

The Denver Public Library is seeking the following goods and services for the E-Rate Funding Year July 1, 2024 - June 30, 2025.

The Library's Form 470s may be found here:

<https://data.usac.org/publicreports/Forms/Form470Rfp/Index>

All communication must be written, no phone calls will be accepted.

Direct all inquiries to: Dave Hamilton, e-rate@denverlibrary.org

Please submit bids in electronic format (Excel, Word, or PDF) to: [**e-rate@denverlibrary.org**](mailto:e-rate@denverlibrary.org)

Bids are requested to be submitted by 5:00 pm, Friday, February 2, 2024.

The allowable contract date is Friday, February 2, 2024.

Written Questions and Answers will be posted on the following website:

[**https://sites.google.com/a/denverlibrary.org/e-rate/home**](https://sites.google.com/a/denverlibrary.org/e-rate/home)

All questions must be submitted by Thursday, January 18, 2024 and answers will be posted on or before Monday, January 22, 2024.

Answers will also be posted to the Form 470 in the EPC by Tuesday, January 23, 2024 at 5pm.

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Bids Sought for 2024-2025 Funding Year

Category Two Services and Equipment (USAC Form 470 #240010706)

Basic Maintenance of Internal Connections

8X5XNBD Maintenance/Support

- Cisco Smartnet or equivalent
- Co-term to 6/30/2025 required
- Vendor must indicate any and all expenses not covered by E-rate
- Spreadsheet of equipment: [DPL Smartnet 2024](https://docs.google.com/spreadsheets/u/0/d/11h8QWVnvM_8d_s_uw_6PdbknBi1IFUX8Ah8FW2LZc1g/edit)
(https://docs.google.com/spreadsheets/u/0/d/11h8QWVnvM_8d_s_uw_6PdbknBi1IFUX8Ah8FW2LZc1g/edit)

WiFi system refresh

Wireless Access Points and Controller to serve up to 29 library locations. Project proposal must include:

- System design to ensure maximum coverage of DPL's indoor and outdoor public spaces.
- Pre- and Post- installation surveys to verify coverage.
- As-built documents of complete system upon completion of the project.
- Professional Services to train DPL network staff on:
 - Ongoing System Management
 - Required Maintenance and Upgrades
 - Adding or removing APs and/or library locations
- Wireless Controller - prefer Cloud based, but hardware will be considered, if hardware option— please include both turn-key hardware pricing and virtual machine pricing (if applicable as an option) for two controllers - Meraki Enterprise Cloud Controller or equivalent
- Purchase and installation up to 600 WiFi6 Wireless Access Points - Meraki MR56 or equivalent
- Provide alternative pricing for up to 600 WiFi 6E - WiFi6 Wireless Access Points - Meraki MR57 or equivalent
- Mounting of up to 600 Wireless Access Points
- Cat 6a cabling pull (295 feet per drop (average 200 feet) for up to 600 Wireless Access Point installation - when current cabling is in good condition and AP is replaced in a previous location, previous cabling may be used as opposed to new cabling pulled.
- Cabling color must be determined by DPL network staff

- Cabling will be terminated with an RJ45 at one end and terminated to the DPL patch panel on the other end.
- A 2'-3' service loop to be placed at the AP location.
- When possible, cable pulls will be run inside the wall/ceiling. When that is not possible or when the project calls for it, provide conduit/wire molding. The color of the conduit/wire molding will have to match the color of the wall/ceiling.
- All circuits will be toned, tested, and certified for use; and warrantied for at least 3 years.
- DPL IT Construction Standards will be supplied to potential bidders and must be followed.

Data Cabling pulls through the year

Cabling pull for changes throughout the year - 29 locations, up to 100 drops added, up to 295 feet per drop (average 200 feet)

- Pricing must be on a per drop basis and include all time, materials, and any other expenses
- Cabling color must be determined by DPL network staff
- Cabling will be terminated with an RJ45 at one end and terminated to the DPL patch panel on the other end. Include a 2'-3' service loop at the termination location whenever possible.
- When possible, cable pulls will be run inside the wall/ceiling. When that is not possible or when the project calls for it, provide conduit/wire molding. The color of the conduit/wire molding will have to match the color of the wall/ceiling.
- All circuits must be toned, tested, certified for use, and warrantied for at least 3 years.
- DPL IT Construction Standards will be supplied to potential bidders and must be followed.

