ENENGINEERING

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City of Superior, Wisconsin RFP – ConnectSuperior Fiber Engineering Phase Two (2)

Prepared for: City of Superior, WI
Dan Shea, IT Director

September 10, 2024

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Cover Letter

September 10, 2024

Dan Shea, IT Director
City of Superior, WI

Cover lettter should always be customized. We've worked for Superior they are a current customer. We should have stated that here....

Dear Mr. Shea,

EN Engineering (EN) is a leading national engineering services firm providing comprehensive design, engineering, and consulting services to gas and electric utilities, local governments including cities, counties and tribes, as well as other energy and industrial end-markets. With over 3,600 professionals in 36 offices nationwide, EN offers customers an unparalleled spectrum of services with expertise in electric power transmission, substation, distribution, and fossil / renewable power generation, as well as a vast array of telecommunications services. EN Engineering, LLC is a limited liability corporation established on July 19, 2001, in the state of Delaware. While EN Engineering has been rebranded as part of the ENTRUST Solutions Group, EN Engineering, LLC is still the operating and contracting entity through which services will be provided. EN will be bidding all aspects of the Superior RFP including Engineering Services, Project Management Services, and Construction Management Services. EN acknowledges both addenda issued by the City of Superior.

Some *unique* items we'd like to highlight in our experience and how they relate to Superior needs are included below:

- **Consulting & Planning Experience:** EN offers a suite of comprehensive Broadband / Fiber Consulting and Implementation services that analyze, identify, explain, and solve complex technical issues for local governments trying to bring access to their residents. Our team of industry experts offers decades of real world experience that can offer custom solutions to our clients. Our Grants Team works in tandem with our Broadband Consultants so that EN is always aware of the ever-changing initiatives involving State and Federal legislature.

- **Fiber and Broadband Design Experience:** EN has over 20 years of experience in offering Fiber design and solution services. Our Engineers are fully capable of providing the best possible routes for fiber lines whether it be underground or aerial. We are able to plan and route fiber designs from start to finish and provide needed access points across miles of network. EN is a turnkey solution provider to municipalities when it comes to Fiber / Broadband Network design and deployment.

- **Smart City Planning Experience:** EN offers a suite of Smart City Consulting, Planning, Design and Implementation services. EN is able to calculate the cost usage per device in CITY/COUNTY that will be connected to provide an accurate cost estimate. We can connect many different applications or tools including Smart Grids, Smart Meters, Lights, Signals, and underground assets.

- **Communication Engineering Experience:** Our experience in communication engineering include but are not limited to following scopes of work: cutover of multiple POTs, relay, alarm and RTU circuits from copper to T1 facilities; project coordination, project reporting and tracking, as well as coordination with such companies as Verizon and AT&T; estimates and engineering support for design, conduit installations, circuit cutovers, siting, environmental permitting, equipment and construction services; licensing fees and real estate purchases; manage client's internal telecommunications resources, as well as outside contractors to replace obsolete structures at each site; budgetary assessments, project reporting and completion of technical and project authorizations; and scheduling development and adherence.

EN Engineering has made their own examination, investigation and research regarding the method of doing the work, all conditions affecting the work to be done, the labor, equipment and materials, and the quantity of the work to be performed. EN Engineering agrees that it has satisfied itself by Proposer's own investigation and research regarding all of such conditions, and that Proposer's conclusion to enter into the Service Agreement and based upon such investigation and research, and that Proposer shall make no claim against the City because of any of the estimates, statements or interpretations made by any officer or agent of the City which may prove to be erroneous in any respect.

We look forward to putting our people and our processes to work for you, to complete services on a consistent and timely basis. We thank you for your consideration. Please do not hesitate to contact your Project Executive, Cole Henkle at chenkle@entrustsol.com.

Sincerely,

Jesse Rodriguez

Jesse Rodriguez
VP of Commercial Operations
jrodriguez@entrustsol.com

EN Engineering Overview and Experience

EN provides fiber engineering, consulting and network implementation to municipalities and utilities whose goal is to improve broadband in their communities. Over 400 municipalities, utilities and cooperatives have used EN to develop their fiber and broadband networks. Our mission is to connect every community, one at a time, to the digital economy so that no one is left behind. Our work ensures that communities can access every opportunity the internet has to offer so they can thrive in the connected world.

Our turnkey broadband solutions allow our clients to maintain a single partner that fulfills every aspect of planning and deploying broadband networks, with seasoned experts guiding their deployments every step of the way. Our success is based on our clients' success and our fiber solutions enable our clients to serve their citizens' most pressing broadband needs in the digital age.

Our mission is to provide a single-source solution to innovative cities that believe in broadband's ability to transform communities. Our staff comes from other cities that have implemented broadband. They carry the most experience industry-wide in planning, community needs assessments, engineering, construction management, inspections, sales, marketing and operations. EN provides a full spectrum of services to our municipal clients because we know that they need guidance on all stages of broadband planning and development, as well as guidance on how to fund, deploy, launch, operate, and provide the best levels of services to their citizens and businesses.

Over our 20 years in business, we've worked with over 400 municipalities, with over 1 million miles of municipal fiber designed and 50 municipal fiber networks built and active today. This experience has shaped the way we serve our clients' needs. It's led us to develop a consultative and collaborative approach, ensuring that your community is engaged, and their needs are well-defined. We work hard to develop innovative solutions to deploy broadband networks because we know the political, financial, regulatory, and operational challenges that cities face in implementing these projects.

Fiber and Broadband Design Engineering Capabilities

EN provides fiber engineering, consulting and network implementation to municipalities and utilities whose goal is to improve broadband in their communities. Over 400 municipalities, utilities and cooperatives have used EN to develop their fiber and broadband networks. Our mission is to connect every community, one at a time, to the digital economy so that no one is left behind. Our work ensures that communities can access every opportunity the internet has to offer so they can thrive in the connected world.

Our turnkey broadband solutions allow our clients to maintain a single partner that fulfils every aspect of planning and deploying broadband networks, with seasoned experts guiding their deployments every step of the way. Our success is based on our clients' success and our fiber solutions enable our clients to serve their citizens' most pressing broadband needs in the digital age. Our in-house design team has significant scaling capabilities to handle extensive multi-phase design and construction projects.

Fiber and Broadband Design Solutions

- Aerial
- Underground
- GPON and Active Ethernet
- Data Center, Central Office, and Shelters
- Network Architecture
- Construction Packages

- Construction Management
- Project Management

Facilities Planning & Siting Capabilities

EN is extremely experienced in all aspects of siting & planning services for transmission, substation and distribution projects. As an industry leader we understand that impacts to the environment, surrounding community and utility facilities based on conditions surrounding a project are all critical to consider. Our local team in Florida is well versed in all aspects of local and state permitting including highway, railroad crossings, environmental and army corps of engineers permitting. Below is a summary of services associated with siting & and planning services.

Transmission & Substation Interconnect Facility Planning

- 30% design package
- Cost estimation
- Permitting impact identification
- Right of way & easement acquisition identification
- Communication with the developer on system impact coordination as required

NEPA & Ecosystem Management:

- Wetland delineation & mitigation
- Wetland and stream restoration
- Endangered species surveys
- Habitat studies
- Fish counts, reports & analysis
- Forest stand delineation and conservation

Land Development

- Site Grading
- Water & Sewer
- Roads & Drains
- Earthwork Analysis
- Cost Estimation
- Landscape Designs
- Rezoning Variances
- Concept Plans
- Public Hearings / Community Input Meetings

Regulatory Compliance & Permitting

- CWA Sections 401 & 404
- USACE Section 408
- USCG Section 10
- Federal/State Joint Permit Application
- NPDES hydrostatic test water discharge permitting
- NPDES wastewater permitting
- NPDES construction storm water permitting
- US Fish & Wildlife (USFWS) and State Endangered Species Compliance

Regulatory Compliance & Permitting

- FEMA/State/Local Floodplain Review & Permitting
- State/Local Sediment & Erosion Control Plans
- State Water Withdrawal Permits
- State/Local Regulated Drain Permits

Construction Management Capabilities

EN Construction Manager ("CM") will manage the overall construction of the fiber-optic network. The CM will review overall compliance with project schedules and specifications, assessing contractor adherence to utility, public works and right-of-way requirements, pole attachment, make-ready, performance of construction activities, and development of applicable project documentation. Other tasks that will be performed include:

- Ensure any grant-funded construction conforms to State of Wisconsin requirements, in terms of quality and craftsmanship.
- Perform a visual survey of the network with the contractor before construction commencement and make any modifications necessary to the plans and specifications.
- Manage make-ready work to ensure it meets requirements and pole infrastructure is ready for new fiber installation.
- Coordinate make-ready construction work;
- Obtain and review fiber reel tests from manufacturer and contractor; review contractor splice tests during construction to ensure splice loss is within the limits of the light loss budget. Oversee end-to-end testing of the network.
- Manage the overall construction deployment of the outside plant, ensuring schedule management, specification compliance and documentation.
- Act as the main point of contact for selected construction contractors, addressing field issues, coordinating daily activities, and assessing compliance with both health and safety requirements and with applicable permits.
- Coordination with the client as applicable on updates with project reporting, construction activities, material access and handling, production tracking, documentation control, and administrative requirements.
- Production tracking, coordination with construction vendor, assessing adherence to schedule commitments, troubleshooting, tracking completion of punch list items, confirming final completion and delivery.
- Facilitating "onsite" quarterly, cross-functional meetings with the client, providing applicable construction updates, identifying any issues with, and resolution of, applicable action items.
- Construction back-office management and accounting, invoice review and approval and change order processing.

Construction Inspection Capabilities

EN will provide construction inspection ("CI") services for all mainline, distribution and drop construction. EN's construction inspectors provide on-site supervision to determine compliance with project specifications and federal and state requirements, applicable permits, and protection of the environment and historic or cultural

sites. All field data and information related to changes in the field, as-built and redline information will be acquired and reviewed in real time. In addition to these services, on-site inspection services provide field representation with oversight of crews in the field. Field inspection services include the following, as well as per diem, lodging, and vehicles for local construction inspection resources up to 5 days per week:

- Real time inspection services at the site of the work, including compliance to specifications and federal requirements; and review of installations.
- Inspection of aerial and underground placement to ensure the network conforms to the plans and specifications.
- Recording of all units placed to ensure accurate construction accounting and validation of contractor invoices.
- Onsite assessment of installed quantities and installation quality assurance.
- Review of local, state, and federal code compliance including National Electric Code.
- Onsite supervision of fiber-optic testing (OTDR and power meter) and compliance.
- Field level decision-making to minimize crew downtime.
- Review of deliverable accuracy for all documentation including red lines, directional bore logs and production sheets.
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- Review of deliverable accuracy for all documentation including red lines, directional bore logs and production sheets.

References and Recent Experience

Connect Superior Phase 1 – City of Superior, WI

Contact

Stephanie Becken, Broadband Manager
Email: beckens@superiorwi.gov

Challenge

The City of Superior, Wisconsin (ConnectSuperior) required a design for constructing a new FTTP (Fiber-to-the Premise) network to serve the underserved areas of the city. The project began with outside plant design of a pilot area of ~833 service endpoints. Construction began the first week of September 2024.

EN's Solution

Connect Superior enlisted the design services of EN to include backbone connectivity back to the point-of-presence, distribution and premise drops. The phase of the project also includes two fiber mid-span meets enabling two internet service providers to connect to the ConnectSuperior network and provide service via the Open Access approach.

NEED SUMMARY

Our Client's Success

The pilot phase of the project is in-progress.

Fiber Design and Construction Management – City of Hillsboro, Oregon

Contact

Greg Mont, Information Services Director
Phone: 503-681-5401
Email: greg.mont@hillsboro-oregon.gov

Challenge

The City of Hillsboro and Hillsboro School District envisioned a joint partnership for a community owned fiber network to support schools' connectivity needs and enable a platform for world-class broadband. In 2017, the City and School district signed an agreement to co-build the network. The next step was to identify a partner that understood municipal fiber projects and could manage the complex engineering process at hand, creating two networks from one.

