



ENGINEERING PARTNERSHIPS IN INFORMATION TECHNOLOGY

“Enhancing economic development through infrastructure”

Why you should choose

SPECTRUM for FTTX

• **Data Center Design / Video Headend Design**

Spectrum has had extensive experience in **Data Center Design**. The first phase typically provides a detailed conceptual/schematic design including drawings that can be used as funding acquisition and sales tools, a detailed cost estimate, proposed business case, and preliminary cash flows model. The second phase completes the detailed Mechanical, Electrical, Plumbing, and Security construction documents needed for construction.

An appropriately sized Data Center will be equipped with the following:

- Properly sized HVAC having humidity control
- State of the art fire protection and power conditioning
- Properly sized standby generation
- Transient voltage surge suppression system
- Test bench
- Electric, lighting, telecommunications, floor, trim, and door schedules
- Rack layout master plan
- Keyless entry and integrated security
- Network materials storage space

In addition to design, we can provide assistance with bidding and selection of the construction contractor and construction inspection.

Designing a Video Headend can include an air tower, dish farm, control building, and a video head end. Points that will be addressed include the following:

- Below grade construction (soil analysis/foundation)
- Pre-fab headend facility (floor layout)
- Outside headend infrastructure (dish farm/tower)
- Inside headend infrastructure (equipment racks)
- Passive and active electronics
- Test equipment

To complete your project, we can develop a project schedule and cost budget, publish construction documents, assist you with bidding, and assist with award of the construction contract. We can also negotiate video content, assist with acquiring cooperative purchasing memberships, and construction management.

Your Data Center may house your voice, video and data Headworks (as well as provide for future business collocation opportunities) in the same building.

Spectrum Engineering Corporation
5524 North County Line Road
Auburn, IN 46706

Contact Rod Sibery
Phone: 260-627-8888
rsibery@spectrumeng.com

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

Customer Name	AUBURN ESSENTIAL SERVICES FIRST MUNICIPAL FIBER OPTIC CABLE IN THE MIDWEST AUBURN, IN		
	<u>EXECUTIVE</u> Stuart Tuttle, Superintendent (866) 428-2876X1301 sltuttle@ci.auburn.in.us	<u>PROJECT MANAGEMENT</u> Chris Schweitzer, IS Mgr (260) 925-8232 cwschweitzer@ci.auburn.in.us	 <p style="text-align: right; font-size: small;">Your Community Network.</p>
Customer Type	Municipality		
Contract Start/Finish	Several stages beginning in 1984 to present. All have finished on time and within budget.		
Project Size	<ul style="list-style-type: none"> •Map Existing Municipal Network: \$44k •Phase III—7500 passings — Data, Phone, Video, Security, WIFI, Class 3 Data Center: \$15.8M •Video Head End: \$2.7M 		
Scope	<ul style="list-style-type: none"> •Map Network Installed 1990-2006 to New Format (2008) •FTTP Design & Deployment—Phase III (2009-11) •Video Head End Detail Plan, Design, and Construction (2009-11) 		
Role	<ul style="list-style-type: none"> •Conversion of fiber Designed in AutoCAD •Designer, Support and Construction Overseer for FTTP •Designer, Support and Construction overseer for Video Head End 		
Project Stage	Phase III FTTP under construction; Video Head End Construction complete		

Spectrum planned and designed the first municipal fiber optic cable build in the Midwest in 1984 for Auburn, IN. We wrote Auburn's Information Technology Master Plan in 1997. In 1999, we designed and constructed the City/County Municipal Area Network for all departments in Auburn/DeKalb County.

Spectrum provided professional assistance to Auburn in each facet of their total broadband network upgrades including:

- Fiber Design, Installation and Testing
- Data Center Design and Construction Oversight
- Feasibility Study of Expanding the City's Existing Broadband Infrastructure
- FTTB Design & Deployment to Every Business

In 2005 Spectrum provided design and construction oversight services for the City's new **Level 3 Data Center**. The design incorporated the following elements:

- Properly sized HVAC having humidity control
- State-of-the-art fire protection
- Properly sized standby generation
- Transient surge protection
- Rack layout master plan
- Integrated security
- Structural layout and design drawings
- Electric layout drawing
- Telecommunications drawing
- Specifications for each element in the construction

Coincident with the Data Center installation, we provided a comprehensive evaluation, review and assessment aimed at addressing the expanded use of the City's existing broadband infrastructure investment. The findings indicated that it was feasible to proceed with the evaluation of current technologies that would suit Auburn's shorter and longer-term goals. Following the completion of the study, Auburn approved proceeding into the primary business districts in 2006. Our involvement in this deployment included design of fiber installation, development of a comprehensive database, negotiations, determination of staffing, specification of FTTP electronics, provision of legal and agreement support and construction oversight.

AES requested our assistance to determine the mode of video delivery options to their customers and **Video Head End Detail Plan Design** services. The design and specifications included:

- Below grade construction
- Pre-fab headend facility requirements
- Outside headend infrastructure
- Inside headend infrastructure
- Passive and active electronics
- Test equipment
- Training
- Off site support

We also developed a project schedule and cost budget, published the construction documents, and assisted with the bidding process and the recommendation to award.