UPS Units for Data Closets

Network closet UPS for up to 36 locations (28 branches + 8 closets at Central)

- Output between 1440VA-1500VA, 1350W-1500W
 - Line interactive, single-phase, 2U rackmount UPS
 - Requires network connectivity compatible with DPL Tripp-Lite systems
 - NEMA 5-15P input; 4+ NEMA 5-15R or 4+ 5-15/20R outlets
 - Tripp-Lite SMART1500RMLN or equivalent
-

Library Branch Information

Branch Name	Address	Levels	Square Footage
Athmar Park	1055 S. Tejon Street	2	6,478
Ross-Barnum	3570 W. 1st Avenue	2	10,500
Bob Ragland (formerly Art Park)	1900 35th St, Suite A	2	7,000
Ross-Broadway	33 E Bayaud Avenue	1	4,500
Bear Valley	5171 W. Dartmouth Ave.	3	11,410
Blair Caldwell	2401 Welton Street	3	39,448
John "Thunderbird Man" Emhoola Jr. (formerly Byers)	675 Santa Fe Drive	2	4,640
Central	10 W. 14th Ave. Pkwy.	10	540,315
Cherry Creek	305 Milwaukee Street	3	17,808

Decker	1501 S. Logan Street	2	4,932
Eugene Field	810 S. University Blvd.	2	10,500
Ford-Warren	2825 High Street	1	10,573
Globeville (opens 2025)	4995 Washington	1	apx.10,500
Rodolfo "Corky" Gonzales	1498 Irving Street	2	26,973
Green Valley Ranch	4856 N Andes Court	1	25,602
Hadley	1890 S. Grove Street	2	12,962
Hampden	9755 E. Girard Avenue	1	11,560
Montbello	12955 Albrook Drive	1	11,443
Park Hill	4705 Montview Blvd.	2	10,260
Pauline Robinson	5575 E. 33rd Avenue	1	5,285

Sam Gary	2961 N. Roslyn	1	28,490
Schlessman Family	100 Poplar Street	3	14,884
Smiley	4501 W. 46th Avenue (5031 W. 46th Avenue)	2	4,726
Ross-University Hills	4310 E. Amherst Avenue	3	21,143
Valdez-Perry	4690 Vine Street	1	5,414
Virginia Village	1500 S. Dahlia Street	1	11,524
Westwood	1000 S. Lowell Blvd.	1	1,079
Lena Archuleta (opens April 2024)	3300 West Nevada Place	1	apx.10,023
Woodbury	3265 Federal Blvd.	3	10,023

UNIVERSAL SERVICE (E-RATE) REQUIREMENTS

To warrant consideration for an award of contract resulting from this Request for Proposals, vendors must agree to participate in the Universal Service Support Mechanism for Schools and Libraries (commonly known as the “E-rate” program) as provided for and authorized under the federal Telecommunications Act of 1996 (47 U.S.C. § 254 “Universal Service”). Vendors acknowledge that any contractual relationship resulting from this solicitation of proposals may be partially or entirely dependent upon the successful receipt of Universal Service Fund (“E-rate”) subsidies. To ensure compliance with all applicable E-rate regulations, program mandates and auditing requirements, vendors must comply with the following:

E-rate Knowledge

Vendor shall have, at a minimum, a working knowledge of how the E-rate Program works and what it requires the Vendor to do.

E-rate Registration

Vendor shall submit with its proposal a valid Service Provider Identification Number (“SPIN”) and a valid Federal Communications Commission Registration Number (“FCCRN”).

E-rate Participation

Vendor agrees to participate in the E-rate Program and to cooperate fully and in all respects with the District, the Universal Service Administrative Company (“USAC”), the Federal Communications Commission, and any other agency or organization with a role, now or in the future, in administering the E-rate Program. Vendor’s cooperation is necessary to ensure that the District receives all of the E-rate funding for which it has applied and to which it is entitled in connection with Vendor’s services and/or products.

Recourse Against Vendor for Failure to Cooperate

Vendor agrees that if the District is unable to receive funding for which it applied or is otherwise entitled to receive due to the Vendor not cooperating and/or providing requested documentation, Vendor will be liable to the District for the amount that the District was unable to collect from USAC due to Vendor’s failure to cooperate and/or provide requested documentation.

Lowest Corresponding Price

The Lowest Corresponding Price Rule (“LCP Rule”), 47 CFR § 54.511 (b), prohibits Vendor from ever charging the District more for E-rate eligible goods or services than it charges similarly situated non-residential customers for similar goods or services, unless it can prove that the lowest corresponding price (“LCP”) is not “compensatory.”