EN's Solution

The City of Hillsboro hired EN to develop a citywide fiber backbone and fiber to the home broadband network. EN approached the design by working with School District staff to determine their most important needs – high bandwidth, reliability and redundancy across all schools. Through the planning process, EN designed a highly redundant, multi-ring fiber backbone to connect 34 schools with dark fiber.

Concurrently, EN engineered an optimal fiber to the home architecture using the backbone network as a launchpad for broadband. Our design furnished the City with a blueprint for broadband across 44,000 homes and businesses. We provided detailed fielding, utility assessment, permitting, make-ready, prints, costing and as-builts for each phase of construction. The design delivers 1 and 10 gigabit capabilities natively in the network. To enable seamless deployment of the network, the City also selected EN to manage construction, given our deep experience constructing municipal fiber and our collaborative approach with the City's internal departments.

Our Client's Success

Today, 34 schools are connected to the network, providing nearly unlimited bandwidth to support their current and future needs, while reducing its operating budgets by $200,000 annually. The fiber backbone and the first

phase of fiber to the home construction have been completed to enable the City to launch its gigabit internet services to the first homes in Hillsboro.

Feasibility Study and Fiber Design – City of Waterloo, Iowa

Contact

Eric Lage, General Manager of Telecommunications
Phone: 319-291-0175
Email: eric.lage@waterloofiber.com

Challenge

The City of Waterloo, Iowa selected EN in 2019 as its partner in the development of a Broadband Study and Action Plan that will identify needs and opportunities for future broadband expansion and growth. EN assisted the City of Waterloo in preparing for the internet of things by integrating fiber-to-the-home broadband and smart city technologies into the City's Broadband Study and Action Plan, a long-term plan, which will ensure that Waterloo is prepared to take advantage of all future wired and wireless applications which may benefit the community.

EN's Solution

EN engaged the City of Waterloo leadership and studied the state of broadband throughout the community, while gathering and presenting information to assist City leadership in making informed decisions as it relates to deploying broadband citywide. The EN team developed supporting financial models and presented multiple options to the City for its consideration. Our team developed an implementation strategy and action plan for Waterloo, allowing the City to immediately begin making improvements to the community's broadband services. This plan will enable the City of Waterloo to also support retaining and attracting new businesses, improving residential and business broadband services all while making Waterloo a high-tech competitive community. The project's final report will served as an implementation roadmap to ensure the broadband needs of Waterloo are served today, and well into the future.

Our Client's Success

In April 2021 the City of Waterloo extended EN's contract to begin Design, Engineering and Permitting activities for a 120-mile fiber-optic backbone identified in the Action Plan. This backbone will connect hundreds of City and Utility sites and will provide the necessary capacity to support a Fiber-to-the-Home deployment. EN engaged the City of Waterloo in 2020 to study the state of broadband throughout the community to gather and present information to assist City leadership in making informed decisions as it relates to deploying broadband citywide. The EN team developed supporting financial models presented multiple options to the City. Our team developed an implementation strategy and action plan for Waterloo, allowing the City to immediately begin making improvements to the community's broadband services. This plan will enable the City of Waterloo to also support retaining and attracting new businesses, improving residential and business broadband services all while making Waterloo a high-tech competitive community. The project's final report has been delivered and the City is moving forward with funding. Following the Study and Design Engineering, the City of Waterloo selected EN to complete Project Management and Construction Management of 512 mile of backbone and FTTH.

Fiber Design and Construction Reference: City of Rancho Cucamonga, CA

Contact

Fred Lyn, Utility Division Manager
Phone: 909.477.2740 ext. 4035
Email: fred.lyn@cityofrc.us

Challenge

City leadership recognizes that fiber-optic infrastructure is an important part of the Rancho Cucamonga community. They understand that in today's world, connectivity affects every aspect of the community - whether in municipal operations, public safety, education, healthcare, quality of life, entertainment and commerce. To realize leadership's vision, the City needed a partner that could develop and manage the expansion of fiber-based broadband across the City in a measured approach that achieved the City's financial constraints while expanding access in year-by-year deployments across the City.

EN's Solution

EN worked with the City to develop a fiber master plan and engineering assessment that laid out a multi-year plan for new aerial and underground fiber deployment throughout the City, totaling $12 million over 6 years. Since adopting the master plan in 2017, EN has designed and built the first three phases of the fiber to the premises network. In this work, we have provided full engineering, fielding, utility assessments, pole and make ready planning, construction prints and bid packages. We also manage construction as an owner's representative for the City in the fiber build, ensuring that the construction contractor meets our engineering specifications developed for the City, with tight quality control and within the budget.

Our Client's Success

Today, the City has connected neighborhoods and business corridors, enabling gigabit broadband services to residents and businesses across the City. Residential customers receive gigabit service for $69.99 per month, giving them nearly five times the bandwidth for a lower cost than is available in the market today. Businesses have competitively priced internet on City fiber that has replaced slow and unreliable DSL, and cable internet services.

Fiber Design and Construction References: City of Chesapeake, VA

Contact

Contact: Jay Krail
Email: jkrail@cityofchesapeake.net
Phone: 504-920-3181

Challenge

The City of Chesapeake, located in the Hampton Roads region of Virginia, is currently experiencing a technology ecosystem boom. As the region flourishes, Chesapeake's leadership noticed a lack of resilient and accessible fiber infrastructure to support the City's technology initiatives and broadband services. In late 2019, the City engaged EN Advisors to lead the development of Chesapeake's Next Generation Network (C-NGN) in an effort to provide world-class fiber connectivity to the City's enterprises, partners, and the greater Hampton Roads region. The objectives included enhancing municipal services, promoting economic development, supporting education and creating a catalyst for future private investment in broadband.

EN's Solution

EN worked with the City to engineer the 170-mile C-NGN fiber-optic network and complementary smart city wireless overlay, branded Chesapeake Connects. EN conducted detailed assessment of each stakeholders' needs and developed the network design to maximize community use of the fiber. The network connects over 200 community facilities including city, school, library, hospital, public utility, public safety and traffic locations. The design also incorporates Chesapeake's economic development goals by ensuring that key business corridors are equipped with high-capacity fiber. EN Advisors engineered over 170-mile route miles of fiber, including fielding, low-level design, construction prints, permitting, master budgets and construction bids. In late 2020, EN's scope was expanded to determine how Chesapeake Connects will support organizations during and after the COVID-19 pandemic focusing on telehealth and remote education.

Our Client's Success

EN's process of design, then bid, then build is giving the City best approach to minimize the cost of construction, select the most capable construction contractor and ensure rapid deployment of the network.

The City of Chesapeake began construction by July 2021 and is working with EN to accelerate the timeline, targeting 18-24 months for completion of major construction related activities.

Smart City and Fiber Design Reference, City of Boulder, CO

Contact

Steve Catanach Director of Utilities
P: 303.441.3274
E: catanachs@bouldercolorado.gov

Challenge

In 2019, EN first conducted a comprehensive review of departmental needs within the City, including transportation, public works, public housing, police and fire, utilities, information technology and open space mountain parks. Through this assessment, over 200 new City-owned sites were identified to be connected to fiber. EN developed the full engineering design package and optimized the fiber backbone to support fiber to the home distribution, to support broadband programs that the City would consider in the future. Our unique design lowered the bar for deployment of new fiber to the home by reducing the cost to build this infrastructure. We also found miles of unused City conduit during the design process, which we integrated into the final engineering design, saving the City approximately $1 million in new construction. We provided detailed fielding, utility assessment, permitting, make-ready, prints, costing and as-builts for each phase of construction. To enable seamless deployment of the network, the City also selected EN to manage construction, given our deep experience constructing municipal fiber and our collaborative approach with the City's internal departments. *EN's Solution*

Our team worked with Marion County to identify opportunities for partnerships with utilities and private industry to develop a plan that met both the needs and capabilities of each unique community within the County. The Plan's recommendations included capitalizing on a planned public works project to deploy additional broadband infrastructure to several of the towns in which lack of broadband access was most dire, as well as partnering with new internet service providers to deliver services that meet the needs of precision agriculture operations.

Our Client's Success

Today, the first two phases of construction are complete. Over the next 24 months, EN will manage the construction of the remaining 50 miles of fiber, connect 114 traffic signals, 23 public housing sites, 2 data centers, 7 towers and 25 other city facilities. Over this time, it will lead to significantly improved capabilities for the City's departments and a new fiber resource to support future broadband applications for residents and businesses.

Additional Recent Projects

City Cherokee Nation, Tahlequah, Oklahoma – Tribal Middle-Mile Fiber Backbone connecting 15 PoP Sites and CAIs

Contact: Spencer Risenhoover; Broadband Program Manager
Address: 17675 S Muskogee Ave, Tahlequah, OK 74464
Phone: 918-510-9208
Email: Spencer-Risenhoover@cherokee.org
Dates Completed: September 2023 - Present

Scope of Work Summary: EN Communications was selected in June 2023 to build a 300-mile middle mile 100 Gigabit fiber backbone network that connects over 15 cellular towers and 16 community centers throughout the most rural portions of the Cherokee Nation in Eastern Oklahoma. The project was funded under the NTIA Tribal Broadband Grant Program as well as American Rescue Plan Act, which combined provides over $80 million in broadband network expansion needed to improve the quality of life for thousands of rural Cherokee households. The fiber backbone network will also connect 3 IP edge sites to the future ISP Partner meet points

for Internet access. EN is also managing the procurement and construction of 15 towers with sheds, generators, and fencing.

Baltimore Gas & Electric – Environmental Contractor of Choice
Contact: Kevin Hedge
Address: 1699 Leadenhall Street, Baltimore, Md
Phone: (667) 313-1126
Email: kevin.hedge@bge.com
Dates Completed: 2011 – Present

Scope of Work Summary: EN's environmental staff has provided and continues to provide a variety of design and permitting services to Baltimore Gas & Electric. EN has worked with BGE's environmental staff and both transmission and distribution project managers to complete numerous NEPA projects through the years. We continue to work throughout the entire BGE service area to provide services such as wetland delineations; Army Corps of Engineering permitting; State & Federal Joint Permit Applications; stream restoration projects; rare threatened and endangered species clearances; historic preservation clearances; and forest stand conservation. Our environmental professionals provide expertise to our client in engineering, hydrology, environmental science, and landscape architecture. We assist BGE with planning and permitting, reporting requirements, ecological restoration, natural resources, wetland delineation, erosion and sediment control, due diligence, and facility inspection. In addition, we support new developments for site expansions with land clearance and site preparation services, including corridor assessments and public involvement.

City Light & Power – Comprehensive Electric Distribution System Upgrade
Scope of Work Summary: EN's environmental staff provided environmental constraints identification, mapping, impact analysis, and permitting according to NEPA requirements for a comprehensive replacement and upgrade of the electric distribution system, including both overhead and underground replacements. The project included seven new substations requiring local, state and federal permits in accordance with National Environmental Policy Act (NEPA) standards and guidelines. All necessary environmental permits and approvals were acquired, including sediment and erosion control, and post construction storm water management design for substations. EN worked with the Maryland Department of the Environment and the US Army Corps of Engineers to minimize impacts avoiding the need for additional mitigation.

Alabama Power Company – Power Delivery to provide fiber connectivity to all high-density coordination / automated devices
Scope of Work Summary: EN provides complete area planning for automated device placement in the client's distribution network to reduce outage times, including the design and installation of the automated device, and the planning, design, and construction of the client's redundant fiber network. EN has been engaged as a key partner in this project since its start several years ago. EN is involved in the high-level design of the fiber routes for annual planning and estimating purposes; physical and optical detailed design of outside plant fiber networks including Bills of Material and Labor estimates; fiber cable installation (construction); construction oversite where EN is not the fiber installation general contractor; maintenance design for fiber leases and automated device additions, and Make Ready Engineering work for fiber projects beginning in 2023. In addition to the fiber-to-the-device engineering work, EN aids Alabama Power's efforts to build Internet Service Provider partnerships where there is fiber capacity to support economic development in the areas where there is a fiber network.

