



Facility Design Standards

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SSU Physical Plant



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PURPOSE

These design standards have been prepared by Savannah State University. They are to be used by all design professionals who are designing facilities for Savannah State.

The purpose is to help standardize materials and systems used on campus. This will allow facilities to be operated and maintained in the most economic manner by the school.

Therefore, all of these standards must be followed unless approval is provided in writing by the Savannah State campus representative. The design team must review each phase of their design with campus representatives. This shall include a review of how each system operates.

It is the goal of Savannah State to provide building systems that are of quality construction, cost effective, reliable and long lasting, easy to operate and maintain, energy efficient and appropriate for the use intended. Systems must be designed for the hard environment of a college facility.

All designs must comply with these standards. Just as important, the design team must review the contractor's installation to verify that all systems installed meet these standards. The design team must also review construction periodically for accessibility and service space.

Facility design must include requirements for training of school staff and a complete set of Operations and Maintenance manuals. Warranties shall be provided for all equipment.

Savannah State welcomes input from design professionals and contractors who will work together to provide the best facilities for the campus.



ARCHITECTURAL

GENERAL CONDITIONS

Submittal Requirements:

1. Provide University with a copy of all approved samples for record keeping.
2. Provide University with overstock materials on all interior finishes.

Quality Requirements:

1. Provide full-size exterior wall/roof cornice mock-up. Mock-up to demonstrate to University the exterior aesthetic intent of Architect. Mock-up is to be separate from building construction, but located on the project site. Mock-up should incorporate as many as possible exterior building components to be used. Materials should include, but are not limited to, exterior veneer, flashings, sealants, window frame and glazing, back-up wall substrate and framing, roof structure, cornice, gutters, etc.
2. Exterior windows to be tested for water intrusion by independent testing company. At a minimum one window, randomly selected by Architect on each floor level, should be tested before interior finishes are installed.

Unit Masonry:

3. University standard brick to be used is Cherokee Brick & Tile Co., "Natchez." Modular size 3-5/8" wide x 2-1/4" high x 7-5/8" long.
4. Mortar color to match color used at SSU Student Center.
5. Provide water-repellant admixture to mortar mixes used for brick. CMU back-up to not have integral water water-repellant admixture where coated with bituminous dampproofing.
6. All masonry reinforcing to be hot-dipped galvanized with G60 zinc coating.
7. Through-wall masonry flashings to be a minimum of 0.040 inch thick rubberized-asphalt flashing. Provide manufacturer's pre-formed corners, end dams, and other special shapes to aid flashing transitions.
8. Weep material to be cotton absorbent rope 1/4" to 3/8" in diameter.

Cast Stone Masonry:

1. University requires that cast stone match color of stone found at masonry entry sign to campus at LaRoche Avenue.
2. Cast stone anchors to be fabricated from Type 304 stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666.



Metal Fabrications:

1. All exterior downspouts to be protected at grade with cast-iron downspout boots attached to underground storm water piping. Match height of downspout boots installed at Student Center. Paint boots to match downspout color.
2. Masonry shelf angle or loose lintels are to be hot-dipped galvanized. Paint all exposed angles consistent with building color scheme.
3. Support accessible sink counters at public restrooms with steel tube or angle supports hidden from view.

Metal Stairs:

1. Provide preassembled steel stairs with concrete filled treads. Stairs to be engineered to comply with ASCE seismic performance requirements and minimum uniform load of 100 lbf/square feet and concentrated load of 300 lbf applied on an area of 4 square inches. Stairs to have welded connections and any bolted connections are to be limited and out of view.

Pipe and Tube Railings:

1. Provide railings in standard exit stairs from pipe conforming to ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads. All railings are to be engineered and shown through comprehensive analysis by a qualified engineer that railings will withstand the following loads:
 - a. Handrails and Top Rails of Guards:
 - i. Uniform load of 50 lbf/ foot applied in any direction.
 - ii. Concentrated load of 200 lbf applied in any direction.
 - iii. Uniform and concentrated loads need not be assumed to act concurrently.
 - b. Infill of Guards:
 - i. Concentrated load of 50 lbf applied horizontally on an area of 1 square foot.
 - ii. Infill load and other loads need not be assumed to act concurrently.

