Identification of Typical Highway-Utility Interaction Problems and Potential Solutions

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The interaction between state highway agencies and utility firms sharing highway right-of-way is exceedingly complex. Many opportunities exist for difficulties to arise. Typical utility-related problems are examined and potential solutions are described. This paper is based on a 2.5-year study of utility difficulties in the Alabama Highway Department. The study included interviews conducted with highway managers, utility industry officials, contractors, utility consulting engineers, highway agencies in other states, and national utility authorities. The project resulted in more than 300 suggestions for improvements to the highway-utility process in Alabama; the suggestions were condensed to 85 topics for study and possible policy changes. Approximately 30 topics are reviewed in this paper. They represent problem areas common to virtually all states. Identification of these topics and potential solutions should assist other state highway agencies in evaluating procedures and improving the highway-utility interaction processes.

For 2.5 years, a University of Alabama research team identified, studied, and restructured the highway utilities policies and procedures of the State of Alabama Highway Department (AHD). The mission of the study team was twofold: to analyze and revise utility policies and to provide state-of-the-art documentation to guide day-to-day highway-utility interactions. The study culminated with a 325-page document that was published in December 1989. The new manual was introduced through training sessions in 8 locations around the state; more than 1,200 people attended the sessions.

This paper was prepared to review the types of highway-utility problems encountered during the Alabama study and to introduce potential solutions identified by department managers and the university research staff. The staff found that the same types of problems existed from state to state and prepared this paper to focus national attention on several common issues.

RESEARCH WORK TASKS

About 30 typical highway-utility problem areas are discussed here. These issues were identified during the research work tasks described in the following paragraphs.

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Literature Review

Utility-related state and federal documents, including the *Federal-aid Highway Program Manual* (FHPM) and other pertinent federal publications, were reviewed early in the project. Additionally, 41 utility manuals were obtained from other state highway agencies.

State Utility Engineers

Ten state utility engineers were interviewed during the project. Eight of the interviews involved in-depth telephone discussions. These discussions revealed that the same types of problems were present in virtually every state and identified solutions implemented by a few states.

National and International Organizations

Members of national and international organizations such as AASHTO, TRB, and the International Right of Way Association were interviewed by telephone to provide insight into utilities operations. University staff also attended several conferences (sponsored by these organizations), which provided an opportunity for interaction with members of committees of these organizations.

In-State Interviews

Department personnel at three different levels were interviewed. Forty-one district engineers were interviewed, prompting 30 suggestions for improvements to utilities procedures. The division utility engineers from each of the 9 Alabama Highway divisions volunteered 19 additional suggestions for policy changes. Central office personnel contributed 35 more suggestions for the manual. The different points of view expressed by these three levels of management gave the university staff an appreciation of the variety of problems faced by highway utility personnel. For example, district engineers frequently faced problems stemming from inadequate traffic control plans used by utilities. They were also concerned about the quality of inspection on relocation projects. Central office personnel tended to worry about reducing overall liability associated with utilities actions, and they also concerned themselves with legislative action that might be taken

to improve the state's ability to effectively deal with utilities issues.

External Advisory Committee

More than 40 representatives of industry, consulting engineers, and contractors were brought together to form an external advisory committee. In two day-long sessions, this committee contributed more than 100 suggestions for improving the policies of AHD.

STUDY RESULTS

The research project yielded a variety of changes to the department's approach to highway-utility interaction. Modifications ranged from simple adjustments to existing procedures to an entirely new set of approval processes and forms. Two of the most substantial changes affected policies and procedures throughout the new manual. One was the introduction of three-phase agreements for utility relocation efforts. The utility would be paid for its efforts at the end of each of three project phases: the feasibility study phase, the engineering plans and specifications phase, and the construction engineering phase.

Providing early notification to utilities that relocations would be required was another significant change. Previously, utilities were notified of required relocations as the department completed its own design process. As a result of this project, utilities are now informed much earlier, allowing more time to plan, design, and construct relocations. This also allows anticipation of potential problems.