- The District is not obligated to ask for the LCP; it must receive it.

- Upon request, Vendor agrees to provide to the District, in electronic form, all of the information necessary to determine what the LCP is or, at a particular time, was.
- If, at the time of delivery, the LCP is lower than the agreed-upon price, Vendor must charge the LCP. If it is determined that the Vendor did not charge the LCP, Vendor agrees to correct the billing and return any monies to the District that were paid due to the Vendor's violation of the LCP Rule.
- Promotional rates that Vendor offers for a period of more than 90 days must be included among the comparable rates upon which the LCP is determined.
- There is a rebuttable presumption that rates offered within the previous three years are still compensatory.
- Vendor may not avoid the LCP Rule by arguing that none of its non-residential customers are identically situated to the District or that none of its contracts cover goods or services identical to those sought by the District.
- The FCC will permit Vendor to charge the District more than the LCP only when it can prove to the agency that the LCP is not "compensatory" – i.e., that it will face demonstrably and significantly higher costs to provide its goods and/or services to the District than it would to provide similar goods and/or services to similarly situated non-residential customers. Some factors that could affect the cost of service are volume, mileage from facility, and length of contract.

E-rate Documentation

Vendor shall provide to District staff and/or the District's E-rate consultant, as directed and within a commercially reasonable period of time, all of the information and documentation that the Vendor has or that Vendor reasonably can acquire that the District may need to prepare its E-rate applications and/or to document transactions eligible for E- rate support.

Invoicing Procedures

Vendor shall itemize, price, and invoice separately any materials or services that are ineligible for E-rate funding. Vendor must include the following information on all invoices to the District for E-rate eligible equipment and/or services:

- Date of invoice
- Date(s) of service
- Funding Request Number ("FRN")
- Vendor's signature on invoice attesting to the accuracy and completeness of all charges
- Detailed description of services performed and materials supplied that matches District's contract specifications, Form 470 and Form 471 descriptions of same
- Clear, concise breakdown of amount(s) to be billed to USAC (discounted portion of eligible charges) and amount(s) to be billed to the District (non-discounted amount of eligible charges)
- Invoice on Vendor's letterhead or on a Vendor-generated form
- District's Billed Entity Number

- District's Federal Communications Commission Registration Number
- Proper E-rate discount percentage as set forth by the applicable FRN and USAC funding commitment decision letter ("FCDL")

E-rate Discounted Invoicing

Vendor shall, invoice the District only for the non-discounted amounts due on E-rate-approved transactions and simultaneously invoice USAC for the balance.

Discounted Invoice Process

Invoicing

Within fourteen (14) days from the date that Vendor delivers to the District E-rate approved materials or services, when delivery of such services triggers a payment obligation under Vendor's contract with the District, Vendor must invoice the District for its share of the pre- discount cost of those materials or services.

Timely Filing

Vendor shall be solely responsible for timely filing invoices with USAC. Accordingly, Vendor understands and agrees that District will NOT be liable to Vendor and Vendor shall have no recourse against the District for any discounted amount that Vendor submits late to USAC for payment, if USAC refuses to pay the invoice due to late filing.

Invoice Rejection

Vendor understands and agrees that District shall not be liable to Vendor and Vendor shall have no recourse against the District for any discounted amount that Vendor submits to USAC for payment if Vendor is at fault for USAC's refusal to pay; if the District is at fault, the District shall not be liable to Vendor and Vendor shall have no recourse against the District for the amount at issue until the District has exhausted its administrative remedies.

District Approval

Before Vendor may submit an invoice to USAC for a service it provided or, in appropriate circumstances, will be providing to the District, Vendor must first submit a copy of that invoice to the District for its review and approval. The District shall not unreasonably delay or withhold approval of Vendor's USAC invoices. As Vendor is solely responsible for timely filing invoices with USAC, it understands that it must submit invoices to the District sufficiently in advance of any USAC filing deadline to ensure that there will be adequate time remaining for it to meet the USAC filing deadline after the District has had a reasonable opportunity to review and approve them.

Delayed E-rate Funding Commitment

Vendor understands that, due to circumstances beyond the District's control, the District may not receive an E-rate funding commitment by the beginning of the E-rate funding year, July 1, for the services it intends to purchase from Vendor during that funding year.

