JCCC Facility Design Standards

Version: 2025-05

JOHNSON COUNTY
COMMUNITY COLLEGE

EXECUTIVE SUMMARY

The following Campus Facility Design Standards are intended to provide clear guidelines for JCCC team members and design, engineering, and construction to ensure consistency across campus, promote interparty communication throughout the design and construction process, and streamline the course of projects. These standards are not intended to direct every design decision, dictate every product selection, or relieve any design or construction consultant of the need to follow the usual standard of care in providing services to the College. Rather, the standards highlight key process and product issues that are priorities for the College.

The standards are organized according to the MasterFormat® system maintained by the Construction Specifications Institute (CSI), the predominant classification system used in the design and construction industry to organize the many components and processes that make up the built environment. Each chapter, or Division, contains a range of requirements within an overarching topic, like General Requirements, Finishes, Plumbing, or Electronic Safety and Security, among others. While there are 50 divisions, not all of these are included in the standards, and the included divisions do not run consecutively where unnecessary divisions are omitted. For a full breakdown of the CSI divisions pertaining to the JCCC organizational units that contributed to these standards, refer to the Responsibility Matrix found in Division 01.

The original version of the Standards, dated April 2025, were collected, reviewed, compiled, and edited through a collaborative process led by JCCC Campus Services and consultant Hollis + Miller Architects, and involved numerous organizational units across the College. As recorded in the standards' General Requirements and the various Divisions, a key process goal is early and frequent coordination and communication between these groups and selected design and construction teams.

These standards are intended to be a living document, and will be revised by JCCC on a regular basis. To ensure that you are viewing the most current version of the Standards, visit JCCC's website or reach out to the following point of contact. For additional information about the Standards or questions about the accessibility of this document, please contact Brett Edwards, Director of Campus Services and Energy Management, at (913) 469-3896 or bedwar26@jccc.edu.

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DIVISION 01: GENERAL REQUIREMENTS

01 3100 PROJECT MANAGEMENT AND COORDINATION

JCCC has multiple internal departments within their organization that shall be consulted with during both design and construction. The below table indicates which divisions each department is involved in reviewing:

Department	Division
Access Control	08, 28
Audio Visual	26, 27
Carpentry	08, 09
Custodial	09, 10, 12, 22
Electrical & Plumbing	21, 22, 26, 32
Emergency Management	08, 10, 26, 27, 28
Grounds	32
HVAC & Fire Alarm	01, 21, 23, 28
Interior	06, 09, 10, 12
IS Network Cabling	27
Sustainability	01, 08, 10, 11, 12, 22, 23, 26, 32
Video Services	26, 27

The project design team shall consult with owner regarding cadence of meetings and which department reviews may be required at during each phase of design and/or construction.

The project design team shall coordinate all device locations with consideration to architectural, structural or other engineering elements. During construction, the contractor shall furnish shop drawings for approval by the design manager to confirm location of devices are not in conflict with any other built elements.

01 6000 PRODUCT REQUIREMENTS

Total Cost of Ownership (TCO)

- TCO assessments shall be used to illustrate design choices relative to impact and to assess anything that deviates from standards.
    - Evaluate multiple design options according to impact on:
    - Material cost
    - Maintenance cost
    - Energy cost
    - Water consumption
    - Greenhouse gas emissions
- TCO assessment shall be performed during:
    - Schematic Design
    - Value Engineering (VE) exercises during any phase of design or construction.
- TCO assessment shall be calculated with a minimum 15-year outlook, unless noted otherwise.

- Calculate with 20-year outlook for gas / electricity consumption.

New Materials

- Use only certified low-emitting paints, coatings, adhesives, sealants, furniture, and wood products.
- Use only formaldehyde-free insulation.

Repurposed Materials

- Use a balanced approach to evaluate material salvage opportunities, weighing the feasibility and likelihood of reuse for various building elements against the recovery cost, schedule, and other impacts to the surrounding community.

01 7419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

The owner has a zero waste to landfill goal that requires materials be recycled or reused when that service is regionally available.

- Refer to owner's material recycling guide for latest requirements.

Develop and implement a construction and demolition waste management plan:

- Describe the diversion strategies planned for the project.
- Describe where materials will be taken including expected diversion rates for each material.
- Separate all recyclable and reusable materials from landfill debris on-site.
- Utilize a certified recovery facility for all construction and demolition waste.
- Contractor shall provide to owner all material recovery reports from C&D facility indicating weights and materials classifications for in-house review.

01 8113 DEMONSTRATION AND TRAINING

All user training for equipment and systems to occur at completion / occupancy of project.

- All training shall be video recorded and delivered to owner within five days.
- Follow-up meetings shall occur 3 months after occupancy for all initial training sessions.

01 8113 SUSTAINABLE DESIGN REQUIREMENTS

General

- Refer to owner's most current sustainability policy for latest information.
- Consult with owner regarding any project-specific sustainability requirements prior to start of design work.

LEED Certification

- All new buildings should be designed and certified as LEED Silver.
- Other projects such as renovations or minor additions should follow LEED principles

but may not necessarily apply for LEED certification.

Energy Performance

- Analyze efficiency measures during the design process and account for the results in design decision making. Analysis can include energy simulation of efficiency opportunities, energy simulation analyses for similar projects, or published data from energy analyses performed for similar projects (such as AEDGs). Analyze efficiency measures focused on load reduction and HVAC-related strategies; passive measures are acceptable. Project the potential energy savings and cost implications for all affected systems.
- Extensive envelope analysis/energy model is performed to determine the optimal amount of insulation and thermal breaks in window construction in order to maximize insulation capacity.
- Utilize life cycle cost calculator to reduce operating costs (HVAC, envelope upgrades).
- No new fossil fuel equipment, remove existing equipment at least consider other options.
- Specify efficient and certified equipment (e.g., Energy Star, EPEAT, ACT, etc.)
- Comply with ANSI/ASHRAE/IES Standard 90.1-2019 or 2022.

01 9100 COMMISSIONING

Complete the commissioning (Cx) process activities for mechanical, electrical, plumbing, and renewable energy systems and assemblies, in accordance with ASHRAE Guideline 0-2013 and ASHRAE Guideline 1.1–2007 for HVAC&R Systems, as they relate to energy, water, indoor environmental quality, and durability.

DIVISION 02: EXISTING CONDITIONS

02 2200 EXISTING CONDITIONS ASSESSMENT

The project design team shall coordinate a comprehensive walk through of affected facilities and/or grounds with owner prior to start of design work. Observations related to as-built conditions such as field-verified dimensions, materiality, finishes, and furnishings shall be itemized and/or documented, including photographic evidence.

02 2500 EXISTING MATERIAL ASSESSMENT

Refer to 01 3100 for the review of various divisions per owner's internal departments.

An audit of all existing interior and exterior materials / finishes should be performed by the project design team with representatives from each of the owner's internal departments for coordination of any new materials, if applicable. Any deviations observed between existing facilities and the standards set forth in the following divisions shall be documented and presented to the owner for confirmation of design direction.

02 4100 DEMOLITION

Refer to 01 7419 for any waste management policies relevant to demolition.

02 4200 REMOVAL AND SALVAGE OF CONSTRUCTION MATERIALS

Contractor shall coordinate pre-demolition walk through with owner's sustainability team to determine any items that are to be salvaged.

Owner shall have first right of refusal on all material removed, including those any materials deemed to be recyclable or donatable.

Any materials conflicting with new work that are not salvaged by owner shall be removed by contractor.

DIVISION 03: CONCRETE

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

DIVISION 04: MASONRY

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

04 2200 CONCRETE UNIT MASONRY

Any restroom wall with wall-hung toilets shall be constructed of concrete unit masonry, metal stud construction is not permitted.

Refer to 22 4000 for plumbing fixture information.

DIVISION 05: METALS

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

DIVISION 06:
WOOD, PLASTICS & COMPOSITES

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

DIVISION 07:
THERMAL & MOISTURE PROTECTION

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

07 5200 MODIFIED BITUMINOUS MEMBRANE ROOFING

Owner's preference is for mod-bit roofs on facilities.

Solar array panels may be installed above mod-bit roofing systems.

