WASHINGTON STATE HIGHWAY DEPARTMENT RESEARCH PROGRAM REPORT **25.5**

GUIDELINES FOR TEAM SCHEDULING AND MANAGEMENT

RESEARCH PROJECT

HR - 527

OCTOBER 1975

PREPARED FOR
WASHINGTON STATE HIGHWAY COMMISSION
IN COOPERATION WITH
U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

COMMUNITY DEVELOPMENT SERVICES, INC.
IN COOPERATION WITH
SOCIAL AND ECONOMIC PLANNING SECTION
PLANNING, RESEARCH AND STATE AID
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16. Abstract

The purpose of this document is to present an effective method by which the scheduling and coordination of the activities of interdisciplinary teams can be carried out. A number of more traditional techniques of project control have not met the unique requirements of scheduling and managing the activities of an interdisciplinary team since the basic logic of task ordering is time sequentiality. Quite a number of the activities of an interdisciplinary team can be carried on simultaneously or at any given time within the projects' period. The system developed within this document uses the princple of "nested" descriptions of program activities and then proceeds to develop operational procedures. The role of the individual team members as well as the overall project development is described.

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This publication was prepared by Mr. Roger Parker and Mr. Robert Jacobson, Consultants, Community Development Services, Inc. in co-operation with the Social and Economic Planning Section of the Washington State Department of Highways.

The purpose of this publication is to provide some assistance to interdisciplinary teams and project managers in bringing about greater efficiency and economy in the application of the interdisciplinary approach.

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I. GENERAL DISCUSSION

The scheduling and coordination of the activities of the various members of a multi-discipline design team is a complex yet essential element of team management. Each team member must know where he fits into the overall process, not only in group dynamics of team meetings and joint team consideration of the problem, but also in the precise sense of knowing where his role interfaces with the roles of others, when his products will be used by others, and from whom in the team he will get the information he needs to effectively complete his work. Further, the design or research processes to be executed by each team member, whether done jointly with other team members or singly, should be visible to all other disciplines, for this enhances the quality of team participation and furthers the achievement of ultimate goals of the design team. Various disciplines do have differing traditions and work processes and often misunderstandings based on such different conventions lead to more difficult team operating problems. such as animosity, "defensive goal tending" (the assertion that the other member shouldn't interfere with oneself), and other divisive team behavior.

At the outset, "tried and true" techniques of complex project control such as Critical Path Method(CPM) and Program Evaluation Review Technique (PERT) immediately suggest themselves as methods of describing the various research and design processes and interlocking those descriptions to provide an overall coordinated analysis of specific team operations and individual team responsibilities.

Indeed, many teams have begun their multi-discipline design process by preparing a CPM of the problem before them. Few have finished under the same method of program management, however. In fact, more likely than not, the systematic management of tasks and responsibilities through PERT or CPM will be abandoned soon after work is underway. The purpose of this document is to present a system which does lend itself to scheduling and managing an interdisciplinary effort. To better understand the reason for suggesting another system, it becomes necessary to understand the premises on which CPM or PERT are based.

The Critical Path Method rests on the logical ordering of tasks, wherein the basic logic of the task ordering is time sequentiality. That is, the CPM network links tasks by determining which tasks must be finished before a given task can be started. Usually, when a CPM project analysis is prepared, all tasks are listed, and then each task on the list is examined and a judgment made with regard to which other tasks on the list are required to be finished before the task under consideration can be started. When this is done, all of these assessments are assembled into a network reflecting the sequentiality implied by this logical basis. Once the network is constructed, the time from beginning to completion of each task is assessed and these time factors added to the network description to determine the time implications of the network logic. From this time-dimensioned logic the critical path (that sequence of tasks that must be completed on schedule for the entire project to be on schedule) and key milestones or bench marks can be discovered, and a project schedule delineated.

PERT differs from CPM primarily in that the significant entity is an event, rather than a task, and time is treated more realistically. The distinction between event and task in PERT or CPM, respectively, is more semantic than real. Events essentially are certain marking points in the logical sequence of tasks which are of importance to project progress. However, the sequentiality of tasks is based on the same "finish these before starting those" logic. A PERT network looks very similar to a CPM network, except different parts of it are given different emphasis. The more realistic treatment of time in PERT is due to the time estimates of tasks being stated in stochastic (or probabilistic) terms, thus reflecting the uncertainty around any estimate of time to complete a task.

Both CPM and PERT were designed for use in construction projects, originally in weapons systems implementation for the Department of Defense, and are now widely used in large scale construction and complex manufacturing activities. In these fields, the "finish this then start that" logic portrays the operational procedures normally followed to achieve some objective. In the management of complex interdisciplinary design teams, where the activities of many players must be coordinated, it is natural to try and apply CPM or PERT to the design team process.

However, it doesn't work. And it doesn't work for at least two reasons. First, the logic of the design process does not have the same sequentiality as that of the processes normally subject to CPM or PERT analysis. Second, CPM or PERT is both too complex, for it requires significant initial analysis at the outset which is difficult to modify, and too simple, for there is insufficient detail to allow for the proper coordination of the many team members' activities.

