A METHODOLOGY FOR EVALUATING THE ESTHETIC APPEAL OF BRIDGE DESIGNS

by

William Zuk
Professor of Architecture
and
Consultant to
Virginia Highway Research Council

Virginia Highway Research Council
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SUMMARY

Presented is a systematic methodology for rationally determining the esthetic appeal of bridge designs by the use of paired line drawings where one visual factor at a time is varied. These paired drawings are then judged by either a preselected or randomly selected group of people.

An example (using a standard bridge overpass) is selected as a vehicle to explain the method. The method is such that conclusions can be clearly drawn from the judgements of the example. The results show that esthetic preference is generally given to such factors as simplicity, slimness, symmetry, conformity to the site, and expression of out of the ordinary characteristics. Other more detailed conclusions are also determined, and presented in the body of the report.

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INTRODUCTION

The appearance of bridges has always commanded the interest of not only bridge builders, but also artists, poets, merchants, farmers, or, in short, almost all who see them. This observation is equally true today, especially as the public is becoming more and more concerned with the quality of its environment. Thousands of new bridges, mostly highway related, are being designed and constructed annually. In the design of bridges for safety, engineers are guided by precise codes, yet in their designs few of them are guided by any sort of esthetic rationale. In some recent references (1-10) a number of characteristics and illustrations are given to depict bridges that are said to be pleasing in appearance. Unfortunately, none of the authors offer any validation of their statements concerning esthetic content except the force of their own personal convictions. This is not to question their conclusions but to suggest that there might be an alternate way to evaluate the appearance of bridges more systematically; a way that puts esthetic judgements on a broad base, and is supported by rational data.

The testing procedure presented is dependent on the fact that in bridges relatively few elements are involved (supports, span, end abutments, and railings) in contrast to other works of art (as architecture, painting, and sculpture), where the constraints are few and the elements are many. However, even with only four basic visual elements of bridges, countless variations and combinations are possible. But once again, the economic and technological constraints imposed on bridges reduce the number of variations to a manageable level.

In regard to how the human mind functions, it is known that decisions can most easily be made by comparing one situation or object with another. In the case of bridges, if the difference between two relates to one particular feature, that feature can be isolated (relative to the whole) and evaluated as to its effect on appearance. In this way, preferences for different features and combinations of features can be systematically evaluated, always in a set of two.

It is also well known that decisions as to the appearance of an object depend on who is doing the judging. One person may like an object while another may dislike it. For this study two control groups were used. The first included people as artists, architects and landscape architects (Group I) who have been formally trained in esthetics.

Figure 7 is the control bridge and Figure 8 shows both the pier and the spanning element with thicker proportions.

Figure 9 is the control bridge and Figure 10 shows the same bridge with two additional piers.

Figure 11 is the same as Figure 10, and is compared with Figure 12, which has four additional piers.

Figure 13 is the control bridge and Figure 14 has an added base on the pier.

Figure 15 is the same as Figure 10, and Figure 16 has added pier caps.

Figure 17 is the control bridge and Figure 18 has a changed pier form, simple but with a slightly special character.

Figure 19 is the control bridge and Figure 20 is a bridge modified by the addition of haunches.

Figure 21 is the control bridge and Figure 22 is the same except for the off-center placement of the pier.

Figure 23 is the same as Figure 22 and Figure 24, except for a thicker spanning element on the long span.

Figure 25 is the control bridge and Figure 26 shows a medium size end abutment in relation to the basic bridge.

Figure 28 is the same as Figure 26, and Figure 27 shows an oversize end abutment in place of the medium size one.

Figure 29 is the control bridge, contrasted with Figure 30, the control bridge on which an open rail is placed.

Figure 31 is the basic bridge in which a solid rail is shown as unified with the span, whereas Figure 32 shows a solid rail with a line of demarkation between the span and the rail.

Figure 33 shows a rigid frame bridge with vertical legs, and Figure 34 shows the same bridge with inclined legs.

Figure 35 shows the basic bridge wherein the openings are circular, while Figure 36 shows the bridge with rectangular openings.

Figure 37 is the basic control bridge and Figure 38 shows some added decorative embellishments.

Figure 39 is the basic bridge set in a rural environment. Figure 40 shows the same environment, but with the spanning elements shown as flat arches.

The conclusions for the entire set of figures, derived from the "Comments", are as follows:

1. Groups I and II both like simplicity of form and simple relationships of elements.

2. Groups I and II both like slimly proportioned elements as piers, abutment, span, and rail.

3. Groups I and II both overwhelmingly favor symmetrical relationships of elements over unsymmetrical relationships.

4. Groups I and II both like bridges with some out of the ordinary characteristic. In particular, forms as arches or those suggesting arches (Figures 20 and 34) are singled out.

5. Groups I and II both like bridge forms that conform to the dominant features of the site.

6. Group I strongly prefers a bridge color that contrasts with the environment; whereas Group II strongly prefers a bridge color that blends with the environment.

7. Group I is somewhat influenced in esthetic judgment by the preference for a clear expression of functionality; and Group II is similarly influenced by an appearance of structural adequacy or safety. (Both factors are related; but because of educational and training differences they are seen and expressed differently.)

Conclusion (7) is seen in the data on Figures 1-2, Figures 15-16 and Figures 23-24. In Figure 2, many in Group II saw a possible structural deficiency in not having a central support; whereas Group I saw an ultimate expression of simplicity. In Figure 16, Group I saw complexity, while many in Group II saw the capitals as an expression of function. In Figure 24, many in Group I saw an expression of functionality (the longer span being deeper than the short span) while Group II saw complexity.

Considered as an example of the methodology, the described procedure and results are believed to have accomplished the goal intended; that of systematically evaluating the esthetic appeal of different bridge designs and rationally determining patterns of preference. The example used was not designed to arrive at one specific most pleasing bridge form, although by the same technique of comparative designs, one form could have been so determined. However, by inference, it appears that arch related forms, as Figures 40 or 34, are generally preferred over all others presented, including the "control" bridge form, Figure 1.

Interestingly, the results of Group I and Group II are dissimilar on only one point; that of color contrast or harmony. On points of form, the two groups are generally in agreement. The latter conclusion is reassuring in that the position of "tastemakers" and that of the general public is essentially the same on most issues, provided a large enough sampling is made. (It is to be noted that there was no figure in the brochure that was unanimously selected or rejected by all.)

ACKNOWLEDGMENTS

Appreciation is extended to all those who participated in this survey and generously gave of their time for discussions of their opinions on bridge esthetics in general.

RECENT REFERENCES ON BRIDGE ESTHETICS

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4. The Highway and Its Environment, Awards Competition, 1970.

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10. View from the Road, Lynch, Appleyard & Myer, MIT Press, 1966.

TABLE 1

RESULTS OF SURVEY

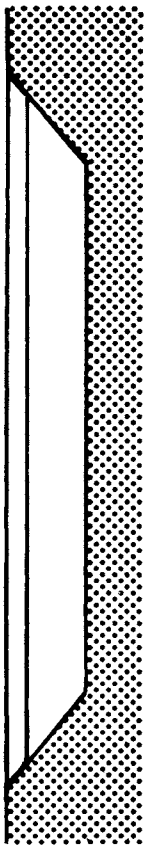
Figures	% for each Figure Group I	Group II	Principal Variant*	Comments
1-2	6-94	54-46	c	I strongly prefers extreme simplicity of no piers, while II is about evenly divided
3-4	69-31	75-25	a	Preference toward slim spanning element
5-6	69-31	61-39	a	Preference toward slim pier
7-8	69-31	61-39	b	Preference toward overall slim proportions
9-10	75-25	72-28	b	Preference toward simple relation of piers to span (few piers)
11-12	75-25	82-18	b	Preference toward simple relation of piers to span (few piers)
13-14	72-28	75-25	c	Preference toward simply shaped piers (no visible base)
15-16	47-53	70-30	c	II prefers simply shaped piers (no capitals), while I is about evenly divided
17-38	44-56	28-72	f	Preference toward simple pier but with special character
19-20	35-65	43-57	f	Preference toward span with a special character
21-22	88-12	95-5	b	Overwhelming preference for symmetrical bridge
22-24	53-47	84-16	c	II strongly prefers simple lines of span, while I is about evenly divided
25-26	50-50	57-43	b	Preferences generally divided, but somewhat in favor of no exposed end abutment
27-28	41-59	34-66	a	Preference toward a modest size abutment as opposed to a large abutment
29-30	78-22	57-43	b	Preference for an "invisible" rail

THE FOLLOWING DIAGRAMS ARE ARRANGED IN PAIRS (ONE PAIR PER PAGE). YOU ARE ASKED TO LOOK AT THE DIAGRAMS ON EACH PAGE AND NOTE WHICH OF THE TWO BRIDGES IS MORE PLEASING TO YOU AT FIRST IMPRESSION. DISREGARD ALL FUNCTIONAL ASPECTS.

JOT DOWN THE NUMBERS OF THE BRIDGES YOU HAVE SELECTED (ONE BRIDGE PER PAGE) ON THE SEPARATE FORM PROVIDED AT THE END OF THE BOOK.

PLEASE CALL WILLIAM ZUK AT 296-2168 WHEN YOU ARE FINISHED, AND THE BOOK AND FORM WILL BE PICKED UP FROM YOU.

THANK YOU FOR YOUR COOPERATION.



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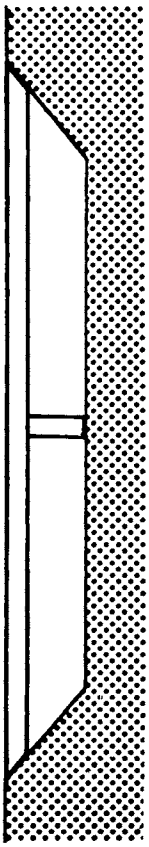

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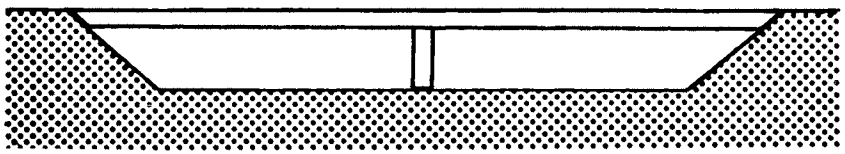

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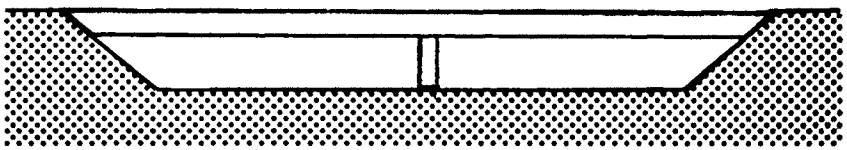

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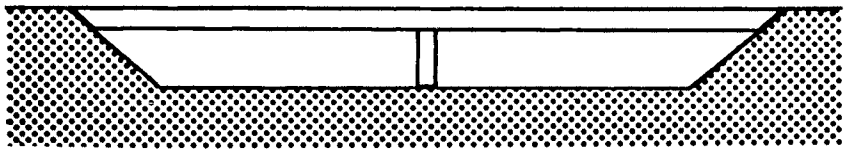

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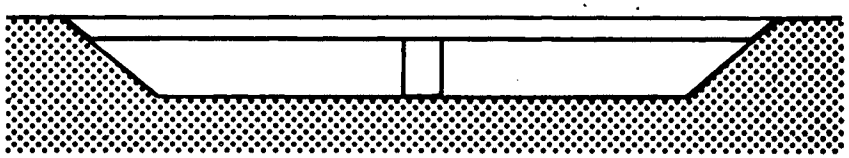

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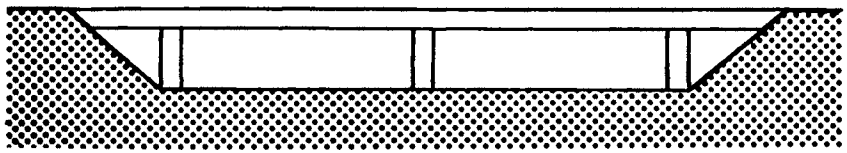

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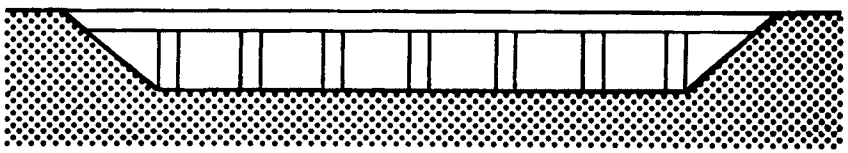

