

## **BIDMC IS Tel/Data Room Requirements**

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These guidelines are required as part of the basis of design for all IS Tel/Data Room designed for Beth Israel Medical Center. The guidelines shall not directly replace MEP Engineering consultant specifications but are intended to convey a set of standards for all projects at the Facility. Where applicable codes conflict with these guidelines the codes shall supersede these requirements and consultant shall notify the BIDMC Telecomm, Network or Facilities staff of such conflicts and guidelines shall be updated accordingly. Any deviation from these requirements shall be brought to the attention of the BIDMC Telecomm, Network or Facilities staff during review with an explanation why it is required or how it may improve the system or systems affected. This document is subject to change; please direct any questions or concerns to BIDMC Telecomm, Network or Facilities staff.

Released by:

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# Information Systems Infrastructure Requirements

## Main Distribution Frame (MDF):

All buildings will have an MDF (Main Distribution Frame), usually located on the lowest level of the building. This room will have minimum inside dimensions of 10' x 12' unless otherwise specified or agreed upon by the BIDMC Telecom office.

These rooms support the main PBX system and core network gear.

The room shall be separated from other nurse call, electrical, mechanical, alarm and housekeeping spaces.

## Intermediate Distribution Frame (IDF):

Intermediate Distribution Frame (IDF's) should be centrally located on each level of the building, and ideally arranged in a "stacked" fashion.

IDF's/Satellite/Off-site tel-data rooms will have minimum inside dimensions of 8' x 10' unless otherwise specified or agreed upon by the BIDMC Telecom office.

These rooms support network gear and in some cases wall mounted overhead paging equipment and CATV connections.

These rooms shall be separated from other nurse call, electrical, mechanical, alarm and housekeeping spaces.

## Important Reminders:

- All MDF/IDF's should not be co-located with electrical equipment due to the EMI-mechanical noise transmitted from the electrical equipment. This noise interferes with most voice and data equipment.
- MDF's and IDF's must be designed so that they are within 295 feet (90 meters) of every telecommunications outlet on that floor.
- There shall be a minimum of three 2" conduits to the building D-Marc (Verizon, Comcast, etc.) from our MDF.

## **A. Size and Location**

- The recommended size of telecom rooms depends on the size of the serving area. If the serving area is:
  - 5,000 square feet or less, the telecom room should be 10 × 8 feet. In some instances this is negotiable with BIDMC Telecomm.
  - 5,000 to 8,000 square feet, the room should be 10 × 9 feet.
  - Greater than 8,000 square feet, the room should be at least 10 × 12 feet.
- For multi-story buildings, one MDF (Usually on the first floor or basement) is required and at least one IDF is required on each additional floor.
- MDF's and IDF's must be designed so that they are within 295 feet (90 meters) of every telecommunications outlet on that floor. If this is not possible then more than one IDF room per floor is required.
- The best location for MDF's and IDF's is the building core. The rooms should be vertically aligned or stacked.
- All rooms shall be located away from any source of water damage. No water carrying pipes shall be permitted to run through or within the ceiling space or floor of rooms, except pipes associated with any required fire protection system.
- No showers, toilets, or similar wet rooms/areas shall be adjacent to or above Telecommunications Rooms. In addition, as much as practicable, rooms shall be located away from electrical transformers, generators, air conditioning units or radio transmission equipment.
- There shall be no windows.

## **B. Ceilings**

- The minimum acceptable ceiling height is 8'; our racks are 7' tall.
- Ceilings should be unobstructed to provide space over the equipment racks for suspended cable trays and/or horizontal ladder racks.

## **C. Doors**

- Doors shall be a minimum of 3'-0" X 7'-0".
- Doors need to be a solid wood or metal and should meet the requirements of the building code for the room location.
- Door locks keyed to Telecommunications room standards. Access to these rooms should be tightly controlled.
- All tel/data room doors should have electronic access control installed when available.
- Doors shall open into corridors or common space.
- All tel/data rooms are accessible without having to access other space.

## D. Sprinklers

- Sprinkler heads should be provided with cages to prevent accidental operations or use of a "concealed type" head would be acceptable. They must be as high as possible and comply with applicable codes to avoid accidental operation from cable pulling activities.

