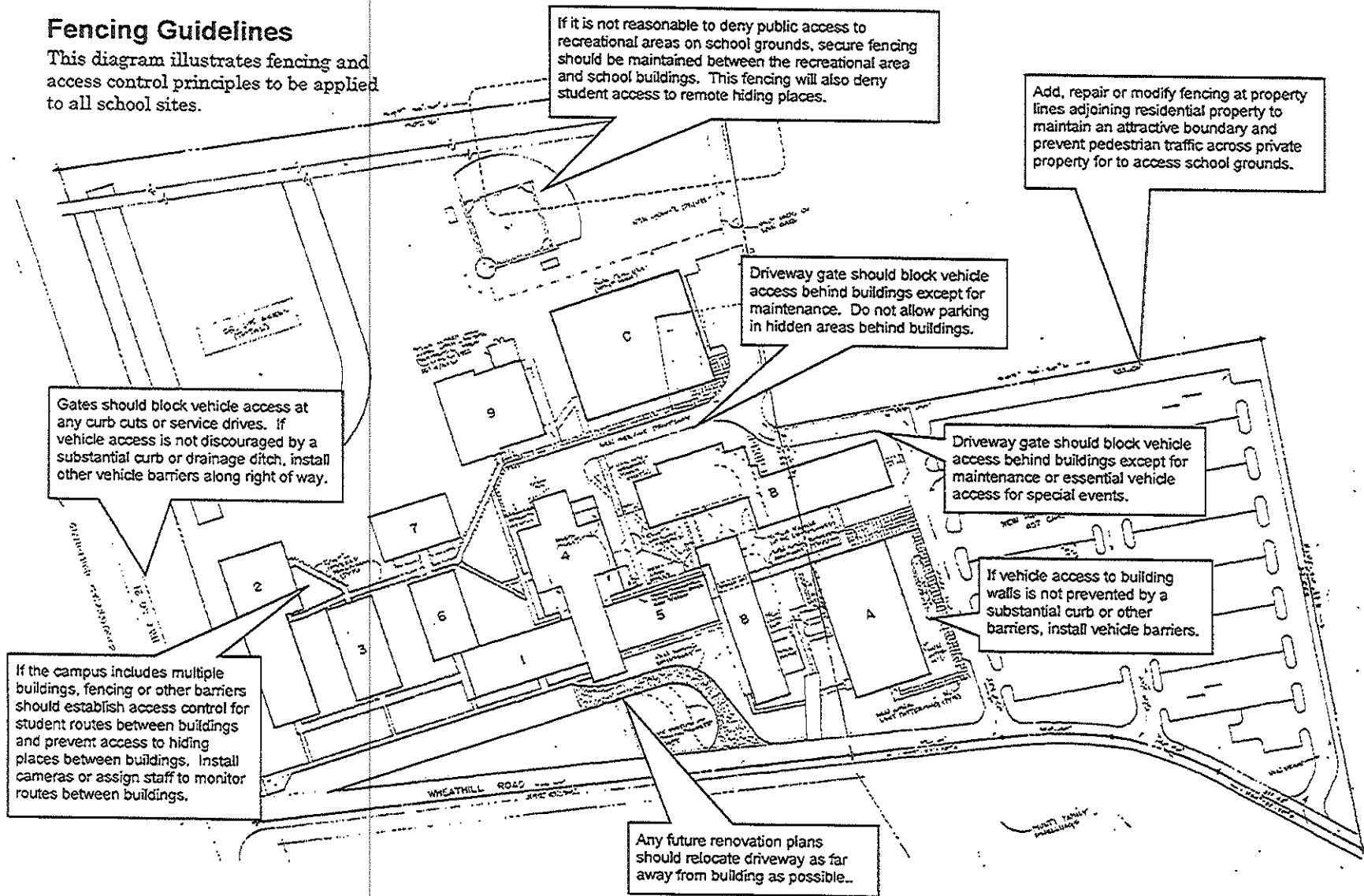


Attachment F

W. Brantford
10/14/13

Fencing Guidelines

This diagram illustrates fencing and access control principles to be applied to all school sites.



Access Control Fencing

Most campuses with multiple buildings, including portable classrooms, need access control fencing between buildings to discourage undesirable activities when students move between buildings. Access control fencing between buildings provides additional after hours security by blocking hidden areas where illegal entry is more convenient. Access control fencing should also be placed to protect outdoor equipment, deny access to ditches, climbable structures near roofs, detention ponds or other hazardous features. The standard specification is based on zinc coated chain link fencing:

- Chain Link Fabric:** Recommended dimensions are a mesh size no greater than 2 inches and a wire size no smaller than 9 gauge. The recommended coating is galvanized zinc, but vinyl or powder coatings can be used where esthetics are a concern.
- Fabric Height:** The minimum fence height is 6 feet. An 8 foot high fence is recommended where climbing of existing fences is common, or where fencing is used to block access to high value equipment, hazardous equipment or other hazardous outdoor conditions.
- Barbed Wire:** Do not use barbed wire.
- Top Rail:** Install a 1.66 inch outside diameter top rail.
- Bottom Rail:** Install a 1.66 inch outside diameter bottom rail to prevent access by crawling under a fence. Secure the center of the rail with an eye bolt anchored in a concrete footing. The bottom rail and fence fabric should be no more than 2 inches above grade.
- Posts:** Outside diameter of end, corner and pull posts should be 2.875 inches. Intermediate posts should be 2.375 inches.

Other chain link fence and gate construction details should comply with the requirements described in the Chain Link Fence Manufacturers Institute Product Guide: Standard Guide for Metallic-Coated Steel Chain Link Fence & Fabric.

- Chain Link Alternatives:** Alternatives for improved esthetics include:
 - Welded wire mesh with a minimum of 2 inches between vertical strands.
 - Steel or aluminum ornamental fencing with a minimum of 3.625 inches between vertical pickets.

Pre-K playground area shall be enclosed with a 4-ft. chain link fence.



Attachment G

SECTION 01 00 00 - TABLE OF CONTENTS

GENERAL REQUIREMENTS

{Note for Editor: These conditions are coordinated with SCCPSS Design-Bid-Build Construction Contract 11/5/2013 revision. Use with any other Contract Form requires editing and revision as necessary}

CONDITIONS

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END OF SECTION 01 00 00

SECTION 01 10 00 – SUMMARY OF WORK

PART 1 - GENERAL

- A. This Section includes the following:
 - 1.1 Work under other contracts
 - 1.2 Owner's occupancy requirements
 - 1.3 Work restrictions

- B. Stipulation Regarding Specifications:

All provisions in these Sections 01 21 00, 01 22 00, 01 26 00, 01 29 00, 01 31 00, 01 32 00, 01 32 33, 01 33 00, 01 40 00, 01 50 00, 01 60 00, 01 73 00, 01 73 29, 01 74 19, 01 77 00, 01 78 23, and 01 78 39 are in addition to the provisions in the CONSTRUCTION CONTRACT BETWEEN CONTRACTOR AND OWNER. No provisions in these Specifications shall be construed to negate or diminish any requirements in the Construction Contract, but shall be applicable in addition to those requirements.

