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.

1. Concrete
2. Interior Finishes
3. Door Hardware
4. Mechanical
5. Electrical
6. Communication Systems
7. Grounds
8. Custodial

1. Concrete
   1.1 Flatwork Specifications
   1.2 Exterior Concrete Specifications
   1.3 Quality Control Testing

1.1 For all flatwork, use SUU mix
   • Sunroc: 6003A
   • Western Rock: SUU Spec

1.2 Requirements for Exterior Concrete
   • 4000 Psi and 6.0 Bag
   • 3.0 Lbs. of Macrofiber (650 Fiber, Fortafiber) per cubic yard of concrete
   • Pozzolans: Less than 15%
   • Air Entrainment: 6 ¼ % plus or minus 1 ¼ %
   • Use of calcium chloride prohibited
   • Seal with Pentra-Sil 244 (28 days after pour) Done by owner unless otherwise specified

1.3 Quality Control Testing: required on any pour greater than one (1) cubic yard
   • Concrete: one set of cylinders for every 10 cubic yard or every truck. Test every load for temperature, slump, and air
   • Subgrade: 98% compaction
   • Make temperature is 26 degree and rising prior to pour
   • 4 in slump max
   • During winter conditions cover with approved blankets (32 degrees and below)

2. Interior Finishes
   2.1 Drywall
2.1 Drywall
- Gypsum: All Drywall finish will be smooth wall with no sand scratches or pinholes.

2.2 Paint
- New drywall or patchwork will be primed with one coat of an appropriate sheetrock primer such as PPG HIGH HIDE. Paint with two coats Sherwin Williams Cashmere low luster or PPG Zero VOC Satin. Back roll each coat applied to match up to existing stipple. Paint all patches corner to corner.
- Facilities Management will approve all colors and products for each individual building.
- Metal surfaces: Prime with appropriate metal primer designed for exterior or interior surfaces. Paint with semi-gloss water based alkyd urethane. 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.

2.3 Flooring
- All stairs must have contrasting color or material, approved by SUU facilities Management, at the leading edge of each step unless otherwise stated.

2.4 Framing
- Steel Stud min 20 gauge
- Wall bracing seismic standards - every 4 ft. minimum

2.5 Ceiling Grid
- Seismic bracing must be used every 4 ft. minimum on main runners, seismic clips are required.

3. Door Hardware
  3.1 Cylindrical Locks/Cylinders
  3.2 Auto Openers
  3.3 Closers
  3.4 Panic Hardware
  3.5 Hinges
  3.6 Keying
  3.7 Doors/Opening
  3.8 Door Trim
  3.9 Wall Stops and Holders
  3.10 Electronic Access Control

3.1 Cylindrical Locks/Cylinders
• Schlage ND Vandlgard Series levers
  ○ IC core cylinders
  ○ 626 finish
• Everest D Family restricted keyway
  ○ 626 finish

3.2 Auto Openers
• LCN4642 or 4631 Aluminum or Dark Bronze finish
• LCN8310-356 WS RF transmitter
• LCN8310-865 RF receiver

3.3 Closers
• LCN4041 Super Smoothee Closer Aluminum or Dark Bronze finish

3.4 Panic Hardware
• VonDuprin 99 Exit Device
• VonDuprin 99 Exterior Trim
  ○ IC core cylinders
  ○ 26D finish

3.5 Hinges
• Continuous Geared Hinges - Hager Roton
• Ball Bearing 4-1/2 by 4-1/2 Butt hinges - Ives or Hager

3.6 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

3.7 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.

3.8 Door Trim
• Kick Plates and Armor Plates
• Minimum thickness of .050 stainless steel
• Threshold – Pemko or National Guard

3.9 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

3.10 Electronic Access Control
• Match SUU’s existing Electronic Access Control System
• TAC Continuum
• All low-voltage wiring will be entirely in conduit or approved protected raceway.
• System and components shall be coordinated with Southern Utah University’s lock shop.

4. Mechanical

4.1 Service Access
• Adhere to manufacturer’s recommendations for working area provided around and in front of all equipment.
• Cannot be blocked by piping, conduit, cable trays, or other obstructions installed as part of the construction process.
• Place equipment to accommodate ready service access to unit.
• All access methods must meet OSHA, NFPA and other pertinent regulations.

