ETHERNET CABLE MATERIAL SPECIFICATION

Ensure Ethernet Cables are compatible with existing architecture and conforms to the following specifications:

A. General
1. Ensure Ethernet Cable is designed for the speed and quality as specified in the project.

B. Standards and Certifications
1. ANSI (American National Standards Institute):
   a. ANSI S-116-732-2013 — Category 6A
   b. ANSI/NEMA WC-66 — Category 6A
   c. ANSI/ICEA S 56434 — Outdoor Use
   d. ANSI/ICEA S 99689 — Broadband Outdoor Use
   e. ANSI/ICEA S 100685 — Indoor/Outdoor Use
2. NEC (National Electrical Code):
   a. CMR
   b. CMX-Outdoor
   c. CM/CMG
3. TIA (Telecommunications Industry Association):
   a. ANSI/TIA-942-B — Data Center
   b. TIA TSB-184-A — Power over Ethernet
   c. TSB-162-A — Wireless Access Points
   d. ANSI/TIA-568-C.2 Category 6A — Balanced Twisted-Pair Telecommunication Cabling
4. ISO/IEC (International Standards Organization):
   a. ISO/IEC 11801-1 — General Cabling On-Premises; Class E_A Specification
   b. ISO/IEC 11801-2 — Cabling for enterprise buildings
   c. ISO/IEC 11801-3 — Cabling for industrial buildings
   d. ISO/IEC 11801-5 — Cabling for high-performance networks used by data centers
   e. ISO/IEC 11801-6 — Cabling for distributed wireless networks Power over Ethernet
5. Institute of Electrical and Electronics Engineers (IEEE) and Operating Standards:
   a. IEEE 802.3d — 10Base-T
   b. IEEE 802.3i — Ethernet over Twisted Pair
   c. IEEE 802.3d — 10Base-T
   d. IEEE 802.3u — 100Base-TX
   e. IEEE 802.3ab — 1000Base-T
   f. IEEE 802.3af — Power over Ethernet (15.4 Watts)
   g. IEEE 802.3an — 10GBase-T
6. Restriction of Hazardous Substances Directive (RoHS)

C. Specifications
1. Bandwidth: 500 MHz (up to 550 MHz)
2. Maximum Distance: 100 meters
3. Impedance: $100 \pm 15\ \Omega$
4. Attenuation: 62.1 dB/100 m at 550 MHz
5. Return Loss: 2.6 dB/100 m at 550 MHz
6. Wiring Scheme: T568B

D. Construction
1. Number of pairs: 4-pair
2. Type: Unshielded Twisted Pair (UTP) with plastic or foil cross web
3. Conductor:
   a. Cables over 10 feet: 23 AWG, stranded or solid bare copper
   b. Cables 10 feet or less, with PoE: 23 AWG, stranded or solid bare copper
   c. Cables 10 feet or less, no PoE: 24 AWG, stranded bare copper

4.	Insulation:	Polyolefin, Foam Skin Polyethylene
5.	Jacket:	PVC different colors with ripcord
6.	Overall Diameter:	0.33 inches (8.0 mm)

E. Mechanical Properties

1.	Fire Propagation Test:	UL 444 CM CMR
2.	Temperature Range (Installation):	-20℃ to +75℃
3.	Temperature Range (Storage):	-40℃ to +75℃
4.	Temperature Range (Operating):	-40℃ to +75℃
5.	Maximum Pulling Tension:	25 lbf (110 N)
6.	Bending Radius:	> 25 mm without load
7.	Bundling:	Velcro or Re-Closable Fasteners (Wire ties are forbidden)
8.	Plug Housing:	UL 1863 Polycarbonate
9.	Boot:	Snagless Boot with 50-micron Gold Connectors

10. Contractor to ensure that the cable fits equipment, patch panels, and PoE requirements.