



FIBER NETWORK DESIGN

FIBER SPECIFICATIONS & DESIGN

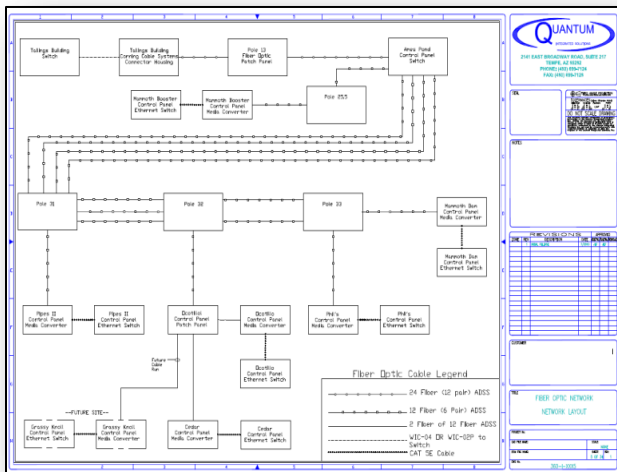
Quantum Integrated Solutions developed a complete 24 Fiber, 12 Pair, ADSS fiber network. This network design included calculations for SAG and TENSION at each pole span location and system drop. This self-supporting 62.5 micron Single Mode network design is approximately 5 miles in length delivering network communications to numerous well pump stations and booster pump stations within the property of a copper mine.

NETWORK LAYOUT

The entire network incorporated both the Fiber backbone as well as CAT-6 drops to the individual control apparatus. Quantum developed the design for the inclusion of CISCO media converters at each drop. The overall scheme included interface to the plant DCS system controllers via interface to their existing plant network controllers.

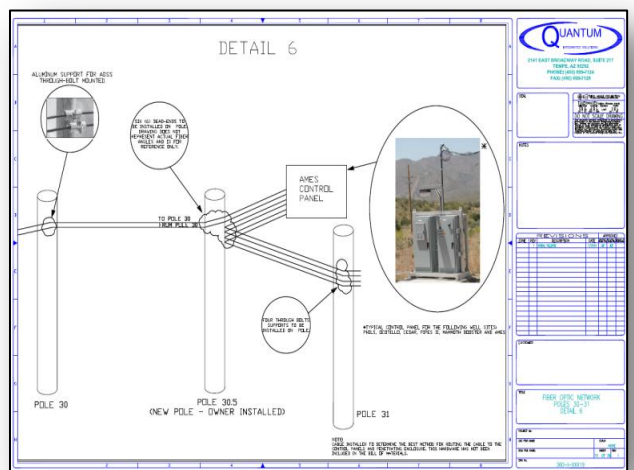
FIELD DESIGN SERVICES

Quantum developed the overall design following a complete on-site assessment of the existing conditions, poles and structures. Each pole location was identified with GPS plotting and assigned a pole name for future identification.



NETWORK MEDIA CONVERTERS

The system as designed utilized multiple media converters to translate the fiber media to CAT-6. Panel layout designs for each pump and booster station location was included in our design.



DESIGN DETAILS

Multiple design details were developed for each pole and corner transition. Sag and Tension calculations were developed for each transition to ensure proper lengths and tensions for each transition did not exceed cable specifications for the particular length.



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CONTROL EQUIPMENT

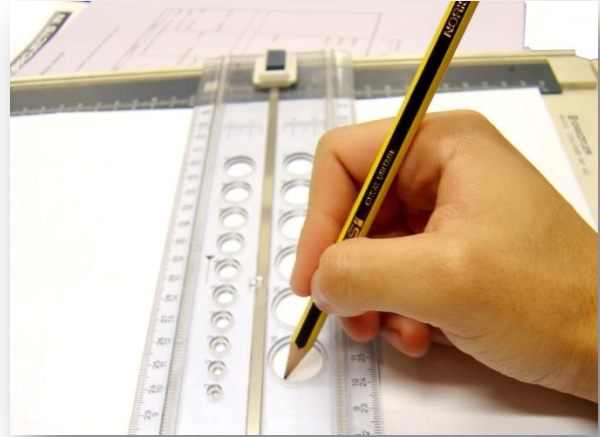
Quantum can evaluate, design, fabricate, install and configure necessary equipment for a wide range of process control designs.

- ✓ Instrumentation
- ✓ PLC Control Panels
- ✓ Motor Control

ADDITIONAL SERVICES

Quantum provides many additional industrial automation applications. Listed below are some additional engineering services provided by Quantum.

- ✓ Radio Surveys
- ✓ Industrial Energy Audits
 - Search for qualifying energy rebates
- ✓ SCADA and HMI Support
- ✓ SCADA Video Surveillance Design and Installation
- ✓ Process Control Training
- ✓ Secure internet access to project backups – 24/7
 - Design Drawings
 - Programming codes
 - Operation and maintenance manuals
- ✓ Fiber Network Design
- ✓ Computer Aided Drafting (CAD)



CERTIFICATIONS AND AFFILIATIONS



MAJOR MARKETS SERVED

Mining



Water/Wastewater



Renewable Energy



Semiconductor