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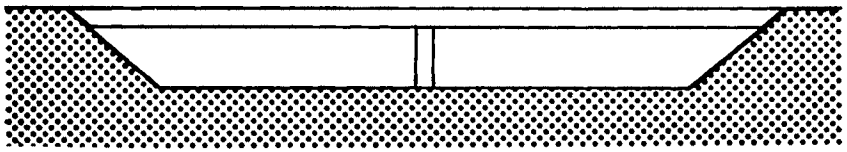

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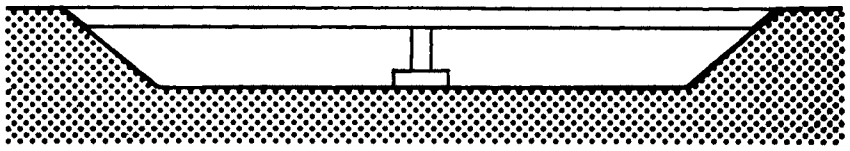

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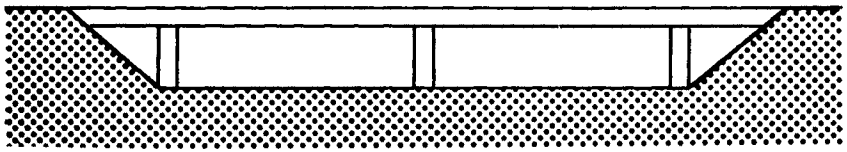

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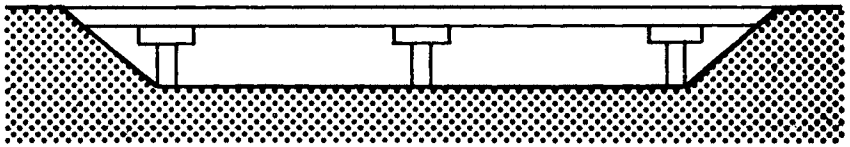

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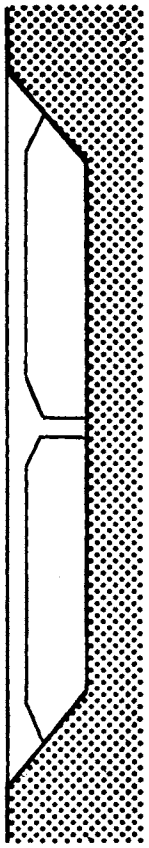

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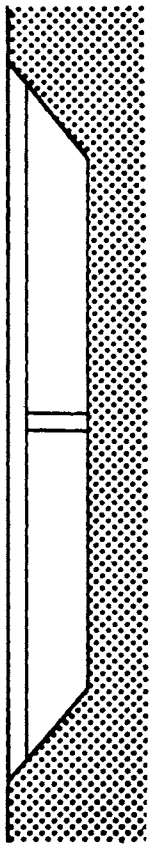

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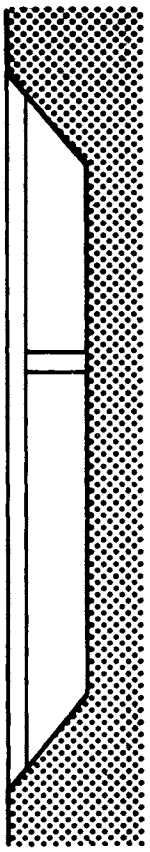

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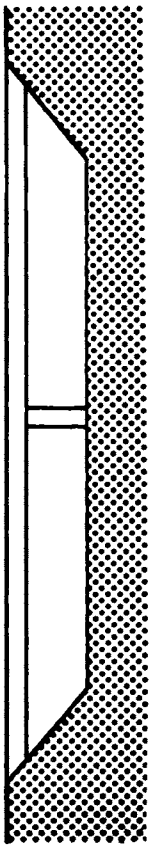

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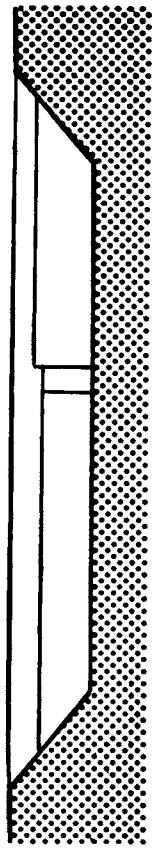

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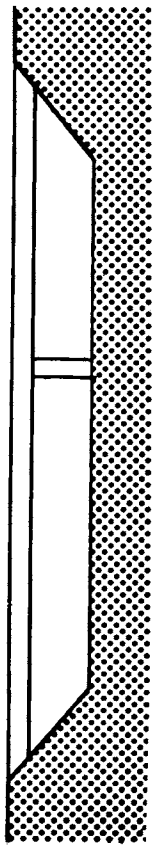

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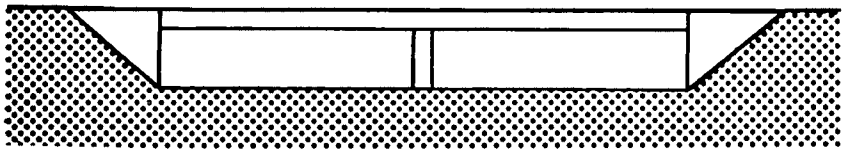

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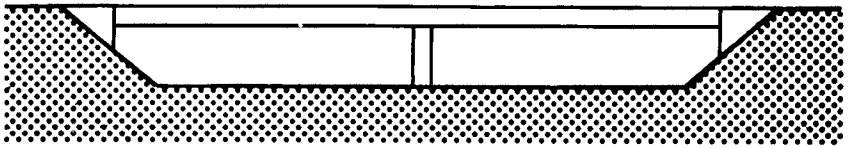

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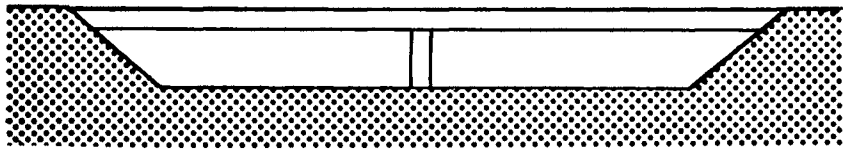

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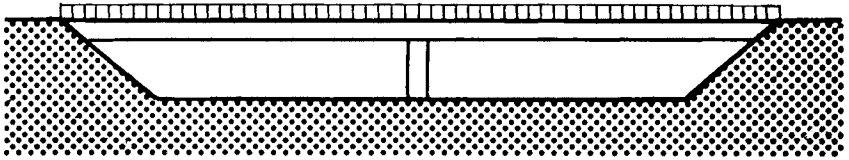

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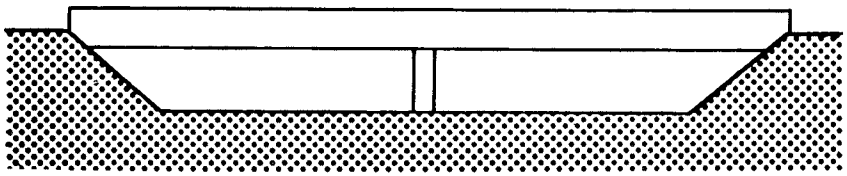

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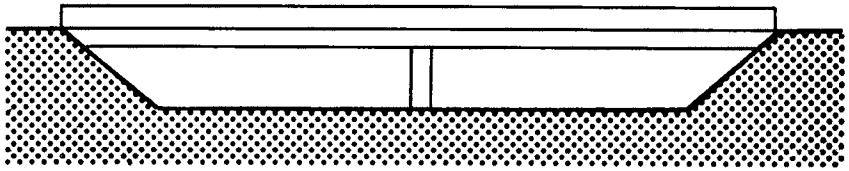

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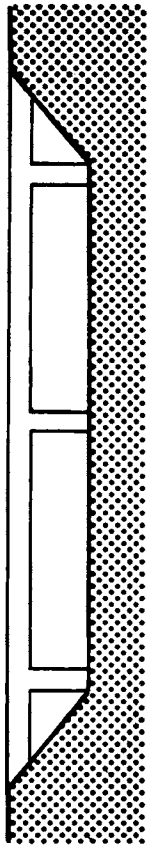

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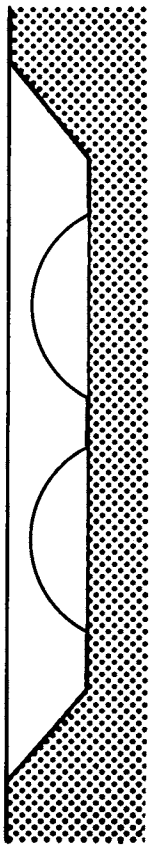

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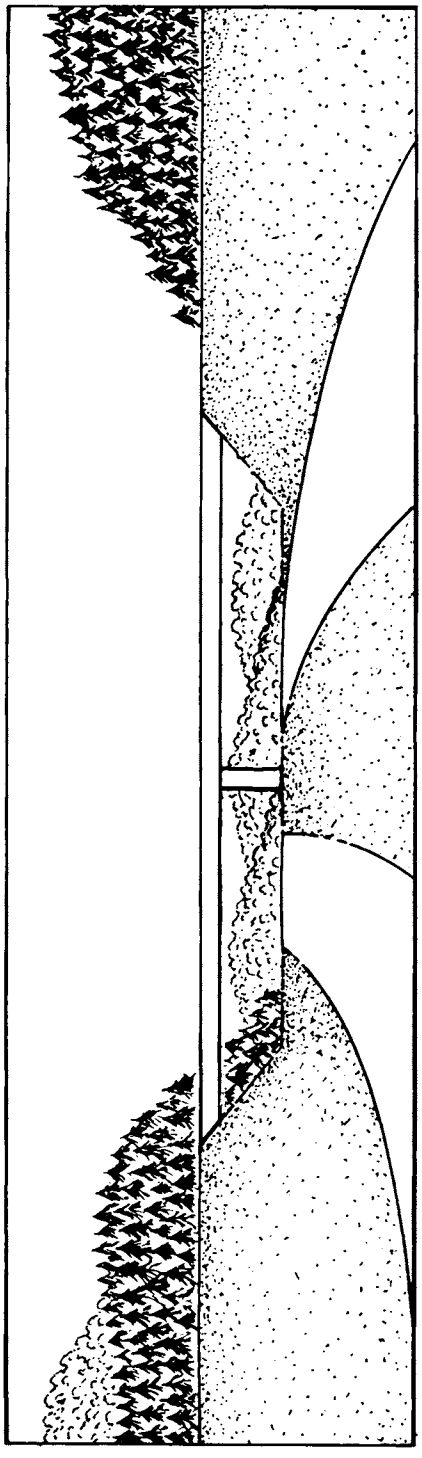

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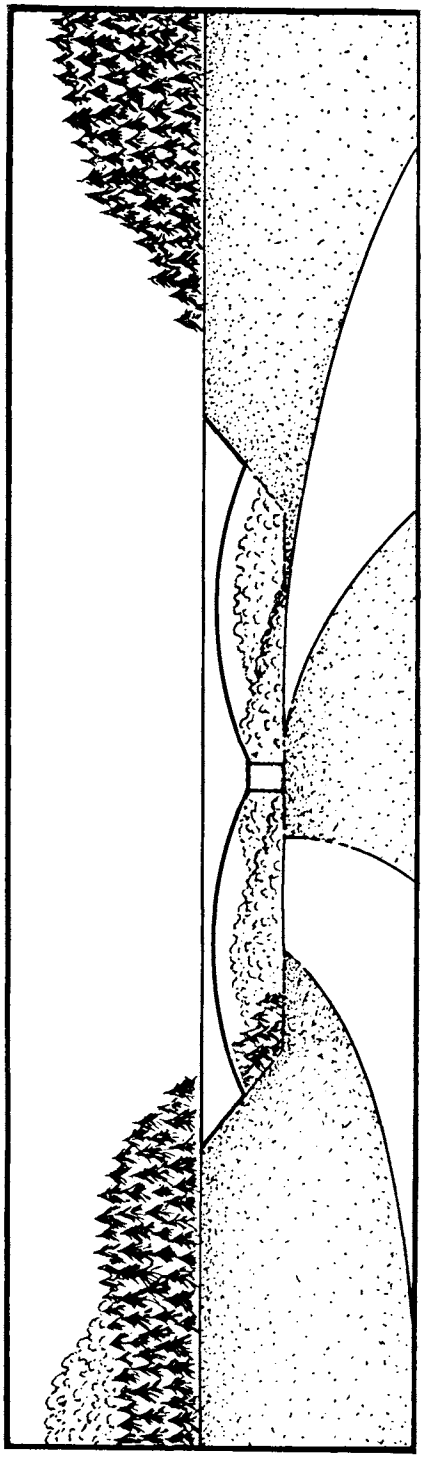

