

OPTIMUM PLACEMENT OF UTILITIES WITHIN FLORIDA DOT RIGHTS OF WAY

PROBLEM STATEMENT

To deliver services to the public, utilities are typically routed in corridors located within the transportation right of way (R/W). Utility companies usually install facilities in the most desirable locations first, but depending on regulatory constraints, such choices may block efficient placement for other facilities installed later. The eventual consequences of this utility corridor crowding are public safety concerns, damage to the infrastructure, and interruption of service to the consumer. Furthermore, in areas of rapid population growth, the need to improve the roadway eventually necessitates modification to the corridor and subsequent utility relocation. Ultimately, the public bears the costs of the corridor infrastructure development and maintenance.

OBJECTIVES

This research is intended to develop a methodology to help identify the best placement of utility facilities during the development stages for new transportation corridors, and also during planning for modification of corridors either by the addition of new facilities or relocation of existing facilities (often associated with alterations to the roadway). The ultimate goal of this research is to improve efficiency and safety of utility corridors while reducing costs and conflicts.

FINDINGS AND CONCLUSIONS

A strategy for identifying optimal configurations for underground corridors was developed. It was found that the following items were needed as information to accomplish this task:

- For each utility, identify all absolute positioning constraints (no-installation zones, clearances, restricted installation zones, tolerance uncertainties, and cover requirements).
- For each utility, summarize all configuration dependent cost factors, reduced to functions of position and brought to present. Much of the cost information must be obtained from utilities or other agencies. Consequently, there is a degree of uncertainty associated with cost.
- Define an overall cost function as a weighted sum of cost components over all utilities. Weighting corresponds to ranking utilities by importance, if appropriate.
- Develop a scheme for determining all possible configurations for proposed utility lines within a defined corridor. For each possible configuration, evaluate total cost and a cost per utility.

- Examine the results to identify those configurations exhibiting the best characteristics, and assess potential for improvement between various acceptable solutions. Note: the assessment of performance is a determination ultimately the responsibility of the planner.

Because the tasks outlined above are extensive, the researchers developed a computer program to assist in performing the necessary computations. They also created a set of performance ratios (e.g., efficiency, flexibility) to facilitate the evaluation of corridor configurations. Several examples are provided in the final report to illustrate both the method and the capabilities of the program.

BENEFITS

This research is expected to provide several short- and long-term benefits. The developed products will help facilitate the management of R/W resources. Their implementation will minimize the disruption to utility services that occur during transportation construction projects. They also will enhance safety during construction, maintenance, or location activities and will aid in maintenance of traffic. Additionally, implementation is expected to facilitate reimbursement by FHWA for utility relocation and, potentially, to reduce claims and delays on FDOT construction projects.

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