



# **Southern Utah University**

## **Design Requirements**

To be used as a supplement to the Utah Division of Facilities Construction and Management (DFCM) Design Requirements

[http://dfcm.utah.gov/downloads/design\\_manual/design\\_requirements.pdf](http://dfcm.utah.gov/downloads/design_manual/design_requirements.pdf)

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The items listed below are supplemental requirements to the DFCM Design Requirements and are specific to Southern Utah University. These requirements will be implemented into all SUU projects.

### Concrete

- For all flatwork, use SUU mix
  - Sunroc: 6003C
  - Western Rock: SUU Spec
- Requirements for Exterior Concrete
  - 4000 Psi and 6.0 Bag
  - 1.5Lbs of fiber per cubic yard of concrete
  - Pozzolans: Less than 15%
  - Air Entrainment: 6 ¼% plus or minus 1 ¼%
  - Use of calcium chloride prohibited
- Quality Control Testing: required on any pour greater than one (1) cubic yard
  - Concrete: one set of cylinders for every 10 cubic yard. Test every load for temperature, slump, and air
  - Subgrade: 98% compaction

### Door Hardware

- Cylindrical Locks
  - Schlage ND Vandlgard Series levers
    - IC core cylinders
    - 626 finish
  - Auto Openers
    - LCN4642 or 4631 Aluminum or Dark Bronze finish
    - LCN8310-356 WS RF transmitter
    - LCN8310-865 RF receiver
  - Closers
    - LCN4041 Super Smoothee Closer Aluminum or Dark Bronze finish
  - Panic Hardware
    - VonDuprin 99 Exit Device
    - VonDuprin 99 Exterior Trim
      - IC core cylinders
      - 26D finish
  - Cylinders
    - Everest D Family restricted keyway
      - 626 finish
  - Hinges
    - Continuous Geared Hinges - Hager Roton

- Ball Bearing 4-1/2 by 4-1/2 Butt hinges - Ives or Hager
- Keying
  - Match SUU's existing master key system
  - Schlage Everest D Family Restricted keyway
  - Master Key System shall be provided by/coordinated with Southern Utah University's lock shop
- Doors/Openings
  - (Exterior Door) Wide style and rail (10") store front doors 1" bronze/ LOW-E glass
  - (Interior/Vestibule Door) Wide style and rail (10") store front doors ¼" clear glass
  - Steel key removable mullion
  - SDI 100 16 gauge welded hollow metal frames
  - SDI 100 18 gauge hollow metal doors
  - Marshfield premium grade wood doors.
- Door Trim
  - Kick Plates and Armor Plates
  - Minimum thickness of .050 stainless steel
  - Threshold – Pemko or National Guard
- Wall Stops and Holders
  - Wall Stops required at location where the door or hardware interacts with another structure.
  - Magnetic Holders only – Ties into Fire Panel – Coordinate with SUU electrical shop
  - Simplex or Rixon
- Electronic Access Control
  - Match SUU's existing Electronic Access Control System
  - TAC Continuum
  - All low-voltage wiring will be entirely in conduit
  - System and components shall be coordinated with Southern Utah University's lock shop.

## **Paint**

- Gypsum: new or patch work will be primed with one coat of an appropriate sheet rock primer. Paint with two coats interior latex satin sheen. Facilities Management will approve all colors.
- Metal surfaces: Prime with appropriate metal primer designed for exterior or interior surfaces. Paint with semi-gloss oil based products. Facilities Management will approve all colors.
- Floors: prepare all concrete by means of acid washing or concrete floor cleaner, whichever is appropriate for the specific situation. Paint all floors with epoxy or waterborne epoxy with gloss sheen. Use of a slip resistant additive is recommended. Facilities Management will approve all colors.

- Any specialty items that may require different products or procedures must be approved by an authorized facilities management technical advisor.

### **Mechanical**

- Adhere to manufacturer's recommendations for working area provided around and in front of all equipment. Service access cannot be blocked by piping, conduit, cable trays, or other obstructions installed as part of the construction process.
- Provide adequate access for service of equipment via access panels in ceilings or catwalks in attic space. All access methods must meet OSHA, NFPA and other pertinent regulations.
- Provide lighting in attic areas for all pathways to equipment and where equipment is located. Minimum of 15 foot candles.
- Provide service outlet at equipment (110V duplex outlet).
- Place all wiring in trays, conduit or bundled - install parallel to ceiling and walls.
- Provide chemical circulation ports on both inlet and outlet of hot water converters (domestic and heating) located on the equipment side of isolation / shut-off valves (for tube "boil-out").
- All fire system main drains shall be piped to the exterior of the building.
- All pumps must have high and low side pressure gauges. Water systems must have thermal wells for installation of thermometers at critical points where the temperature delta is important for operating systems.
- Water systems must have ball style shut off valves installed on supply and return lines at zone branch departures from the main line. Shut off valves will be installed for the isolation of any device on the water system, allowing repair and maintenance with a minimum of water loss.
- All work must be done in a professional manner.