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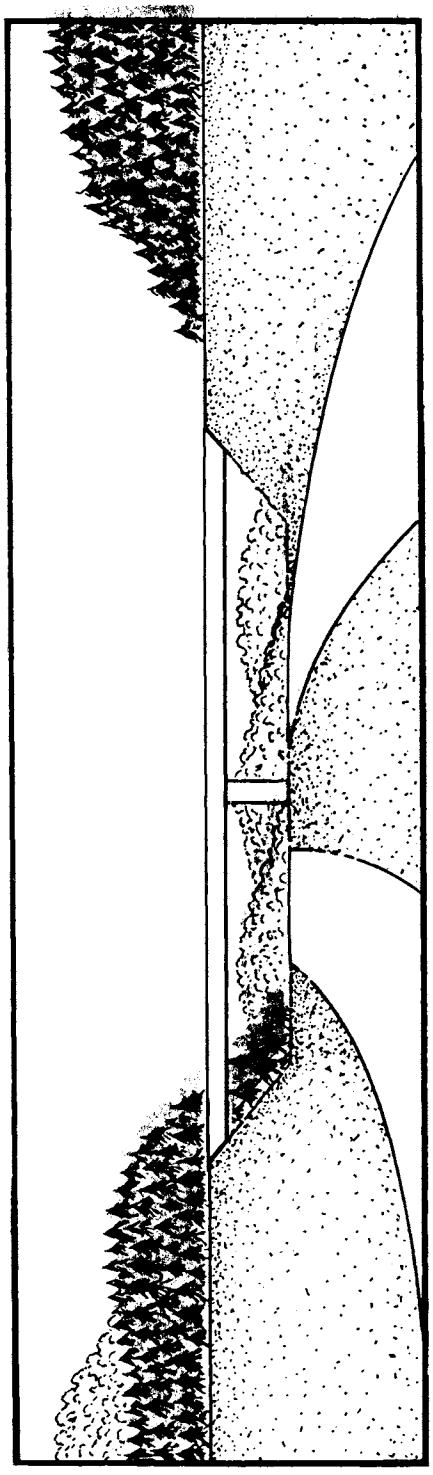

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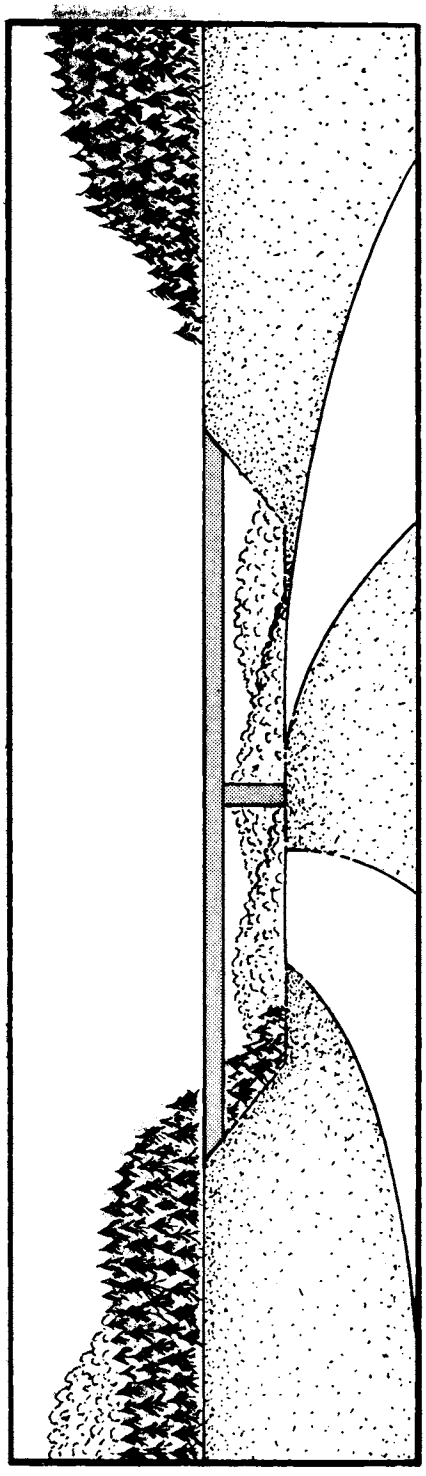

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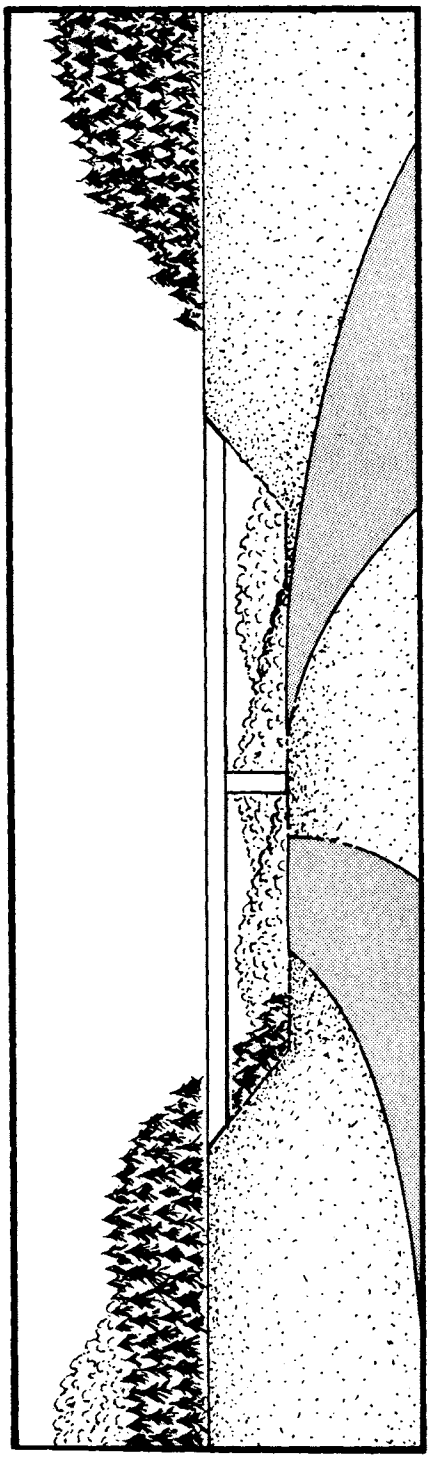

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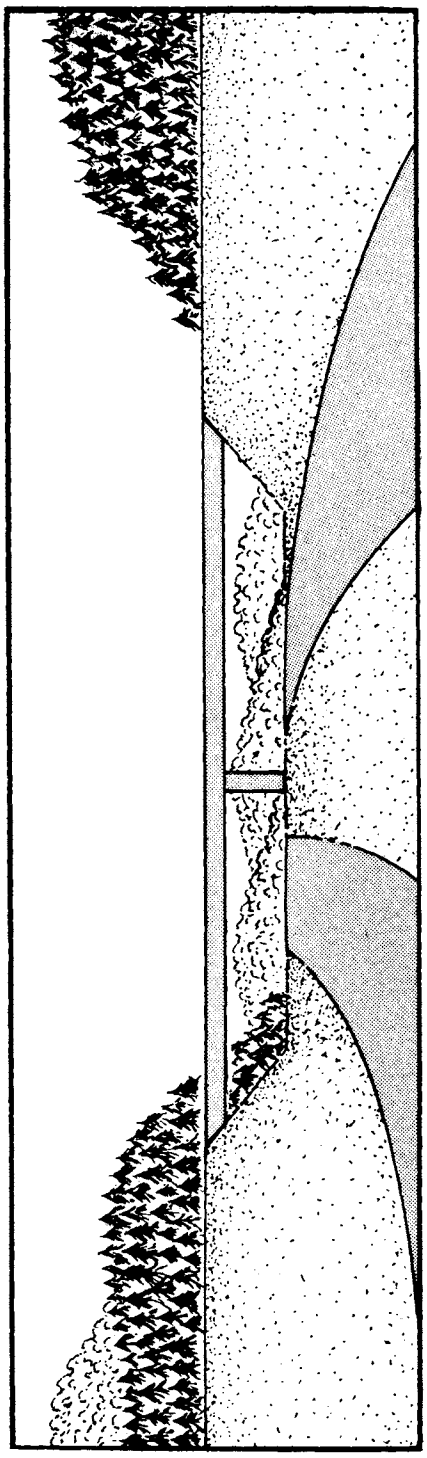

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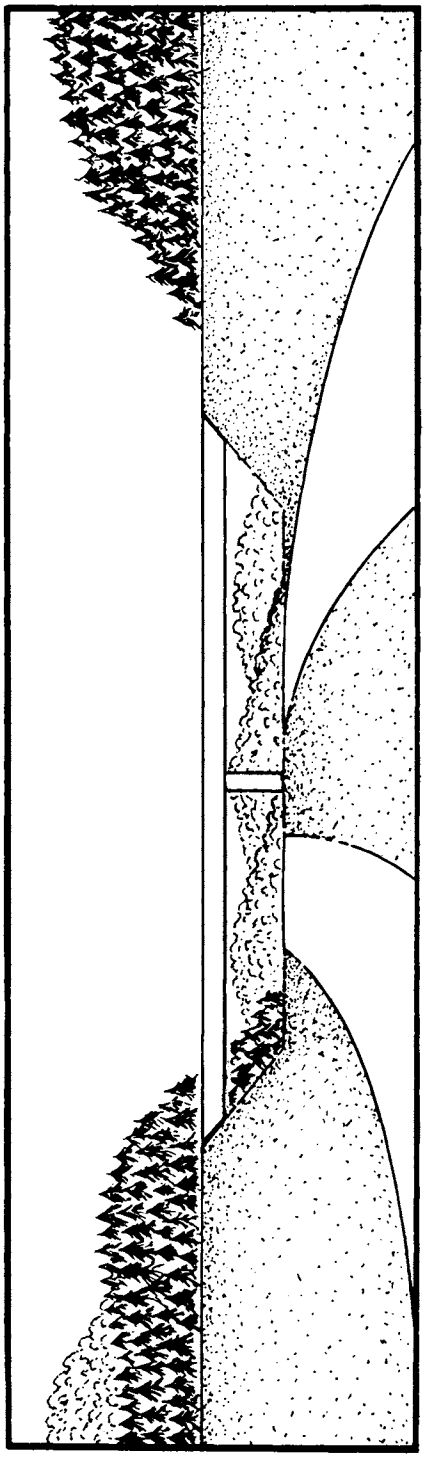

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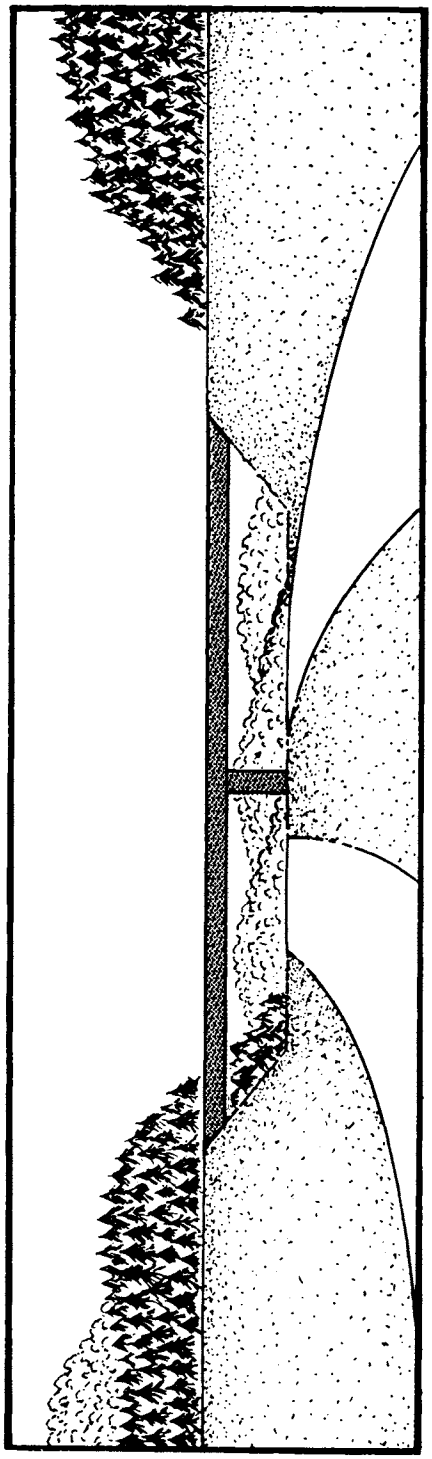

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BRIDGE AESTHETIC RATING FORM

Jot down below the numbers of bridges selected.

