FACILITIES DESIGN GUIDELINES

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INTRODUCTION

The Shippensburg University Facilities Design Guidelines is intended for the use of architects and engineers involved in the preparation of construction documents for Shippensburg University. The guidelines are a reference for University personnel whose responsibilities include implementing institutional lessons-learned through design, construction and in-house services.

As part of the contractual agreement between the design professional and the University, conscientious application of the Guidelines is a tool to expedite the design and construction process in a cooperative partnering effort.

Unless given a complete specification, utilize this information to customize your specification. With the exception of the proprietary items listed, all references to a specific product specify a level of quality and brand name or equal.

The university maintains standard front end documents. The designer is responsible to customize specific sections of these:

Cover Page
Table of Contents
Bid Form
011000 – Summary of Work
012200 – Unit Prices

Design Issues:

- ❑ Coordinate security design with Police Department and Johnson Controls (University's security contractor)
- ❑ Color selection will be made by the university during the design process. Designer to present color choices for selection and incorporate into the design. Prepare 2 color boards to summarize color selections. One is for university and one for the contractor.
- ❑ Designer should determine if an exterior emergency phone is desired by the university. If so, match existing type and color used throughout the university (Talkaphone ETP-500E) , the contractor to provide 18" x 4' deep concrete foundation with bolt pattern to match phone, with two 1" conduits with 120v power and phone line to location designated by the university.
- ❑ Room Numbering: Once a preliminary floor plan is agreed upon, assign room numbers using the University Room Number Policy in the appendix. Room numbers must be approved by the University prior to proceeding.
- ❑ All new construction projects and major renovation projects shall include sufficient design attributes necessary to meet LEED basic certification. The additional costs to reach the next higher level of LEED certification shall be estimated for each project. The Facilities Department will prepare an opinion on whether to proceed to the next level of certification or not depending on construction funds availability and the marginal reduction of anticipated energy

and maintenance costs. It is not our department goal to have projects LEED certified, but rather it is our goal to have construction projects "LEED certifiable".

- ❑ University standard for office design is 140 SF for Directors and Department Chairs, and 115 SF for Assistant Directors, Faculty and Staff. Others are on a case basis.
- ❑ Appendix provides document locating benchmarks used for aerial overflight that was done is 1998. Some of these benchmarks have been destroyed due to construction projects.
- ❑ Bedrock underlying the university includes the Rockdale Run formation of the Ordovician Age. The carbonate bedrock at the site is moderately solution-prone, highly calcareous, and weathers differently to produce a pinnacled or sawtooth top of rock profile. Therefore, very pronounced rock pinnacles would be anticipated in this region. Common features associated with karst terrain include caves, internal drainage, lack of surface streams, solution channels, and topographic features such as sinkholes. These features are the result of the dissolution of soluble bedrock, such as limestone or dolomite, over geologic time by groundwater and/or infiltration of surface water. Caissons or micro-piles may be required for foundations.
- ❑ Land Use Permit: As of October 2009, the University is subject to Section 501 of Shippensburg Township's zoning ordinance. This section of the ordinance requires the University to apply for a Land Use Permit before construction or renovation of a "building" on the University's campus. The Land Use Permit is not required for maintenance or repair of a building so long as the exterior dimensions of the facility are not changed. There is a fee schedule as part of this ordinance that the Design Professional should include with a Land Use Permit application.
- ❑ Commissioning: Commissioning is required on all major HVAC renovations.
- ❑ Designer to assist University in identifying preventive maintenance requirements for new building. This includes identifying new equipment locations and make and model numbers. The intent is to improve the quality of the information being provided to the University regarding maintenance of the facility and the compilation of this information for capture by PM system?
- ❑ QA/QC Requirement: University preference is for all third party testing to be the responsibility of the contractor. This includes special testing required by code.
- ❑ Date Stones: New buildings and significant additions shall incorporate a date stone into the building. Typically this would be as a cornerstone.
- ❑ Plaques: University projects typically incorporate two plaques displayed at the main building entrance. One is the building dedication plaque and the other is the Trustees plaque.
- ❑ Restrooms: In addition to providing code required male and female restrooms, incorporate at least one unisex accessible restroom per building. Have discussion on numbers and locations as well as financial implications.

- ❑ Bicycle Accommodations: The University was designated a bicycle friendly university by the League of American Bicyclists in 2018. Design decisions must incorporate options for strengthening and maintaining this designation.
- ❑ Outfitting: University typically provides and installs network electronics, cameras, and WAPS. Confirm for each project.

DIVISION 1 GENERAL REQUIREMENTS

011000 SUMMARY OF WORK

UNIVERSITY EXECUTED PROJECTS: Utilize sample 011000, and customize specific sections for the project.

UNIVERSITY AND DGS EXECUTED PROJECTS: Incorporate the following issues into the DGS Specifications and Design Drawings

- Project site is required to be completely fenced to control entry. Utilize 6' chain link fence, 4' plastic fence is not acceptable.
- Excess topsoil to be delivered by contractor to university designated site.
- University owns sanitary, gas, telecom, electrical (with the exception of street lighting) and water distribution lines. Utility providers are as follows:
    - Sanitary: Distribution by CFJMA, plant by Shippensburg Borough Authority
    - Gas: UGI
    - Telecom: Shippensburg University owned infrastructure
    - Electrical: Penelec/First Energy
    - Water: Shippensburg Borough Authority
- Coordinate with university on utility location. Calls placed to PA One Call must also be communicated directly to University Facilities.
- No blasting on campus.
- Roofs must be kept clean of construction debris at all times.
- Contractor to utilize a professional cleaning crew prior to final inspection.
- All trees within the project site shall be protected by fencing erected on the drip line.
- University has first right of refusal on all demolished items.
- Include University on all submittal distributions.
- Contractor is responsible for maintaining streets free of construction related mud and debris.
- Normal hours of work are 7:00 am- 4:30 pm.
    - Work may be restricted in vicinity of academic buildings during exam weeks.
    - Work in proximity of residence halls may also be restricted on start times.
    - Work may be restricted during days of the
        - State District III track finals and
        - State PIAA track finals held annually during May
        - Move in day typically held in August.
        - Coordinate exact dates with the university.
- Use of University toilets typically not allowed.
- Contractor is responsible for scheduling all inspections with L&I.
- No parking available outside of project site unless specifically approved.
- No deliveries to be accepted by the university.

- Coordinate with University for road closures and partial closures for receiving shipments. Provide minimum 48 hour notice.
- Coordinate with University for all utility outages. Electrical outages require at least two months prior notification when entire feeder outage is required affecting all buildings on that feeder.
- University to receive one copy of each contractor's as-built mark-ups concurrent with submission to professional as interim until finals received via the professional.
- University to receive electronic copies of Operations and Maintenance Manuals. Format to be .pdf files that are searchable in entirety. O&Ms to be organized by spec section and provided with a table of contents. (For University projects, also provide 2 hard copies)

DIVISION 2 - SITE CONSTRUCTION

Design Guidance:

- Require the contractor to accurately survey and record the actual locations of piping mains, valves, connections, manholes, catch basins, clean outs and invert elevations in the form of surveyed coordinates for all new utilities exterior to the building. Coordinate locations should be at the point of exit from the building, at any change in direction, and at least every 10'. Utilize PA State Plane South coordinate system. Coordinate with University on format for adding to existing GIS database.

