State of the Art of Environmental Impact Statements in Transportation

James Johanning and Antti Talvitie, School of Civil Engineering and Environmental Science, University of Oklahoma

The purpose of this study is to show how environmental issues are currently dealt with in environmental impact statements for transportation facilities and how the incorporation of environmental concerns into the transportation planning process is accomplished. The treatment of environmental issues in 40 statements is reviewed and summarized in this paper. Serious deficiencies are pointed out regarding the types of alternatives presented and the means by which the primary impacts of these alternatives are predicted. Most statements were too narrow in scope to show the total impact of a given project, especially if it was part of a proposed network. The consideration and evaluation of secondary (indirect) impacts need to be improved. Incorporation of citizens' opinion and environmental considerations early in the planning process would help to avoid irreconcilable differences at later stages. Any procedures that lessen adversary relationships among planners, environmentalists, designers, and citizens are encouraged.

In recent years conservationists, ecologists, and concerned citizens have aroused public interest in the worsening condition of the human environment. The National Environmental Policy Act of 1969 (NEPA) is a direct outgrowth of the significance Congress has attached to the environmental impacts of government actions and policies.

In order to determine how well transportation impact statements conform to NEPA requirements, 40 impact statements were read and analyzed. This study indicates how completely and with what technical competence the various reports conform to the purpose of NEPA. In many instances alternative means of attaining greater uniformity are suggested and improved technical methods are described.

UNIFORMITY AND COMPLETENESS WITH RESPECT TO NEPA

The guidelines of the Council on Environmental Quality (CEQ) (1) and various agency memoranda have augmented the topics that are to be discussed in an impact statement. Instead of the original five points addressed by NEPA, eight general items are now required:

1. A description of the proposed project,
2. The relationship of the action to land use plans,
3. The probable impact of the proposed action on the environment,
4. Alternatives to the proposed action,
5. Probable adverse environmental effects that cannot be avoided if the project is implemented,
6. Local and short-term uses of the environment versus maintenance and enhancement of long-term productivity,
7. Irreversible and irretrievable commitments of resources if the proposed action is implemented, and
8. Comments by other agencies and the public.

The second item, land use plans, was added with the 1973 guidelines, which became effective January 28, 1974. The statements reviewed were written before the effective date, so the relationship of the action to land use plans will have been included in other portions of the statements, if at all.

Description of the Proposed Project

The descriptive section of the impact statements reviewed was more nearly in compliance with NEPA than the other sections. No special expertise is required to write this portion of a statement since the descriptive material is usually available to the writer and does not have to be interpreted. Maps, photographs, and technical data (such as right-of-way and construction specifications) were normally contained in this section.

Surprisingly, none of the possible benefits or other impacts were mentioned here. This section should contain brief introductory remarks about the significant benefits that the project should bring and about the most significant environmental issues involved.

Relationship of the Action to Land Use Plans

This section was not required in statements issued before 1974; however, the impact on land use plans should

Publication of this paper sponsored by Committee on Transportation Environmental Review Process.

have been dealt with somewhere in the statement.

More than half of the statements reviewed did discuss land use impacts. The extent to which a change in land use was discussed depended on the land's present use. The use of parkland for right-of-way generated the greatest amount of rationalization. Section 138, title 23, of the United States Codes (commonly known as section 4f) prohibits the use of publicly owned property such as parkland, wildlife refuges, or recreational areas for transportation right-of-way unless two conditions are met: (a) there is no feasible and prudent alternative to the use of such land and (b) all possible care is taken to minimize harm to such land if it is used in this manner.

The main effect of this restriction on the statements reviewed was that parkland was avoided if possible. When it could not be avoided, comments on the first requirement, that of finding no feasible or prudent alternatives, appeared to be deficient; for example, the costs involved in relocating the proposed right-of-way were skimmed over in some of the reports (2). Also, if statements on the section 4f requirements were written in conjunction with the impact statements, this could cause a conflict in interest. An agency that would favor a given alternative in the impact statement would surely favor the same alternative in the section 4f statement.

Many statements also argued that transportation facilities would be an economic asset to a community because of the land use changes that would occur near the facility. The change in land use could obviously result in an alteration of the local environment, especially if the change were a big one, e.g., from agricultural to commercial. Therefore, one would expect to see a discussion of expected land use impacts in transportation impact statements.