EN Telecommunications Recent Client List

Alabama Power Company	Deep East Texas Council of Governments (DETCOG)
Central Alabama Electric Cooperative	Delta-Montrose Electric Association
Central Service Association	Ewiiaapaayp Band of Kumeyaay Indians (EBKI)
Cherokee County Electric Cooperative Association	Gateway Cities COG
Cherokee Nation	Georgia Power Company
City of Boulder, CO	Glendale Water & Power
City of Burbank	Hernando County
City of Cape Coral	Hoh Indian Tribe
City of Carson	KGP Co Services - Circet
City of Chesapeake	La Plata Electric Association
City of Fresno	Lenoir City Utilities Board
City of Hillsboro	Lynches River Electric Cooperative
City of Indio	Matawa First Nations Management
City of Lathrop	Mecklenburg Electric Cooperative
City of Palo Alto	Mississippi Power
City of Pasadena, CA	Pea River Electric Cooperative
City of Sacramento	Pennyrile Rural Electric Co-Op
City of San Buenaventura	Pioneer, Village of
City of Superior	Public Service Telephone (PSTEL)
City of Ukiah	San Gabriel Valley COG
City of Vacaville	Sault Ste Marie Tribe of Chippewa Indians
City of Waterloo	Tallahatchie Valley Electric Power Association
Cleveland Utilities Authority	Tombigbee Electric Cooperative
Columbus Light & Water Department	Tunica-Biloxi Tribe of Louisiana
Covington Electric Cooperative	Ventura County

Project Approach

Entrust Communications proposes to continue providing engineering support for the project during. Engineering support will include a design project management resource, fielding efforts in the market, and ongoing management and oversight from EN Communications. EN will utilize the existing Connect Superior's high-level design to move forward with field engineering, low-level design, and subsequent deliverables.

Entrust will provide at minimum a biweekly meeting that includes but is not limited to the appropriate Project Manager and a representative from the design engineering team associated with the current phase of the design process. Design will provide a progress update through a geospatially referenced representation of the network (often a Google Earth KMZ, or GIS SHP file) biweekly. We will provide this throughout the course. At each of the completed stages outlined Entrust will host a review call to ensure that the design progress throughout the low level design, final design package, permitting, and construction phasing stages.

High-Level Design Review

To review a high-level design for the City of Superior's Fiber Engineering Phase 2, Entrust will begin by thoroughly reviewing the project scope, schedule, and budget with a project kickoff meeting. This involves clarifying the project's objectives, identifying the geographical area to be covered, and listing all stakeholders involved, and end-users. Next, Entrust will delve into the design documentation.

When evaluating the physical infrastructure, Entrust will check the proposed routes for fiber cables, considering both aerial and underground options. The placement of distribution points will be reviewed to ensure they are accessible and strategically located. Entrust will verify that all necessary permissions and legal considerations for laying fiber, known as right of way, are in place. The network components will be assessed, starting with the Optical Line Terminals (OLTs) to ensure they are appropriately specified and located. Similarly, the specifications and deployment strategy for Optical Network Terminals (ONTs) will be checked. The use of passive components, such as splitters and connectors, will be reviewed to ensure they meet the project's needs.

Entrust will analyze the redundancy and reliability of the network design. Redundancy plans will be evaluated to ensure high availability. The design will be checked for adherence to relevant industry standards and compliance with local regulations and guidelines will be ensured.

Future-proofing the design will be considered by assessing its scalability to accommodate future growth and the ease of upgrading to newer technologies. A risk assessment will be performed to identify potential risks associated with the design and its constructability, and the proposed risk mitigation strategies will be reviewed. Finally, feedback from all stakeholders will be gathered, and the design will be iterated as necessary based on the feedback received. This comprehensive approach ensures a thorough review of the high-level design for an FTTH project, addressing all critical aspects from technical specifications to regulatory compliance and cost efficiency.

At the project kick-off Entrust will also include utility review and coordination as part of the high-level design review. Entrust will request and validate any underground data from existing utilities by working closely with the City of Superior's GIS department to identify alignments and ensure that the fiber can be placed with appropriate horizontal and vertical separation from existing utilities. Typically, Entrust will adhere to a design buffer, utilizing the City's construction standards to maintain separation from any city-owned and operated utilities. Additionally, Entrust will collaborate with the City's arborist or forestry department to identify any fiber routes to avoid existing trees and other foliage or specific requests to adhere to city standards. Based on input

from the city, Entrust will adjust the running lines to deliver a final design that meets all requirements and considerations during the field engineering and low-level design process.

At this time, Entrust will work with the city staff to best identify aerial options for the routing to ensure that any required pole data is known to the field engineering and make ready engineering teams to collect and process upon its deployment into market. It is critical that these steps are taken at the beginning of the project, to limit any project delays. For the purposes of this proposal, Entrust assumes 125 miles of fiber routing per the HLD. For the scope of the Field Engineering, Low-Level Design, and Final Design Entrust assumes an additional 10% of footage may be required to ensure all FDHs are appropriately designed.

Field Engineering

Upon final reviews of the high-level design, design engineering will deploy field engineers which will consist of four separate components: aerial fielding, underground fielding for constructability, site verification, and existing asset verification. During these field rotations, Entrust anticipates between 40-50 active days in the market. Each crew consists of two field technicians to ensure safety and efficiency. Each field rotation is between 10-14 days (about 2 weeks), weather delays dependent, with two crews, including weekends if the city allows. Field deployment should be initiated as soon as HLD validation is completed to ensure that field activities can be effective during the winter months. Fielding will utilize the design created during the high-level design to perform the work indicated below. EN will utilize a combination of ESRI Field Maps and/or Katapult software for aerial pole collection.

Fielding Components

- Aerial fielding is the collection of existing pole data such as images and existing pole attachment heights to be delivered to our internal design team.
- Underground fielding consists of identifying the type and location of existing utility surface structures that directly affect or conflict with the proposed underground design as well as any physical deterrents that may affect the ultimate path of the fiber deployment.
- Site walkouts will consist of coordination with a client representative for the on-site visit and data collection of the sites in which fiber is being designed if on city property (ex. City Hall)
- If the client has existing assets that will need to be validated, fielding may also include data collection such as verifying the location and size of interconnection points between the new and existing network.

Deliverable

All data collected during the fielding process will be used internally by Entrust but can be provided to the City of Superior upon request in the form of a shapefile. Not all components fielded will necessarily be utilized in the subsequent steps based on fielding outcomes and design standard expectations.

Make Ready Engineering / Pole Loading Analysis & Aerial Design

Once the aerial fielding has been completed, if deemed aerial routing is the best option, the engineering design will shift focus to make ready and aerial design. Make ready (sometimes referred to as MRE) consists of analyzing the information received from the aerial fielding along with high-level design and creating make-ready documents that comply with identified pole owner or lessee requirements. Design will then modify the aerial portions of the high-level design that will require rerouting based on the make ready. This includes but is not limited to strand, guying, anchor, and riser design. Depending on the requirements of the pole owner, Entrust can process Pole Loading Analysis for pole permit applications.

Deliverable

The make ready and aerial design will produce a complete deliverable package that can be used by the client for review before submittal to the appropriate owners. This will also include a plot map that combines the make ready and geospatially accurate representation of the aerial design. These items, while created during this step, will be produced during the final design deliverables phase.

Entrust assumes 20% of the market to be aerial, with an estimate of 175ft to 200ft average pole span lengths within the market. From here we derive an estimate of approximately 755 poles for potential attachment. Depending on the outcome of there is greater than 20% of the total fiber miles deployed aerially, lead times for Fielding and MRE/PLA may need to be adjusted.

Low-Level Design

After fielding and make-ready has been completed, design engineering will proceed to the next step known as the low-level design. Low-level design can initiate as field data is collected., As field teams complete FDH level collections, the engineering low-level design can begin by FDH. Here we will focus on fiber infrastructure design such as fiber cable size, splice closure locations, slack loops and more while integrating the data that has been collected in the field. The low-level design will also validate cabinet locations as reviewed in the field and finalize FDH boundaries to ensure that all end-customers are serviced. It is also during this step that we procure estimated construction costs based on construction totals and market research.

Deliverable

There will be three primary client deliverables during this phase including (1) a geospatially referenced representation of the network, (2) a preliminary bill of materials and (3) preliminary aerial, fiber, and underground construction prints. At the point of this submittal, Entrust and the key stakeholder from the City of Superior will review all provided materials and ensure the design is adhereing to the City’s project goals. The low-level design outcomes will provide resolution to the following points:

- Final cable placement in aerial and underground environments (underground deployment is preferred)
- Constructability analysis
- Mitigation of special engineering and construction issues
- Identify permitting and environmental requirements
- Public and private easement analysis
- Final service area definitions and adjustments
- Fiber cable sizing and strand allocations
- Fiber splice plans and cut sheets for backbone, feeder, distribution and drops
- Splitter configurations
- Fiber capacity plan and buffer tube allocations
- OLT placement, configuration, and capacity

Construction Documentation and Final Design

The final design will occur after a thorough review of the design engineering Low Level design with the City of Superior and any key stakeholders. This phase is to finalize the network design to ensure the client has the full network design and all documentation that supports the implementation of the construction stage. This starts with performing any changes outlined in the low-level design review. When this is complete, the ultimate step is to provide accurate totals and cost estimates, and construction prints and permit research. Entrust will have a final review with all key stakeholders to review all the scope and address any questions or concerns. The final design outcomes will provide resolution to the following points:

Deliverable

- Bill of materials and cost estimates
- Construction Phasing
- Construction drawings and packages
- Construction bid documents
- Design specifications and standards
- Construction phasing plan Fiber Phase 2 Engineering
- Engineering estimates for each phase of construction
- Entrust will provide the City with three sets of original, signed and stamped preliminary engineering reports and an electronic file in Adobe Acrobat.

Permitting

Permitting support involves identifying all permit agencies for all city, county, DOT, environmental and historic preservation agencies across the project area. The permitting team will collaborate with the City of Superior to ensure that all permitting agencies are identified. At the project kickoff, Entrust will work with the city to ensure that all city construction standards are adhered to and implemented into the permit application documents.

Permitting Application Preparation

Local conditions and variables affect the exact type, number and cost of required permits. Specific requirements for the number and types of permits required will be determined during low-level design phases to be implemented into the final construction project cost estimates. Plans and specifications required to support permitting will be identified and conditions of permitting documented in the final design.

Entrust assumes 40-50 crossings that would require additional bore profile drawings.

Project Management

EN will provide an experienced Project Manager (“PM”) and Project Management Team to oversee all technical and operational tasks required to support of the launch of the City of Superior’s project. Additional resources including EN communications’ Project Executive, Technical Consultants, and others will be tasked with fulfilling various portions of these tasks throughout the duration of this engagement. Expected tasks include:

- Entrust recommends that the Project Manager travel to location at the project kick off and 2 additional trips throughout the course of the project for major project reviews.

- Manage and coordinate day-to-day activities of moving the City's network into construction as expeditiously as possible following the City's procurement process, contract approval and notice to proceed.
- Ensure all State/Federal Funding contract requirements are included in each procurement where necessary.
- Manage Project Capital Expenditure budgets and develop reports as necessary.
- Team with Construction Manager and Construction Inspectors to manage the project implementation plan, including tracking to schedule, budget, issues identification and resolution, and risk mitigation.
- Provide regular progress reports, schedule and coordinate all project-related calls, and ad-hoc vendor/coordination discussions.
- Refine and revise the project implementation plan to reflect the OSP buildout schedule and all necessary steps to implement and turn-up the network.
- Work with EN' Subject Matter Experts (SMEs) to create the designs, functional specifications, scopes of work, and RFP's necessary for implementation including network equipment, inside plant, service fulfillment, and operational services. EN' SME's will research and advise on all options available to the city specific to each procurement including value-engineering designs, developing Statements of Work (SoW), and validating costs to budget. Our team will deliver customized SOWs for each procurement, recommend the appropriate procurement vehicle, and participate in the procurement process including pre-bid conferences, bidder inquiries, issuing RFP addendums, evaluating bids, making recommendations, and assisting in final negotiations.
- Request For Proposal ("RFP") oversight, pre-bid meetings, Question & Answer ("Q&A"), addenda, short-listing and selection of contractors.