The primary distinction in the logic of design or research processes is that, whereas the ending of a given task is clearly discernible, its beginning is not so obvious. Indeed, of the many tasks before the design team at the outset of the project at hand, virtually all of them could be started on the first day of the project. For example, many teams begin at least the format portion of their final reports at the very early stages of a project. Of course, it cannot be completed before the project's technical work and reviews are done, but it can be started almost anytime. Similarly the definition and consideration of alternative solutions to the problem at hand often starts, at least in the minds of the team members, at the end of the very first team meeting.

The important logical distinction, then, between design team processes and those which traditionally use PERT or CPM is that tasks in the design process have "fuzzy" beginnings. There are rarely well defined starting points for the various activities. Therefore it is difficult, if not impossible, to delineate what should be completed before a given task starts, since most tasks can, and do, start before anything is necessarily finished. This inherent logic of the design process means that any attempt to describe it in terms of PERT or CPM must distort the actual workings of the process. Such distortion is immediately realized by the team members, which, in turn, leads them to either mechanically force their work into the required mold, or largely ignore the procedural implications of the project management network, thus voiding its primary validity. Neither activity, of course, is conducive to overall team operations.

The second difficulty arises out of the cumbersomeness of PERT or CPM when modification is necessary and when sufficient detail must be illustrated in the network descriptions. There has never been a case in this author's experience where, after an initial project logic description and schedule calendar had been specified, that some unforeseen problem or external change in conditions did not force the initial description to be out of date. Such situations where this does not occur must be rare. Thus any project definition established at at the outset of a program (in Step 1) must be done in such a manner as to permit its modification, if and when necessary.

If the project descriptive tool is CPM or PERT, then this expected need to modify forces one of two things to happen. First, the initial project description can be done on a general level. This means that fewer tasks would be described. Therefore, there would be fewer tasks to modify, and the network would be less sensitive to program changes. However, such levels of generality are costly in terms of precision of work flow descriptions and eventually in delineation of responsibility. This latter point can be quite important if the project is large and controversial. One of the most severe attacks on the operation of a multi-discipline design team is that of a community group who asserts that the design team is fuzzy in its responsibilities. Furthermore, when the project is controversial and large, to describe the work program in detail sufficient to clearly identify responsibility requires an extensive PERT or CPM network.

If this is the case, then the second problem alluded to above happens. This is that changes in the project description need to be reflected in modification to a large network, which can be a very large administrative and bookkeeping task. In the construction industry, for example, where PERT is used and the networks are quire complex, computers are used to manage the network. However, in all but the very largest highway team problems, the added expense of computers and their supporting staff cannot be justified. But without such a bookkeeping capability, modification to a complex network just cannot be done. In fact, it often takes longer to modify the network than it does to execute the various tasks described in it.

Of these two options, the one most often elected is the first, but the one needed for effective project display is the second.

In response to these difficulties with traditional methods of project scheduling and control, a system has been designed specifically for the types of problems undertaken by multi-discipline teams. It is called Team Program Logic, or TPL. The objectives of TPL are these:

1) Provide for a description of a project of sufficient detail to define precisely the responsibility of each team member, on the one hand, and the responsible team member for each project task, on the other.
2) Provide for ready modification under the inevitable changes that will occur, and yet maintain its level of detail.
3) Provide the capability of easy communication of the program to the community and other interested parties.
4) Recognize the inherent logic of a design process, i.e. that tasks can begin at any time, but must end in some sequential order.
5) Provide for the precise description of inputs and outputs of each task, so that the basis for a sequential relationship between project tasks can be seen.

To achieve these objectives, TPL uses the principle of "nested" descriptions of program activities. It is recognized that a general level of project description is needed for comprehension by all team members and outsiders. A block diagram is usually prepared relating these general level tasks to each other according to the logical premise that a first precedent to a given task must be completed before the given task can be completed. This block diagram is called a level one logic diagram. Figure 1 illustrates the general multi-discipline design team work tasks as a level one logic diagram.

Level one logic is of no use in illustrating the processes of execution of each general task, however, and is hence of no use in making that visible to all team members. Therefore, in TPL each level one task is broken down into a second level of detail, wherein the operational aspects of each gross task is explained.

Essentially, a block diagram of each level one task is prepared, showing how it would be executed. Furthermore, it is developed as though that particular task were the only one under consideration, i.e., in a self-contained manner. (Once two or three sequential tasks at level one are described at level two, the level two tasks can be appropriately interrelated.)

Often, however, even at the operational detail of level two, the responsibility for some tasks will not be clear. That is, there will still be level two tasks that have more than one team member involved in their execution. This is an undesirable situation from a team management standpoint, for shared-responsibility tasks are difficult to maintain management control over. In such cases, it might be necessary to develop some level two tasks at even greater detail, in order to isolate responsibility. As was the case with the transition from level one to level two, the transition from level two to level three is done by considering a single level two task and describing its operation in detail by itself, connecting it to other level three task descriptions if necessary only after the breakdown is completed.

It is rare, but possible, that even a level three description will not isolate responsibility. If this is the case, then level four or more descriptions of selected tasks can be developed. This usually occurs, however, only in the most complex multi-discipline team projects.