Bituminous Dampproofing:

1. Where face of cavity wall is CMU provide, as a minimum, cold-applied, emulsified-asphalt dampproofing. Coating to comply with ASTM D 1227, Type III, Class 1.



Fluid Applied Membrane Air Barriers:

1. At cavity walls with gypsum or wood sheathing provide an air barrier capable of performing as a continuous vapor- permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage. Vapor- permeable air barrier shall be an ABAA tested assembly.
2. Air barrier coating thickness is required to be tested by independent testing service for minimum wet mil coating thickness on a regular basis during installation. Perform one test for every 300 square feet of wall area.

Metal Roof Panels:

1. University prefers sloped metal roofs over low-slope roofing shapes. At sloped roofs provide an all-aluminum smooth with striations vertical rib, standing seam metal roof panel of minimum 0.040 inch thickness and 16" wide and 2-1/2" maximum seam height. Basis of design is PAC-CLAD Petersen Aluminum "TITE-LOC-PLUS" panel system. Color: PAC-CLAD "Cityscape". Finish is to be a 2 coat fluoropolymer AAMA 620 standard with manufacturer's standard white or light colored acrylic or polyester backer finish on concealed side of panel. Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
2. Metal roofing system to have a minimum of 20 year watertight warranty and 20 year finish warranty.
3. Beneath metal roofing provide self-adhering, high temperature sheet of 30-40 mils thick, slip resistant with release paper. Basis of design: Henry Company; Blueskin PE200 HT.
4. Metal soffits, fascia, gutter and downspouts to be constructed of aluminum and finished to match roof color.

SBS Modified Bituminous Membrane Roofing:

1. Where low-slope roofs are necessary, provide a hot-mopped adhered membrane roof comprised of the following: Base Sheet: One (ASTM D 2178, Type IV, asphalt-impregnated, glass-fiber felts) followed by two layers of glass-fiber base-ply sheets then one layer of SBS-Modified Asphalt Sheets and finished with M (mineral-granule-surfaced cap sheet surface (ASTM D 6164, Grade G, Type I or II; granular surfaced white, 60 mils). Base roof insulation to be polyisocyanurate board Insulation ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer with 3/4" perlite board substrate board (ASTM C728). Provide compatible base flashings, termination bars and sealants as necessary to provide watertight warranted roof system.
2. Roofing system to have a minimum of 20 year watertight warranty and 2 year installer's warranty.



Sheet Metal Flashing and Trim:

1. All sheet metal flashing exposed to view to be a minimum of aluminum-zinc alloy-coated steel sheet ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40 ; structural quality. Metal to be smooth, flat and finished with a minimum of 2-coat Fluoropolymer AAMA 620 standard with manufacturer's standard white or light colored acrylic or polyester backer finish on concealed side. Provide self-adhering high temperature sheet of minimum 30 mils beneath flashings to provide additional water resistance. Metal flashings to be a minimum of 0.028 inch thick or greater to prevent oil-canning appearance.

Roof Specialties:

1. Provide pre-manufactured metal copings, reglets, roof edge flashings engineered to comply with wind uplift requirements and insure roof watertight warranty. Metal roof specialties to be constructed of aluminum where exposed to view and finished with 2-coat Fluoropolymer AAMA 620 standard with manufacturer's standard white or light colored acrylic or polyester backer finish on concealed side. Finish to carry a 20 year warranty. Coping basis of design is W.P. Hickman Company; Permasnap Parapet Wall Coping.

Roof Accessories:

1. All roof-mounted equipment and piping to be supported on manufactured roof curbs, equipment curbs. Size curbs to accommodate roof construction and flashings. Access to roof to be provided, at a minimum, via a roof hatch. Roof hatch minimum size is 30" x 54" with insulated construction and manufacturer's standard polyester or powder coat finish. Hatch to also have ladder assist post.

Joint Sealants:

1. All exterior building sealants to be single-component, nonsag, neutral-curing silicone sealant, class 100. Provide single component, nonsag, traffic grade urethane , class 25 at pedestrian traffic joints. All interior joints within bathroom/toilet spaces to receive mildew resistant, single component, acid curing silicone joint sealant. Sealants adjacent exterior openings should be color-matched to material within opening not building veneer.

Flush Wood Doors:

1. Flush wood doors to be constructed of structural composite lumber core where not rated. Veneer to be grade AA select white maple, plain sliced with book matched veneer leaves balanced on width of door. Finish to be "Barley #175" from Graham. Provide flush wood moldings for lite openings and veneered metal frames for rated openings.