Project related procurements may include:

- Fiber-Optic OSP Construction
- Inside Plant (ISP), Power, Environmental, Access Security, etc.
- Network Equipment and Software
- Wholesale Internet and Transport Services

Implementation work is expected to involve:

- Manage design changes, and value engineering opportunities for the fiber-optic network, including coordinating all project approvals/changes, change orders, billing/invoice approvals by vendors, and other project administrative functions.
- Work with EN SME's and vendors to ensure that equipment and software are implemented, configured, and tested prior to launch.
- Assist in development of job descriptions, interviews, staffing readiness, and suggested workplace environment.
- Develop and oversee acceptance tests of the network and services.
- Oversee production launch based on rollout plan with post-rollout review.

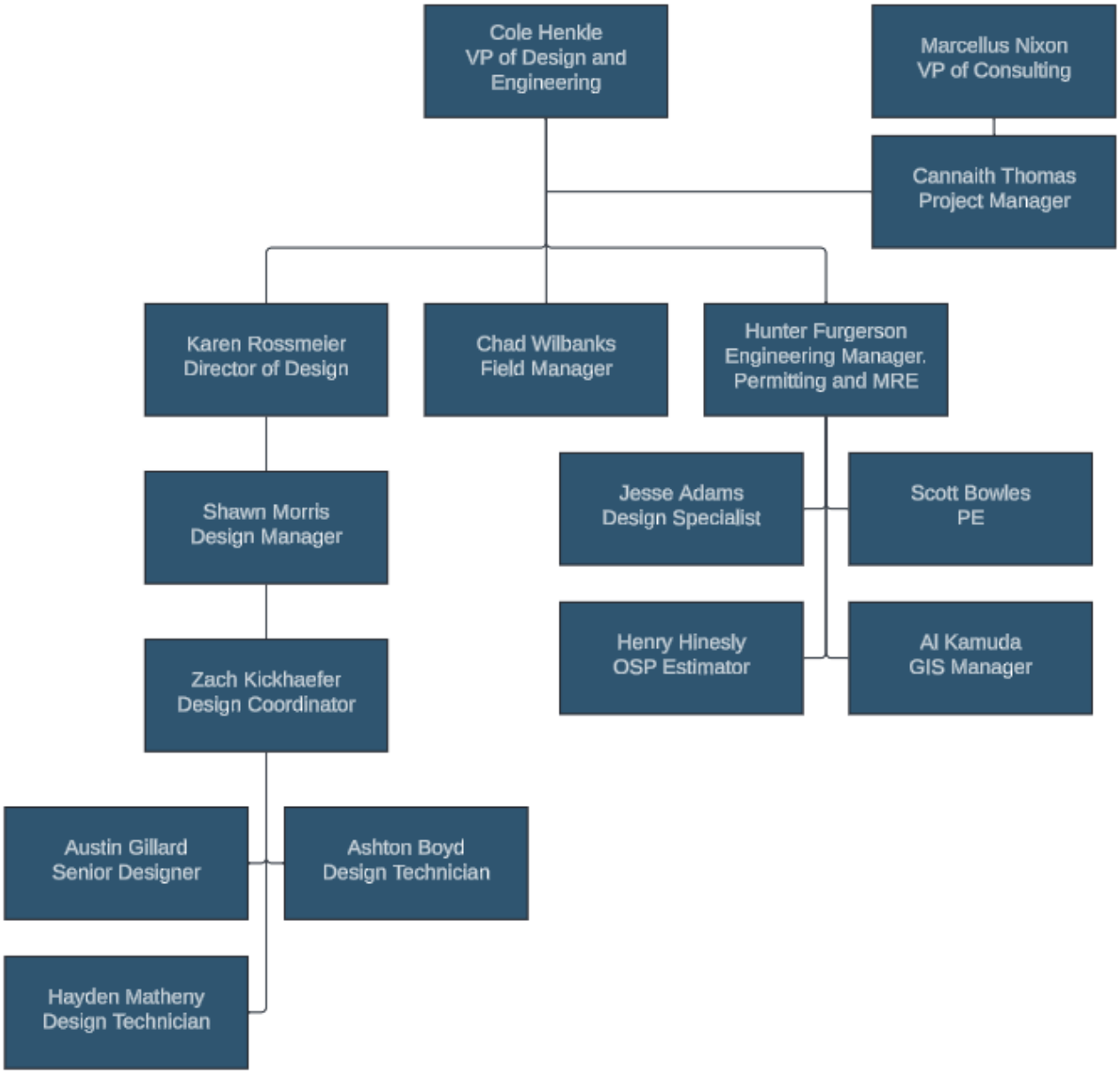
Project Timeline

◆ Ongoing Task

☐ Deliverable

Phase	NOV 2024	DEC 2024	JAN2024	FEB 2025	MAR 2025	APR 2025	MAY2025	JUN 2025
Project Management	◆	◆	◆	◆	◆	◆	◆	◆
HLD Review	◆							
Field Engineering	◆	◆	◆	◆				
Low Level Design		◆	◆	◆	☐			
Final Design					◆	◆	☐	
Permitting Support						◆	☐	◆
Construction Phasing						◆	☐	◆

Key Personnel



Cole Henkle

Vice President of Design and Engineering

Resume Highlights
Engineering Design
Project Management
GIS
QA/QC

Years with EN Engineering: 5

Years of Experience: 12

Primary Office Location:
999 18th Street Suite 3000
Denver, CO 80202

Education:
Master of Architecture
Kansas State University

Skills:
- Leadership
- Project Management
- Project Planning
- OSP Design
- Project Estimates
- Public Speaking
- Customer Service
- Sketching
- Google Suite
- Microsoft Office
- Adobe InDesign
- ESRI ArcMap
- Lucid Charts

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OVERVIEW:

Cole has a decade of experience managing large broadband designs. He manages the full life cycle of engineering projects from inception to completion, managing all permitting activities and personnel in local and remote locations. He has direct experience working with major carriers, municipalities and regional governments on regional fiber and broadband deployments across the US, some of which include Google Fiber, Verizon and the Cities of Boulder, CO, Chesapeake, VA, Portsmouth, VA, and Ann Arbor, MI.

RELEVANT EXPERIENCE:

Magellan Advisors
Director of Broadband Design

Led the design and development of broadband networks. Managed a team of engineers and designers to execute network plans. Collaborated with cross-functional teams to ensure the integration of broadband technologies for the desired specifications of our clients. Prepared phasing and technical specifications for construction deployments. Ensured compliance with regulatory standards. Oversaw project budgets and timelines.

Actavo
Project Manager – Team Lead - Designer

Managed all aspects of fiber optic design projects including building, scope negotiations, budgets, outside plant design, permitting, geo-spatial data, and invoicing. Lead a team of up to 50 colleagues domestically and abroad while increasing programmatic efficiencies and reducing ineffectual engineering time, planning, and fielding. Developed new employee training, methods of procedure, and performance review processes adopted company-wide. Delivered monthly business reviews covering financial tracking, deliverables, and client risk and opportunities. Streamlined input methods for national broadband providers design data.

Atlantic Engineering Group
Team Lead - Designer

Designed and implemented neighborhood fiber optic networks to deliver residential internet and television service to the entire Kansas City metro area for a Fortune 100 client "Fiber to the Home" project. Led a team of five to ten Design Engineers developing a Scope of Work and creating construction drawing sets with AutoCAD Map 3D that contained basemaps, individual neighborhood fiber design drawings from inception to completion. Conducted feasibility analyses to determine the most profitable design changes, including extensions and re-routes

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Marcellus Nixon

VP of Consulting

Resume Highlights
Developing KPIs
Identifying Risks and Problems
Mentoring
Fiber Infrastructure
BSS
Calix
Juniper
OSS

Years with ENTRUST: 1

Years of Experience: 15

Primary Office Location:
Warrensville, IL

Education:
Executive Master Business Administration
Virginia Tech University

Bachelor of Interdisciplinary Studies
University of Virginia

OVERVIEW:

Marcellus has more than 35 years of experience building fiber-optic infrastructure, domestically and internationally, and is a trusted advisor in the high-speed internet space. As Vice President of Consulting, Marcellus initiates consultant engagements and guides clients through the planning phase for their projects, helping them understand how to build for long-term infrastructure sustainability.

EXPERIEINCE:

VP of Consulting
Entrust Solutions Group

We plan, design, and build fiber networks that empower communities.

- Manages project teams and ensures projects are prepared according to proposals developed for clients
- Manages a portfolio of key customers and works to maximize relationships
- with every client

VP; Internet Services
United Cooperative Services (UCS)

UCS is 6th largest rural electric distribution utility in TX, 33rd in US

- Led $270M greenfield project to deliver high-speed internet to >70,000

un(der)served across 14-county north central Texas region

- Partnered with CEO and Board of Directors to develop expedited plan to

provide service 75% faster than initial project plan

Senior Director; Network Engineering and Operations
Verizon Digital Media Services

VDMS streamlines video content delivery for broadcasters
Anchored network operations towards a DevOps approach to improve infrastructure deployment deficiency by 75%

Head, Internet Architecture
Reliance Jio

Jio is the first pure Internet Protocol or IP-based 4G network in India
Developed strategy & implemented Internet network to serve 100M mobile users enabling an innovative technology era in an emerging market

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Karen Rossmeier

Director, Design Engineering

rev. 3/27/23

Resume Highlights
Drafting & Design
Scheduling
AutoCAD

Years of Experience: 24

Primary Office Location:
Huntsville, AL

Education:
Northeast State Community College, Rainsville AL 08/97-02/98, 08/04-02/05, 08/15-07/17
Computer Information Sciences, General Studies, Social Sciences

Calhoun Community College, Huntsville AL 07/02-10/02
Computer Information Sciences

Rainsville Technical School, Rainsville AL 10/98-11/98
Basic AutoCAD

Platform Literacy:
AutoCAD 2000, 2000i, 2002, AutoCAD Release 13 & 14, Focus, Lode Data Versions 1.53, 2.0, 3.0, Microstation, Microsoft Excel, Microsoft Word, Microsoft Outlook DGNLink, Peachtree accounting, Qwik Quote, 20/20 CAD software, ESRI, QGIS, Quickbase

OVERVIEW:

Ms. Rossmeier has over 14 years of drafting and design experience. Karen is proficient not only in drafting, scheduling and budgeting but also managing and directing her teams.

RELEVANT EXPERIENCE:

FiberRise
Director of Design Engineering
Direct and manage a team of managers for a total of up to forty direct and indirect reports. Maintain production schedule for an increase of production and tight timelines to produce high quality production for contractors and customers for Electric Cooperatives, Municipalities, and IOU customers with all design related projects. Control budgetary needs for company through software, f ielding contractors, and personnel needs. Consistently exceeds forecast projects on a quarterly basis.

FiberRise
Manager of Design Engineering
Design for Fiber telecommunications high level and detailed design for multiple Electric Cooperative customers while leading a team of up to twenty design engineers and up to f ive GIS personnel. Scheduled engineering deadlines, timelines, and quality control measures for all aspects of the project including management of personnel and contractor deadlines for fielding of each project.

Tennessee Valley Authority- CadNet School to Work Program
Quality Assurance -Checker
Perform Quality Assurance review and validation on TVA transmission system drawings including electrical wiring, mechanical, and civil for Bellefonte Nuclear Facility. Work with onsite contractors to produce documents to comply with TVA procedures and standards to be used for reconstruction of facility. Maintain project tracking information daily by use of Microsoft excel documents and Microsoft outlook.

Coca Cola Enterprises
Account Manager-Small Store
Account representative for small store activity. Maintained appropriate inventory levels, point of sale, and ensured account met company merchandising standards. Sold in incremental displays and promotional programs to accounts as well as created and prosp ected new clients and opportunities within my region. Ensured all equipment was working properly and were set to company standards.

