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26 00 00	ELECTRICAL DESIGN CONSIDERATIONS	<ol style="list-style-type: none"> 1. Location of electrical panels shall maximize the future flexibility of the building area. Panels must be located on “permanent” walls. 2. Do not allow home runs to be routed from interior partitions to under slab. Home runs must originate from “permanent” walls. 3. Provide 5% minimum spare capacity in panels and distribution conduits to allow for future flexibility. Provide and label nylon pull cord in all spare conduit. 4. Provide separate panels for technology in order to isolate transient signals and to provide grounding including TVSS protection at the panel 5. Conduits below the slab shall follow current NEC codes and be at least 2 inches minimum below the bottom of the concrete slab. Provide receptacles in mechanical rooms, electrical rooms which are fed from NEC 702 electrical system, telephone and data rooms (optional NEC 702 circuits), lobbies, corridors, custodial rooms, restrooms and building entrances will be fed from regular utility power. 6. Provide data outlets and supporting 120 volt receptacle per C&C standards in mechanical rooms. 7. All exterior devices and devices installed below ground must be waterproof with wire and connections designed to remain in water. Coordinate with civil design to drain all of these connections whenever possible. Provide particular attention to low voltage systems. 8. All runs should be labeled at both ends, for all systems.
26 01 00	O & M OF ELECTRICAL SYSTEMS (& AS-BUILTS)	<ol style="list-style-type: none"> 1. All closeout submittals shall be submitted in an open source electronic format; pdf preferred, approved, and shall include all manufacturers’ cut sheets and shop drawings. Data must be bookmarked (tabbed) by section and by product. Include all installation shop drawings. Drawings must be bookmarked and files labeled by sheet number and name. 2. Provide as-built panel schedules at substantial completion and as a close out submittal.

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		<ol style="list-style-type: none"> 3. Provide CAD files for fire alarm, emergency NEC 700 & 702 systems, network & data routing per IT standards, Electrical drawings, lighting and security system as-builts. Include list of all devices compatible with the panel. Include battery calculations. All CAD drawings shall be properly x-refed and bound with folder system automatically referencing appropriate attachment. 4. All programmable equipment must include the original source code, including a final electronic system configuration backup file, the software as modified and installed, all passwords including detailed instructions as to how to modify the software, and any licenses to modify the software later. 5. Digitally record all training sessions and provide bookmarked on thumb drive or DVD to owner with close out submittals. Provide three (3) copies. 6. Provide three (3) hard copy of O&M's in binders with one digital copy in PDF format on either CD, DVD or a thumb drive. 7. As-built floor plans shall have detailed locations of equipment, including wiring routes.
26 05 33	RACEWAYS AND BOXES	<p>Conduit (depending on application)</p> <ol style="list-style-type: none"> 1. EMT using steel compression fittings 2. Seal tight 3. Flex conduit will only be approved on a case by case basis in special circumstances (I.E.: vibration isolation). 4. All home runs from panel to devices should contain 2 gang junction box above ceiling areas at 50-foot intervals for future access. Blank cover should be labeled with panel and circuit numbers. 5. Home run should be in the EMT to the first device. 6. All receptacles (and junction boxes) shall be labeled with the panel and circuit numbers. 7. Individual neutral conductor should be installed for each 120 / 277 volt circuits.
26 05 34	MC CABLE	<ol style="list-style-type: none"> 1. Use allowed above suspended ceilings, with or without 0-10 volt dimming conductors for lighting application home runs originating from first device connected to that circuit.

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		2. Only use in other circumstances with prior approval from owner for 120 volt circuits.
26 08 00	COMMISSIONING OF ELECTRICAL SYSTEMS	<ol style="list-style-type: none"> 1. Commissioning Agent will be contracted directly with the owner independent of design engineers and construction contractors. 2. Testing to include but not be limited to the following: <ol style="list-style-type: none"> a. Fire alarm system. b. Clock and program system. c. Emergency Power & lighting systems including automatic transfer switch operation. d. Data cabling system.
26 09 43	NETWORK LIGHTING CONTROLS	<p>Whole building:</p> <ol style="list-style-type: none"> 1. Douglas lighting control system that allows multiple control panels to be locally network connected with the ability to allow multiple public area zone control in addition to room light & power switching with local control or using occupancy or photo cell based daylight harvesting. It shall also allow DDC system inputs for coordination of multiple campus system systems and be compatible with our IT network security protocols. 2. Lutron lighting control system for room scene options that is compatible with the multimedia systems. 3. Lutron Occupancy based control system (I.E. Library stacks) that offers reduced light output options until users are present and light levels are elevated based on occupancy. <p>For energy code requirements:</p> <ol style="list-style-type: none"> 1. Watt Stopper (model LMRC-101 digital 1 or multiple zone room controller) with associated occupancy, daylight and other options. This should also have an emergency lighting relay if applicable 2. Green Gate controller that allows single or multiple zone room lighting control options with related occupancy, daylight and other sensors. Should also include emergency lighting control relay
26 18 00	CIRCUIT PROTECTION	1. Provide phase loss protection for motors 1 hp and above.