Many of the new procedures were derived in response to a list of approximately 300 suggestions (condensed to 85 topics) identified in the first year of the project. Twenty-nine of these problem areas are addressed in this paper, along with potential solutions or mitigating procedures. Many of the solutions are tied to the two substantial changes listed previously (three-phase agreements and early notification).

TYPICAL HIGHWAY-UTILITY PROBLEM AREAS

While conducting the Alabama utilities study, the authors identified a myriad of problems in many aspects of the utility accommodation and relocation process. Several typical problems are discussed in the following paragraphs, along with potential techniques for solving or mitigating the problems.

The issues discussed in this paper have potential impacts from trifling to substantial. Highway agencies and utility firms are encouraged to look for and address similar problems at all levels. Finding solutions to large problems offers savings of hundreds of thousands of dollars. Resolution of even trifling problems creates goodwill and understanding among the parties and promotes cooperation and improvement. One thing is certain: the highway-utility process is exceedingly complex and fraught with possibilities for misunderstandings and problems. Plenty of opportunities exist to refine and improve the process.

COMMUNICATION DIFFICULTIES

The most common problem was poor or incomplete communication. Many difficulties were rooted in the failure to communicate. The following are several typical communication problems identified during interviews with employees of AHD and utility industry officials in the state.

1. Highway agency manuals are old, out-of-date, or inaccurate.
2. Highway agency policies exist as (noncirculated) policy letters, or as the rules of thumb of a few managers instead of in publications.
3. Policy changes are not completely disseminated.
4. Interpretations of policy documents change from highway district to highway district, and the utility ends up working for nine different fiefdoms.
5. Neither highway nor utility employees understand (or even read) the FHPM.

Old or Out-of-Date Manuals

The Alabama utility study was generated because the department publications used to govern utility activities were out-of-date. This is not unusual for highway agencies. Copies of utility manuals were obtained from 41 state departments of transportation. More than half of these documents contained substantial amounts of information that should be updated or revised.

There is no easy solution to this difficulty, to which understaffed highway agencies are especially susceptible. One of the ways in which the problem may be addressed is to establish a specific procedure for revising or upgrading the manual, assigning specific responsibilities to specific individuals, conducting the program at least once a year, and delivering revised materials to manual holders. In Alabama, a log is kept of changes to materials in the manual. All utility manual owners may register their manuals (by unique identification number) and receive updates of the changes as they are generated.

Policy in Noncirculated Letters

A second type of miscommunication is the unofficial promulgation of regulations through policy letters written by highway managers to other highway managers. These letters have limited circulation. Utility firms submitting permit applications or preparing plans for relocations have no way of knowing about them. Consequently, a large percentage of utilities initial submittals are rejected because they are not based on the criteria against which they were screened. It is not unusual for highway managers in field offices or in other portions of the agency to be unaware of these unofficial policy letters.

During the Alabama study the problem was addressed by interviewing managers at all levels within the department. During this aspect of the study, the researchers asked many simple questions and asked for rather complete explanations of procedures and policies. As a result, they identified several instances in which policies that were supposedly distributed

widely were not distributed at all. These policies and practices were identified, documented, and published in the comprehensive Alabama Utility Manual. They were also emphasized during the widespread training at the end of the project.

Policy Changes Not Completely Disseminated

This problem is similar to the first two. The department modified its policies and attempted to distribute them to users. The problem was that there was no official distribution process, and many utility firms never received notice of the changes. This is not uncommon if the highway agency does not have a strong rule-making procedure and a clearly defined distribution process for revisions.

The use of a comprehensive manual, a registration process for manual owners, and periodic mailings to distribute changes should help overcome this difficulty.

Each Highway Division is a Fiefdom

Utility firms have complained for years about the lack of consistency from one highway division to another. A utility that had been successful in its construction activities in one part of the state might find that a division engineer in another portion of the state was much more demanding about filling out paperwork, complying with the small details of the permit, and completing other issues that required a high degree of effort from the utility firm but did not greatly improve its productivity. The division engineers interpreted utility regulations and policies differently. In effect, they made their own policies and built their own little fiefdoms.