### **Electrical**

- Acceptable rigid raceways: GRC, IMC, EMT, and PVC. EMT only above grade, PVC only below grade. All metallic raceways below grade must be wrapped with 10 mil tape.
- Acceptable flexible raceways: Steel flexible conduit, liquid tight steel flexible conduit: 6 foot or shorter lengths, aluminum or non-metallic not allowed. No concealed flexible conduit unless special permission is granted by SUU.
- No cast aluminum fittings conduits or locknuts; except for screw in cast aluminum flex connectors and conduits 1 inch or smaller or where specifically allowed by SUU.
- Steel connectors shall be insulated throat or have bushings. All nipples shall have bushings.
- Unless approved by SUU staff, non-removable anchors shall not be used.
- No gang-able or handy boxes shall be used unless special permission is granted by SUU.
- All four inch square boxes shall be 2-1/8" deep, minimum, unless approved by SUU. No more than 3- 3/4" conduits in this size box. More than 3 conduits will require 4-11/16" square boxes.
- No NM, MC, BX, ENT conduit, or AC cable shall be used.
- Aluminum wire will not be allowed, including main feeders. Panel buss bars and transformer windings shall also be copper.
- Conduits shall be strapped within 18" of j-boxes, panels etc. and then at least two straps for every ten foot piece of conduit. Flex will be strapped within 12 inches of j-boxes and every three feet thereafter.

- Box brackets shall be used to support boxes and conduit in the walls.
- Receptacles and switches shall be spec. grade 20 amp devices.
- All panels shall have bolt-in type circuit breakers.
- Minimum size conduit shall be ¾ inch unless special permission granted by SUU.
- Seismic wires size #12 minimum, galvanized shall be used where required.
- All supports must come from structure.
- Minimum burial depth for conduit is 24 inches with warning tape no more than 12 inches or less than 8 inches above buried line. All buried conductors will be in conduit.
- All bends over 22-1/2 degrees in PVC shall be GRC or IMC wrapped with 10mil tape. All below grade GRC and IMC shall be wrapped with 10 mil tape.
- Multi-wire Branch Circuits shall comply with N.E.C. 210.4 but all receptacle branch circuits shall have a neutral wire for each ungrounded conductor (120 volt circuits).
- A green grounding wire shall be pulled in all conduit used for power.
- Low or control voltage and signal/data wiring shall not share a raceway with line voltage.
- All work must be done in a professional manner.
- Unless otherwise approved by SUU electrical staff, there shall be no more than one conductor of each phase in each conduit.
- Three pole breakers shall not be used to serve single phase circuits.

### **Communication Systems**

#### Communications rooms:

- Never locate under or adjacent to water such as, but not limited to, restrooms, irrigation sprinklers, etc. The only water that shall be permitted is fire sprinklers required by fire code.
- Communications rooms should be located near the center of a building in order to minimize cable lengths. For multi-story buildings the rooms should be stacked vertically. Whenever possible the main room (MDF) should be centered vertically. Then, when cable length permits, all cables shall be home run to the MDF to be terminated. This will save space as well as the cost of having multiple AC units, UPS systems and possibly excess network equipment.
- Communications rooms shall be dedicated space, not shared with electrical, custodial, or any other utility or service.
- Communications rooms shall not have any walls that are building exterior walls. They should not be adjacent to elevator shafts or transformers.
- The ease of adding more cables in the future must be considered in the design.
- Communications closets shall be accessible without going through a classroom or an office.
- Cooling should be separate from the building cooling system and should be capable of running year round even if the rest of the building is being heated.
- Power shall be supplemented by a backup generator.

#### Cabling between buildings:

- Fiber optic cables
  - These shall be Corning Freedom LST Gel Free loose tube cables.

- Unless otherwise specified the fiber count should be 12 SM and 12 MM (hybrid preferred).
- Fibers should be terminated in a wall mountable housing.
- Connectors should be LC.
- Twisted pair cables
  - To support legacy applications, there should be a (minimum) 25 pair cable. It shall be terminated on 66 blocks with surge suppression.

Twisted pair cabling and termination within buildings:

- All pieces of a twisted pair solution should be Systimax Category 6.
- There should be no distinction between telephone and data cables or jacks in materials, color, termination, labeling, or anything else.
- PVC cable color shall be slate.
- Plenum cable color shall be blue.
- Data/telephone jacks shall be black.
- Face plates shall be stainless steel, unless otherwise specified by the campus to match surroundings.
- Terminations in the communications room shall be made on wall mounted Visi-Patch blocks. Patch panels are not acceptable.
- All cables shall be home run to the communications room.

**Miscellaneous:**

- A standard office shall have two outlets each in two different locations (total 4) placed appropriately for where furniture would most likely be placed. Larger offices should have more locations appropriate for the size.
- A network drop shall be provided for wireless access points, high on a wall or in the ceiling. There should be a ¾ inch conduit provided in the ceiling in each classroom. In other areas, there should be, as a minimum, 1 drop per 2000 sq. feet of floor space. This coverage will change due to expected possible density. For example, a stadium style classroom would need better coverage than a similar area used as office space. Please contact IT by one of the methods listed below for discussion and design review.
- When paths are possible, 3/4 inch conduits home run to the communications room are preferred. If cable tray is used, it should be above hallways, not above offices, classrooms or restrooms.
- No more than two maxes may be daisy chained on one conduit. One is preferable.
- All faceplates, jacks, and termination blocks shall be numbered. The numbering must match the campus' documentation system so please contact IT by one of the methods listed below for more information.
- At the conclusion of a project, provide IT with a floor plan that shows jack locations and numbers. Also provide test results. Ask about acceptable formats.

**Grounds**

- Use only Rainbird Irrigation products
- Connect all controls to Maxi-Com through the phone line
- Follow State Codes on all backflow prevention
- Design all irrigation systems for head to head coverage
- Use only plants designated for this zone
- Use a quality weed fabric under all Mulch products
- Mulch products need to be approved by Facilities Management
- An Installation Guide for all planting and irrigation is available upon request

**Custodial**

- All custodial closet doors must swing out of the room
- Custodial closets will have finished walls throughout

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