Basic IT Specifications for new construction

USU abides by all Bicsi standards and installation practices. This document is meant as a reference only and not as a complete set of standards. If there are any questions or concerns please contact Information Technologies located in the USU Planning and design office.

General items

- If possible the door or doors to enter/exit the communications room should swing out as to not take away from the wall space of the room.
- Elevator umbilical shall have 2 Category 6 cables in addition to the basic requirement of a twisted pair for communications. (Will be used for cameras or other technologies)
- A UPS shall be installed to provide a minimum of 20 minutes of run time for the network and VOIP phone system. The UPS should be a single building unit to provide backup to at least 1 quad receptacle in each communications room. UPS should be an APC design including a networkable card.

Telecom Rooms (TR sizing under normal conditions)

10’ x 8’ serves an area of less than 5,000 square ft.
10’ x 9’ serves an area of less than 8,000 square ft.
10’ x 11’ serves an area of less than 10,000 square ft.
If an area is greater than 10,000 square feet, a second room will be required.

When buildings have a usable floor space of 5,000 square ft. or less a shallow or walk-in room may be used
Shallow room must be at least 2’ deep and 8.5’ wide
Walk-in rooms must be at least 4’ x 6’

1) All TRs should be vertical stacked within a building wherever possible
2) All TRs should be lined with ¾” A/C or better plywood extending 8’ high with outlets extending flush with the surface of the wood.
3) All TRs should be tied to Emergency power and UPS from a common location
4) All TRs should have dedicated HVAC controls
5) Must be at least one Telecom space per floor. (All com outlets should be feed from a TR on the same floor)
6) All conduits extending from the floor should extend 1-3” AFF and no more than 2” off any wall.
7) Conduit rows should not exceed two deep
8) Conduits that enter a TR should terminate near the corners to allow for proper racking.
9) All pathways must not exceed 295’ from the TR to the com/ outlet

Acceptable conduit runs

1) Must not have a bend over 90 degrees or an aggregate of bends in excess of 180 degrees between pull points.
2) No conduit segments will not exceed 100’ without a pull point.
3) Conduit runs should be limited to less than 150’
4) All conduits should be equipped with a pull cord that has a minimum rating of 200lbs.
5) A minimum of 1” conduit is required for all Voice/Data locations
6) Wireless locations should be mounted directly to the ceiling or T-bar. Wall mount locations will be approved on a case by case basis in written form.

Pathways and Cable support

1) Pathways must have adequate support to withstand pulling the cables
2) Pathways should be installed at least 3” of clear vertical space above the ceiling tiles and T-bars to ensure accessibility, and should at no point rest or be supported by any component of the suspended ceiling
3) J-hooks should at no point exceed 5’ for adequate support
4) For areas exceeding 75 com cables a cable tray system should be used for adequate support
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Cable Trays / Basket Tray
1) All cable trays must be installed to meet national and local building codes.
2) The inside of a cable tray must be free of burrs, sharp edges, or projections that can damage the cable during installation
3) Elevation changes and offsets must be kept to a minimum
4) Tray should extend at least 1" into the TR then waterfall to 8’ to accommodate internal racking
5) When cable tray is used, conduit should extend from the telecom outlet located in the work area, directly to the cable tray.
6) Trays should be supported every 5’ and within 24” on each side of a fitting (unless otherwise noted by the manufacturer)
7) All metallic cable trays must be grounded, marked and all sections bonded in accordance with applicable codes, standards and regulations
8) Pathways should be kept in common areas to avoid future maintenance occurring in private work areas.
9) Trays should be sized to be at 40% fill at the end of the initial install, and no more than 60% fill at project completion

Grounding and Bonding
1) If there is a conflict between Local safety code, USU, or the manufactures requirements, the conflict should be resolved with the AHJ before proceeding
2) Entrance Facility (EF) must contain the TMGB (4” wide 1/4 “ thick and no less than 6” in length) this will serve as the dedicated extension of the building ac grounding electrode system for the telecom infrastructure
3) The placement of this bus-bar must be in close proximity to the primary/ secondary surge protection, cable sheaths, and entrance conduits.
4) TRs must contain TGBs (2” wide ¾” thick and no less than 6” in length)
5) Each TGB or TMGB must have an effective bonding connection to the nearest approved building grounding electrode and the equipment grounding system.
6) The installation of the telecom bonding backbone connects the TMGB to TGBs and should be run as short and straight as possible
7) If the TBB is to be used and is less than 13’ use 6-AWG,( 13’-20’ use 4AWG),( 20’-26’ use 3AWG), (26’-33’ use 2AWG), (33’-44’ use 1AWG), (44’-52’ use 1/0 AWG), (52’-66’ use 2/0 AWG), if greater than 66’ use 3/0 AWG

Outside Plant
1) Outside communications raceways should be (4”) schedule 40 PVC conduit
2) Outside communications raceways should not exceed 600’ between manholes or pull points
3) All comm. raceways will have a pull rope installed during initial installation (200lb)
4) Underground or buried entrances must be piped directly to the EF (Entrance Facility)
5) Conduit stubs entering a building must extend no less than 5’ into undisturbed earth
6) All outside communication raceways should be 36” below grade and no less than 24”
7) If the 24” of cover cannot be met the raceway should be encased in concrete
8) Communication duct bank’s should have 6” of covered sand to prevent damage from vibration and tamping
9) Warning tape should be placed 12” below grade over all comm. raceways
10) Separation from power or other foreign conduit (3” if encased in concrete or 12” if direct buried
11) Separation from Gas, oil, water, (6” when crossing and 12” when parallel
12) When outside comm. pathways cross any road (paved or dirt) a minimum depth of 40” must be maintained
13) A minimum of 4 - 4” conduits should be used for building entrances
14) Underground entrances should not have more than 2 -90 degree bends between pull points
15) Size and placement of all manholes will be determined by the USU IT planning and design team