Probable Impact of Proposed Project on the Environment

Direct and indirect positive and negative impacts resulting from the implementation of a project should be discussed fully but without needless detail in the impact statements. In addition, the range of impacts should be complete and issues should not be hidden in inaccessible pages of material but made obvious, since the purpose of a statement is to inform the immediate decision makers, the Congress, and the public of all the ramifications of a project, both good and bad. If the impacts are categorized in the statement, i.e., presented in outline form, the reader can quickly determine the completeness of the set of impacts; however, this was not often done. It was also observed that the omission of a discussion of impacts was a more serious deficiency than an abridged discussion.

Direct impacts are often the easiest to measure, predict, and comprehend, while the measurement and prediction of indirect impacts are often quite uncertain. For this reason the direct impacts should be presented clearly at an early stage and the effect of indirect impacts on project selection and design should be evaluated during the planning process, which should be sensitive to the values held by the citizenry with regard to the indirect impacts.

Pollution Impacts

Normally, the most obvious environmental concerns associated with a transportation project are the various forms of pollution. One would expect most impact statements to address themselves to this problem in some manner, and the results of this review substantiated that hypothesis. In general, the direct impacts of pollution were discussed to the exclusion of secondary impacts. For example, carbon dioxide, hydrocarbons, nitric oxides, sulfur dioxide, and particulates were mentioned as principal atmospheric contaminants in terms of emission loads but their ultimate environmental consequences were not indicated. The most frequently mentioned water pollution problem was erosion. Many statements approached problems of erosion by placing construction constraints on the contractor. Explanations of what these impacts entailed (e.g., gully erosion, stream siltation) in spite of preventive measures were sidestepped.

Standards were used to assess the secondary impacts of noise in many statements. For the most part, highway-oriented statements appeared to follow guidelines set out by FHWA in Policy and Procedure Memorandum 90-2. It is questionable whether arbitrary nationwide standards are helpful in evaluating the secondary impacts of noise; the importance of these secondary impacts depends on what the alternatives are. A more reasonable approach would be to raise the noise issues in public sessions and the mass media and to deal with them frankly.

Ecological Impacts

The ecological impact of a project is of primary importance in an environmental impact statement. Preservation of the existing interactions between organisms and their environment is a national goal because these interactions form part of the human environment. Projects involving rural areas, wildernesses, and parklands require the greatest amount of care because the ecological status of such regions is most susceptible to change as a result of construction of transportation facilities. This does not imply that the balance or equilibrium will be upset in all cases but that present conditions will be changed.

Half of the statements we examined admitted that implementation of the project would result in some type of ecological impact. Some more detailed statements, especially if section 4f lands were involved, identified and discussed impacts linked to endangered species, nesting and breeding areas, migratory paths, existing flora and fauna, and other ecological data. Even those few environmental impact statements that recognized specific ecological problems seemed to fail to use such information in planning early enough to affect the development of alternatives (3, 4, 5). Generally, however, the effects on local ecosystems were discussed rather than the aformentioned specific impacts, probably because such discussions do not require results from field surveys for prediction but can often rely on rationalizations by the authors. This is not meant to imply that logic has no place in the analysis but that it should be accompanied by evidence.

Monetary Impacts

Both policymakers and the public should have some idea of the monetary impact of a proposed project. These impacts should be analyzed along with other types of impacts in a systematic manner. Unless one alternative is decidedly better in all areas, trade-offs will have to be made so that the most desirable choice can be carried out. Such topics as capital relocation, displacement costs, and changes in taxes, property values, and employment were handled with varying amounts of expertise. One statement went through an itemized list of ways that the displaced would be recognized and helped by the agency (6). However, only five households and five businesses were displaced by the project, leaving the reader skeptical of whether standard bureaucratic procedures were being followed at a substantial cost instead of using a

responsive planning process to accomplish the same ends.

Future impact statements need to present monetary impacts in a well-organized manner. Better cost-accounting procedures must be followed so that cost estimates are credible. Monetary estimates of benefits of the proposed project and its alternatives should be presented along with costs. The inclusion of cost-benefit analysis is not a requirement of NEPA and was not observed in any of the statements surveyed. However, a good cost-benefit analysis of project alternatives, using the given monetary data, would expose to public view a comparison of the resultant net monetary benefits of these alternatives. In any event, some type of monetary analysis should be incorporated in all impact statements.

Social Impacts

Social interactions form part of the human environment. Any change in social equilibrium that may result from implementation of transportation projects should be covered in impact statements. More than half of the statements did look at some types of social effects, but most were far from comprehensive. The types of social impacts most commonly addressed were neighborhood cohesion and identity, school access, access to recreational facilities, community services, and zoning.