If you would not object to being personally interviewed at a later date on the subject of bridge aesthetics, please note your name and phone number below.

Part I - Technical Proposal
GS - 12
RFP - 57

Effective Community Participation in Highway Planning

by

L. E. Walton, Jr.
Highway Research Analyst

and

Dr. James E. Lewis
Consultant to the Virginia Highway Research Council
and Associate Director of the Center for Comprehensive
Health Planning Services, University of Virginia

and

Michael A. Perfater
Highway Research Analyst

Virginia Highway Research Council
A Cooperative Organization Sponsored Jointly by the Virginia
Department of Highways and the University of Virginia

Charlottesville, Virginia

January 19, 1972

VHRC 71-P2

"EFFECTIVE COMMUNITY PARTICIPATION IN HIGHWAY PLANNING"

BACKGROUND

Theoretically, public hearings provide an opportunity for citizens, individually and in groups, to express their viewpoints on the location and design of specific highway projects and improvements. However, previous research, as well as the magnitude of highway projects in controversy nationwide, have indicated that either more information is needed on the alternative means of achieving effective community participation in the total highway planning process and/or substantial changes are required in the public hearing strategy. One must remember that the public hearing process was conceived at a time when it was necessary for highway departments to merely inform the public of the location and pertinent design features of proposed highways. The nation's highway system at that time was such that most citizens were willing to accept a certain amount of adverse impact if the highway network was improved. However, today it is a whole new ball game. Today, citizens recognize that they can have an improved transportation system that can complement their community and that they should have some type of input during the total planning process.

It appears to the authors that much of the controversy between citizens and highway planners is generated by several factors, such as:

1. Citizens do not become aware of the highway project generally until it reaches a location or design hearing stage, which makes citizen participation difficult. At this stage, the highway planner is pretty well committed to the selected route due to the time and money invested in the project.
2. Since citizens are not involved in an early stage of the planning process, for the most part many of them are unaware of the depth to which highways are planned by today's highway engineers. Expressed another way, there is a communications gap between the planner and the community.
3. Many citizens are intimidated by the formalized format of today's highway hearing. Frequently individuals attend public hearings wishing to express their viewpoints, but being unaccustomed to public speaking they are reluctant to get up in front of large groups and express themselves. Therefore, they sit silently through the formal procedings and feel that they have been denied the opportunity to provide any input into this process.
4. Based on previous contact with governmental agencies, some citizens, whether justified or not, feel that transportation facilities will be built where the planners and engineers desire them regardless of the citizens' personal feelings.
5. Frequently, highway planners mistakenly assume that the viewpoints expressed by individuals testifying at public hearings are

representative of those of the total community to be served by the highway facility, and it is only after abandonment or modification of the proposed highway that the engineer recognizes that in this particular community there is more than one view.

Therefore to the authors it appears imperative that today's transportation agency must develop techniques and methods of eliciting citizen participation that is truly representative of the total community. In other words, it can no longer build fourth-generation transportation facilities with first-generation techniques.

OBJECTIVES

The objectives of this study will be threefold. First, the contractors would seek to identify and evaluate alternative methods of ensuring representative community response and improving the public hearing process in order that it may achieve its intended purpose, i.e., providing the citizen with a mechanism for a positive input into the planning process. The second objective would be to test the alternative methods under actual conditions in at least three states. Preliminary indications are that Louisiana, Virginia, and Wisconsin would be willing to participate in the study. Third, those methods which appear to be most effective under actual conditions would be recorded in a manual along with visual aids that could be used to train the highway engineer in techniques which have been found to be effective in eliciting citizen participation.

METHODOLOGY

The researchers believe that their continuous program of studying

citizen participation as it relates to highway hearings provides them with a basic understanding of the crucial factors in community participation, at least as it applies to Virginia. However, to confirm that those factors important in Virginia are also pertinent in other areas, the researchers propose to carry out indepth interviews at public hearings similar to those conducted in Virginia over the past two years. An example of the questionnaires used in the Virginia studies is included in Appendix A of this proposal. Exhibit 1 of Appendix A is a self-administered questionnaire which was passed out to all persons attending public hearings in Virginia over a period during the past two years. The data from the questionnaire were keypunched and a computer analysis was made to give the researchers a basic understanding of the socioeconomic characteristics of people attending public hearings and some of their feedback. Exhibit 2 of Appendix A is a questionnaire used in a household interview in three selected areas to determine the representativeness of citizens attending public hearings. The principal purpose of that research was to gain an indication of whether the persons attending public hearings were representive of the community. The results from the questionnaire in Exhibit 2 were then compared to the results obtained by the questionnaire used at the public hearing and shown in Exhibit 1. The researchers propose to use this methodology in selected hearings in at least two additional states simultaneously. The researchers would be in the audience and observe the methods and procedures used by the highway departments, which would be agreed upon by the FHWA, the principal investigators, and the individual state highway agencies involved. Following this, the researchers would draw from their Virginia experience to

suggest procedural modifications which might make the public hearing process more effective for those attending.

As a basic part of the analysis, the researchers would simulate the conditions obtained at the observed public hearing and duplicate the roles of the highway personnel and citizens. Then, the same actors would simulate a public hearing for the same project utilizing the suggested modifications in the hearing procedures. The two simulations would then be presented to the highway personnel responsible for conducting hearings in the particular state to allow them to see the differences. Immediately afterwards, the researchers would conduct an indepth discussion of the two mock public hearings with the participants from the particular state involved. As a result, the researchers believe that the highway engineers from the particular state would agree upon an approach to try at some future hearings.

The researchers would then observe public hearings in which state highway personnel would use the modified approach. Immediately following the public hearings the researchers would interview each of the highway department participants and seek their opinions as to the effectiveness of the techniques. The audience reaction, of course, would be obtained from the self-administered questionnaire shown as Exhibit 1 in Appendix A. The results of this questionnaire would then be compared to the data collected by that particular state at a previous hearing.

The basic approach the researchers have been successful with in Virginia includes prehearings, which are merely informal hearings held one, two, or three nights prior to the formal hearing, and at which highway engineers

are on hand to explain and discuss the project in detail with individual citizens. The informal hearings are announced in the newspapers and in the normal prescribed technique for a particular state. In addition the technique which has proved very effective, particularly in the densely populated urban areas of Virginia, has been for the resident engineer to contact local civic groups and offer to explain the project to them at one of their regular or called meetings.

The third technique that would be used by the researchers would be to try in individual states a public hearing team with personnel normally responsible for conducting public hearings in the use of a group-process model for problem identification and program planning as developed by Dr. Andre L. Delbecq of the University of Wisconsin. Utilizing his technique, the highway organization personnel would establish a special meeting relating to a project and would gather the citizens in groups of 50 or 60 in separate rooms. Here they would explain the purpose of the meeting as being to discuss individual and common problems relating to the project. The agency representative would open the meeting by indicating that his agency was sincerely interested in understanding the nature and character of the citizens' problems relating to the proposed project. He would further explain that the purpose of the meeting was to gain an understanding of the problems and not necessarily to explore solutions. He would then explain the transportation needs of the community as viewed by the highway agency. For example, he would explain that his agency had conducted studies and found it was necessary or desirable to connect Point A with Point B and that generalized traffic corridors could be devised in certain areas. However, he should clearly point out that none of the corridors suggested by him were

firmly fixed and that no decision had been made as to which corridor would be selected, and that the feedback from this meeting would play a very vital part in the final decision on which corridor would be selected for the route. He would then divide the citizens into smaller groups of from six to nine persons according to some common characteristics i.e., age, geographical location, or socioeconomic status. Special areas in large rooms or, ideally, separate rooms which would enable the six to nine citizens to sit around a table and discuss the problems should be provided. The agency representative selected to lead the discussion of the smaller groups would explain that most problems have emotional and organizational dimensions. The organizational dimensions often deal with authority, structure, cost, availability of resources, quality of services, etc. He would then explain that his agency was sincerely interested in both sets of problems, and ask each individual to write his "personal feelings" on one side of a 5 x 7 card and organizational difficulties on the other side of the card. The members of a group would then be given 30 minutes to list the aspects of the problem on their individual cards without speaking among themselves.

At the end of the 30 minutes the highway agency representative would provide the group a large paper pad, felt pens, and masking tape, and he would serve as recorder for the group. He would then ask each citizen around the table, one at a time, to give one organizational difficulty from his 5 x 7 card. The recorder would write the problem on the pad exactly as the individual reads it from his card. Each item would be numbered in sequence. The recorder would be cautioned to avoid any debate about the similarity of items

by writing all related problems rather than rewording a particular problem statement, even if there is an overlap with a previous one. The recording would continue until all the organizational difficulties are listed. The recorder would then tear the sheet off the pad and tape it to the wall and proceed to repeat the process for the personal feelings.

After the group has listed all of the items on the two sheets of paper, the group is offered a chance for a coffee break. Upon returning, they are given half an hour to discuss their two lists, clarify, elaborate and define any item, or add items. At the end of the 30 minutes, the group is given 3 x 5 cards. Each member is asked privately to vote (by number) which five items he considers most crucial on the "personal" problem list and which most crucial on the "organizational" problem list. The recorder then collects and records the votes of the group on each of the pad sheets. At the alloted time, the small groups will then meet together in a larger room and the votes of each group are reported to the entire audience. Discussion is allowed for as long as the citizens actively talk about the subject, usually about ten minutes.

The organizational representative then briefly explains the remaining phases of the program-planning model and asks the group if they would like to select representatives to participate in phase two of the process. The group is allowed to vote for their representatives. The audience is thanked and the meeting ends.

Dr. Delbecq, in defending the phase 1 approach, explains "one of the objectives of PPM is to facilitate, to the greatest degree possible,

innovation and creativity in program planning. The phase 1 PPM format is based on research which shows that creativity can often be facilitated by following specific group processes. . . .In recent years, a number of major research studies substantiated the superiority of nominal groups (individuals work in the presence of each other but do not interact) as compared to conventional brainstorming groups. This research indicates that interacting groups produce a smaller number of problem dimensions, fewer high-quality suggestions, and a smaller number of different kinds of solutions than groups in which members work estranged from interaction during the generation of critical problem variables."[1]

One of the benefits that Dr. Delbecq claims for his methods makes it particularly appropriate for obtaining more effective citizen participation for highway projects. Dr. Delbecq explains this benefit as follows: "Getting professionals to react to client statements is a tricky business. The experience of OEO and political agencies has been that the interfacing of client groups with professional or political groups has often resulted in "maximum feasible misunderstanding" rather than maximum feasible participation. Indeed, the literature would suggest that low status clientele interphased with higher status professionals will often be forced into a rather passive and subordinate position by the professional staff.

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[1] Dr. Andre L. Delbecq, "Nominal Group Processes for Program Planning," Center for the Study of Program Administration, Reprint Series, Graduate School of Business, Madison, Wisconsin

"Further, militant representatives of clients or customers often confront professionals with rhetoric which alienates the professional or political resource controller. . . .Our own experience has been that rhetorical readers are not able to dominate problem-centered discussion by consumers or clients in nominal group situations. As a result, the output from phase 1 provides a summary of critical problem dimensions in comfortable terms for professionals in phase 2 and resource controllers in phase 3 to respond to."[2]

Following the completion of phase 1, the researchers would select persons with the appropriate disciplines to deal with the problems identified in phase 1. The location of the Virginia Highway Research Council on the Grounds of the University of Virginia will enable the researchers to obtain the services of the needed disciplines easily. Prior to the phase 2 meeting, the researchers would divide the problems identified in phase 1 into major and minor categories. Large visual displays of these problem categories would be prepared and would identify the priorities assigned by phase 1. The meeting would be scheduled and the representatives elected in phase 1 would be invited to attend along with the discipline specialist (hereinafter referred to as specialist). The moderator selected for the meeting would then explain that his agency was sincerely interested in developing an adequate program to deal with the priority problem identified by the citizens in phase 1. The results of phase 1 would then be summarized by the moderator, and the moderator must be careful not to interrupt items analytically but should

[2]Delbecq, op. cit.

provide an impartial quantitative description of the problems which underline the items identified in phase 1. Following his summary of the previous meeting, the moderator would define the role of the specialists. He would make it perfectly clear that they were invited as idea men and not as voting representatives of the group. The specialists are then divided into small groups composed of six to nine each. Each of the groups should represent a cross section of the specialist by age and discipline. 5 x 7 cards are then passed out to each of the specialists. They would receive as many 5 x 7 cards as there were priority items identified in phase 1. On one side of each card the specialists write "solution components and existing resources which can be adopted or used." On the reverse side of the card he would write "solution components and new resources which can and should be developed." The specialists will then be alloted 40 minutes to complete the list of existing and new solution components they feel will help develop a solution to the problem for each of the priority items. At the conclusion of the group discussion, round robin procedures as described in phase 1 are again used. This time a sheet divided and labeled "existing" and "new" solution components and sources is used for each of the priority categories. Again, an agency staff member will indicate on each of the sheets items identified on the individual cards of the specialists.