4.2 Lighting
• Provide lighting in attic areas for all pathways to equipment and where equipment is located. Minimum of 15 foot candles, with adequate lighting at equipment location for service to be performed safely.

4.3 Wiring
• Provide service outlet at equipment (110V duplex outlet).
• Place all wiring in trays, conduit or bundled - install parallel to ceiling and walls.

4.4 Heat Exchangers
• Provide chemical circulation ports on both inlet and outlet of hot water heat exchangers (domestic and heating) located on the equipment side of isolation / shut-off valves (for tube “boil-out”).

4.5 Fire Systems
• All fire system main drains shall be piped to the exterior of the building where landscaping will not be damaged.

4.6 Water Systems
• All pumps must have high (discharge) and low (suction) side pressure gauges. Installer shall select a pressure gauge whose operation range is only slightly larger than the actual operating pressure range of the equipment on which it is installed. Water systems must have dry thermal wells for installation of thermometers at critical points where the temperature delta is important for operating systems.
• Water systems must have domestic manufacture ball style shut off valves installed on supply and return lines at all zone branch departures from the main line. Shut off valves shall be installed for the isolation of any device on the water system, allowing repair and maintenance
with a minimum of water loss. All valve locations shall be clearly indicated on “Record” drawings.

4.7 Fire Device Mounting

- Fire Device Mounting Heights (See Image)

4.8 Codes and standards

- All work must be done in a professional manner.
- A representative from the IT department should be included when designing or bidding new head ends or control systems that utilize campus network or fiber resources.

5. Electrical

5.1 Raceways
5.2 Conduits
5.3 Panel Identification
5.4 Steel connectors
5.5 Anchors
5.6 Boxes
5.7 Wiring
5.8 Circuits/Circuit Breakers
5.9 Lighting
5.10 Emergency Blue Light
5.11 Codes and Standards
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.

Low or control voltage and signal/data wiring shall not share a raceway with line voltage.

5.2 Conduits
- No cast aluminum conduit fittings or locknuts; except for screw in cast aluminum flex connectors on conduits 1 inch or smaller or where specifically allowed by SUU.
- All four inch square boxes shall be 2-1/8” deep, minimum, unless approved by SUU. No more than 3- ¾” conduits in this size box. More than 3 conduits will require 4-11/16” x 2-1/8” square boxes or larger.
- No NM, MC, BX, AC, ENT conduit cable shall be used.
- 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. Except where allowed for fixture whips un secured.
- Only approved Screw gun brackets shall be used to support boxes and conduit in the walls.
- Minimum size conduit shall be ¾ inch unless special permission granted by SUU.
- 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.
- Unless otherwise approved by SUU electrical staff, there shall be no more than one conductor of each phase in each conduit.

5.3 Panel Identification
- Circuit number & Panel Identification shall be displayed at each junction box and device box. Permanent markers acceptable at junction boxes only. Device plates, panels, and disconnect, etc. shall use label makers.

5.4 Steel Connectors
- Steel connectors shall be insulated throat or have bushings. All nipples shall have bushings.

5.5 Anchors
- Unless approved by SUU staff, non-removable anchors shall not be used.

5.6 Boxes
- No gang-able or handy boxes shall be used unless special permission is granted by SUU.

5.7 Wiring
- Aluminum wire will not be allowed, including main feeders. Panel busbars and transformer windings shall also be copper.
- Fire alarm system wiring shall have red covers on all j-boxes and raceways shall also be identified by continuous or intermittent red markings, and piped in a Class-A loop. A single initiating, notification zone per each conduit loop on new installations.
- Seismic wires size #12 minimum, galvanized shall be used where required.
- A green grounding wire shall be pulled in all conduit used for power.

5.8 Circuits/Circuit Breakers
• All panels shall have bolt-in type circuit breakers. Some exceptions will be made in residential locations.
• 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).
• Three pole breakers shall not be used to serve single phase circuits. Unless special permission is granted.
• Voltage drop calculations must be considered in all feeders and branch-circuits.

5.9 Lighting
• See University for light fixture detail.
• Exterior power and lighting needs shall be considered on all new projects. Photo-eye control on exterior lighting.

