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# GUIDELINES FOR THE OPERATION OF INTERDISCIPLINARY TEAMS

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PREPARED FOR  
WASHINGTON STATE HIGHWAY COMMISSION  
IN COOPERATION WITH  
U. S. DEPARTMENT OF TRANSPORTATION  
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The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of Washington, Department of Highways, and/or U.S. Department of Transportation, Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

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These guidelines were prepared by personnel from the Washington State Department of Highways and Mr. Robert Jacobson, Consultant, Community Development Services, Inc. The experience of the Department of Highways in implementing the interdisciplinary approach of the Action Plan was carefully reviewed and discussions were held with managers of various projects on which interdisciplinary teams have been utilized.

The purpose of this report is to provide some guidelines that will be helpful to project managers and interdisciplinary team members in their efforts to plan a total project.

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## GUIDELINES FOR THE OPERATION OF INTERDISCIPLINARY TEAMS

### Foreword

The purpose of this document is to assist interdisciplinary team members and project managers carry out their responsibilities. It supplements both the Action Plan\* and the directive of the Washington State Department of Highways, Interdisciplinary Approach to Project Development, No. D 31-12 (PP), issued May 1974, as thereafter amended. All persons involved in the interdisciplinary efforts should be familiar with these official departmental documents.

Unlike the other two documents, these guidelines are recommendations rather than rules of procedure. They incorporate the experience of teams which have already been activated as well as the collective experience of the authors. The recommendations in this report may not apply to all situations. However, a team should carefully consider each recommendation and deviate from it only if it determines that some other course of action is preferable given the particular circumstances of its assignment.

Part 1 deals with the organization and responsibilities of the team and of its members. Part 2 sets forth ten steps recommended for teams to follow in carrying out their charge. Part 3 then discusses some of the practical operating problems which teams have experienced and recommends possible solutions.

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\*An Action Plan for Social, Economic, and Environmental Consideration in the Planning, Location, and Design of Highways, State of Washington, Department of Highways, October, 1973.



## Introduction

Interdisciplinary teams are relatively new in highway planning. However, they have been used for some time to solve complex planning problems in other fields. As stated in the Action Plan (page 3):

Increased concern in recent years over the effect of highways and other transportation facilities on people and the environment has emphasized the need to involve persons with other skills in addition to engineering in the administrative process of transportation planning, location, and design.

These guidelines are intended to facilitate team operations. While one or more members of the team may have had prior experience in a "task force" or a "design team" assignment, it is likely that some members have never participated in an interactive planning process with professionals from outside their own fields. In either case, all team members should understand the specific responsibilities of the team as a whole and of each of its members.

Recent research in group dynamics indicates that interactive groups solve complex problems more efficiently than do groups composed of individuals working independently. Of course, many small subtasks are more efficiently performed by individuals working alone. The interdisciplinary approach to project development utilizes the interactive process, but also allows individual independent contributions to the planning process when appropriate. Therefore, the guidelines which follow describe the steps in a successful interactive process. The format should provide the team with a solid framework around which to organize its efforts. The steps defined in these guidelines are more appropriate for major projects or for systems planning studies. Nevertheless, much of the material applies to planning for any project.

The procedures followed and the studies undertaken during the current financial crisis in highway construction, most by interdisciplinary teams for projects in the design stage of development will vary somewhat from those in the location stage. However, the logic of the ten steps described in this document is not necessarily modified. The approach of the various reports, including the Environmental Impact Statement, will vary only according to the stage of the project; the team's basic responsibilities and the sequence in which they are carried out remains essentially the same.

## PART 1

### ORIENTATION

#### RESPONSIBILITIES OF THE TEAM

The directive concerning interdisciplinary teams indicates that the team is responsible for performing the following basic duties:

1. The conduct and consideration of in depth studies of all pertinent factors;
2. The development, implementation and utilization of a community involvement program, and
3. The recommendation of solutions to the transportation problems.

The team is a "problem solver", not a "solution justifier". It must do more than identify impacts. Its responsibility is to apply its collective professional competency to the assigned problem(s). The responsibilities of the team are collective. The team, as a whole, must carry out each of its three basic responsibilities.

#### Studies

In undertaking the required in depth studies, some tasks may be accomplished efficiently by the independent research efforts of a single team member, or perhaps those of a subcommittee of the team. However, in "doing his own thing" the team member will be working within the context of total team effort. The team then meshes its creative interactive group efforts with the essential individual contribution of its members. The end product of the studies undertaken must not be an anthology of those independent efforts but rather a totally integrated report in which the interaction of the team is reflected.

### Community Involvement

The team and its members are official representatives of the Highway Department responsible for developing highway plans for consideration of the Washington State Highway Commission. They serve as a vital communication link with the public. Just how they are to carry out this responsibility, collectively and individually, must be carefully determined. The development and implementation of a community involvement program is a significant part of their assignment. A separate directive entitled "Community Involvement in Project Development", D 31-18 (PP), has been issued concerning this important subject and guidelines have been prepared.

### Recommendations

The team as a whole must ultimately formulate recommended solutions to transportation problems. The interdisciplinary approach with the inclusion of community input, should lead to a consensus on the recommended course of action. In reality unreconciled minority opinion may persist. It is not the duty of the team to suppress such opinion; if the team is unable to reconcile its differences, recommendations of the minority should be included in its report to the Department.

### ORGANIZATION

The District Engineer creates the team by following procedures outlined in the directive on interdisciplinary teams. His proposal is reviewed and approved by the appropriate Assistant Director of the Department. Once created, the team organizes itself and elects officers. The role to be played by the team's officers and members suggests the form of its organization.

## The Chairman

The chairman must be a leader. He must involve each team member in the team activities, if the team's potential is to be realized.

The chairman must also be (1) an overall "productivity watchdog", (2) a facilitator of intra-team communications, and (3) a motivator and coordinator of individual efforts. During team meetings, which he conducts, he is responsible for keeping the discussion alive and relevant. He must guide the discussion to a logical conclusion and see that "the sense of the meeting" is articulated. In those cases where critical issues are at stake the chairman should conclude the meetings by requiring the team to (1) set forth the consensus of the session and its implications for the team, and (2) identify decisions reached and the next course of action.

The chairman must serve as spokesman for the group, especially at public meetings. Moreover, it is important that he participate directly in planning the community involvement program. For example, preparation for public meetings must include much more than a "briefing" just prior to the appointed hour. He must participate in developing the agenda. In selecting a chairman, team members should consider his abilities as a public spokesman and coordinator as well as his ability to conduct meetings.

A chairman can assume these roles and responsibilities without dominating the team or dictating its activities. While domination of the team by a strong leader may be a real danger, autocratic personalities tend to conform to group consensus; if the majority of the team is determined to make the team approach work, its efforts can overcome the resistance of the chairman or any other dominating person. Those who do not contribute to the total team effort are more quickly corrected by subtle social control than by formal censure.

### The Project Engineer

The project engineer may be a team member or the District Engineer may appoint another engineer to the team leaving the project engineer free to provide the extensive support activities required. The project engineer who has the responsibility for the project will serve as administrative officer or executive secretary for the interdisciplinary team and, in this capacity, will expedite the project, provide staff assistance for members as required, undertake engineering studies, together with the appropriate team member, coordinate and/or prepare reports, record assignments and decisions and review interdisciplinary team actions for conformity with existing policies and standards.

The project engineer also makes available to the team "the resources of the Department", including among other things, maps, reports and statistical data needed by the team and its members. The team should establish a means for monitoring the collection of data and the exchange of information among team members.