Retroactive Invoicing

When E-rate funding is approved, Vendor shall invoice USAC for the discounted amount the District is owed retroactive to July 1st of the funding year or to whenever approved service to the District began, whichever date is later.

E-rate Audit and Document Retention Requirement

Vendor shall retain secure, easily retrievable electronic copies of all bids, quotes, records, correspondence, receipts, vouchers, delivery information, memoranda and other data relating to Vendor's services to the District. All such records shall be retained for ten (10) years following completion of services and shall be subject to inspection and audit by the District. In all subcontractor agreements for services, Vendor shall include a provision requiring the subcontractor to retain the same electronic records and allowing the District the same right to inspect and audit them as set forth herein.

In addition to the foregoing, Vendor will create, implement and enforce an internal E-rate audit process that ensures that Vendor complies with all E-rate program rules and regulations. This process must include the following:

- Separating ineligible project management and other professional services costs, if any, from other charges
- Where labor is involved, maintaining detailed, signed individual timesheets
- Ensuring that ineligible charges are not submitted to USAC
- Invoicing to USAC that is consistent with the contract and the applicable Forms 470 and 471
- Ensuring that services or products are not provided to the District without District's express written permission or official purchase authorization
- Ensuring that District-approved substitute services or products are prominently noted on invoices submitted to USAC and the District
- Ensuring, where applicable, that non-recurring services are provided prior to September 30th and recurring services provided prior to June 30th of the relevant E-rate funding year

- Creating and retaining supporting documentation sufficient to evidence that what was approved per the FCDL and provided to the District was actually provided to the District and when
- If E-rate eligible services and/or installation or equipment costs are included as part of a larger contract or service/equipment billing, support for the allocation of E-rate eligible amounts and reconciliation of that total to the total amount billed
- If E-rate eligible services or equipment are allocated to multiple sites, support for the allocation consistent with the amount and locations identified in the Form 471
- Documenting that E-rate funded services were provided within the allowable contract period and program year
- Charging proper FRN(s)
- Ensuring that invoices and USAC forms are submitted to the District in a timely manner
- Ensuring that USAC forms are filled out completely, accurately, and on time
- Maintaining a fixed asset list of E-rate-supported equipment provided to the District with detailed information for each item (model number, serial number, product description) and made available to the District in electronic format

Contract Term Modification

The District reserves the right to extend or abbreviate the term of the contract for as long or short a period of time as it deems necessary, if the receipt of E-rate funding for the products and/or services the contract covers depends on it. For example: (1) a contract term modification might be necessary to make the Contract term coincide with an E-rate “program year;” or (2) a contract extension might be necessary if the District receives a “service delivery deadline extension.”

Addendum: DIVERSITY AND INCLUSIVENESS – EXECUTIVE ORDER #101

Definitions

Diversity: Diversity refers to the extent to which a contractor/consultant has people from diverse background or communities working in its organization at all levels, is committed to providing equal access to business opportunities and achieving diversity in procurement decisions for supplies, equipment, and services, or promotes training and technical assistance to diverse businesses and communities such as mentoring and outreach programs and business engagement opportunities.

Inclusiveness: Inclusiveness, for purposes of Executive Order No. 101, includes the extent to which a contractor/consultant invites values, perspectives and contributions of people from diverse backgrounds and integrates diversity into its hiring and retention policies, training opportunities, and business development methods to provide an equal opportunity for each person to participate, contribute and succeed within the organization's workplace. Inclusiveness also includes the extent to which businesses have an equal opportunity to compete for new business opportunities and establish new business relationships in the private and public sector.

Requirements

Using the linked form, entitled "Diversity and Inclusiveness in City Solicitations Information Request Form", please state whether you have a diversity and inclusiveness program for employment and retention, procurement and supply chain activities, or customer service, and provide the additional information requested on the form. The information provided on the Diversity and Inclusiveness in City Solicitations Request Form will provide an opportunity for City contractors/consultants to describe their own diversity and inclusiveness practices. Contractors/Consultants are not expected to conduct intrusive examinations of their employees, managers, or business partners in order to describe diversity and inclusiveness measures. Rather, the City simply seeks a description of the contractor/consultant's current practices, if any.

Diversity and Inclusiveness information provided by City contractors/consultants in response to City solicitations for services or goods will be collated, analyzed, and made available in reports consistent with City Executive Order No. 101. However, no personally identifiable information provided by or obtained from contractors/consultants will be in such reports.