An acceptable method of evaluating an explicit social impact usually involved acknowledging the existence of the impact and stating how that impact would be ameliorated. For example, it was not unusual for statement writers to admit that a given highway project would act as a barrier to school access. A common, albeit expensive, solution was to propose the construction of a walkway.

The assessment of social impacts of a highly nebulous nature, such as neighborhood cohesion or future zoning changes, was quite often overlooked. Impacts on future zoning were thought to be associated with expected growth in only two statements (7, 8). Since physical and economic growth, generally advocated as being a consequence of proposed projects, will inevitably be accomplished by zoning changes and zoning will to some extent influence resultant land use, one would expect more discussion of zoning impacts than was observed.

Operation Impacts

Operation impacts are those directly related to the operation of a transportation facility. These include safety and intermodal and intramodal compatibility.

A common assumption was that a good measure of the safety benefits associated with a proposed project would be evident in a before-and-after comparison of accident rates. None of the reports considered the increased volume generated by the improved facility itself. Taking into account the expected accident rates for this new traffic would permit a more realistic estimation of the number of accidents expected. Also, a comparison of accident figures if other feasible modes were present should be made. None of the highway statements considered the safety of alternative modes. Only seven statements mentioned any relationship between proposed projects and other modes of travel in their respective local areas.

A transportation facility forms part of a cooperative network that can include several modes of travel. If small sections of a highway or public transit facility are considered separately, effects on the network may be overlooked. For this reason a relevant portion of a facility, one that could stand alone, should be evaluated in one step.

Effects on local roads and streets also need to be indicated, even if the statement concerns a project of the same mode. Temporary disruptions during construction and more permanent obstructions due to limited access facilities were typical impacts noted in the statements. However, none of the statements considered the impacts on traffic in local street systems.

Aesthetic Impacts

Aesthetic impacts are possibly the most elusive and subjective aspects of an environmental impact statement. They refer to the artistic quality or natural beauty of the area and to the appearance and architectural quality of the facility. For the sake of brevity, the historical and archeological sites are also discussed in this section.

It should be noted that the appearance of the facility to the user and to the nonuser is not necessarily the same. An elevated section of highway or rail can offer panoramic views but may itself form a visual barrier. High fills impede horizontal views, while overhead spans cast ominous shadows and may be an aesthetic liability.

Nearly half of the statements looked at natural and aesthetic impacts. Detrimental impacts appeared to far outweight beneficial changes imposed by the various projects. Some concern was given to minimizing the resultant impact, but in most instances the expected negative impact was just described.

A historical site can form a significant portion of the aesthetic appeal of an area. The change in access to a site and the displacement of a site were considered primary causes of any impact. The magnitude of the impact was related to the relative significance of a particular site. Sites listed in the National Register of Historic Places or in state historic registers were accorded the most deferential attention.

Alternatives to the Proposed Action

All reports mentioned possible alternatives, but some were more sincere in their efforts to satisfy the requirements of NEPA than others. The omission, unequal treatment, and small scope of alternatives were the major deficiencies noted.

Different alignments or routes involving the same type of design were often presented as alternatives. One shortcoming of this approach is that environmental differences between routes tend to be insignificant. A large number of alternatives can be presented without looking into the true choices available to a community.

Unequal treatment of alternatives was evident whenever one mode was arbitrarily preferred over others. Although various modes may be outside the jurisdiction of a given agency, feasible alternatives that use such modes should be included without prejudice in an impact statement.

Impact statements covering only small segments of large projects tended to be shy of reasonable alternatives. In each case a prior commitment to an overall project precluded the possibility that any alternative to the proposed action would be realistic. The same problem occurred when the corridor under study was arbitrarily narrow.

Effects That Cannot Be Avoided if the Project Is Implemented

This portion of most statements was presented as a summary of the negative impacts of the proposed alternatives. Deficiencies in the general part of the statement were usually carried through to this section of the statements. Some reports described the impacts of various alternatives, but most gave a brief account only of the detrimental effects of the recommended alternative.

One of the main purposes of an impact statement is to ensure that environmental considerations enter into the planning process. Presentation of designs and procedures to be used that will reduce environmentally debilitating aspects of a project is not only desirable but also obligatory if the statement is to be effective.

It appeared that this important section was too often a set of pat answers, not a set of sensitive and well-reasoned approaches to avoid adverse environmental effects; considering its importance, not enough attention was given to this section.