Aluminum-Framed Entrances and Storefronts:

1. Provide YKK AP America; YHS 50FI for framing and YKK AP 35DH for entrance door systems. All exterior storefront to be delegated designed for wind-borne debris requirements for large missile impact. Storefront system should be incorporated into exterior wall mock-up construction for approval by University. Exterior finish of storefront to match aluminum entrances/storefronts at Social Sciences Building and Student Center. Finish to be a 3-coat fluoropolymer finish complying with AAMA 2605 and a 20 year warranty from manufacturer. Attachment of storefronts to building structure to be inspected by independent testing company to verify attachments and frequency match approved delegated design.

Door Hardware:

1. All door hardware to be finished US26D. Provide high security cylinders and keys from Best, keyed to campus's existing system. Provide 2 change keys per lock. Main entry door to be provided with motorized door operator with push button activation each side. High cycle use doors such as main entries, stair doors, classroom doors are to have continuous hinges instead of separate hinges. Coordinate with University on location of access control lock locations. Where access control is required, design should provide for all necessary hardware and electrical components to be installed by contractor excluding card readers. All access control hardware to be connected to campus blackbox system.

Glazing:

1. All exterior glazing to be insulated, laminated, Low-E sputter coating on surface #3 of inner light and outer lite tinted gray reflective. Basis of Design for tinting is Versalux Grey R). All exterior glazing to conform to wind-borne debris region large missile impact testing. Provide same tinted glass in single laminated version, 9/16" thick at storefront entrance doors. Where large glass areas are sought in fire rated assemblies provide ceramic glazing.

Louvers & Vents:

1. Exterior louvers and brick vents are to be extruded aluminum construction with 3-coat fluoropolymer finish complying with AAMA 2605 and insect screen. Provide insulated blank-off panels as needed. Basis of Design is Ruskin Company, Inc; model ELF6350DMP.

Tiling:

1. All public toilet spaces to receive porcelain tile flooring and tile base and floor drain as a minimum. Tile placed on upper floors shall have a waterproof membrane installed. Provide control joints as required by TCA and manufacturer's guidelines. All grout joints to be sealed at project completion.



Carpet:

1. All offices and classroom spaces should receive Shaw (Emotion) Harbor Desire 2'x2' carpet tiles and new cove base.

Acoustical Panel Ceilings:

1. Where acoustical panel ceilings are scheduled provide Armstrong World Industries, Inc. "Cirrus" Tegular white 24" x 24" panel. Suspension system to be 15/16" wide cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized with aluminum cap, heavy-duty type. Install ceiling with seismic support according to classification for space.

Signage:

1. For interior signage provide combination acrylic and aluminum signs matching those installed at SSU Student Center. Basis of Design is APCO Signs, Arcadia 1000 series. Interior signage to include signs for all interior spaces as well as way-finding signs such as directories, directional signs and emergency egress signs. Provide cast bronze dedication plaque for each new building minimum size, 24" wide x 30" high. If letters are proposed for exterior of building they shall be cast metal letters 2" thick from aluminum.

Toilet Compartments:

2. Toilet compartments to be constructed of solid, high-density polyethylene (HDPE) panel material, not less than 1 inch thick, seamless, with eased edges, no-sightline system, and with homogenous color and pattern throughout thickness of material. Provide overhead brace type compartments. All hardware to be stainless steel and brackets to full-height continuous type. Door hinges to be continuous.