02220 – DEMOLITION

University has first right of refusal on demolished items and will normally remove curtains, clocks, blinds and lock cores prior to the start of the project

Asbestos surveys of all University buildings were conducted in 1996 by Volz and are available as hard copy for reference. These do not reflect removal of asbestos since that time.

The University does not maintain records of areas that may require lead abatement. Designer to sample as necessary to make that determination.

23000 – EARTHWORK

All excavations shall be specified as Unclassified Excavation. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or the removal of obstructions.

02510 – WATER DISTRIBUTION

- University owns from water meters at two points of connection (Prince Street and near SR 696) and includes a 1M gallon water tank; utilize ductile iron.
- Water Meter – supplied by Plumbing Contractor (Meter should have Digital readout with Pulse/Modbus/BacNet outputs capable of communication with the University WebCTRL Building Automation System.) The controller shall monitor the meter for consumption on a continual basis. These values shall be made available to the system at all times. Alarm shall be generated for meter failure when sensor reading indicates a loss of pulse output from the water meter. The controller shall monitor and record the peak (high and low) demand readings from the meter. Peak readings shall be recorded on a daily, month-to-date, and year-to-date basis. The controller shall monitor and record meter readings so as to provide a consumption history. Usage readings shall be recorded on a daily, month-to-date, and year-to-date basis. University proprietary DDC contractor (subcontracted by mechanical contractor for multi-prime jobs and by plumbing contractor for single prime jobs) shall provide terminations, validation,

programming, and graphics required to tie points for meter into existing Automated Logic and WebCtrl system. The DDC Contractor shall provide an Automated Logic Control panel with CAT-5 BACnet/Ethernet ports if there are no spare digital inputs in the existing Automated Logic Control panel.

- Water Valves: Incorporate concrete rings around each valve not in the roadway or sidewalk.

02535 – SANITARY SEWERAGE SYSTEM

University owns; ensure clean outs at accessible locations at building.

02554 – NATURAL GAS DISTRIBUTION

- University owns and operates the system as a Master Meter Operator per 49CFR 192.1015 and maintains an operations and maintenance plan for that system. As such, new construction, renovations, replacements or additions to the Master Meter Gas System shall be designed IAW applicable state and federal regulations, and the Gas Pipeline Safety Rules. Contractors must be certified to work on gas systems and the work is to be inspected and certified by qualified individuals. All new work shall be consistent with the existing gas distribution system. Requirements include 2' minimum cover, using medium density polyethylene resin piping and fittings approved for use with natural gas. Joints in continuous runs are to be joined using heat fusion method. Test new piping to 60 psi.
- Contractor is responsible to ensure open gas lines are kept clean at all times.
- Tracer wire is to be installed with all new installations. Demonstrate tracer wire is continuous at the end of the project prior to final acceptance.
- Incorporate concrete rings around each valve not in the roadway or sidewalk.
- Gas Meter – supplied and installed by Plumbing Contractor (Meter should have Digital readout with Pulse/Modbus/BacNet outputs capable of communication with the University WebCTRL Building Automation System. Meter should also allow for temperature and pressure compensation). The controller shall monitor the meter for consumption on a continual basis. These values shall be made available to the system at all times. Alarm shall be generated for meter failure when sensor reading indicates a loss of pulse output from the water meter. The controller shall monitor and record the peak (high and low) demand readings from the meter. Peak readings shall be recorded on a daily, month-to-date, and year-to-date basis. The controller shall monitor and record meter readings so as to provide a consumption history. Usage readings shall be recorded on a daily, month-to-date, and year-to-date basis. University proprietary DDC contractor (subcontracted by mechanical contractor for multi-prime jobs and by plumbing contractor for single prime jobs) shall provide terminations, validation, programming, and graphics required to tie points for meter into existing Automated Logic and WebCtrl system. The DDC Contractor shall provide an Automated Logic Control panel with CAT-5 BACnet/Ethernet ports if there are no spare digital inputs in the existing Automated Logic Control panel.
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02584 – UNDERGROUND DUCTS AND MANHOLES

Communication ducts and distribution power ducts to be concrete encased; always incorporate at least one spare conduit. IT ducts to include tracer wire that can be accessed from lid of manhole without having to enter it.

02743 – BITUMINOUS CONCRETE PAVEMENT

Utilize PENNDOT standards Publication 408 for all asphalt roadway and pedestrian path applications. University standard for parking lots is

1-1/2" ID -2 Bituminous Wearing Course,
2-1/2" ID – 2 Bituminous Base
6" 2A modified crushed stone aggregate base.

University standard for roadways is:

- 1-1/2" ID -2 Bituminous Wearing Course,
- 5" ID – 2 Bituminous Base
- 6" 2A modified crushed stone aggregate base.

Parking Lot Dimensions: Typical parking space to be 9'x16' set at 90 degrees. Aisles should be sized to 24'.

02770 – CURBS, SIDEWALKS AND STAIRS

Utilize PENNDOT publication 408 for the construction of all concrete curbs, ramps, and sidewalks. Coordinate ramp types with University. University standard sidewalk is

- 8' wide unless directed otherwise
- Incorporate radiuses and/or 45 degree corners at walk intersections to minimize pedestrian corner cutting.
- section is 6" reinforced concrete with 6X6X8 welded wire mesh
- over 6" compacted stone base over compacted earth.
- Utilize fiber expansion joint with snap cap and self leveling caulking (Sikaflex – 1CSL or equal) at all expansion joints and junction to existing walks.
- Incorporate dowels with sleeves at all new expansion joints.
- Specify doweled joints at all interfaces with existing concrete. Utilize ½"X18" smooth dowels @18" OC max.
- Specify that in lawn areas provide top soil to top of sidewalk after final grade and compaction. Contractor is responsible for settlement next to walks resulting in greater than 1" drop. Place this requirement in specifications as well as on the drawings.
- Remove all excess stone prior to backfilling next to sidewalks.
- Coat all concrete surfaces to manufacturer's recommendations with Densicrete Penetrating Concrete Sealer or equal.

For concrete stairs, see Appendix 8 for standard details. Incorporate grooving in stairs and cheek walls for handrail embedment as a standard.

02800 – SITE IMPROVEMENTS AND AMENITIES

- Coordinate design with university grounds manager. University typically provides and installs all non-lawn planted area.
- Roadway and Parking Signs: Utilize PennDot standard two part break away posts set in concrete with square shaped posts. Coordinate signs with current University standard.

02810 – IRRIGATION SYSTEM

Provide in-ground lawn irrigation for projects with site work when specified by the University. Utilize Hunter pop up heads, valves and controllers

02820 – FENCES AND GATES

- Provide enclosures for all site mechanical or electrical equipment. Coordinate heights with equipment to cover where practical.
- Standard enclosure is metal louvered with heavy duty access doors (no flimsy units). Belvedere 7.2" rib panel BWR 360 by Atas International in dove gray has been used at multiple locations on campus and is a good starting point.