To submit the required Diversity & Inclusiveness Form, please enter the following address into your web browser: <https://us.openforms.com/Form/57f3a8ea-39b7-4115-be17-1770f38d3cf6>

NOTE: A DIVERSITY & INCLUSIVENESS FORM MUST BE RETURNED WITH YOUR PROPOSAL; OTHERWISE, YOUR PROPOSAL MAY BE REJECTED WITHOUT CONSIDERATION.

Addendum: DPL Construction Standards

Section 1 - Introduction

1. Departments Involved in Design Process

This document provides design specifications for voice, video and data communications infrastructure at the Denver Public Library (DPL). The DPL IT, Facilities, Security, and City and County of Denver of Transportation and Infrastructure (DOTI) departments are responsible for this communications infrastructure and should be involved in the design process as appropriate to each project. Contacts for these departments are given below.

The individuals above shall be consulted initially during all phases of design. As questions arise during the construction phase, the above individuals are also to be consulted. **For organizational clarity, DPL IT must be the point of contact for all communications with data cabling subcontractors.**

Table 1. Contacts

Name	Email	Phone	Position
David Hamilton	dhamilton@denverlibrary.org	Office: 720-865-1174 Cell: 303-907-9497	Senior IT Manager, Denver Public Library
Jeremy Ansell	jansell@denverlibrary.org	Office: 720-865-1141 Cell: 970-567-0144	IT Svc Operations Mgr, Denver Public Library
Brigitte Kerr	bkerr@denverlibrary.org	Cell: 303.870.3795	Facilities Planner, Denver Public Library

The individuals above shall be consulted initially during all phases of design. As questions arise during the construction phase, the above individuals are also to be consulted.

2. Applicable Standards

Telecommunications physical infrastructure as defined by the Telecommunications Industry Association/Electronics Industry Association, or TIA/EIA, consists of six elements: 1) building entrance, 2) building main telecommunications room or Main Distribution Frame (MDF), 3) backbone cabling, 4) telecommunications closets or Intermediate Distribution Frames (IDFs), 5) horizontal cabling, and 6) work area. These elements will be augmented by a seventh element, networking equipment, required to provide a minimum level of data service for the building.

In general, the following standards at a minimum shall be observed for telecommunications infrastructure and are incorporated herein by reference:

- TIA/EIA 568A Commercial Building Telecommunications Cabling Standard
- TIA/EIA 569 Commercial Building Standard for Telecommunications Pathways and Spaces
- TIA/EIA 607-A-2002 Commercial Building Grounding and Bonding Requirements for Telecommunications
- Most current edition NEC
- BICSI DD 120-Grounding Fundamentals for TELCO Facilities Chapter 4 Telecommunications Systems Grounding (as reference)
- IEEE 802.3-1993
- Systimax Structured Cabling System (SCS) standards

This document provides interpretation of the standards referenced in the previous paragraph and provides additional detail, in some cases superseding those standards. Where Systimax guidelines differ from TIA/EIA standards, the Systimax guidelines supersede the TIA/EIA standard. Should the contractor require additional interpretation of these design guidelines, the contractor shall contact the designated Library representative (Table 1).

Table 2. Standards Hierarchy

System	Purpose	Substitutions
TIA/EIA/NEC/BICSI	Grounding, Bonding, and Fire-stopping	None
Corning	Fiber Optics Glass	None
Systimax Structured System (SCS)	Category 6e Copper Cabling	None

TIA/EIA	Data	None
TIA/EIA	Voice	Must be pre-approved in writing

The color standard for all horizontal cable within the libraries is Gray.

3. General Guidelines

Integral to the telecommunications infrastructure in buildings are the secure communications rooms, consisting of the MDF and, generally, one or more IDFs. These rooms must be secure, environmentally conditioned and clean before IT can work in them, especially as fiber must be terminated in these rooms requiring a very clean environment. Expensive and delicate networking devices, requiring environmental conditioning, also are housed in these rooms. In this regard, the MDF and IDFs shall be completed including environmental conditioning and completed early in the project timetable. In particular, all penetrations shall be completed and sealed (e.g., capped) before Telecommunications work can continue in these environments.

4. Equipment and Materials Specifications

Check with Contact, Table 1, to ensure use of the latest materials list.

Note that there are some materials for which no substitutions are allowed. Where substitutions are allowed, these must be pre-approved in writing in an addendum prior to the final design bid. Questions about substitutions of these materials should be referred to the Library designated representative (Table 1 Contacts).

