Downtown Fairbanks Revitalized by Utildor

The Cushman Street Bridge in Fairbanks.
Courtesy of Fairbanks Convention and Visitors Bureau

Franchot Fenske, Asociate
R.W. Beck and Associates

Several years ago, Fairbanks, Alaska, was experiencing rapid urban growth. New developments were springing up in and around the city. Unfortunately, the street and utility systems in the downtown core area — some of the oldest in Fairbanks — were unable to accommodate this growth. In fact, most of the systems needed repairs just to ensure that they could handle the existing demands reliably.

Deteriorating and undersized utilities plagued city planners and elected officials. The downtown core experienced typical growth-related utilities problems: inadequate storm drainage, an undersized telephone system with major maintenance problems, and a steam district heating distribution system that had required the replacement of condensate pipelines every year for several years.

Streets had to be torn up whenever the below-grade utilities required repairs, while above-grade utilities, such as telephone and electrical systems, were subject to damage from the elements.

These problems had to be addressed if the downtown area was to continue to grow and attract new business. Time constraints and a desire to reduce or eliminate continual disruption of traffic and business for utility repairs led to initiation of a major renovation of downtown utilities.

After careful consideration of the various options, the City chose to pursue a visionary public works project that would

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position Fairbanks for economic growth and development into the 21st century.

The completion of the Downtown Utility/Street Upgrade Project began a new era for the city. To solve the problems of failing and inadequately-sized utilities that required annual repairs during the summer tourist season, city planners conceived an enclosed utility environment capable of year-round access.

In 1985, the city hired R.W. Beck and Associates to design and help with the construction management of a 2,100-foot-long, 7-1/2-foot-high by 8-foot-wide utilidor that relocated district steam, water, fire protection, electric, and telephone systems in a utilidor network beneath the streets.

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In just eight months, the engineering team led by R.W. Beck completed the system design in time to obtain project funding and take advantage of the short summer construction season.

The Downtown Utility/Street Upgrade Project was designed to emphasize long-term benefit. No longer will businesses face the annual rumble of machinery in downtown streets or the chaos created by massive roadway excavation activities. For years to come, downtown Fairbanks can develop and prosper, both economically and socially, because its utility systems are reliable, well-protected, and readily accessible for upgrades or modifications.

Downtown Fairbanks prior to the utilidor construction.
Courtesy of R.W. Beck and Associates - Malcolm Lockwood Photography

Comprehensive Planning Minimizes Disruption

Work began with development of a comprehensive plan for approaching the project. The plan provided detailed schedules for meeting the eight-month design period, and close coordination with staff representing all the city utility systems maintained continuity throughout design and construction.

To assure that the project fully responded to city needs, engineering team members met with representatives from the city's various utility agencies at the start of the process to collect information on the existing systems, to learn their concerns, and to identify their scheduling and review requirements.

Milestone submittals, used throughout the design process, allowed agency officials the opportunity to comment on design modifications or changes.

Downtown streets in Fairbanks are narrow. A detailed and workable traffic control plan was extremely important. The engineering team focused on coordinating with other construction projects in downtown Fairbanks and sequencing utilidor construction so that traffic could move freely at all times.

Public information played a vital role in the project. As the project cost was financed in part by a state grant and by a local general obligation bond, public support was essential. The City conducted an intensive public information program with support from R.W. Beck, which included contacting each of the property owners along the utilidor route to introduce and discuss the construction project. The City's consulting engineers prepared several information brochures and actively participated in public meetings covering the project. This program helped win an 85 percent approval from citizens in the bond election.

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One of the most important benefits of the utilidor project was to help the City achieve the goals of providing reliable utility services to business in the downtown area and planning for continued economic growth and prosperity.

Until the utilidor was installed, businesses within the downtown core were suffering financially, and new businesses would not locate downtown because of the yearly construction work. By placing the utility systems in a utilidor, the project gives Fairbanks utilities protection from the freezing and thawing of the harsh Alaskan environment.

