

Utility Location And Highway Design

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waits until a later point in the process to initiate its portion of the work.

- **Inability of DOTs to Purchase ROW in Advance for Utility Relocations.** Many DOTs cannot purchase the ROW in advance for utility relocations. Not knowing whether the ROW is available can influence design decisions.
- **Difficulty Getting "Design Tickets" Locates from One-Call Centers and Locators.** DOTs and utilities are affected by the limited level of service that One-Call centers and locators can provide, particularly during the design phase. Reliance of utility owners on their One-Call systems has not worked well for design purposes because the system was designed for safety during construction. Indeed, in a majority of states, state legislation or practices preclude permitting or mandating what utility owners do to prevent utility ratepayers from having to supplement the design costs that may be covered by other stakeholders.
- **Inaccurate or Incomplete Field Markings, Risks with Multiple Locators, and Process Inefficiencies.** In states that allow utility owners to mark for design, utilities have generally protected themselves from liability by seeking statutory language that absolves them of responsibility for the accuracy or completeness of the marks. This statutory protection reduces the incentive of utilities to produce accurate or timely location information. DOTs rarely recover redesign or contractor delay claims from utilities for wrong design markings. This issue is compounded because designers have little or no information about the accuracy and completeness of the marks placed by the One-Call systems and place their faith in it when there is no other source of information.
- **Availability of Subsurface Utility Engineering (SUE) and State-Specific Cost-Benefit Information.** A number of states are conducting research and implementing programs to promote SUE. SUE is an engineering process for accurately identifying the quality of subsurface utility information needed for highway plans and for acquiring and managing that level of information during the development of a highway project. In states where SUE is not standard or a SUE program does not exist, it may still be used in exceptional circumstances. However, even with significant documented savings from a variety of independent sources and research organizations, some states still resist the practice of SUE.
- **Quality and Effectiveness of SUE Services.** Many DOT engineers consider SUE mapping services to be expensive and therefore do not include it in the budget. SUE providers have proliferated and this has led to concerns in some cases, including: (1) SUE providers not using adequate imaging equipment, (2) procurement of the wrong amount of imaging to cut costs or meet other goals and limits, (3) inadequate level of skill or experience interpreting visual output, and (4) poor scopes of work.
- **Overly Small Mapping Limits in Early Characterization.** In an attempt to minimize initial project cost, mapping limits are frequently set unrealistically small. As this is

discovered during the project development process, extra costs and time are incurred. Previous designs can be irrelevant or inefficient if more space is available, but if addressed early the extra costs of extending the topo and utility survey limits can be minimized.

Another document that has significant applicability to this study is the FHWA's 2002 *Avoiding Utility Relocations (2)*. Its major premise is that "unplanned and unnecessary utility relocations must be avoided." It identified the following six applicable utility issues with their related problems:

1. **Property interest**—Because a majority of utilities within the ROW are under permit or franchise agreements, the state or municipality has the power to force relocation with the cost of that relocation borne by the utility. In such cases, the agency, although cognizant of the relocation impacts and costs, is not as concerned with avoidance strategies as they would be if they were reimbursing the utility. Just obtaining required easements on private property is a time-consuming and costly issue for the utility.
2. **Quality of records**—Unless utilities are designated through the One-Call design system (only available in about 12 states) or through a SUE firm, records that are frequently inaccurate, incomplete, and many times unavailable are the source for location information. This makes it difficult to make accurate decisions.
3. **Readability of plans sent to utilities**—Many times utilities are asked by the DOT to place their utility information on a set of highway plan sheets. These plan sheets may be difficult for the utility owners to interpret, owing to a lack of trained personnel in highway plan reading, inadequate or confusing topographic references, plan scale, clutter, or detail contrast.
4. **Reliance on institutional memory**—There is a significant generational change in both the utility companies and the DOTs as agencies become "right-sized, downsized, or capsize." There are few mid-level people who would be the heirs to valuable planning and design practices.
5. **Technology to locate utilities**—There is no one piece of equipment capable of detecting all types of utilities in a given location. Even many SUE firms do not employ all the possible tools owing to DOT budget concerns, lack of trained personnel, and logistical issues. Technology is advancing, but so is the cost of equipment and the training required to use and interpret it. There is a broad range of assumptions by highway designers on technology capabilities.
6. **Abandoned facilities**—Abandoned facilities usually have no available records. However, they may still contain product and, as such, can create expensive and dangerous construction conditions. Abandoned facilities, existing in close proximity to active ones are easily mistaken for the active ones, and vice-versa. Abandoned facilities are best identified in the design stage so that

Download a PDF of "Utility Location and Highway Design" by the National Academies of Sciences, Engineering, and Medicine for free. Read chapter Summary: TRB's National Cooperative Highway Research Program (NCHRP) Synthesis Utility Location and Highway Design explores .FEDERAL HIGHWAY ADMINISTRATION. REQUIREMENTS LOCATION AND DESIGN ISSUES UTILITY PLANNING CURRENT AND LONG-RANGE. Avoiding Utility Relocations, This manual describes the problems common to highway designers and utility owners, the tools available to locate. Issue 4: Modify Highway Design to Minimize Utility Relocations. Issue 5: Obtain Sufficient Right-of-Way to Accommodate Utility. Relocation. highway contractors, design consultants and utility companies utility facilities located in the right-of-way is necessary to accommodate highway improvements, .for the accommodation of utilities crossing highway (and freeway) highway and its use should be considered in the design and location of. This page provides an overview of utility adjustments for highway right of way projects, including a flowchart. It includes transition terms and acronyms, glossary . Template Name, Description. Pole Relocation Summary Sheet, Spreadsheet used to summarize existing and relocated utility pole locations. Process Guide. Good risk decisions on design and construction cannot be made . Improvement), and NCHRP (Utility Location and Highway Design). Each of these. SUE services can include utility design, utility coordination, surveying and (DOTs), local highway agencies, utility companies, and highway design consultants. The design of utility facilities located within the existing or proposed highway right -of-way requires coordination among the Project Manager. suggested location and design standards applying to the accommodation of or relocation of utility facilities located within the limits of a Federal-aid highway. utility operations on highway right-of-way. Utility Location and Design - General. - 1. .. poles); and the design and installation of facilities which could. Encroachments Permitted Within Conventional Highway Right-of-Way .. considered in the design and location of utility facilities on or along highway.

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