Following a break, a discussion is held of the existing and useful components which were identified and resources which can be incorporated into the project to deal with the priority items. It is intended that this discussion

will help to establish the most reasonable and adequate combination of "solution components" and "resources" to appropriately deal with each priority problem. At the conclusion of the group discussion, the recorders for the specialist groups will report to the total meeting a list of the solution components and resources which they feel must be part of the final program.

As each group reports, two separate lists are compiled--one of the components and another of resource items. Following a short discussion, the specialist asks for a vote on the components and resources which are considered absolutely essential in constructing an adequate program to deal with the priority problems identified in phase 1.

Upon completion of phase 2, the researchers propose to employ a modification in Dr. Delbecq's model. The suggested modification here would be to establish a meeting of the specialists used in phase 2 and key decision makers from the state highway department. It is proposed that the specialists would serve as the consumer or citizen's advocate and the key decision makers from the highway department would solve the priority problems as identified by the citizens within the constraints of highway policy. The researchers believe that this modification would be necessary to prevent establishing a cumbersome procedure which most highway departments would soon be forced to abandon either because of financial or time constraints.

The researchers, after appropriate field testing, will identify the scope and level of participation that would be most effective for the different

types of highway decisions. For example, it is reasonably certain that the Delbecq method would not be appropriate for the rural areas and would be reserved for the more complex, involved urban projects.

The end product of this proposed research would be a manual setting forth alternatives for the various types of highway projects and accompanied by appropriate training materials. The researchers believe that to ensure a high degree of implementation it would be necessary to supply a complete package of training visual aids. The training aids would include slide and tape talks for each of the different alternatives suggested by the study. In addition, the video tapes used to train the personnel of the sample states would also be made available to the Federal Highway Administration.

EXPERIENCE IN COMPARABLE RESEARCH AND DEVELOPMENT PROGRAMS

Citizen Participation

In May 1970, L. E. Walton and J. R. Saroff conducted research on highway hearings in Virginia. This study obtained, for the first time, data on the socioeconomic characteristics of citizens attending public hearings and information on citizen feedback, and evaluated the effectiveness of the Highway Department's method of conducting hearings. The study recommended substantial changes in the strategy of conducting public hearings which the authors believe will improve citizen participation in highway planning. All but two of the twenty-nine recommendations for conducting hearings were adopted by the Department. One of the major suggestions of the study was that the Department place more emphasis on the prehearing phase of hearings to provide citizens a better opportunity to understand the planning and environmental considerations

used by the Department in constructing highways.

In the summer of 1971, L. E. Walton and J. R. Saroff again conducted research on highway hearings in Virginia. The 1971 study was a threefold investigation. First, the authors again collected socioeconomic data on citizens attending public hearings and compared them with those obtained in the 1970 study. Second, the researchers evaluated the effectiveness of their previous recommendations for conducting public hearings. This continuing research program has provided the Virginia Department of Highways with constant feedback and has enabled the Department to modify its approach to conducting hearings to obtain the most effective citizen participation possible. The third aim of this 1971 study was to attempt to evaluate the representativeness of persons attending and testifying at public hearings for the total community to be served by the proposed highway facility. Three proposed highway projects were selected in areas of different population, size and characteristics. Indepth household interviews were conducted and will be compared to the questionnaires obtained from citizens attending those particular hearings. The results of this phase of the 1971 study will be published in June of 1972.

Mr. L. E. Walton presented a paper entitled "A Proposed Strategy for Conducting Public Hearings" at the 50th Annual Meeting of the Highway Research Board. This paper was selected by Mr. John Swanson of the Federal Highway Administration for distribution to all FHWA district and regional offices.

Environmental Planning

In addition to the citizen participation studies listed above, the authors of this proposal have been intimately involved in the development of a methodology for measuring the environmental impact of proposed highways. After the development of the methodology, the researchers field tested their recommendations by conducting numerous case studies of environmental impact ranging from the complex urban areas such as I-66 in Arlington County to very rural case studies of bypasses of sparsely populated county townships.

The principal investigators for this proposed research were called upon to train the interdisciplinary staff of the newly created Environmental Quality Division of the Virginia Department of Highways and are currently serving as in-house consultants to the Environmental Quality Division in handling complex troubleshooting problems.

BRIEF HISTORY OF THE VIRGINIA HIGHWAY RESEARCH COUNCIL

The Virginia Highway Research Council is sponsored cooperatively by the Virginia Department of Highways and the University of Virginia, and its main offices are located in Thornton Hall, which houses the University's School of Engineering and Applied Science. The governing body is the Administration Board composed of the Deputy Commissioner and Chief Engineer of the Highway Department (permanent chairman), the Dean of the University's School of Engineering and Applied Science, the State Highway Research Engineer (permanent secretary), one additional appointee of the Highway Commissioner, and one of the President of the University. The Board establishes policies in all matters pertaining to personnel, finances, facilities, and the research

program.

Research Advisory Committees, appointed by the Board, assist each section of the Council and some special projects by offering guidance for the research and assistance in implementing the research findings.

The objectives of the Virginia Highway Research Council are:

1. To serve as a center for securing and disseminating information leading to a more scientific and improved approach to highway transportation, engineering, and research.
2. To educate and train men in the fundamentals of highway engineering and other areas encompassed by highway transportation.

WORK PROGRAM

It is proposed that this research be conducted in an eight-phase study. Progress reports will be issued at the completion of each phase and it is suggested that permission be granted to distribute progress reports to each of the participating states as well as to the Federal Highway Administration. A description of the work program of each of the eight phases is as follows:

Phase 1 - Preparation

a. An indepth literature search would be conducted to ensure that the most effective techniques for eliciting citizen participation are selected. The authors believe that based upon their previous research the most appropriate methods have been selected. However, the purpose of the literature search is to confirm or modify this belief.

b. A narrative report will be prepared including questionnaires and a detailed discussion of the proposed study. This report will be distributed to the highway agencies that elect to participate in the study. All the visual

aids necessary to explain the study methodology process to the participating agencies will be prepared.

c. The researchers will make final arrangements with the state highway departments electing to participate in the study and set up a meeting which will include the public hearing unit as well as management personnel from the selected agencies.

d. When the researchers visit each of the states, they will conduct a one-day session on the purpose and procedure to be followed in conducting this study.

e. The researchers will work with the selected highway agencies and determine which highway project should be studied in that particular state. It will be the aim to select one urban and one rural highway project which may be in either the location or design phase. In addition, one project will be selected at the system stage to be used in testing the Delbecq model for program planning.

f. Review the proposed projects with the designer and if possible the researchers would propose to tour the selected areas.

g. The last stage of phase 1 would be to finalize the plans for phase 2 and prepare a report on phase 1.

Phase 2 - Analysis of Public Hearing Procedures

The principal objective of phase 2 will be to analyze the procedures presently followed by each of the three states elected.

a. Attend public hearings in each of the three states selected for study.

b. Observe procedures and citizen reaction in each instance.

c. Survey citizens attending, using the self-administered questionnaire shown in Appendix A as Exhibit 1.

d. Make video tape of selected portions of the hearing in each of the states. The video tape of the actual hearing will serve as a training aid and permit comparison of the present and recommended strategy, which will be demonstrated by a simulated hearing also to be video taped.

e. Run a computer analysis on the questionnaires obtained in a survey for each of the states.

f. Compare the computer analysis of the questionnaire data to the observations made by the researchers at the actual hearing.

g. Review the actual transcript and video tapes of the hearings attended before making recommendations for changes in the process.

h. Make recommendations for a new strategy for conducting hearings for the individual state.

i. Prepare a report on phase 2.

Phase 3 - Recommend New Strategy

The principal objective of phase 3 will be to demonstrate to the selected state highway agencies a comparison between the actual procedures followed at present and the recommended procedures based on findings of this study.

a. Review computer analysis for the highway department's public hearing unit and top management.

b. Review video tapes of the actual hearing made in the specific state.

c. Present recommendations for a new strategy design for the specific state based on the computer analysis of citizen response and the actual observations. If possible, present a video tape utilizing the suggested procedures at a simulated hearing.

d. Conduct an indepth discussion of the suggested strategy with the public hearing unit personnel of the selected state highway agencies.

e. Prepare a report on phase 3.

Phase 4 - Evaluate New Strategy

a. Attend public hearings in each of the three states selected for study.

b. Observe procedures and citizen reaction in each instance.

c. Survey citizens attending, using the self-administered questionnaire shown in Appendix A as Exhibit 1.

d. Make video tape of selected portions of the hearing in each of the states.

e. Run a computer analysis on the questionnaires obtained in a survey for each of the states.

f. Compare the computer analysis of the questionnaire data to the observations made by the researchers at the actual hearing.

g. Review the actual transcript and video tapes of the hearings attended before making recommendations for changes in the process.

h. Prepare a report on phase 4.

Phase 5 - Conduct Phase 1 of the Program Planning Model

The purpose of phase 5 would be to test the effectiveness of Dr. Andre Delbecq'a planning model for eliciting citizen participation in

highway projects at the system stage. To the researcher's knowledge, this is the first time that this model has been proposed for use in a highway project. It appears to offer all of the advantages claimed for the Sherett process and citizen advisory panels plus the additional advantage of establishing a possible very meaningful dialogue between the citizen, the specialist, and the highway decision maker. Another advantage of the program planning panel appears to be that the specialist would gain a full understanding of what the citizen's desires and aims were and would then carry these to highway management.

Phase 5 would be conducted as follows:

a. Select systems stage project for each state. If at all possible, from the state highway agency's viewpoint, it would be very desirable to select projects in areas where considerable citizen aggravation has occurred. Arrange for the meeting place, which will be adequate to accommodate the expected attendance and would provide the facilities necessary for conducting phase 1. For example, it would be necessary to be able to divide the group into smaller groups of six to nine persons for individual work.

b. Arrange for publicity on the meeting. This should include newspaper display ads, TV and radio spot announcements and, if the state highway agency will agree, letters to individual citizens in the area. The mailing of the letters could be achieved by contacting a mailing service and having them mail on a selected address basis, i.e. addresses that would cover the area served by the proposed system.

c. Arrange for the state highway agency to prepare all visual aids necessary to present the project to the group in a succinct manner.

d. Meet with highway agency personnel and explain the process in detail. The researchers would attend a session and observe and provide any assistance the state highway agency desired in conducting the meeting.

e. Prepare a report on phase 5.

Phase 6 - Conduct Second Phase of the Delbecq Planning Model

Based on the items identified in phase 1, the researchers would select persons in the necessary disciplines to serve as specialists in phase 2 along with the elected representatives of the citizen group from phase 1. The specialists preferably will be selected from the individual states invovled since they would offer a substantial knowledge of the area, customs, and constraints of the specific state. However, in the event that it is deemed advisable by the FHWA and the individual state involved the specialist could be selected from faculty members at the University of Virginia, where the Virginia Highway Research Council is based.

Phase 6 would be conducted as follows:

a. Prepare data from phase 1 identifying the major areas for which specialists are needed for phase 2.

b. Contact and arrange for the specialists for the particular state meeting.

c. Arrange for site and meeting date making certain that physical facilities for the meeting location are adequate.

d. Arrange for publicity again through newspapers, radio, and TV. In addition personal letters should be sent to the selected representatives inviting them to attend the meeting. The letter will explain that specialists will be

available for the major problem areas that were identified. The purpose of the specialists will be to serve as resource persons to help identify possible solutions in meeting the citizen's goals and objectives.

e. Arrange for the highway agency to have visual aids available at the meeting in order to familiarize the specialists with the project.

f. Meet with individual state agencies and explain the process in detail to them. The researchers would attend the meeting as observers but would be available to assist the individual state representative if desired.

g. Prepare a report on phase 6.

Phase 7 - Conduct Modified Phase 3 of the Delbecq Program Planning Model

Phase 7 would be a modification in the Delbecq program planning model which the researchers feel will make it acceptable and workable for state highway agencies. If the full process of the program planning model were followed through to its conclusion, the time required would be a minimum of 18 months added on to a 5 to 7 year planning period, and the researchers believe that this additional time would make the model unworkable for most state highway agencies. The modifications in the program planning model suggested for this study would be for the specialists now to meet with the highway agency's designers and decision makers and serve as citizen advocates in the planning process.