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Karen Rossmeier
Director, Design Engineering

The Home Depot
Commercial Sales Manager
Held position as cabinet designer using 20/20 CAD software, Kitchen and Bath department manager, and Electrical department manager prior to becoming department manager of Pro Sales division within store for two years. Managed accounts daily by providing daily customer service to all contractors and walk in customers. Managed existing accounts and prospected new accounts daily to meet weekly sales projections. Provided customer service to all specialty and surrounding departments. Held key carrier position for three years assisting Store manager and Assistant Managers. I also verified vault and bank deposits for vault operator and cashiers. I operated register daily either thru store systems or hard register sales.

General Ventilation
Customer Service Representative/Receptionist
Performed multiple tasks which included customer service, project invoicing, shipping schedule preparation, sales quotes utilizing Qwik Quote software and completion of sales orders. Completed schematics for electrical components and fire suppression systems of hood ventilation systems.

Cavitron Systems Inc.
Drafting Technician
Maintained position as Drafting Department Manager for full year.
Produced detailed drawing packages for cable television industry which included customers such as AT&T, Charter Communications, and Comcast Cable. Demonstrated exceptional customer service and correspondence.

NEAL Technology Associates
Drafting Technician/Receptionist
Produced detailed drawing packages for cable television industry. Customer base inclusive but not limited to Charter Communications, Comcast Cable, AT&T, and Mediacom. Displayed excellent customer service and maintained department supplies.

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Shawn Morris

Project Manager - Design

Resume Highlights
Digital Infrastructure
Network Design
Network Architecture
GIS Mapping

Years with EN Engineering: 5

Years of Experience: 12

Primary Office Location:
999 18th Street Suite 3000
Denver, CO 80202

Education:
Master of Architecture (M.Arch)
Kansas State University
Manhattan, KS

Skills

- Project Planning and Schedule Management
- Project and Construction Management
- Passive Optical Network Planning and Deployment
- Project Design Team Process Development
- High/Low-Level-Design Analysis

OVERVIEW:

Shawn Morris has more than a decade of experience designing, and coordinating fiber projects and has additional experience in the architecture design industry. Most recently, Shawn has contributed towards multiple municipalities based FTTH and Infrastructural Network projects. Shawn excels at identifying potential problems early in projects and uses his problem-solving skills to plan and develop processes and procedures to navigate each unique challenge. His excellent customer service is consistently recognized by our clients and Shawn always ensures that quality deliverables are provided. Shawn holds a Master of Architecture from Kansas State University. Shawn is experienced with the following software: Microsoft Office, Autocad, ArcGIS, 3-GIS, SketchUp, Adobe InDesign, G Suite, Lucidchart.

RELEVANT EXPERIENCE:

Octavo Engineering Services
Design Engineering Team Lead

Design and development of processes for OSP Fiber Design. Generation of bills of materials, splice diagrams, and other supporting documentation for the design. Development of documentation processes, coordinating scripting and automation of deliverable packages. Project Coordination – Managing multiple teams and assets, directing workflow per Project needs. Responsible for project schedules, project deadlines, and mitigating schedule risks as they arise. Manages scope compliance and changes, following appropriate internal and client procedures. MOP and supporting design documentation development, including training and standards documentation. Coordination with client and third parties to plan OSP Fiber Design and Design Updates, managing schedule and construction driven updates. Develops structured training program for new and current designers to expand OSP engineering skills and ensure project specific requirements are maintained and understood. Develops and implements programs and procedures to meet technical project requirements. Provides technical support to ensure quality assurance standards are met across all project tasks, including integration of updated design standards and specifications throughout the maturity of the project. Management and direction of outside resources towards Project workflow.

Atlantic Engineering Services
Design Engineering Team Lead

Supports the administrative/operational leadership of a project within the project guidelines as defined by the Project Manager. Oversight of a design engineering team to complete a specifically assigned engineering related task. Drives iterative process improvement to maximize efficiency of designs, team members, and internal processes. Responsible for project schedules, project deadlines, and mitigating schedule risks as they arise. Oversight of the team's design and development of layouts for OSP Fiber designs, ensuring design specifications are maintained. Reviews and audits the work of team's designers to ensure errors and inefficiencies in design/documentation are identified and corrected.

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Zach Kickhaefer

Associate Project Manager

rev. 11/21/23

Resume Highlights
Engineering Design
Project Management
Operations Management
QA/QC

Years of Experience: 8

Primary Office Location:
999 18th Street Suite 3000
Denver, CO 80202

Education:
B.S. Geography
Kansas State University
Manhattan, Kansas

Skills:
Project Management
Client Relations
OSP Design
High/Low level design Analysis
Leadership by Example
Multitasking
Attention to Detail
Adaptability
Conflict Resolution
Team Development
Problem Solving
Microsoft Office
Google Suite
ArcMap / ArcGIS Pro
Lucid Charts

OVERVIEW:

Zach Kickhaefer has 8 years of experience in designing and managing fiber projects as well as 11 years of GIS solutions for both the broadband and transportation industries. Zach has managed 6 fiber design projects for both large communication carriers and municipal projects resulting in nearly 2000 miles of aerial and underground fiber path installed. He specializes in process improvement, problem solving and project managing both internally and externally. He has excellent customer service skills and strives to ensure that a quality deliverable is provided to the client.

RELEVANT PROJECTS:

Boulder, Co.
- Project Management
- OSP/ISP Design
- BOM Projections
- Permit Submittals
  - City, County, CDOT, RR, Open Spaces
- Data Integration
- As-builts

Portsmouth, VA
- Project Management
- OSP/ISP Design
- BOM Projections
- Permit Submittals
  - City, VDOT, RR
- As-builts

Dayton, TX
- Project Management
- OSP/ISP Design
- BOM Projections
- Permit Submittals
  - City, TXDOT, RR
- As-builts

Lodi, CA
- Project Management
- OSP/ISP Design
- BOM Projections
- Permit Submittals
  - City

ENENGINEERING

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Zach Kickhaefer
Associate Project Manager

RELEVANT PROJECTS: (cont'd)

Lady Lake, FL
- Project Management
- OSP/ISP Design
- BOM Projections
- Permit Submittals
  - City, County

Cape Coral, FL
- Project Management
- OSP/ISP Design
- BOM Projections
- Permit Submittals
  - City

Austin Gillard

OSP Engineer II

Resume Highlights
Engineering Design
Project Management
Operations Management
QA/QC

Years of Experience: 9

Primary Office Location:
999 18th Street Suite 3000
Denver, CO 80202

Education:
Bachelors of Geography
University of Missouri
Graduation May 2013

Skills:

- ESRI ArcGIS Server
- ESRI ArcGIS Pro / Desktop
- 3-GIS
- O-Calc
- Spida-Calc

OVERVIEW:

Austin has been working in telecom for 9 years. He got his start working for GE Oil and Gas in Kansas City Missouri. From there he entered Telecom using pole load analysis programs to calculate cable tension of several commination company cables. Austin also completed construction ride out for projects in the field. Since joining EN Engineering Austin has done OSP engineering for multiple projects across the United States as well as in field training for contractors

RELEVANT EXPERIENCE:

Actavo Engineering Services: Design Engineer II
- Design and edit long haul OSP fiber distribution routes using state right of way plans, environmental data, and historical data through ArcGIS
- Implement cloud based utility data for permit use in order to maintain minimum clearance distance for proposed cable construction
- Compile and manage geo-databases for both in house and client permit construction.
- Generate bills of materials, splice sheets and other supporting documentation for design
- Review the work of other designers to ensure errors and inefficiencies in design are identified and corrected

BHC RHODES: GIS Analyst
- Design and edit long haul OSP fiber distribution routes using state right of way plans, environmental data, and historical data through ArcGIS
- Complete construction ride out and design of extensive utility maps to be used for proposed construction in both office and field using 3GIS software.
- Analyze structural integrity of utility poles to insure constructability and addition of new aerial fiber cable with SpidaCalc and Ocalc.
- Review peers work to ensure quality before sending products out to clients

GE Oil and Gas: Data Conversion Specialist/GIS Technician
- Create and edit pipeline maps using ArcGIS for delivery to oil and gas clients
- GIS Analysis and conversion from various sources including but not limited to Alignment Sheets, P&IDs, Plan & Profiles, Isometrics, Schematics, ILI and other visual surveys
- Create stationing for control points and add z-values to centerlines using proprietary and linear referencing tools in ArcGIS to load to PODS ESRI Spatial database
- Maintain high attention to detail by developing standard procedures and work instructions to maximize production, while also overseeing and training four employees in the basics of ArcGIS

EN ENGINEERING

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Austin Gillard
OSP Engineer II

RELEVANT PROJECTS:

City of Boulder CO
- OSP Design

City of Chesapeake VA
- OSP Design

Escambia County FL
- OSP Design

City of Englewood
- OSP Design

City of West Duluth WI
- OSP Design

Mecklenburg County VA
- OSP Design

City of Waterloo IA
- OSP Design

ENENGINEERING

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Hayden Matheny

OSP Designer I

rev. 7/06/22

Resume Highlights
Network Design
ArcGIS Pro
OSP Insight
QC/QA

Years of Experience: 1

Primary Office Location:
Warrenville, IL

Education:
University of Wisconsin – Oshkosh, Bachelor of Science in Psychology

OVERVIEW:

Dedicated and skilled OSP Designer with one year of experience in designing robust and efficient fiber optic networks. Utilized industry-standard tools and software for designing networks at both high and low levels. Proficient in applying field notes, addressing the needs of the client while maintaining optimal network performance. Experience in digitizing client easement data with ArcGIS Pro, resulting in an overall more efficient network. Quickly learned and utilized previously unfamiliar software to produce As-Built documents.

RELEVANT PROJECTS:

PSTEL N54 Phase 1 & 2
We are aiming to expand Public Service Telephone's (PSTEL) existing fiber optic network. Focusing on the FTTP element of the project, I've drafted thousands of vaults, closures, and cables, all while maintaining appropriate attribution. I've also scoured the client's internal database to locate and digitize as many easements as possible, which had a large positive impact on the overall design.
Location: GA

Hillsboro, OR (multiple phases)
Developed skills in OSP Insight creating As-Builts for the most recently constructed phase. Worked on the Low Level Design from start to finish, drafting and attributing thousands of features in ArcGIS Pro. Gained experience with designing in a market with large proportions of both underground and aerial fiber.

ENENGINEERING

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Cannaith Thomas

Project Manager

Resume Highlights
Client Relationship Management
Vendor Management
Training and Development
Regulatory Compliance

Years with EN Engineering: <1
New Hire

Years of Experience: 7

Primary Office Location:
Remote

Education:
BS Sociology & Anthropology
Lincoln University
Lincoln University, PA

Skills

- Network building/development
- Project management
- Liaising and communications
- Outreach and education
- Data collection and analysis
- Leadership
- Microsoft Suite
- Adobe Suite
- Social media: Instagram, LinkedIn, Facebook

OVERVIEW:

Cannaith joined the Entrust team in December 2023, after 4 years with Kastle Systems, a property technology company in Northern Virginia. At Kastle, Cannaith served as an Account Manager for KastlePark, a Smart Parking initiative aimed toward parking solutions for the city of Arlington. As the primary contact for clients, Cannaith coordinated project timelines, budgets, and resources to ensure optimal project delivery. Cannaith played a pivotal role in spearheading efforts to optimize parking efficiency for the new Amazon headquarters and businesses in the surrounding areas. With a strategic mindset and a hands-on approach, Cannaith has excelled in navigating multifaceted projects, fostering stakeholder collaboration, and delivering innovative solutions that exceed client expectation.

RELEVANT EXPERIENCE:

Account Manager, Kastle Systems

Account Manager responsible for orchestrating successful launch of new SaaS product, resulting in 50% increase in customer adoption within six months, leading to a $400,000 increase in annual recurring revenue for the company. Structured product demos and trainings for customers, teaching more than 200 end-users how to self-serve which resulted in a reduction of 90 to 25 requests per day. Led cross-departmental development teams to deliver three monthly product enhancements aligned with client needs.