HVAC

1. The heating and air conditioning systems shall consist of an air handler with VAV boxes per floor, air cooled chillers and heating by electric strip heat or gas fired boiler.
2. A chiller yard is to be provided to utilize multiple chillers for diversity in the system and some capacity when one has to have maintenance. Chilled water piping shall be welded black steel 2-1/2" and larger and copper 2" and smaller. Pipes shall have foam glass insulation.
3. The air handlers shall be double wall variable air flow consisting of a filtered mixing box, heating coil, chilled water coil and fan. The fan shall be controlled by a variable frequency drive. Make-up air for the building shall be brought in through the air handler based on ASHRAE 62 and exhaust air to maintain a positive pressure to the building and meet the code requirements. The make-up air will remain constant based on an air monitoring station.
4. Variable air volume (VAV) boxes will serve zones to be controlled by one thermostat. Zones will be selected according to room types and HVAC load calculations for common peak times. Each box will have a heating coil for space comfort.
5. If a boiler is used for heating, piping shall be welded black steel welded black steel 2-1/2" and larger and copper 2" and smaller. Pipes shall have fiberglass pipe insulation.
6. All pumps shall be floor mounted for ease of maintenance and provided with VFD.
7. Restrooms shall be exhausted to meet the code requirements.
8. Ductwork shall be galvanized steel with a minimum of flexible ductwork to supply air devices. The system will have a ducted return. The supply, return and makeup air ductwork shall be externally insulated.
9. There are several data rooms throughout the building. These rooms should be conditioned separately from the building system. Ductless split systems shall be provided.
10. The controls to the building will tie into the Siemens or Johnson direct digital system on the campus.
11. Air devices shall be aluminum.
12. Duct mounted smoke detectors shall be coordinated with fire alarm system. See electrical for more information on fire alarm system.
13. Systems shall be tested and balanced by a certified test and balance contractor.
14. Mechanical rooms shall be conditioned where possible. If not possible they should be heated and ventilated.



1. The design and installation of the plumbing systems shall comply with the International Plumbing Code with Georgia Revisions, The Americans with Disability Act (ADA), The International Energy Code and Georgia Water Usage requirements.
2. The domestic water system will consist of cold water, hot water and hot water return systems.

The domestic water service will extend from the riser (mechanical) room and connect to the exterior water distribution system. A backflow preventer and water meter will be required on the building. These will be installed outside the building and shall comply with the requirements of the Authority Having Jurisdiction.

The interior water system shall be zoned and valved so that the entire building does not have to be shut down for any maintenance/service work.

The domestic water service underground piping service piping to a point 5 feet from the building for 4 inches and larger shall be ductile iron pipe with hub and spigot push on fittings. Pipe and fittings shall be cement lined and comply with AWWA Standards. Piping 3 inches and smaller shall be type 'K' hard drawn copper tubing with soldered joints and wrought copper or cast bronze fittings.

The above ground water piping shall be type 'L' hard drawn copper tubing with soldered joints. Pro-Press style fittings shall be an approved equal for soldered fittings on above ground piping.

3. All above ground water piping shall be insulated with fiberglass jacketed pipe insulation. The insulation thickness shall comply with The International Energy Code requirements.
4. In labs, pure water systems shall be provided as required by the use of the lab and the user's requirements. All piping for pure water systems shall be approved by the manufacturer of the "Pure Water" equipment. Faucets shall be designed for the type pure water that it is serving.

On pure water systems the water shall have a circulated system as required by the water type. There shall be no dead legs in the system over 18 inches long.

5. The interior sanitary, waste and vent piping system for the building to a point five feet from the building shall be as listed below. The exterior sanitary system is provided in the site design. The piping shall be as follows:
 - a. The underground piping shall be schedule 40 PVC solid core pipe with solvent glued DWV fittings.
 - b. The above ground sanitary, waste and vent piping in single story buildings shall be schedule 40 PVC solid core piping and DWV fittings as listed above. UL listed fire rated assemblies shall be provided as required.
 - c. The above ground sanitary, waste and vent piping in two or more story buildings shall be service weight coated cast iron pipe and DWV fittings.



- d. Piping 6 inches and larger shall be gasketed hub and spigot joints. Piping 5 inches and smaller shall be no-hub band clamp joints.
- 6. In labs an acid waste type system shall be provided as needed. The acid waste system shall be provided with an acid neutralization basin. The acid waste piping systems shall be as follows:
 - a. Schedule 40 polypropylene pipe and drainage fittings with fused or mechanical joints.
 - b. Schedule 40 CPVC acid waste piping with solvent glued joints as manufactured by Charlotte Pipe or Spears Manufacturing for acid waste systems.

The type of piping shall be selected based on the chemicals used in the lab and the manufacturer's recommendations. When the above piping types are not recommended for the chemicals used then silicon iron or glass acid waste piping shall be used.

