

Air-Blown Fiber Gives University of Utah Unmatched Flexibility in Campus-Wide Network at Half Cost

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In 1990 the underground conduit system supporting the campus-wide network at the University of Utah was in serious trouble. Conduit utilization was out of control. Eight different departments were using up conduit space rapidly; there was no effective plan to control the growing number of cables and the services they carried. No one knew which cables were abandoned, and many conduits were unusable because of improper installation practices.

To bring order to the university's communications infrastructure, a committee was formed in February 1990 by enlisting representatives from each of the eight user departments. Called the Campus Telecommunication Conduit and Cable Excavation Committee, or "Manhole Committee," it quickly determined that the college needed a one-time cable installation that could provide flexibility to support unknown growth of present and future networks.

The committee's first step was to restrict conduit access. Then it addressed a long-term cabling solution to support present and future media, including data, video and telephone networks.

The Fiber Master Plan

Over a two-month period the Committee developed its Fiber Master Plan -- a campus-wide data network topology designed to allow a user logged onto any one data network to establish a link to any other on-campus user or network.

The Fiber Master Plan was designed to employ a campus-wide FDDI ring linking 7 hubs via multi-mode fiber cables. The network was initially designed with plenty of extra fiber to support unknown future growth along the backbone routes -- a campus-wide ring of 96 fiber cables between FDDI hubs and 24 to 48 drop cables to Ethernet and Token Ring network locations within each FDDI hub's local area.

The network installation was divided into 5 phases by specific geographic areas to provide service to 63 buildings (see Figure 1). At initial planning, 11 additional buildings were noted as possible future additions to the network. They, and 10 others, have since been connected.

By August 1990, The Fiber Master Plan evolved to a data network Request For Proposal (RFP) that was released to more than 30 optical fiber cable and equipment suppliers. While the RFP addressed current network requirements, future needs were unknown. Respondents were asked to propose types and quantities of fiber that, in their estimation, could accommodate future requirements.

Approximately two thirds of the suppliers responded. All except one proposed conventional fiber optic cabling. Sumitomo Electric Lightwave Corp. (SEL) recommended a technique described as "air blown fiber." Called FutureFlex™, the solution, according to SEL, would address the requirements of the university in 1990 while providing the capability to support ongoing communications growth in an economic manner.

The SEL proposal was accepted by the university because it addressed three critical design aspects: long-term flexibility, long-term cost and long-term expandability. The technique enabled the university to install less fiber than initially planned for in its effort to accommodate future growth. It also reduced end-to-end attenuation due to the elimination of field splices while its more direct fiber routing capability minimized design issues in several of the longer fiber spans.