Coordinate with owner's roofing consultant for specification and detailing standards.

All roof designs to be reviewed and approved by owner's roof consultant prior to construction.

Consult with owner for any active roof warranties, if applicable.

07 5563 VEGETATED PROTECTED MEMBRANE ROOFING

Green roofs will not be allowed.

07 6113 STANDING SEAM SHEET METAL ROOFING

Standing seam metal roofs are acceptable.

Coordinate with owner's roofing consultant for specification and detailing standards.

All roof designs to be reviewed and approved by owner's roof consultant prior to construction.

Consult with owner for any active roof warranties, if applicable.

07 7600 ROOF PAVERS

Occupied roof terraces will not be allowed.

DIVISION 08: OPENINGS

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

08 1400 WOOD DOORS

All wood doors shall be solid core, plain-sliced red oak with hardwood edges.

Door locations shall be coordinated with Emergency Management department.

08 4000 ENTRANCES, STOREFRONTS AND CURTAIN WALLS

Storefront system jambs shall accommodate mortise-lock hardware.

Door locations shall be coordinated with Emergency Management department.

Refer to 08 7000 for hardware information.

08 5000 WINDOWS

No operable windows shall be permitted.

08 6000 ROOF WINDOWS AND SKYLIGHTS

No skylights shall be permitted.

08 7000 HARDWARE

All hardware and pathway design to be coordinated with owner's access control department. Any deviations from specifications below shall require approval prior to installation.

Sargent shall be the provider for all keys and locks.

General finish requirements: 26d brushed stainless.

All doors must have traditional Keso key override capabilities.

Hardware does not require a dedicated power supply above the doors.

Emergency door lock switches need to be installed on all classrooms.

Hardware sets

- Mortise locks on card reader doors
  - Sargent: LC RX 8271-24V LN J 26D
  - Door position switch.
  - 4+ wire power transfer hinges or Securitron CEPT-10 power transfer.
- Electrified crash bars on card reader doors
  - Sargent: 55-56-8800 or 8500 Series (E-J) 32D
  - Door position switch.
  - 4+ wire power transfer hinges or Securitron CEPT-10 power transfer.

- Emergency door lock switches
  - Gardner Bender GSW-110 with stainless steel switch plate (single door lock).
  - Gardner Bender GSW-14 (two door locks).
  - Note: standard procedure is to provide switch in classrooms that interrupts power supply to door hardware, and door can only be opened with override key from campus security / police.
- Exit trim for crash bars
  - Sargent: 704 ETJ x (Handing) & 26D (storefront)
  - Sargent: 715-8 ETJ x (Handing) & 26D (passage)
- Non electrified mortise lock (office doors)
  - Sargent: F1-82-8237 LN J 32D (Handing), or
  - Sargent: F1-82-8255 LN J 32D (Handing)
- Non electrified mortise lock (storeroom doors)
  - Sargent: F1-82-8204 LN J 32D (Handing)
- Non electrified mortise lock (passage doors)
  - Sargent: 8215 LN J 32D (Handing)
- Deadlocks / Hook bolts
  - Adams Rite: MS1850S OR MS1850S-X5X
- Power transfer hinges
  - 4 - 8 wire power transfer hinges.
  - knuckle power transfer: Securitron: CEPT-10
- Card Readers
  - HID: Signo: 20NKS-03-0139B3: Mullion, pigtail
  - HID: Signo: 20KNKS-03-0139B3: Mullion, pigtail with keypad
  - HID: Signo: 20TKS-03-0139B3: Mullion, terminal strip
  - HID: Signo: 20KTKS-03-0139B3: Mullion, terminal strip with keypad
  - HID: Signo: 40NKS-03-0139B3: Wallswitch, pigtail
  - HID: Signo: 40KNKS-03-0139B3: Wallswitch, pigtail with keypad
  - HID: Signo: 40TKS-03-0139B3: Wallswitch, terminal strip
  - HID: Signo: 40KTKS-03-0139B3: Wallswitch, terminal strip with keypad
- Cylinders
  - Sargent: Traditional Keso Mortice Cylinder: 82-71 26D
- Access control head-end
  - PCSC IQ1200 w/ On board LAN
- Lock power supplies
  - Altronix: ALT AL600ULXB
- Power relay boards
  - Altronix: ACMS12, or
  - Altronix: ACM8

- ADA operator
  - Horton: 4000
- Access control cable
  - Refer to 28 1300 for access control requirements
  - Plenum, 22AWG/3Pair Shielded + 18AWG/4 + 22AWG/4 + 22AWG/2, Stranded, Yellow.

08 8000 GLAZING

Provide bird-safe glazing on all new buildings and when replacing glazing in existing windows. Consult with owner for preferred frit/dot pattern.

DIVISION 09: FINISHES

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

09 6513 RESILIENT BASE AND ACCESSORIES

Tarkett: Johnsonite Wall Base: Charcoal 20.

Tarkett: Johnsonite Millwork Wall Base: Mandalay: MW 20H.

09 6519 RESILIENT TILE FLOORING

Interface: Brushed Lines: Graphite.

09 6723 RESINOUS FLOORING

Welch or Treadwell epoxy flooring: trawled or broadcast, smooth finish only. (Restrooms and kitchens)

Certification required.

09 6813 TILE CARPETING

Interface

- AE311 Arial Collection: Iron. (Office areas and corridors)
- Harmonize / Ground Waves: Gravel. (Classrooms)
- Step Repeat: SR899: Onyx. (Vestibules and entries)

09 8436 ACOUSTICAL CEILING UNITS

Rockfon: Education Standard.

- SL 41300: 2’ x 2’ x 5/8”
- 15/16” suspension system: square regular

09 9123 INTERIOR PAINTING

Sherwin Williams

- Promar 200, speedhide: eggshell (walls)
- Promar 200, speedhide: flat (ceilings)
- Pro-industrial water based catalyzed 2-part epoxy: eggshell (corridor walls)
- Pro-industrial water based catalyzed 2-part epoxy: semi-gloss. (door frames)

Colors

- SW2850 Chelsea Grey (classrooms)
- SW6507 Resolute Blue (classrooms)
- SW7566 West Highland White (office areas)
- SW7035 Aesthetic White (office area)
- SW7029 Agreeable Grey (office areas)
- SW 6246 North Star (office areas)
- SW9145 Sleepy Hollow (office areas)
- SW6228 Refuge (accent)
- SW7618 Deep Dive (accent)
- SW6487 Cloudburst (accent)
- SW6712 Luau Green (accent)
- SW 7007 Bright White (ceilings, walls)
- SW 7069 Iron Ore (door frames)

DIVISION 10: SPECIALTIES

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

10 1116 MARKERBOARDS

Clarus: Glass Markerboards, 48 inch typical height.

Clarus: Magnetic Glass Markerboards, 48 inch typical height.

Everwhite: Magnetic surface aluminum frame with tray, 48 inch typical height, #L7600.

10 1400 SIGNAGE

Location and quantity of building map and emergency response and evacuation procedures signage to be coordinated with owner's Emergency Management department.

Typical classroom installation to consist of two plexiglass frames secured to walls with screws (provided by Emergency Management) unless factored into building remodel for specifically designed 11 by 17 frames.

10 2113 TOILET COMPARTMENTS

Bobrick: DuraLine Series CGL 2088G.67P: Satin stainless with black core 4830-60 or brushed alumnimum 0328-FH.

ASI Global Partitions: Plastic laminate satin stainless 5030.

Partition Style

- Floor anchored, overhead braced with shoes.
- Maximum privacy with interlocking sightline-free design.
- Thickness: 3/4 inch.

Door Style

- Captured panel (oversized).
- Size: 28 inches and 32 inches width, 71 3/4 inches in height.

Interior dividing partitions

- Size: 72 inch height.
- Hardware: stainless steel continuous u-brackets at each partition.
- Hold bottom of partitions off finish floor by 6 inches, typical.

Wall-hung urinal screens

- Size: 24 inches wide by 58 or 72 inches in height.
- Hardware: stainless steel continuous u-brackets at each partition.