- 7. In buildings with interior roof drains a storm water system shall be provided. The interior piping to a point 5 feet from the building shall be as follows. The exterior piping shall be in the site design package.
 - a. The underground storm drainage piping to a point 18 inches above finish floor shall be schedule 40 solid core PVC pipe with solvent glued DWV fittings.
 - b. The above ground storm drainage piping shall be service weight coated cast iron pipe with DWV fittings. Piping 6 inches and larger shall be gasketed hub and spigot joints. Piping 5 inches and smaller shall be no-hub band clamped joints.

All above ground storm water piping shall be insulated with fiberglass jacketed pipe insulation. Insulation thickness shall be 1 inch.

- 8. Natural gas piping will be as follows:
 - a. Schedule 40 black steel pipe with threaded joints for piping 2 ½ inches and smaller.
 - b. Schedule 40 black steel pipe with welded joints for piping 3 inches and larger.
 - c. Type 'K' copper tubing with brazed joints for piping at lab tables.
 - d. SDR 11 polyethylene tubing with socket heat fused joints for underground exterior gas piping.
- 9. Compressed air piping will be as follows:
 - a. Schedule 40 black steel pipe with welded standard weight fittings for piping 3 inches and larger in shop areas.



- b. Schedule 40 black steel pipe with threaded joints for piping 2 ½ inches and smaller in shop areas.
- c. Type 'K' hard drawn copper tubing with brazed cast bronze or wrought copper fittings for piping in labs.

Air compressors shall be sized for the system load and provided with a dryer. The air quality shall be as required for any lab equipment, etc.

10. In labs the water, compressed air and gas systems shall be controlled with an ISIMET controller. Coordinate with electrical any requirements for electrical systems to be controlled. The controller shall be provided with solenoids, shut offs and panic buttons.

The controller shall not be connected to the water serving the emergency eyewashes and showers.

11. Water heaters, circulation pumps and tempering valves shall be provided for the building. The water heaters shall be as follows:

- a. For small systems an electric tank type heater with expansion tank will be used.
- b. For larger system gas fired water heaters and expansion tanks will be used. These heaters can be either gas fired storage tank type heaters or gas fired boilers with remote storage tanks.

Tempering valves will be provided on the systems as required. Tempering valves shall be the high-low flow valves.

12. Floor drains will be installed in all gang toilets. Floor drains will also be installed in all student use single person private restroom.

13. Grease traps will be provided for all kitchens. The design and installation of the grease traps shall comply to "The City of Savannah Grease Trap/Interceptors Standards."

In kitchen waste systems verify that any equipment will not discharge water, etc. into the drain that exceeds 140° F. Provide drain coolers as required.

14. All piping, valves, equipment, etc. shall be labeled. Labels and tags shall be as follows:

- a. Pipe labels shall be either snap on type pipe bands on painted on pipe labels.
- b. Valve tags shall be 1 ¼" brass tags with ½" high stamped on letters.
- c. Equipment labels shall be painted stenciled letters.



15. The water closets, urinals and lavatories will be white china fixtures. The sinks will be stainless steel. Mop sinks will be floor mounted precast terrazo fixtures.

Other fixtures and trim will be as follows:

- a. Flush valves for water closets and urinals shall be exposed battery operated infrared type. Flush valves are Sloan Valve GZ Optim Plus series or equal.
- b. Faucets for lavatories shall be a plug in infrared flush valve. Faucets are Sloan Valve ETF-600 series or equal.
- c. P-traps for lavatories and sinks shall be chrome plated cast brass.
- d. Emergency showers and eyewashes shall have mixing valves to provide tepid water.
- e. Where required fixtures shall comply with ADA guidelines.
- f. Water flow rates shall comply with the State of Georgia requirements.



FIRE SPRINKLER

1. The entire building shall be fully sprinklered in accordance to NFPA 13 and other required codes. The sprinkler systems shall be wet type systems. The system shall be served from a fire service main connecting to the site water system. The backflow preventer, post indicator valve (PIV) and fire department connection shall be located exterior of the building. The backflow preventer shall comply with the requirements of the Authority Having Jurisdiction.
2. Where freezing is an issue the sprinkler system shall be a dry pipe system installed per NFPA 13 requirements.
3. In multiple story buildings the fire sprinkler system shall be zoned by floors.
4. The sprinkler systems shall have alarm and tamper switches. These shall be connected to the building fire alarm system.

Coordinate system interconnection with civil. Civil to provide tamper switches on PIV and OS&Y valves.