02930 – LAWNS AND GRASSES

University standard for establishing new or repairing lawn areas:

- Loosen sub grade to a depth of 8" prior to topsoil installation and grading to permit interface of soils. At lay down areas and temporary roadways, loosen sub grade to a depth of 18"-24". Use of a Harley rake or rock hound alone will not be acceptable if it does not reach the full depth of the topsoil.
- Topsoil Quality: Suitable topsoil includes material that is representative of soils in the local vicinity and is free from underlying subsoil, clay lumps, or any material that might be harmful to plant growth or be a hindrance to grading, planting or maintenance operations.
- Topsoil depth minimum: Lawn areas:8"
  Designated Planting Areas: 18
- Remove stones larger than 2" in any dimension and sticks, roots, trash and other extraneous matter from topsoil layer. Remove excess stone base around sidewalks, roadways and slabs prior to placing topsoil
- Do not move or work excessively wet soils.
- Do not cover man hole lids or valve boxes. These should be brought up to level grade. Valve boxes should also have a concrete ring placed around them.
- Tire track soil compaction to grade at all walks, pavement edges, etc. If subsequent settlement at edges exceeds 1", apply additional soils and re-plant.
- Till and rough grade prior to fertilizer or lime applications

- Keep all non-lawn working equipment off of topsoil once it has been placed. Soils compacted due to construction contract after soil placement must be re-tilled.
- Test topsoil to determine lime and starter fertilizer rates/requirements specifying seed selection for establishment
- Finish grade and seed all new and disturbed areas with a three-way blend of turf type tall fescue. Provide submittal.
- Lawn installation requires hydro-seed and mulch combination, or broadcast seeding followed by hydro mulch. (No straw) For smaller areas where approved, apply layer of granular much made from recycled wood and cellulose fibers, Seed Aide Cover Grow or equal.
- maintenance fertilizer application following initial mowing, or as owner determines

Maintenance Period: University provides all mowing. Contractor responsible for all other services (to include watering, weeding, fertilizing, over-seeding and replanting) until a healthy, uniform, close stand of grass is established free of weeds, bare spots exceeding 5 by 5 inches and surface irregularities.

Qualified Contractor: All lawn and grasses work shall be done by a licensed contractor with at least five years of experience in the area of landscaping.

Pre-installation Conference: The contractor shall conduct a pre-installation conference involving the University prior to the installation of any soils for lawn areas. Any finish landscaping prior to this meeting is cause for rejection of the installed work.

DIVISION 3 – CONCRETE

See section 02770 for direction regarding concrete sidewalk, stairs, curbs, and ramps.

Unless directed otherwise, testing of concrete typically not required for non-structural pours of 50 CY or less during one day.

DIVISION 4 - MASONRY

04800 – MASONRY ASSEMBLIES

- Fully cured mock-up required for all new assemblies.
- Predominate university brick was Glen Gery 53DD, which is no longer available. Propose match to existing. Harding Blend Paragon Series by Glen-Gery Corporation was used in construction of Chilled Water Plant in 2014 as well as both phases of new housing in 2014 and 2016.
- Brick in the proximity of Shiprec, Stadium, Baseball, is Watsontown Landover Smooth Ironspot Frit T-7 modular by Beth -Hanover Supply Co. Inc. For projects in that immediate area, match that finish.
- Petro graphic analysis to match existing grout is required;

04900 – MASONRY RESTORATION AND CLEANING

- Protect vegetation during cleaning.
- Clean splash zone of buildings at the end of the project after establishment of grass or installation of buffer material.

DIVISION 5 - METALS

05521 – PIPE AND TUBE RAILINGS

- Anodized Aluminum railings, no steel railings.
- No surface bolting (core drill and grout)
- Follow University Handrail Design Standard. See the appendix.

DIVISION 6 – WOOD AND PLASTICS

6400 – ARCHITECTURAL WOODWORK

- Use kiln dried wood
- Heavy-use restrooms, use solid-surface counter tops instead of plastic laminate.

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

07111 – BITUMINOUS DAMPROOFING

- Expansion joint water stops required between floors

07180 – TRAFFIC COATINGS

University standard for line colors:

- Center lane is 1 yellow line.
- In parking areas striping corresponds to parking use
    - Staff/Faculty=yellow,
    - students=white,
    - handicap spaces are blue. H/C symbol to be white set in a blue square.
    - Special event spaces=orange
- Traffic pattern markings are white as well as at cross walks and stop bars. Use piano key layout from crosswalks.

07310 – SHINGLES

- Utilize 50 year long life shingles only

07320 – ROOF TILES

- University standard for slate replacement is polymeric rubber based roof tile (Ecostar Celestial or equal)
- Specify Gold Star Warranty requiring the use of Elk's VersaShield underlayment and Glacier Guard ice and water shield underlayment.

07530 – ELASTOMERIC MEMBRANE ROOFING

The only type of roofing system allowed on the university is specified below. No built-up, coal-tar, thermoplastic membrane, modified bituminous, or fluid applied systems.

- Utilize Carlisle roofing design standards.
- Design for 72 mph warranty, 20 year minimum warranty period.
- EPDM fully adhered with tapered insulation to drain (60 mil, Sure Tough, reinforced Carlisle A system is basis of design.)
- Wrapped parapets;
- Specify walkmats for access to mechanical equipment.
- Keep roof area clean of all construction debris at all times;
- Designs that involve modification to existing roof must indicate penetration by qualified roofer only

- University selects color pre-bid. Incorporate selected cover in specifications.

DIVISION 8 – DOORS AND WINDOWS

Design Guidance:

- All designs should incorporate operable windows for most spaces including offices and classrooms. Coordinate with the University.
- Window Sills, interior: Preference material of solid-surface, unacceptable material – wood.
- Doors for offices, meeting rooms and classrooms should have some glass incorporated for security purposes.
- Flush outside doors not covered by roof overhang shall be equipped with a drip cap.
- Wood finish preferred on most internal doors that are visible to the public. We have had issue with fire core doors at high traffic areas. Painted metal doors are preferred in these locations.

The following door and window systems are NOT allowed:

- Sliding Metal Doors
- Aluminum Sliding Glass Door
- Sliding Wood doors
- Accordian Folding Doors
- All-glass entrances and storefronts.
- Roof windows
- Unit Skylights
- Metal Framed Skylights

08210 – FLUSH WOOD DOORS

- Utilize solid core birch with natural finish;
- No gypsum core doors at high use doors. Specify painted metal doors instead.
- No pocket doors

08310 – ACCESS DOORS AND PANELS

- Specify metal with Best 7 pin compatible locking in accessible areas.
- Ensure opening is large enough to permit entry.