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26 24 00	PANELBOARDS	<ol style="list-style-type: none"> 2. Provide panel schedules for review and approval prior to release of bid documents. 3. Prefer Square D and Cutler Hammer with bolt in breakers, door within door front panel configuration with key lock. 4. Provide as-built panel schedules at substantial completion of project and include in the closeout submittal. 5. Panel schedules shall include information regarding location circuits are feeding.
26 24 19	MOTOR CONTROL CENTERS	<ol style="list-style-type: none"> 1. Provide combination motor starter, disconnect, with over-current protection and hand-off-auto switch for each motor. 2. Provide manual bypass transfer switch for each VFD such that VFD can be removed for service without loss of equipment operation.
26 27 13	METERING	<p>Provide for network monitoring.</p> <ol style="list-style-type: none"> 1. Install Shark 200 meter system including Pt's , Ct's, related network ports including pulse count option card and low voltage connections in a 12 x 12 junction box with connection terminal strip to support related water, gas, steam & condensate meter connections. Use owner provided IP addresses to connect to the campus server.
26 27 26	SWITCHES & RECEPTACLES	<ol style="list-style-type: none"> 1. Coordinate type of key switch with owner prior to writing specification. 2. Prefer Leviton or Pass & Seymour "spec grade" with removeable pig tail connector.
26 32 00	GENERATORS	<ol style="list-style-type: none"> 1. Diesel is preferred fuel source. Second source of fuel must be compatible with the primary source and not require any modification to the equipment to operate. 2. Emergency circuits to include; Administration area (all circuits), public address system, communication system, data system, mechanical room lighting, generator room lighting, exit signs, and egress lighting. 3. Provide automatic transfer switches (ATS). ATS shall be mounted in a common enclosure, and bussed together with copper bus to provide a complete and pre-tested factory assembly. Construction shall be such that the installation contractor need only to make the incoming power and control wiring connections

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		4. See current NEC code regarding 700 & 702 emergency power systems and associated transfer switch requirements. Install separate labeled transfer switches and associated distribution panels per project specifications.
26 33 53	UNINTERRUPTED POWER SUPPLY SYSTEMS	<ol style="list-style-type: none"> 1. Coordinate ventilation requirements with Mechanical Engineer. 2. Coordinate computer/server UPS systems such that systems shut down in an orderly manor prior to a total loss of power. 3. See IT standards for voltage, approved brands, power cord configuration, and related IDF cooling
26 51 00	INTERIOR LIGHTING	<ol style="list-style-type: none"> 1. LED fixtures are preferred unless there is a specific reason for considering other types of lighting systems. 2. Do not specify fixtures that are bug catchers. Specify fixtures that allow reasonable maintenance access to emitters and related drivers. 3. Specify 0-10 volt dimming capability on all drivers.
26 52 00	EMERGENCY LIGHTING	<ol style="list-style-type: none"> 1. Shall be on emergency power system (emergency generator), not on battery backup. Test procedure should include all requirements of local jurisdiction, and should include certification by an approved independent agency. 2. Do not specify lights that have beeping diagnostics.
26 53 00	EXIT SIGNS	<ol style="list-style-type: none"> 1. Shall be on emergency power system, not on battery backup.
26 55 61	THEATRICAL LIGHTING	<ol style="list-style-type: none"> 1. Consider programmable fixtures. 2. LED lamps preferred.
26 56 00	EXTERIOR LIGHTING	<ol style="list-style-type: none"> 1. Pole lights: Lithonia Ledway Series, 53 watts, LED 4000K, Type II distribution 2. Try to design with campus standard height of 15-feet, but height may be more depending on feasibility of the area needing to be illuminated. 3. Color: Campus bronze 4. Finish: Powder coated 5. Hand-hole shall have a removable coverplate that matches pole finish, installed with vandal resistant bolts, locate approximately 18-inches above pole base.