Hinges

- Manufacturer's heavy duty surface-mounted barrel / wrap around stainless steel barrel hinges, satin finish

Latch / Slide / Indicator

- Chrome plated zamac indicator slide latch with occupancy indicator, satin finish

Interior Pull

- 5-inch bar pull, AISI-304, satin finish

Coat Hook

- Provide manufacturer's standard stainless steel coat hook on the back of each door at 48 inches above finish floor in accessible stalls and ambulatory stalls and at 54 inches above finish floor in all other stalls.

10 2600 WALL AND DOOR PROTECTION

Chair rails: Inpro: Palladium 3D trim horizontal board: 8": pewter.

10 2800 TOILET, BATH AND LAUNDRY ACCESSORIES

Toilet paper dispenser (OFCI): Georgia Pacific #56747A, compact quad 4-roll coreless dispenser: white.

- Dispenser must hold GP Compact coreless bath tissue 2-ply.
- Do not mount above hand washing stations.

Paper towel dispenser (OFCI) : Georgia Pacific 59407A, Enmotion 10 inch automated touch-less (electric): white.

- Dispenser must hold GP Enmotion roll towel, 10 inch x 800 feet, A/C connector supplied by GOJO.

Soap dispenser, counter-mount (OFCI): Renown RENO2545, touch free foam dispenser

- Dispenser must hold at least a 1.5L refill bottle.

Soap dispenser, wall-mount (OFCI): Purell ES8 7734-01, touch-free foam hand soap dispenser: graphite.

- Dispenser must hold a 1.2L refill bottle

Sharps disposal (CFCI): Boberick B-350169 with insert

Hand dryers (CFCI): Dyson AB12, Nickel.

- All restrooms shall receive both paper towel dispenser and hand dryer.
- Do not hang near mirrors.

Sanitary napkin dispenser (CFCI): Evogen EV-1-Free

- Shall be provided in every female restroom.

Sanitary disposal (CFCI): Bobrick B-270: stainless steel.

- Shall be provided in every female restroom.
- Shall be provided in male handicap restroom stall for disposal of colostomy or urostomy bags.
- No locks.

Baby changing stations (CFCI): ASI 9018 stainless steel unit, recessed.

Recessed Waste Receptacles:

- Do not provide any recessed wall-mounted waste receptacles.
- Refer to 12 4633 for waste receptacle information.

10 4300 EMERGENCY AID SPECIALTIES

Determination of quantity and final locations of emergency aid specialties, such as defibrillator and first aid cabinets, shall be coordinated with owner's emergency management department.

10 8113 BIRD CONTROL DEVICES

Design of facilities shall avoid creating bird traps. Consult with owner on past issues such as parking structure stairwells, building canopies and openings.

DIVISION 11: EQUIPMENT

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for demonstration and training requirements.

Refer to 01 8113 for sustainability requirements.

11 4100 FOOD-SERVICE EQUIPMENT

General preference shall be electric equipment. Some equipment may need to be gas for energy consumption requirements, consult with owner during design.

Stoves shall be induction type.

DIVISION 12: FURNISHINGS

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

Refer to 02 2500 regarding audit of existing materials / finishes.

12 2413 ROLLER WINDOW SHADES

Mecho: EcoVeil 1750 Series 1%: Silver Birch 1769.

12 3216 MANUFACTURED PLASTIC LAMINATE-CLAD CASEWORK

Wilsonart: D503 Cement.

Wilsonart: D91-60 Slate Grey.

Wilsonart: 4939K Vapor Strandz.

12 3661 SOLID SURFACE COUNTERTOPS

Wilsonart: Silver Smoke 9226SS.

Wilsonart: Milk Glass Spectra 9077ST.

12 4633 WASTE RECEPTACLES

Provide paired waste and recycling receptacles in hallways and rooms.

Refer to owner's latest policy for waste and compost bin configurations in all restrooms.

- Do not provide any holes / grommets in countertop for waste receptacles.
- Refer to 10 2800 for recessed wall-mounted waste receptacle information.

12 5000 FURNITURE

Podium: Computer Comforts: Evolve

- Cool-IT front door (vented).
- Filtered front door (dust free).
- Reversible front door (hinge left/right).
- Keyless front door (combination lock).
- 16u front rack rails (included).
- Locking rear access panel (keyless combination lock).
- 8u rear rack capacity.
- Heavy-duty locking wheels (1200lb capacity).
- Ultra quiet cooling fan.
- LCD arms.
- Cable cubby.
- 16u removable rack.
- Flip-up worksurface extension.
- Power-lift side table (42W x 30D).
- AV cabinet (22W x 30D).

DIVISION 14:
CONVEYING EQUIPMENT

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for demonstration and training requirements.

Refer to 01 8113 for sustainability requirements.

14 2000 ELEVATORS

Elevator equipment shall be non-proprietary.

New elevators shall be electrically driven, non-hydraulic.

Any modifications or modernizations of existing elevators shall require a pre-inspection.

Elevator phones must be compatible with Zoom internet phone system.

DIVISION 21:
FIRE SUPPRESSION

GENERAL NOTES

No bypass is allowed on fire line backflow preventer.

21 1000 WATER BASED FIRE SUPPRESSION SYSTEMS

Fire sprinkler heads must use flex sprinkler heads.

Backflows must be installed inside the building.

Coordinate sprinkler finishes with JCCC.

Sprinkler heads must match existing or be one of the types listed below. Coordinate type with JCCC.

- Concealed ceiling sprinkler, including cover plate.
- Extended-coverage sprinklers.
- Flush ceiling sprinklers, including escutcheon.
- Pendent sprinklers.
- Quick-responses sprinklers.
- Recessed sprinklers, including escutcheon.
- Sidewall sprinklers.
- Sidewall and pendent, dry-type sprinklers.
- Upright sprinklers.
- Dry flex sprinklers by Victaulic – VicFlex VS1

DIVISION 22: PLUMBING

GENERAL NOTES

Work shall comply with the edition of the applicable standards, regulations and codes currently in force of all Federal, State and local authorities having jurisdiction. Where quantities, sizes, or other requirements indicated on the drawings or herein specified are in excess of the standard or code requirements, the specifications and/or drawings shall govern. In the absence of other applicable local codes, acceptable to the Architect/ Engineer, the International Set of Codes shall apply to this work.

Plumbing chases in the restroom must be big enough to walk through and have lighting. Minimum depth of 48" front of wall for back to back restroom configuration.

No garbage disposals are allowed anywhere on campus.

All plumbing fitting shall be directional type (no 90 degree tees).

Coordinate all demo work with JCCC prior to construction.

22 0523 GENERAL-DUTY VALVES FOR PLUMBING PIPING

Provide shutoff valves at each restroom bank.

Provide in-line shut off to each fixture branch.

22 0553 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

Provide wraparound plastic pipe labels.

Match existing where applicable.

22 0719 PLUMBING PIPING INSULATION

Fiberglass insulation with universal barrier PVC jackets.

All domestics cold, hot, and recirculation piping must b be insulated.

Insulation thickness must match current IPC code adopted by jurisdiction.

22 1114 FACILITY NATURAL-GAS PIPING

All underground interior gas lines shall have a copper tracer wire no less than 12 AWG THHN terminating above ground on each end.

22 1119 DOMESTIC WATER PIPING SPECIALTIES

Domestic Water Entrance:

- Up thru 2" - Watts LF-009, lead free bronze body with ball valves, ASSE 1013/ AWWA C511 and USC compliant.
- 4" thru 10" - Watts LF-909 cast iron body with gate valves, ASSE 1013/AWWA C511 and USC compliant.
- Strainer – 1/2" thru 2" – Watts LF777 bronze body, lead free 125 PSIG, 20 mesh stainless steel screen. Provide with ball type blowdown valve.
- Strainer – 2-1/2" thru 12" – Watts 77F-DI-125 iron body, lead free, 125 PSIG, bolted bonnet, 20 mesh stainless steel screen. Provide with ball type blowdown valve.
- Pressure reducing valve – 1/2" thru 2-1/2" – Watts LF-223 bronze body, lead free, sealed spring cage, replaceable seat, Online serviceable up thru 2", stainless steel strainer, 300 PSIG.
- Pressure reducing valve – 4" and larger – Watts F100 series flanged ductile iron body, lead free, EPDM seats, external stainless steel strainer, 250 PSIG. Provide with pilot control system.
- Flood protection valve – Up thru 3" – Watts ACV LFF113-12 FCIS with sensor and control panel, 120/1/60.
- Flood protection valve – 4" and larger – Watts ACV F113-6RFP or Zurn FCIS with sensor and control panel, 120/1/60.