### Liaison Advisors

The relationship of the team to its official advisors needs consideration in a more general sense than is provided hereinafter or in the directive, D 31-12 (PP). Each team has liaison advisors from the appropriate Assistant Director and from the District Engineer. The directive states that the representative designated to serve as liaison to the team "...will not serve as a member of the interdisciplinary team..." (His review) "...is not intended to impair the freedom necessary for the interdisciplinary team to conduct a comprehensive and objective study and recommend the course of action to be undertaken. However, if deviations from standards and policies are contemplated

by the interdisciplinary team the representative will so inform the team." The team must obtain approval before alternatives which deviate from policy can be studied further. The departmental advisor is not a referee. He is there to monitor team progress and to provide interpretation of departmental policy.

In addition to the liaison representatives from the Department of Highways, the team should consult with appropriate professional personnel of other state and local agencies. For example, local city and/or county public works and planning officials must be consulted continuously throughout the overall process. Team meetings in which such persons are directly involved in the interactive consideration of design (planning) factors are both appropriate and desirable though not specifically mentioned in the pages which follow.

#### Team Members

Each team member has been selected because he possesses an area of competency essential to solution of the team's assigned problem(s). Each, then, should anticipate undertaking one or more in depth studies in which he applies his professional skills to some aspect of the problem(s). However, his responsibilities as a team member (for supporting the collective responsibility of the team) require an approach which may be unique to him; team members cannot limit their participation to technical studies.

Each team member must actively participate in all team activities including:

1. The review and approval of the study plan, including a community involvement plan;
2. Participation in the implementation of the community involvement program;

3. The evaluation of various courses of action, and
4. The development of final recommendations.

Team members are selected primarily on the basis of their capability to undertake independent research assignments or to contribute their expertise to the project plan, but individual team members have an even greater responsibility to facilitate the effective operation of the team as a whole. The most important role for each and every one is that of team member.



## PART 2

### STEPS IN TEAM OPERATIONS

#### OBJECTIVES OF THE FIRST TEAM MEETING

The first meeting of the team must set the stage for its subsequent operations. It is extremely important that prior to this meeting the team members understand the interdisciplinary approach, why each member has been selected to serve, and the nature of the problem(s) to which the team will address its efforts.

Each member of the team should receive notice of his appointment, a directive to attend the meeting, and the following materials:

1. Directives on Interdisciplinary Teams and Community Involvement Programs.
2. The Action Plan.
3. These guidelines.
4. A general description of the problem(s).
5. A tentative agenda for the first meeting.

As a general rule, it is preferable that detailed reports and related information about the project not be distributed prior to the meeting. There are two sound reasons for this; first, the inclusion of too much material may prevent some team members from giving adequate attention to the basic documents, and second, it invites independent consideration to problem solution which may subsequently interfere with the effective utilization of the interdisciplinary approach. The following outline suggests the topics the team might well consider at the first meeting:

1. The Action Plan process and the general role and responsibility of the interdisciplinary team.
2. The assigned problem.

The District Engineer or his representative should present the team's assignment. He also should brief the team on the history of the project and present needs. However, he should avoid presentation, or even identification, of alternative solutions at this time. If these alternatives are pertinent to the assignment, there will be more appropriate occasions to discuss them. The project engineer should identify background materials such as maps and traffic data which the Department has available, and explain procedures for obtaining them. Similarly, he should discuss the services of personnel of the Department and other resources, which the team may call upon.

3. Team discussion of its operations and responsibilities.

Notes: Roberts' Rules of Order does not facilitate the interactive problem solving process. However, between meeting communications, efficient utilization of data, and distribution of working materials will be aided by the establishment of some kind of group procedures. Nevertheless, normally, no attempt to make final decisions with regard to procedures should be made at the first meeting. The basic purpose of that meeting is to relate the interdisciplinary approach to the team's assignment.

The team should leave the meeting with a sense of how the interdisciplinary approach can be used effectively to carry out its assigned

responsibilities. A nondirective group discussion among team members along with an opportunity to ask questions of the District Engineer or his representative should consume a majority of the meeting time.

4. Review of study plan.

Preferably the project engineer will have a draft of a study plan prepared to give the team members at the first meeting. The team members should review the draft plan and be prepared to discuss and adopt a study plan at the second meeting of the team.

If the interdisciplinary approach is to work, all team members must be involved in the process from beginning to end. Because interactive consideration of all factors achieves the best solution, no member can avoid the responsibility for participating in study design. The purpose of a study plan is to set forth objectives and the process by which these objectives will be accomplished.

The second team meeting presents the first opportunity for team members to engage in interactive problem solving. Some will have had prior experience in such activities and be more familiar with organizing comprehensive research projects. Such members should take the initiative to assist the group, but should take care not to assume the decision-making responsibility reserved to the team as a whole.

The chairman can direct the discussion to an articulation of "goals and objectives" which relate the project to its history and to its function in the larger transportation system. Goals should be considered from a number of other perspectives as well (i.e., the future development of the community, the health and safety of the public, etc.). The team will find it advisable to establish a hierarchy among broad, long range goals and more specific short

term objectives. At this time the team should identify a number of the most important questions that must be answered regarding the project under consideration. These questions will vary considerably for various projects.

#### STEP 1 - DEVELOPMENT OF STUDY PLAN

Since the study plan deals with specific functions and tasks necessary to complete the study, the team must decide who will have responsibility for what.

Since training and experience in various disciplines may logically equip more than one team member with the expertise to satisfactorily study various factors, a "responsibility table" indicating the specific tasks of each team member will consider should be utilized. (See Exhibit I) Assignment of responsibilities will usually follow without difficulty because of the background of the various team members. However, if conflicts arise, the team chairman in deliberations with the rest of the team should decide who will have responsibility for which items.

However, before tasks are assigned to individual team members each member should answer the following questions about the factors relevant to the project:

1. With which factors would he like to deal?
2. Which factors are most appropriate to his discipline?
3. Which team member can best address a specific planning factor on this project?
4. On which factors can he provide assistance to project manager and other team members?
5. For which might he require assistance from another member?

A member's answers to these questions should accurately reflect his own strengths and limitations.

A team as a whole must devote adequate resources to each analytical issue before it, but it must also be careful to avoid duplication of effort. The team's effort should produce a clear statement of each member's area of responsibility within the study plan. However, this document need not include specific detailed task assignment.

The "area of responsibility" concept applies to the technical requirements for independent research and analysis and not to the broader participation in team responsibilities. For example, the planning and administration of the Community Involvement Program may be the "area of responsibility" for only one or two team members; yet all must help implement that program.

The Community Involvement Program is a basic component of highway planning. Thus, this element of the study plan, perhaps more than any other, requires the attention of all team members as well as the one assigned direct responsibility for its preparation.

## STEP 2 - DEVELOPMENT OF DETAILED WORK ASSIGNMENTS

Having determined each member's area of responsibility, the team must then consider the interrelationship among the many tasks required to complete the assignment. The tasks required in planning for and implementation of the Community Involvement Program must be integrated into the total schedule of activities.

A general work flow diagram, such as those illustrated on pp. A-37 and A-38 of the Action Plan, can be used to formulate the overall schedule. However, the sequential ordering of detailed tasks and activities for a planning or design

project too often wastes time; inevitable shifts will occur throwing the whole schedule off when there is no time to redraft it.

A dynamic scheduling process is needed, however. As part of its own internal management, the team needs to establish such a schedule to review it systematically limiting detailed tasks to the immediate steps ahead. As a general rule, revision should be undertaken following Steps 4, 5, 7 and 8. A general discussion of team and individual member progress is an important part of schedule revision.