## E. Floors

- Floors shall be covered with static resistant VCT. Sealed concrete is permitted.
- Carpet is not permitted in any telecommunications spaces.

## F. Walls/Plywood

- Fire-retardant plywood shall be used, grade A-C equivalent, lining the walls to a height of at least six feet and beginning at 24" AFF.
- All walls and fire-retardant plywood shall be covered with two coats of fire-retardant white paint and with fire rating symbol exposed on each sheet of plywood.
- At *least* one wall designated by BIDMC staff shall be covered with 4' x 8' x 3/4" fire-retardant plywood backboard, in some locations we may also ask for a 4" clearance in front of existing wall.
- Walls shall extend from the finished floor to the structural deck, with a minimum 2-hour fire rated wall.

## G. HVAC

- Conditioned air which meets and typically exceeds normal building standards for office space as a minimum.
- Heat load requirements shall be calculated based upon telephone and network equipment that will be installed in each room, usually what is shown below:
  - Network gear averages - 9000 btu/h
  - Telephone system gear - G430 - 800 btu/h / G450 - 1780 btu/h
  - Overhead Paging Gear – BPA2120 - 1587 btu/h
- Conditioned air shall be independently controlled for each telecom room and provided 24hours/7days a week, 365 days per year.
- All design efforts shall attempt to locate Telecommunications room cooling equipment such that it is not located in the telecom room ceiling space.
- A temperature range of 62 to 72 degrees should be maintained.

## H. Electrical

- MDF/IDF power requirements shall be individually based on equipment & facility requirements.
- Whenever possible connection to a building wide or dedicated emergency backup generator is preferred.
- There shall be a minimum of 2x dedicated 208VAC, 30 amp NEMA L6-30P receptacles on ladder tray or equipment rack - **1x normal and 1x emergency**
  - 2x Rack PDU Basic AP6031A, 1U, 30A, 208V, (4) C19
  - or
  - 2x Rack PDU AP 7811B, 2U, 30A, 208V, (12) C13s & (4) C19
- There shall be a minimum of 2x dedicated 120VAC, 20 amp L5-20P Locking style receptacles on ladder tray or equipment rack - **1x normal and 1x emergency**
  - 1x RACK ATS AP4452, 120V, 20A, L5-20 IN, (10) 5-20R OUT
- Outlet locations to be designated by BIDMC staff.
- There may be special receptacle requirements depending on the type of electronics and/or the location of the tel/data room. Consultation with BIDMC staff is necessary in order to determine exact requirements.
  - **ATS/PDU Equipment That May Be Required**
    - Rack ATS, 120V, 20A, L5-20 IN, (10) 5-20R OUT (AP4452)
    - Rack PDU Basic, 1U, 30A, 208V, (4) C19 (AP6031A)
    - Rack PDU, 2U, 30A, 208V, (12) C13s & (4) C19 (AP7811B)



## I. Grounding

- Per NEC and ANSI/EIA/TIS 607 requirements, the telecommunications grounding and bonding infrastructure shall be designed and routed through each telecommunications space.
- Each telecommunications room shall be equipped with a Telecommunications Grounding Busbar.
- The busbars shall be a minimum of 10" in length, 2" in width and ¼" thick. They shall be pre-drilled and tapped to accommodate standard NEMA compliant grounding hardware.