Phase 7 would be conducted as follows:

a. Prepare materials for phase 3 of program planning model, including visual aids and narrative material explaining the process to be followed. These materials would be distributed to the specialists, the

highway designers and the highway decision makers of the individual state agencies. In addition, the report from phase 6 would be distributed to each of the participants of phase 7.

b. Arrange for a meeting between the designers, highway decision makers and the specialists utilized in phase 6.

c. The researchers would explain the purpose of the meeting and assist, if desired, in conducting the session. However, it is envisioned that the specialists, designers and decision makers would have sufficient material to enter into a meaningful dialogue. Individuals would be used as recorders of course to record the final solutions to each of the problems identified by the citizens and specialists.

d. Prepare a report on phase 7.

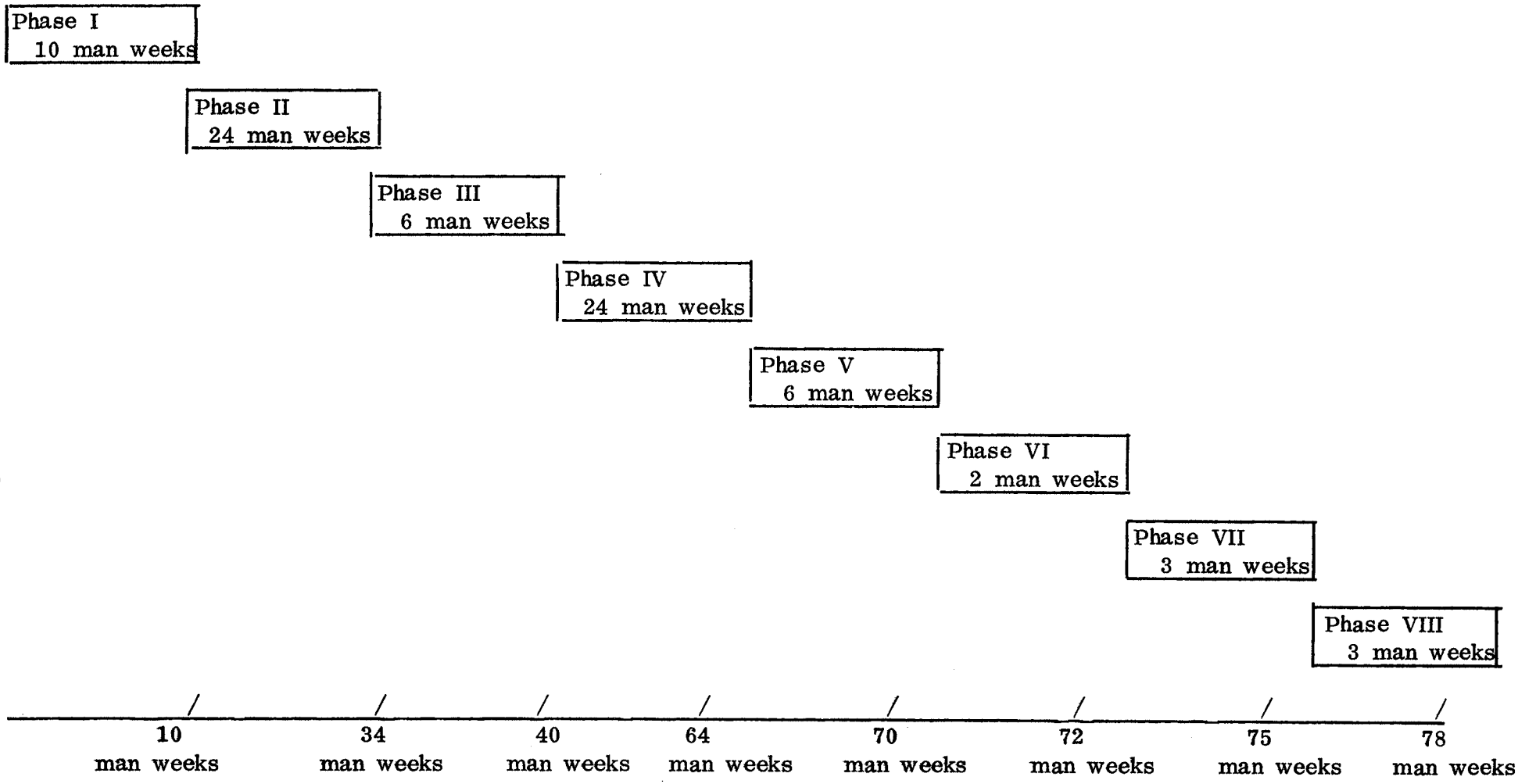
Phase 8 - Prepare a Final Report

The purpose of phase 8 would be to provide an evaluation of the overall study to provide a guideline in manual form which could be utilized by organizations involved in transportation or highway planning. The manual would be supplemented by visual aids developed throughout the other seven phases in this study. It is the researchers' opinions that the video tapes and other visual aids developed as training techniques would be invaluable provided permission to use them could be secured from the individual state agencies.

Phase 8 would also include an evaluation from each of the specialists and state agency person involved in the process. Each of these individuals would be asked to give their evaluations of the effectiveness of the process and enumerate any problems that they envision.

To assist in the evaluation of this proposal, a work progress chart indicating the number of man weeks estimated for completion of each phase of the study is included on the following pages. It should be noted that while the number of man weeks indicated represents 18 man months, it may not be possible to conduct this study as a continuous process. This can be explained by the researchers' belief that the selection of highway projects to be included will be vital for proper evaluation of the techniques outlined. Therefore, the researchers believe freedom should be extended to select the projects that the researchers and the individual state agencies believe to be most valuable to the evaluation of the techniques suggested. For example, it may not be possible to select a systems stage study in each of the three states to run in the sequence indicated in the work progress chart. In order to secure coverage of the projects believed to be most representative of the particular state involved, it may be necessary to have some delay time between the study conducted in Virginia and that, for example, conducted in Louisiana or Wisconsin.

WORK PROGRESS CHART



APPENDIX A

EXHIBIT I

Public Hearings Questionnaire

THE PURPOSE OF THIS QUESTIONNAIRE IS TO HELP THE VIRGINIA HIGHWAY RESEARCH COUNCIL LEARN HOW TO BETTER SERVE YOU THROUGH PUBLIC HEARINGS SO THAT YOU — THE PUBLIC — WILL HAVE A BETTER CHANCE TO MAKE YOUR VOICE HEARD AND GET YOUR POINT ACROSS. THUS, YOUR COOPERATION IS ESSENTIAL TO THE IMPROVEMENT OF PUBLIC HEARINGS AND GIVING YOU A MORE EFFECTIVE VOICE IN HIGHWAY PLANNING.

PLEASE ANSWER ALL QUESTIONS ON FRONT AND BACK OF SHEET AND DO NOT SIGN YOUR NAME.

1. How did you learn about this public hearing?

   1. Radio ☐ 2. News Story ☐ 3. Legal Advertisement in Newspaper ☐ 4. TV ☐

   5. From a Friend ☐ 6. From an Organization ☐ 7. Other (Please Specify) _____

2. Have you ever attended a public hearing on any subject before? 1. Yes ☐ 2. No ☐

   IF ANSWER IS YES

   2a. About how many hearings have you attended? 1. ☐ 2. ☐ 3. ☐ 4. ☐ 5. ☐ 6 or more (Specify Number) _____

   2b. Is this the first public hearing concerning a highway you have been to? 1. Yes ☐ 2. No. ☐

   2c. What other public hearing have you attended?

   1. City Council ☐ 2. County Board of Supervisors ☐ 3. Planning Commission ☐ 4. School Board ☐

   Other (Please Specify) _____

3. About how many miles did you travel to this public hearing?

   1. Less than ½ mile ☐ 2. ½ - 1 Mile ☐ 3. 1 - 5 Miles ☐ 4. 5 - 10 Miles ☐ 5. Over 10 Miles ☐

4. Are you at the public hearing as an individual, a member of an organization, or as a representative of an organization?

   1. Individual Citizen ☐ 2. Member of an Organization ☐ 3. Representing an Organization ☐ 4. Other (Please Specify) _____

5. Did you come to testify at the public hearing - - - or to listen? 1. Testify ☐ 2. Listen ☐ 3. Other (Specify) _____

6. Did you come to this hearing to support the proposed highway, oppose the proposed highway, or for other reasons?

   1. Support ☐ 2. Oppose ☐ 3. Other (Specify) _____

   6a. Why? (Specify) _____

7. Which of the following items do you feel the proposed highway will affect or change? (CHECK ONE OR MORE)

   1. People, neighborhoods, houses ☐
   2. Business, industry, jobs ☐
   3. Property values ☐
   4. Taxes ☐
   5. The environment, nature, ecology, trees ☐
   6. Movement of traffic and people ☐
   7. Other (Specify) _____

over →

8. What kind of effect do you feel the proposed highway will have on the following items. That is, will the highway have a positive effect, a negative effect, or not mu effect at all? (CHECK ONE OR MORE)

	Positive	Negative	Not Much
1. People	☐	☐	☐
2. Business, industry, jobs	☐	☐	☐
3. Property taxes	☐	☐	☐
4. Taxes	☐	☐	☐
5. The environment, nature, ecology, trees	☐	☐	☐

6. Other (Specify) _____

9. What, to you, is the single most important effect of the proposed highway, either positive or negative? (Specify)

Positive (If Any) _____

Negative (If Any) _____

10. Did you attend the information hearing held on this highway project? 1. Yes ☐ 2. No. ☐

11. How long have you lived at your present address? Months _____ Years _____

12. What is your sex? 1. Male ☐ 2. Female ☐

13. What is your job? (If female, and do not work full-time, write in housewife or homemaker.) _____

14. Do you own your home or rent? 1. Own ☐ 2. Rent ☐ 3. Other (Please Specify) _____

15. Please check your age group? 1. Under 21 ☐ 2. 21-34 ☐ 3. 35-49 ☐ 4. 50-64 ☐ 5. 65 and Over ☐

16. What was the highest grade of school or college you completed?

1. 0-8 ☐ 2. 9-12 ☐ 3. Some College ☐ 4. College Graduate ☐ 5. Graduate School ☐

17. Please check the box next to your total family income, considering all sources, before taxes, in 1970.

1. Under $5,000 ☐ 2. $5,000 - 9,999 ☐ 3. $10,000 - 14,999 ☐ 4. $15,000 - 19,999 ☐ 5. $20,000 - 24,999 ☐

6. $25,000 - 29,999 ☐ 7. $30,000 - 34,999 ☐ 8. $35,000 - 39,999 ☐ 9. $40,000 - 44,999 ☐ 10. $45,000 - 49,999 ☐

11. Over $50,000 ☐

FILL OUT AFTER HEARING

18. Do you feel this hearing was conducted in a good, fair, or poor way? 1. Good ☐ 2. Fair ☐ 3. Poor ☐

19. In what ways do you think this hearing can be improved. (Please Specify) _____

THANK YOU

APPENDIX A

EXHIBIT 2

Virginia Highway Research Council
1971

Public Hearing Survey

COVER SHEET

Interviewer _____

Date _____ No. _____

Started _____ Finished _____

HOUSEHOLD COMPOSITION

List all persons (adults and children) in the dwelling unit.

Relationship to Head	Age	Sex	Marital Status	Emp. Status	Occupation	Adult No.	R

Are there any other dwelling units at this specific address?

(1) Yes (2) No

(IF YES, MAKE OUT AN EXTRA COVER SHEET AND INTERVIEW IN THIS D. U.)

REPRESENTATIVENESS OF CITIZENS AT HIGHWAY HEARINGS

Interview No.

1. Have you had a chance to hear about or read about the public hearing on the proposed location of the (Name of Project)_____?

Yes _____ No _____ Other (Specify) _____

_____

1a. Have you had a chance to hear about or read about the project on the proposed location of the (Name of Project)_____
_____.

Yes _____ No _____ Other (Specify) _____

_____

IF YES, to Question Number 1, did you attend that hearing?

1. Yes _____ 2. No _____

(IF YES, TERMINATE INTERVIEW)

(IF NO, SKIP TO QUESTION NUMBER 9)

IF NO to Question Number 1, how did you hear about or learn about the hearing?

(SHOW CARD 1)

1. Radio
2. Newspaper Story
3. Legal Ad
4. TV
5. From a _____
6. From an Organization
7. Other (Specify) _____

IF YES to Question 1a, how did you hear about or learn about the highway project?

(SHOW CARD 1)

2. I'd like to ask you some questions about the proposed highway. Some people support the proposed highway and feel that it is a positive improvement for your neighborhood. Some people oppose the proposed highway and feel that it will have a negative effect, and other people feel that it won't have much effect at all. How do you feel about it?