5. Piping shall be as follows:
 - a. Underground piping shall be ductile iron pipe and fittings installed per NFPA 24 and NFPA 13.
 - b. Piping 2 inches and smaller shall be schedule 40 black iron pipe with threaded joints.
 - c. Piping 2 ½ inches and larger shall be schedule 10 black iron pipe with rolled grooved joints.
6. Sprinkler heads shall be as selected by the architect and approved by the owner.
7. Where required by NFPA 14, the International Building Code and The International Fire Code standpipes and hose valves shall be installed. The design and installation shall comply with NFPA 14.
8. Where required based on the building elevation and available water pressure a fire pump shall be installed. The fire pump shall be an electric type with automatic transfer switch. The pump shall be located in a fire pump room. The design and installation of the fire pump shall comply with NFPA 20.



ELECTRICAL

1. The primary electrical service for new, on campus buildings shall extend from the existing underground electric primary 200amp loop feed system. New 3 – 4/0 – 25 KV AL cables will extend in new 2 way – 4” concrete encased ductbank to new pad mounted transformers. The transformers will be connected in a loop configuration. Primary cables shall utilize 1/3 concentric neutral conductors with an overall polyethylene jacket. Provide above ground translosures with interior racks for pull points. Do not provide manholes. At all transformers, provide cable fault location. Provide engraved identification tag for all cables at each transformer and transclosure.
2. For large buildings, provide one pad mounted transformer to provide 480Y/277 volts and another to provide 208Y/120 volts. Pad mounted transformers shall be loop fed type with loop fed switches in primary compartment. Transformers shall be dead front with 200 amp load break elbows. Provide Bay-O-Net and inline fuses. Secondary side shall have tap changer, oil sampler, level gauge and spade covers. The transformers will be located at least 10 feet from the building and any sidewalks and/or drives. Size transformer for building load plus 25% future capacity.
3. For off campus buildings provide secondary services with meters connected to utility company.
4. Meters will be installed on the building services at transformers showing KWHR and KW demand. Pulse output will be provided for KW demand tracking. Sub-meter all parts of building that contains non-instructional use such as dining halls, bookstores and athletic department.
5. Locate all service equipment in main electrical room. Limit access to electrical rooms. Access electrical room from exterior of building.
6. For overcurrent protection, use circuit breakers, not fuses. Label all breakers, panels, switchboards, starters and disconnect switches.
7. Each project will have a coordination study and an arc fault study performed. Provide rating and settings of all circuit breakers to meet study. All distribution equipment shall have arc fault labels installed. Provide arc fault training to owner.
8. Panelboards will be located throughout the facility to serve loads. All fluorescent and HID lighting, electric heat, motor loads and other large loads will be served at 480/277 volts. Receptacles and small loads will be served at 120 volts.
9. Conduits will be specified as follows:
 - a. Rigid galvanized to be used where exposed and where subject to damage.



- b. Schedule 40 to be used where conduit is in contact with ground.
 - c. EMT to be used in concealed areas in walls and above ceilings.
10. All EMT fittings will be steel, compression type with insulated throat connectors.
 11. All conductors will be stranded copper, color coded to match school system.
 12. All devices will be specification grade with stainless steel plates.
 13. Surge protection will be provided at all services, at secondary of each dry type transformer and at computer load panels.
 14. Interior lighting in office and classroom type areas will use T-8 fluorescent lamps and electronic ballasts with 5 year part and labor warranty. Exit lights will be LED. Multi-switch 3 and 4 lamp fixtures. Do not dim fluorescent lamps.
 15. Specialty lighting shall be either LED or compact fluorescent. LED is preferred.
 16. Exterior lighting on building shall be LED type controlled by exterior lighting control system for either photo-on, photo-off or photo-on, time off control. Provide emergency egress lighting, connected to backup power source, at all exit paths outside.
 17. All parking lot and sidewalk lighting to be provided by GA Power Company under school's master contract.
 18. Occupancy sensors will be used to control lighting in interior spaces. Use PIR or ultrasonic type occupancy sensors. Devices by Watt-Stopper, Cooper and Leviton are acceptable. Do not provide central lighting control system without permission of school facilities personnel.
 19. Emergency/egress power shall be provided using battery packs for small buildings or buildings that only need backup power for lighting and not larger loads. For all batteries, provide self-diagnostic modules.
 20. For large buildings or buildings with need for emergency power for large loads, provide an exterior mounted natural gas generator in outdoor, weatherproof sounds attenuating enclosure. Units by Cummins, Caterpillar and Kohler only, with service centers within 50 miles of campus. Provide remote annunciator in lobby of building. Connect alarm and pre-alarm to building EMS system. In addition, provide red and amber flashing lights, visible from street on top of generator housing for alarm or pre-alarm. Provide 5 year parts and labor warranty.
 21. Automatic transfer switches shall be located in main electrical room. Provide code required electrical system, normal and non-code required standby power system. Provide 5 year parts and labor warranty.



