



DIVISION 27 COMMUNICATIONS

GENERAL

The Owner will contact the Office of Information Technology (OIT) before beginning work on the design of a renovation or new facility. OIT will coordinate data and voice communications for the project.

The Owner's project management representative will coordinate with a team of communication engineers, technicians and support personnel to meet the scope of the project.

American University has many different voice, data and video requirements that rely on a high quality, reliable and flexible wiring infrastructure to meet the ever-changing demands of its faculty and staff.

The diversified options vary from building to building and require a great deal of planning. This team will provide space requirements for the communication rooms, distribution design assistance/approval, and cost estimates. They will also assist with the coordination of all communication wiring and equipment.

AU OIT is responsible for termination and activation and the CM/GC is responsible for running any new communications wiring unless otherwise stated. These costs will be budgeted by AU into the project by the offices of the Planning and Project Management or Capital Program Management.

OIT will not take occupancy of any space until it is completed, commissioned, punch list complete and cleaned per OIT standards for installation of communications equipment.

The consultant shall identify equipment requiring emergency power during development of the Owners Program Requirements and incorporate emergency power for required communications to include necessary building support systems.

BUILDING COMMUNICATIONS SERVICE ENTRANCE

All communications cabling on the AU campus is installed in underground ducts encased in concrete. During schematic design, OIT will specify the route and building entrance location. At that time, OIT will assist in developing the best size and number of conduits to anticipate ultimate requirements for service and emergency needs.

Construction drawings shall provide for an equal number of conduits extending from a manhole 5'-0" outside the building and will terminate in the building's main entry communications room (BCR) as described later in this booklet. In this room and as close to the entrance conduit as possible, a minimum of one (1) #4 copper ground cable is required.



Where the entrance conduits penetrate the foundation, footings or outside walls, rigid metallic conduit shall be used. Plaster fiber ducts or aluminum conduit will not be accepted. At the point of exit, a minimum of 2'-0" ground cover must be maintained.

If existing conditions should alter this setup, an OIT Communications Analyst should be notified and alternatives worked out.

COMMUNICATION ROOMS

A single communications room or Main Distribution Frame (MDF) may serve a floor area as large as 20,000 square feet provided it serves only the telephone and data needs on the same floor and that additional satellite rooms or Intermediate Distribution Frames (IDF) are provided on other floors. Connecting conduit is required to ensure that the greatest distance from any communications outlet to the nearest communication room does not exceed 300 linear feet

Minimum space requirements for communication rooms are listed below along with general notes to be considered during planning and design. Please note each project is different and larger space requirements may be needed for communication rooms because of the user's expanded voice/data requirements or size of the facility.

Once again, early consultation with the American OIT communications analyst is a must to ensure size of communication rooms are adequate to meet user and facility needs.

MAIN DISTRIBUTION FRAME (MDF)

The MDF shall be:

- A. A minimum of 150 sq. ft. (minimum width 6') and will provide a 2 ft clearance on each side for telephone equipment and 19" racks on which data electronics and power equipment are normally mounted. This room size will provide service to approximately 20,000 square feet of building.
- B. A single, solid door 3'-0" in width with a 180-degree hinge shall be provided and mounted to swing outside the room if possible, by code.
- C. Located off a corridor or an area not associated with business offices and other high activity areas.
- D. A well-sealed tile floor is required. (No carpeting)
- E. Open, non-finished ceiling spaces are preferred. HVAC ducts, plumbing lines (water, soil, or steam), sprinkler heads and piping installed through this space will not be acceptable. No utilities except those serving the room may occur in or above this room.
- F. All internal wall surfaces shall be lined with unpainted pressure treated fire retardant 3/4" plywood 8' high.
- G. Fluorescent light fixture(s) will be required. See Division 26 electrical.
- H. If emergency power is available in the building, these circuits shall be connected to this power source and labeled. Contractor shall indicate on drawings whether



emergency power is a generator or a UPS.

- I. Conduits entering these spaces shall penetrate the closet walls at a height above the plywood panels and extend only far enough to install bushings. Overhead ladder racks shall be designed, provided and installed by American OIT to support wiring.
- J. Fire stops around cables will be sealed or plugged with fiberglass one inch (1") thick topping of water plug cement or equivalent. Unused conduits will be plugged and capped for fire proofing as specified above or as required for fire code rating. Additional fire stop or other requirements by the University insurance provider shall be followed.
- K. A minimum of 15,000 BTU of cooling is required and the room shall be positive with respect to the corridor or area adjoining these rooms. Auxiliary air conditioning units may be required in closets with a large number of data/phone electronics devices.
- L. Tie-in to the Building Automation System typically is required, see Division 25 for control and/or monitoring and alarm requirements.
- M. Supply a ground connection from a cold water pipe or building ground system utilizing a minimum #6 bare copper conductor. Leave 6' coil in each room.

Caution: Room square footage is dependent on equipment serving the building. Contact American University OIT for exact footage required.

INTRA-BUILDING DISTRIBUTION SYSTEM

In all buildings at American University, communication horizontal and vertical distribution systems are an absolute necessity in meeting and in keeping pace with the occupants' voice, data, and video communications needs.

HORIZONTAL

New buildings should be designed to include a means for an open cable tray communication distribution system. Due to the different styles and types of cable tray systems available minimum standards require the tray to be a minimum of 12" wide and 4" deep. The tray shall be open on top and suspended from the ceiling by supporting rods in the middle of the tray or as recommended by the manufacturer. No rod threads should be exposed in the cable tray due to easy damage of cable when being pulled.

To deter the use of plenum cable, open wire-ways can only be used in air return spaces for very special cases.

A minimum of one inch (1") conduit shall be used from the cable tray to the user's communication outlet to house communications cabling.



Renovation projects are very different in nature and require very early consultation with an AU Tele/Video Communications analyst to insure all existing and future requirements are met for communication distribution systems in consultation with the Project Manager.

VERTICAL

New multi-level buildings should be designed with communication rooms (IDF's) placed one above the other in a vertical fashion to facilitate vertical distribution systems. The size and quantity of conduit between each of the communication rooms will depend on the size and functionality of the building. Early consultation with an e-operations analyst is required to ensure all requirements are met.

END OF DIVISION 27