Hot and cold supply lines to have manufactured pre-charged piston type water hammer arresters sized and installed in accordance with PDI-WH 201. Install at each solenoid actuated quick closing valve location including but not limited to dishwashers, clothes washers, ice makers, electronic faucets and similar items. An arrester shall also be required at each group or battery of fixtures to prevent water hammer. Sioux Chief, JR Smith or equal. Provide access panel where required.

Irrigation systems shall be separately metered and shall be connected to smart irrigation system for on/off control.

22 1123 IN-LINE DOMESTIC WATER PUMPS

Hot water recirculation pumps must be controlled by the college BAS system using and RIB (relay in a box).

Provide aqua stat taco brand.

22 1316 SANITARY WASTE AND VENT PIPING

Remodel work must have all cast iron drain/vent lines behind walls replaced using PVC where permitted. PVC piping is not allowed where exposed to return air plenum.

Use PVC waste and vent piping where plenum is not used for return.

Scope existing waste piping prior to any design or construction work depending on existing information and existing conditions. Coordinate with owner.

22 1319 SANITARY WASTE PIPING SPECIALTIES

Provide cleanouts above each urinal.

Cleanouts for toilets must be installed above critical level so it can be snaked without flooding the restroom. Only wall cleanouts are acceptable.

Wall cleanout to be flush with finish wall within ½".

Coordinate main line clean out outside of the building with civil contractor.

Floor cleanouts and drains must be protected before the project starts and uncovered, visible and fully serviceable one the project has been completed.

Cleanouts installed must match the same size of drain pipe up to 4 inches. Any pipe size larger than 4 inches must have a minimum 4-inch cleanout.

A cleanout must be installed above a wye drain line fitting.

22 3300 ELECTRIC, DOMESTIC WATER HEATERS

All water heaters and the like shall have disconnects.

Remote individual sinks shall have 1-gallon small water heater or electric instantaneous type. Coordinate type with owner.

Utilize high efficient water heating equipment such as on-demand/instantaneous, or heat pump water heating. Storage heat pump water heater must be AO Smith or owner approved equal.

22 4200 PLUMBING FIXTURES

Water Closets

- Sloan Model ST-2459 wall mounted vitreous china.
- Sloan Model ST-2229 floor mounted vitreous china.
- Sloan Royal 2 flushometer valve, 1.6 GPF, sensor activated, hardwired, electrical override button, adjustable tailpiece, EL-154 transformer for 120 V to low voltage power.
    - Electrician shall coordinate with plumber for the appropriate flush sensor box location to ensure the sensor will not be partially blocked by water line and in order to prevent accidental flushing when leaning forward. Follow manufacturer's minimum standard rough-in specifications as indicated.
- Solid plastic seat, open front, white, elongated bowl. Integrated bumper, external check hinges with stainless steel posts.
- Provide carrier as required for wall mounted application.

Urinals

- Sloan Model SU-1009 wall mounted vitreous china with ¾" top spud.
- Sloan 186 ESS flushometer valve, 0.5 GPF, sensor activated, hardwired, electrical override button, adjustable tailpiece, EL-154 transformer for 120 V to lo low voltage transformer.
    - Electrician shall coordinate with plumber for the appropriate flush sensor box location to ensure the sensor will not be partially blocked by water line and in order to prevent accidental flushing when leaning forward. Follow manufacturer's minimum standard rough-in specifications as indicated.
- Provide carrier as required for wall mounted application.
- Waterless urinals are not allowed.

Lavatories

- Provide integral bowls.
- Sloan faucet Model ETF-600, 0.5 gpm, optima hardwired-powered deck, mounted low integrated base body, EL-154 transformer for 120 V to low voltage power, ASSE 1070 compliant mixing valve Sloan Model MIX-60-A.

Floor Drains

- Must have integral cleanouts.
- Provide drains for ice maker machines below sinks with partial grate covers.
- Floor drains must be protected before the project starts and uncovered, visible and fully serviceable once the project has been completed.

Hose Bibbs

- Provide with local shut-off valve in all mechanical rooms.

Wall Hydrants

- Provide recessed freeze proof wall hydrants with local shut-off at all exterior mechanical equipment locations.
- Must have vacuum breaker and operate with standard 4-way key (no ½" keyway operators allowed).

Roof Hydrants

- Provide with local shut-off in accessible location.
- Roof hydrant must be drainable, freezeless brass, 1" inlet and ¾" hose connection, ASSE double check backflow preventer automatic draining, pail hook, lever actuator with galvanized steel rod and one piece plunger, cast iron mounting support and under deck flange with weatherproof boot assemble.
- Pipe weep hole drain to floor or equipment drain or hub drain.

Service Sinks

- Service sinks shall have SST surrounds.

Custodial Service (Mop) Sinks

- Provide with quarter turn faucet.
- Provide floor drain near sink.
- Second cold water supply required for custodial cleaning machine. Do not add wye splitter on main faucet.

Breakroom Sinks

- Chicago model 1100-GN2 two handle faucet.

Drinking Fountains

- Elkay model EZSTL8WSLK double fountain with bottle filler.
- Elkay model EZSTL8LC double non-filtered fountain without bottle filler.
- Elkay model EZS8L single non-filtered fountain.

Eye Wash / Shower Stations

- Bradley S19314BF, or Guardian G1902.
- All showers must have a floor drain.

DIVISION 23: HVAC

GENERAL NOTES

Work shall comply with the edition of the applicable standards, regulations and codes currently in force of all Federal, State and local authorities having jurisdiction. Where quantities, sizes, or other requirements indicated on the drawings or herein specified are in excess of the standard or code requirements, the specifications and/or drawings shall govern. In the absence of other applicable local codes, acceptable to the Architect/ Engineer, the International Set of Codes shall apply to this work.

Contractors should not leave trash of any type up in ceilings.

Contractors should make a reasonable effort to clean up after themselves.

All chilled water equipment shall design around 16 degree delta T with 44 degree T entering and 60 degree T leaving.

Duct smoke detectors shall be installed by JCI Fire.

Coordinate all demo work with JCCC prior to construction.

All elevator equipment shall be cooled and/or heated to meet elevator manufacturer temperature and code requirements. All work must be consulted with JCCC representative.

All roof mounted heating and cooling equipment must have a roof hydrant nearby. Coordinate placement with plumbing engineer and JCCC.

Coordinate a hose bib in mechanical rooms with plumbing to wash AHU coils as needed.

Provide return air boots between all rooms that have walls go to deck.

Coordinate equipment floor drain placement with plumbing. No floor drains are allowed to be installed in housekeeping pad.

Discuss all manufacturer standard and extended equipment warranties with JCCC during design.

Coordinate equipment type at entry doors with JCCC.

Mechanical rooms shall be adequate in size for the proper servicing of equipment, including access for replacement of all mechanical equipment. Design shall provide for clear service and maintenance access to all equipment. Service areas shall comply with codes, manufacturer's recommendations and shall be reasonably planned for human access.

Equipment and server rooms must be separately zoned and not on central AHU.

All indoor air handling and rooftop units must be equipment with economizer. If feasible provide with energy recovery option.

Provide with demand control ventilation in all high occupancy and cooking spaces.

Any reduction in equipment in size must be supported by updated load calculations and data.

23 0553 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

Label all new equipment on door of filter housing with tag listing size and number of filters used.

Coordinate new equipment tag identification with JCCC during design and construction.

When designing a building the engineer shall not use room numbers as a reference for naming the vav boxes. Consult with JCCC for labeling standards.

23 0713 DUCT INSULATION

Provide sheetmetal duct wrap with 0.75 lb. Density glass fiber insulation with FSK glass fiber reinforced laminated/bonded aluminum foil and kraft paper vapor barrier. Apply with all fasteners, mastics and sealants and joint tape. All insulation wrap must be 1-½" thick.