There is no guarantee that management practices will be absolutely consistent across boundaries of field divisions. The solution attempted in Alabama was to clearly publish department policies (and when possible, the reasons for those policies) in a comprehensive manual. Additionally, an extensive training course was conducted after publication of the manual. An average of more than 25 departmental employees, 30 local government representatives, 50 utility employees, and 10 consulting engineers were trained in each of the department's 9 field divisions. Publication of policies and procedures and widespread training should improve consistency from division to division.

Who Reads the FHPM?

The FHPM is the source document against which the appropriateness of any highway-utility action may be tested. It is frequently referenced in manuals, correspondence, and conversation. Apparently, however, this important document is rarely read or even consulted by individuals whose activities are regulated by it.

During the Alabama training sessions with the largest attendance, the authors referred to the applicable portion of the FHPM while answering a question regarding an unusual situation. During the ensuing discussion with audience members it became apparent that the FHPM was not understood. The authors asked how many in the audience had read the applicable portion of the FHPM. Only 3 of 200 attendees raised their hands. Two of the hands belonged to the authors. Thus, less than 1 percent of the audience (people whose day-to-day jobs depend on the FHPM) had read this vital document.

The FHPM is not widely read for many reasons. One of the most common is that the person who needs it never seems to have a copy. A reasonable way to overcome this difficulty is to make the document more readily available. AHD provided a copy of pertinent portions of the FHPM as an appendix to the utility manual.

HIGHWAY CONSTRUCTION DELAYS

Highway contractors who fail to complete construction projects on time frequently cite utility problems as the cause of the delays. This was vividly illustrated to the authors during conversations with the utility engineers of 10 state highway agencies. Calls were made to identify the most prevalent utility problems and to seek solutions. Construction delays were prominently mentioned by every state. Most of the states suggested that the solution could only come through better cooperation or better planning. One state indicated that it had an innovative solution. It automatically granted a 30-day extension to each highway contractor in anticipation of probable utility relocation delays. Several statements that deal with portions of the construction delay problem are listed next. In general, they address methods to alleviate the delay, or reflect frustration over the nature of the problem. The role of each of these statements will be discussed in the following paragraphs.

1. Master lists of planned highway projects are not available to utility firms.
2. Utilities suffer time compression between notification of required relocation construction and the completion of the relocation.
3. Highway agencies should hold predesign conferences with utility companies to minimize conflicts and save money.
4. Planning and preliminary engineering work should be done by the highway agency and the utility company at the same time.
5. Utility certificates do not give accurate completion dates for utility work.
6. Highway agencies have no way to force utility firms to speed up their work.

Master List of Highway Projects

Highway agencies are reluctant to publish lists of future highway projects except for general lists that show a wide range of possible dates. Uncertainties in funding and possible political intervention make it difficult for most highway departments to establish rigid dates for projects. Even if such dates could be predicted absolutely, it is often undesirable to publish them because they drive property values up and increase right-of-way costs.

Utility firms would benefit from better knowledge of possible time frames for upcoming highway projects. This would

allow utilities to alter their own construction and renovation project time frames to coincide with upcoming highway work. It would also minimize the unfortunate occurrence of new utility facilities being destroyed and relocated by subsequent highway construction. It is highly desirable for utility firms to have a good concept of the time frame for upcoming highway projects.

Time Compression of Utility Design and Construction

Utility firms often face unreasonable time schedules for planning, designing, and relocating facilities. This is especially true when highway projects are suddenly added to the construction calendar.

AHD had traditionally preferred not to notify utility firms of relocation projects until the highway design had cleared the Plan-in-Hand inspection. At this time the final changes in alignment had been completed for the proposed highway project. This occurred at Step 40 in the department's 65-step highway design process. By withholding notification to the utility firm until final highway line and grade had been ensured, it eliminated the possibility that the utility's preliminary engineering work would have to be revised because of a change in roadway geometrics. Unfortunately, it also critically compressed the time span available for utility design and construction.