5.10 Emergency Blue Light
• See University for Emergency Blue Light detail.

5.11 Codes and Standards
• All supports must come from structure. Follow N.E.C. rules.
• All local and national electrical codes and standards shall be followed.
• All work must be done in a professional manner.
• A representative from the IT department should be included when designing or bidding new head ends or control systems that utilize campus network or fiber resources.
• Standard use Receptacles and switches shall be spec. grade 20 amp devices. Stainless steel covers shall be used unless special permission is granted to match existing. Devices shall be weather resistant in outdoor and damp locations.
• All bends over 22-1/2 degrees in PVC shall be GRC or IMC wrapped with 10 mil tape. All below grade GRC and IMC shall be wrapped with 10 mil tape.

6. Communication Systems
   6.1 Communications rooms
   6.2 Cabling infrastructure between buildings
   6.3 Twisted pair cabling and termination within buildings
   6.4 Data cable locations
   6.5 Data cable pathways
   6.6 Labeling and Documentation

6.1 Communications rooms:
• Are never to be located under or adjacent to plumbing systems, such as restrooms. Fire sprinklers, as required by fire code, will be the only permitted plumbing system.
• 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.
  ○ When cable lengths allow, all cables shall be terminated in the MDF. Other communications rooms (IDF) will serve as a path for the cables to get to the MDF.
• Are to be dedicated spaces, not shared with electrical, custodial, or any other utility or service.
○ Exceptions: Locks controllers, DVR, Fire panels. (These could also go in an IDF.)

● Are not to have any walls that are building exterior walls.
  ○ They should not be adjacent to elevator shafts or transformers.

● Are to be accessible without going through a classroom or an office.

● Cooling must 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. No water based cooling in communications rooms.

● Power is to be supplemented by a backup generator if the building has one.

● SUU IT will providing switches and VisiPatch patch cables.

● Contractor is responsible for providing and installing the VisiPatch 360 system, minus the patch cables.
  ○ The layout of the VisiPatch 360 blocks starts on the left with user lines. Then vertical wire management (doors) followed by switches then doors then user and so forth. Vertically there will be 96 lines on the top then horizontal wire management in the middle and another 96 lines on the bottom. IT can provide a diagram with measurements before beginning installation.

● Contractor is responsible for providing and installing a 7 foot 2-post equipment rack and all ladder rack needed in the comm room.

● Contractor is responsible for providing and installing switch tails from the VisiPatch 360 to the equipment.

6.2 Cabling infrastructure between buildings

● Fiber optic cables:
  ○ Are to be Corning Freedom LST Gel Free loose tube cables.
  ○ Are to have, unless otherwise specified, a fiber count of 12 SM and 12 MM (hybrid preferred).
    ■ The MM fiber will be 50 micron.
  ○ Are to be terminated in a wall mountable housing.
    ■ Connectors must be LC.

● Copper cables for analog systems:
  ○ Are to be a minimum of cat3 25 pair 22 awg and armored if running in utility tunnels.
  ○ Runs between buildings are to be terminated on 66 blocks with surge suppression. Runs between MDF and IDF in the same building do not require protection.

6.3 Twisted pair cabling and termination within buildings

● The twisted pair cabling solution must be Systimax Category 6A.
  ○ If there is limited conduit space in an existing building and adding new conduit is not feasible, a Systimax Category 6 cabling solution may be used upon approval from SUU IT.

● Data jacks
  ○ Category 6A jacks must be black
    ■ Systimax part number: MGS600-003
  ○ Category 6 jacks must be black
    ■ Systimax part number: MGS400-003
“Data jacks” will be black for all network cables including phones, faxes, cameras, TVs, projectors etc.

- **Cable types**
  - Category 6A riser cable color must be black
    - Systimax part number: 1091B BLK C6A 4/23 U/UTP W1000
  - Category 6A plenum cable color must be green
    - Systimax part number: 2091B GRN C6A 4/23 U/UTP W1000
  - Category 6 riser cable color must be slate
    - Systimax part number: 1071E SL 4/23 W1000
  - Category 6 plenum cable color must be blue
    - Systimax part number: 2071E BL 4/23 W1000

- Face plates shall be stainless steel, unless otherwise specified by the campus to match surrounding device plates.
- Terminations in the communications room must be made on wall mounted VisiPatch 360 blocks. Patch panels are not acceptable.
- All cables shall be home run to the communications room.