### STEP 3 - INDEPENDENT INDIVIDUAL STUDY

Researchers in most disciplines initiate a research (or study) plan by analyzing the relevant information. They may review the relevant information already provided on the project; collect data from secondary sources, and generate primary data. While this step emphasizes independent individual research, lines of communication among members should be maintained. Team members should share facilities, information and ideas and should coordinate contacts so that several team members do not ask the same agency or organization for the same data. Since a major objective of the Community Involvement Program is to both give and obtain pertinent information from the citizens of the community, this important resource must not be overlooked. Community inputs are a critical and essential part of the information required by the team.

Interdisciplinary team members must utilize community values and opinions in evaluating various causes of action so it becomes important to include community data within studies that are undertaken.

STEP 4 - SYNTHESIS OF PRELIMINARY RESEARCH FINDINGS (presentation of written and oral reports)

This step marks a critical point in team operations. It permits each member to describe to his co-workers the salient findings of his individual research. The presentations should be made at one continuous meeting which should not be scheduled unless all members are prepared to make their oral presentations. Written reports should be distributed one week prior to the meeting date.

The team should prepare for an all day meeting at which everyone will make his presentation. Each presentation should be followed by uninhibited critical discussion.

The team should strive to maintain a continuity of interests; it should conduct no other business until it has accomplished the objectives of this step. If it is not possible to complete this step by the end of the normal working day, the team should reconvene the following morning. In general the following agenda is recommended for the meeting.

1. Statement of Procedures.

The chairman should state the ground rules for the meeting which should have been determined ahead of time, and should indicate the order in which presentations are to be made. No time should be spent reconsidering these ground rules.

2. Presentation of reports by physical science disciplines.

Each member should present his oral report and answer questions on his presentation as well as on his written report. Before proceeding to the next presentation, each member of the team should state in his own words the thesis of the presentation and discuss it with the member who made that presentation.

3. Presentation of reports by the social science disciplines.  
this should follow the format in 2 above.
4. Presentation of reports by the design disciplines.  
This should follow the format in 2 above.
5. Identification of deficiencies or need for additional work.  
If there are deficiencies or conflicting elements in the various reports, these should be discussed and openly debated. Conflicts or deficiencies should be resolved expeditiously. If the team cannot resolve the conflict, the matter should be referred to district managerial personnel.
6. Discussion of interrelationships and overall implications of the presentations.  
The meeting must come to a logical conclusion. A mandatory end product is a summary of the key planning and design factors, and of the potential sensitive environmental conditions which must be considered by the team. This summary must be included in the minutes and, if necessary, discussed at the subsequent meeting.

#### STEP 5 - DEVELOPMENT OF ALTERNATIVES

Once the team understands the problem(s) it must resolve together with the major constraints on their solution, it is ready to begin the creative phase of its operations. By this point the team should have established its capability for dynamic interaction. If so, members will engage in the professionally satisfying kind of experience marking the successful use of the interdisciplinary approach.



Step 5 should be initiated with a meeting at which the team will articulate and consider the major alternatives. It is recommended that the following rules apply to such a meeting:

1. Every member should be given adequate but not excessive time to present his ideas.
2. Members should express their ideas freely and should not be criticized until the ideas are fully developed alternative solutions.
3. Each member is encouraged to elaborate upon every idea expressed.
4. The team as a whole should "scan the broad spectrum" of possible alternatives and should logically apply each idea to the problem before attempting any specific evaluation.

At this point in the planning process all alternatives are potential means to achieve the broad goals adopted in Step 1. No attempt should be made at this point to resolve all the detailed problems attendant to specific design of the facility.

Once the team has articulated all the possible alternatives it should reduce them to a manageable number of practical approaches by combining ideas and/or eliminating redundancies. The objective is to produce significant unique and feasible alternatives for achieving the goals and objectives adopted in Step 1.

While alignment of highways within a transportation corridor is one differentiating characteristic between alternative solutions, the team should not overlook others. For example, alternative modes (re: combining automobile with rail or bus transit; separating trucks and buses from passenger vehicles, etc.) or different roadway levels (i.e., depressed, at grade or elevated) may

apply in some situations. Further, the "do nothing" and "up-grading of existing facilities" are valid alternatives which nearly always must be retained through this step. The total number of major alternatives to be developed will vary with the complexity of the problem. Generally, no less than three should be developed. The maximum number should be governed by the ability of the team to develop clearly unique alternatives. However, feasibility is a primary factor in determining the number of alternatives, as many clearly unique solutions are not feasible and their further study would be purely academic.

#### STEP 6 - MEASURE IMPACTS

Once the team has selected the major alternatives that it will consider, each must be developed to a point where it is possible to measure its potential impacts.

Within the areas of his designated responsibility, each team member should now measure, by independent study, the impacts of each major alternative. As this step proceeds, coordinated efforts between members will become necessary. A good procedure is as follows:

1. Each member determine, define and quantify the primary impacts of each alternative within his area of responsibility;
2. Exchange this information in order to make sure that secondary impacts can be identified;
3. Each member determine, define and quantify the secondary (and lower order) impacts of each alternative, and
4. Each member complete his written report on impacts.

STEP 7 - PRESENTATION OF WRITTEN AND ORAL REPORTS REGARDING THE IMPACTS OF EACH ALTERNATIVE

The interdisciplinary approach succeeds only when each member shares his knowledge with the team as a whole; another all day meeting is needed to insure this mutual education. In planning for the meeting the team should consider the time required, particularly if many reports are to be given and several alternatives are to be considered.

Rather than scheduling separate meetings at which different sets of members make their presentations, the following format is recommended:

1. Each team member, in turn, describes the impacts of the first alternative only. A question and answer period and open discussion should follow each presentation.
2. The team then summarizes and records the probable environmental and human ecological consequences of the first alternative.
3. Each of the remaining alternatives is given the same consideration. The meeting may be adjourned to the next available meeting time as may be necessary, provided that each meeting is concluded with the final summarization of an alternative.
4. At the final meeting (or group of meetings) in the sequence each member evaluates the different impacts among all the alternatives, followed again by a question and answer period, discussion and summarization.

The presentations and discussions may require more time than can be set aside for continuous sessions, but an effort should be made to do this in one ongoing meeting so that all factors concerning each alternative can receive attention

in the team's evaluation process. Some factors tend to be overlooked or the importance diminished by lapse of time between meetings.

After all the presentations have been made and appropriately discussed, each team member should be required to prepare an independent written report summarizing all the presentations made, including his own. His statement should express his own understanding of the probable consequences of each alternative. These reports should be exchanged and carefully studied by all team members.

The final meeting of this step should be devoted to preparation of a consolidated statement. In order to faithfully implement national environmental policy, the team must be able to disclose all the relevant impacts of each alternative.

#### STEP 8 - EVALUATION OF ALTERNATIVES (Looking at the whole)

The team should systematically evaluate the alternatives,\* carefully considering all the significant factors. The end product of evaluation should not be a decision; rather, it should be a precise articulation of the advantages and disadvantages of each alternative.

In the preceding step the team analyzed impacts utilizing the independent technical research of each member. In the final analysis the team cannot evaluate alternatives satisfactorily without interpreting the community values generated by the Community Involvement Program. To be complete, evaluation requires the consideration of three factors, often overlapping and interdependent:

1. Probable impacts;
2. Planning and design factors, and
3. Community goals and objectives.

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\* A separate set of guidelines describes Evaluative Methods.

Before completing the evaluation process the team should assure itself that it has duly considered all three.

In the experience of nearly all teams activated in this state, the evaluation phase has stimulated the most intensive group interaction. Therefore, it is highly probable that the team will need little direction in order to fulfill this step's requirements. There is a danger that the team will become more concerned with the technique itself than with its purpose and end product. Whether or not a formal scoring technique is used, evaluation should result from team interaction. Although members should be permitted and encouraged to discuss the advantages of each alternative, the team should be reminded that uninhibited support for (or opposition to) any given alternative thwarts the evaluative process.