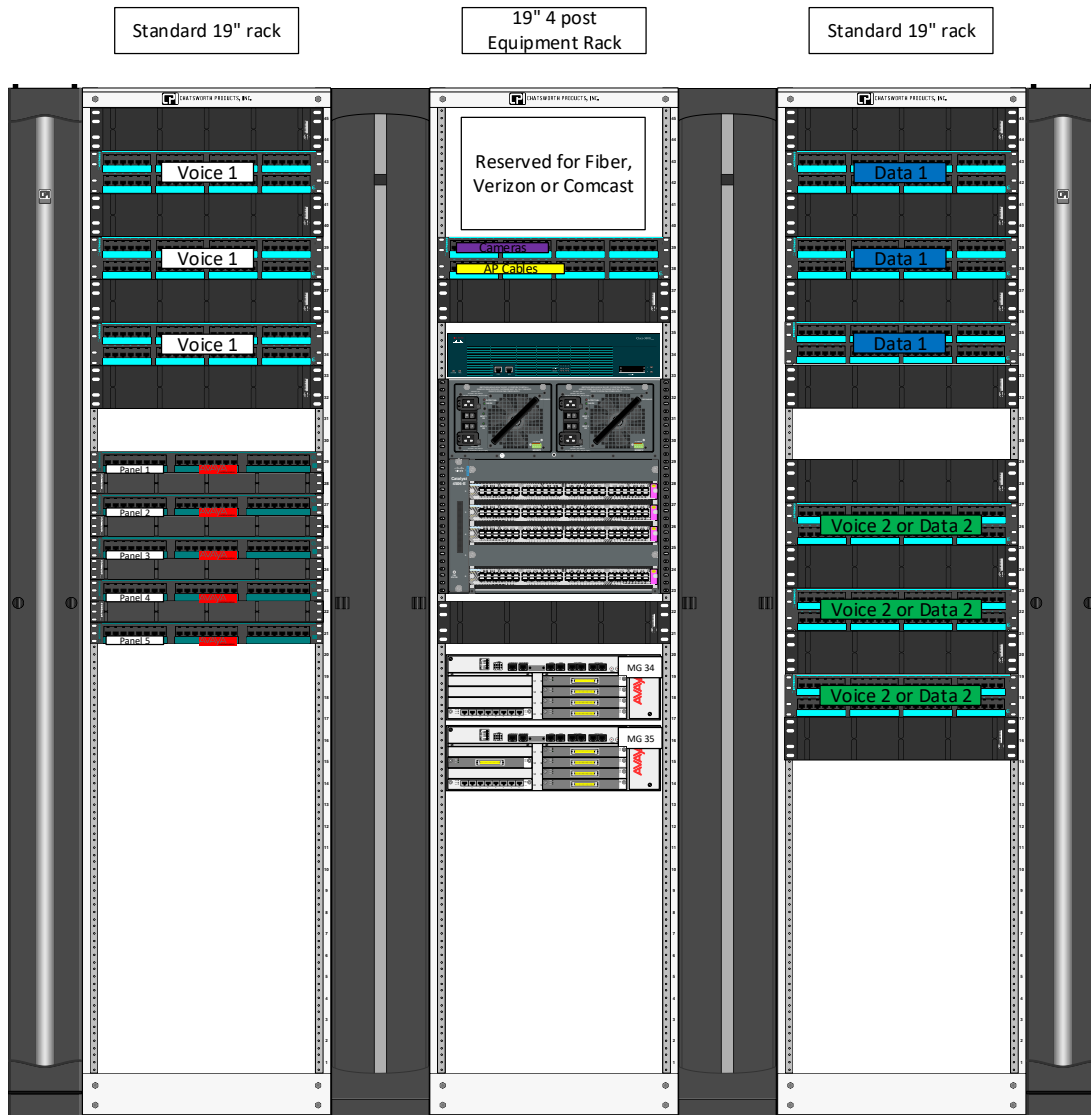
## **J. Lighting**

- Lighting must have uniform intensity of 50 foot candles when measured 3 feet from the finished floor and must comply with BIDMC electrical standards.
- Indirect lighting is not permitted.
- Lighting shall be switched, without occupancy sensors.
- Lighting fixtures must be on separate electrical circuits separate from the circuit the feeds the electrical outlets in the room.
- Do not place light fixture above equipment racks to avoid blocking of light.

## **K. Sleeves and Conduits**

- Stacked closets shall be connected by four - 4" EMT sleeve conduits without offsets, for a clear cable pull.
- All floor penetration sleeves shall extend 4 in. above and below the finished surface.
- There should be a minimum of four - Horizontal 4" EMT sleeve conduits into telecommunications closet, location TBD by BIDMC staff
- There shall be a minimum of three 2" conduits to the building D-Marc (Verizon, Comcast, etc.) from our MDF.