Figure one shows the relationships between the various levels of program logic description.

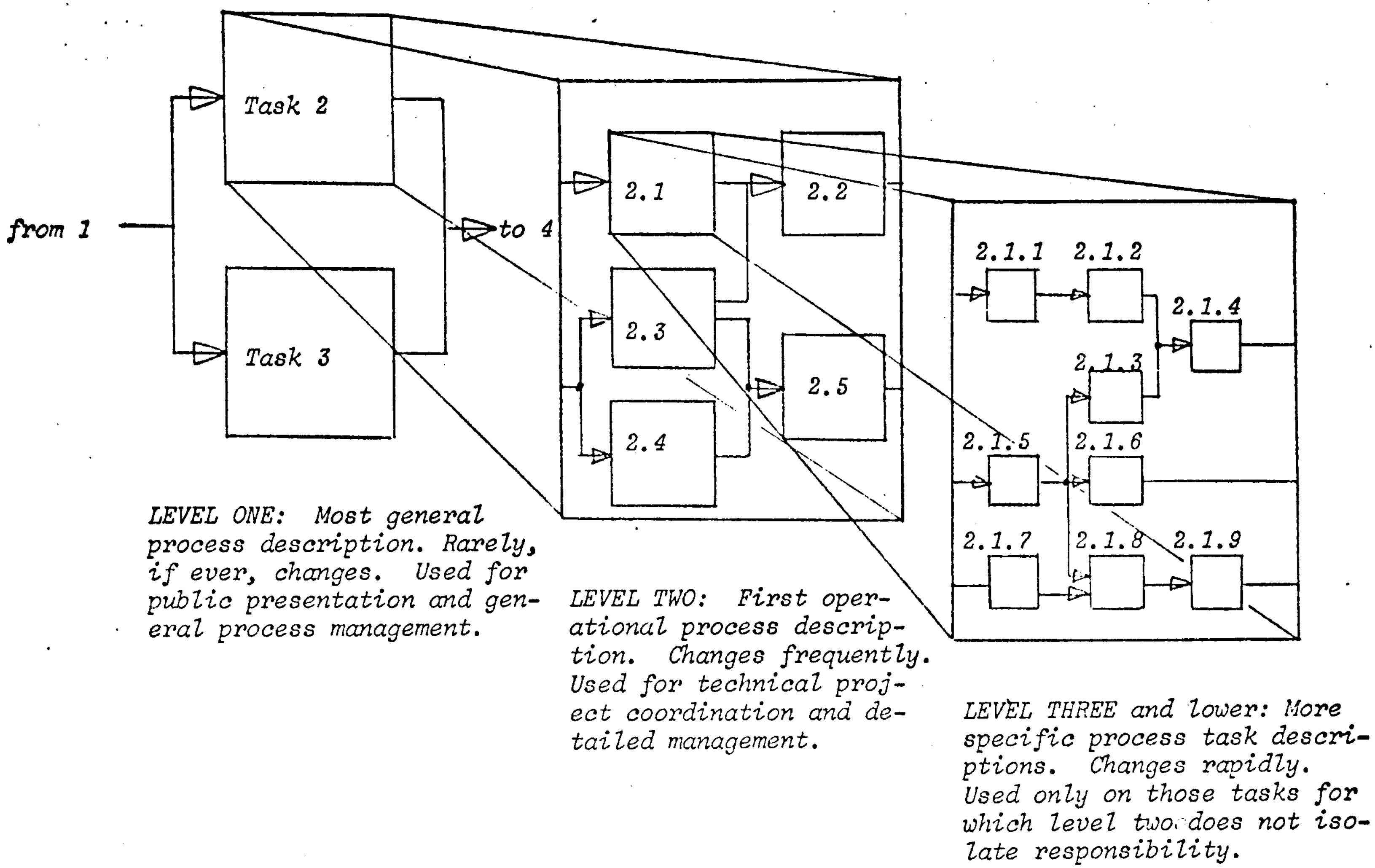


FIGURE ONE: NESTING PRINCIPLE OF TEAM PROGRAM LOGIC (TPL)

In the use of TPL a level one diagram is always prepared, and, subject to time nesting discussed below, so is a level two. Level one can be used for general presentation to the public and as a general guide to overall team operations. Level two and lower are operational descriptions of the process which are developed for managerial purposes. Notice that, however, levels three and lower are not necessarily assembled for every level two task, but only for those tasks where responsibility is not clear. This illustrates a fundamental characteristic of TPL: One does not describe the program in any more detail than is necessary for effective management.

This selective breaking-down, or nesting, of task descriptions allows another dimension to the use of TPL. This is nesting in terms of time.

At the outset of a project,. with at least some changes expected, it is not necessary to carry every level one task to level two or lower. Only those in near proximity to the present need be so described. What constitutes proximity depends on the project. However, by way of example, a year-long design project would have level one developed for the entire year, level two developed for the next four months, and necessary levels three or four for the next two months. This type of nesting with relation to time prevents excessive detailing early in the project, and permits much more ready modification of the project description. Figure two illustrates this time-dependent logic description.