A good approach to evaluation is the systematic discussion of the planning factors (see Appendix B):

First: Relate each factor, one at a time, to the alternative.

Second: Evaluate each alternative, one at a time, with respect to all the factors.

A valid and precise articulation of the advantages and disadvantages may be accomplished at one meeting if information is available. More independent research might well be required to complete this step. However, in accord with the principle of the interdisciplinary approach, the end result must represent a team effort.

After evaluating the alternatives, the team may drop one or more of them. For obvious reasons the "do nothing" alternatives should be retained, however. Elimination of alternatives should be based primarily on feasibility factors and should be clearly documented.

## STEP 9 - PLAN REFINEMENT

This critical step in the planning process must not be overlooked in the rush to meet deadlines or to respond to political pressures for a decision.

It includes:

1. Individual Study

Within his area of responsibility each member must, (a) attempt to identify means for eliminating or reducing the disadvantages, and (b) design measures to mitigate the adverse impacts of each alternative.

2. Team Consideration and Synthesis of Alternative Plans

A substantive interactive effort of the team is needed to complete the planning process. The team must select detailed solutions to design problems and recommend mitigating measures. Such recommendations might include actions and policies which do not relate to design of the facility or which go beyond the jurisdiction of the State Highway Commission. In the latter case justification must be clearly set forth and the team must be sure that the agency having jurisdiction over the recommended policy also has the legal authority and resources necessary to implement it. In addition, the activities of this step must reflect the results of community involvement program.

## STEP 10 - REPORTS AND PRESENTATIONS (The end product)

The preceding nine steps are designed to produce the reports and presentations required by the team's assignment. Adequate recording of team activities and documentation of individual research along the way should simplify preparation of the team's reports. Even though prior efforts have been directed toward integration of all work, considerable collective and individual editing

may be required to assure continuity of style and format. Here again, editing decisions need to be based on the interaction, give-and-take of the team as a whole.

The community involvement program, if successful, should result in direct citizen contributions to the team's reports.

Generally, these are team's major end products:

1. The Draft Environmental Impact Statement
2. In person presentation of team findings and recommendations
3. The team's written report of recommendation
4. The Final Environmental Impact Statement

The team's recommendations might precede the public hearing or be last in the order. However, the team should not issue its recommendations until it has received and considered all responses to the Draft Environmental Impact Statement.

## PART 3

### TEAM MANAGEMENT

The interdisciplinary approach is preferred as a means of achieving departmental planning policy goals. Nevertheless, it is still experimental and is new to many professionals. This section describes some of the operating problems which teams have experienced and recommends ways to solve them.

#### Definition of Roles

When interdisciplinary teams are formed, the persons involved (administrators and team members) each have opinions and expectations regarding the operation of the team and anticipated results of the team's efforts. Frequently these expectations vary considerably. If the team is to function satisfactorily, it is essential that the entire team process and the role of management in this process be discussed in some detail when the team is organized.

Departmental Directive entitled "Interdisciplinary Approach to Project Development" (D 31 - 12 (PP)) outlines the policy of the department regarding the basis process to be followed and carefully defines management and team responsibilities. It is advisable for the District Engineer or his representative and the team to review the process together at the time the charge is given to the team. Since this team process is of basic concern to many people, it is essential that an atmosphere be created in which everyone feels free to raise questions and issues, to discuss them and suggest ways by which problems can be resolved. Answers must be provided and guidance given to the team by District management. This can be done most effectively if team members know



that their suggestions and concerns have been considered before procedural decisions are reached.

The District Engineer has administrative responsibility for the study and the team. The team should apply its collective professional competence to study the problem assigned to it, to develop a community involvement program and utilize the opinions received from the community in its deliberations and then make a recommendation of action to be taken by the Department. The primary role of the team is to seek solutions to some rather complicated problems. Emphasis should be placed upon this problem solving responsibility and not permit the preparation of reports or procedural matters to become the actual objectives. Team members will contribute studies and write sections of reports as requested but the primary responsibility for the preparation of environmental impact statements and design reports rests with the District staff.

#### Mutual Understanding of the Purpose of the Study

When an interdisciplinary team is created, the District Engineer outlines the purpose of the study for the team and he provides some parameters for the team to follow. Numerous questions usually arise from team deliberations and discussions with the community. One important aspect of team management, therefore, is to create an atmosphere in which questions of team members can be discussed, basic problems analyzed and the team charge clarified. To achieve this goal one useful device for all concerned is for the team to outline basic questions or objectives which should be addressed in the study. One session devoted to this exercise early in the deliberations of the team brings about a much greater understanding of the purpose of the study and the limitations

and problems involved in pursuing the assignment. Such a discussion sometimes leads to changes in the team charge and to clarification of departmental policy regarding important factors the team must consider. In such a discussion, it is important that all team members participate. If each member does not, the team chairman should ask each member for specific comments.

#### Review of Objectives

When the study plan is prepared, the objectives and purpose of the study will be included. As time progresses, the original objectives of important questions to be addressed quite easily become obscured by various conditions that arise. The chairman, project engineer and liaison officers, therefore, need to reiterate these original objectives as frequently as necessary. Otherwise the time of the team can be utilized considering details or other subjects that contribute little to the basic purpose of the study.

When situations arise that make it essential that the original charge to the team be reconsidered, team managers should seek clarification and when decisions have been made the team should be informed. The team should feel free to request clarification whenever necessary. The most effective relations can be maintained between district management and the team if opportunities are created for discussion of problems throughout the various phases of the study.

#### Meeting Commitments

When each team is organized, the study plan will include time schedules for completion of the various steps in the study process. A key factor in

team management is to report the progress of the study to the team frequently thereby informing the members how well the actual progress matches the completion dates and the budget to which the team is committed. Team members want to make the effort successful and meet commitments. If time allotted to complete various tasks proves to be unrealistic (too little or too much), adjustments should be made on the overall schedule to reflect realistic conditions. Success in meeting obligations motivates the team and, conversely, failure to meet expectations or a lack of concern about schedules by management encourages team members to become unconcerned about the stated obligations of the team.

Progress can only be made if each team member shoulders his share of responsibility. When a team member fails to meet his obligations, the team chairman and project engineer should not hesitate to have a personal discussion with the team member and if the team member cannot devote sufficient time and effort to complete his assignments, he should resign so that someone who can devote necessary time can be appointed.

Managers should never underestimate the value of their recognition of successful efforts by the team. Teams need to be motivated and nothing contributes to success more than achieving established objectives and then receiving recognition for such achievements.

### Meeting Technical Deficiencies

Development of the study plan is the process whereby the team determines how it will apply its collective professional competency to the assigned problem(s). A significant part of that process is to state each member's technical area of responsibility so that more specific task assignments can then be made. As noted in a preceding section (under Steps 1 and 2), it is necessary to identify overlapping professional interests and proficiencies in order to avoid duplication of effort and operational conflicts. In so doing the team may also find gaps in the spectrum of the team's expertise which require additional technical support.

For example, there may be a need to confront an unforeseen problem area not now covered by an appropriate discipline represented on the team. Or some problem may arise (perhaps at a later point) which requires a highly specialized technician within a discipline otherwise ably represented on the team. Gaps may also result from the resignation of a team member whose discipline needs to be represented.

These gaps can be met in either of two ways:

1. A new team member is recruited, brought on board and made a full team member, or
2. A competent professional is selected to assist the team and given a very limited and exactly defined assignment.