All return air boots must have minimum ½" thick liner.

23 2116 HYDRONIC PIPING

Provide vents at the high point of all piping systems, in accessible locations, to allow for system venting. All vents shall have isolation valves.

When installing copper lines for HVAC systems, dry nitrogen must be purged through while brazing. Install a properly sized filter drier on the system also

23 2116 HYDRONIC PIPING SPECIALTIES

Provide check valves for hydronic pumps. Triple duty valves are required.

Provide brass valve tags.

Expansion tanks shall be diaphragm type. The pre-charge pressure shall be specified to suit the system.

23 2123 HYDRONIC PUMPS

All water pumps must be interlocked with EMS.

All pumps greater than or equal to 5 horsepower shall have soft start or VFDs for motor control.

23 2500 HVAC WATER TREATMENT

All HVAC water subsystems, closed or open, shall be drained, flushed, and equipped with treatment systems. Water treatment procedures and equipment shall be coordinated and specified based on JCCC current contracted Chemical Treatment vendor

23 3113 METAL DUCTS

All duct joints shall be sealed.

23 3416 CENTRIFUGAL HVAC FANS

All roof and interior fans must have local disconnecting means.

All fans greater than or equal to 5 horsepower shall have soft start or VFDs for motor control.

Exhaust fans should be Loren Cook or equivalent and if they are not direct drive they should have a belt tensioner.

23 3600 AIR TERMINAL UNITS

Fan powered boxes shall only be used in problem existing areas and must be approved by owner prior to design.

Fan powered boxes shall be parallel type fan with SCR heater. Heaters must be minimum 277 volt.

Reconnect all BACnet wiring from VAV Box to Box. No splices between controls.

EMS to monitor electrical service for demand limiting.

All VAV and Fan powered boxes should be fiber free insulated.

Any Fan powered boxes or VAV boxes when installed should have a disconnect and clearance for maintenance.

When installing VAV boxes the service switch disconnect shall not be more than 4 feet from VAV box.

23 3713 AIR DIFFUSERS, REGISTERS AND GRILLES

Square diffusers shall be Titus TMS style or similar.

All diffusers and grilles shall be either Titus or Price.

23 7313.13 INDOOR AIR HANDLING UNITS

Air handling units must be double wall.

Provide drain pans for all air handling units.

23 8219 FAN COIL UNITS

When installed Mini Splits should be vacuumed with micron gauge down to 500 microns. Must be triple evacuated. Refrigerant lines should be torqued to manufactured specifications.

23 3923 DIRECT DIGITAL CONTROL

Energy management controls shall be BACnet compatible JCI web based.

All sensors shall be computer controlled. No adjustable sensors unless requested.

Use occupancy sensors for occupied setback control.

VFD shall be Cutler Hammer/Eaton with disconnects.

Duct pressure detectors shall be pilot tube type.

Air handling units, energy-recovery units, fan coil units and other terminal units shall not be provided with manufacturer furnished controls. Controls shall be furnished by the JCI METSYS building automation system manufacturer. Controls for specialty equipment such as chillers, shall be BACnet compatible with the building BAS system.

Controls interfaces and all required monitoring points between systems shall be coordinated with the BAS control sequences during design phase.

All BACnet cabling shall be 22awg 3 conductor with shielding and a black jacket.

All fan status for BAS system on a ECM motor shall use current transducer model # RIBXGTA-ECM or equivalent.

DIVISION 26: ELECTRICAL

GENERAL NOTES

All electrical work must meet or exceed latest NEC codes and governing local codes.

Use total cost of ownership (TCOA) for study of new electrical systems and equipment.

Mechanical rooms shall be well lit, maintaining a minimum of 25 foot-candles. Lighting shall be switched at each exit.

26 0500 COMMON WORK RESULTS FOR ELECTRICAL

Janitor Closets

- At least one electrical outlet, and more based on size of the closet to provide support for battery chargers for ride-on cleaning equipment.
- Must have GFCI 6ft above mop sink for future chemical dispensing system.
- Must have occupancy sensor lighting controls.
- Must utilize digital time switches.
- Install lighting fixtures like keyless lamp holders with LED bulbs in plumbing chases.

Mechanical Rooms

- Maintain at least 25 footcandles, switched (toggle) at each exit.

Elevator / Electrical Rooms

- Must have a standard toggle light switch.

Equipment and Device Labeling

- Electrical panels, equipment, junction boxes, and devices must be accurately label per the following:
  - LV ..... Low Voltage / 120/208
  - HV ..... High Voltage / 277/480
  - O ..... Outside
  - OLC ..... Outside lighting contactor
  - LP ..... Lighting Panel
  - GP ..... General Purpose Panel
  - HP ..... Heating Panel
  - CO ..... Computer
  - DP ..... Distribution Panel
  - From ..... Where the panel is fed from
- Each label must include the Room Number where the panel is located:
  - EX: LVGP111-1(5) = Low voltage, general purpose panel, located in Room 111, section 1, breaker #5.
- If multiple panels with separate feeds are in the same room, use a hyphen and a number after panel designation.
  - EX: first panel “LVGP111-1”, second panel “LVGP111-2”
- If multiple panels are on the same feed, use Letters A, B, C, etc. to identify each section
  - EX: Section A: LVGP111-1A, Section B: LVGP111-1B.

- Use a number inside parenthesis when designating a circuit or disconnect number.
  - EX: HVDP111 (5) = High voltage, general purpose panel, located in Room 111, breaker #5
- Use "From" to list where the panel is fed from
  - EX: LVGP111-1A From HVDP111 (5)

Active Learning Classrooms

- Double gang, fourplex outlet (flush mount, not in recessed box.)
- See Division 27 for communications requirements.

Conference Rooms:

- Floor Box: Electrical - four outlets, all low-voltage connections ending in jacks in the floor box.
- See Division 27 for communications requirements.

Digital signage:

- Reach out to Video Services team for the latest models to be used for standard monitor and mounts, and for exact communications requirements for each installation.
- Provide electrical outlet for powering monitor, signage player, and possible signal split and extension equipment.
- See Division 27 for communications requirements.
- Coordinate locations with Video Services and content owners. For standard, campus-wide digital signage this would be Marketing for content and Emergency Management for the emergency alert system. For individual programs with one to three monitors only it would just be the individual content owner.

Door Access and Card Reader requirements:

- See Division 8 and Division 28 for more information.
- Coordinate with IS for electrical requirements, conduit/pathways, electrical power connections, etc.
- Access control cable: Plenum, 22AWG/3 Pair shielded + 18AWG/4 + 22AWG/4 + 22AWG/2, stranded, yellow typically in suspended cable tray.
- Hardware does not require a dedicated power supply above the doors. Emergency door lock switches need to be installed in all classrooms.
- Door layouts shall be coordinated with Emergency Management.

Wiring Devices:

- Outlets and switches must be gray in color unless otherwise noted
- Cover plates must be stainless steel unless otherwise noted
- Floor boxes shall be flush with heavy duty hinged cover - coordinate floor box specification with owner

Raceway:

- Underground conduit shall be PVC and transition to rigid steel conduit before turning out of ground / slab.
- All exterior conduit exposed to physical damage shall be in rigid steel conduit.
- MC Cable is allowed where concealed and only past first junction box.

Conductors:

- The wiring must be copper (not including feeders) and terminated in junction boxes using wire nuts. Stab-in / quick connectors are not acceptable. Feeders shall be copper as base bid; Aluminum may be indicated as a deduct alternate on Main Feed Only.

Panelboards:

- Panelboards shall have hinged from covers and shall have bolt-on breakers.
- Switchgear and panels shall be commercial grade General Electric, Siemens, or Square D.