Of course, in order to have time-nested logic descriptions, one must have time data included in the TPL documentation. This is not included in the logic diagrams because of the need to keep the process logic clear, but is defined in a piece of documentation called a project calendar. Looking somewhat like a classical Gannt chart, it shows the calendar time to be spent on each task.

For each level of logic a calendar should be prepared. It follows, then, that the calendars are also nested, both in logic level and in time. Again, this nesting provides flexibility in terms of possible schedule modification. Figure three illustrates a hypothetical calendar for a level one logic diagram.

A third set of documentation is usually prepared with a TPL description of a project. It is called the product specifications, or PS. A PS is written for each task at its finest level of detail, i.e., at that level of description for which there is a uniquely responsible team member. A PS is merely a sheet which identifies

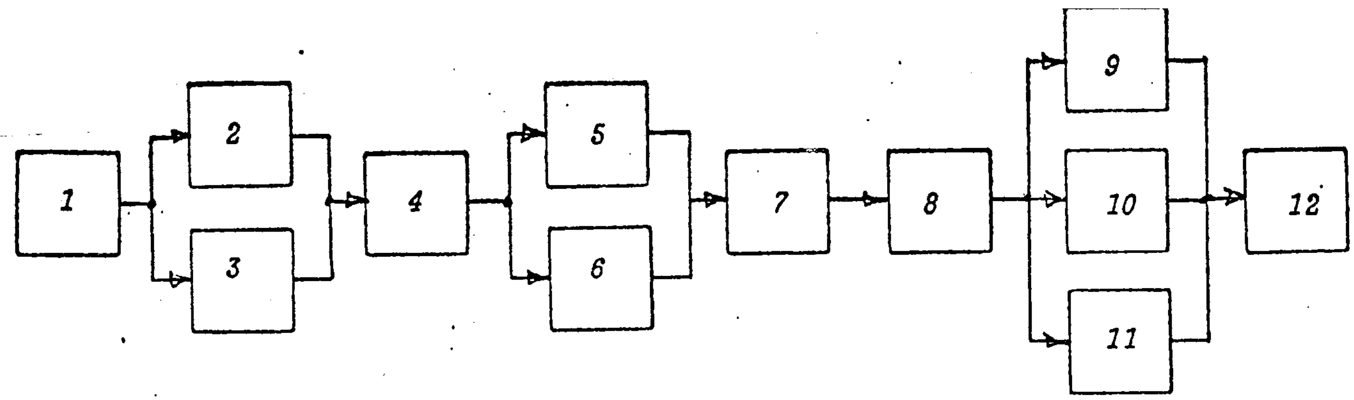
1) What is to be the product(s) of the task
2) When are they due
3) What outputs from other tasks are needed for the completion of these outputs
4) What outputs from other tasks need this output for their completion.

Figure 4 shows a sample PS. The purpose of the PS is, of course, to delineate the exact relationship between tasks, and thus the substantive basis for their interrelationship. Of course, PS's are not prepared until the lowest level of detail is defined. This means, then, that they are prepared only for near term products that have been identified in near-proximate time; i.e., they are subject to time nesting.

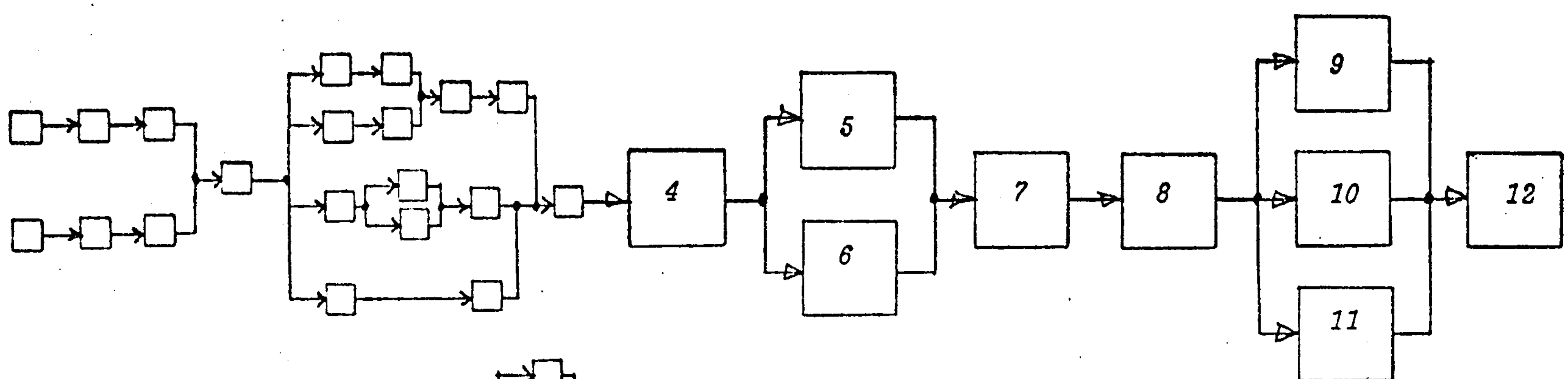
Thus TPL includes three pieces of documentation, as shown in figure 3. These are:

1) The logic diagrams, showing the logical interrelationships of tasks at various levels of detail, subject to "end this then end that" logic.