The decision to add a new member or to engage a short-term consultant does not solely depend on the specialized knowledge required to "fill the gap." A more important consideration is the relationship of the area of responsibility to

the specific problem and how this relates to alternatives which must be considered in each of the other areas of responsibility represented on the team.

Putting it another way, if one or more alternative solutions to the specific problem are likely to have a direct effect on specific alternatives to be considered by more than one team member, then the professional assigned the task should be a member of the team. If, on the other hand, the probable alternative solution to the problem relates to the area of responsibility of only one other team member, a special limited-term consultant would be appropriate.

#### When the Team is Too Large

Research in group dynamics is inconclusive with respect to optimum interactive group size. Under ideal, experimentally controlled circumstances, groups as large as thirty in number have been capable of solving complex problems. However, such cases are rare, and most students of the subject suggest that five is an optimum number; efficiency declines rapidly as the number of members increases beyond six or seven.

However, experience to date indicates a desire and probable substantive need for more than seven disciplines to be represented in some cases. The principle of interdependence states that any discipline whose involvement will alter the alternatives considered by other disciplines should be represented by a full member of the team.

Until the more critical interactive phase is entered (Step 5 above) it may not become evident that the team is too large. However, from the first

meeting the chairman should devise means for involving the entire team and if participation by team members is not forthcoming then the chairman should seek special assistance from personnel in the Planning Division of the Department of Highways or elsewhere in group dynamics.

### Team Interaction

Some simple measures may facilitate interaction. The chairman and the project engineer should refer questions or comments regarding a subject that is the responsibility of a team member to the team member concerned rather than providing answers or opinions themselves. Likewise, the chairman should ask questions and suggest items for team discussion rather than announcing conclusions that he has reached. If team members are hesitant or reluctant to state their opinions concerning matters of import, each team member at the meeting should be asked to give his opinion before decisions are reached. If the team can deliberate in a relaxed, somewhat informal situation, interaction can be facilitated. Sincere comments and questions of team members should be treated with respect even though the proposal or suggestions may not appear to be practical to the person conducting the meeting.

Very often confusion results because of the inability of team members to convey their concerns in a manner that is meaningful to other disciplines. In such instances, the team chairman or another team member should simply seek clarification by asking the following question: "If I understand you correctly, you believe that" (then state the comment or concern as you heard it). Such a replay often helps clarify the real meaning the person wants to convey.

Another factor which often destroys meaningful interaction is the failure of the team chairman or whoever is conducting the meeting to keep the conversation on the subject under consideration and to define adequately the purpose of the meeting and the importance of the matters under consideration. Each meeting should have an agenda and the objectives to be reached should be clearly understood.

Care should be given to the subjects that are brought before the team, and whenever possible, an individual member should be given the responsibility to develop specific items and report findings and conclusions to the team for their discussion and approval rather than attempting to waste time and bore the entire team by considerations of subjects that could best be handled by one member.

Physical arrangements for meetings are important. Team members should sit around a table and every person should be able to talk directly to every other person.

A subcommittee of the team can most efficiently develop the Community Involvement Program. However, care should be taken to insure involvement of all team members in appropriate phases of community involvement.

#### Differential Work Load

As the study plan and subsequent detailed work assignment are developed, differences in the "level of effort" required of each team member will become apparent. The project engineer will need to confirm the allocation of time required for each departmental employee on the team. Appropriate measures must be taken to insure that the team member will not be assigned conflicting or

higher priority responsibilities. While ancillary staff support to team members may be appropriate and necessary, they must accept prime responsibility for their team activities. This responsibility includes their technical work assignments as well as attendance at team meetings. If a team member is an independent contract consultant or a representative of a consulting firm, the contract for his services must insure the "level of effort" necessary to fulfill his obligations.

Since "level of effort" cannot be absolutely defined at the onset, flexibility in personnel management and contract administration is essential. Differential work load should not be a management problem of the team. It should be handled by the District Engineer. The team should recognize this and should inform the District Engineer of its changing manpower needs as they are anticipated.

#### Improving Efficiency of Interdisciplinary Teams

One of the basic concerns about using Interdisciplinary Teams to undertake studies, is the cost and the length of time that such a process involves. The interdisciplinary team process does not need to involve more time and expense than would otherwise be required if the team is managed efficiently. Improvements have occurred in team efficiency as the department has gained more experience in using this approach to planning and design.

Time and cost can be reduced considerably if tasks are segregated early in the process so that only those that require the attention of the full team are scheduled for meetings, with the remainder being accomplished by the project



engineer and his staff or by individual team members. Agendas of team meetings can easily become cluttered with items that are not necessary for the entire team to consider. Tasks such as the detailed planning for community involvement activities, preparing newsletters, solving technical problems of specific disciplines in undertaking studies, and reviewing detailed data that do not relate directly to problems under study can be undertaken by one team member and/or the project engineer and reported to the entire team when necessary rather than involving the total team in the process. The task of making up the agenda is shared by the team chairman and the project engineer. Team members should be invited to submit items that are of importance to the entire team. Agendas should be followed carefully.

Teams can review documents such as the study plan or the report of team recommendations together and make worthwhile contributions. The preparation of such documents should be left to the project engineer or assigned to a team member and then revised as necessary by the author after team review and adoption.

Meetings should be held when necessary but not routinely unless absolutely necessary as a way of reserving the time of busy team members. The entire team will need to become involved in several meetings at the beginning of the project. Later the team members will be involved in doing their own studies, and meetings should only be scheduled as necessary to maintain team continuity. When technical studies have been made and the community has been involved, another series of meetings will be required by the team to evaluate alternatives and make a preliminary recommendation. Later it will be necessary to

review comments from the circulation of the draft environmental impact statement and comments at the hearing and arrive at a team recommendation for use by the Department of Highways.

#### Resignation of Members

On almost every interdisciplinary team organized by the Department to date at least one member has desired to resign. We are not concerned here with the member who has personal or professional difficulties, but rather, with the member who feels either that his expertise is not essential to problem solution or, more often, that his responsibilities should be limited to his own self-directed independent research.

Any team member who has attended one or more team meetings, and who has had adequate opportunity to learn about (1) the interdisciplinary approach, and (2) the team's assignment, and who does not desire to assume full responsibilities of team membership, does not belong on the team. There is no such thing as a second-class member whose responsibilities exclude active participation in any aspect of the team's work. The team cannot afford to carry those who do not see the need to fully participate no matter how proficient they may be within their own area of expertise. In some instances the solution is to obtain technical studies of factors that are not of primary importance in the particular project under study and have the consultants discuss this with the team.

#### Role of Team Members

Each team member will need to understand all the basic issues and the major problems involved in taking various courses of action even though all

the disciplines are not involved in each case. Understanding problems and the consequences of taking specific actions are quite different from attempting to become an expert in each field. Therefore, the team must rely upon the technical competence of each member in collecting and evaluating data in his area of expertise. The team as a whole is in the best position to judge the relative importance of various planning and design factors in reaching a decision about the specific problem being studied.

Throughout the study process, it is necessary for team members to recognize that they are serving in various capacities and to distinguish between these various roles at appropriate times. When conducting studies, each team member is serving as a specialist in his field of professional competence. When he participates in community involvement activities, the team member attempts to understand the values and desires of the citizens of the area. When the team member serves as one of a group in reaching a conclusion concerning the best course of action to follow, he is seeking a solution which serves the best overall public interest, and therefore, he has a responsibility to place all factors in perspective. Serving as a member of an interdisciplinary team is a challenging role and team managers can help considerably by focusing the attention of the team on the role the team members must play at specific times in the team process.