## Example Rack Layout

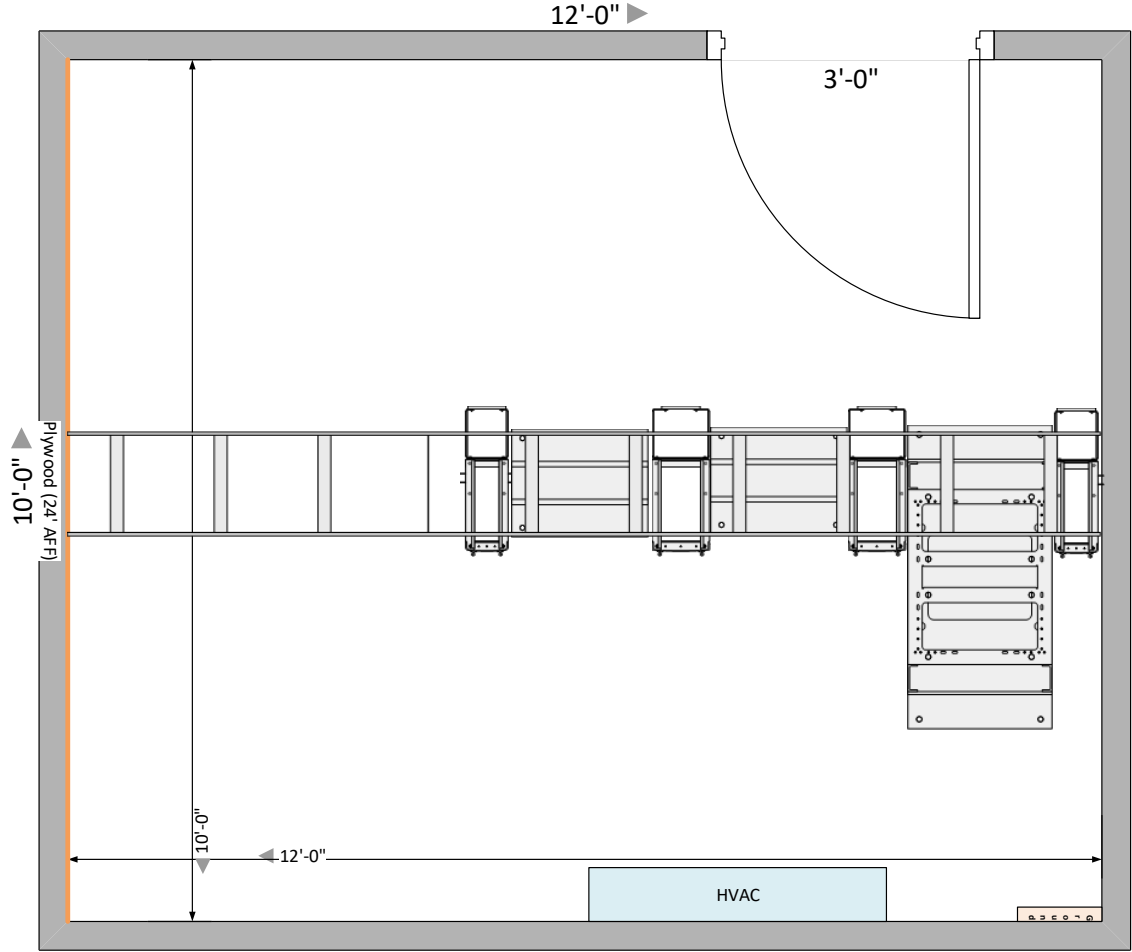


**Tel/Data racks** – The usual configuration is 3x racks installed with wire management.

- 2x Standard 19" wiring racks
- 1x 4 post rack with shelf in the middle
- Panels and equipment placement may vary



# Example IDF Layout



## References

Reference Standards (all codes and standards compliance will be to the most current revision available, including applicable addendums):

- Telecommunications Distribution Method Manual (TDMM) 12th Edition by Building Industry Consulting Services Incorporated (BICSI)
- ANSI/EIA/TIA 568-B: Commercial Building Telecommunications Cabling Standard
- ANSI/EIA/TIA 569-A: Commercial Building Standards for Telecommunications Pathways and Spaces
- ANSI/TIA 569-C: Telecommunications Pathways and Spaces
- ANSI/EIA/TIA 606: Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
- NFPA 70: National Electric Code (NEC)
- ANSI/EIA/TIA 607: Commercial Building Grounding and Bonding Requirements for Telecommunications