After the Alabama utility study, the notification of utility firms was changed to Step 19 of the highway design procedure. At this step, utility firms were asked to begin feasibility studies and initial design efforts. After the highway project had advanced to Step 40, and after the highway agency had approved the utility's preliminary concepts, the utility was then authorized to begin the design process. This allows the utility to begin advance planning earlier, to develop better designs, and to proceed through the design-construction process in a more orderly fashion.

Predesign Conferences

An obvious step that can be taken to promote advance planning and cooperation, and thus reduce construction delays, is the use of predesign conferences. Two examples illustrate this point. During the upgrade of an urban arterial from four to six lanes, seven utility firms were asked to relocate their facilities in an extremely confined right-of-way. The utility firms independently developed their relocation designs, with many consequent conflicts with each other. This was finally resolved by a joint meeting in which the department assigned specific portions of the right-of-way to each utility and preapproved the relocation concepts of the various agencies.

A second example illustrates a better way to accomplish relocations. For a complex highway project involving upgrading of a freeway spur, the department's utility engineer held a predesign conference with utility companies to discuss anticipated difficulties and to minimize conflicts. Many immediate benefits resulted. All utilities were allowed an early start with their planning. An electric power utility conducted an extensive feasibility study that resulted in a $200,000 savings by beefing up surrounding substations and abandoning a substation that was to be relocated. Another utility had time to order less expensive poles, and to conduct extensive tests of PCB contamination before right-of-way acquisition.

Simultaneous Planning by Department and Utilities

The ideal concept is to allow the utility to begin preliminary work at the same time that the highway agency begins preliminary work on a project. It is not an easy concept to implement. Many highway projects are initiated but halted before the construction stage. Other projects progress at a normal rate through preliminary engineering and design stages yet undergo numerous last-minute design changes before construction. In both of these situations, the utility firm will go through needless planning and engineering design. In the worse case, the utility might be asked to undertake a rapid design of a relocation project, yet the project might never be constructed. This promotes a "hurry up and wait" attitude, and utility managers become frustrated with responding to false emergencies, leading to callousness and sluggishness in responding to the highway agency.

To address this difficulty, the department separated utility relocation efforts into three phases. The engineering aspects of this work include the following: Phase I—Feasibility study or preliminary concepts of relocation, Phase II—Engineering plans and specifications, and Phase III—Construction engineering.

Each phase of the utility work is keyed to a specific portion of the 65-step highway design process. Each phase begins with a specific authorization, and the utility's effort can be terminated at the end of any phase if the department recognizes that the roadway project is not proceeding as originally scheduled. This offers the utility the advantage of immediate payment for each portion of the work, knowledge of the status of each current project, and insight into upcoming highway projects.

Utility Certificates

The utility certificate is a statement placed in highway bid documents, notifying potential bidders of the anticipated completion dates of utility work. Previously these estimates had been prepared by department field employees on the basis of conversations with utility employees. The utility representatives were generally reluctant to specify dates for relocations. It was to their advantage to remain noncommittal or to be liberal in establishing the anticipated completion date. The estimated dates had to be provided at least 8 weeks before the highway bid letting so that they could be included in the highway project bid documents. At this early date, utility officials were often unsure of the status of their work, or they were hastily attempting to complete design and construction during a compressed time frame.

These difficulties were addressed in Alabama by allowing utility firms to begin planning and design at an earlier phase of highway design, offering predesign conferences, and encouraging utilities to estimate time frames for completion (e.g., 30 to 60 days after bid opening) instead of absolute dates.

This encouraged cooperation and improved accuracy in preparation of utility certificate information.

Requiring Utilities to Speed Up

Statements of this type were frequently heard from highway managers who were frustrated by utility delays and consequent highway contractor claims. As a result of this research project, in which utility management practices were studied, the department chose to switch to the "carrot" approach instead of the "stick" approach. Utilities were offered incentives, such as opportunities for advanced planning and earlier feasibility and design work, to encourage earlier starts to construction projects and stress cooperation over punitive aspects. As a result of policy changes and extensive training, the concept has changed from seeking punishment for "slow" utility firms to seeking incentives for "fast" firms.