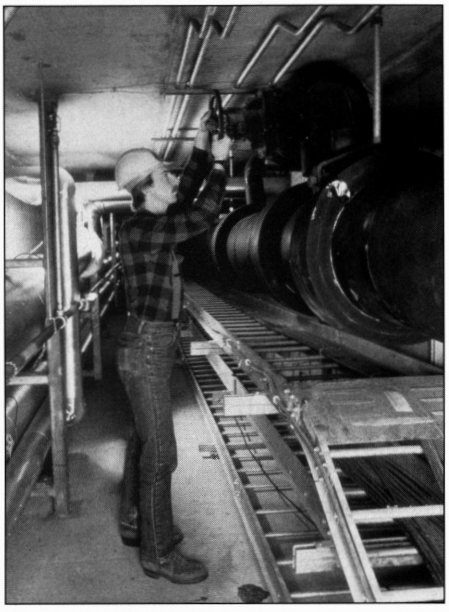
A new medium-pressure (55 psi) steam system was constructed that can be converted to hot water in the future or, alternatively, can be expanded to serve additional areas using the steam to heat circulating hot water.

The concrete structure allows year-round access for maintenance, repairs and expansion. The large multi-purpose manholes placed in most intersections connect intersecting utilities from other streets. They contain flexible ball joints for controlling expansion of the district steam heating system, house the electrical and telephone control panels, and allow adequate room for system maintenance and for future additions. Utiliducts for present and future customer service connections allow access for maintenance and new service connections without digging up the streets.

The concept of installing utilities in utilidors underground is not new, although utilidors are not common because of their high cost. Usually, special considerations such as congestion, difficult construction conditions, or extreme weather must be present to make such a project economically feasible.

Project Scope Brings Community Benefits

The scope of the Fairbanks utilidor system, which includes all of the utility systems in the downtown area, is unique. The system concept, its special design and construction features contain numerous original solutions.



The new utilidor in Fairbanks allows easy access to all downtown utilities.
Courtesy of R.W. Beck and Associates - Malcolm Lockwood Photography

For example, there are significant social and economic benefits to placing utilities in an enclosed environment. The utilidor minimizes the need to disturb downtown streets in the future, resulting in a boost to the local economy because businesses, residents and tourists are not inconvenienced by construction. The utilidor system will revitalize the downtown area and help the city to realize its development goals.

The utilidor and downtown utilities are designed to be functional and reliable. The utilidor is designed to be waterproof and to withstand uplift caused by potential flooding of the Chena River.

The project included detailed analyses of steam and hot water alternatives. A new medium-pressure (55 psi) steam system was constructed that can be converted to hot water in the future or, alternatively, can be expanded to serve additional areas using the steam to heat circulating hot water.

Another unique feature of the project is the circulating water system that was pioneered by R.W. Beck and Associates in the 1950s to prevent freezing of the system. During the winter, water is circulated not only through the distribution system, but also to the individual service connections and fire hydrants using pitot tubes. The district heating system keeps the utilidor warm and, combined with the water circulation, prevents freezing.

The size and magnitude of replacing much of the city's core utilities made this project complex. Numerous Fairbanks city departments were involved, requiring hours of coordination. Businesses had to be notified and kept informed of all activities. Utility service had to be maintained at all times during construction. Temporary water, district heating, and electrical systems were installed and operated during most of the 18-month construction period, including one winter. The project required complex engineering and project management efforts.

The project has also improved downtown's appearance. The dense maze of electrical and telephone wires that once cluttered the downtown landscape are gone. Pavement that used to be a patchwork of asphalt from numerous excavations has been replaced by new streets, sidewalks, curbs and storm drains.

Fairbanks officials had the vision to see that dependable utilities would be vital for the future. The utilidor will serve downtown Fairbanks well into the next century.

Franchot Fenske *is a civil engineer and an associate of the firm with the Seattle office of R.W. Beck and Associates. He specializes in surface-water management engineering, but has a thorough background in engineering related to water and wastewater systems, storm drainage systems, irrigation systems, and streets and traffic systems.*