Section 2: Horizontal Infrastructure

1. Horizontal Cabling

Systimax Structured Cabling System (SCS) or equivalent - Category 6a cable, connectors, and fixtures shall be used for horizontal data cabling. Data cable runs shall be strictly limited to 90 meters in total length, according to standards. In particular, IDFs are to be located so as to maintain less than a total 90-meter cable run.

Plenum Spaces - Plenum cabling or conduit shall be used in plenum spaces, this includes under floor space. Contractor shall determine prior to work being started, in consultation with DPL IT and DPL Facilities, whether the space is a plenum space.

Underground Cable – All cable placed in raceways installed underground shall be rated for wet locations.

2. Patch Cords

Table 3. Patch Cord Color Standards

Application	Color
Analog Interface (911, POTS lines)	Red
Interconnection (IT equipment)	Yellow
Public Data Network	Orange
Staff Data Network	Green
Wireless Infrastructure	White
Building Management Systems	Purple

Patch cords must be of proper length to eliminate “Jump Rope” and “Banjo” style of patching.

3. Conduit

Conduit – Please refer to; Building Industry Consulting Services International (BICSI) Telecommunications Distribution Methods Manual 11th Edition v. 1, Section 1 – Horizontal Pathway Systems, Chapter 4 – Horizontal Distribution Systems, p. 4.5 - 4.27 and Telecommunications Distribution Methods Manual v. II, Codes, Standards and Regulations, p. A7-A8 for details on the installation of conduit.

Contractor will leave pull string attached to each end of cable. All conduits to have heat sealable inserts.

Installation of Cable Trays – Install cable trays with sufficient space to permit access for installing the cables. Clear space shall be provided above the top rail equal to the loading depth but not less than 12 inches. Provide lateral clearance of 24 inches on at least 1 side of the trapeze hung tray. DPL prefers aluminum ladder type cable tray with 9” spacing on rungs. All cable trays must be trapeze hung.

Table 4. Conduit Fill Capacity

Number of Cables	Percentage
1	51%
2	31%

>2	40%
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Cables shall be pulled with no more than a 25-pound pull force applied at any time during installation.

4. Testing

Testing and Reporting of Test Results – Each Category 5e, 6, or 6e cable installed shall be tested in accordance with the latest EIA/TIA 568 standards, and the results recorded on a separate USB stick for each building and provided to DPL IT.

The contact from Table 1 shall be notified prior to any testing so that the representative or designate may be present during the testing.

5. Certification

Systimax Certification or equivalent (Panduit, etc.) – DPL requires that upon completion and testing of each building/project, certification must be obtained. The Telecommunications contact person is responsible for coordinating the certification and facilitating any remedies. Please refer to Table 1 – Contacts for the name of the Telecommunications contact.

6. As-Builts

As-Builts - Upon completion of termination and testing, as-built drawings of all Category 6a drops shall be provided within seven work days for each major phase of work; such as 1) floors, 2) wings, or 3) entire buildings. The as-built drawings shall be provided in PDF or AutoCAD format. These files are to be on a separate USB stick for each building.

7. Labeling

Drop (Circuit) Labeling – Each Category 6a drop installed shall be labeled per DPL labeling scheme. Each drop shall be labeled on the front of the jack faceplate, on the patch panel in the IDF or MDF, and on both ends of the cable.

Four labels per fiber cable, two for the cable and two for the fiber patch panel, shall be prepared for all fiber cables.

Examples of this should follow

Wall plate and Patch Panel labeling standard

Each wall plate and patch panel label will be labeled as follows:

- Closet location/Closet number
- Rack number

- Patch panel number
- Patch panel jack number

For example:

At CEN: 5W.1.3.34

Closet **5th** floor **West** end, Rack **1**, Patch Panel **3**, Patch Panel Jack **34**

B2W.1.6.29

Closet in the **second** floor **basement**, **West** end, Rack **1**, Patch Panel **6**, Patch Panel Jack **29**

Branch example:

1.1.2.15

Closet on **first** floor, Rack **1**, Patch Panel **1**, Patch Panel Jack **15**

2.2.2.23

Closet on **second** floor, Rack **2**, Patch Panel **2**, Patch Panel Jack **23**

B.2.5.10

Closet in the **basement**, Rack **2**, Patch Panel **5**, Patch Panel Jack **10**

8. Work Schedules

Invasive Work and Work Schedules Invasive work (e.g., core drilling, hammer drilling or work that is noisy, dusty, etc.) shall be conducted during off-business hours. Other work shall be coordinated with the Library designated representative (e.g., to pull cables during off-hours), and these arrangements shall be determined by mutual agreement.