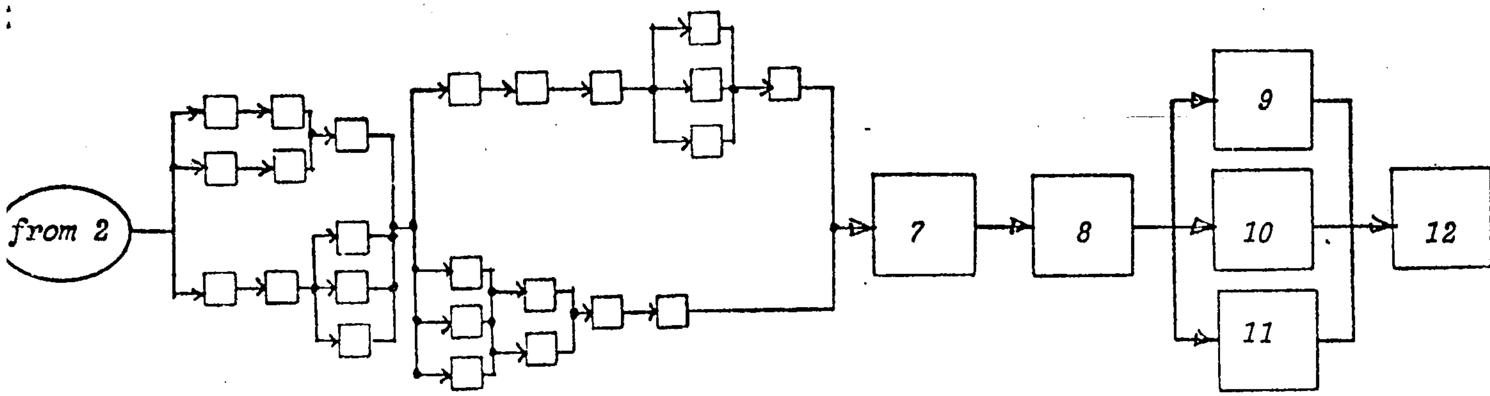
Figure Two: Time Nesting



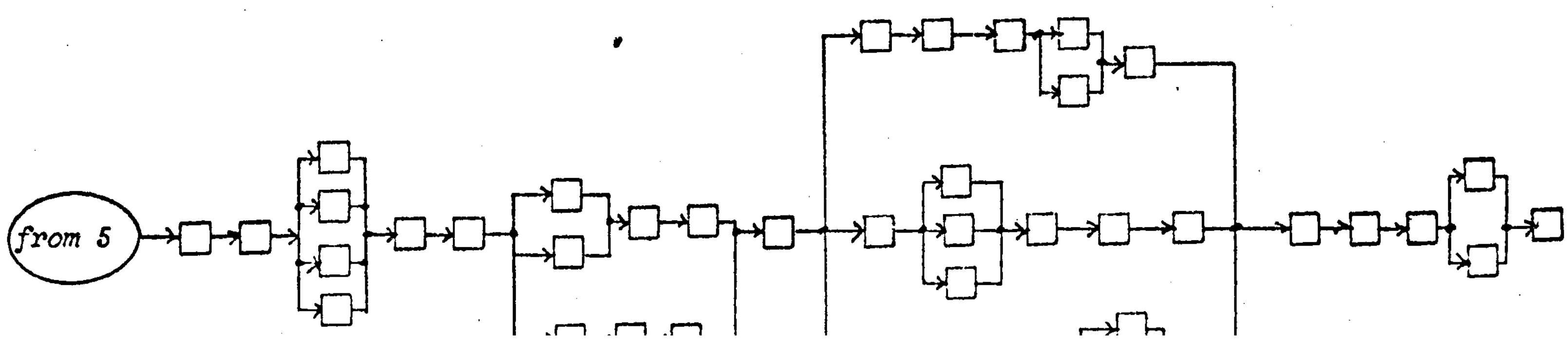
Level one description of entire process.



Time period one: Tasks 1, 2, 3 broken down to more detail.

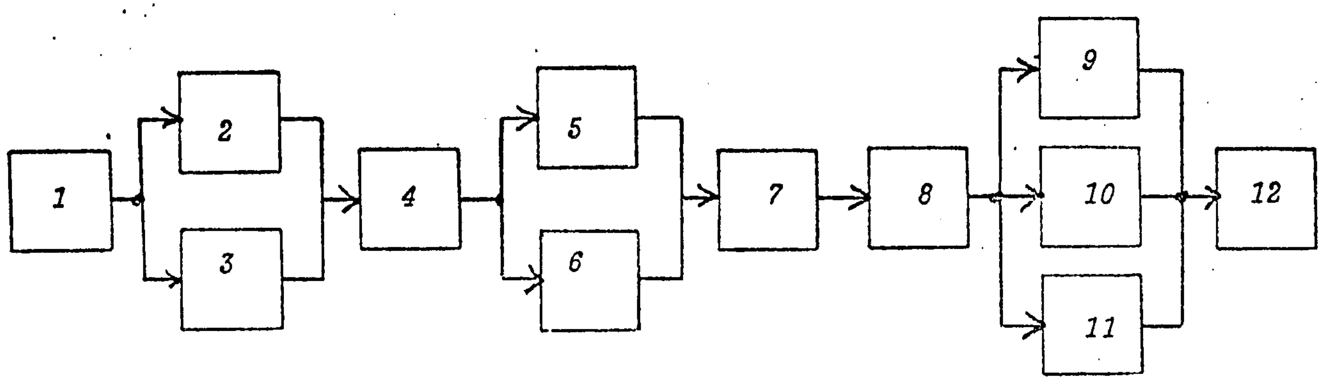


Time period 2: Tasks 1, 2, 3 completed. Tasks 4, 5, 6 broken down to more detial.