### 6.4 Data cable locations

- A standard office must have at least two data drop locations with two cables at each data drop location.
  - Data drop locations are to be placed appropriately for where furniture would most likely be placed.
  - Larger offices should have more data drop locations appropriate for the room size.
  - Workrooms for office areas shall have minimum of 4 data jacks. One will be reserved for Fax machines.

- Data drop locations must be provided for wireless access points.
  - There shall be two cables for each data drop location.
  - Locations shall be in the ceiling or may be high on a wall with campus IT approval.
  - Location of the drops in the ceiling areas requires IT approval.
  - There should be a minimum of 2 data drop locations in the ceiling for every 2000 sq. feet of floor space.
  - The number and location of data drops for wireless can change due to expected user density. I.E. A stadium style classroom would need more Wi-Fi density that a similar area used as an office space.

- Main hallways, lobbies or foyer areas on the main floor should have one data drop location on the wall or in the ceiling for an emergency notification IP speaker.

- Mechanical rooms where smart building IP based controls are placed shall have data drops as required. These may include DVRs, security camera controls, lighting, signage, locks, sprinkler controls, and HVAC.

- Mediated rooms and classrooms will require 3 data runs to the presenter / teacher station.
  - A 1” conduit is required between the teacher station and projector and or wall mount TV location.
  - If the room has a TV, then 2 data outlets are required at the TV location.
- Rooms that call for a projector shall have two data outlets and a power outlet at the projector. The projector mount and location should be approved by the SUU IT Media Tech.
- Consider data drops for classroom signage and controls that are IP based.

6.5 Data cable pathways
- Conduits shall be 1” minimum.
- No more than two boxes max may be daisy chained on one conduit. Watch the fill ratios. No daisy chaining is preferred.
- Conduit fill for Category 6A should be as follows:
  - ¾” – 2 cables (¾” only allowed if already existing)
  - 1” – 4 cables
  - 1 ¼” – 7 cables
  - 1 ½” – 9 cables
  - 2” – 15 cables
  - 3” – 41 cables
  - 4” – 69 cables
- Conduit fill for Category 6 should be as follows:
  - ¾” – 3 cables
  - 1” – 6 cables
  - 1 ¼” – 10 cables
  - 1 ½” – 15 cables
  - 2” – 26 cables
  - 3” – 59 cables
  - 4” – 105 cables
- If cable tray is used, it must be above hallways, never above offices, classrooms, restrooms or solid ceilings.
- Conduits should extend all the way to the cable tray.
- To facilitate future moves, adds and changes the architect, or other design engineer, is responsible to clarify on the plans that air ducts and other utilities are installed above the cable tray leaving it accessible.
- Where cable tray passes through a firewall, provide adequate firestop pillows.

6.6 Labeling and Documentation
- All faceplates, jacks, and termination blocks shall be numbered and labeled. The numbering must match the campus’ documentation system. Campus IT can provide examples for labeling.
  - Each face plate will have a unique ID based on the building and room number.
    - I.E. The first face plate in the Science Building room 214A will be labeled ID SC 214A-01. If there is a second location in the room it will be labeled ID SC 214-02 and so forth. It is common to start with the first plate to the left of the door as -01 and continue clockwise around the room.
    - All data needs to have a face plate ID assigned to it including wireless access points, projectors, cameras etc.
  - Each data jack will have a unique number within the building.
• Every data cable in the building will have a number assigned starting with 1001 and working up sequentially.
• Every data jack shall be labeled individually with D 1001, D 1002 etc.
• One face plate can have from 1 to 6 data jacks. They don’t have to be sequential, but they do need to be mounted in numerical order left to right and top to bottom, like reading a book.
  o VisiPatch 360
    • The VisiPatch 360 connecting blocks will be numbered sequentially starting at 1001 and working up.
    • The data jack numbers throughout the building (i.e. D 1001) must match the other end of the cable mounted on the VisiPatch 360 blocks (1001).
    • SUU IT will provide the label strips for both the station lines and the equipment lines on the VisiPatch 360 panels.
• At the conclusion of a project, provide IT with a floor plan that shows jack locations with face plate ID’s and data jack numbers.
• Installer will provide cable test results. Ask about acceptable formats.
• All test results and documentation shall be provided to IT before receiving final payment.