**APPENDIX**

EXHIBIT I

Interdisciplinary team members are assigned the responsibility of conducting studies and making reports to the team and the public when necessary regarding each of the factors listed below. Since more than one team member may be involved, the task of data collection, analysis and preparation of reports are separated for each item. One team member may complete all three of these tasks or others may be assigned responsibility for one or more tasks. By using this format, the responsibility of the individual team members can be assigned quite specifically.

Factors

- |                               |                                  |                          |
|-------------------------------|----------------------------------|--------------------------|
| 1) Acoustics                  | 11) Service to Areas             | 14) Aesthetics           |
| 2) Air Quality                | a) Regional                      | 15) Construction Costs   |
| 3) Water Quality              | b) Local                         | 16) Maintenance Costs    |
| 4) Wildlife                   | c) Route Continuity              | 17) User Costs           |
| 5) Vegetation                 | 12) Traffic                      | a) Vehicle Operation     |
| 6) Geology                    | a) Regional                      | b) Safety                |
| 7) Soils                      | b) Local Circulation             | c) Time                  |
| 8) Drainage                   | 13) Design Factors and Standards | d) Comfort - Convenience |
| 9) Governmental Services      | a) Project Traffic               | 18) Economic Activities  |
| a) Health                     | b) Right-of-Way                  | a) Tax impact            |
| b) Education                  | c) Capacity                      | b) Employment            |
| c) Utilities                  | d) Geometrics                    | c) Trade                 |
| d) Police-Fire                | e) Restraints                    | d) Property Values       |
| 10) Other Public Institutions |                                  |                          |

- 19) Land use Impact
  - a) Existing & Projected
- 20) Comprehensive Planning Process
- 21) Urban Form & Development Patterns
- 22) Community Identity
  - a) Population Trends & Characteristics
    - 1) Stability
    - 2) Change
  - b) Neighborhood Characteristics
- 23) Displacement
- 24) Relocation
- 25) Disruption
- 26) Community Cohesion
- 27) Minority Interests
- 28) Community Values & Desires
  - a) Development of the area
  - b) Transportation Values & Desires
  - c) Perception of Problem
  - d) Solution of Problem
- 29) National Defense

DEPARTMENT OF HIGHWAYS

DIRECTIVE

No. D 31-12 (PP)

Effective Date:  
May 27, 1974

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Assistant Director for  
Planning and Research

INTERDISCIPLINARY APPROACH TO PROJECT DEVELOPMENT

I. INTRODUCTION

A. PURPOSE:

To provide guidelines for the implementation of a systematic interdisciplinary approach in the location and design of highway capital improvements.

B. SUPERSESSION:

IL 31-12 (PP), "Interdisciplinary Teams".

C. SCOPE:

The instructions contained in this Directive pertain only to projects in the location and design stages of project development. Routine maintenance operations are exempt.

D. REFERENCES:

1. M 31-10 (PP), "Action Plan"
2. PPM 90-4, "Process Guidelines (Social, Economic, and Environmental Effects on Highway Projects)"
3. D 27-50 (HE), "Consultant Authorization, Selection and Use"
4. D 22-34 (HR), "Approval of Limited Access Hearing Plans"
5. D 22-52 (HR), "Public Hearings"
6. D 22-52.1 (HR), "Public Hearing Procedures"
7. D 16-05 (SS), "Project Prospectus for Capital Improvement Projects"
8. D 31-18 (PP), "Community Involvement In Project Developments"
9. D 33-30 (PP), "Environmental Quality"

**E. DEFINITIONS:**

1. **Group 1 Projects:** The construction of highways, roads and streets in a new location, the major upgrading and reconstruction of existing facilities, or any other project that has major social, economic, environmental impact. Projects in this group usually have impacts that extend beyond the right-of-way line and are long lasting or permanent. Group 1 projects require hearings or advertising for hearing interest and the development of an environmental impact statement.
2. **Group 2 Projects:** The improvement of highways, roads and streets that require little or no additional right of way or limited construction on new locations. Projects in this group require either an environmental impact statement or a negative declaration according to the impact involved, and hearings may or may not be required.
3. **Group 3 Project:** Improvement of existing highways, roads, and streets or maintenance projects that do not involve any significant changes for property owners or the communities in which the project is located. These projects are anticipated to have minimal or no known adverse impact on social, economic and environmental factors. Generally hearings will not be required and a negative declaration may be filed.
4. **Project Prospectus:** A brief document prepared by the Washington State Highway Department to outline basic information relating to the needs for a highway improvement project. The Project Prospectus is prepared in accordance with D 16-05 (SP).
5. **Initiating Document:** A brief document prepared by the District indicating the District is ready to proceed with project development studies. It includes the project classification, disciplines requested to conduct studies and a copy of the Project Prospectus.
6. **Study Plan:** The detailed work plan of the Interdisciplinary Team including the community involvement plan. Preparation of the Study Plan, which is the responsibility of the Interdisciplinary Team, assigns responsibility to accomplish tasks and establishes timetables for their completion.
7. **Interdisciplinary Team:** A group of professional personnel, composed of individuals having expertise in the natural, social, physical and engineering sciences, and design arts, having responsibility to conduct indepth technical studies, establish and participate in a community involvement program and develop a departmental recommendation regarding appropriate course of action to follow.



8. Appropriate Assistant Director: For projects in the location stage, the Assistant Director for Planning, Research and State Aid; for projects in the design stage, the Assistant Director for Highway Development.
9. Hearings: Formal public opportunities for presentation of views prior to Department decisions as to courses of action to be taken i.e., corridor, design and/or access hearings. (See D 22-52 (HR), "Public Hearings" and D 22-52.1 (HR), "Public Hearing Procedures")

## II. RULES

### A. PURPOSE:

The Department of Highways uses a systematic interdisciplinary approach to provide a means by which pertinent expertise is utilized in an integrated manner to determine transportation requirements, identify impacts, and seek the best possible solutions to problems. Interdisciplinary functions are not to be considered as separate and distinct from the functions performed by the engineering personnel in the Department. Engineering, social, economic and environmental studies and resources are integrated to ensure that decisions are made in the best, overall public interest.

### B. OBJECTIVES:

The systematic interdisciplinary approach has three basic objectives:

1. Obtain meaningful studies of all factors related to transportation planning and design by qualified personnel, and utilize the information derived from such studies in the decisionmaking process;
2. Assess the values, goals and desires of the public and consider these factors in technical studies and in the decisionmaking process;
3. Develop a Departmental recommendation based upon technical studies and community involvement concerning the appropriate course of action to follow.

### C. DISCIPLINES INVOLVED:

#### 1. Areas of study

The interdisciplinary approach utilizes professional personnel trained in the appropriate natural, social, physical and engineering sciences and design arts to study and evaluate the impact of proposed highway capital improvements. The personnel selected for an individual project will depend on the characteristics of the project. Personnel which might be selected include, but are

not necessarily limited to, persons trained in the following areas of expertise:

<b>Acoustics</b>	Communications	Meteorology
<b>Air Quality</b>	Economics	Sanitary Engineering
<b>Archaeology</b>	Geology	Sociology
<b>Architecture</b>	Highway Engineering	Structural Design
<b>Biology</b>	Hydrology	Transportation Planning
<b>Botany</b>	Landscape Architecture	Urban Planning
		Water Quality

## 2. Qualifications

In every case, interdisciplinary personnel are expected to perform professional services and must be prepared, by training and experience, to conduct indepth studies and prepare reports as required. Professionals have recognized skills in certain fields or areas of knowledge. Such skills are normally attained through education, experience, or both. Each member's work will be judged against standards established by his profession.