Section 3: Communications Rooms (MDF and IDF)

1. General Requirements

Telecommunications room space (MDF and IDF), shall be dedicated to the telecommunications function and related support facilities. Equipment not related to the support of the telecommunications function shall not be installed, passed through, or entered in the telecommunications rooms without review by DPL IT and consideration in the sizing of the space, environmental requirements, etc.

DPL IT CANNOT install equipment in communications rooms prior to the completion of the following items; (a) permanent dedicated power, (b) proper grounding and lighting, and (c) secure permanent door and two keys provided to the Senior IT Manager.

DPL IT REQUIRES a minimum of three (3) weeks from the completion of the aforementioned items until the service data for the following services; (a) elevator telephones, (b) fire alarm(s), (c) door security, (d) environmental controls, and (e) voice, data and/or video services.

DPL IT strongly recommends that early in the design phase ALL parties desiring to install equipment in the MDF and/or IDFs be collectively engaged to discuss placement of equipment and determine size requirements for the communications rooms.

DPL IT requires a minimum of 3' of clear space adjacent to all sides of the primary rack.

Demarcation points and fiber interfaces will be located in MDF or IDF rooms, per architectural, functional, and contractual agreement.

Uninterrupted Power Supply (UPS) Standards

The capacity of the UPS is a function of the equipment it is intended to support.

A minimum of 30 minutes UPS support time is required for IDF and 2 hours for MDF,

All UPS equipment must be installed to accommodate the environment provided. (MDF, IDF, 2 post, 4 post, etc)

Access Control

Doors to all DPL Data Closets will remain locked at all times with badge-only entry required. Hard keys will be available for emergency entry. Card key access will only be provided to Security, Facilities, and Library IT.

Library badge system will integrate with the existing Active Directory Identity Management network database and infrastructure..

2. Main Distribution Room–MDF

DPL IT shall provide customized communication room designs based on the requirements of each project. Please contact the Telecommunications Contact Table 1 page 3.

The following are general guidelines in the absence of a custom communications room design.

Buildings shall have a MDF where voice, video and data enter the building. The MDF also serves as the distribution point for voice, video and data and shall be secure to protect the integrity of these systems, particularly E911 services.

Grounding and bonding shall be provided in the MDF that includes bonding to equipment racks, cable trays and telecommunications conduits in strict accordance with the TIA/EIA 607 standard, the most current edition NEC, and as a reference BICSI DD 120-Grounding Fundamentals for

TELCO Facilities, Chapter 4 Telecommunications System Grounding and extended to all IDFs as described therein. All penetrations of the MDF envelope shall be fire-stopped.

In buildings of size 5,000 square feet or greater, a secure room dedicated to telecommunications, shall be provided for the MDF. In smaller buildings, a secure wall-mounted Hoffman box may be an option in lieu of a separate, dedicated room.

TIA/EIA 569 shall be strictly observed for the MDF, especially as to location (away from electromagnetic interference), perimeters (no false ceilings), limited access (i.e., security), HVAC, lighting and electrical.

MDF Power Requirements:

MDF shall be provided with four dedicated and two general use circuits.

Two 20 amp, 120 volts NEMA 5-20 terminated on double duplex outlets, and two 30 amp, 208 volts NEMA L6-20 outlet on the wall adjacent to the telecommunications racks. The general use outlet shall be near the door for ease of access – these locations shall be determined in consultation with DPL IT.

Provisioning of power and receptacles for non-DPL-IT equipment requiring power installed in the MDF or IDFs is the responsibility and at the expense of the entity responsible for the equipment. No extension cords are acceptable loose on the floor or tied to the infrastructure.

No piping, ductwork, mechanical equipment, or power cabling or similar shall be allowed to pass through a MDF that is not associated with the communications services in that specific MDF. Switched lighting of 50-foot candles shall not be sourced from the same circuit as the telecommunications equipment.

MDFs shall be environmentally conditioned to accommodate network equipment loads up to 10,000 BTU/hr/. Temperature in MDFs shall not exceed 75°F.

The MDF shall have 3/4" A/C fire treated plywood backboards to be installed on all walls, 8' high, painted with matte white paint.

The MDF serves as the fiber distribution point for the building and houses the network switches. DPL IT will design the network-switching infrastructure.