TRAINING AND EDUCATION

It became apparent during the research project that employees of both AHD and utility industries were not aware of many pertinent aspects of the highway-utility process. There were obvious reasons for this. For example, massive retirements are occurring in highway agencies across the United States, with more than one-quarter of managers retiring in the current five-year period. Promotions and normal turnover in the labor force add to the number of "new faces" making utility permit and accommodation decisions. Similar personnel turnover is occurring in the utility industry.

The highway-utility process is complex, and the learning curve for new employees is long. Unfortunately, highway employees tend to learn only the highway side, and utility employees tend to learn only the utility side. As new developments or technologies occur on either side of the issue, the other side is lax in identifying and adopting the changes.

To address the widespread need for training and education, AHD desired that its new utility manual be comprehensive and in effect serve as a textbook for instruction for new employees. Additionally, the manual would be written in a way that provided a rationale for department policies and a discussion of the benefits from following the policies. An understanding of the reasons for the policies promotes compliance. A training course was also added to the end of the project to disseminate new policies, procedures, and documents to encourage their use.

REIMBURSEMENT ISSUES

Difficulties become more pronounced when they involve money. Reimbursement for utility relocation work is an excellent example. The following are several reimbursement problems identified in the Alabama study.

1. Provisions of FHPM 6-6-3-1 (governing reimbursement) are not understood, especially when they involve "betterment."
2. Reimbursement for utility work is frequently delayed and should occur more quickly.
3. Highway departments should set up utility planning and engineering budgets as soon as the highway design starts.
4. Utilities should be reimbursed for each phase of utility work: planning, feasibility study, engineering drawings and specifications, and construction.
5. Sometimes utility firms are told to prepare relocation plans for an emergency highway job, but the emergency does not materialize, the road is never built, and the utility firm is never paid for the cost of developing its plans.
6. Small utility firms without engineering expertise must hire a consultant, whose work must be done before payment. If the job is not built, the consultant may not be reimbursed.

Lack of Understanding of FHPM

The guiding concepts for reimbursement for Federal-aid projects are found in Section 6-6-3-1 of the FHPM. Problems arise frequently (especially when small utility firms are involved) regarding which projects and which types of expenses may be reimbursed. Perhaps this is because of disdain that many individuals have for reading the small print in federal documents.

The most persistent difficulties seemed to be with utility firms wishing to enlarge the capacity of their physical plant or upgrade their facilities during a relocation project. This is often a prudent business decision because little additional planning and engineering costs are used in upgrading the capacity or capability. Frequently, smaller utilities are not aware of the FHPM "betterment" clause, which requires that the utility pay for any increased capacity. Explaining this clause and interpreting how to determine the actual cost of the betterment features consume many hours of a highway utility engineer's time, and can create strained feelings between the utility and the highway agency.

In Alabama, this was addressed through creation of a separate chapter in the utility manual to discuss reimbursement. Betterment was specifically addressed. Additionally, the FHPM was reproduced as an appendix to the manual.

Reimbursement is Slow

Reimbursement to utility firms occurs in Alabama about 60 days after the submission of an invoice, which may be filed on a monthly basis. This means that the utility is reimbursed for its efforts 60 to 90 days after the initial purchase of materials and use of labor. Telephone calls to other states indicated that Alabama's practices were not unusual. Typically, a state highway agency spends a great deal of time checking and verifying the invoices of utility firms and approving the invoices at several administrative levels within the agency. This is cumbersome and slow. After the invoice has been approved, a separate administrative document must be processed to have the check prepared in another state agency.

Several states have made deliberate efforts to decrease the length of time between receipt of invoice and payment of the fee. West Virginia has speeded the process by eliminating or minimizing the invoice review process. This occasionally re-

sults in overpayment of the contractor's monthly invoice during the process of construction. To remedy this, a complete review and audit is conducted at the end of the project. The utility then receives any remaining payment. If the audit finds that the utility has already been overpaid, it must reimburse the state.