08460 – AUTOMATIC ENTRANCE DOORS

- Utilize for primary ADA entries, typically one or two entrances per building. Coordinate with University.
- keep out of main entry pathway (create separate pathway if possible);
- wireless push pad is acceptable
- utilize card swipe at these doors

08520 – ALUMINUM WINDOWS

- Colors to be selected in advance;
- thermal breaks
- install sample window for approval prior to purchase and installation of all windows

08711 – DOOR HARDWARE

- Exit devices are to be flat push bar design with rim by mullion. (Removable and lockable mullion compatible with Best 7 pin)
- Doors should have a center rail, located at the height where the push bar is mounted. This eliminates gaps when push bars are mounted over glass frames.
- Exterior trim should be as such to regulate entrance to one side, having a blank trim on the opposing door. (controls egress route and prevents chaining)
- Any panic hardware with exposed vertical rods should be equipped with vertical rod covers.
- Push bars should be equipped with cylinder dogging to prevent use of a common tool.
- These same specs hold true for vestibule doors, hallways, and other areas where double doors are used.
- Doors that are vulnerable to un-authorized use when students open them from the inside, can be made more secure by installing alarmed delayed opening devices.
- Exterior glass doors should be fully framed and equipped with breakage resistant tempered safety glass.
- Exterior doors should have as little exposed hardware as possible (trim, pull handles, levers etc…)
- Exterior doors should be equipped with hinges that have non removable pins.
- Exterior key access should be available at all exists to assist emergency access. At a minimum, include finger pull and electronic locking override if applicable.
- Stanley D-4550 door closures; heavy duty series is basis of design.
- Aluminum door systems require reinforced headers and top rails for mounting closers and bracket arms
- Utilize card readers at designated exterior doors for faculty/staff after hour access, typically limited to a minimum number.
- Classrooms utilize Office lockset; provide conduit to strike for future electric strike capability, no exposed conduit.
- University provides card swipe, contractor provides junction box, electric strike, pathway and source of power for all electrified doors. See Appendix
- Common bathroom locksets must not be lockable from the inside, only un-lockable. All other doors should either be locked at all times or be lockable from the inside without a key. The door functions listed below are compatible with that philosophy.
- The university standard for door functions is as follows:

- Storeroom (Best D F86): Outside lever always locked, inside lever always un-locked, key access only. Utilize for, storerooms, janitor closets, mechanical spaces and the like.
- Office (Best B F82): Key to un-lock outside, push button inside (no rotation) to lock it back. Push button released by key in outside lever, or rotating inside lever. Closing door does not release the push button. Use for offices and classrooms and laboratories.
- Residence Hall (Best T F90): Key to lock outside lever only, push button for inside un-locks when door closes. Use for dormitories as well as meeting rooms.

- Utilize 7 pin interchangeable cores compatible with existing Grand Masterkey system. Keyway to match existing system.
- All keying requirements coordinated directly between university and cylinder manufacturer.
- Provide 3rd party door hardware inspection for all hardware prior to acceptance
- Incorporate 6 month inspection and adjustment of all door hardware.

Utilize the following door hardware requirements in specifying door hardware:

PART 2 – PRODUCTS

1.1 HARDWARE ITEMS

A. Hinges, Full Mortise: All hinges to be 5 knuckle heavy duty with ball bearings.

B. Hinges, Continuous Gear: Use by exception only. Use of continuous hinges must specifically be approved.

C. Key Cylinders and Keying: All cylinders shall be of the interchangeable core seven (7) pin type. Utilize Best cylinders as basis of design. Unless directed otherwise by the Owner, all cylinders shall be keyed into the existing seven (7) pin interchangeable core Best Coremax Grand Masterkey system. Keyway to be specified by the University. All keying requirements shall be coordinated and completed by a factory representative of the cylinder manufacturer. Field keying performed by anyone, is not allowed.

D. Exit Devices and Removable Mullions: With the exception of any fire rated or electrically operated device, all devices shall be furnished with a key cylinder dogging feature. Key cylinder shall be standard 1-5/32" diameter mortise cylinder, with a removable core, masterkeyed to the existing key system. Mechanism end cap is to be zinc die cast. Plastic end caps are not acceptable. All exit devices shall carry a three (3) year warranty.

E. Door Closers: Stanley D-4550 Series door closers; heavy duty series is basis of design. Incorporate door stops in closer. Door closers must have written certification of completing over ten (10) million door opening-closing cycles in a test supervised by an

independent testing laboratory. All door closers shall have a warranty of ten (10) years from the date of manufacture.

F. Overhead Concealed Door Stops: Not preferred.

G. Wall Or Floor Mounted Door Stops: Furnish wall-mounted stop for each door opening against a wall, complete with fasteners. Fasteners shall be of type required by wall details. Floor-mounted dome stops not preferred, incorporate into overhead closer.

H. Thresholds: Thresholds shall be of the latchtrack type and have a polyurethane insert weatherseal. Vinyl insert is not acceptable.

I. Door Sweeps/Bottom: Provide extruded aluminum housing with neoprene seal door sweep for all exterior wood and insulated steel doors. Provide powder coat finish to match door finish.

J. Door Silencers: Furnish and install rubber silencers for all interior wood and metal door frames

DIVISION 9 – FINISHES

09513 – ACOUSTICAL TILE CEILINGS

- Ceramaguard in restrooms;
- all metal grid;
- 2X4 preferred (Cortega)
-

09650 – RESILIENT FLOORING

- Armstrong (Imperial Standard);
- Contractor to clean, seal and apply 4 coats of wax. Provide submittal with type and planned procedure.
- Rubber stair treads and risers ok. Prefer vinyl tile on landings

09651 – RESILIENT BASE AND ACCESSORIES

- Utilize only factory pre-molded corners
- Color selected in advance
- Where practical and available use rolled vinyl section in long lengths vs 4' sections.

09XXX – SEALED CONCRETE FLOORING

- Preferred sealed concrete floor finish for mechanical/electrical/telecom rooms is a Granite Acrylic Urethan Fortified Floor Finish by Bortek Industries or equal. Use this over painted floor or just "sealed" concrete. Same flooring as chiller plant. Manufacturer recommends 5 coats.

09910 – PAINTING

- University standard for luster on drywall is eggshell finish or equivalent. On block, semi-gloss is preferred. Doors and trim also to be semi-gloss.
- Colors selected in advance during the design period.
- Utilize university standard "Thin Ice" as much as possible. See Appendix for University color expectations.
- Specify no paint attic stock.
- Provide list of paint colors with manufacturer/sheen/type/name and color number actually used on project. Provide this information in the O&M manual.

DIVISION 10 – SPECIALTIES

10100 – VISUAL DISPLAY BOARDS

- University standard is white board.

10150 – COMPARTMENTS AND

MATERIALS AND INSTALLATION

A. All required polymer components (e.g. doors, panels, pilasters) shall be solid and homogeneous material manufactured using 100% virgin high density polyethylene or recycled high density polyethylene. Laminated polymer materials are not acceptable. All polymer components must meet or exceed the fire safety requirements specified within.