In a multi-story building, there should be an IDF room on each floor, centrally located. DPL IT requires that the MDF be located on the ground floor. All data cable runs are to be limited to 90 meters in length.

The MDF shall be large enough to accommodate at least two 7'x19" relay racks and 3 - 12" vertical organizers; one rack for the building fiber and copper distribution and the other for the building

data switches and associated UPS. The MDF shall also accommodate the voice and video distribution systems which may be wall or rack mounted.

All raceways into the MDF envelope shall be a fire barrier pathway.

Doors shall open outward and adhere to all fire codes. It may be necessary to install double opening doors for this purpose. Self-closing locksets shall be used to ensure doors are secure upon their closure.

3. Intermediate Distribution Room (IDF)

DPL IT shall provide customized communication room designs based on the requirements of each project. Please contact the Telecommunications Contact Table 1.

The following are general guidelines in the absence of a custom communications room design.

Grounding and bonding shall be provided in the IDF that includes bonding to equipment racks, cable trays and telecommunications conduits in strict accordance with TIA/EIA J-STD-607-A-2002 standard, the most current edition NEC, and as a reference BICSI DD 120-Grounding Fundamentals for TELCO Facilities, Chapter 4 Telecommunications System Grounding and extended to all IDFs as described therein. All penetrations of the IDF envelope shall be fire-stopped.

TIA/EIA 569 shall be strictly observed for the MDF, especially as to location (away from electromagnetic interference), perimeters (no false ceilings), limited access (i.e., security), HVAC, lighting and electrical.

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IDF Power Requirements:

IDF shall be provided with four dedicated and two general use circuits.

Two 20 amp, 120 volts NEMA 5-20 terminated on double duplex outlets and (if applicable) two 30 amp, 208 volts NEMA L6-20 outlet on the wall adjacent to the telecommunications racks. The general use outlet shall be near the door for ease of access – these locations shall be determined in consultation with DPL Telecommunications.

Provisioning of power and receptacles for non-DPL-IT equipment requiring power installed in the MDF or IDFs is the responsibility and at the expense of the entity responsible for the equipment. No extension cords are acceptable either “loose” on the floor or tied to the infrastructure.

No piping, ductwork, mechanical equipment, or power cabling or similar shall be allowed to pass through an IDF that is not associated with the communications services in that specific IDF. IDFs shall be supplied with 50 foot-candle of switched lighting, which shall not be sourced from the same circuit as the telecommunications equipment.

Each floor shall have a dedicated IDF. IDFs shall be environmentally conditioned to accommodate network equipment loads up to 7,000 BTU/hr/. Temperature in IDFs shall not exceed 75°F.

The IDF shall have 3/4" A/C fire treated plywood backboards to be installed on all walls in the IDF, 8' high, painted with matte white paint.

The IDF serves as the fiber access point for the building and houses the network switches. ACNS will design the network-switching infrastructure.

IDFs shall be located at points that minimize the runs of the data network to the end user, typically in the center of wings of buildings. Data cable runs are to be limited to 90 meters, and this may affect placement of the IDF or require additional IDFs to be added.

IDFs shall be sized such that there is ample room to install racks to house the equipment. The IDF shall be sized to accommodate a minimum of two vertical 7'x19" relay racks and 3 - 12" vertical organizers: one for the fiber, an IDF switch, and UPS; and another for edge network switches. Ideally, there shall be 48" of space on each side of the rack lineup. Preferably, the MDF and IDF shall be vertically stacked within the building. Vertical relay racks and organizer dimensions may be modified, as needed, when agreed to by all parties.

IDFs shall be sized to accommodate all connections that may potentially be used from that room. In a typical scenario, an IDF would serve an area of approximately 10,000-15,000 Assignable Square Feet (ASF), depending on density of connections deployed from the IDF.

Table 6. IDF Size Specifications

Serving Area	Number of Jacks	Room Size
10,000 sq. ft	361-480	10x12
8000 sq. ft.	241-360	10x10
5000 sq. ft.	0-240	10x8

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Additional rooms, one for each area up to 10,000 square feet or the horizontal distance to the work area exceeds 250 feet, shall be required.

Doors shall open outward, adhere to all fire codes, and be secured with self-locking locksets. It may be necessary to install double opening doors for this purpose.

The communications rooms shall not be located below water level unless preventive measures against water infiltration are employed. The communications rooms shall be free of water or drain pipes not directly required in support of the equipment within the communications rooms. A floor drain shall be provided within the room if risk of water ingress exists.