- C. Use of Existing Building(s): As applicable, maintain existing building(s) in a weather tight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

1.1 WORK UNDER OTHER CONTRACTS

1.1.1 The Owner reserves the right to perform construction or operations related to the project with separate Contractors on the site per Article 1.3.6 of the Construction Contract. The following separate Contracts have been awarded and the Contractor shall coordinate construction operations as required, or directed, by the Owner:

1.1.1.1 [List contracts awarded, or to be awarded, schedule, and scope of work. If none, so state]

1.2 OWNER'S OCCUPANCY REQUIREMENTS

1.2.1 Owner Occupancy of Completed Areas of Construction:

Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Material Completion. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work. Design Professional will prepare a Certificate of Material Completion for each specific portion of the Work to be occupied before Owner occupancy. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.

1.3 WORK RESTRICTIONS

1.3.1 On-Site Work Hours: Work shall be scheduled during working hours of 7 a.m. to 7 p.m., Monday through Saturday. Exceptions may be requested in writing. The Contractor shall observe the reasonable needs of nearby properties for quiet and minimized activity at certain times.

- a. Weekend Hours: Except as required by the construction schedule, and as approved in advance by the Design Professional, do not work on Sundays. Any work done on Sundays must be non-disruptive to other facilities on the property and nearby properties, which includes consideration of noise levels.
 - b. Early Morning and Nighttime Hours: As indicated above, and as limited by regulations and by authorities having jurisdiction for restrictions of noise levels.
- Hours for Utility Shutdowns: As authorized in advance by the Design Professional,

- and as limited by regulations and by authorities having jurisdiction.
- c. Coordination with Campus Police: Access to school facilities during non-school hours shall be coordinated with Campus Police. Contractor shall obtain prior clearance to occupy the site or buildings by calling Campus Police dispatcher @ 912-395-5536. Contact Campus Police at end of work and ensure facilities are secure and Alarm Systems are activated.
 - d. Tobacco Products are prohibited and not permitted on Board property.
 - e. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated. Notify Design Professional, and Owner, not less than 72 hours in advance of proposed utility interruptions. Proceed only with Design Professional's, and Owner's, written permission and only with all written authorizations including permits that may be required by authorities having jurisdiction.

END OF SECTION 01100

SECTION 01 21 00 – ALLOWANCES

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements governing the following:
 - 1. Lump-Sum Contingency allowances.

1.2 SELECTION AND PURCHASE

- A. At Design Professional's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the work.
- C. Purchase products and systems selected by Design Professional from the designated supplier.

1.3 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.4 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish shop and or fabrication drawings as required to coordinate installation.
- B. The performance of Work by Allowance shall not increase the Contract Time, unless demonstrated by the Contractor to cause an increase, and approved by the Design Professional and Owner.

1.5 LUMP-SUM ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner under allowance and shall include taxes, freight, and delivery to Project site and shall be included in the Contract Sum.
- B. Contractor's costs for receiving and handling at project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner under allowance shall be included as part of the allowance, and shall included in the Contract Sum.

- C. At Project closeout, credit unused amounts remaining in allowances to Owner by Change Order.

1.6 UNUSED MATERIALS

- A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted
- B. If requested by Design Professional, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Design Professional, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- 1. **List each Allowance:** **\$0.00**

END OF SECTION 01 21 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.

1.2 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services included in the Contract Sum; if estimated quantities of Work required by the Contract Documents.

1.3 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- A. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- B. The Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- C. The performance of Unit Price Work shall not increase the Contract Time, unless demonstrated by the Contractor to cause an increase, and approved by the Design Professional and Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

In accordance with applicable Drawings and Specifications, provide Unit Prices for quantities of the following scheduled items:

OR

No Unit Prices are requested with the Project Bid.

Project Name

Date

END OF SECTION 01220

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for processing Contract modifications.

1.2 Requests for Information or Clarification

- A. Request for Information (RFI): The Design Professional will issue a written RFI Response to each written Contractor inquiry. Unless specifically addressed, RFIs and RFI Responses shall not involve any adjustment to the Contract Sum or the Contract Time. RFI Responses when issued, become a part of the Contract Documents, and as such must be adhered to. The effects of RFI Responses must be reflected in the Project Record Documents. Each RFI Response shall bear words addressed by the Design Professional to the Contractor: “The work shall be carried out according to the following instructions or clarifications issued in response to Request For Information #(enter RFI #), and in accordance with The Contract Documents without change in The Contract Sum or Contract Time. If you determine that this response does affect The Contract Sum or Contract Time, you shall notify The Design Professional immediately, and shall do so prior to proceeding with the work in accordance with this response. Proceeding with the work in accordance with this response without your prior notification otherwise indicates your acknowledgement that there will be no change in The Contract Sum or Contract Time.”

1.3 CHANGES IN THE WORK AFFECTING COST AND/OR TIME

- A. Proposed Change Order Requests: The Design Professional (or Owner) may issue a, which is detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time, the description will include supplemental or revised Drawings and Specifications. Each PCO will be numbered and dated, and subsequent communications regarding each PCO should give reference to the PCO number and date.
 - 1. Proposal Requests are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in PCO after receipt of Proposal Request, the Contractor shall submit a Change Order Proposal (COP), which is a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change. Each COP must give reference to the number and date of the PCO to which it is in response.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Pricing of Changes shall be in accordance with Articles 3.2.9 and 3.2.10 of the Construction Contract.
 - d. If affected, the Contractor's Construction Schedule shall be updated to indicate the

effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. This updated schedule shall be submitted with the COP. Use available total float before requesting an extension of the Contract Time. By omission of an updated Schedule as a part of a COP, the Contractor shall and does establish that the Schedule is not affected by the subject change. Any COP that proposes to affect Contract Time may be considered non-responsive if it does not include an updated Schedule

- A. All change proposals shall include complete break-out and support documentation, including unit descriptions, unit quantities, unit costs (labor, material, other), burdens and mark-ups. Portions of work that are to be deleted as a part of an overall change description shall be clearly reflected in the break-out; abbreviated descriptions which reflect only the net effects of reduced work scopes combined with increased work scopes will not be accepted. The Design Professional and Owner shall have full discretion in determining what measure of breakout and support is adequate and acceptable. No extension of Contract Time will be allowed for Construction delays attributable to the failure on the part of the Contractor to provide properly prepared and supported change proposals.
- B. Proposal and change request forms: Use forms that are acceptable to the Design Professional and Owner. If the Design Professional or Owner deems it necessary, the Contractor shall be required and shall agree to submit change proposals on forms provided by the Design Professional or Owner.
- B. Do not reflect any Change Order in the Schedule of Values or Application for Payment Continuation without an approved Change Order. The Design Professional or Owner shall have full discretion in establishing the manner in which Change Orders are added to the Schedule of Values and Continuation Sheets.

1.4 ALLOWANCE

- A. Allowance Adjustment: All charges against an Allowance shall be made in the form of a CO resulting from PCO or RFI, shall be managed as any CO, and shall be invoiced against the Allowance line item in the Application for Payment. At Project completion, any unused balance in each allowance will be returned to the Owner by deductive CO.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents Submit claims within 14 days of receipt of the Change Order authorizing work to proceed. Owner will reject claims submitted later than 14 days after such authorization per Article 5.2.2 of the Contract.
 - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 - 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

1.5 CHANGE ORDER PROCEDURES

- A. The Design Professional shall immediately upon receipt review each Proposed Change Order (PCO) for its technical and monetary merits. The Design Professional will not forward to the Owner any advice or recommendation for any PCO that does not meet all requirements per Article 3.2.4 of the Contract Documents, but shall instead return it to the Contractor with

specific instructions as to what must be done in order to rectify the problems with PCO. The Design Professional will provide written advice to the Owner regarding his opinion of each PCO, which will include a recommendation.