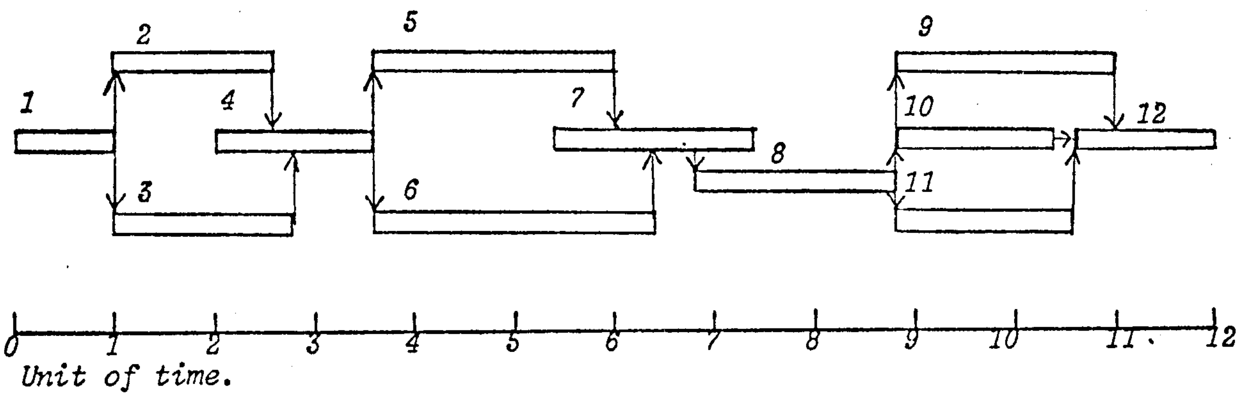


Time period 3: Tasks 4, 5, 6 completed. Tasks 7, 8, 9, 10, 11 and 12 broken down to greater detail.

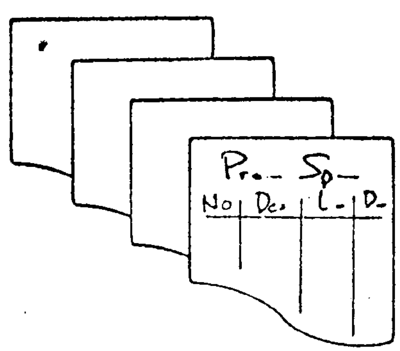
Figure Three: Documentation Required for Team Program Logic



Logic Diagrams: Describe the relationships between tasks, at whatever level of detail required.



Calendars: Describe task timing and schedules. Usefull for manpower allocation and budget preparation and control.



Product Specifications: Defines actual products resulting from each task, including their responsibility, expected date of publication, and the logical connections between this and other steps.

HIGHWAY DESIGN TEAM

PSP 27

PRODUCT SPECIFICATION

TASK 2.3 RESPONSIBILITY Urban Planner PAGE 1 OF 1

NO.	DESCRIPTION	LOGIC IN	LOGIC OUT	DUE DATE
2.3.1	Map of general zoning throughout region	2.1	2.8	June 30
2.3.2	Detailed zoning maps of areas in immediate vicinity of facility sites	2.1	2.8	July 15

SAMPLE

2) Calendars, showing the time of execution of each task.

3) Product specifications, showing the precise products and responsibilities for each task, and prepared for the lowest level of detail of each task description.

It is possible, with little difficulty, to use the TPL description of a program as a basis for allocation of budget and cost control. The only requirement is the preparation of supplementary documentation describing cost allocations to task and to time.

II. OPERATIONAL PROCEDURE

The primary responsibility for preparation of the TPL description of the program rests with the project engineer. However, he should, and must, enlist the services of the other team members for a proficient execution of team management. The general flow of the work of program documentation preparation is shown in Figure 5. Each step in this process is described below. However, the unique character of each individual project should be considered in following this procedure, and appropriate variations made from it when the situation demands it.

The sixteen procedural steps recommended for preparation of TPL documentation will be discussed in detail.

1. Development of Level One Logic Diagram By Project Engineer (PE). The first task is the development of the general task description and logic flow of the level one diagram by the P.E. In Figure 6 a general level one as stipulated in other State Highway Department Guidelines is presented. This can be used as a guide, either to be adopted as is, or modified to suit the unique characteristics of the situation at hand.

