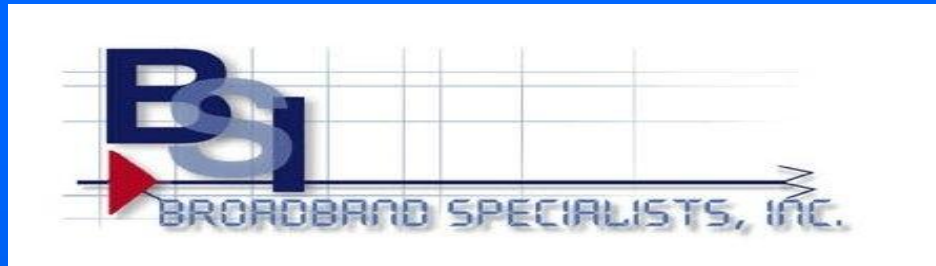




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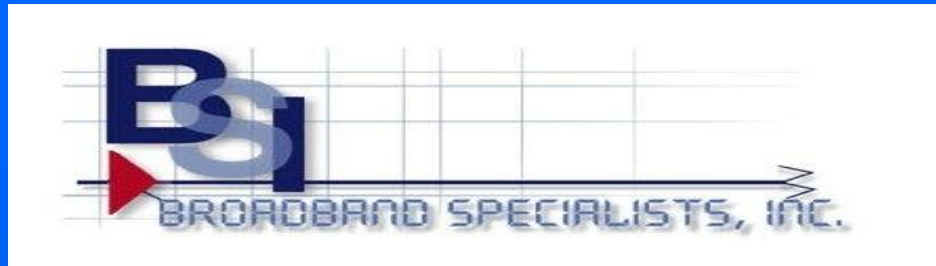
## **SUBSURFACE UTILITY ENGINEERING (SUE)**

With billions in federal stimulus flowing into state and local budgets this year and next, states and municipalities are prioritizing shovel ready projects. \$ 130,000,000,000.00 is set aside for construction of highways, buildings and other public works.



States and municipalities, to keep from wasting tax dollars, must consider requiring their contractors to consider one very important question in order to keep their projects on time, and within budget.

“Do you know where your underground utilities are located before you dig?”



## RISKS OF NOT BEING SHOVEL READY

National organizations estimate more than 400,000 utility lines are damaged or severed each year in the U.S.

- Gas pipeline explosions can result in fatal accidents
- Severed power lines can cause fatalities by electrocution
  - Frequent environmental spills can occur
- Complications can cause traffic congestion in work zones, accidents can affect public safety response times and disrupting businesses and communities
  - Taxpayer dollars are squandered
- Public loses faith in elected officials, contractors and engineers in charge of the project
  - Litigation is often pursued when utilities are damaged during construction
- Severed 9-1-1 phone lines and power lines can cause safety concerns for the public



## 1999 PURDUE UNIVERSITY STUDY

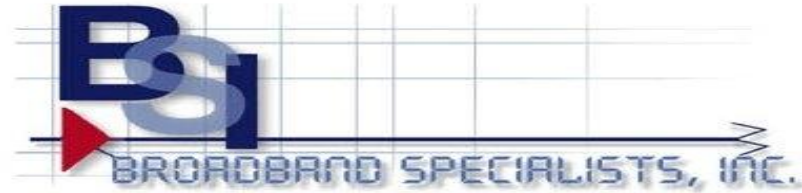
Titled

“Cost Savings on Highway Projects Utilizing Subsurface Utility Engineering”

71 Projects totaling over 1 billion were studied. The study revealed that a \$4.62 savings was achieved for every \$1.00 spent on SUE.



**A recent study sponsored by the American Association of State Highway Transportation Officials (AASHTO) and conducted by Dr. Ralph Ellis and Dr. Randolph Thomas as part of the National Cooperative Highway Research program NCHRP 2-24 (12) for the Department of Transportation revealed that the leading causes of construction delays on federal and state DOT projects is utility relocation and utility differing site conditions.**



**DOT Projects have far-reaching impacts and commonly intersect with an abundance of underground utilities, including:**

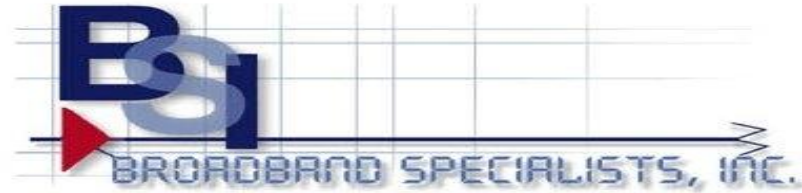
**Metropolitan areas**

**Airports**

**Bridges**

**Plant access roads**

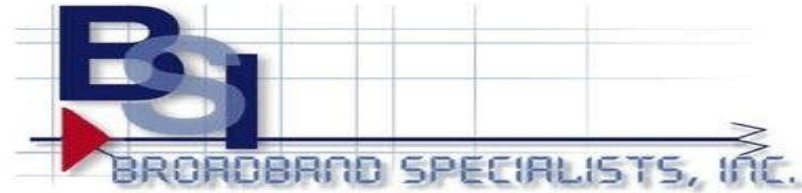
**The potential negative impacts are obvious.**



## **TOOLS TO LIMIT DAMAGES**

**We have a variety of tools and techniques at our disposal with which to identify underground utilities.**

- **Computerized Aided Design combining many different aspects of the project into a base map**
  - **Consolidate right of way maps**
- **Vacuum Extraction, which provides a nondestructive method of removing dirt to expose utilities**
- **Geographic Information Systems (GIS) and Global Positioning Systems (GPS) to combine software and hardware to develop database using coordinates of various land features and mapping techniques**



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