Maintenance and Enhancement of Long-Term Productivity

According to the CEQ guidelines (1), future options that have been eliminated and trade-offs between short-term and long-term environmental gains or losses should be analyzed in this portion of the impact statement. In most reports, the analysis was limited to a brief explanation of how the proposed project fit into the future plans of the agency. Environmental aspects were often overlooked in favor of compliance with some type of general plan. Trade-offs were referred to but not detailed (9).

Most of the reports did not indicate what future options may have been eliminated. While these economic constraints on future options imposed by construction of the project rightly belong to the system planning activity, a brief discussion of the alternatives considered at that level should be included for completeness.

Irreversible and Irretrievable Commitments of Resources

Brief statements concerning the amount of material, land, and labor to be used in planning and construction were the usual approaches to this required section of impact statements. The CEQ guidelines require a broad interpretation of what is meant by a resource. General environmental change, in effect, involves the loss or commitment of environmental resources, and it would be appropriate to discuss that change in this section of an impact statement.

It would also be appropriate to discuss in general terms the opportunity costs associated with the use of economic resources; that is, what possible enterprises will have to be foregone if a given project is implemented. In short, this section should not only include economic resources (land, labor, and capital) but also the environmental resources that could not be recovered due to planning, construction, and operation of a transportation facility.

Comments on the Statements

The most voluminous portion of many impact statements was composed of the comments from sister agencies and concerned citizens. Comments from government sources far outnumbered those from the private sector. Some of these governmental replies were form letters in which no opinions about the proposed project were offered. There should be no need to reproduce such material since it tended to hide the informative comments in the sheer volume of replies.

It was apparent that more work in the area of citizen involvement will be needed if the controversy surrounding future projects is to be resolved. The lack of alternatives and unjust displacement were two concerns most evident in citizens' comments. Agencies will have to be willing to approach transportation projects with a broader outlook and be more sensitive to the needs of those displaced if such complaints are to be answered.

METHODS USED TO PREDICT ENVIRONMENTAL IMPACTS

The future environmental impact of a transportation project is at best uncertain. Different tools of analysis have been used to attempt to predict the environmental outcome of a given plan; some have been more successful than others. Methods ranged from highly technical computer applications to more conventional means, such as the comparison with standards or the opinions of experts.

The means by which a given alternative was determined to be environmentally superior to others under consideration varied greatly. The most arbitary and probably least environmentally conscious method noted was the selection of a given alternative before any environmental studies were made. If a statement concerned only a portion of a project, this type of approach was quite likely. Since a partial commitment had already been made, the alternative that advocated fulfilling this commitment was inevitable. Less arbitrary but still environmentally negligent methods involved the selection of an alternative on the basis of engineering economics alone. Referring to (but not presenting) a benefit-cost analysis or least cost analysis independent of environmental considerations rendered the impact statement impotent. Assurances that various steps would be taken to minimize impacts if a given alternative was implemented did not mean that the chosen alternative in itself minimized either economic or environmental impacts.

Mathematical models to predict the magnitude of impacts were used quite sparingly, with the possible exception of the travel forecasts. Besides travel forecasts, models were evident only in the fields of air and noise pollution.

Gaussian dispersion models were used to predict the levels of carbon dioxide that resulted from predicted travel near transportation facilities under various atmospheric conditions. The greatest impacts were usually predicted when low wind speeds and the presence of a temperature inversion impeded dispersion of pollutants. Noise-level calculations usually followed models set forth by NCHRP (10). For both air and noise, predicted levels of pollution were compared with standards for evaluating the actual impact.

Travel forecasts were, as a rule, expressed as truths for 1985 or 1990. Surprisingly, the models themselves or their underlying assumptions were never shown, even in an appendix. A good surmise is that the travel forecasts were obtained by using the standard urban transportation planning system. Given that the profession has long been aware of the pitfalls of the standard travel forecasting methods, it comes as no small surprise that the credibility of travel forecasts was never questioned or that the generally informed public was not afforded the opportunity to examine the premises of these forecasts.

Standards of various sorts were quite popular for evaluation of impacts, especially if any pollutants were involved. Pollution standards referred to in impact statements were usually set on a national basis. Comparison with a given standard should take into account the present pollution situation surrounding the transportation project. If the current ambience is relatively pollution free, an increase in the level of pollutants that does not exceed national standards may still produce severe environmental impacts. The existence of standards does not relieve agencies from their responsibility of attempting to assess impacts even though standards will not be violated.