22. Provide non-fusible disconnect switches for all motors, dry type transformers and remote equipment. Label each switch.
23. Provide identification of all electrical equipment such as cable markers, labelled switches, circuit breakers, panels, starters and switchboards.
24. Provide magnetic starters with solid state overload protection for all large motors.
25. Provide variable speed devices for mechanical loads as required by HVAC and plumbing systems.
26. Provide power and communication raceways for all audio visual, door control, emergency distress and exterior call boxes.
27. The fire alarm system will be an addressable system to include manual pull stations, smoke and heat detectors, audible/visual alarms and connection to the fire protection system. All signals will be capable of visual and audible sounds. An annunciator will be provided in the lobby for operator's use. The fire alarm system will be Simplex (no substitutions) and be connected into the campus alarm system. Locate audible/visual alarms on the exterior of the building. Connect fire alarm to campus data system for remote monitoring.
28. Card access and door control will be provided for this facility. Access and monitoring of all exterior doors and access to selected doors will be provided. Motion detectors will be located at selected areas to monitor intrusions. The card access/monitoring system is be by Blackboard (no substitutions).
 - a. Door Access Card Reader (DR4200-OF)
 - b. Door Access Controller/Power Supply (SA3032-OF/ SA3000)
29. Provide coaxial cable for TV boxes located throughout the facility. Home run each cable to nearest communications closet. Coordinate head end space requirements and service conduit with Comcast. In addition to coax, provide data jack for each TV location.
30. The following systems are requested to be proprietary:
 - a. Fire Alarm – Simplex
 - b. Security/Card Access – Blackboard
31. Provide electric hand dryers in all gang toilets. Preferred hand dryer is Dyson Airblade AB02-120V with silver finish.
32. For labs, provide utility shutoff control panels for each lab.
33. Coordinate with GA Power for all rebates allowed for each building.



DATA BACKBONE WIRING

1. The data network wiring systems will be supplied and installed by the contractor as a complete, fully tested and operational system at the date of acceptance of the facility. The systems will be designed to meet GTA and SSU standards. These systems will include the building and infrastructure to bring these systems to the facility.
2. Provide single mode fiber service to a new building. The optical fiber cables shall extend to the nearest campus hub, either Hammond Hall, Herty Hall, Colston Hall or Whiting Hall. Extend cables in new innerduct in existing campus duct bank system. Coordinate fiber count with campus IT department. Provide 4" conduit plus 4" spare for each new duct run. Use 1" innerduct.
3. Where pull boxes are needed 3' x 5' x3' quazite boxes will be used. The new ducts will stub up into the Entrance Facility of the new building. Along with the innerducts a #10 copper tracer wire and ground rods will be installed along the entire route (new and existing) and be grounded at each end and in pull boxes.
4. The fiber will be installed with slack loops left at each end of the cable and slack loops in each pull box. The fiber cable will be supported with racking hardware and labeled in each pull box. The fiber will be terminated with SC connectors at each end and will utilize fan-out kits. Fiber will be tested with a cable analyzer and test reports will be submitted with manufacturer viewing software for any PC.
5. The main communications room backboard will be 8'H x 4'L x 3/4" plywood with the bottom at 6" A.F.F. for each telephone and data. Extend a No. 1/0 bare copper grounding conductor from the electrical service ground to the backboard and leave with sufficient slack for termination. Provide ground bus and interconnected grounding system for each room. The backboard will be mounted in the communications room. The cable distance from communications closet and the telephone/data modular jack will not exceed 250' in cable length. Two 30A, 208volt circuits plus two dedicated 20A, 125V double duplex electrical outlets will be mounted in the electrical communications room for the electrical/electronic equipment needed to make the systems complete. Size all data rooms per TIA standards. Each floor shall have at least one data room. Stack rooms as much as possible.
6. Two 4" spare conduits will be installed from the main communications backboard to outside the building.
7. A 1" conduit to above corridor ceilings with communication cables will be extended from each computer/telephone outlet to the backboard in the electrical communications room. All boxes to be 4 11/16" deep square boxes. Cabling will not exceed 250'. Cable trays or J-hooks will be provided above corridor ceilings.



