

Part 1 General

1.1 RELATED SECTIONS

- .1 Not used.

1.2 REFERENCES

- .1 The following references and standards shall be followed with respect to the cabling system supply, installation and testing, but shall not alter the design of the cabling system as detailed on the drawings and specifications.
- .2 CAN/CSA-T530-M90 Building Facilities, Design Guidelines for Telecommunications.
- .3 CAN/CSA-T529-M Design Guidelines for Telecommunications Wiring System in Commercial Buildings.
- .4 CAN/CSA-C22.2 No. 214-08 Communications Cables.
- .5 CAN/CSA-C22.2 No. 182.4-M90 (R2006) Plugs, Receptacles and Connectors for Communication Systems.
- .6 EIA/TIA Bulletin TSB-36 Technical Systems Bulletin Additional Cable Specifications for Unshielded Twisted Pair Cables, Electronic Industries Association (USA), November 1991.
- .7 Uniform International Conference of Building Officials Building Code (ICBO).
- .8 EIA/TIA-569- A Commercial Building Standard for Telecommunication Pathways and Spaces, latest draft.
EIA/TIA-568-B2 (2001) Commercial Building Wiring Standard, latest draft.
EIA/TIA-607 (CSA T527) Grounding and Bonding
EIA/TIA-606 (CSA T528) Administration Standards
EIA/TIA TSB-67 UTP End-to-End System Testing
- .9 BICSI Telecommunications Distribution Method Manual 13th Edition.
- .10 BICSI Information Transport System Manual 4th Edition.
- .11 CAN/ULC C102.4M (1987) Test for Fire and Smoke Characteristics of Electrical Wiring and Cable.
- .12 Treasury Board Information Technology Standard (TBITS) No. 6.9 Profile for the Telecommunications Wiring System in Government Owned and Leased Buildings.

1.3 SYSTEM DESCRIPTION

- .1 Structured system of telecommunications cables (copper) installed within buildings for distributing voice signals.

Part 2 Products

2.1 HORIZONTAL CABLING, VOICE

- .1 Cable supplied to all voice outlets shall be Category 6, UTP – 4 Pair, 24 AWG, CMP rated cable, FT6 rated.
- .2 Category 6 Electrical Specifications
 - .1 DC Resistance @ 20C, Maximum: 9.4 Ohm / 100 meters.
 - .2 DC Resistance Unbalance, Maximum 5%.
- .3 Mutual Capacitance, Maximum: 5.6 nF/100 meters.
- .4 Capacitance Unbalance Pair to Ground, maximum: 330 pF / 100 meters.
- .5 Input Impedance: 100 +/- Ohms from 1 Hz to 100 MHz, 100 +/- 22 Ohms from 100 MHz to 200 MHz.
- .6 Nominal Velocity of Propagation: NVP Plenum 72% @ 10 MHz.
- .7 Propagation Delay (skew), Maximum: 20 ns / 100 meter.
- .8 White in color.

Maximum Attenuation Values, Worst Pair and Cross Talk (next min).

Frequency (MHz)	Attenuation (dB/100m)	Next (dB Min.)
1	2.0	74.3
4	3.8	65.3
8	5.4	60.8
10	6.0	59.3
16	7.6	56.3
20	8.5	54.8
25	9.6	53.3
31.25	10.7	51.9
62.5	15.5	47.4
100	19.9	44.3
200	29.2	39.8
250	33	38.3
300	36.6	37.2
350	40.0	36.2
400	43.2	35.3

Part 3 Execution

3.1 INSTALLATION OF HORIZONTAL DISTRIBUTION CABLES

- .1 Install horizontal cables, as indicated on drawings from termination in telecommunications closet to outlets.

- .2 Plastic tie – wraps, ‘C’ clamps, ‘D’ rings are not permitted for use with communications cabling. Only hook and loop straps are permitted, and are to be utilized every 610mm.

3.2 **FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 01 - Common Work Results - Electrical.
 - .1 The Project Authority shall be notified one week prior to any testing so that the testing may be witnessed.
 - .2 Before requesting a final inspection, the Contractor shall perform a series of end to end installation performance tests. The Contractor shall submit for approval a proposal describing the test procedures, test result forms, and timetable for and all copper plant wiring.
 - .3 When errors are found, the source of each error shall be determined, corrected, and the cable re-tested. All defective components shall be replaced and re-tested. Defective components not corrected shall be reported to the Project Authority with explanations of the corrective actions attempted.
 - .4 Test results for each UTP cable must be submitted with identification to match labels on all patch panel ports and 8 position modular jacks, and identification to match as-built associated with that cable.
 - .5 Owner will observe and verify the accuracy of test results submitted.
- .2 UTP cable installations tests:
 - .1 Contractor to show evidence of channel bandwidth performance by submitting to the Engineer “Testing Certificate” of manufacturer’s product evaluated by independent testing authority or agency to TIA/EIA-568-A-5.
 - .2 The installed channel must pass all Category 6 tests using a high performance level tester equipped with a compatible link interface adapter. Testing capability shall be up to 350 MHz including verification for Cable length, Wire Mapping, Cross-Talk (NEXT), Equal Level Far-End Cross-Talk (ELFEXT), Power Sum Cross-Talk (PSNEXT), Power Sum Equal Level Far-End Cross-Talk (PSELFEXT), Attenuation, Attenuation to Cross-Talk Ratio (ACR), Propagation Delay, Return Loss, and Delay Skew.
 - .3 For each network drop installed the following documentation must be provided on a CD:
 - 1. Room # of installation
 - 2. Cable ID
 - 3. Length of cable in metres
 - 4. Wall plate ID
 - 5. An indication of what test type was used and whether the test was a PASS or FAIL.
 - 6. Output from cable tester showing attenuation on each pair, and NEXT for all pair combinations. Complete output of the test result is desirable.

The test results from the cable tester should also be included in electronic form on a compact disk in PDF format.

3.3 LABELING

- .1 Label each cable within 50mm of terminations.
- .2 Use permanent, wrap around, self-adhesive labels employing individual characters. Characters shall be minimum 14 point, bold, Arial font, black on white background.
- .3 Prior to labelling, coordinate with the Project Authority to determine the exact labelling standard. Allow for 10 characters per label.

3.4 "AS BUILT" RECORDS

- .1 Provide as built drawings detailing the terminations and connections for all communication conductors. As built drawings shall include label names for all terminations and connections as installed on site. Provide in hard copy format.

END OF SECTION