Title	**Category 5e Cabling Guidelines**
Category	**Network Architecture**
Date Adopted	
Date of Last Revision	**August 2, 2001**

A. Authority

Section 86-1506 (6). "(The Nebraska Information Technology Commission shall) adopt minimum technical standards, guidelines, and architectures upon recommendation by the technical panel created in Section 86-1511."

B. Purpose and Objectives

The purpose of this document is to define and clarify policies, standards, and guidelines pertaining to installation of cabling systems.

The primary objectives of these guidelines include:

1. Improve versatility and compatibility of systems;
2. Reduce maintenance problems;
3. Provide vendors with an explicit set of guidelines that will meet state requirements;

C. Standards and Guidelines

Unless unique requirements dictate other types of cable, networks should comply with industry standards for installing category 5e cabling systems. These cabling guidelines are intended to provide a reference for the installation of computing cabling systems. They are not intended to endorse any single product or vendor. They may be used as specifications in cabling contracts or requests for procurement.

1. Work to be done
   - Install ladder racking in each communications closet from where the station cables enter the room to relay rack locations. Racking is to be securely attached to walls and approximately seven feet above finished floor.
   - Assemble and install a relay rack in each communication closet. Rack to be bolted to the floor and attached to the ladder racking. Verify exact location with site contact. Rack position should not interfere with access to voice blocks or floor/wall cabling sleeves.
   - Relay rack must be properly grounded.
   - Install category 5e rated, rack mountable patch panel to relay rack for data cable termination. TIA/EIA-568-A, unshielded twisted pair, category 5 for data.
   - Install wire management panels under each patch panel.
   - Install cable raceway as necessary.

- Install one category 5e data cable to each designated data jack outlet. Each cable is to be home-run to the appropriate communication closet. All cables are to be one continuous length with no splices between outlet jacks and patch panels.
- Wiring installed in ceilings must be bundled and supported off of the ceiling (cable raceway or Cat 5 rated J hooks are recommended).
- Terminate all wires at each outlet jack and appropriate patch panel location. Data jacks and patch panels are to be configured using TIA 568B color scheme. All terminations at patch panel are to be done in sequential order by room number and/or jack number.
- Test all data cables for proper connectivity and certify for category 5e, 100 MHz compliance and provide a 15-year minimum warranty.
- Install fire stop material after all cabling is installed as required.
- Label all jacks at each outlet location and on all patch panel locations using a commercially available label maker.
- Cable differentiation: Jackets for voice and data cables should be different colors to make differentiation easier.

2. Materials to be used
   - Relay racks should be Chatsworth P/N 46353-503 (19" X 7' free standing) or equivalent.
   - Ladder rack should be Chatsworth P/N 10250-112 or equivalent.
   - Patch panels* are to be 'fully loaded' category 5e compliant, rack mountable and configured using the TIA 568B color scheme with 110 connecting hardware on the back side.
   - Wire management panels are to be 19" with a minimum of four cable guides sized to accommodate a quantity of patch cords to match corresponding patch and jack count.
   - Data cable is to be category 5e rated, 4 pair, 24 gauge, unshielded twisted pair. The jacket material must meet appropriate fire rating.
   - Data jack* is to be RJ-45, category 5e rated, gray or black in color, configured using the TIA 568B color scheme.
   - Faceplates should be single gang in size where appropriate and should accommodate the appropriate number of data jacks required at each location.
   - Hubs for AS/400 connections should be Powerstar IV dual hubs with twinax inputs. Baluns for AS/400 terminals should be twinax to RJ45, with pins 4 and 5.

   *Note: Patch panels and jacks are to be of the same manufacturer. Materials not listed above are at the discretion of the contractor.

3. Labeling
   - Label all jacks at each outlet location and on all patch panel locations using a commercially available label maker.
   - A labeling scheme will be provided to the County's on-site point of contact.
   - Additional labeling requirements are indicated in each section under "Work to be done…"

4. Workmanship
   Cables not run above lay-in ceilings and inside walls will be concealed in non-metallic surface raceway and supported in such a manner to protect the cabling while not detracting from the facility aesthetics unless otherwise directed by the County's on-site point of contact.

   The new data outlet boxes and/or faceplates are to be mounted at the same height above the finished floor or work surface as any existing outlets, unless otherwise instructed by the site contact. Cabling raceway material shall make vertical runs as close to a room corner as possible, where feasible.

   Equipment rack installation locations shall be coordinated with the site contact.

   The contractor is to supply all materials and test equipment as required to perform the work as outlined in this document.

   The contractor shall be responsible for all cutting, drilling and patching required for the installation of the cabling as outlined. All floor and wall penetration locations are to be coordinated with the site contact. Any questions pertaining to structure stability shall be forwarded to the site contact, which will forward it to the agency Facilities Maintenance Office for resolution.

   The contractor shall be responsible for all clean up associated with the execution of this project.

   All installation methods shall conform to the appropriate and most current recommended standards, as well as any associated technical systems bulletin, as published by the TIA committee of ANSI.

5. Testing
   All data locations shall be tested for category 5e compliance. A written test results document is to be provided by the contractor to the site contact upon completion of project and prior to submittal of bill.

6. Warranty
   Provide a minimum 15-year warranty for Category 5e compliance for the data network. All installations shall conform to the standards of EIA/TIA-568-A. Certification of this compliance is required. All materials and labor are to be warranted for a period of not less than 15 years from date of acceptance. This warranty shall be in writing and provided prior to issuance of warrant.

D. Key Definitions

1. Agency shall mean any governmental entity, including state government, local government, or third party entities under contract to the agency.
2. Networking Services

E. Applicability

These policies are intended to be sufficiently generic to apply to a wide range of governmental and educational agencies in the State of Nebraska. All Agencies and local government agencies, which utilize networking services of the Information Management Services Division and the Division of Communication, must follow these guidelines when installing new cabling systems. Any exceptions must have approval of the Division of Communications and IMServices Division.

F. Responsibility

1. Division of Communications
2. Information Management Services Division
3. Nebraska Information Technology Commission. The NITC provides strategic direction for state agencies and educational institutions in the area of information technology. The NITC also has statutory responsibility to adopt minimum technical standards and guidelines for acceptable and cost-effective use of information technology. Implicit in these requirements is the responsibility to promote adequate accessibility for information systems through adoption of policies, standards, and guidelines.

G. Related Policies, Standards and Guidelines

Other Network Architecture Standards (to be developed)