   1. Positive
   2. Negative
   3. Not Much Effect
   4. No Opinion
   5. Other (Specify) _____

3. You mentioned that you feel that the proposed highway will have a POSITIVE, NEGATIVE, NOT MUCH EFFECT, ETC. on your neighborhood. Could you tell me in what ways you feel it will have a POSITIVE, NEGATIVE, OR NOT MUCH OF AN EFFECT?

   POSITIVE _____

   NEGATIVE _____

   NOT MUCH _____

4. Is there anything else, any other effects you feel the highway will have? (PROBE)

   _____

   _____

5. Which of the following items do you feel the proposed highway will affect or change? (Check one or more)

(SHOW CARD 2)

1. People, neighborhoods, houses ..... △
2. Business, industry, jobs ..... △
3. Property values ..... △
4. Taxes ..... △
5. The environment, nature, ecology, trees ..... △
6. Movement of traffic and people ..... △
7. Other (Specify) _____

6. (a) On which of these items (READ BACK THOSE RESPONDENTS MENTIONED) do you believe the highway will have a positive effect?

(b) On which of these items a negative effect?

(c) On which of these items not much effect at all?

7. What, to you personally, is the single most important effect of the proposed highway, either positive or negative. (Specify)

Positive (If Any) _____

Negative (If Any) _____

8. Why didn't you go to the hearing on the (MENTION NAME) Highway Project?

Now I'd like to ask you some questions about public hearings in general.

9. Have you ever attended a public hearing in this community in which you live or in other communities where you lived?

[1. Yes] [2. No]

(IF YES) (a) About how long ago would you say that was? _____

(b) What kind of a public hearing was that? (IF RESPONDENT CANNOT SPECIFY, THEN ASK ABOUT CITY COUNCIL HEARINGS, BOARD OF SUPERVISORS, SCHOOL BOARD, ETC.)

_____

_____

_____

10. Would you say that you keep up with happenings in local government, here in _____ quite a bit, about average, very little, or rarely or not at all?

[1. Quite a bit] [2. About average] [3. Very little]
[4. Rarely or not at all]

11. Some people are very active in community affairs, some people are not very active, and some people are not interested in community affairs at all. Would you say, that you are interested, not very interested, or uninterested in community affairs?

[1. Interested] [2. Not very interested] [3. Uninterested]

12. Many citizens have some concerns about the community in which they live. That is, people want to improve the community in certain ways or eliminate certain problems. Have you thought about this very much?

[1. Yes] [2. No]

(IF YES) (a) What are those issues and problems which concern you most?

_____

_____

(b) Would you please look at this card (SHOW CARD 3) and tell me which of these issues or problems concern you, here in this community?

CARD 3

a. Taxes ..... △
b. Pollution ..... △
c. Violence ..... △
d. Personal Problems ..... △
e. Recreational Space ..... △
f. Police Protection ..... △
g. Efficient Government ..... △
h. The Environment ..... △
i. Highway Construction ..... △
j. Race ..... △
k. Ecology ..... △
l. Noise ..... △
m. Attractiveness of Community ..... △
n. Responsiveness of Local Government ..... △
o. Other (Specify) _____

13. Here is a list of Clubs and Organizations that many people belong to. Please look at this list (SHOW CARD 4) and tell me which of these kinds of organizations you belong to.

CARD 4

	RESPONDENT BELONGS
Parent-Teachers Association	△
Church Connected Groups	△
Neighborhood Clubs or Community Centers	△
Organizations of People of Same Nationality	△
Neighborhood Improvements Organizations or Community Groups	△
Organizations Concerned with Environment and Ecology	△
Political Clubs or Organizations	△
Other	△

(a) (IF RESPONDENT BELONGS TO ONE OR MORE) and in which of these organizations would you say you are most active? _____

_____

(b) And with what kinds of projects or problems does the organization concern itself?

_____

_____

14. Do you own or rent your home? [1. Own] [2. Rent]

3. Other (Specify) _____

15. About how long have you lived here, in this community?

_____Months _____Years

16. What was the highest grade of school or college you completed?

(SHOW CARD 5)

1. 0 - 8	2. 9 - 12	3. Some College
4. College Graduate	5. Graduate School	

17. What was your total family income before taxes in 1970 — considering all sources such as rent, profits, wages, interest, etc. ? (SHOW CARD 6)
Could you tell me approximately how much it came to — just say what letter of this card it would be?

CARD 6

a. Under $5,000	f. $25,000 - 29,999
b. $5,000 - 9,999	g. $30,000 - 34,999
c. $10,000 - 14,999	h. $35,000 - 39,999
d. $15,000 - 19,999	i. $40,000 - 44,999
e. $20,000 - 24,999	j. $45,000 - 49,999
	k. Over $50,000

Call No.	Date Hour	Detailed Result of Each Call (If necessary, use back of this page)

NON-INTERVIEW DATA

Reason for Non-Interview

_____Dwelling Unit Vacant

_____Address Not a Dwelling Unit

_____No Structure at Sample Address

_____Refusal or Other Reason for Non-Interview (Explain Below)

Please give detailed account below of the non-interview including the race and approximate age of the would-be respondent.

_____

1. Is this interview of questionable value, generally adequate, or high quality?

[1. Questionable] [2. Generally Adequate] [3. High Quality]

(IF QUESTIONABLE) WHY? (CHECK EACH REASON WHICH APPLIES TO IT)

_____ Spoke English haltingly, with marked accent

_____ Evasive, suspicious

_____ Drunk, mentally disturbed

_____ Had poor hearing or vision

_____ Confused by frequent interruptions

_____ Confused because of low intelligence — did not understand questions

_____ Other (SPECIFY) _____

2. How was rapport with R? [1. Excellent throughout] [2. Average]
[3. Poor throughout] [4. Started good, became poor]
[5. Started poor, became better] 6. Other _____

3. What was R's interest in the interview? [1. High] [2. Average] [3. Low]

4. Who else was present during the interview, and what effect did this have?

[Only R Present]

PERSONS PRESENT	HOW LONG	WHAT EFFECT
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Part II - Staffing
GS - 12
RFP - 57

Effective Community Participation in Highway Planning

by

L. E. Walton, Jr.
Highway Research Analyst

and

Dr. James E. Lewis
Consultant to the Virginia Highway Research Council
and Associate Director of the Center for Comprehensive
Health Planning Services, University of Virginia

and

Michael A. Perfater
Highway Research Analyst

Virginia Highway Research Council
A Cooperative Organization Sponsored Jointly by the Virginia
Department of Highways and the University of Virginia

Charlottesville, Virginia

January 19, 1972
VHRC 71-P2

EFFECTIVE COMMUNITY PARTICIPATION IN HIGHWAY PLANNING

Staffing - Principal Investigator

The principal investigator for this proposed research will be L. E. Walton, Jr., Head of the Environmental Management and Economics Section of the Virginia Highway Research Council. Mr. Walton is a full-time employee of the Virginia Highway Research Council. Mr. Walton's curriculum vita is as follows:

Date of Birth: November 26, 1925

Sex: Male

Marital Status: Married

Educational Background:

B.S. - Business Administration, Richmond Professional Institute of the College of William and Mary, 1950

M.C. - Commerce, University of Richmond, 1966

Current Position: Highway Research Analyst
Head, Environmental Management and Economics Section of the Virginia Highway Research Council

Work Experience:

1966 - Present, Virginia Highway Research Council, Charlottesville, Va. Research in Right of Way Acquisition, Economic Impact and Highway Finance

1963 - 1966, Labor Market Analyst, Virginia Employment Commission, Research, Statistics and Information Division. Research of labor market procedures--estimating labor force, commuting patterns, population and new entrants into the labor force.

1946-1963, Real Estate Broker, Real Estate sales and property management, Vice President.

Publications:

Walton, L. E., Jr. and Savage, W. R. III, An Investigation of Methods of Protecting and/or Reducing Cost of Future Right-of-Way, Charlottesville, Virginia, Virginia Highway Research Council, 1967.

Walton, L. E., Jr. and Kuthy, W. G., A Conceptualized Updating System for a Continuing Transportation Planning Program, Charlottesville, Virginia, Virginia Highway Research Council, 1968.

Walton, L. E., Jr. and Kuthy, W. G., Procedure Manual for Implementing A Continuing Transportation Planning Program, Charlottesville, Virginia, Virginia Highway Research Council, 1968.

Walton, L. E., Jr., Distribution of Highway Funds in Virginia, Charlottesville, Virginia, Virginia Highway Research Council, 1970.

Walton, L. E., Jr., A Return on Investment Analysis of Virginia's Interstate System, Charlottesville, Virginia, Virginia Highway Research Council.

Professional Memberships:

Chairman, Land Economics Studies Committee, Old Dominion Chapter, American Right-of-Way Association.

Chairman, National Land Economics Studies Committee, American Right-of-Way Association.

Task Force to Identify Community Values for Transportation Planning of the Highway.

Research Board Committee on Social, Economic, and Environmental Factors of Transportation.

Virginia Citizens Planning Association.

Dr. James E. Lewis is a part-time consultant to the Virginia Highway Research Council and a full-time employee of the University of Virginia Medical Center. Dr. Lewis' current position for the Medical Center is Associate Director for Comprehensive Health Planning Services. Dr. Lewis' curriculum vita is as follows:

Date of Birth: January 5, 1938

Sex: Male

Marital Status: Married

Educational Background:

B.A. - Geography, Eastern Michigan University, Ypsilanti, Michigan, 1961

M.A. - Urban and Economic Geography, University of Georgia, Athens, Georgia, 1963

Ph.D. - Urban and Economic Geography, University of Georgia, Athens Georgia

Current Position: Assistant Professor, Division of Community and Family Medicine, School of Medicine, University of Virginia, 1970-

Responsibilities:

1. Associate Director, Center for Comprehensive Health Planning. In this position, I am responsible for developing a university-wide interdisciplinary program of training, research, and public service in health planning. The Center is supported by a grant from the Division of Comprehensive Health Planning. Health Services and Mental Health Administration, DHEW. I organized the faculty group and wrote the grant application for the Center. The two principal efforts involved in this position at present are curriculum development and liaison within the University and to the Virginia health community.

2. Project Planner, Central Virginia Community Health Center, Inc., New Canton, Va. In this position, I am responsible for planning and implementing the health care delivery program for this Center. The Center is supported by a grant (which I assisted in preparing) from the U.S. Office of Economic Opportunity. I also serve in a back-up and advisory role to the locally-selected Project Director.

The principal efforts involved are planning a permanent structure to house the Center, liaison to the funding agency, liaison to the local community, planning for geographic expansion of the Center's service area, and programming the services and manpower training aspects of the Center's program.

3. Consultant, Medical Facilities Commission of the Virginia General Assembly. In this position, I conduct studies of transportation, communications (principally Instructional Television), and housing problems involved in using community hospitals as integral elements of the Virginia medical school's educational efforts. These studies involve liaison to local, state, and federal agencies, data collection and interpretation, and preparation of oral and written reports.

Research Experience:

Co-investigator, Virginia Highway Research Council project. "State-of-the-Art of Research in the Environmental Impact of Highways." Project funded by Virginia Department of Highways, January 1970 - to present. (with L. Ellis Walton and J. R. Saroff)

Urban and Economic Geographer, Urban Studies Division, Gulf South Research Institute, June 1966 - August 1969 (fulltime in summer and part-time during school year). Supervisor: Ned A. Cole. (See Publications List)

Principal Investigator, Louisiana Water Resources Research Institute project "An Investigation of Manpower Resources for Water Resources Research and Other Water Related Activities." Project funded by U.S. Office of Water Resources Research for Summer, 1968.

Graduate Research Assistant, University of Georgia, 1963-1964. Supervisor: James A. Barnes

Research Assistant in Community and Area Development, University of Georgia, 1962-1963. Supervisor: James A. Barnes

Research Assistant in Community and Area Development, University of Georgia, 1961-1962. Supervisor: Ray M. Northam, Ph.D.

Teaching Experience:

Assistant Professor, Department of Environmental Sciences, University of Virginia, September 1969-September 1970. Courses: Advanced Economic and Transportation Geography.

Assistant Professor--Louisiana State University, Fall, 1966-June 1969. Courses: Economic, Urban, and Transportation Geography.

Instructor--Economic Geography, University of Georgia, Summer, 1965.

Instructor--World Regional Geography, University of Georgia, Summer 1964.

Teaching Assistant--Air Photo Mapping and Interpretation, University of Georgia, Spring 1964. Supervisor: James A. Barnes.

Other Experience:

Assistant to Executive Director, Northeast Georgia Area Planning and Development Commission, Athens, Georgia. Summer 1963. Duties included: data collection, data processing and analysis, report writing, and cartographic work.