- B. Upon Owner's approval of a Proposed Change Order (PCO), Design Professional will issue a Change Order for approval by the Owner.

1.6 FORCE ACCOUNT CHANGE ORDER

- A. Force Account: Force Account work shall be undertaken only after receipt of an Approved Change Order, stating a maximum dollar amount (Stipulated Maximum Sum) beyond which no change work may be undertaken subject to amendment, for funding all costs of the Change Order as prescribed in Article 3.2.7.3 of the Contract.
- B. Documentation: The Contractor shall maintain detailed records on a time and material basis of work required by the Force Account Change Order.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 TRACKING, COORDINATION and MANAGEMENT of CLARIFICATIONS and CHANGES

- A. Some clarifications and changes will go thru a process whereby they are assigned tracking numbers as more than one of the type documents defined in the articles above and in other Sections of these Specifications (i.e. RFIs, etc.). All documents created which pertain to the same subject shall make clear reference to other previous or concurrent documents on the subject.
 - 1. The Contractor shall establish and maintain current a single Log which tracks all these type documents. The form and content of this log is subject to Design Professional and Owner approval, and may if sufficient be used to meet other stipulated tracking log requirements.

1.8 DELAYS AND EXTENSIONS OF TIME DUE TO WEATHER

- A. Delays caused by weather are non-compensable, and will be processed in accordance with Article 3.3.7.2 of the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. The Design Professional and Owner shall have full discretion in establishing the measure and depth of breakout that is required to be reflected in the Schedule of Values. Additionally, the Design Professional and Owner shall have full discretion in establishing the manner in which Change Orders are added to the Schedule of Values.
 - 2. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Application for Payment forms with Continuation Sheets Submittals Schedule and Contractor's Construction Schedule.
 - 3. Submit the Schedule of Values to Design Professional and Owner at earliest possible date but no later than 14 days after the issuance of the first Proceed Order. The Schedule of Values must precede and be approved by the Design Professional and Owner prior to the initial Application for Payment.
 - 4. Sub-schedules: Where the Work is separated into phases requiring separately phased payments, provide sub schedules showing values correlated with each phase of payment.
- B. Format and Content: The Schedule of Values shall be in a format similar to AIA Document G703. Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Submit draft of Application for Payment Continuation Sheets.
 - 2. The approved Schedule of Values shall be used in the Continuation Sheets of all Applications for Payment, and shall not be altered except by the addition of approved Change Orders. Alterations to the approved line items in an Application for Payment without prior agreement will result in the return of the Application for Payment to the Contractor, for correction.
 - 3. The total of the items in the Schedule of Values shall equal the Contract Sum.
 - 4. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Use information indicated in the Contract Documents to determine quantities.
 - 5. Schedule Updating: Resubmit the Schedule of Values at least 10 days before the next Applications for Payment when Change Orders result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Design Professional and paid by Owner.

- B. Payment Application Times: Progress payments shall be submitted to Design Professional no later than the last day of the month. The period covered by each Application for Payment is one month (minimum), ending on the last date of the application.
- D. Payment Application Forms: Use forms provided in the Construction Contract.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Design Professional will return incomplete applications without action.
1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if approved revisions were made. No changes shall be made to the Schedule of Values and Continuation Sheets without the prior approval of the Design Professional and Owner.
 2. Include amounts of Change Orders approved before last day of construction period covered by application. Add Change Orders to the Schedule of Values and Continuation Sheets in a manner that accurately reflects the manner in which they are authorized and issued.
 3. On the Application form, include in the "work completed" columns (previous and current) only the value of work that has actually been completed. The value of the current inventory of stored materials shall be accurately reflected in the "stored materials" column. When stored materials which have been previously invoiced remain stored at the time of subsequent Applications, their value shall remain in the "stored materials" column; only when previously-stored materials are incorporated into the work shall their value be shifted into the "current work completed" column. The inaccurate inclusion of the value of Stored Materials within the value of Work Completed will result in the return of the Application for payment with no action. There will be no exceptions.
 4. All Stored Materials for which payment is requested must be supported by sufficient documentation including invoices. If there remains stored a value of materials for which an invoice was presented with a previous Application for Payment, a copy of the same invoice shall be presented. When applicable, these material support invoices should bear notations to reflect the diminishing volume and hence value of the stored materials.
 5. Applications for Payment which reflect an incorrect or unapproved retainage rate or amount will be returned without action.
 6. The Design Professional will not mark, edit, or correct Applications for Payment in order to recommend them for payment. Applications which require corrections will be returned to the Contractor for the needed corrections.
 7. The Contractor may if he wishes submit a draft of each Application for Payment in advance of the actual Application, for the advance cursory review and informal approval of the Design Professional. Any such review and informal approval by the Design Professional shall not guarantee the formal review action by the Design Professional of the actual Application for Payment.
- F. Transmittal: Submit 4 signed and notarized original copies of each Application for Payment to Design Professional by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
- G. Waivers of Mechanic's Lien: If required by the Owner or Design Professional, with each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by

the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. Owner and Design Professional reserve the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner and in conformance with Georgia Law.
- H. All Applications for Payment involve additional required actions and submittals. Any Application for Payment submitted without compliance with these additional requirements will be returned without action.
1. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - a. List of subcontractors and suppliers.
 - b. Schedule of Values.
 - c. Contractor's Construction Schedule (preliminary if not final).
 - d. Submittals Schedule and Log (preliminary if not final).
 - e. All submittals and approvals of all items that require approval prior to commencement of work for which payment is sought.
 - f. List of Contractor's staff assignments.
 - g. List of Contractor's principal consultants.
 - h. Copies of building permits.
 - i. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - j. Initial progress report.
 - k. Report of preconstruction conference.
 - l. Certificates of insurance and insurance policies.
 - m. Performance and Payment Bonds.
 2. Periodic Applications for Payment: Administrative actions and submittals that must precede or coincide with submittal of each Periodic Application for Payment include the following:
 - a. Contractor's updated construction schedule, or a written statement that the most recent previous updated schedule remains accurate within 5%, which statement shall be subject to the concurrence of the Design Professional.
 - b. Updated current Submittals Schedule and Log.
 - c. Updated current RFI, PCO and CO Logs.
 - d. All actual submittals and approvals of all items that require approval prior to commencement of work for which payment is sought.
 - e. Daily Construction Reports for the period covered by the Application.
 - f. Minutes of all Meetings held during the period covered by the Application.
 - g. Local and/or MFBE Monthly Report Forms provided in the Bidding Documents
 3. Application for Payment at Material Completion and Final Payment:

PART 2 - PRODUCTS (Not Used)

Project name

Date

PART 3 - EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Safety.
 - 2. Coordination Drawings.
 - 3. Project meetings.
 - 4. Requests for Interpretation (or Information) (RFIs).
- B. See Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 SAFETY

- A. Safety is the responsibility of solely the Contractor in accordance with Section 1-General, Part 4-Protection of Persons and Property of the contract.
- B. The Contractor shall have in effect at all times an active Safety Plan, and the Design Professional may in the course of and as a prerequisite to approving Applications for Payment, request to see evidence that this required Safety Plan is in place and fully in effect.