B. Type – floor mounted, headrail braced. heavy duty design.

C. Panels
- shall be a minimum of 1" thick
- shall be a minimum of 55" high
- shall be of required depth with uniformly machined radius edges
- panels to be anchored to front pilasters using continuous "U" channel
- panels to be anchored to wall using continuous double ear bracket covering entire panel height
- all panels shall include a continuous aluminum strip attached to the panel's bottom edge
- panels shall be homogeneous throughout in color and material

D. Doors
- shall be a minimum of 1" thick
- shall be a minimum of 55" high
- shall be of same design and construction as panels
- all doors shall include a continuous aluminum strip attached to the door panel bottom
- all doors shall include bumper/coat hooks
- all out swing doors shall have door stops and pulls

E. Pilasters
- shall be a minimum of 1" thick
- shall be a minimum of 82" high
- shall be of same design and construction as panels
- shall be secured to floor using 1/8" aluminum angle
- shall be secured to walls using continuous single ear brackets of panel height
- top bracing shall be anodized aluminum channel (brite finish) 1-1/2" X 1-1/2", channel shall weigh no less than .75 lbs. per linear foot, shall be "anti-grip" design to cap top of pilaster, secured on

inside of stall using 5/8” stainless steel tamper proof screws, floor fasteners, shall be concealed by a minimum of 3” high, one piece polished stainless steel floor shoe.

F. Hardware
- stall compartments shall be supplied with all required hardware and fasteners necessary for a complete and professional installation
- doors shall be hung on a continuous contact piano type hinge made of extruded aluminum, door hinges shall weigh not less than 1.5 lbs. per foot
- knuckles shall have nylon separators
- pivot pins shall be ¼” type 304 stainless steel
- all fasteners shall be 5/8” stainless steel torx head, these screws shall be located 8” on center on door and pilaster
- fasteners shall be concealed using snap-on cover, this cover shall be fastened top and bottom using the 5/8” stainless steel torx screws.
- hinge shall include an internal spring which is adjustable to hold door in the open or closed position as indicated on drawings.
- owner supplied toilet paper holders shall be installed per manufacturer’s recommendations and as approved by University representative

G. Strike, Keeper, Wall Bumper, and Out Swing Door Pull
- shall be heavy chrome plated Zamac and fastened with 5/8” stainless steel tamper proof screws

H. Surface Mounted Latch
- shall be slide latch
- shall include an emergency access feature which will not require lifting of the door
- no concealed latches.

I. Fittings
- all brackets shall be constructed of heavy duty extruded anodized type 6463T5 aluminum (brite finish), all brackets shall run the full length of panel
- floor and wall fasteners shall be #14 X 1-1/2” torx head, or one-way theft-resistant head screws with conical plastic anchors

J. Finish and Color
- surfaces shall include mar-resistant finish
- color shall be uniform throughout
- owner shall select color from manufacturer’s full range of standard and economy colors, owner’s color selection to be finalized with award of bid

K. Fire/Life Safety Requirements

- all toilet partitions shall be tested in accordance with NFPA 255 and meet the requirements of NFPA 101 for Interior Finish (flame spread and smoke developed)
- partitions shall have a minimum Interior Finish Classifications of C
- see Section VIII, Item A.2. for required test documentation

L. Instructions

- install partitions rigid, straight, plumb and level in accordance with manufacturer's instructions
- set units with not more than ½" between pilasters and panels and not more than ¾" between panels and walls
- secure to concrete floor and walls using #14 X 1-1/2" torx head or one-way theft resistant head screws and conical plastic anchors
- adjust and lubricate hardware for proper operation after installation
- set hinges on all doors to swing in, except for handicapped doors
- set all hinges to hold fully open when unlatched.

10210 – WALL LOUVERS

- No wood louvers allowed.

10260 – WALL AND CORNER GUARDS

- Use of corner guards is encouraged at any drywall corners.
- University basis of design product is 150 BN Bluenose high impact corner guard by Interior Protection Products and Decorative Surfaces.

10410 – DIRECTORIES

- Directories at entrances. Confirm location and type for each project.
- University std is surface mounted 4'X4'X3" single hinged door case made of satin finish aluminum
- Door to have ¼" safety laminated glass with lock,
- Back panel to be ½" black felt "grooved changeable letter board.
- Include one set of 300 assorted white helvetica style letters (1") per case.

10433 – EXTERIOR SIGNAGE

- Exterior building lettering by University. Factor in location and layout, but do not have it as part of the contract.

10440 – INTERIOR SIGNAGE

- Coordinate with University on interior signage requirements. For many projects, the University may take the lead on the procurement of the interior signage

package for installation by the construction contractor. For significant renovations and new construction, procurement and installation of signage may be in the construction contract. In either case, the designer should take the lead on developing the signage requirements spreadsheet.

- See Appendix for interior signage requirements.

10523 – FIRE EXTINGUISHERS AND CABINETS

- University std requires 10 lb ABC type extinguishers provided at new extinguisher locations.
- Cabinets to be wall in-set mounted with non-locking curved face door rated consistent with the wall partition it is mounted in.

10800 - MIRRORS

- Specify 20 years warranty on mirrors.

10810 – TOILET ACCESSORIES

- University supplies the following accessories, contractor installs
  - Soap Dispenser, surface mounted
  - Sanitary Napkin Disposal, surface mounted
  - Towel Dispenser, surface mounted
  - Toilet Tissue Dispenser, surface mounted
- Sanitary Napkin Dispenser to be salvaged and re-used in renovations if in good shape. For new construction and when it needs to be replaced, use combination napkin (25 cents)/tampon (10 cents) dispenser. (Washroom Accessories Model U510 or equal)
- No installed waste receptacles
- For janitor closets, water proof walls around the water appliances. FRP is acceptable.
- For janitor closets, provide floor mop basins only. No slop sinks. Provide mop holders and shelf over sink area.
- Coordinate size of Janitor closet to accommodate cleaning supply dispensers, cleaning supplies and cleaning equipment.

10XXX EYEWASH STATIONS

- If an emergency eyewash station is needed, locate in the immediate vicinity of the hazard minimizing required travel distance.
- Provide plumbed water supply and floor drain.

DIVISION 11 – EQUIPMENT

11132 – PROJECTION SCREENS

- Incorporate mounting of screen brackets in construction contract where directed. Screens to be provided by University.
- Incorporate built-in screens where room size and ceiling heights warrant
- See Appendix for Smart Classroom Interface Requirements including projection requirements
- Coordinate with faculty and Media Services

11400 – FOOD SERVICE EQUIPMENT

- Coordinate requirements with Food Services

11610 – LABORATORY FUME HOODS

- Connect to automatic temperature control system.

DIVISION 12 – FURNISHINGS

12481 – FLOOR MATS

- University supplies mats.

12481 – FOOT GRILLS

- To be installed in vestibule areas. Utilize ½" slim line walk off mats in ½" recess.

12490 – WINDOW TREATMENTS

- Furnishing and installation of window blinds to be part of construction project.
- Window Blinds to be 1" metal shades, eggshell color by Levelor, Bali, or Hunter Douglas.