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Hunter Furgerson

Manager of Detailed Design

Resume Highlights
FTTH Design
OSP Detailed Design

Years of Experience: 8

Primary Office Location:
Huntsville, AL

Education:
A.A.S. Drafting and Design Technology, Summa Cum Laude, Northeast Alabama Community College

Drafting and Design Technology, DeKalb County Technology Center

Professional Certifications:
- Autodesk Certified User: AutoCAD
- Kubota Manufacturing: Kaizen Continuous Improvement Certification Microsoft Office Certification: Word
- OSHA 30-hour Certificate of Completion OSHA 10-hour Certificate of Completion

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OVERVIEW:

Mr. Furgerson has over 8 years of experience in Design & Drafting. He is proficient in drafting skills: sheet metal design, civil & electrical design exceptional at operating solid modeling software. He is also adept in computer skills with excellent oral and written communication skills. Hunter operates the electronic team collaboration and task management systems.

RELEVANT EXPERIENCE:

FiberRise Communications
Manger of Detail Design (IOU)

- Develop new initiatives proactively for network design process improvements and work cross- functionally to make decisions about priorities.
- Drive programs across product areas show leadership and influence across teams.
- Develop and manage the detail design process flow to accelerate Fiber to the Home (FTTH) designs that include highly constructible job packages through final as-built completion.
- Manage engineering vendor workload and production to achieve critical milestones
- Develop and maintain a high standard or quality control for the design process, including prompt troubleshooting and creative problem-solving for any equipment and/or design issues identified. Manage the production of efficient designs for new development, network relocations, and network upgrades.
- Provide effective and comprehensive support for network deployment and other cross-functional teams.
- Communicate quality issues with the engineers and field engineers to find resolutions.
- Approve designs before submission to clientele.
- Manage and enforce OSP detail design quality and compliance with the outside plant design specifications.
- Accurately depict new construction route opportunities, with the ability to identify, research and problem solve cable path/placement issues and accurately relay solutions to the OPS detail design team.
- QA/QC of the following OSP aspects including identifying issues, researching possible solutions, making corrective proposals, and tracking updates to the project's end.
- Bill of Materials (BOM), Splice Sheets (SS)c Fiber Construction Drawings, Permit Drawings, Single Line Drawings (SLD)
- Other positions at FiberRise include Lead OSP Design Engineer and OSP Design Engineer

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Scott D. Bowles, PE

Managing Principal

Resume Highlights
Project Management
Telecommunications Engineering
Electrical Power Systems Engineering
SCADA Systems

Years of Experience: 35

Primary Office Location:
Auburn, IN

Education:
- MBA, Indiana University – Strategic Management, 1992
- Bachelor of Science – Electrical Engineering, Power Option, Tri-State University, Cum Laude

Professional Registrations:

Licensed Professional Engineer:
KY, MI , MN, OH, WI, IL, IA, MA, IN, ME, TX, FL, PA, AZ, MD, MO, UT, NV

Professional Organizations
- National Society of Professional Engineers
- IEEE; Institute of Electrical and Electronics Engineers
- American Public Power Assoc.
- NCEES; National Council of Examiners for Engineering and Surveying

Academic Societies:
- Eta Kappa Nu; National Electrical Engineering Honors
- Tau Beta Pi; National Engineering Honors Society

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OVERVIEW:

Mr. Bowles has professional and project management experience in specification, design, electrical and optical systems installation, testing and turn-up. Customer types include electric utilities, municipalities, large industrials and university campus and Tier 2 and 3 telecommunication service providers. Scott has thirty-five years of telecommunication systems experience including B-PON, G-PON, E-PON NGPON, 10GPON, Wi-Fi 102.11b, g, ac, ax, licensed microwave, DOCSIS 3.0 and 3.1, data center design, long haul optical fiber deployment, DS0, DS1, T1-MUX, OC-1, OC-3, OC-12 and OC-48 SONET, IMUX and JMUX add drop multiplexers and Ethernet. Also, a broad range of electrical power systems engineering experience ranging from 230kV high voltage substations to 480V distribution and industrial manufacturing facilities, with the majority being 138kV to 12kV. Mr. Bowles holds a patent in SCADA systems.

Mr. Bowles managerial responsibilities include strategic business planning, network administration, managerial reporting, and financial / cost accounting.

Mr. Bowles has experience in Optical Fiber, including Construction, Installation and Testing. Data Center Design and Equipment, Power Conditioning and Power Supply and Conceptual and Detail Design. He won the best-in-class national award for Enterprise GIS deployment and Cisco Case Study for the development of Citywide IT infrastructure, cultural adoption, and process standards development.

RELEVANT PROJECTS:

One Communications, Broadband Network, Bermuda – (2016-2018)
Principal engineer and chief architect for island wide HFC telecommunications system consisting of a hybrid fiber coaxial network. Planned and designed node layout. Designed network with future ability to upgrade to 10GBps synchronous fiber to the home shared by 32 subscribers' minimal rework. Developed construction, implementation, and testing specifications. Work product consists of manufacturer's equipment cut sheets, specifications, optical attenuation calculations, voltage drop calculations, schematic drawings, outside plant drawings, scopes of work

BCV Fiber Design, Bermuda – (2013-2015)
Chief architect for design and implementation of fiber optic municipal area network in Hamilton, Bermuda. I assisted client with strategy planning and policy formation regarding telecom reform. I developed new standards of reporting and customer care to satisfy new government mandate.

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Chad Wilbanks

Project Manager and OSP Engineer

Resume Highlights
Telecommunications Design
Outside Plant Engineering
Construction Estimation
FTTx Distribution Planning

Years with ENTRUST: 1

Years of Experience: 13

Primary Office Location:
Huntsville, AL

Certifications:

Certified Project Director

Certified Project Master

OSHA 10

OSHA 30

Platform Literacy:
Vetro
CrescentLink
Katapult

ENTRUST SOLUTIONS GROUP

OVERVIEW:

Mr. Chad Wilbanks is primarily experienced in Telecommunication distribution design and Project Management for overhead and underground construction systems. He has developed construction drawings, cost estimates, and other design package components for numerous utility clients. Mr. Wilbanks has been exposed to a variety of client standards and is experienced in using them to implement construction designs as well as Project Management.

RELEVANT PROJECTS:

Tombigbee Electric Cooperative
Project Manager

Lead as project manager for the development of DWDM Network CGNAT integration and deployment of the FTTH network. Assigned to support the customer through the activation or 20,000 subscribers. That will be completed in Q1 of 2024. At which time closeout will be completed. The overall Project budget started at $27,000,000 and grew to $90,000,000. As more territory was claimed by the provider and new technologies were utilized. All progress was documented through changes in the SOW to better cover the vast growth of the customer. The ending mileage will be around 4000 miles.

Tombigbee Electric Cooperative Franklin County Expansion
Outside Plant Engineer
Oversee the design, permitting, make ready construction, and construction of 450 miles engineered. Maintained monitoring systems for control checks on all aspects of the project. Completed OTDR testing and Fiber characterization for DWDM activation.

Tallahatchie Valley Electric Cooperative Phase 2
Project Manager

Completed the Second phase of project. Worked multiple change orders and renegotiated better contractor pricing. Managed material shortages due to Covid so that the overall completion of the project stayed in line.

Tallahatchie Valley Electric Cooperative Phase 3
Project Manager
Created RUS Audit process for material usage and BOM creations. Completed required 100Gig testing and Power Audit required for closeout.

Tombigbee Electric Power Association
Project Manager

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Chad Wilbanks
Project Manager and OSP Engineer

Completed Phase 1 of the build out. Negotiated with Comcast for one touch make ready after many attempts by them to halt the progress of the construction. During the phase the original 1200 miles was increased an additional 800. This had a major impact on the budget while keeping to the same timeline. I decided to take an out of the box approach and went to my customer with solutions. I recommended using a different Prime Contractor at the same cost as the current contract to complete the new 800 miles. The secondary project came in well in advance of the deadline and was able to help the original contractor finish up on time.

C Spire North Mississippi Broadband Deployment-

Responsible for the deployment of the BTI DWDM design and deployment throughout North Mississippi. Overseen the instillation and integration of the Adtran TA5000 and Calix e7s across the North Mississippi region.

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Al Kamuda

Design Team Lead

Resume Highlights
Engineering Design
Project Management
GIS
Operations Management
QA/QC

Years with EN Engineering: 6

Years of Experience: 21

Primary Office Location:
999 18th Street Suite 3000
Denver, CO 80202

Education:
Associate of Science (AS),
Electronics CPI, East Hartford, CT

Skills:
- ESRI ArcGIS Server
- ESRI ArcGIS Pro / Desktop
- ESRI Web Development
- ESRI Web Services
- ESRI SDE Management
- QGIS
- Bentley Communications
- Bentley Comm Oracle Spatial
- OSP Insight
- 3-GIS
- GE Small World
- OSP Design / Costing
- Quantitative Analysis
- Management & Leadership
- Team Development

OVERVIEW:

Al Kamuda is a seasoned telecommunications and GIS professional with over 20 years' experience in telecommunications engineering, mapping, design and outside plant construction. Prior to EN Engineering, Al was the Senior Design Manager for the Central Florida region at Spectrum (Charter Communications), where he led the planning, project management and implementation of outside plant design for various company growth projects including residential, commercial, cellular backhaul and metro WIFI. His extensive experience with the telecommunications industry, CAD platforms and geospatial expertise along with his strategic forward thinking provides an extremely diverse skill set that allows him the valuable insight needed to understand the client's objectives in all aspects of telecommunications construction and design processes.

Al has a decade of experience managing large broadband designs. He manages the full life cycle of engineering projects from inception to completion, managing all permitting activities and personnel in local and remote locations. He has direct experience working with major carriers, municipalities and regional governments on regional fiber and broadband deployments across the US, some of which include Google Fiber, Verizon and the Cities of Boulder, CO, Chesapeake, VA, Portsmouth, VA, and Ann Arbor, MI.

RELEVANT EXPERIENCE:

Magellan Advisors
Design Team Lead
Magellan Advisors is a full-service consulting and technology services firm, specializing in telecommunications, broadband and smart city planning deployment and management for public and private sector organizations.

Spectrum /Bright House Networks
Senior Manager HFC Design and Drafting
Provided engineering support and direction for new or existing technologies and on-going operational initiatives to Regional, Network Operations and other cross functional leadership regarding technical operations. Development and implementation of outside plant infrastructure and design specifications for various company strategic growth projects including fiber to the premise (FTTH, FTTX), Public Wi-Fi, Node segmentation, mid-band return spectrum and cellular backhaul.

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Jesse Adams

Senior Design Specialist

rev. 2/01/24

Resume Highlights
Engineering Design
Project Management
Measurement, analysis, and knowledge management
Leadership Skills

Years with ENTRUST: 2

Years of Experience: 17

Primary Office Location:
Bristol, TN

Education:
MS, Engineering Technologies, East Tennessee State University

BS, Computer Science, East Tennessee State University

OVERVIEW:

Mr. Adams has over 17 years of experience in the Fiber to the Home field. Through the years he has held a variety of assignments with companies such as Bristol Tennessee Essential Services, Magellan, and Entrust Solutions. A majority of this time his attention has focused on network, field, and headend services.

Mr. Adams has extensive experience related to engineering systems for the transmission, distribution, and storage of electric and fiber optic services. This includes designing, specifying, and constructing various systems related to data storage, meter data management, ISP services including IPTV, VOIP, and outage recovery.

Additionally, he spent time working as a technical contact for measurement, analysis, and knowledge management at Bristol Tennessee Essential Services. His implemented best practices, along with his team, allowed Bristol Tennessee Essential Services to win the Malcolm Baldrige National Quality Award, the nation's highest presidential honor for performance excellence.

Currently, Mr. Adams is responsible for leading the Engineering Group in network and splicing design for ENTRUST Solutions Group. He is responsible for implementing the development of our network and fiber optic backbone and FTTH designs.