Utility Planning and Engineering Budgets

Highway agencies usually execute a single reimbursement agreement with the utility to handle all costs for a relocation project. Before the utility can execute the agreement, it must have a reasonably accurate estimate of the cost of the relocation work because the budget is an integral portion of the agreement. A budget that is inaccurate means that the utility may not receive complete reimbursement for its work, or at best, that the agreement must be renegotiated.

To establish a good relocation budget, the utility must conduct planning and preliminary engineering steps. This means that much of its work is completed before the agreement is executed. It is appropriate for the highway agency to recognize this process and to authorize utility preliminary engineering reimbursement at an early phase of the highway project.

Multiphased Utility Work

As discussed in the previous paragraph, utilities must devote considerable effort to preliminary engineering in order to come up with a relocation budget estimate. If the highway agency postpones or cancels the project, the utility firm may have no way to recover the cost of this preliminary engineering work. AHD created the three-phase utility relocation process to ensure that the utility was properly and promptly reimbursed for its work during each portion of a utility relocation project. If the highway project was canceled after the utility had begun its feasibility study, Phase I of the utility work would be completed and the utility would be reimbursed for its work. The three-phase utility agreement also addresses items 5 and 6 in the list of typical reimbursement problems. For example, the department recognizes that on occasion it must begin an urgent road construction project. The utility may be asked to begin immediately and to complete its relocation design as rapidly as possible. At this point, the utility will be reimbursed for its efforts, the relocation plans will be available, and if the highway department must cancel or postpone the project, at least the utility's efforts will have been acknowledged.

Utility Consultant Engineers

A similar problem exists for small utilities that do not have engineering staffs. When they must design a relocation project, an engineering consultant must be engaged. For a reimbursable project, AHD reviews the utility's contract with the engineering consultant, including labor rates and the consultant's estimated total fee for the project. At this point, consultants that serve small towns or small clients face a universal problem. Their clients rarely have the funds available to pay for preliminary engineering work. For utility work, the consultant must perform a large amount of preliminary work in order to accurately estimate the total engineering fee. If the department or FHWA rejects the consultant's proposal for services, the firm has lost a considerable amount of funds. The same situation occurs if the consultant designs a relocation but the highway project is not constructed.

AHD has taken two steps to rectify this problem. First, the department uses the multiphased engineering agreement. Second, the department now encourages small utility firms to utilize continuing contracts for engineering services. The FHPM allows a rapid approval in cases in which the utility has a standing agreement with an engineering consultant, has used the consultant for previous work, and the consultant's fees are reasonable. This arrangement generally improves consistency and quality of the utility's engineering design efforts and makes proper reimbursement of the consulting engineering firm more rapid.

DIFFICULTIES DURING CONSTRUCTION

The single largest difficulty during construction is when relocation of utility facilities runs behind schedule and causes delay to highway contractors. This issue was voiced by virtually every highway agency employee with whom interviews were conducted, in Alabama and in other states. This topic was addressed previously. Other construction difficulties are as follows.

1. Extend time between notification of utility and required end of utility relocation construction.
2. Establish reasonable methods for resolving conflicts during construction.
3. Require compliance with approved traffic control plan.
4. Require utility to keep qualified supervisor on the job at all times.
5. Require utility companies working in the right-of-way to repair damage to physical plant of other utilities.
6. Require highway agency working in the right-of-way to repair damage to physical plant of utilities.
7. Require utility contractors to keep an approved permit drawing on the site at all times during construction.
8. All utility inspectors should be qualified.
9. When consultants design utility plans, require the consultant to do the construction inspection.
10. Require the inspector's name, address, and telephone number on the permit application.
11. Require part-time inspectors to post a schedule of times when they will be at the job site. This helps the highway agency contact them.
12. Require the highway agency to share its inspection records with the utility for comparison of estimated quantities.

Coordination During Highway Construction

A significant issue involves utilities that must be relocated while the highway project is under construction. For example, sanitary sewers may not be placed until a deep roadway cut has been completed. This type of relocation requires close

coordination between the highway contractor and the utility firm.

