NETWORK INFRASTRUCTURE ENGINEER – MUNICIPAL BROADBAND

DESCRIPTION

Under direction, designs, plans, and optimizes municipal broadband fiber network infrastructure; prepares network architecture, bills of material, cost estimates, and technical standards; provides oversight, training, and technical support for engineering and fiber installation staff; ensures quality assurance and compliance with codes and industry standards; does other related duties as required. Work includes the application of professional engineering knowledge, industry codes, and emerging broadband technologies to ensure the reliability, scalability, and security of City-operated networks.

EXAMPLES OF WORK

- Designs broadband fiber network architecture for the City, including fiber-to-the-premises (FTTP), GPON/XGS-PON, Ethernet, and optical transport systems.
- Develops detailed network designs, bills of material, and cost estimates for capital projects and service expansions.
- Establishes technical standards, engineering deliverables, and documentation to guide engineers, contractors, and fiber technicians.
- Manages network capacity planning to meet customer demand in residential, business, and multiple dwelling unit (MDU) environments.
- Reviews and approves contractor designs, construction drawings, and vendor equipment submittals.
- Conducts quality assurance/quality control (QA/QC) inspections of fiber installations and verifies adherence to specifications.
- Evaluates vendors, contractors, and service providers for technical compliance and performance.
- Provides advanced technical support and training to engineering teams, network operations staff, and field technicians.
- Prepares and maintains network performance monitoring tools, utilization reports, and infrastructure documentation.
- Participates in developing budgets, project schedules, and funding/grant proposals for broadband infrastructure.
- Serves as a technical liaison with utilities, ISPs, public safety agencies, and external stakeholders.
- Researches and recommends new technologies and methods to improve network efficiency and service delivery.
- Prepares technical reports and makes recommendations to supervisors and governing bodies.

REQUIREMENTS

EDUCATION
Graduation from an accredited college or university with a bachelor's degree in Electrical Engineering, Computer Engineering, Network Engineering, Telecommunications, Information Technology, or closely related field. Required and authenticated industry certifications.

EXPERIENCE
Four (4) years of professional experience in the design, planning, and implementation of network infrastructure, including two (2) years specifically with fiber-optic broadband or telecommunications systems.

NOTE: Applicants who do not possess the required education may substitute additional professional experience in network infrastructure engineering on a year-for-year basis.

LICENSE
Appointees will be required to possess a valid driver's license in New Jersey only if the operation of a vehicle, rather than employee mobility, is necessary to perform the essential duties of the position.

KNOWLEDGE AND ABILITIES

Knowledge of:

- Principles and practices of broadband fiber network design and deployment.
- Optical transport technologies and architectures (GPON, XGS-PON, DWDM, Ethernet).
- Industry standards, regulations, and codes (FCC, NEC, BICSI, ITU, IEEE).
- Network capacity management, traffic engineering, and performance monitoring.
- Quality assurance/control methods for fiber installation and splicing.
- Vendor evaluation and procurement standards.
- Project management techniques and cost estimation.

Ability to:

- Design and optimize municipal broadband network infrastructure.
- Prepare technical plans, bills of materials, and cost projections.
- Analyze and interpret engineering drawings and vendor specifications.
- Provide technical leadership and training to staff and contractors.
- Conduct QA/QC reviews and enforce compliance with standards.
- Diagnose and resolve advanced network infrastructure problems.
- Communicate complex technical issues to technical and non-technical audiences.
- Establish and maintain cooperative working relationships with public officials, contractors, and service providers.
- Prepare clear technical reports and maintain accurate records.