1.3 DEFINITIONS

- A. Request For Information (RFI): Request from Contractor seeking interpretation or clarification of the Contract Documents.
- B. Design Professional's Supplemental Instruction (DSI): A supplemental instruction from the Design Professional. DSIs will commonly be issued when the Design Professional (as opposed to the Contractor) recognizes the need to provide interpretation or clarification, or to make a change in the Work which will not change the Contract Sum or Time. See Section 01 26 00, "Contract Modification Procedures" for additional information.

1.4 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Where availability of space is limited, coordinate installation of different components to

ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Pre-construction conference.
 - 5. Delivery and processing of submittals.
 - 6. Progress meetings.
 - 7. Pre-installation conferences.
 - 8. Project closeout activities.
 - 9. Startup and adjustment of systems.
 - 10. Project closeout activities.
- D. Electronic Communications: It will be acceptable and in most cases preferable that communications regarding the project be sent and received electronically, by email and email attachment. Exceptions would include Applications for Payment and executed Change Order Documents, and Notices of Claims or Disputes.

1.5 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
 - 1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
 - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - b. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Design Professional for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
 - 2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
 - 3. Number of Copies: Submit two opaque copies of each submittal. Design Professional will return one copy.
 - 4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

1.6 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. The Contractor shall be responsible to facilitate and schedule all required meetings, including meeting agendas and reports of meeting minutes.
 2. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Design Professional of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Design Professional, within three days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Design Professional, but no later than 14 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Design Professional, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Safety.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long-lead items.
 - e. Designation of key personnel and their duties.
 - f. Procedures for processing field decisions and Change Orders.
 - g. Procedures for RFIs.
 - h. Procedures for testing and inspecting.
 - i. Procedures for processing Applications for Payment.
 - j. Distribution of the Contract Documents.
 - k. Submittal procedures.
 - l. Preparation of Record Documents.
 - m. Use of the premises, coordination with Campus Police, and utility outage process.
 - n. Work restrictions.
 - o. Owner's occupancy requirements.
 - p. Responsibility for temporary facilities and controls.
 - q. Construction waste management and recycling.
 - r. Parking availability.
 - s. Office, work, and storage areas.
 - t. Equipment deliveries and priorities.
 - u. First aid.
 - v. Security.
 - w. Progress cleaning.
 - x. Working hours.
 3. Minutes: Record and distribute meeting minutes to all attendees as well as to those not in attendance who should receive the meeting minutes.
- C. Pre-installation Conferences: Conduct a reinstallation conference at Project site before each

construction activity that requires coordination with other construction. Hold reinstallation conferences for construction activities determined by either the Contractor or the Design Professional to require such a conference. Indications within these Specifications as to which construction activities require pre-installation conferences shall not be construed to set a limit.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Design Professional of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. The Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written recommendations.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Design Professional, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with

- Project and authorized to conclude matters relating to the Work.
2. Agenda: First, address all safety issues. Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time. Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls and utility outage requirements.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) RFIs.
 - 16) Status of proposal requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
 3. Minutes: Record the meeting minutes.
 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.7 REQUESTS FOR INTERPRETATION (RFIs)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
 1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and

the following:

1. Project name.
 2. Date.
 3. Name of Contractor.
 4. Name of Design Professional.
 5. RFI number, numbered sequentially.
 6. Specification Section number and title and related paragraphs, as appropriate.
 7. Drawing number and detail references, as appropriate.
 8. Field dimensions and conditions, as appropriate.
 9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 10. Contractor's signature.
 11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation. Give clear reference to all attachments on the face of the RFI.
- C. RFI Format: Use RFI forms that are acceptable to the Design Professional and Owner.
1. Identify each page of attachments with the RFI number and sequential page number.
- D. Design Professional's Action: Design Professional will review each RFI, determine action required, and provide an RFI Response as soon as possible, but in no case later than two business days after receipt. RFIs received after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs may be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for information that is already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Design Professional's actions on submittals.
 - f. Incomplete RFIs or RFIs with numerous errors, mistakes or other flaws.
 2. Design Professional's action may include a requirement that additional information be provided, in which case Design Professional's time for response will start again.
 3. Design Professional's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
 - a. If Contractor believes the Design Professional's response to an RFI warrants change in the Contract Time or the Contract Sum, notify Design Professional in writing within seven days of receipt of the RFI response and submit a Proposed Change Order. Do not proceed with any additional cost work item until receipt of an approved Change Order.
- E. On receipt of Design Professional's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Design Professional within seven days if Contractor disagrees with response.
- F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Design Professional.
 4. RFI number including RFIs that were dropped and not submitted.

Project Name**Date**

5. RFI description.
6. Date the RFI was submitted.
7. Date Design Professional's response was received.
8. Identification of any related Design Professional's Supplemental Instruction (DSI), Request for Proposal (RFP), Proposed Change Order (PCO), Bulletin Drawing (BD), and executed Change Order (CO), as appropriate.

1.8 TRACKING, COORDINATION and MANAGEMENT of CLARIFICATIONS and CHANGES

- A. Some clarifications and changes will go thru a process whereby they are assigned tracking numbers as more than one of the type documents defined in the articles above and in other Sections of these Specifications. All documents created which pertain to the same subject shall make clear reference to other previous or concurrent documents on the subject.
 1. The Contractor shall establish and maintain current a single Log which tracks all these documents. The form and content of this log is subject to Design Professional and Owner approval, and may if sufficient be used to meet other stipulated tracking log requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

Project Name

Date

SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's Construction Schedule.
 - 2. Submittals Schedule.
 - 3. Daily construction reports.
 - 4. Field condition reports.
- B. See Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
- C. See Division 01 Section "Photographic Documentation" for submitting construction photographs.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time belongs to Owner.
- E. Fragment: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- F. Major Area: A story of construction, a separate building, or a similar significant construction element. See Section 01100, "Summary."

1.3 SUBMITTALS

- A. Submittals Schedule [Article 2.2.3; Submittals]: Submit three copies of schedule within 60 days of the effective date of the contract. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.

Comment [CD1]: reworded

Project Name

Date

2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Design Professional's final release or approval.

- A. Contractor's Construction Schedule :{ Article 2.1.5; Construction Progress Schedule} Submit two copies of initial schedule, large enough to show entire schedule for entire construction period.
- B. CPM Reports: Concurrent with CPM schedule, **submit two copies of each of the following** computer-generated reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 3. Total Float Report: List of all activities sorted in ascending order of total float.
- C. Daily Construction Reports: Submit one copy of daily construction reports, accompanied by corresponding photographs, at weekly intervals.
- D. Field Condition Reports: Submit immediately at time of discovery of differing or noteworthy conditions.

Comment [CD2]: reworded

1.4 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 1. Secure time commitments for performing critical elements of the Work from parties involved.
 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Comply with all requirements, including those of Section 013300, "Submittal Procedures," and coordinate submittal requirements with the project schedule requirements.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Proceed Order to date of Final Completion.

Project Name

Date

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

- B. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 1. Activity Duration: Define activities so no activity is longer than 21 days, unless specifically allowed by Design Professional.
 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than 21 days for startup and testing.
 5. Material Completion: Indicate completion in advance of date established for Material Completion, and allow time for Design Professional's administrative procedures necessary for certification of Material Completion.

- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 1. Phasing: Arrange list of activities on schedule by phase.
 2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 3. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Use of premises restrictions.
 - b. Seasonal variations.
 - c. Environmental control.
 4. Work Stages: Indicate important stages of construction for each major portion of the Work.

- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Proceed Order, Material Completion, and Final Completion, and the following interim milestones, including for applicable parts as established in Section 01100, "Summary":
 1. All scheduled pre-installation conferences
 2. Dry-in, roof
 3. Dry-in, walls
 4. Permanent power
 5. Start-up dates for primary systems and equipment
 6. Interim commissioning dates for systems and equipment which are relied upon by other systems or equipment
 7. Permanent lighting
 8. Moderation and control of interior climate
 9. Milestone dates relating to Furniture, Fixtures, and Equipment
 10. Certificate of Occupancy (delivered to Design Professional)

- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragments to demonstrate the effect of the proposed change on the overall project schedule.

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Date

- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
 - 1. Identification of activities that have changed.
 - 2. Changes in early and late start dates.
 - 3. Changes in early and late finish dates.
 - 4. Changes in activity durations in workdays.
 - 5. Changes in the critical path.
 - 6. Changes in total float or slack time.
 - 7. Changes in the Contract Time.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site, to include:
 - 1. List of subcontractors at Project site, including the approximate man-power presence for each subcontractor.
 - 2. Equipment at Project site.
 - 3. Material deliveries.
 - 4. High and low temperatures and general weather conditions.
 - 5. Accidents and unusual events.
 - 6. Stoppages, delays, shortages, and losses.
 - 7. Meter readings and similar recordings.
 - 8. Orders and requests of authorities having jurisdiction.
 - 9. Services connected and disconnected.
 - 10. Equipment or system tests and startups.
- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with an RFI. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Design Professional, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.

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2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
- B. See Division 01 Section "Closeout Procedures" for submitting digital media as Project Record Documents at Project closeout.
- C. See Division 01 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.

1.2 SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same label information as corresponding set of photographs.
- B. Construction Photographs: Submit a digital image of all photographs weekly, along with daily construction reports.
 - 1. Format: as approved by Design Professional.
 - 2. Identification: Each digital image shall have a unique identifier, and shall be accurately date stamped, or the accurate date shall be ascertainable by electronic file date. Tag and/or transmit the photographs in a manner so as to clearly identify them as photographs of this project. Also, for digital images for which it is necessary or for which requested by the Design Professional, provide a description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - 2. Digital Images: Submit a complete set of digital image electronic files as a Project Record Document on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, un-cropped.

1.3 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who is familiar with the project and the progress of the work.

1.4 COORDINATION

- A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.5 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Design Professional and Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS**2.1 PHOTOGRAPHIC MEDIA**

- A. Digital Images: In format as approved by Design Professional.

PART 3 - EXECUTION**3.1 CONSTRUCTION PHOTOGRAPHS**

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in filename for each image.
 - 2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Design Professional.
- C. Preconstruction Photographs: Before commencement of demolition, take , digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Design Professional.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take 36 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 36 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
- D. Periodic Construction Photographs: Take no fewer than 50 digital photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Additional Photographs: Design Professional may issue requests for 500 additional digital photographs, in addition to periodic photographs specified. These additional photographs are included in the Contract Sum.
 - 1. Three days' notice will be given, where feasible.
 - 2. In emergency situations, safely take additional photographs immediately upon request.
 - 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.

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- b. Immediate follow-up when on-site events result in construction damage or losses.
- c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
- d. Material Completion of a major phase or component of the Work.
- e. Extra record photographs at time of final acceptance.

END OF SECTION 01323

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting all project submittals, including product data, product certificates, manufacturer certificates, test reports, shop drawings, color and finish selection information, samples, and other submittals.
- B. See also all other Divisions and Sections for additional submittal information as required by the Design Professional.

1.2 SUBMITTAL TYPES / DEFINITIONS

- A. Each submittal must be identified according to the following submittal types:
 - 1. Informational Submittal: Submittal item that is made for the purpose of supplying required information or information which demonstrate compliance with project requirements. While an Informational Submittal does not require the Design Professional's or Consultant's responsive action, it may be rejected for not complying with requirements, in which case the item would be required to be re-submitted. Also, in certain instances, corrective work may be required as the result of a rejected Informational Submittal.
 - 2. Action Submittal: Submittal item that is made for the purpose of supplying required information or information which demonstrate compliance with project requirements, and which does require the Design Professional's or Consultant's responsive action. Except as directed or indicated otherwise, an Action Submittal shall be submitted and approved prior to the commencement of the work to which it pertains.
 - 3. Administrative Submittal: Submittal item that is required as a part of general project management and administration. Most or all Administrative Submittals will be Informational Submittals.
 - 4. Technical Submittal: Submittal item that pertains to a particular aspect of the actual work. Most Technical Submittals will be Action Submittals, although some will instead be informational submittals.
 - 5. Periodic Submittal: Submittal item that is required during the course of construction (such as manufacturing or installation reports). Most or all Periodic Submittals will be Informational Submittals.
 - 6. Job-End Submittal: Submittal item that is required as a part of project close-out, operation and maintenance information, warranties, record documents, demonstration and training, or special requirements associated with Material and Final Completion. Do not submit Job-End Submittals with Technical Submittals. Most or all Job-End Submittals will be Informational Submittals.
 - 7. Component Submittal: Submittal (more accurately, transmittal) of actual components, such as extra materials, tools, parts that are specified to be required. While a Component Submittal does not require the Design Professional's or Consultant's responsive action, it may be rejected for not complying with requirements, in which case the item would be required to be re-submitted. Also, corrective work may be required as the result of a rejected Informational Submittal.
- B. Do not transmit or bind different type submittals together when such would encumber proper handling or action by the Design Professional; for instance, do not bind Informational Submittals together with Action Submittals.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Design Professional may withhold action on a submittal requiring coordination with other submittals until related submittals are received. Failure on the part of the Design Professional to notify the Contractor that action on a submittal is pending related submittals shall not be cause for an extension in the Contract Time.

- B. Submittals Schedule/Log: Maintain and periodically submit a Schedule/Log of Submittals. Coordinate submittal and action dates with the Project Schedule, allowing adequate time {14 calendar days minimum} for review and action by the Design Professional, re-submittal, re-review and action, field measuring, ordering, manufacturing, fabrication, and delivery.
 - 1. Include for each line entry in the Submittal Schedule/Log columns to indicate no less than the following information:
 - a. Number
 - b. Section Article Number
 - c. Subject or Description
 - d. Content
 - e. Type Product
 - f. Type
 - g. Date, scheduled
 - h. Date, actual
 - i. Review Action Date, scheduled (for Action Submittals)
 - j. Review Action Date, actual (for Action Submittals)
 - k. Review Action
 - 2. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 - 3. Submit current updated Submittal Schedule / Logs no less frequently than monthly and more frequently when required by the Design Professional.

- C. Identification / Transmittal of Submittals: Use the Project "Submittal Cover / Transmittal Sheet" form, which follows this Section, to transmit ALL submittal items, without exception. Complete all information on the form, entering "NA" in blanks that are not applicable. For Action Submittals, attach a fully completed copy of the "Project Submittal Cover / Transmittal Sheet" to the front of each and every copy of each and every submittal. A partially editable electronic copy of the "Project Submittal Cover / Transmittal Sheet" will be made available to the Contractor upon request. Submittals that are not properly and correctly identified will be returned with no action, a re-submittal will be required, and attributable delays will not be considered as cause for an extension in Contract Time.