Alabama now asks that during design of the relocation the utility identify any activity that must be completed after the highway contractor has begun work. Notice of this activity is placed in the supplemental provisions portion of the highway bid documents, giving prospective bidders adequate notice of the special circumstances.

Resolving Conflicts

Conflicts can arise between the utility and the highway contractor, or between multiple utilities competing for the same limited right-of-way space. The highway agency should provide a clear procedure for resolving these conflicts as soon as they occur. Multiparty conferences are an excellent way to address these issues. Often the conference will reveal that none of the parties were aware of the complete situation. Once all the facts are available, these issues are usually much easier to resolve. When necessary, the authority resides with the highway agency to resolve these questions; however, it is much preferred for the parties to arrive at a mutual resolution, using a procedure that is clearly defined in highway agency documents.

Traffic Control Plan

Adequate traffic control is necessary on utility construction projects for two reasons: (a) safety of employees, pedestrians, and motorists, and (b) liability. FHWA has emphasized traffic control to state highway agencies, which are now emphasizing it in construction work and utility permits.

The national *Manual on Uniform Traffic Control Devices* specifically states that persons working in the highway right-of-way installing or maintaining utilities are subject to the provisions of the manual. Many large utility companies have adopted a series of standard traffic control device configurations and use them whenever possible to ensure adequate warning to oncoming motorists. AHD has periodically offered a training course on work-zone traffic control that is open to highway contractors and utilities. Additionally, it has printed and distributed work-zone traffic control workbooks, and an entire chapter of the *Alabama Manual on Uniform Traffic Control Devices* deals with work-zone traffic control.

Inspection of Utility Facilities

The list of construction difficulties contains several statements dealing with inspection of utility facilities. These concerns emerged during interviews of highway and utility employees. Highway managers wanted to ensure that the roadway remained structurally sound and that the roadway drainage features and vegetation were reasonably restored to their original condition. This required that the utility firm maintain good supervision or good inspection throughout the project. If the utility had a part-time inspector who visited the construction periodically, the highway manager often had difficulty making contact. Thus, the department now requires that the inspector's name, address, and telephone number be part of the permit application. Additionally, part-time inspectors must provide a schedule of times that they anticipate being on the construction site. This is invaluable when a utility emergency erupts and the appropriate utility employees must be promptly notified.

One difficulty that had frequently arisen involved use of a consultant engineer for design and another agency or another person for construction inspection. More conflicts arose, which were more difficult to resolve because the design and inspection were performed by two different parties. For example, if the design contained serious flaws, the designer might never learn of the problem and might continue to design the same types of flaws into future work. Another example involved special aspects of the design in which the consultant made special efforts to customize it to local conditions. The construction engineer might be unaware of the issue and might eliminate the special design in a futile effort to save money. A third and convincing issue involved change orders. On almost every construction project, the conditions in the field turn out to be different than anticipated by the designer. Change orders are used to allow modifications of work as needed. If the design engineer and construction engineer are the same, requests for change orders are easy to evaluate, and the project may be kept on schedule and pointed to a successful conclusion. When design and construction are handled by separate parties, change orders are not handled as promptly or accurately.

Other Construction Issues

Several other topics are presented in the list of construction difficulties. These are listed as reminders of potential trouble areas. In Alabama, they were handled with simple statements in the utility manual defining responsibilities or issues that would be monitored.

CONCLUSION

Just a few of the hundreds of potential difficulties in the highway-utilities interface have been discussed. These problems and their potential solutions have been offered to encourage other states to seek improvements to the highway-utility process.

In closing, the authors point out that an overriding consideration and a major reason for the success of the Alabama study was the open attitude exhibited by managers of AHD, especially the Utility Section. This attitude was matched by the industry representatives of the external advisory committee. The attitude of openness and serious consideration of any and all suggestions allowed the authors to probe deeply into sensitive areas involving long-standing policies, finances, and responsibilities. Consequently, substantial improvements were made because the involved parties were dedicated to improving cooperation and increasing efficiency on both sides of the highway-utility interface.

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