

Utility Telecommunications Standards

Iowa State University

A. Outside Plant

1. Identify and locate, on the building plans, the communication manhole serving each building.
 - a. Provide new manhole if the existing manhole is not available within 400 ft. of the building entry point. Consult Project Manager for information.
 - b. Distance between manholes shall not exceed 600 ft.
2. Manhole
 - a. Provide and install 6 ft. W X 12 ft. L X 7 ft. D or 4 ft. W X 6 ft. L X 7 ft. D manholes as required.
 - b. Prefabricated manholes with H20 wheel-loading shall be used whenever possible.
 - c. Manholes shall be equipped with cable racks, pulling irons, 3" sump hole, frame, cover and 5/8 in. by 10 ft. grounding rod. No ladder shall be provided.
 - d. The frame shall be Neenah Foundry R1740-B, no substitutions permitted.
3. Conduit Installation
 - a. Install a minimum of three (3) – 4 in. diameter polyvinyl chloride (PVC) schedule 40 conduits from existing and/or new manhole to the building MDF. The total number of conduits required shall be determined by the Project Manager.
 - b. Install a minimum of four (4) – four inch diameter polyvinyl chloride (PVC) schedule 40 conduits and one each 4 cell 1.25 in. conduit from between new and existing manholes if additional manholes are required. The total number of conduits required shall be determined by the Project Manager.
 - c. The total number of bends in a conduit run shall not exceed two 90° bends or equivalent in sweeps and radius bends. Each bend will have minimum radius accordance with existing standards (10 times the conduit I.D. minimum for the bend radius).

- d. The top row of conduits shall be installed at a minimum depth of 24 in. below finished grade.
- e. Conduits shall be encased with sand to a distance of 6 in. away from the conduits. Backfill above shall be clean excavated soil.
- f. An orange warning tape (minimum 6 in. width) shall be placed in conduit trench approximately 12 in. below the surface. The tape shall display words identifying the buried utility (e.g., "FIBER OPTIC CABLES BURIED BELOW").
- g. Conduits terminating inside a building shall be installed so that the conduit extends a minimum of 4 in. beyond the surface through which it penetrates.
- h. Conduits shall be plugged with inserts to ensure that foreign matter does not enter the building. Consult University Project Manager for specific product requirements.
- i. All conduits shall be installed with a minimum 1000 lb. test, non-corrosive graduated pull tape.
- j. Inner-ducts shall be installed to allow fiber optic cables to share conduits with copper cables. Innerduct shall be polyethylene or fabric style Maxcell products. All innerducts shall have pull tapes installed.

B. Service Entrance

1. Service Entrance Cable (Fiber, Copper and Coaxial)
 - a. Project Manager will determine the connection point of the cables to the existing university system. If the building project is to provide for the underground cable plant the Project Manager will provide a current copy of the University's standard specifications for the engineers use detailing all the fiber, copper and coaxial cable requirements including cable, details, splicing, terminations and testing requirements.
 - b. All metal-sheathed cable shall be properly grounded and protected upon entering building. See section "H" for more detail.
2. Galvanized steel conduits (direct buried) or reinforced concrete encased schedule 40 PVC conduits shall be installed from the inside of the building to three ft. minimum past excavation line of the building. Direct buried

schedule 40 PVC shall be installed from three ft. past excavation line of the building out to the manhole. Conduits shall not be routed under building foundations.

3. Termination Space
 - a. Terminating space for the service entrance shall be in a Main Distribution Facility (MDF). See Section "D" for closet design.
4. Pair protection shall be provided at the Node Room for all cables and at the building MDF only if the copper cable entering the building is direct buried or leaves the main campus area. Consult with the Project Manager to determine if the cable requires protection at the MDF.
5. All outside plant copper cable shall be the ANMW style in 24 awg. Size of cable shall be based upon one pair for each required outlet, plus 50 percent future growth and then sized to the next larger common size.
6. All outside plant fiber will be furnished by the University and installed by the contractor. Fiber counts to the building will be either 12MM/12SM or 12MM/24SM dependent upon building size and needs. Number of fibers to be provided and terminated to be determined during the Design Development phase.
7. Coax cable will be installed by the Universities Cable Television service provider. Project shall provide raceway system from CATV provider point of service or telecommunications manhole. Consult with the Project Manager to determine connection location.