12610 – FIXED AUDIENCE SEATING

- Same seating used in Franklin Science Center and Rowland Shearer Rm. 200
- Product to meet the minimum standards of KI Inc. "University Seating"
- 18" Laminate tops (20" at ADA rows)
- Incorporate modesty panels
- Vertebra Shell seating, un-upholstered

12661 TELESCOPING BLEACHERS

- These type of bleachers are not preferred.

DIVISION 13 – SPECIAL CONSTRUCTION

13100 LIGHTNING PROTECTION

- University policy does not mandate lightning protection. Conduct evaluation of structure and location to determine if lightning protection is warranted.
- Specify connections to rooftop equipment such as exhaust covers to be bolted and not screwed to make the connection hold when the covers are being taken off and put back on.
- Ensure adequate slack to service the units without un-bolting the connection.

DIVISION 14 – CONVEYING SYSTEMS

14240 HYDRAULIC ELEVATORS

Most types of new elevators will be considered, but not elevators that do not have a machine room.

- Maintenance Service
  A. Initial Full Maintenance Service: Provide initial maintenance service during warranty period, by fully trained elevator mechanics. (See Appendix; Shippensburg University Facilities Management and Planning Elevator Maintenance Specification) Maintenance shall commence upon completion and acceptance of all elevator work and shall include adjustment, greasing, oiling and parts replacement due to normal elevator usage. Provide unlimited regular time and twenty-four (24) hour emergency call back service, including travel time, at no additional cost. Response to regular time callback shall be as stated in Appendix – Shippensburg University Facilities Management and Planning Elevator maintenance Specification, Section II Specifications, 2.11 Call Back Service.

  B. All maintenance activities performed in accordance with the procedures set forth in the approved maintenance manual and the maintenance specifications included in the Appendix.. Each month, the contractor is to submit a written detailed breakdown of all activities occurring in the previous month. In addition, the reports are to be provided in an electronic format acceptable to the University.

  C. Maintenance Responsibility
  1. The Contractor shall keep the elevator maintained to operate at the original contract speed, keeping the original performance times, including acceleration and retardation as designed and installed by the manufacturer. The door operation shall be adjusted as required to maintain the original door opening and door closing times, within legal limits.

  2. The owner reserves the right to make inspections and test as and when deemed advisable. If it is found that the elevator and associated equipment are deficient either electrically or mechanically, the Contractor will be notified of these deficiencies in writing and it shall be his responsibility to make corrections with in thirty (30) days after his receipt of such notice. In the event the deficiencies have not been corrected within thirty (30) days, the Owner may employ a Contractor to make the corrections at the original bidder's expense.

  D. Approximately six (6) months prior to the end of the warranty period, the Owner will make a thorough maintenance inspection of all elevators cover under this contract. Contractor is responsible to provide assistance with field personnel responsible for normal maintenance procedures. At the conclusion of this inspection, the Owner shall give the Contractor written notice of any deficiencies

found. The Contractor shall be responsible for correction of these deficiencies within thirty (30) after receipt of such notice.

E. Diagnostic Tools: At the completion of the work as specified, the Contractor shall provide items listed. These items shall become the owner's property. One (1) complete set of all diagnostic tools, connections and equipment required for the complete maintenance of all aspects of the control and dispatch system and solid-state motor drive units. The diagnostic system shall be an integral part of the controller and provide user-friendly interaction between the serviceman and the controls. All such system shall be free from secret codes and decaying circuits that must be periodically reprogrammed by the manufacturer. Diagnostic equipment shall be permanently mounted in the control cabinet or secured in a lock cabinet provided by the contractor and located within the elevator machine room.

- PRODUCTS

Passenger Elevator: Subject to compliance with requirements, including single-source warranty from the accepted elevator Manufacturer covering all elevator components and providing a control system by one of the firms listed below, provide elevator as manufactured by Otis Elevator, ThyssenKrupp Elevator or Cemcolift.

Operation: keyed hall stations keyed to the University "Best" 7-pin removable core system unless approved otherwise.

Control System: All diagnostic and trouble-shooting readouts shall be located directly on the unit. Control system shall be manufactured by one of the following firms:

Motion Control Engineering, Inc. (MCE)
Computerized Elevator Control Corp. (CEC)
Elevator Systems, Inc. (ESI)

Finishes: Heavy duty mar-resistant finishes are preferred. Vandal resistance fasteners. Luminaries shall be LED and vandal resistant as well. Utilize VCT flooring.

Phone: Provide hands free phone

Door Operation: Provide door re-opening devices with a uniform array of 36 or more microprocessor-controlled, infrared light beam projecting across car entrance.

Sump Requirements: Verify latest requirements with Labor and Industry. Current regulations require sump with installed sump pump. Must have either oil separation or oil detection system to prevent possible oil discharge. University prefers oil detection system.

DIVISION 15 – MECHANICAL

Design Guidance:

- All air-conditioning systems and components shall be ARI (Air Conditioning and Refrigeration Institute) certified.
- The University operates a centralized chilled water system and a distributed hot water system with a number of nodes. Any building design must first consider if tying into the chilled water loop or heating node is practical. This is the preferred option. Hot water nodes are year round to provide re-heat requirements. Domestic hot water is typically provided near the source of use
- Coordinate HVAC design and sequence of operation with University Energy Manager and Automated Logic. .
- The University is committed to aggressive energy conservation and seeks to exceed the requirements of the International Energy Conservation Code.
- Sequence of Operations for systems to be placed on drawings and not in specifications.
- Design 4 pipe system for heating and cooling. Protect vulnerable chilled water piping from freezing such as to roof top units.
- Utilize DX units for computer rooms. Specify standalone strip controls for split systems to facility BAS control of units.
- Incorporate thermostat control in each room.
- Pressures:
    - Water: 50 - 75 psi
    - Gas: 6 – 8 psi

15080 MECHANICAL INSULATION

- Closed cell foam on chilled water piping.

15180 HEATING AND COOLING PIPING

- Ball valves for 2” and smaller
- Show on the drawings and detail in the specifications a coalescing type air eliminator and dirt separator on hot and chilled water systems. Specify Spirovent or equal.
- Dielectric unions must be placed where they are accessible, preferably they would not be used at all. Don’t bury in the walls.
- Design and specify hydronic systems using automatic flow balance valves.

15300 FIRE SUPPRESSION

- The designer is to determine if sprinkler systems are required by code. The University would prefer not to have a sprinkler system if conditions allow.

- 210 degree heads in mechanical rooms with guarded heads;
- Prefer wet systems;
- Heat detectors in baths, not smoke.

15410 PLUMBING FIXTURES

- Faucets: Wolverine-ceramic cartridged
- Sloan flushers, only exposed flush valves, no concealed.
- Kohler china;
- Urinals electric eye (hard wired, no batteries); Sloan Optima 186.
- Water Fountains: Select unit with integrated bottle fillers and no in-line filter, Halsey-Taylor HTHB-HACG8SS or equal.
- Esco flow rates

15430 PLUMBING SPECIALTIES

- Do not utilize trap primers for restroom and mechanical room floor drains. Use trap seals, SureSeal or equal.
- Backflow preventers must be tested and certified after installation by a certified tester with documentation provided in the O&M manual.

