

Telecommunication Closet Standards

Iowa State University

A. Telecommunications Closet

1. Main Telecommunications Entrance Facility (EF) or Main Distribution Frame (MDF) – This location shall be designed/sized to serve the entire building based on the assessment results. This closet is to be centrally located so as to ensure that all copper voice and data cable sheath lengths out to the outlets are less than 90 m (295 ft). This closet shall interconnect with each Telecommunications Closet (TC) or Intermediate Distribution Facility (IDF) via distinct, dedicated multimode and single-mode fiber optic backbone cables, 25 pair twisted pair CAT 5 data risers and 100 pair twisted pair voice riser cables. In smaller buildings, where only one telecommunications closet is required, the MDF will also function as the IDF.
2. TC or IDF - This location shall be designed/sized to serve the floor on which it is located, and the floors above and below, based on the assessment results. This closet is to be centrally located so as to ensure that all copper voice and data cable sheath lengths out to the outlets are less than 90 m (295 ft). In larger buildings, several IDFs per floor may be required to adhere to this maximum cable length requirement. The overall design shall minimize the total number of closets while staying within the 90 m (295 ft) requirement. Closets shall be located such that vertical cable installations are limited to three floors either above or below.
3. Closet size requirements are based on distributing telecommunications service to one individual work area per 100 sq. ft. of occupied floor space.
4. The total serving area is calculated using only the worker-occupied floor space. Minimum telecommunications closet (MDF or IDF) sizes are shown in the table below:

<u>IF THE SERVING AREA IS</u>	<u>THEN THE CLOSET MUST BE AT LEAST</u>
Less than 5,000 sq. ft.	Negotiated with Information Technology Services
Between 5,000 sq. ft. and 8,000 sq. ft	10 ft. x 10 ft.
Larger than 8,000 sq. ft.	10 ft. x 12 ft.

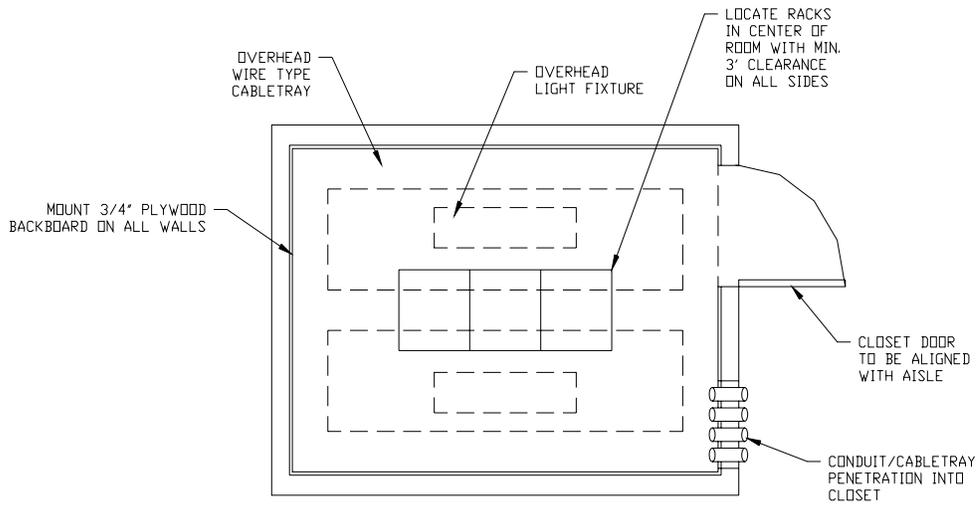
5. No other utilities shall pass through the MDF, IDF or TC, except for building sprinkler systems. This room shall not be shared with or used for any function other than legitimate telecommunication systems. Each room shall be designed and located to minimize the potential for water entry.
6. Ideally, each floor of the building should have at most one centrally located MDF

or IDF closet. Where distance permits, closets on certain floors may be omitted. Closets shall be vertically stacked. Closets shall be connected by four - 4" EMT sleeves conduits or equivalent cable tray, without offsets, for a clear cable pull.