The opinions of prominent individuals were also invoked for predicting impacts. Experts such as sociol-

ogists, economists, ecologists, and engineers were asked to shed light on difficult problems. Elected officials, appointed government personnel, clergymen, and other people who had standing in the community were also used to help assess impacts in areas of their authority. Interested groups also offered thoughts on various impacts, but their ideas were usually confined to the section on comments.

The judicial use of reasoning is probably the most powerful tool in the hands of the people writing impact statements. Logical conclusions have to be made about all the data presented in a statement, whether it is derived from displays, models, opinions, or other sources. Reasoning is subjective but quite potent. Environmental sincerity is mandatory if biased results are to be minimized. It is this use of reasoning that can make an impact statement a worthwhile aid in the planning process. The reasoning used in the statements reviewed was generally inferior. An improvement in the quality of reasoning in future statements would enable those statements to more effectively determine a course of action to be taken.

METHODS USED TO PRESENT THE IMPACT OF ALTERNATIVES

No strikingly new or innovative methods of presenting impacts of alternatives were observed; most reports used fairly standard approaches to the presentation of material.

Various types of visual displays were quite popular. Maps (land use maps or aerial photos) indicated the location of a project and usually how it fitted in with the existing network. Some indicated topographical features, e.g., rivers and lakes, so that proximity to environmentally sensitive areas could be surmised. Land use maps helped to clarify where impacts to schools, homes, businesses, and recreational sites would occur in developed areas. Impact statements that devoted a lot of effort to diverse routes for essentially the same alternatives made extensive use of maps for comparisons.

Structural descriptions consisting of cross-sectional drawings were included in statements to indicate how much right-of-way would be consumed by the proposed project. In addition, sketches of intersections and other major structures were sometimes included. These drawings did add information but, since alternative designs were not included, comparisons could not be made. The addition of these alternative designs would be helpful, especially if drawings of this type were to be incorporated into statements.

Computer mapping techniques were used extensively in the Rhode Island statement (9). The authors of the statement offered their opinion about the probable impact of each alternative, but the influence of this analysis on the proposed course of action was not evident because this was a draft statement.

The general impression one gets after reviewing many statements is that they are boring. If these reports are meant to be read by the public, it is doubtful that much information will be conveyed. Many reports need to be more concise and lucid. The major environmental issues have to be made obvious to the reader, not hidden in massive documents. By presenting data in a clearly understandable form, impact statements can be of useful service to both decision makers and the public.

INCORPORATION OF PUBLIC OPINION IN THE DECISION-MAKING PROCESS

Incorporation of the opinions and viewpoints of planning experts is automatic; however, the incorporation of the views of the general public is a difficult task. Without evidence to the contrary, the lead agency should not be suspicious of the intentions of the public and vice versa. The existence of such mistrust between agencies and concerned citizens was both subtle and direct.

Whenever a section of an impact statement concerning public interaction was titled Problems and Objections or something similar, some type of mistrust was implied. It appeared that the public was being treated as a type of impediment to the implementation of a project that could be effectively neutralized by the mere admission in an impact statement that objections were raised at public hearings. The viewpoint of the public was heard but was not incorporated in the decision-making process. More direct evidence of mistrust occurred in attached comments.

Most comments were answered in some form or another. When public input was restricted to comments alone, however, there was really no attempt to use this input when decisions were made. The comments were external to the statement and therefore formed no portion of the chain of logic used to formulate the decisions explained in the statement.

Comments were useful in that they tended to indicate how valid an impact statement appeared to the public and other agencies, but this should not be the only place public input is used in a statement.

CONCLUSIONS

Major environmental issues should be fully disclosed in a comprehensible manner. A complete set of alternatives must be prepared to ensure that all feasible means of minimizing environmental harm can be studied. If the study is to be useful, these alternatives have to be fundamentally different from each other, so that the differences in impacts can be distinguished. Alternatives suggested by citizens should be considered, especially if they are significantly different from those already proposed. The basic differences between alternatives should be clearly pointed out. In this way decision makers and citizens can more easily identify the trade-offs associated with any given alternative.

Impact predictions need to be realistic and credible. A total disclosure of the method used to predict an impact and the errors associated with that prediction needs to be presented as a part of the statement or as an appendix. Impacts that are believed to be of major consequence by any interested parties should be analyzed without prejudice. This would be, in effect, a response to input from citizens or peer agencies and thus would help encourage such input.

