



# SHARING PIPELINES, TUNNELS, MULTIPURPOSE STRUCTURES, AND RIGHTS OF WAY AMONG CABLES, GASLINES, SEWERS, HEATING DUCTS, AND WATERLINES



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## ABSTRACT

*Our citizens are fed up with utilities- each one doing their own thing creating disruption to their lives, multiple times. We need refreshing ways to serve our citizens better. This paper presents innovative construction ideas of how structures could be designed, constructed, and shared among multiple utilities to save enormous amount of time and money in the most environmental friendly manner.*

## KEYWORDS

*Multiuse structures, shared rights of way, cables*

## INTRODUCTION

The very governmental, commercial, and residential end users who are craving for true broadband coming into their premises already have sanitary sewers, storm drains, waterlines, and natural gas lines reaching their premises to meet their needs. The fat pipe to carry infinite voice/video/data from multiple providers could be housed in these utilities by forming creative business partnerships among optical fiber owners, service providers, utility pipe owners, and vendors. By municipalities taking the initiatives for building the last mile or FTTH fiber, they could meet the needs of FTTH, renovation of their aging pipeline infrastructure, and improved sensing, surveillance, and security of vital lifelines and treatment plants. None of the old and established rules for making money in the cable market would work. First of all, the causes of the current fiber glut need to be understood; new rules need to be written with a whole new set of business partners and new financial incentives ought to be considered in the rewriting of the business plan. The very governmental, commercial, and residential end users who are craving for infinite bandwidth through optical fiber networks coming into their premises already have sanitary sewers, storm drains, waterlines, hot water pipes, heating ducts, electrical conduits, and natural gas lines reaching their premises for providing essential services to meet their needs. These underground pipes start in the vicinity of the current POPs of optical fiber in the metro loops or backbones and finish inside of the very buildings where the last mile or FTTH fiber needs to end to provide the on and off ramps for these information highways made of optical fiber. It makes all the sense in the world to locate the last mile or FTTH fiber in these existing rights of way on sewers, water mains, and gas pipes to deploy last mile or FTTH fiber quicker and at a cheaper cost, particularly when some of these pipes are renovated.

## WORLD IS HUNGRY FOR BANDWIDTH

More than 110 million North Americans are expected to telecommute to work by 2010. This will increase our productivity and quality of life significantly. The rest of the

world also would have similar unprecedented numbers of people working from these home offices. The world needs more bandwidth to meet its demands for better homeland security, better classrooms, better government, better medicine, better science and technology, better entertainment, better quality of life, and better job opportunities.

## CHALLENGES WITHIN THE LAST MILE

There are numerous challenges for anyone other than local utilities or ILECS to build the last mile or FTTH fiber. Local municipalities control access of much needed rights of way. They charge franchise fees, make the permit process really difficult, and pass numerous ordinances to discourage open cut construction of fiber and even impose network build moratoriums. Some even demand free fiber, where the network provider will lose even their existing revenue from the very municipalities, while requiring that the network builder pass on to them a portion of the gross revenue from the remaining fiber. Often, the areas where municipalities are willing to let fiber construction proceed are not where demand is and even in these, municipalities enforce strict time limits. The ILECS already have infrastructure in place in most locations and only fiber laterals are left to bridge the last mile or FTTH. Even regulatory environment has not given the CLECS the legal teeth they needed to compete more aggressively in the marketplace against the ILECS. The result is a mere 10% penetration by CLECS in the local access market even after 6 years of operating in the aftermath of the Telecom Act of 1996. Most significantly, the last mile or FTTH fiber carrying conduit design and installation has been in the hands of mostly telecom personnel with little or no input from civil engineers, resulting mostly in expensive and laborious implementation adding further to the problems surrounding the last mile or FTTH. If adequate civil engineering talent were involved in approaching the municipalities for access for rights of way on behalf of fiber installers, given the very municipality public works departments are managed by civil engineers, matters would have preceded a lot quicker.

## SECURITY OF PIPES, PLANTS, AND PUMPS

If the optical fiber technology could be rolled out at a faster pace, with less hurdles in rights of way acquisition, and at a lower cost, then end-to-end optical fiber connectivity could win this race in the coming years in the last mile or FTTH. For this to happen, we need to turn to existing underground infrastructure to build our communication networks, so that we can avoid additional congestion underground. North America already has invested many trillions of dollars in the past century building an extensive underground pipe network. These underground utilities were carefully engineered, constructed, operated, and maintained with mostly public funds. These have been stable well-protected