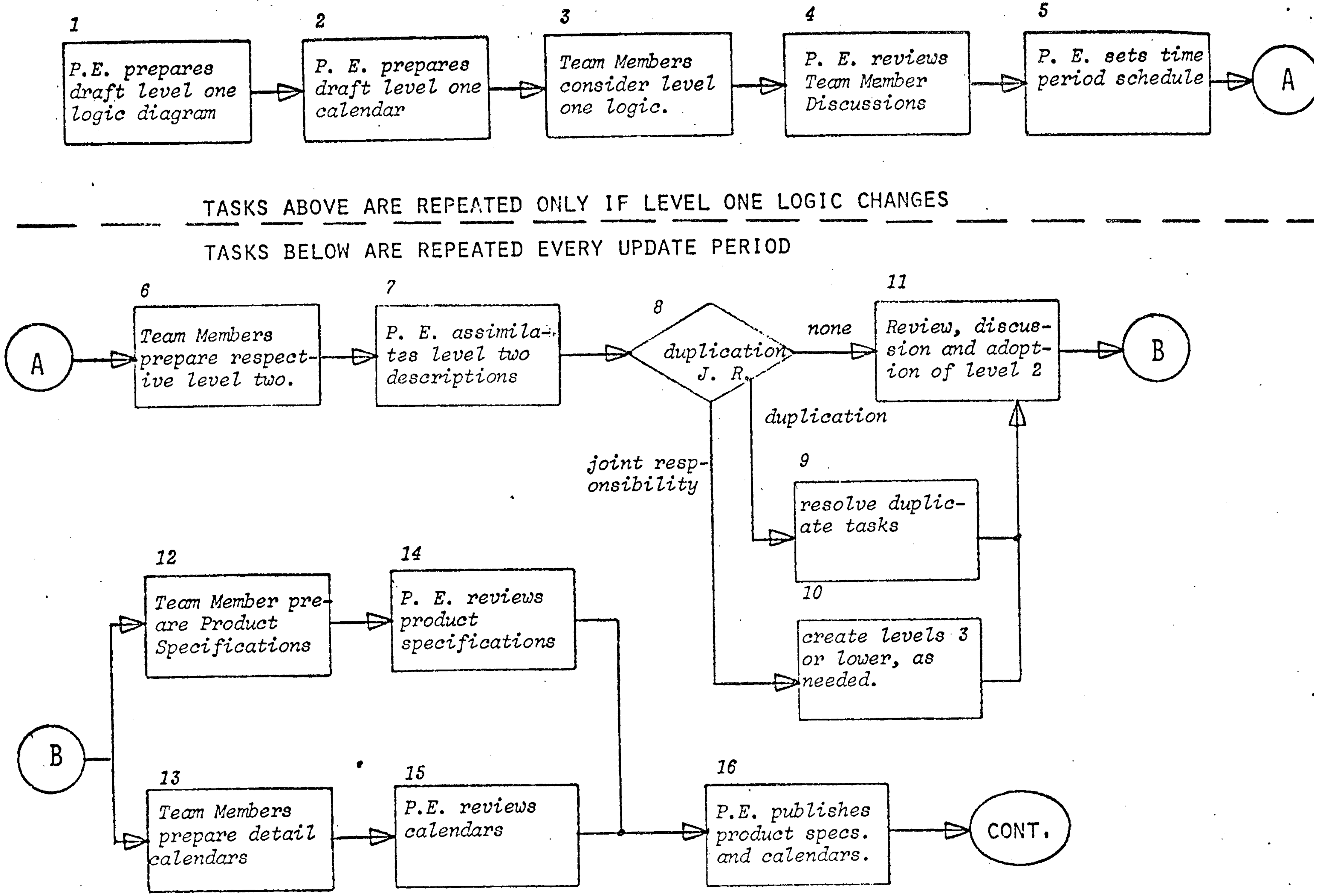


FIGURE FIVE: SUGGESTED PROCEDURE FOR TPL DOCUMENTATION PREPARATION

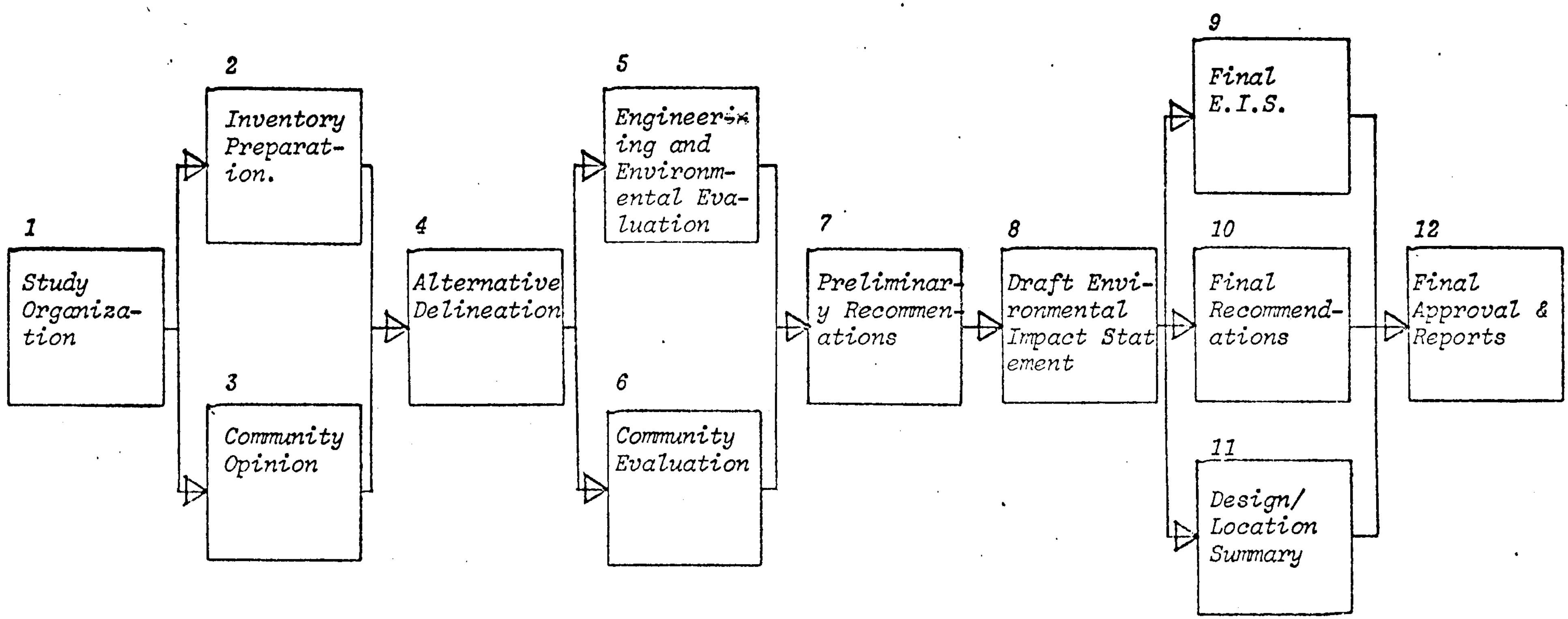


FIGURE SIX: DESIGN TEAM GENERAL PROCESS; LEVEL ONE LOGIC DIAGRAM

2. <u>Development of a Level One Project Calendar by the P.E.</u> The Project Engineer should also assemble a level one project calendar at this point. This will set the general framework for estimation of time in future steps in the documentation procedure. However, the time estimates here should be considered, insofar as external circumstances (imposed deadlines, etc.) permit, tentative, and subject to modification as a result of further tasks.

3. <u>Team Member Consideration Level One.</u> At this point, each team member should take the level one logic diagram and describe his role, in general terms, in each level one task. To facilitate this, the forms illustrated in Form 1 may be used. The purpose of this activity is to guarantee that all team members are thoroughly familiar with level one, and as a necessary prelude to Step 6, preparation of level two logic descriptions.

4. <u>Review of Team Member Considerations by P.E.</u> The results of Step 3 are here reviewed by the P.E. This should give him a clear indication of the general areas of responsibility for each team member, and allow him to judge the efficiency of the level one logic description in light of the operations of other team members. This may necessitate revision of the level one diagram to some degree, and this should be done at this time.

5. <u>Establishment of Time Period for Level Two and Lower Logic Descriptions.</u> At this step of the procedure, the P.E. determines the best time period for detailed logic diagram preparation. In coming to this decision, the P.E. should take into account, the complexity of the project, the likelihood and rapidity of external change, and the overall project length. As a general guideline, time periods for level two and lower logic should not be less than two months, nor longer than six. Whenever possible, time period scheduling should coincide with the ending schedule of level one tasks. This simplifies the updating process.