- D. Processing Time: Allow enough time {14 calendar days minimum} for submittal review, including time for re-submittals, as follows. Time for review shall commence on Design Professional's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

1. Initial Review: Allow 14 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Design Professional will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Re-submittal Review: Allow 14 days for review of each re-submittal.
- E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- F. Additional Copies: Unless additional copies are required for final submittal, and unless Design Professional observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. All copies including additional copies submitted for maintenance manuals less three will not be marked with action taken and will be returned.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are returned with a review stamp and note by either the Design Professional or his Consultant that does not indicate the requirement that they be resubmitted.
 4. The Design Professional shall be responsible for an initial and one subsequent review of the submittal. The Contractor shall be liable for additional cost of subsequent reviews due to non-compliance.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, and installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Use only final submittals with mark indicating a review stamp and note by either the Design Professional or his Consultant that does not indicate the requirement that they be resubmitted.
- J. All submittals shall be made in a manner that will accommodate the progress of construction. No extension of Contract Time will be issued for construction delays caused by untimely submittals. All Action Submittals and all other submittals that are deemed relevant to the progress of the Work shall be provided according to the approved Submittals Schedule, and all such submittals shall be provided no later than within 60 days of commencement of work or other notice to provide submittals, or within 15% of the project schedule, whichever time period is shortest.
- K. If at the time of an Application for Payment, the provision of submittals is behind schedule, based on the current approved Submittal Schedule, the Contractor may not be allowed to request funds for General Conditions, which, if requested, will cause the Application to be returned without action.
- L. If the Agreement allows for the reduction of retainage, this reduction shall not be approved or allowed until all Action Submittals and all other submittals that are deemed relevant to the progress of the Work have been approved.

1.4 CONTRACTOR'S USE OF DESIGN PROFESSIONAL'S CAD FILES

- A. General: At Contractor's written request, copies of Design Professional's electronic drawing files may be provided on a limited basis to Contractor for Contractor's use in connection with Project, subject to the following conditions:
 - 1. The Design Professional assumes no liability for reliance upon these documents instead of actual physical measurements or examination of actual field conditions. The Design Professional's drawings are copyrighted and may not be used for any purposes other than for the construction of this building at this time and place.
 - 2. Each request must include specific information about the intended use of the electronic drawings, and the type electronic drawing file sought, and a list of the specific drawing sheets sought. These will be provided in response to each request at the sole discretion of the Design Professional.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
 - 1. Except as approved by the Design Professional, submit all Action Submittals required by each Section at one time. Bind and consolidate these to the greatest extent possible, taking care however that each individual submittal requirement is included.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Wiring diagrams showing factory-installed wiring.
 - f. Printed performance curves.
 - g. Operational range diagrams.
 - h. Compliance with specified referenced standards.
 - i. Testing by recognized testing agency.
 - 4. Number of Copies: Submit copies of Product Data in a quantity to meet Contractor's requirements, considering that the Design Professional will retain three copies. Mark up and retain one returned copy as a Project Record Document.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Design Professional's electronic Drawings is otherwise permitted.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.

- d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Notation of coordination requirements.
 - j. Notation of dimensions established by field measurement.
 - k. Relationship to adjoining construction clearly indicated.
 - l. Seal and signature of professional engineer if specified.
 - m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
 3. Number of Copies: Submit copies in a quantity to meet Contractor's requirements, considering that the Design Professional will retain three copies.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit no fewer than five full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Design Professional will retain three and will return the remaining submittal(s) with options selected.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit no fewer than four sets of Samples. Design Professional will retain three Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location.
1. Number of Copies: Submit copies of product schedule or list in a quantity to meet Contractor's requirements, considering that the Design Professional will retain three

copies.

- F. Applications for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."
- G. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- I. List of Subcontractors and Suppliers, including Local and/or MWBE participants: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include company names, addresses, contacts, phone numbers, fax numbers, and email addresses.
 - 1. Number of Copies: Submit no fewer than four copies of list, unless otherwise indicated.
 - 2. Local and/or MWBE Monthly Report: Submit with Monthly Payment Application on Forms specified in the original solicitation documents.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. Design Professional will not return copies.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements specified in Division 01 Section "Quality Requirements." Instruct all testing and reporting agents to forward copies of all documents directly to the Design Professional.
- B. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Design Professionals and owners, and other information specified.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that

product complies with requirements in the Contract Documents.

- I. **Material Certificates:** Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- J. **Material Test Reports:** Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- K. **Product Test Reports:** Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- L. **Research/Evaluation Reports:** Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- M. **Preconstruction Test Reports:** Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- N. **Compatibility Test Reports:** Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- O. **Field Test Reports:** Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- P. **Maintenance Data:** Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- Q. **Design Data:** Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- R. **Manufacturer's Instructions:** Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.
- S. **Manufacturer's Field Reports:** Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Statement on condition of substrates and their acceptability for installation of product.
 - 2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 3. Results of operational and other tests and a statement of whether observed performance

complies with requirements.

- T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- U. Construction Photographs: Comply with requirements specified in Division 01 Section "Photographic Documentation."
- V. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Design Professional.
 - 1. Design Professional will not review submittals that include MSDSs and will return them for re-submittal.

2.3 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Design Professional.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit copies of a statement, in a count no fewer than that of the shop drawing or other type submittal to which it is in relation, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

All submittals shall be reviewed and approved by the Contractor prior to submittal to the Design professional. Submittals that are not fully and properly reviewed by the Contractor will be returned with no action, and a re-submittal will be required, and attributable delays will not be considered as cause for an extension in Contract Time. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions.

3.2 DESIGN PROFESSIONAL'S ACTION

- A. General: Design Professional will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Design Professional will review each submittal, make marks to indicate corrections or modifications required, and return it. Design Professional will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.
- C. Informational Submittals: Design Professional will review each submittal and will not return it,

or will return it if it does not comply with requirements.

- D. Partial submittals are not acceptable, will be considered non-compliant, and will be returned without review.
 - 1. Should the Contractor proceed with the Work without the required full review of complete submittals, he does so at his sole risk. In any event and at any time it is determined that a missing portion of a submittal is needed in order to ensure compliance with the Contract Documents; the Contractor shall immediately submit the missing portion. No increase in the Contract Amount or the Contract Time will be allowed, nor will any variations from the requirements of the Contract Documents be allowed as a result of the failure on the part of the Contractor to provide complete submittals, or as a result of the failure of the Design Professional to garner complete submittals from the Contractor.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.
- F. In no case shall any review action or comments on the part of the Design Professional or his Consultants be construed to authorize compensable extra Work or an increase in Contract Amount or Contract Time.

END OF SECTION 01330

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
 - 1. Except for the expense of inspections and testing required by Chapter 17 of the IBC, the expense of all required on-site quality-control inspections and testing shall be borne by the Contractor.
 - 2. The Contractor's responsibility for Quality of Materials and Installation is specified in Article 2.1.4 of the Contract. The Contractor shall submit a written Quality Control program.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and quality-control services required by Design Professional, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. See Divisions 02 through 33 Sections for specific test and inspection requirements.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Design Professional.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to

- establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.3 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Design Professional for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Design Professional for a decision before proceeding.

1.4 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Reports: Prepare and submit certified written reports that include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.

10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and re-inspecting.

C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

- I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Design Professional.
 - 2. Notify Design Professional seven days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Design Professional's approval of mockups before starting work, fabrication, or construction.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed, unless otherwise indicated.

- J. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 16.

