Communication Cable Selection Guide
Local Area Network (LAN) Only

There are a variety of copper and fiber optic cables that can be used for voice and data communications within a building. There are also electrical code requirements that must be considered when selecting the right cable. This section will first look at the types of cables that can/must be installed according to electrical code. It will then identify the different performance characteristics of a variety of cable and which may be best for your project.

Electric Code Considerations:

For all non-residential projects, there are two types of cable

- The building's heating and ventilation system design will determine whether spaces in the building are plenum or non-plenum. A plenum space is defined by the national electric code as a chamber or compartment to which one or more air ducts are connected that form part of the air distribution system. Often, but not always, spaces above suspended ceilings are plenum spaces. According to National Electric Code (NFPA-70), plenum spaces require a specific type of cable. This cable, in the case of copper cable is identified as **CMP** (communication plenum). In the case of fiber optic cable, it is identified as **OFNP** (optical fiber non-conductive plenum) The cable must be identified as CMP for it to be installed in a plenum space. If in a cable run, a cable enters than leaves a plenum space, it must be **CMP** rated.

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Performance Characteristics:

- HVAC coordination
- Wall or desk phones, fax and printer locations
- UPS systems and maintenance
- Existing LAN with locations
- Cabinets versus racks
- Ceiling changes
- All quad deep back boxes unless otherwise specified
- Conduits & surface mounted raceway installed with pull string – minimum 1 inch per gang with additional sizing for floor box feeds
- Network Administration Issues

- School discussion including drop locations, basement access
- Purpose of LAN installation
- General construction work issues: renovation, new construction, additions and associated timelines
- Plenum versus PVC cabling
- Angled versus straight jack types
- Plastic or metal surface raceway requirements
- Pathway sizing, firewall locations, conduit sleeve sizing, riser conduits
- Closet location and sizing- typical 15'x20' for MDF and 6'x9' each IDF
- Power quality and quantity at both workstation locations and telecommunications closets
- Power requirements: co-location with data
- Sizing of power at various workstation locations
- (20A at T/M, 2-20A at student, 20A at administrator)
- Equipment rooms (6 to 8 - 20A dedicated for the Main and 2 –20A dedicated for the Intermediate closet locations) (with possible 30A for UPS or special equipment)
- Main Distribution Frame co-location with Equipment room
- Electrical outlet locations in telecom closets with locations 18" AFF & 7' AFF
- Separating telecommunications equipment from EMI, RFI and associated code issues.
- Power types should be: dedicated subpanels & circuiting, K rated transformers, super neutrals (200% minimum), TVSS at main & sub-panels, GFCI & AFCI where required, special power where required (IG for equipment manufacturer that requires it only)
- Grounding and bonding requirements – bus-bars, infrastructure, connection to Main Electrical Service Bond
- Computer lab locations and specialty spaces
- New ceiling areas (renovations)
- Design for audio visual/video equipment and locations
- Design of security locations & equipment
- Design of speaker, paging systems clock/speakers locations & equipment
- Design for emerging technologies
- Emergency Generator power availability

SECURITY INFORMATION REQUIREMENTS FROM ARCHITECTS:

1. Overall site plan
2. Architectural Egress plans (if any)
3. Architectural floor plans with furniture locations and room numbers
4. Architectural plan elevations
5. Architectural door details
6. Architectural door schedules

7. Architectural door finish schedules
8. Parking lot plans including lighting plans
9. A full set of project specifications
10. Electrical plans including fire alarm plans

OTHER SERVICES:

1. Supporting of lighting controls
2. Security access controls
3. Monitoring systems
4. Building automation systems
5. Point of sale terminals
6. Web cameras
7. IP telephony
8. Wireless access points