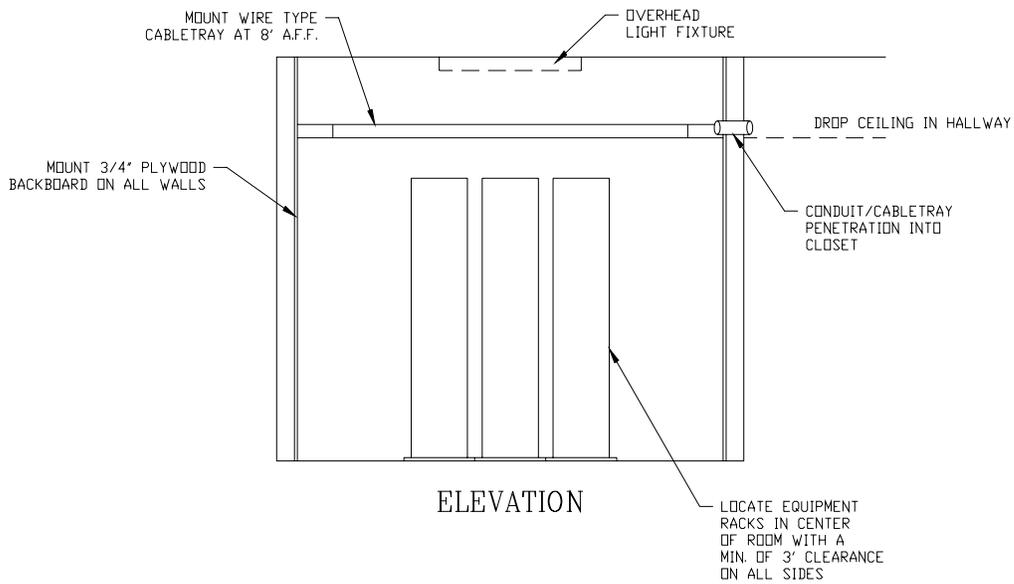
7. The design and construction of all new Node (Switch) rooms shall be coordinated with the Owner's Representative.
8. Power audit shall be completed by consultant with the assistance of University Project Manager. The audit shall determine the need, if any, for additional power conditioning equipment. Each closet shall have a dedicated power panel with integral Transient Voltage Surge Suppressor (TVSS) provided. Power panel shall be 18 pole minimum. Where available power panel shall be connected to the emergency power system in the building. If not available system shall be designed to allow future installation of emergency power.
9. Standard layout of the MDF, IDF, or TC shall be similar to Detail D-9-A, "Typical ISU MDF/IDF Closet Layout".
10. A complete building design including closet and raceway locations and closet layouts shall be submitted for review to the Information Technology Services in advance of the issuance of permission to proceed with the project.
11. The MDF or IDF shall not have doorsills or center posts. The door shall be 7 feet high by 3 feet. wide, lockable, and open outward. Doors and frames shall be designed and piped for door alarms or future electric locksets and access control system readers.
12. All walls of the closet shall be lined with rigidly installed wall-to-wall framing of 3/4 inch trade size AC grade plywood, 8 feet. high.
13. All surfaces (including the unexposed side) of the plywood shall be painted with a white latex nonconductive fire-retardant overcoat. (Exception is only the exposed side shall be painted if plywood is mounted on a 30 minute rated or greater wall.) All areas and equipment above the plywood including the ceilings shall be painted. Color shall be white.
14. Allow a minimum clear working space of 4 feet from front and 3 feet from rear of data racks to the wall. Distances may have to be increased to account for specialized equipment or cross-connect fields mounted on the wall as applicable.
15. Minimum ceiling height shall be 10'-0" unless approved by the Owner's Representative.
16. False ceilings are not permitted in the MDF or IDF.
17. Conduits and cable trays located above 8'-0" shall protrude a minimum of 2

inches. into the closet.

18. The rated distributed floor loading shall be greater than 250 lb-ft/ft².
19. The rated concentrated floor loading shall be greater than 1,000 lb-ft/ft².
20. Floors shall be covered with white VCT except for raised floor installation. Raised floors shall be factor finished white. White vinyl wall base shall be provided on all walls.
21. Kick plates, sleeves or dam walls around floor slots shall extend 4 in. AFF.
22. Closets shall include a minimum of 2 dedicated, non-switched, 120 V AC 20 ampere duplex receptacles on separate branch circuits on each wall and one 120 volt duplex outlet installed below the power panel. The dual duplex receptacles shall be mounted in separate boxes with 3 inches between. Outlets shall be positioned 6 inches above the cable tray. Two sets of the outlets to be positioned to serve equipment in rack(s) in the center of each closet.
23. A telecommunications grounding source shall be provided at the terminating space.
24. Contractor shall, as required by code, be required to restore all walls and floor slabs to their original fire ratings using appropriate fire stopping materials after penetrating walls or slabs with any type of horizontal or vertical raceway. A smoke detector shall be provided in the TC and connected to the building fire alarm system. Fire protection sprinklers shall be extended into the TC in buildings that have existing sprinkler systems.
25. The temperature of the room shall be kept between 64° F and 75° F. The fan coil unit should be installed outside the closet.
26. Relative humidity in the telecommunications room shall be kept between 30% and 55%.
27. Ventilation shall accomplish one air change per hour (minimum).
28. Filtration systems are required to reduce airborne particulates. Filter systems shall be accessible from outside of the room.
29. Lighting intensity shall be at least 50 foot candles at 3 ft. above the floor. Light fixtures shall be chain hung at 6 inches above the cable tray.



PLAN VIEW



ELEVATION

NOTE:

LENGTH AND WIDTH OF CLOSET SHALL BE ESTABLISHED SO AS TO COMPLY WITH THE REQUIREMENTS SET FORTH IN D.4 OF THIS UNIFORM BUILDING WIRING STANDARD.

DETAIL D-9-A
TYPICAL ISU MDF/IDF CLOSET LAYOUT