Assistant Community Planner, Technical Assistance Division, Atlanta Regional Metropolitan Planning Commission, Atlanta, Georgia, Summer 1962. Duties included: data collection, data processing and analysis, report writing, and cartographic work.

Brief periods of supplemental employment while in graduate school:

Athens-Clarke County Commission, Athens, Georgia

Free-lance cartographer, University of Georgia

Published Reports and Research:

A Manual for Areawide Comprehensive Health Planning in Louisiana. Baton Rouge: Gulf South Research Institute, (in press) (author).

Water Resources Manpower: Supply and Demand Patterns to 1980. Baton Rouge: Louisiana Water Resources Research Institute, May, 1970. 46 pp. (author).

A Concept for Health Care in Louisiana. Baton Rouge: Gulf South Research Institute, April, 1969. (co-author).

Design and Application of a Comprehensive Health Planning Technique. Baton Rouge: Gulf South Research Institute, September, 1968. 75 pp. - seven technical appendices totalling 326 pp. (co-author, co project leader).

A Study of the Louisiana Charity Hospital System. Baton Rouge: Gulf South Research Institute, September, 1968. 125 pp. (co-author, co-project leader).

Health Service Regions in Louisiana. Baton Rouge: Gulf South Research Institute, September, 1968. 40 pp. (author).

"Changes in Highway Mobility in the U.S. South, 1940 to 1960," The Professional Geographer, v. 20 (Nov., 1968). 382-387.

"Major Functional Regions of the United States South," The Southeastern Geographer, VII (1967), 1-5.

Domed Stadium Site Study (for New Orleans). Baton Rouge, La.: Gulf South Research Institute, August, 1967. 60 pp. (co-author, project manager, principal researcher).

Planning Study for New Orleans Aviation Needs: 1980-2000. Baton Rouge, La.: Gulf South Research Institute, July, 1967. 180 pp. (co-author).

Design Study for Health and Medical Services for Louisiana. Baton Rouge, La.: Gulf South Research Institute, June, 1967. 30 pp. (co-author).

Planning Study for Our Lady of the Lake Hospital (Baton Rouge). Baton Rouge, La.: Gulf South Research Institute, May 1967. 50 pp. (project manager, principal researcher, and author).

Baton Rouge Airport Planning Study. Baton Rouge, La.: Gulf South Research Institute, November, 1966. 186 pp. (project manager and co-author).

Housing Regions of Georgia. Athens, Ga.: University of Georgia, Institute of Community and Area Development and Department of Geography, 1964. 19 pp. (With James A. Barnes and John C. Belcher).

Functional Regions of Georgia: Their Delimitation and Nature. Athens, Ga.: University of Georgia, Institute of Community and Area Development and Department of Geography, 1963. 34 pp. (With Ray M. Northam and James A. Barnes).

East Point: Population and Economy. Atlanta, Ga.: Atlanta Region Metropolitan Planning Commission, 1962. 36 pp. (With T. I. Hawkins)

East Point: Neighborhood Analysis Number Three. Atlanta, Ga.: Atlanta Region Metropolitan Planning Commission, 1962. 24 pp. (With T. I. Hawkins).

Professional Papers:

"Planning Public Services: New Problems and New Opportunities for Geographers." Paper presented at the annual meeting of the Southeastern Division, Association of American Geographers, Columbia, S.C., November, 1970.

"Spatial and Temporal Variations in Regional Centrality for Major Cities of the U.S. South." Paper presented at the annual meeting of the Association of American Geographers, Washington, D.C., Aug., 1968. Abstract published in Annals, AAG, Vol. 59 (1969), p. 190.

"Recent Changes in the Spatial Structure of the Louisiana Cane Sugar Industry." Paper presented at the annual meeting of the Southwestern Division, Association of American Geographers, Dallas, Texas, April, 1968. (With Donald W. Davis).

"Changes in Highway Mobility in the U.S. South, 1940 to 1960." Paper presented at the annual meeting of the Southeastern Division, Association of American Geographers, Gainesville, Florida, November, 1967.

"Functional Regions of the United States South: Changes in Size and Number, 1940 and 1960." Paper presented at the annual meeting of the Association of American Geographers, St. Louis, Missouri, April, 1967. Abstract published in Annals, AAG, v. 57 (Dec., 1967), p. 795.

"Economic Development Districts: Theory, Reality, and Politics." Paper read at the annual meeting of the Southwestern Division, Association of American Geographers, Dallas, Texas, March, 1967.

"Major Functional Regions of the United States South." Paper read at the annual meeting of the Southeastern Division, Association of American Geographers, Atlanta, Georgia, November, 1966, and appearing in the Memorandum Folio, XVIII (1966), 112-116.

"A Technique for Regional Delimitation as Applied to Housing in Georgia." Paper read at the annual meeting of the Southeastern Division, Association of American Geographers, Lexington, Kentucky, November, 1964.

"Location Aspects of the Commercial Fertilizer Industry in Georgia." Paper read at the annual meeting of the Southeastern Division, Association of American Geographers, Chapel Hill, N.C., November, 196[illegible]

"Traffic Flow in the Atlanta Nodal Region." Paper read at the annual meeting of the Southeastern Division, Association of American Geographers, Knoxville, Tennessee, and appearing in the Memorandum Folio, XV (1963), 65-70.

Unpublished Materials:

"Transportation Geography: A Bibliography of Books, Reports, Dissertations and Theses." Baton Rouge: LSU, Dept. of Geography - Anthropology, April, 1969. 27 pp. mimeo.

"Advanced Economic Geography: A Bibliography of Books, Reports, Dissertations and Theses." Baton Rouge: LSU, Dept. of Geography - Anthropology, April, 1969. 27 pp. mimeo.

"Financial Analysis of Louisiana's Participation in Title XVIII and Title XIX of the Social Security Amendments of 1965." (unpublished confidential report to the Governor of Louisiana.) Oct., 1967. (co-author).

"Approaches to Measuring and Mapping the Efficiency of Highway Transportation." Unpublished report to the Current Planning Division, U.S. Bureau of Public Roads, Washington, D.C., January, 1967. 15 pp.

"The Evolution of the Concept of Functional Regions: With Application to their Delimitation in the United States South." Unpublished Ph.D. dissertation, University of Georgia, 1966. 175 pp.

"Location Theory Bibliography." Athens: University of Georgia, Department of Geography, March, 1964. 22 pp. (mimeo).

"An Examination of Vehicular Traffic Flow Entering and Leaving the Atlanta Sphere of Influence." Unpublished M. A. thesis, Department of Geography, University of Georgia, 1963.

Other Information:

Member, Virginia Regional Medical Program Committee on Rural Health Care Delivery, 1971 -
Consultant, Community Progress Council, York, Pa., Dec., 1970. (Under contract to Volt Information Services).
Consultant, Roanoke Valley Health Services Planning Council, April, 1970 - June, 1970.
Clinical Assistant Professor, Department of Preventive Medicine, University of Virginia, December, 1969 - September, 1970.
Consultant to Office of Comprehensive Health Planning, Virginia Department of Public Health, November, 1969 - April, 1970.
Who's Who in the South and Southwest, 1970 -
American Men of Science, 1967 -
Executive Representative for Louisiana, The American Institute of Urban and Regional Affairs, 1968.
Member, LSU Advisory Group on establishing a Department of Urban and Regional Planning, 1967 - 1969.
Phi Kappa Phi Honorary, 1966 -
Georgia Alumni Foundation Fellow, 1964 - 1965, 1965 - 1966.
Supervisory Graduate Assistant, Department of Geography, University of Georgia, 1963 - 1964, 1964 - 1965.
Consultant to Georgia Department of Public Health, Oct., 1964.
Consultant to City Center, Inc., Atlanta, Georgia, Nov. - Dec., 1964.

Professional Organizations:

Association of American Geographers, 1963 -
Association of American Geographers, Southeastern Division, 1963 -
American Geographical Society, 1963 -
Regional Science Association , 1966 -
The American Institute of Urban and Regional Affairs, 1968 -
American Association for the Advancement of Science, 1966 -
Society for International Development, 1968 -
Southeastern Regional Science Association, 1966 -
Southwestern Social Science Association, 1967 - 1969
American Public Health Association, 1971 -

Master's Theses Directed:

Eugene D. Richardson, Measures of Geographic Association Applied to Hospital Patient Characteristics in Louisiana, Louisiana State University, May, 1969.

C. Harold Finn, Quantitative Description of the Location of Urban Places in the Florida Parishes of Louisiana, Louisiana State University, August, 1969.

Donald W. Davis, The Movement of Crude Petroleum on the Inland Waterways of South Louisiana, Louisiana State University, August, 1969.

Major and Graduate Courses:

Techniques and Methods	
Seminar in Geographic Thought and Methods	Georgia
Quantitative Methods in Areal Analysis	Georgia
Advanced Cartographic Compilation	Georgia
Cartography	Georgia
Air Photo Mapping and Interpretation	Georgia
Field Methods	EMU
Urban Field Methods	Georgia
Physical Geography	
Introductory Weather and Climate	EMU
North American Physiography	Georgia
Directed Problems in Geomorphology	Georgia
Advanced Climatology	Georgia
Directed Problems in Climate and Water Resource	Georgia
Cultural Geography	
World Resources	EMU
Economic Geography	EMU
Urban Geography of North America	Georgia
Industrial Geography of North America	Georgia
Seminar in Urban and Industrial Geography	Georgia
North American Agriculture and Land Use	Georgia
Special Problems in Economic Geography (3)	Georgia
Directed Problems in Economic Geography (3)	Georgia
Thesis Research (M.A. and Ph.D.)	Georgia
Regional Geography	
World Regional Geography	EMU
Europe	EMU
Asia	EMU
Africa	EMU
United States South	Georgia
Directed Problems in United States South (2)	Georgia
Directed Problems in Anglo-America (2)	Georgia
Related Subjects	
Techniques of Population Analysis	Georgia
Statistics	Georgia
Physical Geology	EMU
Intermediate Micro-economics	Georgia
Economics of Transportation	Georgia
Economics of Motor Transportation	Georgia
Languages	
French	
German	

Post-Graduate Short Courses and Workshops:

"Cost-Effectiveness in Educational Television." National Association of Educational Broadcasters, Nov., 1970.

"Principles and Practices in the Development of Skills in Program, Interagency, Comprehensive Planning." American Public Health Association, Southern Branch, Sept., 1970.

Addenda

Published Reports and Research:

Community and Environmental Impact of Highway Investment Decisions. Charlottesville: Virginia Highway Research Council, June, 1971 (VHRC 70 - R53) with L. Ellis Walton, Jr., 29 pp.

A Manual for Conducting Environmental Impact Studies. Charlottesville: Virginia Highway Research Council, June, 1971 (VHRC 70 - R46) with L. Ellis Walton, Jr., 27 pp.

Other Information:

Consultant, West Central West Virginia Community Action Agency, Parkersburg, W. Va., June, 1971 (under contract to Volt Information Sciences).

Post-Graduate Short Courses and Workshops:

"Administrative Aspects of Comprehensive Health Planning," University of Oklahoma, School of Health, April, 1971.

Mr. Michael A. Perfater is a sociologist for the Environmental Management and Economics Section of the Virginia Highway Research Council. Mr. Perfater is a full-time employee of the Virginia Highway Research Council. Mr. Perfater's curriculum vita is as follows:

Date of Birth: November 12, 1946

Sex: Male

Marital Status: Single

Educational Background:

B.A. - Sociology, University of Virginia, Charlottesville, Va., 1970

M. Ed. - Social Education, University of Virginia, 1972

Current Position: Highway Research Analyst

Experience:

1. Entire Masters Degree curriculum was concerned with social and education reform. Emphasis was on planning and intergroup and intergovernmental relations.

2. Received courses in both survey and non-survey research techniques from Charles Longino and Theodore Caplow, noted sociologists.

3. Authored a paper which was presented at the Alpha Kappa Delta Sociological Research Symposium at Virginia Commonwealth University on April 17, 1971 and was published in the "Proceedings" of that symposium. This paper was entitled "Traditional and Authoritarian Characteristics of a College Organization: Discrepancies in Traditionalism and Authoritarianism Test Scores Between Fraternity Members and Non-Fraternity Members." This paper was concerned with characteristics of a group structure and the manner in which certain of those characteristics as well as attitudes of its constituents were altered.

Additional Staffing

As the proposed research progresses, it may be necessary to employ additional persons in disciplines other than those for which the authors are trained. The services of such people would be readily obtainable from the University of Virginia or the Virginia Department of Highways. For example, for use of the video tape equipment and in the development of the visual aids, arrangements have been made with the Virginia Department of Highways Photography Section to utilize the chief of that section, Willard Heath, and any of his staff that may be required.