26 3000 FACILITY ELECTRICAL POWER GENERATING AND STORING EQUIPMENT

Photovoltaic (PV) and Electric Vehicle (EV) standards:

- PV Solar project shall be design / build to provide college with best value.
- Structural analysis should include per square foot (PSF) allowance for roof, ASCE Classification, and Wind Exposure Classification.
- When possible, building renovation requiring significant roof work and without PV Solar systems should consider spare conduit run from roof to electrical room.
- PV system should be sized appropriately with the building's energy use post remodel based on energy modeling.
- Only Tier 1 panels should be used.
- Based on criteria, only SMA or SolarEdge inverters are to be specified.
- Load ration for system design is preferred between 1.1 to 1.5 based on criteria for projects.
- Panels should have a 10-degree tilt.
- Following UL374, it is preferred to avoid the use of Rapid Shutdown devices by design systems that meet the requirements for rapid shutdown.
- Ballasted systems are preferred over anchored systems when possible.

EV Charging Stations:

- Blink network EV chargers are preferred. Minimum conductor pull for 60 amps per port. Line of sight signage required as well as college's graphic standard on pavement.

26 5000 LIGHTING

Light Fixtures

- Must be LED
- No lighting circuit shall be loaded at more than 50%.
- Provide proper lighting density per latest energy code.
- Bulb replacement is preferred over full fixture replacement.

Interior lighting

- 2X2 and 2X4 fixtures shall be Satco LED Flat panels or HE Williams decorative arch lens fixture, interior color 4000K
- Any other light fixture types including recessed cans, linear pendants, pendants, sconces, decorative fixtures must be given owner approval prior to specifying them.
- Emergency lighting shall be wall pack “bug eyes” - preferred Lithonia ELM4L
- Exit signs - preferred Lithonia TCE Commercial steel exit sign, Lithonia LQM, or Lithonia LQM
- All emergency lighting shall be on dedicated circuits.

Exterior Lighting

- All exterior lighting shall be 5000K.
- Exterior lighting controlled by building automation system (BAS – no time clocks or photocell shall be used.)
- All ground lighting must have remote drivers located within the building.
- New, retrofitted, replaced lighting outdoors to meet dark sky standards
- No uplighting unless approved for specific instances (sculptures, etc.)

Lighting Controls

- Provide lighting controls and sensors where appropriate and required by code, including daylighting, motion sensors, dimming and other low voltage switching.
- Office and classrooms shall install a 0-10V dimming system.
- Use dual row switching in classrooms.
- 20 amp and larger lighting contractors shall be mechanically latching
- Occupancy sensors shall be used in classrooms, offices, restrooms and storage areas using either Hubbell or Watt stopper.
    - Watt stopper Relay: BZ-50
    - Wattstopper Motion Sensor: DT-305
    - Hubbell Relay: CU3000A
    - Hubbell Motion Sensor: ATD2000C
    - Watt stopper DLM - LMRC series controllers and relays

DIVISION 27: COMMUNICATIONS

27 0500 COMMON WORK RESULTS FOR COMMUNICATIONS

Digital Signage:

- A representative from Video Services department shall be invited to all project meetings related to scope and construction.
- Contact Video Services department for the latest models to be used for standard monitor and mounts, and for exact communications requirements for each installation.
- RF Connections: preferred but not always necessary. Run Coax back to nearest data closet with RF Infrastructure. This is generally used to display main campus signage.
- Wired network connection: CAT 6a preferred but not always necessary, depending on what will be displayed. Sometimes these displays will be used for network connection (CAT 6a), and sometimes for HDBaseT HDMI extension (HDMI). Wireless can also be used in some signage sub-system installations.
- See Division 26 for power requirements.
- Coordinate locations with Video Services and content owners. For standard, campus-wide digital signage this would be Marketing for content and Emergency Management for the emergency alert system. For individual programs with one to three monitors only it would just be the individual content owner.

Special mounting notes:

- When mounting near brick, an option is to use pole mount - Peerless CMJ500R1 or equal - coordinate with Video Services team.
- When mounting in a wall recess, a minimum of 4 inches on the top and bottom is needed to mount the monitor, and 3 inches on the sides, which will allow enough space to hang the monitor on the wall bracket.

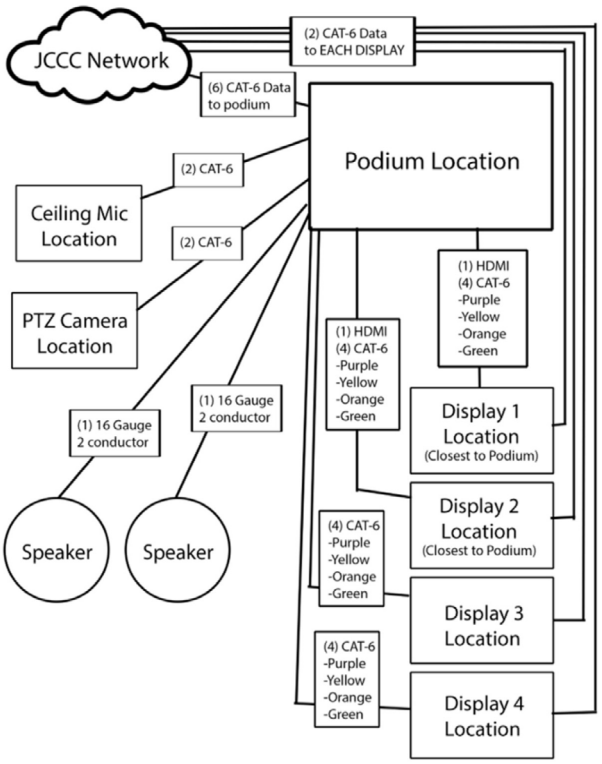
Remote Studios:

- A representative from Video Services department shall be invited to all project meetings related to scope and construction.
- In situations where Video Services (VS) is requested to install equipment in a studio or stage environment, it is important for VS to be informed of any changes, modifications or adjustments to the space as this can greatly impact their installation plans. This includes but should not be limited to:
    - Changes to the ceilings, walls, and floor including their coverings, dimensions, placement, elevations or materials; anything mounted to, hanging from or placed on the surfaces.
    - Any changes to existing or planned technology additions in the space, regardless of whether it is AV related or not.
    - Addition, removal or modification of any significant pieces of furniture (such as a dais, podium, or anything similar).

Active Learning Classrooms:

- A representative from Multimedia Services department shall be invited to all project meetings related to scope and construction.
- Instructor Podium: 6-data, in-room cable runs (all terminated in wall plates at podium location.)
- Displays: 2-data, 4-CAT 6a ran to the podium location, 1-HDMI to podium location (all terminated in wall plates.)
- All connections mounted at 72" above finished floor unless otherwise specified.

- See Division 26 for electrical requirements.
- PTZ Camera: 2-CAT 6a ran to podium location (terminated in “biscuit” in ceiling.)
- Ceiling Microphone: 2-CAT 6a ran to the podium location (terminated in “biscuit” in ceiling.)
- Speakers: for each speaker, 16 ga speaker cable (non-shielded) from speaker locations to podium (cut wire at the speaker location and wall plate at podium location.)
- Touch Panels: 1-CAT 6a ran from panel location to podium location (do not install any boxes. MMS will cut location as needed.)



Example diagram for Active Learning room cabling

Conference Rooms:

- A representative from Multimedia Services department shall be invited to all project meetings related to scope and construction.
- Displays: 3 data, 4 CAT 6a ran to floor box location, 1 HDMI to floor box location terminated in wall plates, Electrical - double gang, fourplex outlets flush mount, not in recessed box, all connections mounted at 72” above finished floor unless otherwise specified.
- PTZ Camera: 2 CAT 6a ran to floor box location, terminated in “biscuit” in ceiling, Ceiling Microphone: 2 CAT 6a ran to the floor location, terminated in “biscuit” in ceiling.
- Speakers: 16 ga speaker cable (non-shielded) from speaker location to floor box, cut wire at the speaker location and wall plate at floor box location.
- See Division 26 for electrical requirements.

Phones:

- Emergency: coordinate locations and requirements with Emergency Management.
- Classroom: coordinate locations and requirements with IS and Emergency Management.