1.6 QUALITY CONTROL

- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified here or not.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least 24 hours (or as required by testing agencies) in advance of time when Work that requires testing or inspecting will be performed.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

- D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.

- E. Testing Agency Responsibilities: Cooperate with Design Professional and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Design Professional and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.7 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Design Professional and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Design Professional with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Material Completion which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 COORDINATION

- A. General: It is the sole responsibility of the Contractor to coordinate with the testing agency(s) and inspection authorities to ensure that all required tests and inspections are performed.

3.2 ACCESS TO WORK

- A. General: It is the responsibility of the Contractor to provide safe and unencumbered access for the Design Professional and other testing and inspection personnel to all locations requiring testing or inspection. This in some cases may require and include the lifting of personnel using power equipment on the project site.

3.3 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
 - 2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- A. See Division 01 Section "Execution" for progress cleaning requirements.
- B. See Divisions 02 through 33 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.
- C. Failure on the part of the Contractor to establish and maintain all required on-site communication and clerical provisions may be cited as cause to return Applications for Payment without action.

1.2 DEFINITIONS

- A. Permanent Enclosure: As determined by Design Professional, permanent or temporary roofing is complete, insulated, and weather-tight; exterior walls are insulated and weather-tight; and all openings are closed with permanent construction or substantial temporary closures.

1.3 USE CHARGES

- A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Design Professional, testing agencies, and authorities having jurisdiction.

1.4 SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. Pavement: Comply with Division 02 pavement Sections.
- B. Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top rails and galvanized barbed-wire top strand.
- C. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts.
- D. Lumber and Plywood: Comply with requirements in Division 06 Section "Rough Carpentry."
- E. Gypsum Board: Minimum 1/2 inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36/C 36M.
- F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
- G. Provide and maintain during the Construction period one (1) project sign as specified by the Owner. The maintenance and upkeep of the sign shall be the responsibility of the Contractor.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading. Provide unit(s) of adequate size to serve needs of project, including jobsite progress meetings.
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system; provide climate control units with individual space thermostatic control.
 - 1. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - 2. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 – EXECUTION**3.1 INSTALLATION, GENERAL**

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work, and to limit site disturbance as required to attain LEED-NC Credit SS 5.1, and as specified in Division 01 Section "Summary." Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 - 1. Install electric power service overhead, or underground, as conditions required.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line(s) for each field office.
 - 1. At each telephone, post a list of important telephone numbers including police and fire departments, Contractor's home office, Design Professional's office, principal subcontractors' field and home offices.

3. Provide superintendent with cellular telephone for use when away from field office.

- J. Electronic Equipment: In field office, provide and maintain a computer with on-line capability and electronic mail. Provide and maintain also a printer which can be used to print communications and bulletin drawings.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide noncombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.
2. Maintain support facilities until near Material Completion. Remove before Material Completion. Personnel remaining after Material Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and non-tracking. Reapply treatment as required to minimize dust.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Provide temporary parking areas for construction personnel.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

F. Project Identification and Temporary Signs: Provide Project identification and other signs as a part of Allowance No. Four. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.

1. Provide temporary, directional signs for construction personnel and visitors.
2. Maintain and touchup signs so they are legible at all times.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

I. Temporary Elevator Use: Refer to Division 14 Sections for temporary use of new elevators.

J. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

- K. Temporary Use of Permanent Stairs: Cover finished permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- C. Storm water Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.
- D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- E. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Material Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.
- F. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner and Design Professional with one set of keys.
- G. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with

NFPA 241.

1. Prohibit smoking and use of all tobacco products on SCCPSS property
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Material Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Material Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves the right to take possession of Project identification signs.
 2. At Material Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 01500

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. See Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.
- C. See Divisions 02 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.2 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. It may be in certain instances, but is not necessarily the intent of product Specifications to limit the use of product manufacturers and model numbers to those listed by name. As a minimum, all requirements of the Specifications must be met, including but not limited to in regard to appearance, function, quality, durability, and source reliability. Actions and approvals regarding products and product substitutions will occur in a manner that suits and is in the best interest of the Owner.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.3 SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use CSI Form 13.1A.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided, or an explanation why Contractor wishes to provide an alternate material or product.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of Design Professionals and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results, or because of adverse unforeseen conditions or expenses resulting from the substitution.

3. Design Professional's Action: If necessary, Design Professional will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Design Professional will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Change Order.
 - b. Use product specified if Design Professional cannot make a decision on use of a proposed substitution within time allocated.

- B. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 1. Design Professional's Action: If necessary, Design Professional will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Design Professional will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
 - b. Use product specified if Design Professional cannot make a decision on use of a

comparable product request within time allocated.

- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project; product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

- B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

- C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementations products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
 - 3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. All warranties that are normally available from manufacturers, vendors, Subcontractors, etc. shall be provided to the Owner, even if these warranties are not specifically called for in the Contract Documents.
- D. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Design Professional will make selection.
 - 5. Where products are accompanied by the term "match sample," sample to be matched is Design Professional's.
 - 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B. Product Selection Procedures:
 - 1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
 - 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
 - 3. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements, as determined by the Design Professional. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
 - 4. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements, as determined by the Design Professional. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
 - 5. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
 - 6. Basis-of-Design Product: Where Specifications name a product and include a list of

manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.

7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Design Professional's sample. Design Professional's decision will be final on whether a proposed product matches.
 - a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.

8. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, and textures" or a similar phrase, select a product that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Design Professional will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Design Professional will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Design Professional will consider requests for substitution if received within 5 days after the Proceed Order. Requests received after that time may be considered or rejected at the discretion of the Design Professional.

- B. Conditions: Design Professional will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Design Professional will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Design Professional for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 4. Substitution request is fully documented and properly submitted.
 5. Requested substitution will not adversely affect Contractor's Construction Schedule.
 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
 7. Requested substitution is compatible with other portions of the Work.
 8. Requested substitution has been coordinated with other portions of the Work.
 9. Requested substitution provides specified warranty.

- C. Should, subsequent to the approval or implementation of a substitution, there occur a discovery of an unforeseen circumstance or condition that is attributable to the substitution, the Contractor

shall be responsible to bear any additional costs or to return to the Owner any cost savings resulting from the discovery.

2.3 COMPARABLE PRODUCTS

- A. Conditions: Design Professional will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Design Professional will return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of Design Professionals and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. General installation of products.
 - 4. Progress cleaning.
 - 5. Starting and adjusting.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.

- B. See Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.2 SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal, if any.

1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.

- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical

- services.
- 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Design Professional. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Design Professional promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Design Professional when deviations from required lines and levels exceed allowable tolerances.
 - 6. Close site surveys with an error of closure equal to or less than the standard established

by authorities having jurisdiction.

- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Design Professional.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- B. Benchmarks: Establish and maintain a minimum of four permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- D. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Recording: At Material Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Material Completion.

- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Design Professional.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Material Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Material Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Material Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

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- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. See Divisions 2 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
- C. See Division 07 Section "Penetration Fire stopping" for patching fire-rated construction.

