



Spectrum
ENGINEERING CORPORATION

ENGINEERING PARTNERSHIPS IN INFORMATION TECHNOLOGY

“Enhancing economic development through infrastructure”

Why you should choose

SPECTRUM for FTTX

• **Construction Oversight & Inspection**

Along with design services we offer a full range of Construction Assistance services. By hiring us to perform the Construction Assistance of your project, you can be assured that the products and construction practices are compliant with the specifications and drawings. Using one point of contact helps reduce the cost and streamlines the decision-making process.

A complete Bill of Materials will be produced for each fiber service area. We can also use this information to track construction costs to budget and to manage field change order requests by the OSP contractor. We can assist you with materials delivery and marshalling and materials inspection.

On site daily construction inspection will be executed by one of the fiber inspection contractors we employ. We have built good relationships with our contractors and work closely with them on projects.

At each stage along the construction process, Spectrum is normally involved, either through direct support (project oversight) or on an as-needed basis. Invariably, there will be questions specific to the field conditions in the construction application of the design.

We employ highly qualified individuals with years of experience to assist with the construction of your

project from contract execution to ribbon cutting. Before, during, and after the construction process, coordination is key. It is critically important that the client and the construction contractor have open access to the designing engineer to ensure the project is completed as designed. Spectrum steps up and delivers the effort required to keep your project running on time and at budget.

Spectrum Engineering Corporation
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Auburn, IN 46706

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We're on the Web! www.Spectrumeng.com

Customer Name	FIBERNET MONTICELLO MONTICELLO, MN	
	<u>PROJECT MANAGEMENT</u> Jeffrey O'Neill, City Administrator 763.271.3215 Jeff.ONeill@ci.monticello.mn.us	
Customer Type	Municipality	
Contract Start/Finish	2/2008—10/2009	
Project Size	Fiber Loop: \$900k 2009 FTTP Project: \$6MM	
Scope	Extending Fiber-based Services to Community	
Role	<ul style="list-style-type: none"> • FTTP Design • Project Management • FTTP Construction Overseer 	
Project Stage	Complete	

Construction Oversight & Inspection Experience

Monticello, MN is a progressive community located near Minneapolis. Recognizing that the provision of accessible and affordable broadband telecommunications services is essential for the long term development and vitality of Monticello's businesses and for informed, healthy and economically competitive residents, the City formed a Fiber Optic Task Force.

In 2008 Spectrum was enlisted for design and construction management of the planned network initially encompassing the City limits of Monticello. Before work began, TDS Telecom served a lawsuit against Monticello claiming revenue bonds could not be used for establishing a telecommunications system. Confident the City was within its legal rights, the Task Force began a smaller project — the Fiber Loop — 11 miles of fiber connecting important commercial, industrial and civic facilities for high-speed data only.

The Minnesota Supreme Court rejected an appeal to overturn 2 lower court decisions favoring the City in June, 2009. We were awarded the design and construction management of the 2009 Monticello FTTP Project, — nearly 95 plant miles of underground optical fiber — providing the following services:

- Prepared OSP Construction bid packages including construction drawings, specifications, detailed materials specifications and quantities, and managed the bidding process to hire a construction contractor.
- Assisted selecting an FTTP equipment vendor.
- Performed walkouts of the proposed fiber routing and provided field verification of strand maps, route design and fiber counts/provisioning.
- Reviewed economic development plans in affected

areas to determine future needs and sized the transport system for the intended service area.

- Utilizing GIS software, designed the Fiber Loop Project consisting of 12 underground miles configured as a passive optical network PON architecture having a nominal 1x32 splitters housed in passive LCP Cabinets.
- Development of a comprehensive database supporting the installation and documentation of the design.
- Designed the 2009 FTTP Project passing 5700 potential subscribers. The average Local Convergence Cabinet (work order) boundary consisted of between 240 and 550 subscribers. Monticello desired to install drops in concert with construction for 2009 and 2010. The design included all FTTP electronics, splitters, huts and other items needed to make the fiber network functional.
- Identified and made applications for all needed permits and rights-of-way for all construction, RR, water, and interstate crossings.
- Construction oversight of the field installations, including testing and documentation.
- Revised construction drawings and provided final as-built drawings to the City showing the completed network, as constructed, including type, depth, location, and dimension.

On September 28, 2009, the City was recognized as "Organization of the Year" by the National Association of Telecommunications Officers and Advisors (NATOA). Monticello received the honor for "its vision and courage in planning a community fiber-to-the-home network and for fighting in the courts against an anti-competition incumbent for its right to determine its own broadband and economic future." FiberNet Monticello had their ribbon cutting ceremony October 27, 2009 to announce to the community they are open and ready for business.