Citizens' views, especially on environmental matters, need to be incorporated early in the planning process so that they can effectively change the outcome of a project. The term citizens does not imply the elite of the community (the elected officials and other influential citizens); it refers to the citizenry at large, with people from all walks of life represented. When the general citizenry is involved in planning, irreconcilable differences at public hearings are avoided or at least minimized.

The treatment of secondary impacts could definitely be improved. Although secondary impacts are not necessarily quantifiable, they can at least be described. It is, after all, the secondary impacts that are of vital concern. The reliance on standards is not reassuring. The responsibility for environmental damage is delegated to those people who set the standards instead of where it belongs—to the planners and builders of a given project.

Statement summaries need to be concise and informa-

tive. Alternatives and their associated major impacts and benefits should be described briefly, leaving greater detail in the remainder of the statement. The general consensus of planners and citizens as to what course of action would be best to follow should be provided in a final statement. If no consensus has been reached, it is apparent that more negotiations need to be pursued before a final statement is written.

On the basis of our reviews of the environmental impact statements, it appears that they have had no discernible effect on the selection of alternatives. Even so, they may have had at least two positive consequences. The first is that the actual construction of projects may have become more environmentally sensitive than it would have been in their absence. The second positive consequence is that the citizenry now has something concrete to challenge.

In order to make the environmental impact statements more effective, the values expressed in NEPA should be internalized by the planning profession, as the environmental impact assessment should be in the planning process. This is an obvious conclusion. Equally obviously, it has not been accomplished. From our reviews, we not only observed the lack of importance of statements to the decisions but also sensed an adversary relationship between engineers and environmentalists and noticed one bureaucracy regularly supporting another. Either the values implied by NEPA are not worth internalizing, or they may be of secondary importance, or we do not know how to go about instilling new worthwhile values and expressing them in our daily work.

We believe that a far more productive way to accomplish environmentally and socially sensitive planning is not by instituting a uniform set of values and guidelines to be internalized and learned but to place emphasis on the development and distribution of good theories for transportation system analyses. To this end it is proposed that much greater attention be paid to the education and reeducation of men and women who have internalized the thought and underpinnings of transportation science and not the manipulation of turn-key methods, programs, and red tape. The objective should be to train engineers and planners who can think for themselves and engineer and plan solutions to problems, each of which is always in many ways unique, with the help of the theories and methods of transportation science and its administration.

We realize that this is in some contrast to the current federal guidelines for the conduct and even the outcome of transportation studies. We believe that transportation planners are currently so regulated in their work that these rules and regulations are more a deterrent than a help to finding imaginative and fitting alternatives. One would also expect the productivity of engineers and planners to decline in an atmosphere in which tasks, problems, and methods of solution are all given. On the other hand, a greater amount of freedom in planning would be likely to increase their productivity, as well as the number of imaginative and successful planning exercises.

REFERENCES

1. Council on Environmental Quality. Guidelines for the Preparation of Environmental Impact Statements. Federal Register, Vol. 38, pp. 20550-20562, Aug. 1973.
2. Environmental Impact Statement for Route 58, Mechlandburg County, Virginia. Federal Highway Administration, Richmond, Va., May 1973.
3. Environmental Impact Statement for the Expansion of Interstate 95, Middlesex County, Connecticut. Federal Highway Administration, Hartford, Conn., EIS-CT-72-4922-F, 1972.
4. Environmental Impact Statement for the Haines Highway, Haines to the Canadian Border, Alaska. Federal Highway Administration, Juneau, Alaska, ESI-AK-72-4468-F, May 11, 1972.
5. Environmental Impact Statement for Interstate Route 88, Schoharite, Schenectady County Line to Interstate Route 890. Federal Highway Administration, Albany, N.Y., EIS-NY-72-4778-F, June 26, 1972.
6. Environmental Impact Statement for U.S. Route 41, Collier and Lee Counties, Florida. Federal Highway Administration, Tallahassee, Fla., EIS-FL-72-5634-F, July 12, 1972.
7. Environmental Impact Statement for Metropolitan Atlanta Rapid Transit System. Urban Mass Transportation Administration, EIS-GA-73-0588-F, March 1973.
8. Environmental Impact Statement for I-215 Interchange I-80, Salt Lake City, Utah. Federal Highway Administration, Salt Lake City, Utah, EIS-UT-72-01-F, Nov. 1972.
9. Environmental Impact Statement for Interstate Route 84 in Rhode Island. Federal Highway Administration, Providence, R.I., EIS-RI-72-03-D, Nov. 1972.
10. Highway Noise—A Design Guide for Highway Engineers. NCHRP, Rept. 117, 1971.