15510 HEATING BOILERS AND ACCESSORIES

Prefer natural gas condensing boilers to match kind that are installed at the heating nodes if connection to existing heating node is not practical.,

15620 PACKAGED WATER CHILLERS

Compatible with Automatic Temperature Control system used by University if not practical to connect to existing chilled water loop.

15660 LIQUID COOLER AND EVAPORATIVE CONDENSORS

- Compatible with Automatic Temperature Control system used by University.

15670 REFRIGERANT CONDENSING UNITS

- Compatible with Automatic Temperature Control system used by University.

15760 TERMINAL HEATING AND COOLING UNITS

- Fan coil units must have easily removable plastic drip pan piped to drain; ½" diameter condensate drains for drip pans.
- ALC compatible

- Provide University standard filters in units for testing and balancing. Insert new set of University standard filters at project completion and provide 1 pair attic stock.
- See section 15761 for filter specification
- Units must have isolation valves at the unit enabling them to be valved out of the system for maintenance. Includes fin tubes, CUHs, VAVs etc. Balancing or circuit setter valves are not acceptable for isolation.

15761 FILTERS

Three Ply Internally Supported Wire Ring Panel and Link Filters

- Filters shall be Tri-Dek 15/40 3-Ply Panel and link filters as manufactured by Tri-Dim Filter Corporation or equal

Construction

- The filter media shall be multi-graduated laminate of variable denier synthetic fibers that form three distinctive plies that are arranged from coarse to increasingly finer deniers of media.
- The filter shall have a downstream layer that is composed of a needled, synthetic media that has dual directional strength, insuring filter integrity as it become loaded.
- The filter shall utilize two distinctive tackifiers, both a wet and dry tack, to maximize filtration.
- The filter shall utilize an internal wire support constructed of a nine and one half gauge galvanized wire. Cross wires will be utilized on all panel grater than eleven and one quarter inches for added rigidity.
- The internal wire support shall be encapsulated between the different plies of synthetic media by a thermally generated seal.
- The filters shall be available in a linked panel configuration.
- When requested by the University, the filter shall be treated with an EPA Registered Antimicrobial to inhibit the growth of mold, mildew and bacteria.

Performance

- The filter shall have a MERV (Minimum Efficiency Reporting Value) value of 7 when tested by an independent test facility according to ASHRAE standard 52.2-1999. The filter shall achieve a minimum E2 value of 52% and minimum E3 value of 53%.
- The filter shall have an initial resistance of 0.51” W.G. (127 PA) at the recommended airflow of 4922 FPM (2.5 m/sec). The filter shall have a recommended final resistance of 1.0” W.G. (249 PA)
- The filter shall be Class 2 per Standard 900 from Underwriters Laboratories.

Two Ply Sleeve Filter Media

- Filters shall be Tri-Dek #3 2-Ply Sleeve Filter in media pads and rolls as manufactured by Tri-Dim Filter Corporation or equal.

Construction

- The filter media shall be composed of two layers of a needled, synthetic media that has dual directional strength, insuring filter integrity as it become loaded.
- The filter shall utilize a distinctive dry tackifier to maximize filtration.
- The filter shall utilize a removable wire support constructed of a nine and one half gauge galvanized wire. Cross wire will be utilized on all panels greater than eleven and one quarter inches for added rigidity.
- The wire support shall be position between the different plies of synthetic media and shall be reused form filter change to filter change.
- The filter shall be available in either a media pad or bulk roll configuration.

Performance

- The filter shall have a MERV (Minimum Efficiency Reporting Value) value of 7 when tested for initial efficiency by utilizing outdoor air.
- The filter shall have an initial resistance of 0..25" W.G. (62 PA) at the recommended airflow of 300 FPM (1.5 m/sec). The filter shall have a recommended final resistance of 1.0" W.G. (249 PA)

15900 HVAC INSTRUMENTATION AND CONTROLS

- Provide a native BACnet Direct Digital Control (DDC) system for automatic temperature control, hereafter referred to as the Building Automation System (BAS). The system shall be a direct extension of the existing Automated Logic WebCTRL system. The control contractor shall furnish all engineering, material, labor, and supervision for a complete and functioning system.
- Utilize specification 230900 located in the appendix in the design. This is one specification section that is meant to be inserted in its entirety. (Review laptop requirements and training requirements to ensure they are appropriate for the job.) The short version of the specification is in the appendix. For major jobs, the longer version is available and may be more appropriate.
- This is a proprietary item. See University proprietary letter.
- DDC contractor responsible to hook up and incorporate into DDC program all meters in the building, typically, water, gas, electric, condensate return and A/C condenser water make up. Each contractor is responsible to run wires from meter to the Automated Logic panel.

DIVISION 16 - ELECTRICAL

16050 BASIC ELECTRICAL MATERIALS AND METHODS

- No shared neutrals anywhere
- Dedicated circuits for computers
- No FP or General manufacturers
- No stab in type connections
- Unless directed otherwise, all electrical work shall be inspected by an approved inspection agency. All inspection costs shall be paid by the Electrical Contractor. Any work failing to pass inspection shall be corrected and re-inspected at no additional cost to the University. The Electrical Contractor shall formally file for this inspection within 20 days of signing the Contract.
- Max 7 conductors in any conduit
- Minimum ¾" conduit
- For new construction, all new conduit should be placed in wall unless there is absolutely no other way to construct it.
- No MC cabling to be used in walls. Above accessible ceilings only.
- Any run longer than 120' should be larger than a #12 conductor.

16075 ELECTRICAL IDENTIFICATION

- In addition to standard labeling of all panelboards and cabinets, contractor required to label all outlet and switches with panel and circuit number.
- Outlet and switch labeling to be on the face of the plate using machine produced labels approved by University. No hand labels.
- Junction boxes must also be labeled. Junction boxes can be marked with permanent pin so that it is legible at the end of the project. If boxes painted black, they may be marked on the inside.
- Fire alarm junction and pull boxes to be red. Emergency system junction and pull boxes to be orange.

16140 WIRING DEVICES

- Isolated ground outlets to be orange.

16145 LIGHTING CONTROL DEVICES

- Incorporate motion sensors in classrooms as required by Code and where appropriate. Include manual switching to allow override of motion sensor.
- Standard motion sensor shall utilize intelligent continuously adapting sensor technology that combines both ultrasonic and passive infrared sensing. Use Wattstopper DT-200 Dual Technology Sensor or equal.
- Incorporate multiple lighting levels in classrooms. Typically front rows are switched separately from back rows for presentations.

- The most simple lighting control is desired. Multiple switches is preferred over an electronic lighting control system. If one must be used, keep it as simple and maintainable as possible.