1.2 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. Products: List products to be used and firms or entities that will perform the Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
 - 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
 - 7. Design Professional's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.3 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Design Professional's opinion, reduce the

building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.4 WARRANTY

- A. Existing and Projected Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties, or warranties that are set to commence with Material Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply

with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 4. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 73 29

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Recycling non-hazardous demolition and construction waste.
 - 2. Salvaging nonhazardous demolition and construction waste.
 - 3. Disposing of non-hazardous demolition construction waste.
 - 4. Removal and disposal of existing loose items inside the building.
- B. See Division 02 Section "Structure Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.
- C. See Division 32 "Site work" and Civil Drawings for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.
- D. See Division 04 Section "Unit Masonry" for disposal requirements for masonry waste.
- E. See Division 04 Section "Stone Masonry" for disposal requirements for excess stone and stone waste.

1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- C. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

1.3 PERFORMANCE GOALS

- A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work.
- B. Salvage/Recycle Goals 01: Owner's goal is to salvage and recycle as much non-hazardous construction waste as possible. Owner has established minimum goals for the following materials:
 - 1. Recycle 75% of all metals.
 - 2. Reduce landfill waste disposal by 25%.

1.4 SUBMITTALS

- A. Waste Management Plan: Submit for approval 3 copies of plan within 7 days of date established for the Proceed Order.

1.5 QUALITY ASSURANCE

- A. Waste Management Conference: Conduct conference at Project site.

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification and waste reduction work plan. [Include separate sections in plan for demolition and construction waste.] Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.
- D. Forms: Prepare waste management plan on forms satisfactory to the Design Professional.

PART 2 - PRODUCTS (Not Used)**PART 3 - EXECUTION****3.1 PLAN IMPLEMENTATION**

- A. General: Implement waste management plan as approved by Design Professional. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Disposal of Loose Items Inside Existing Building: Except for items or materials to be salvaged, recycled, or otherwise reused, any of which would be at the Owner's discretion, remove from the Project site all loose items inside the building and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal.

2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until installation.
 4. Protect items from damage during transport and storage.
 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale or Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area [on-site] [off-site] [designated by Owner].
 5. Protect items from damage during transport and storage.

3.3 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 2. Polystyrene Packaging: Separate and bag materials.
 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
 2. Ground and screened gypsum materials may be used as landscaping substrate, at Contractor's option.

3.4 DISPOSAL OF WASTE

Project Name

Date

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 01 74 19

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. See Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Material and Final Completion.
- C. See Division 01 Section "Photographic Documentation" for submitting Final Completion construction photographs and negatives.
- D. See Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
- E. See Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- F. See Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
- G. See Divisions 02 through 33 Sections, including but not limited to Section 15 01 60, "Mechanical Work Closeout," for specific closeout and special cleaning requirements for the Work in those Sections.

1.2 MATERIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Material Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
 - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - 7. Make final changeover of permanent locks and deliver keys to Owner. Transmit keys with a detailed accounting of the keys transmitted, and garner the receipt signature of an authorized representative of the Owner. Advise Owner's personnel of changeover in security provisions.
 - 8. Complete startup testing of systems.

9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Material Completion. On receipt of this written request, Design Professional will either proceed with inspection or notify Contractor of unfulfilled requirements. Design Professional will prepare the Certificate of Material Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Design Professional, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Submit certified copy of Design Professional's Material Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Design Professional. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training DVDs.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of this written request, Design Professional will either proceed with inspection or notify Contractor of unfulfilled requirements. Design Professional will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with the site, then the building

- 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Design Professional for designated portions of the Work where commencement of warranties other than date of Material Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 - 4. Provide all warranties available from product and system manufacturers, regardless of whether each warranty is specifically called for in these Specifications.
- B. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Material Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other

- foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters and clean exposed surfaces of diffusers, registers, and grills.
 - q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - r. Leave Project clean and ready for occupancy.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 77 00

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following per Article 6.4.1; Final Documents, of the Contract.
 - 1. Emergency procedure manuals.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Maintenance manuals for the care and maintenance of products, materials, and finishes systems and equipment.
- B. See Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.2 SUBMITTALS

- A. Manual: Submit one copy of each manual in final form at least 15 days before final inspection. Design Professional will return copy with comments within 15 days after final inspection.
 - 1. Correct or modify each manual to comply with Design Professional's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Design Professional's comments.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain a title page, table of contents, and manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name, address, and telephone number of Contractor.
 - 6. Name and address of Design Professional.
 - 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
 - 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

- a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
- 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
- 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
- 4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY PROCEDURE MANUALS

- A. Content: Organize manual into a separate section for type of emergency, emergency instructions, and emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component for fire, flood, gas leak, water leak, power failure, water outage, equipment failure, and chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include instructions on stopping, shutdown instructions for each type of emergency, operating instructions for conditions outside normal operating limits, and required sequences for electric or electronic systems.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.
- B. Descriptions: Include the following:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.

shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.

- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and inspection procedures, types of cleaning agents, methods of cleaning, schedule for cleaning and maintenance, and repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including maintenance instructions, drawings and diagrams for maintenance, nomenclature of parts and components, and recommended spare parts for each component part or piece of equipment:

- D. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, and adjusting instructions, and demonstration and training DVD if available, that detail essential maintenance procedures:
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Procedure Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original Project Record Documents as part of operation and maintenance manuals.
- F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01782

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous Submittals
 - 4. Record Documents
- B. See Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- C. See Divisions 02 through 32 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Submit one set of full size marked-up Record Prints
 - 2. Submit one set half size prints size marked-up Record Prints.
- B. Record Specifications: Comply with the following:
 - 1. Submit one copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Comply with the following:
 - 1. Submit one copy of each Product Data submittal.
- D. Electronic Copies: Using the Record Drawings and Specifications provided by the Construction Professional, the Design Professional shall provide the following
 - 1. Record Drawings: Submit two copies of electronic media (disk, memory card, etc.) in "PDF" format and "DWG/CAD" format. (Submitted from design professional to SCCPSS)
 - a. PDF drawings to be created with layers that can be turned on and off. (no raster scan pdf will be accepted).
 - b. Electronic File Naming to be as follows:
 - i. School letters code-Sheet number.PDF
 - 1. Example for Beach High School – Sheet A1.0: "BHS-A1.0.PDF"
 - 2. Specifications: Submit two copies of electronic media (disk, memory card, etc.) in "PDF" format and "DOC" format. (submitted from design professional to SCCPSS)
 - a. Electronic File Naming to be as follows:
 - i. School letters code-Specification number-Section Title.PDF
 - 1. Example for Beach High School – Spec. Section 04 23 13 – Brick Masonry: "BHS-04 23 13-Brick Masonry.PDF"
- E. Miscellaneous Submittals
 - 1. Submit one hard copy of any pertinent documents and one electronic copy in PDF Format

F. Municipality Close Out Documents

1. Submit as a record of submittal one hard copy of any documents required by authority having jurisdiction and one electronic copy in PDF Format.
 - a. Submit CAD file in DWG format if produced as part of this contract.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
3. Mark record sets with erasable, red-colored pencil/or PDF mark-up. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record CAD Drawings: Immediately before inspection for Certificate of Material Completion, review marked-up Record Prints with Design Professional, to assist the Design Professional in preparing a full set of corrected CAD Drawings of the Contract Drawings, as follows:

1. Format: "DWG" format Autocad version 2000 or greater.
2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
3. Resolve any instances of uncertainty with Design Professional.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Design Professional.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.5 MUNICIPALITY RECORD SUBMITTALS

- A. Assemble all paper documents submitted to the authority having jurisdiction. Bind or file these records with and identifying each for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project. Project Record Documents will be reviewed periodically during the course of the project, as a part of the payment authorization procedure.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Design Professional's reference during normal working hours.

END OF SECTION 01784