JCCC Cabling and Wiring Technical Requirements

- JCCC structured CAT6A network cabling will meet the following requirements:
- Meet all TIA/EIA commercial building wiring standards.
    - PANDUIT ® categorized product must be used in conjunction with an equivalent or higher Category UL or ETL verified cable. Category 6A UTP MINI-COM® UTP RJ45 Cat 6A Jack Modules shall be Category 6A modules. The eight position modules shall be used in all work areas and shall exceed the connector requirements of the TIA/EIA Category 6A standard. Termination shall be accomplished by use of a forward motion termination cap and shall not require the use of a punch down tool. The termination cap shall provide strain relief on the cable jacket, ensure cable twists are maintained to within 1/8" (3.18mm) and include a wiring scheme label. The wiring scheme label shall be available with both T568A and T568B wiring schemes. All terminations for this project shall use the T568B wiring scheme. The modules shall terminate 4-pair, 22-26 AWG twisted pair cable. Category 6A modules shall have UL and CSA approval. The modules shall have ETL verified Category 6A performance and ISO Class EA performance (as Requirements of ANSI/TIA-568-C.2 Category 6Aand ISO 11801 Class EA Standards at Swept frequencies 1 to 500 MHz) in both the basic and channel links. They shall be universal in design, accepting six or eight-pair modular plugs without damage to the outer module contacts. The modules shall be able to be re-terminated a minimum of 10 times and be available in 11 standard colors for color-coding purposes. The module shall snap into all MINI-COM ® outlets and patch panels.
    - PANDUIT ® must be installed per PANDUIT ® instruction sheets. Panduit network jacks to be used, Mini-Com® UTP RJ45 Cat 6A TG Jack Module.
    - All network cabling will be tested, and test results provided by the contractor. General cable GenSPEED 10 UTP, Cat 6A or better cable is to be used to meet PanGen specifications. Cable runs consisting of 5 or more cables must have J-Hooks installed approximately every five feet as needed. Cable management trays may be installed above the ceiling for higher cable counts. The maximum allowed length of a Cat 6A cable is up to 100 meters (328 ft). This consists of 90 meters (295 ft) of solid "horizontal" cabling between the patch panel and the wall jack, plus 5 meters (16 ft) of stranded patch cable between each jack and the attached device.
    - Data ports must be labeled at the data closet patch panel and the data jack end. Patch panels will be labeled alphabetically (A-Z) starting with "A" port numbers 1-48, "B" 1-48, "C" 1-48, etc. Wall jacks or data jacks should be labeled with the Data Room number, Panel letter, and port number. Wall Jack Example: [GEB166-A-48] = Data room GEB 166, Panel A, port 48.
    - Note: All Networks shall be installed per applicable standards and manufacturer's guidelines.

JCCC fiber optic back bone connections will meet the following requirements.

- The PANDUIT ® network fiber cabling system or equivalent shall be comprised of PANDUIT ® Fiber Optic modular connectors in support of high-speed networks and applications designed for implementation on glass fiber cabling.
- All fiber connections will be tested, and test results provided by the contractor.
- Innerduct not required if armored plenum rated fiber cable is used.
- As built diagrams for inside and outside plant cabling.

Installer Requirements

- Installation and testing must be in accordance with the ANSI/EIA/TIA-568, NEC compliant, Panduit PSC Network Solutions criteria, and any Panduit Cabling Solution criteria that may apply.
- Utilizing only Panduit Cat6A jacks, cable, and faceplates (exceptions may be approved by the college on a Required Certifications as follows:
    - PSC (Panduit Structured Cabling)
    - PCI (Panduit Certified Installer) certified
    - RCDD (Registered Communications Distribution Designer)
    - BISCI certified member on staff
    - Test all data and fiber connections after each installation and provide electronic and hard copies of test results to JCCC upon completion of project*
    - 1 year required on all certifications

*Contractor will be required to provide detailed electronic data test results with confirmation of run lengths and point test – to be provided to Information Services in a Microsoft Excel compatible format.

Cable testing requirements

- Testing the installed fiber optic cable plant shall be done according to FOA Standard (FOA-1 – 6). Insertion Loss, TIA OFSTP-14, OFSTP-7, ISO/IEC 61280, ISO/IEC 14763, etc. Insertion Loss, TIA FOTP-171, OFSTP-7, ISO/IEC 14763. Transmitter and Receiver Power, FOTP-95. OTDR Testing of Fiber Optic Cable Plant (TIA FOTP-8/59/60/61/78, ISO/IEC 14763, etc.)

Test Parameter	**TIA-568-B**	**ISO 11801:2002**
Wiremap	Pass/Fail	Pass/Fail
Propagation Delay	Pass/Fail	Pass/Fail
Delay Skew	Pass/Fail	Pass/Fail
Cable Length	Pass/Fail	Information only
Insertion Loss (IL)	Pass/Fail	Pass/Fail
Return Loss (RL)	Pass/Fail (except CAT 3)	Pass/Fail
Near-End Crosstalk (NEXT)	Pass/Fail	Pass/Fail
Power Sum NEXT (PSNEXT)	Pass/Fail	Pass/Fail
Equal-Level Far-End Crosstalk (ELFEXT)	Pass/Fail	Pass/Fail
Power Sum ELFEXT (PSELFEXT)	Pass/Fail	Pass/Fail
Attenuation-to-Crosstalk Ratio (ACR)	Information only	Pass/Fail (except CAT 3)
Power Sum ACR (PSACR)	Information only	Pass/Fail (except CAT 3)
DC Loop Resistance	--	Pass/Fail

Warranty Requirements – Structured Cabling Solutions

- Each registered link and / or channel will meet or exceed performance requirements defined in the Commercial Building Telecommunications Cabling Standards, provided it is installed in accordance with the designated standard classification.
- Each registered link and / or channel will support all current and future network applications designed to run as defined in the Commercial Building Telecommunications Cabling Standards, provided the network equipment operates in accordance with the designated standards, and the connectivity hardware, the cabling, and the installation meet the performance specifications of the designated standards classification.
- All connectivity hardware and cable used in the structured cabling will be free of defects in the material and workmanship under normal handling and use.
- If any connectivity hardware or cable used in the structured cabling system fails to perform as specified above in the above, the company will repair and / or replace the defective hardware or cable or will contract with another approved company to complete the work in accordance with the requirements in this warranty.

Communications Preferred Items:

- Coax Cable
  - Belden 1695A or Clark Wire CD7506P
- BNC Connectors
  - Canare BCP-B53
- Network
  - CAT-6a
- Fiber
  - Single Mode, LC UPC Connectors
- Production Equipment
  - Coordinate with Video Services department as this equipment and the college's requirements change periodically
- Cabling and Wiring Technical Requirements
  - Meet all TIA/EIA commercial building wiring standards.
- PANDUIT®
  - Sole source PANDUIT® categorized product must be used in conjunction with an equivalent of higher Category UL or ETL verified cable. Category 6a UTP MINI-COM® TX6™ PLUS Jack Modules shall be CAT 6a modules featuring GIGA-TX™ Technology. The eight position modules shall be used in all work areas and shall exceed the connector requirements of the TIA/EIA CAT 6a standard. Termination shall be accomplished by the use of a forward motion termination cap and shall not require the use of a punch down tool. The termination cap shall provide strain relief on the cable jacket, ensure cable twists are maintained to within 1/8" (3.18mm) and include a wiring scheme label. The wiring scheme label shall be available with both T568A and T568B wiring schemes. All terminations for JCCC projects shall use the T568B wiring scheme. The modules shall terminate four-pair 24 and 22 AWG 100-ohm solid unshielded twisted pair cable. The modules shall be universal in design, including complying with the international standard IEC 60603-7 for compatibility. CAT 6a modules shall have UL and CSA approval. The modules shall have ETL verified CAT 6a performance and ISO Class E performance (as defined in ISO/IEC 11801) in both the base and channel links. They shall be universal in design, accepting six or eight-pair modular plugs without damage to the outer module contacts. The modules shall be able to be re-terminated a minimum of 10 times and be available in 11 standard colors for color-coding purposes. The module shall snap into all MINI-COM® outlets and patch panels. The module shall include an ivory-colored base to signify CAT 6a 500 MHz performance.
  - PANDUIT® must be installed per PANDUIT® instruction sheets. Panduit network jacks to be used, Mini-Com TX6.