## 3. Sources and Reimbursement of Professional Personnel

- a. Disciplines available within the Department of Highways will be utilized to the greatest extent possible since one of the purposes of the interdisciplinary approach is to develop in-house expertise in various professions, thereby permitting all to work together effectively in solving transportation problems. However, personnel from other state or local agencies, private consulting firms, or professional personnel in the community may be included on teams as needed.
- b. Department of Highways personnel are reimbursed according to normal accounting methods. All costs incurred by such personnel in their conduct of necessary duties will be charged to the appropriate project. Consulting firms or individuals advertising as consultants will be selected and reimbursed according to the established procedures of D 27-50 (HE). Personnel from other agencies will be utilized through mutual agreement between the agencies and the Department. All such agreements will be negotiated by the appropriate Assistant Director or District Engineer as applicable. All costs incurred through the use of outside personnel will be charged under the terms of their individual agreements to the appropriate projects.

## III. PROCEDURES

An interdisciplinary approach is utilized at each stage (i.e., corridor location and design) of project development. For projects with both a location and a design stage, the procedures following are repeated for each stage.

A. GUIDELINES FOR GROUP 1 PROJECTS:

1. For all Group 1 projects, the objectives of the systematic interdisciplinary approach are achieved by use of formally constituted Interdisciplinary Teams. These project Interdisciplinary Teams are utilized to achieve the following basic objectives; namely,
  - a. To conduct indepth studies of all pertinent factors and utilize the results in the delineation and evaluation of alternative solutions to transportation problems;
  - b. Develop and implement a community involvement program and utilize the findings in technical studies and the decisionmaking process;
  - c. Develop a Departmental recommendation concerning the specific courses of action to be taken.
2. The basic procedures for initiating, administering and operating such Teams are outlined below and begin when all Project Prospectus requirements are completed and location or design engineering funds are authorized.
  - a. Initiation of Interdisciplinary Project Studies.
    - (1) When the District is ready to proceed with development of a project, the Project Prospectus is reviewed and updated if required to reflect the current status of the projects. An updated Project Prospectus must be forwarded to the Assistant Director for Management Services for processing. An initiating document (the Project Prospectus and a memorandum indicating the project classification and the disciplines needed to plan and undertake the project studies and the proposed sources of such disciplines) will be forwarded to the appropriate Assistant Director for review and approval.
    - (2) The purpose of the review and approval of the initiating document by the appropriate Assistant Director is to indicate the decision of the District to undertake the project and to provide the management of the Department of Highways with a decisionmaking tool to determine if sufficient resources exist to pursue the project, if the project is consistent with current goals and objectives, and whether funds or other resources should be committed at that specific time.
    - (3) The initiating document will not include such detailed items as study procedures and the community involvement plan. These and other items are part of the Study Plan which will be prepared after the Interdisciplinary Team is appointed.

b. Review of Initiating Document

- (1) The District Engineer forwards the initiating document to the appropriate Assistant Director for review and comment. The appropriate Assistant Director is responsible for coordinating his review with other affected Assistant Directors. Approval of the initiating document shall constitute authorization for the District Engineer to proceed with project planning.
- (2) The appropriate Assistant Director, subsequent to the coordinated review, returns his comments to the District Engineer. All differences of opinion should be resolved between the affected parties prior to further implementation of the project.

c. Appointment of the Interdisciplinary Team

- (1) The Interdisciplinary Team members will be appointed by the District Engineer in accordance with the approved initiating document.
- (2) The District Project Engineer may be appointed a member of the Interdisciplinary Team if the District Engineer so desires, or another engineer may be appointed as the Team member with the Project Engineer working with the team providing necessary staff support.

d. Organization and Assignment of Duties of Interdisciplinary Team

(1) Briefing of the Team by District Engineer

After the Interdisciplinary Team has been appointed, the District Engineer has the responsibility to outline the basic problem(s) to be studied, the scope of work to be undertaken, any known significant factors which affect consideration of the problem, and the time table for project development. Following the briefing by the District Engineer, the Interdisciplinary Team and the Project Engineer have the responsibility to develop a Study Plan which is then submitted to the District Engineer for approval before the Study is undertaken.

(2) Organization of the Team

The Interdisciplinary Team will operate as a board with each member having equal status. The Team members will elect one of their members to serve as chairman.

(3) Resolution of Conflicts

- (a) If conflicts arise concerning Interdisciplinary Team procedures or related matters, the decisions reached by a majority of the Interdisciplinary Team will be binding on all Team members.
- (b) If other conflicts arise concerning operation of the Interdisciplinary Team which cannot be resolved by the Team as indicated above, appeal may be made to and decisions reached by the District Engineer.

e. Responsibilities and Duties of the Interdisciplinary Team

- (1) Develop a Study Plan including a community Involvement plan;
- (2) Review and assess transportation objectives in the study area pertinent to the problem being studied;
- (3) Conduct studies that are necessary for the development of the project. This will include various engineering, social, economic and environmental studies;
- (4) Implement the community involvement plan in cooperation with appropriate personnel from the District;
- (5) Evaluate alternative course of action;
- (6) Prepare reports, as necessary, including data and conclusions for the expertise involved including the views of the citizens, local officials and organized groups obtained through the community involvement plan.
- (7) Develop a Departmental recommendation concerning the specific course of action to be followed and prepare a report after studies have been concluded which contains the recommendations of the Team.

f. Duties and Responsibilities of Team Chairman and Project Engineer

- (1) The Team chairman has the responsibility to conduct meetings, coordinate Team efforts, and guide the Team so that the responsibilities and duties outlined in the Study Plan and the community involvement plan can be satisfactorily performed;
- (2) The Project Engineer who has the responsibility for the project will serve as administrative officer or executive secretary for the Interdisciplinary Team and, in this capacity, will expedite the project, provide staff assistance for members as required, undertake engineering studies

together with the appropriate Team member, coordinate and/or prepare reports, record assignments and decisions and review Interdisciplinary Team actions for conformity with existing policies and standards.

- (3) To achieve harmony and efficiency in the implementation of the Study Plan, the Interdisciplinary Team chairman and the Project Engineer will carefully coordinate their activities.

g. Development of the Study Plan Including the Community Involvement Plan.

One of the first duties of the Interdisciplinary Team is to develop a Study Plan in cooperation with the Project Engineer. The Study Plan is an extremely important document in project development since it outlines the scope of the work to be undertaken, procedures for accomplishing the work and assignment of the various tasks. Items to be included in the Study Plan are the following:

- (1) Purpose of the Study.
- (2) Work to be undertaken including types of data to be compiled and analyzed and reports to be prepared.
- (3) Delineation of areas of responsibility of each Team member.
- (4) Community Involvement Plan.
- (5) Work flow.
- (6) Methods by which technical studies and community values and desires will be integrated and presented for consideration in the decisionmaking process.
- (7) Manpower requirements.
- (8) Fiscal requirements.

h. Review and Approval of Study Plan

After the Interdisciplinary Team, with the assistance of the Project Engineer, has prepared the Study Plan including the community involvement plan, these documents will be reviewed and approved by the District Engineer and appropriate Assistant Director(s). This process will insure comprehensiveness of the Study, avoid duplication of effort and assure compliance with the time schedule and financial resources.

i. Determination of Evaluative Methods

The Interdisciplinary Team has the responsibility to adopt an evaluative approach prior to implementation of the Study Plan that will permit each member to determine the relative importance and desirability of the numerous factors involved in highway planning and design as related to the project under consideration. The basic purpose of the evaluative system is to determine factors to be studied, avoid duplication of effort in conducting studies, and determine an evaluative format which will permit the entire Interdisciplinary Team to integrate their efforts. To permit maximum understanding between the various people or groups with whom the Interdisciplinary Team will be working, the approach used by the Team should be as simple as possible while still requiring adequate consideration of all pertinent factors in reaching a Team decision. Each member will be required to conduct indepth studies in his own area of expertise, present his factual findings and recommendations to the entire Team and, likewise, review the work of other members prior to the time the Interdisciplinary Team makes a recommendation concerning the most appropriate course of action to take. A number of methods have been developed by Washington State University, California Department of Highways, University of Washington and others.