7. Grounds
  7.1 Landscaping Damage
  7.2 Tree Replacement
  7.3 Sprinkler lines
  7.4 Trash and Debris
  7.5 Clocks
  7.6 Backflow system/pressure vacuum breaker
  7.7 Mulch

7.1 Damage
• Any landscape damaged by the contractor or subcontractors will be fixed to SUU Grounds standards by a licensed Landscape contractor before receiving final payment.
• Any damage to grass areas such as holes or heavy machinery driving on grass causing compaction should be handled in the appropriate way.
  o Damaged area should be over excavated by 12 inches, and at least 6 inches of approved topsoil will be added to the area. Each damaged area should be cut with a sod cutter in order to create defined lines where the new approved sod begins and to create an even continuation from old grass to new grass. New sod cannot be laid on top of old grass!
• Any damage to trees should be brought to the attention of the grounds crew as soon as possible. It will be up to the Director of Grounds & Gardens to determine if the tree can be salvaged or should be replaced.
  o Damage due to compact drip line, broken limbs, damaged roots, lack of water, or damaged bark can result in replacement of tree. The replacement tree should be the same species of the damaged tree unless otherwise approved by the Director of
Grounds and Gardens who has the right to deny any new tree that does not meet certain requirements of a healthy tree.

- See 7.2 regarding replanting of trees.
- See 7.3 regarding sprinkler lines.

7.2 Tree Replacement
- Trees should be planted according to SUU Grounds specifications
- Trees that are bought and are in a container or bucket should be handled according to the instructions found at this web address https://www.arborday.org/trees/planting/containerized.cfm
- Trees that are purchased and come in a wire basket, and/or burlap should have those materials removed as much as possible and then follow the instructions found at this web address https://www.arborday.org/trees/planting/balled-burlapped.cfm.
- Trees that are considered bare root are not to planted on SUU grounds, unless approved by the Manager of SUU grounds.
- All trees must have a (1) year warranty from the date the project is complete.

7.3 Sprinkler lines
- The grounds crew will be in charge of isolating any sprinkler lines that are outside the assigned work area but may still affect the project; However, any sprinkler lines inside the project will be the responsibility of the contractors to protect. If sprinkler lines are damaged, the grounds crew should be notified so they can check the area for any potential issues. Any re-designing of sprinkler lines and heads because of construction should always be designed with head-to-head coverage.
  - All sprinkler parts should be replaced with similar product (e.g., Schedule 40 should be replaced with Schedule 40. Schedule 80 should be replaced with Schedule 80.) All sprinkler heads and valves should be replaced with Rainbird products.

7.4 Trash and Debris
- All trash and debris should be cleaned up daily. Wind may carry some of the debris or trash past the work area; However, the contractor or subcontractors are still responsible for cleaning their own trash.

7.5 Clocks
- All new clocks must be Rainbird brand and must be capable of connecting to the Maxi-Com central control system. The clock may require a phone line or a two wire connection.

7.6 Backflow system/pressure vacuum breaker
- If the back flow system or pressure vacuum breaker (PVB) is altered in any way, the contractor must follow all state codes regarding backflow prevention.

7.7 Mulch
- Weed fabric should be used under any mulch or decorative rock added to all planters. Dewitt brand is preferred but any weed fabric used must meet the specifications of the Dewitt 4oz.
- Mulch products must be approved by the grounds supervisor in charge of the project or the Director of Grounds and Gardens.
- Approved Soil
  - 20 % Organic Materials (Screened Mushroom Mulch)
- 20% Washed Sand
- 60% Screened Soil
- Approved Sod
  - 80% Cool Weather Blue Grass
  - 20% Fine Fescue

8. Custodial
   8.1 Custodial closet
   8.2 Supply room

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

8.2 Supply room
- Include one custodial supply room of approximately 80 square feet per building in addition to the custodial closets on each floor.
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