- All network cabling will be tested, and test results provided by the contractor. General cable Genspeed 6000 or better cable is to be used to meet PanGen specifications. Cable runs consisting of 5 or more cables must have J-Hooks installed approximately every five feet as needed. When used for 10/100/1000 BASE-T, the maximum allowed length of a CAT 6a cable is up to 100 meters (328 feet). This consists of 90 meters (295 feet) of solid "horizontal" cabling between the patch panel and the wall jack, plus 5 meters (16 feet) of stranded patch cable between each jack and the attached device.
- Data ports must be labeled at the data closet patch panel and the data jack end. Patch panels will be labeled alphabetically (A-Z) starting with "A" port numbers 1-48, "B" 1-48, "C" 1-48, etc. Wall jacks or data jacks should be labeled with the Data Room number, Panel letter, and port number. Wall Jack Example: [GEB166-A-48] = Data room GEB 166, Panel A, port 48.
- All networks shall be installed per applicable standards and manufacturer's guidelines.

- JCCC Fiber optic back bone connections
  - The PANDUIT® network fiber cabling system or equivalent shall be comprised of PANDUIT® Fiber Optic modular connectors in support of high-speed networks and applications designed for implementation on glass giber cabling.
  - All fiber connections will be tested and test results provided by the contractor.
  - Innerduct not required if armored plenum rated fiber cable is used.
  - As built diagrams for inside and outside plant cabling.
- Remote Studio Installations
  - Coax Cable = Belden 1695A or Clark Wire CD7506P
  - BNC Connectors = Canare BCP-B53
- Digital Signage Installations
  - Coax Cable = White Belden 633938-plennum cable
  - F Connector = Klein tools F compression VDV812-606
- Installer Requirements
  - Installation and testing must be in accordance with the ANSI/EIA/TIA-568, NEC compliant, Panduit PSC Network Solutions criteria, and any Panduit Cabling Solution criteria that may apply.
  - Utilizing only Panduit CAT 6a jacks, cable, and faceplates (exceptions may be approved by the college on a Required Certifications as follows:
  - PSC (Panduit Structured Cabling)
  - PCI (Panduit Certified Installer) certified
  - RCDD (Registered Communications Distribution Designer)
  - BISCI certified member on staff
  - Test all data and fiber connections after each installation and provide electronic and hard copies of test results to JCCC upon completion of project (contractor will be required to provide detailed electronic data test results with confirmation of run lengths and point test - to be provided to Information Services in a Microsoft Excel compatible format.
  - 1 year required on all certifications

- Cable Testing Requirements
  - Testing the installed fiber optic cable plant shall be done according to FOA Standa (FOA-1-6). Insertion Loss: TIA OFSTP-14, OFSTP-7, ISO/IEC 61280, ISO/IEC 14763, etc. Insertion Loss: TIA FOTP-171, OFSTO-7, ISO/IEC 14763. Transmitter and Receiver Power: FOTP-95. OTDR Testing of Fiber Optic Cable Plant (TIA FOTP-8/59/60/61/78, ISO/IEC 14763, etc.
- Copper Data Cabling Certification
  - The performance tests and their procedures have been defined in the ANSI/TIA/EIA-568-B.1 standard and the ISO/IEC 11801 standard. The TIA standard defines performances in categories (CAT 3, CAT 5e, CAT 6, CAT 6a) and the ISO defines classes (Class C, D, E, EA, F, and FA.) These standards define the procedure to certify that an installation meets performance criteria in each category or class.
  - The significance of each category or class is the limit values of which the Pass/Fail and frequence ranges are measured: CAT 3 and Class C (no longer used,) test and define communication with 16 MHz bandwidth, CAT 5e and Class D with 100 MHz bandwidth, CAT 6 and Class E up to 250 MHz, CAT 6a and Class EA up to 500 MHz bandwidth, CAT 7 and Class F up to 600 MHz, and CAT 7a and Class FA with a frequency range through 1000 MHz.
  - See Testing of Ethernet Cabling section.

DIVISION 28:
ELECTRONIC SAFETY & SECURITY

28 1100 ACCESS CONTROL

General Access Control

- Refer to Division 8 Door Access and Card Readers for more information.
- Refer to Division 26 Electrical for electrical requirements.

Classroom Access Control

- Coordinate lockdown functionality with Emergency Management.

28 2100 SURVEILLANCE CAMERAS

Security cameras: Coordinate number and location with IS, Chief of Police, and Emergency Management

28 4620 FIRE ALARM SYSTEMS

Fire Alarm System

- Fire alarm system shall be Simplex by Johnson Controls
- Simplex AIM devices shall be installed with Simplex mounting brackets and cover plates with sticker label affixed to cover plate.
- Simplex addressable relays shall have Simplex cover plates installed, and sticker label affixed to the cover plate.

Qualifications

- The fire alarm installation contractor shall have at least one installer with a minimum of NICET level 2 in Fire Protection Engineering Technology, Fire Alarm Systems on site always.
- The fire alarm installation contractor shall have at least one project manager or foreman with a minimum of NICET level 3 in Fire Protection Engineering Technology, Fire Alarm Systems overseeing the fire alarm installation.

Initiating and Indicating Devices

- All wall mounted notification devices that are surface mounted shall have skirts installed.
- All devices shall have sticker labels noting the device hardware address.
- Device sticker labels shall include node number.
- All visual alerting/speaker devices shall be labeled as “Alert” versus fire.
- When an initiating device is concealed above a ceiling it shall have a remote indicated LED.
- Ceiling mounted notification devices that are mounted in drop tile ceilings shall be mounted utilizing ceiling tile bridges.
- Remote indicators and test switches shall have sticker labels.
- When a device is concealed above a ceiling, the device shall have a sticker label on the ceiling and on the device.
- Device addresses on as-built drawings shall match the device address label in the system program.
- Isolators at the fire alarm panel shall have custom labels assigned.

Work standards:

- All cabling shall be installed in red conduit. Existing fire alarm conduit can be reused if the conduit fill is not exceeded per NEC.
- All junction boxes shall be painted red.
- All floor and wall penetrations shall be sealed
- Flexible metal conduit shall not be used in lengths greater six feet and shall be supported
- Remove associated conduit and wiring for all demolished devices.
- Remove conduit and wiring back to nearest junction box, remaining device or source.
- Remove all abandoned / unused wiring and conduit back to source.
- When a device has been removed from the wall, the opening shall be covered with a blank stainless steel cover plate.
- When a device is removed from the ceiling tile, the ceiling tile shall be replaced with a new ceiling tile provided by JCCC.

Cabling

- IDNET shall be red.
- IDNAC shall be yellow.
- Speaker shall be blue.
- RUI shall be red with white stripes.
- 24V Device power shall be green.
- 24V door holder power shall be black.
- IDNET circuits shall be isolated by floor at the fire alarm panel.
- IDNET, IDNAC and speaker circuits shall not serve more than one floor.

DIVISION 32:
EXTERIOR IMPROVEMENTS

GENERAL NOTES

Refer to 01 6000 for general product requirements.

Refer to 01 8113 for sustainability requirements.

CPTED stanrdards for crime prevention shall be utilized when considering exterior landscape, bollards, etc.

32 1000 PAVING

All concrete and asphalt site paving shall be KCMMB type.

32 8000 IRRIGATION

Preference is for no permanent irrigation.

If irrigation is proposed, design team shall consult with owner regarding smart irrigation technology.

- Only Hunter irrigation controllers and valves will be used.
- Only Rainbird heads shall be used.
- Main irrigation line shall be installed with Class 200 pipe and sized to match backflow preventer, 160 pipe for lateral lines.
- All irrigation pipes shall be installed to a depth minimum of 10". All trenches and holes shall be backfilled and compacted to align with existing grade

32 9100 PLANTING PREPARATION

Calcium chloride pellets shall be 97 percent purity.

32 9200 TURF AND GRASSES

All sod shall be thin blade tall fescue variety, no bluegrass.

At locations for spot repair or construction planting, thin blade tall fescue shall be tristar three-way blend or better in terms of quality, purity and germination.

32 9300 PLANTS

Provide drought-tolerant plantings.

Design landscape to minimize risk for birds.

- Do not align rows of trees with glazing.