16230 GENERATOR ASSEMBLIES

- Should be sized to run heating system (circulation pumps) if a heating node (FSC, CUB, PAC, Kriner, Reisner)
- Natural gas powered (when economically feasible compared to diesel.)
- Air supply tied to genset operation if applicable.
- Require freeze protection for utilities in genset room

16300 TRANSMISSION AND DISTRIBUTION

- Load break terminations in transformer
- Ensure fusing is incorporated on the high voltage side.
- Disconnect switch on HV side
- Oil pressure gauge
- Drain in secondary side
- Mounted exterior of building.
- Feed thru transformers (provide empty conduit to outside slab for future connection.
- Manual tap changer
- Lightning arrestors on all building transformers.

16330 MEDIUM VOLTAGE SWITCHING AND PROTECTION

- The University maintains a master Short Circuit Coordination and Arc Flash Study in an SKM database that is available for use.
- Arc flash labeling:For larger projects involving the replacement of electrical distribution equipment, the contractor shall conduct an Arc Flash Study and include specific label information for each panel
- Switch gear; incorporate a new meter tied to University Automated Logic System.
- Provide spare fuses for high voltage transformers and/or switch gear.

16441 SWITCHBOARDS

Electric Meter – supplied by Electrical Contractor (Meter should have a digital readout with Pulse/Modbus/BacNet outputs capable of communication with the University WebCTRL Building Automation System). The controller shall monitor the electric meter for electric consumption on a continual basis. These values shall be made available to the system at all times. Alarm shall be generated for meter failure: Sensor reading indicates a loss of pulse output from the electric meter. The controller shall monitor and record the peak (high and low) demand readings from the electric meter. Peak readings shall be

recorded on a daily, month-to-date, and year-to-date basis. The controller shall monitor and record electric meter readings so as to provide a power consumption history. Usage readings shall be recorded on a daily, month-to-date, and year-to-date basis. The controller shall set the system demand level (adj.) based on the current power consumption readings from the electric meter. There shall be six daily time periods in which the demand shall be adjusted on three levels. These demand levels shall be available for facility equipment to utilize for demand limiting.
• Demand Level 1: Power consumption has exceeded the first demand level threshold (adj.).
• Demand Level 2: Power consumption has exceeded the second demand level threshold (adj.).
• Demand Level 3: Power consumption has exceeded the third demand level threshold (adj.).

Demand limiting shall be controlled through the relaxation of all zone temperature setpoints at the building level. Setpoints shall be adjustable for demand levels. University proprietary DDC contractor (subcontracted by mechanical contractor for multi-prime jobs and by electrical contractor for single prime jobs) shall provide terminations, validation, programming, and graphics required to tie points for meter into existing Automated Logic and WebCtrl system. The DDC Contractor shall provide an Automated Logic Control panel with CAT-5 BACnet/Ethernet ports if there are no spare digital inputs in the existing Automated Logic Control panel.

16510 INTERIOR LUMINAIRES

- Specify all LED fixtures. Include 3% spare fixtures for attic stock. Lights should have LED arrays that are replaceable without removing the fixture.
- 2x4 trough lights should be predominate fixture. LED arrays and drivers in these fixtures must be replaceable.
- No light fixture to use MR-11 or MR-16 Tungsten Halogen bulb due to durability problems.
- Exit signs to be red only.

16521 EXTEROR LUMINAIRES

- University Standard Walkway lighting is Sternberg “candy cane” fixture. Model number has changed over the years, most recent is LED model. Confirm with Sternberg on most recent model number: 1910LED/5QLBS/R2/3900 RFP4-14’ AG/4A1R45T3-MDH(or MDL 480Vvs208V)/PG (or BK) in either the one or two arm option according to the application. The color for the central campus is PG (park green) and BK (black) for the area bounded by Bucks Drive, Stadium Access Road and Baseball Access Road (includes PAC, Heiges, Shiprec Stadium area). Concrete base to be 3” above grade.
- Utilize Sternberg mounting detail with no leveling nuts (washers only if required).
- Bollard ltg near building Gardco F4BRM820, 42: 100MH, BRP (bronze) finish or equal.

- Utilize LED wall packs if approved. Select Dark Skies approved units
- No exterior pendant lights
- Outside lighting control by photo eye
- Utilize all LED fixtures.
- Exterior lighting should adhere to Dark Skies requirements whenever possible.

16715 DATA DISTRIBUTION

- See Appendix for university standards for data distribution.
- See Appendix for smart classroom interface requirements.
- Design MDF and IDFs to provide sufficient space to access equipment and for future expansion. Provide separate air conditioning system to ensure year round operation. No water pipes above or transiting the space unless required by code. No none IT functions in rooms (ie. Electric panels)
- Non IT functions such as fire alarm, security, building controls, etc. can be placed in adequately sized IT spaced with approval of Telecom Director.
- Utilize adjustable through wall fire stops for all fire rated telecommunication penetrations. Utilize EZ Path or equivalent type pathways.
- Data drop required for Building Automation System router and server

16730 CENTRAL CLOCK SYSTEM

Clocks are typically located in hallways, large lecture rooms (capacity over 100) and social use rooms on an exception bases. Coordinate with University.

- University Std (proprietary) BRG Precision
- All clocks must be of digital red LED Wi-Fi design with a **minimum** digit height of 4.0 inches (preferably BRG Duratime Model# WF440 or equivalent). This is the minimum dimensional requirement, the clock may be larger, if appropriate for the specified project.
- All hallway clocks shall be of double face design. All classroom and office clocks may be either double face or single face design, as deemed appropriate for the specified project.
- All clocks must have the ability to connect to the Shippensburg University time server, via Wi-Fi signal.

16760 FIRE ALARM SYSTEM

- Fire alarm pull stations to be single action.
- Specify Siemens XLS panel as a proprietary item. See University proprietary letter for this item
- Utilize fire alarm system for emergency notification. Provide necessary inputs to interface with University system.
- Junction boxes in distribution system to be red.

16850 TELEVISION EQUIPMENT

- Provide two data outlets per television location.
- Coordinate location of electrical and data outlets. Typically above mounting bracket behind TV.
- TVs are typically provided through FF&E along with mounts. Coordinate with University to provide adequate backing for mounts to be secured to wall.

16XXX SECURITY SYSTEMS

- Smart classrooms to be compatible with card swipe access. Decisions on whether a classroom will be equipped with a card swipe will be made during design.
- Contractor to coordinate with university security vendor
- University security vendor to install card readers. Electrical contractor to install pathway and pull wire to the site. See appendix for more information and coordination of efforts between trades.
- Conduit required in areas with hard ceilings.
- Cameras: Provide data outlets with POE. University typically install camera. Contractor to provide data outlet and home run to telecom closet. Locations to be determined during design. All elevators to be cameral capable.

SHIPPENSBURG UNIVERSITY

FACILITIES DESIGN GUIDELINES

APPENDIX

(1) Room and Door Numbering Policy
(2) Smart Classroom Interface Requirements
(3) Color Selection Expectations
(4) 15900 HVAC Instrumentation and Controls
(5) 16715 Data Distribution
(6) 10440 Interior Signage
(7) 16521 Exterior Lighting
(8) Handrail Design Standard at Exterior Concrete Steps
(9) Benchmark Locations from 1998
(10) Elevator Maintenance Specification
(11) Deleted
(12) Card Swipe Provisions