RELEVANT PROJECTS:

Mecklenburg Electric Cooperative – Empower Broadband Expansion Project
Responsible for implementation of fiber design, with a concentration of networking related from POP site to end customers across six counties, serving 39,000 underserved locations. Responsible for fiber allocation and management.
Location: VA

City of Boulder – City Fiber Backbone Project
This project entailed the design of a Backbone network, connecting 104 sites across the city of Boulder with a partnership with six different city departments, including the traffic management network.
Location: CO

City of Waterloo – City Fiber Backbone/FTTH Project
Responsible for the design and allocation of a Backbone and FTTH network, connecting 360 sites and 26,000 customers.
Location: IA

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Henry Hinesley

OSP/ISP Estimator - Communications

Resume Highlights
Engineering Design
Project Management
Operations Management
QA/QC

Years of Experience: 37

Primary Office Location:
999 18th Street
Suite 3000
Denver, CO 80202

Education:
Master of Science, Texas A&M University, College Station, TX

Bachelor of Science (Cum Laude), Texas A&M University, College Station, TX

OVERVIEW:

Henry possesses telecommunications experience interpreting engineering and design documents, drawing accurately drawing and placing features in 3GIS and developing labor and material investment costs. Successfully process and analyze data for financial and cost analysis and presentation. Identified and understand complex problems and issues then develop and implement solutions. Continuously seek process improvement and increased efficiencies. Collaborate and participate as part of a diverse team to achieve proper analysis of telecommunications systems, products and services.

Experience spans IOF, high capacity, FTTx and fiber based emerging services. Developed models that calculate investments for all fiber products. Additional experience includes Pole attachment rate support and management guided by FCC standards.

GIS experience included validation and drawing of new and existing fiber networks, entering all required features and attributes using 3GIS. Validation was completed based on engineer drawings and as-builts.

He worked extensively with fiber services understanding design and analysis of fiber networks. Investment and cost development and analysis of all fiber (aerial, buried, underground), ADMs, ROADMs, cards, small format pluggable (SFP), SONET, ethernet, customer access required to provide service. Teamed with engineering and vendors to construct Excel models for design, investment and cost analysis.

Served as an Interface and liaison between finance, vendors, engineering, product management and pricing. Experience with Fujitsu, Cisco, Tellabs, Ciena, and Nortel equipment.

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Henry Hinesley
OSP/ISP Estimator - Communications

RELEVANT PROJECTS:

TEKsystems
Telecommunications Design Engineer / GIS Analyst
Validate engineering as-built documents against geographic information system (3GIS) database.

- Analyze and interpret engineering documents to understand the built network for 3GIS management.

Edit and input data into 3GIS as required to reflect existing and proposed networks.

VERIZON WIRELINE
Manager – Financial Planning and Analysis
Collaborate with internal and external legal, municipal, state, and business entities to remove barriers, resolve issues, and achieve agreement. Provide analytical support for pricing, legal and regulatory requirements, and property tax abatements resulting in greater profitability. Build and maintain investment and cost models supporting all products and services.

- Constructed actionable reports for network investments that generated more than $40 million per year savings across multiple states for the Property tax team.
- Supported regulatory and legal filings that saved millions in revenue retention, avoided fines, judgments, and avoided legal expenses.
- Calculated pole attachment rates for contract negotiation team resulting in $40 million-dollar savings over a 3-year period. Resolved cost issues and supported tariff, special assembly and custom cost requirements.
- Identified customer and serviced locations using geographic information systems.
- Produce monthly, quarterly, semi-annual, annual and ad hoc finance reports.

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Henry Hinesley
OSP/ISP Estimator - Communications

RELEVANT PROJECTS: (cont'd)

VERIZON WIRELINE
Sr. Consultant – Financial Planning and Analysis
Created and support model for network investment and cost development.

- Model provided investment for all fiber based products including Fujitsu, Tellabs, Ciena, Alcatel-Lucent ROADMs, DWDM for interoffice transport and access platforms. PON, GPON developed for FTTP services.
- Results supported all the network services.
- Worked closely with engineering, product management, legal, regulatory

Trained users of cost production tools and systems

VERIZON WIRELINE
Staff Manager – Service Costs
Guided a team of four direct reports to respond to all regulatory directives and interrogatories related to the Telecom Act of 1996.

- Developed and filed cost support for all wireline products and services.
- Conducted workshops and reviews with legal, regulatory, federal and state commissions.
- Provided answers to all questions and made adjustments to achieve approval of costs to maintain company profitability.

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Fee Proposal

At the onset of the project kickoff, the FDH boundaries and backbone network will be identified and tracked for production. At each design phase (Field Engineering, Low-Level Design, and Construction Documentation/Final Design) the City of Superior will be invoiced for completed design phases by each FDH design area or backbone segment. For the purposes of this proposal, Entrust assumes 125 miles HLD + 10% equaling 137.5 total miles of fiber routing.

The total cost to the CLIENT is $1,374,804.57 and includes all work to be completed by EN as stated in this Proposal. EN will bill the client in monthly payments of $165/hr for PM fees. EN will bill the City of Superior $1,250 per profile crossing required. EN will bill the City of Superior $120 for MRE and PLA respectively for each engineered pole required. EN will bill for PE stamps for each set of 20 pages in a standard 11x17 construction document at $1,500. EN will bill on the first day of the month for the current month's services. Invoices are payable on net 30 terms from the date of invoice.

Description	Measure	Unit	Unit Cost	Total
PM and Engineering				
Project Management	Hours	1,096	$165	$180,840.00
Field Engineering	FT	726,000	$0.39	$283,140.00
Make Ready Engineering	Pole	755	$120	$90,600.00
Pole Loading Analysis	Pole	755	$120	$90,600.00
Low-Level Design	FT	726,000	$0.48	$348,480.00
Construction Documentation and Final Design	FT	726,000	$0.23	$166,980.00
PE Stamps	20 Pages	605	$1,500	$86,428.57
Permit Crossings	Each	50	$1,250	$62,500.00
Subtotal				$1,309,568.57
Project Expenses				
Project Management Travel	Trips	3	$2,000	$6,982.50
Field Engineering Rotations	Trips	5	$10,496	$58,254.00

Subtotal	$65,236.05
TOTAL EN ENGINEERING LLC	**$1,374,804.62**

Rate Schedule

Position Description	Hourly Rate
Principal (SVP/VP)	$325.00
Project Executive (Director)	$262.50
State - Licensed Professional Engineer	$262.50
Sr. Broadband Consultant	$210.00
Broadband Consultant	$175.00
Sr. Project Manager	$195.00
Project Manager	$165.00
GIS Manager	$150.00
GIS Analyst	$105.00
Senior Grant Manager	$145.00
Grants Analyst	$120.00
Design Technician I	$100.00
Design Technician II	$115.00
Senior Design Technician	$135.00
Design Manager	$165.00
Field Technician	$100.00
Project Coordinator/Analyst	$90.00
Permitting Coordinator	$100.00
Make Ready Engineer	$135.00
Sr. Construction Manager	$175.00
Construction Manager	$155.00
Inspector	$140.00
Network Engineer	$160.00

Additional Design Elements

Client Asset Requirements

- City Drive Obstacles
- Moratoriums
- Beautification/ Undergrounding
- Capital Improvement Projects
- Existing Assets (if any)
- Existing Structures (Conduit, Vaults, Poles, Strand, etc)*
- Existing Network Equipment (Fibercable, Splice Closures, Cabinets, etc)*

Client Partnership Implications

- JPA (Joint Pole Agreement) Partnerships

Fiber Design Requirements

- Data Centers
- Client/Partner/Provider Data Centers
- Unassigned Data Center Default Location
- Complete List of Sites and/or Address
- Drop sites vs non drop sites
- Future vs current sites
- Client owned vs non client owned
- Site point of contacts (site verification)
- Fiber Allocation/Splicing Requirements
- Client vs Partner Fiber Split Agreement
- Client vs Partner Fiber Ribbon Assignments
- Client splicing requirements, Partner splicing requirements
- Existing Fiber Dark Counts for splicing (if required)
- Backhaul Requirements
- Allocated Fiber per Site / Address / Hut / Hub
- Redundancy (Dark Fiber vs Ex. Infrastructure)
- Proposed fiber splicing vs existing infrastructure splicing
- Individual Network Requirements
- Material Products Specifications
- Fibercable - Loose, ribbon, reel lengths
- Splices – Existing infrastructure matches, preferred expansion size, etc
- Fiber infrastructure Identified
- Mesh, Ring, Hub and Spoke
- GPON, FTTH Point to Point
- Cable sizing
- Backbone/Lateral/Distribution Sizing
- Sizing in relation to partner contracts

* Existing assets are assumed to be in a format that is both legible and manageable to pull the required data from. This may include but is not limited to construction prints, KMZs, shapefiles, layer packages, etc. The package delivered by the client must include the exact assets that are intended to be used with no uncertainty

about location, access, or usability status. Existing assets must be derived from these records and cannot be identified and utilized from institutional knowledge. If any of these conditions are not met, the existing asset will not be used or might require a change order to utilize in the future.

Final Design Deliverable Details

This itemized list will refer to “fibercable design elements.” The design elements are as follows as applicable to the project requirements. Design elements include (1) Fibercable, (2) Conduit, (3) Vaults, (4) Strand, (5) Poles, (6) Anchors, (7) Risers, (8) Sites, (9) Splice Closures, and (10) Slack Loops. Additional fiber design elements may be included as required by the fiber infrastructure.

Deliverable List

ArcGIS Pro Layer Package (.lpkx) of all design elements.

ArcGIS Shapefiles (.shp) of all design elements.

Google Earth KMZ (.kmz or .kml) of all design elements.

Underground and or Aerial and Fiber Construction Maps (.pdf)

Cover sheet with project name and address

General notes and contact information sheet

Miscellaneous detail sheets including construction typicals and City of Superior Construction Standards to be included in construction documentation and provided in a separate Word document

Site specific details if necessary for constructability

Final construction prints and packages for Phase 2, including final drawings, plans, specifications, bid templates and related information needed to release phases of construction to selected contractor.

Erosion and Grading requirements for the City of Superior – all plan details, quantities, and specifications required in support of the permits required will be included in this scope of work. Any resulting permit conditions will be incorporated into the plans and specifications during the final design phase.

Single Line Diagram (.pdf)

Permit Identification Overviews (.pdf)

Permit Authority Research (.zip)

Including necessary bore profile drawings

Bill of Materials (Final Engineer’s Estimate) (.xlsx)

Estimated quantity sheets

Detailed, unit-based bills of materials and cost estimates for construction, with individual units for labor, materials and equipment.

Phase 2 engineering design, including all backbone, feeder and distribution fiber routes, aerial and underground placement, cable sizing, POP and FDH locations, splice and interconnection points and related information.

Deliverable Explanations

ArcGIS Pro Layer Package - This is an ArcGIS proprietary package that can be opened directly in ArcGIS Pro. All fiber cable design element's labeling and symbology are setup in ArcGIS beforehand and make for a quick and easy review process. EN utilizes an industry standard set of feature classes and schema.

ArcGIS Shapefiles - This will consist of a separate shapefile export for each of the fiber cable design elements. The purpose of these separate shapefile exports if for end users that will be utilizing other GIS applications to review the network such as ArcMap or QGIS. All shapefile files for all design elements (about seven per design element) will be zipped and submitted in one folder.

Google Earth KMZ - This will consist of an export of our ArcGIS database into a file format that can be opened directly in Google Earth. While the formatting will be extremely close to the Layer Package, it does lack some of the labelling features but will be the most distributable of the deliverables as the file can be opened by a free application everyone has access to, Google Earth.

Underground Construction Maps - This (11x17) PDF deliverable encompasses all necessary information for the construction crew to build the underground plant. It includes legends, construction specifications, an overview, and detailed construction prints.

Aerial Construction Maps - This (11x17) PDF deliverable encompasses all necessary information for the construction crew to build the aerial plant. It consists of legends, construction specifications, overview prints, and make ready notes.

Fiber Construction Maps - This (11x17) PDF deliverable encompasses all necessary information for the construction crew for placing fiber and splicing. It consists of legends, splicing specifications, overview prints and elements details.