j. Implementation of the Study Plan Including the Community Involvement Plan

The District Engineer and Interdisciplinary Team will share responsibility for implementation of the Study Plan. Team members will have responsibility for determining data to be collected, analysis of data, and preparation of reports to the extent possible. The Project Engineer and his staff will provide assistance as needed and, by agreement, may assume responsibility for a function where it is more feasible for the District to perform work with the member acting as consultant overseeing the study in his area of expertise. The Interdisciplinary Team and/or District Engineer will assume responsibility for various types of community input as outlined in the community involvement plan. The member(s) responsible for developing the community involvement plan will be directly involved in its implementation.

k. Designation and Evaluation of Alternatives

After necessary data concerning the study area has been compiled and analyzed by the Interdisciplinary Team, the study and evaluation of specific alternatives can be undertaken. The designation of various alternatives for further study and evaluation will require discussion with the community as outlined in the community involvement plan to insure that the public is

cognizant of the problem, aware of various projections that have been made concerning future developments, and that an opportunity is provided for citizens to recommend specific courses of action for further study. The determination of alternatives for evaluation will be made mutually by the Interdisciplinary Team, District Engineer, and advisory committees wherever such committees are created. It is important that the Interdisciplinary Team and the District Engineer respond to suggestions from the public and consider alternatives suggested by the public. Each designated alternative will receive detailed study by the various disciplines to permit effective evaluation. Part of this study will include community values and desires.

#### 1. Review Process

- (1) Since the Interdisciplinary Team and the public will be actively involved in the location and/or design of projects, it is important that those organizational units within the Department of Highways having responsibilities to review the alternative courses of action recommended by the Interdisciplinary Team, be actively involved in reviewing actions taken as the project develops.
- (2) A representative designated by the appropriate Assistant Director will review the progress of the study as it develops and determine whether project plans meet with standards and policies of federal or state governments. He will not serve as a member of the Interdisciplinary Team. This review is not intended to impair the freedom necessary for the Interdisciplinary Team to conduct a comprehensive and objective study and recommend the course of action to be undertaken, however, if deviations from standards and policies are contemplated by the Interdisciplinary Team, the representative will so inform the Team.
- (3) If such ongoing review does not transpire and conflicts in standards or policies are later discovered, the Department is placed in a position of reacting adversely to project recommendations developed after extensive study by the Interdisciplinary Team members and the public.

#### m. Preparation of Reports

- (1) Documents required for Group 1 projects include the Environmental Impact Statement, Report of Public Involvement Activities and Findings, and Recommendations of the Interdisciplinary Team. All of these reports may be combined into one document. However, the draft environmental impact statement must be completed prior to the time that the Team recommendations have been finalized or the community involvement program has been completed.



- (2) The responsibility for preparing the environmental impact statement will vary under differing conditions and hence the responsibility must be determined early in the location or design studies and the basic division of responsibility outlined in the study plan. Whenever possible, interdisciplinary team members should be assigned responsibility for preparing basic documents for inclusion in the environmental impact statement because of the team members expertise in their specific areas. Compilation and editing of the total document will be the responsibility of the Project Engineer and his staff.
- (3) The Report of Recommendations of the Interdisciplinary Team and the Report of Public Involvement Activities and Findings will be prepared by the Interdisciplinary Team.
- (4) After these reports have been prepared and approved by the Interdisciplinary Team they will be reviewed by the District Engineer and forwarded to the Director of Highways together with a memorandum outlining the District Engineer's proposed action on the project.

**n. Public Presentations**

The District Engineer and the Interdisciplinary Team share responsibility for public meetings and other areas of community involvement as outlined in the community involvement plan. Since the Interdisciplinary Team must carefully consider and evaluate the values and desires of the public as one important aspect of project development, they should obtain views of community through various means to insure that the views of the public at large are known.

**o. Review and Response**

After a Draft Environmental Impact Statement has been circulated and the responses received from other agencies and the public, the Interdisciplinary Team members responsible for the preparation of basic documents will have the responsibility to comment upon responses as required and necessary. Also, if other documents such as location or design reports are prepared by the Interdisciplinary Team, they should respond to comments to these reports as requested by the District Engineer

**p. Recommendations of the Interdisciplinary Team**

- (1) After the Interdisciplinary Team has conducted its own studies and evaluated and considered input from the community and other agencies (including comments on the Draft Environmental Statement and hearing transcripts), it will adopt a Departmental recommendation concerning the course of action to be followed. In the process of

adopting the course of action every effort should be made by the Interdisciplinary Team to achieve a consensus; but, if this cannot be done, the report will reflect the views of the majority. Those members who do not agree with the majority may include their views within the report, establishing conclusions and recommendations of all members. The report should be brief but indicate the basis for the recommendations. The Team Report of Recommendations is submitted to the District Engineer.

- (2) The District Engineer reviews and evaluates the team's adopted departmental recommendation and forwards it to the appropriate Assistant Director with a memorandum containing his proposed action on the project.
- (3) The Interdisciplinary Team will present information and/or recommendations as requested by the District Engineer at public meetings and before policy determining bodies.

**B. PROCEDURES FOR GROUP 2 and 3 PROJECTS:**

1. For Group 2 and 3 projects a formal Interdisciplinary Team need not be appointed, but an interdisciplinary approach is required. The District Engineer has the responsibility to determine the studies that will be undertaken and to appoint personnel having appropriate expertise to undertake studies and make recommendations. Although the formal team organization is not required for Group 2 projects, personnel involved in project development will meet as necessary to analyze the transportation problem and make recommendations. For Group 3 projects no team meetings are required, but should be held if the need arises.
2. The project development activities will be initiated by the preparation and approval of the initiating document in the same manner as Group 1 projects. The Study Plan will be prepared for Group 2 projects by the Project Engineer having responsibility for the project and then submitted to the District Engineer and the appropriate Assistant Director(s) for approval. A Study Plan is not required for Group 3 projects unless desired by the District Engineer.
3. The Study Plan (for Group 2 projects) will include the following items:
  - a. Brief description of transportation problems in study area.
  - b. Scope of work to be undertaken.
  - c. Proposed classification of project
  - d. Funds available for study
  - e. Disciplines needed in development of project.

- f. Sources from which interdisciplinary manpower will be obtained.
  - g. Community involvement plan.
  - h. Project development schedule.
4. The Project Engineer or other personnel appointed by the District Engineer will be responsible for the development of the project. Since a formally organized team is not required by the Action Plan for Group 2 or 3 projects, the project engineer has the responsibility to see that factual information and recommendations derived from professional studies and public involvement are considered in the decisionmaking process.
  5. The Project Engineer will have the responsibility for documentation of interdisciplinary involvement and analysis. Such documentation may consist of reports or memoranda or other written material placed in project files. Whatever form is utilized, it is important that reports or other documentation be maintained in such a manner that is readily available for review and reference.
  6. The Project Engineer has the responsibility to see that citizen opinions and recommendations are considered by decision makers for Group 2 and 3 projects. No formal community involvement plan is required for Group 3 projects, but the methods to be used to inform the public and obtain citizen opinions will be maintained by the Project Engineer to indicate how this has been accomplished.
  7. During the progress of the study it is necessary that the District Engineer or personnel appointed by him keep the management of the Department of Highways, local governmental officials, and the community abreast of the progress of the project and decisions reached.