8. Four data cables will be provided for each location shown for each data outlet. Cables will be UTP, 4 pair category 6. Terminate cables at jacks on the user end and modular patch panels on the other end. The user end will consist of RJ45 jacks.
9. Data outlets will be provided in all spaces. Each office will have two-4 jack outlets. All rooms, including storage rooms and vending areas, will have at least one outlet. Data outlets will be provided above each classroom's ceiling for wireless antennas with 2 jacks per antenna. Antenna outlets will be provided in each hallway.
10. Patch panels will provide 24 port panels for data and telephone. They will mount to free standing racks, high capacity D-ring type horizontal wire management panels and designation strip kits for each panel. The layout drawings will accommodate telephone and data patch panels, fiber optic terminations, fiber distribution panel(s), fiber multiplexer to modular RJ45 concentrator(s), and provide 25% for future expansion.
11. The facility will be networked and necessary communication routers, fiber optic extension electronics, amplifiers and connectors will be provided to make a fully operational system by owner. All electronics by owner.
12. Data cables will be identified in each accessible enclosure at each termination using cable designations. Labels will be stenciled, i.e. no thermal or handwritten labels, and will show the room number, outlet designation and jack numbers.
13. Provide data connections for all future access points, TV's (for future smart TV's), smart board HVAC control panels, large mechanical equipment, vending machines, card access and CCTV. Coordinate all locations with campus IT department and other trades.
14. The cables will be tested for their complete length including from the modular jack to the termination at the campus data center. Where the test readings are not acceptable; splices and/or terminations will be reworked to make them acceptable. Splices are not acceptable in manhole/handholes.
15. All low voltage wiring on campus shall be by NetPlanner, Trison or other vendor as approved by the campus IT department.
16. The entire backbone system shall include a manufacturer's 15 year warranty.
17. Patch cords of various lengths shall be provided for all data jacks and patch panels and for all optical fiber termination panels.
18. Provide staff emergency call system as directed by school.



SSU Design Standards

January 1, 2016

	EQUIPMENT	MFG	2014/15 MODELS
1	Indoor IP Fixed Camera	Axis	M30 Series
2	Outdoor IP Fixed Camera	Axis	P Series
3	Outdoor IP PTZ Camera	Axis	Q Series
4	Network Switch	Cisco	3650-48
5	Network SFP Connectors	Cisco	SFP-SM & SFP-MM
6	Indoor Wireless Access Points	Cisco	1700
7	Outdoor Wireless Access Points	Cisco	1530
8	Emergency Call Boxes	Cyberdata	11209
9	Emergency Call Towers	TalkaPhone	Webs-mtr-Op4
10	VOIP Handsets	Cisco	Various
11	Uninterruptable Power Supply (UPS)	APC	RM 2200 (NEMA 5-20)
12	Door Access Card Reader	Blackboard	DR4200-OF
13	Door Access Controller	Blackboard	SA3032-OF
14	Door Access Controller Power Supply	Blackboard	SA3000
15	Ethernet Network Drops	Various	Cat-6
16	Fiber Optics	Various	62.5 MM and 9.0 SM
17	Digital Signage - Flat Screen TV	Various	Various
18	Digital Signage - VESA Wall Mount	Various	Various
19	Digital Signage - HDMI - Ethernet Converters	StarTech	Various
20	Fax ATA Converters	Grandsteam	HT701
21	Network Closet - Rack	Various	19" Free Standing
22	Network Closet - Patch Panel	Various	48-port Cat 6
23	POE Injectors	Axis	T8124
24	Stepdown Transformers 48V	Meanwell	MDR10048
25	Ethernet to Fiber Converters	IFS	MCR300
26	Ethernet to Fiber Converters w/POE	IFS	MCR352
27	Ethernet Media Converter Chassis	IFS	MCR-R15
28	Remote Boot	DataProbe	iBoot-G2

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