Single Line Diagram (SLD) - This is a PDF (11x17) that simplifies the entire fiber allocations into as few pages as possible. The goal in this is to condense information to account for all fiber allocations into a singular document. It consists of legends, splicing specifications, overview prints and cut sheets.

Permit Identification Overviews – These are PDFs that mirror the construction and aerial documents but are isolated from the various authorities that will require some sort of encroachment permit to perform construction. Separate crossings shall be assigned permit names and sequence numbers in preparation for encroachment permit package creation.

Permit Authority Research – These will be zipped packages of various information required for the creation of encroachment permits including but not limited to authority standards, creation and submittal cost estimates ranges and encroachment permit examples.

Bill of Materials - EN will create a final design cost estimates for the fiber network which itemizes all labor, materials, and equipment costs. We will provide a comprehensive bill of materials with unit rates for construction, based on local labor costs that are commensurate with the current market. This bill of materials will supply each per unit cost for outside plant construction, splicing, termination, testing, wireless siting, construction, installation, and activation.

Required Forms

Date: September 10, 2024 City of Superior, Wisconsin I/we, the undersigned, being familiar with your local conditions, having made a field inspection and investigation that I/we deemed necessary, having studied the plans and specifications for the work and being familiar with all the factors and other conditions affecting the work, are hereto attaching the following documents: 1) Subcontractors & Suppliers List 2) Addenda Acknowledgment 3) Qualification & Evaluation Checklist 4) References I/we, the undersigned, hereby propose to furnish all labor, tools, materials, skills, equipment and all else necessary to execute the work, in accordance with the specifications and are hereby submitting the following proposal: Total Cost (Not-to-Exceed): $One Million, Three Hundred Seventy Four Thousand, Eight Hundred and Four Dollars and Sixty Two Cents Amount in written figures: $**1,374,804.62** Completion Date: May – June 2025 (date) Interested firms may, at their discretion, suggest additional services not explicitly requested by this RFP. Proposals should include line item costs for additional services. Please note that additional services may or may not be awarded by the City and that costs for additional services are excluded from the base proposal.

Interested firms may, at their discretion, suggest additional services not explicitly requested by this RFP. Proposals should include line item costs for additional services. Please note that additional services may or may not be awarded by the City and that costs for additional services are excluded from the base proposal.

SIGNATURE Jesse Rodriguez Date 9/10/2024

Print Name Jesse Rodriguez, VP of Commercial Operations

Name of Company EN Engineering, LLC

Address 28100 Torch Parkway, Suite 400, Warrenville, IL 60555

Phone +1 (630) 353 4077 Fax

E-mail Addrees jrodriguez@entrustsol.com

10. Subcontractors Listing (Must be submitted with proposal.)

Engineering Services for Fiber Phase 2

The undersigned agrees to employ the following listed subcontractors for the following enumerated classes of work and not to alter or add to such list without the written consent of the City of Superior, WI. Use separate sheet as necessary.

	SUBCONTRACTOR	CLASS OF WORK
1)	N/A	
2)		
3)		
4)		
5)		

Submitted by:

COMPANY EN Engineering, LLC

ADDRESS 28100 Torch Parkway, Suite 400, Warrenville, IL 60555

COMPANY REPRESENTATIVE Jesse Rodriguez

11. Addenda Acknowledgement (Must be submitted with Proposal)

Engineering Services for Fiber Phase 2

I/we hereby acknowledge receipt of the following addenda(s):

Addendum No.	1	Dated	8/26/24
Addendum No.	2	Dated	9/4/2024
Addendum No.		Dated	
Addendum No.		Dated	

I/we further certify that no agreement has been entered into to prevent competition for said work and that I/we carefully examined the site where the work is to take place, and the plans, specifications, form of contract and all other contract documents.

I/we further agree to enter into the contract, as provided in the contract documents, under all the terms, conditions and requirements of those documents.

* If no addenda were issued, the consultant/firm shall so indicate and sign this document.

EN Engineering, LLC
Company

Jesse Rodriguez
Representative Signature

12. Qualification Evaluation Checklist

Owner: EN Engineering, LLC

Contact Person: Jesse Rodriguez

Address: 28100 Torch Parkway Suite 400

City: Warrenville State: IL

Zip: 60555

Telephone: +1 (630) 353 4077

Instructions:

1. When filling out the checklist check "YES" only to those services provided "in-house" by your firm (or prior experience of key personnel anticipated to perform a substantial amount of the project work) and check "SUB" for services you intend to subcontract out. List the subcontracting firm in the "Comments/Explanation" area.
2. Respondents are encouraged to add comments and to attach more detailed information where appropriate in response to checklist items. Such clarification can greatly assist the evaluation process. Firms may include other information as they deem appropriate.
3. Attach to this checklist any appropriate licenses, certification, degrees, or appropriate training that will assist in qualifying your firm for these services.
4. Consultant qualifications will be determined using this checklist along with the information provided as outlined in the "Requirements for Statement of Qualifications".
5. Firms are expected to answer "YES" to some of the checklist items, but not all of them.
6. False, inaccurate or misleading information shall be grounds for disqualification at any time during and after the selection process. When in doubt attach a detailed answer or call for clarification.

Yes	Sub	No	#	Question
			1.	How many years has your firm been engaged in the consulting business under the present firm name? 24
☐		☒	2.	Has your firm ever failed to complete any work awarded to you? Comment/Explanation:

Yes	Sub	No	#	Question
☒		☐	3.	Is your firm willing to provide (at no cost to the City) an on-site presentation to the City regarding your firm's qualifications? Comment/Explanation:
☒	☐	☐	4.	Does your firm have experience developing construction costs and ongoing maintenance costs for a similar project? Comments:
☒	☐	☐	5.	Does your firm possess all of the necessary licenses and credentials to perform the work as specified? Is your firm licensed in Wisconsin? Comment/Explanation:

13. Statement of Qualifications Reference Form

Applicant Firm Name: EN Engineering, LLC

Contact Person: Jesse Rodriguez, VP of Commercial Operations

Address: 28100 Torch Parkway Suite 400

City, State, and Zip Code: Warrenville, IL 60555

Telephone: +1 (630) 353 4077

Reference #1

Owner or Company Name: City of Hillsboro, OR

Contact Person: Greg Mont

Type of Service(s) Provided: Fiber Design and Construction Management

Calendar Year(s) of Service(s) Provided: 2017-2019

City, State, and Zip Code: Hillsboro, OR

Telephone: 503-681-5401 greg.mont@hillsboro-oregon.gov

Reference #2

Owner or Company Name: City of Waterloo, Iowa

Contact Person: Eric Lage

Type of Service(s) Provided: Feasiblity Study and Fiber Design

Calendar Year(s) of Service(s) Provided: 2019 - Current

City, State, and Zip Code: Waterloo, Iowa

Telephone: 319-291-0175 eric.lage@waterloofiber.com

Reference #3

Owner or Company Name: City of Rancho Cucamonga, CA

Contact Person: Fred Lyn

Type of Service(s) Provided: Fiber Design and Construction Management

Calendar Year(s) of Service(s) Provided: 2018

City, State, and Zip Code: Rancho Cucamonga, CA

Telephone: 909.477.2740 ext. 4035 fred.lyn@cityofrc.us

Terms and Conditions Exceptions

Additional Insured Requirements - The following must be included as additional insureds **on the General Liability and Business Automobile liability coverage arising out of project work - City,** and its officers, council members, agents, employees and authorized volunteers. This does not apply to Workers Compensation Policies.

Ownership of Documents. All drawings, specifications, renderings, models, approved copies, manuals and other such documents prepared by the Consultant or any party pursuant to this Agreement shall become the property of the City of Superior on completion and acceptance of any of the Consultant's work, or upon termination of the Agreement and upon payment with the terms of this Agreement, and shall be delivered to the City of Superior upon request. This notwithstanding, Consultant shall maintain all ownership rights, title and interests in all inventions, trade secrets, trademarks, copyrights, patents, know-how, practices, drawings, specifications, details, procedures, processes, technology, software, hardware, database, calculations, algorithm, object and source code developed, owned or controlled by Consultant prior to the performance of any Services for City under this Agreement or developed by Consultant independently from the performance of any Services for City under this Agreement ("Consultant IP"). If and to the extent any Consultant IP is included with or incorporated in the Work Product, Consultant grants to City a non-exclusive, perpetual, royalty-free license to use and employ any and all Consultant IP to the extent necessary to gain the full advantage and benefit of the Work Product. City shall not misappropriate, infringe, reverse engineer, decompile, disassemble, or otherwise attempt to derive the source code, techniques, processes, algorithms, know-how, processes, formulae, methodologies, or other information of any of Consultant IP. All other rights in and to Consultant IP are expressly reserved by Company.

Indemnifications. Consultant hereby agrees to indemnify, defend and hold harmless the City its elected and appointed officials, officers, employees, agents, representatives and volunteers, and each of them, from and against any and all suits, actions, legal or administrative proceedings, claims, demands, damages, liabilities, interest, attorneys' fees, costs, and expenses of whatsoever kind or nature only to the extent caused, occasioned, or contributed to in whole or in part by reason of any negligent act, omission, whether active or passive, of Consultant or of anyone acting under its direction or control or on its behalf, even if liability is also sought to be imposed on the City, its elected and appointed officials, officers, employees, agents, representatives and volunteers.

The obligation to indemnify, defend and hold harmless the City, its elected and appointed officials, officers, employees, agents, representatives and volunteers, and each of them, shall exclude any obligation to defend or indemnify the City for its negligence or the negligence of its elected and appointed officials, officers, employees, agents, representatives and volunteers, or any third parties not under contract with or control of Consultant.

Termination. This Agreement may be terminated by either party without cause upon ten (10) days written notice to the other. In the event of termination, Consultant shall be paid for services performed to termination date. The results of the work by

Consultant shall immediately be turned over to the City of Superior, and is a condition of final payment. This notwithstanding, for any incomplete work product, Consultant shall have the right to remove or redact any identifiable markings, including names, logos, title block, signatures and seals. Consultant shall be held fully harmless from and have no liability for any and all claims, losses, liabilities and damages which arise out of or relate to any continued use or modifications made to any such incomplete work product transferred to the City hereunder.

Warranty of Documents. The City, its representatives, employees, and agents make no representations of the accuracy of documents, drawings, procedures, etc., provided to Consultant under this Agreement, and shall not be held liable for the inadequacy thereof. To the greatest extent possible, any document, drawing, procedure, etc., provided by the City for the purposes of the project that cannot be utilized as reliable information by the Consultant shall be noted as such by the City in the transmittal of the material. This notwithstanding, Consultant shall be entitled to rely upon the accuracy and completeness of the information and documents it is provided for use or incorporation in its work and services, and Consultant shall not be responsible for any errors, omissions, or inconsistencies contained in any information or documents provided by City to Consultant for use in its work and services.

Limitation of Liability. NEITHER CITY NOR CONSULTANT SHALL BE LIABLE TO THE OTHER FOR ANY PUNITIVE, EXEMPLARY, SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER FORESEEN OR KNOWN IN ADVANCE BY EITHER PARTY, WHETHER BASED IN CONTRACT, WARRANTY, TORT OR OTHER LEGAL THEORY, INCLUDING BUT NOT LIMITED TO LOSS OF PROFIT, REVENUE, FINANCING, FUNDING, BONDING, USE, PRODUCTIVITY OR EFFICIENCY, BUSINESS, EQUIPMENT OR FACILITY INTERRUPTION, INEFFICIENCY OR SHUTDOWN, AND DAMAGE TO BUSINESS REPUTATION. THE TOTAL AND AGGREGATE LIABILITY OF CONSULTANT FOR ANY AND ALL CLAIMS, LOSSES, LIABILITIES, DAMAGES, JUDGMENTS AND AWARDS ARISING OUT OF OR RELATED TO THE SERVICES, ORDERS OR THIS CONTRACT SHALL BE LIMITED TO THE GREATER OF THE APPLICABLE INSURANCE LIMITS REQUIRED TO BE MAINTAINED BY CONSULTANT UNDER THIS AGREEMENT OR $5,000,000.