Form No. 1: TEAM MEMBER DISCUSSION OF GENERAL PROJECT LOGIC.

TEAM MEMBER:____________________	GENERAL AREA OF RESPONSIBILITY
PREPARED BY______ DATE______	________________________
PAGE _____OF_____	________________________

RETURN TO PROJECT ENGINEER BY __________.

For each of the twelve tasks below, please describe the general nature of your work in that task. Refer to the level one logic diagram for the general name and content of each task.

TASK 1:

TASK 2:

TASK 3:

TASK 4:

TASK 5:

TASK 6:

TASK 7:

TASK 8:

TASK 9:

Form No. 1, page 2.

TASK 10:

TASK 11:

TASK 12:

SUGGESTED MODIFICATIONS.

Below please indicate any suggested modifications (additional tasks, task redefinitions, etc.) to the above twelve. Be especially aware of instances where the level one logic does not suit well the operation of your responsibility.

Also at this step, the P.E. delineates when the level two and lower logic descriptions shall be done for succeeding time periods. This should be started no later than one month before the end of any time period. Note that this is not necessary for all time periods to be of the same length.

As an aid to this step, a simple form such as that of Form 2 can be used.

6. Team Members Prepare First Period Level Two Descriptions. In this task, each team member takes the level one tasks that need refining in the first period and prepares a level two description of his role in that task. He should also describe expected interrelationships with other team members. Only the tasks which fall in the first time period need to be discussed. Forms like that shown on Form 3 may, if desired, be used to ease this process. It may well be necessary, and is certainly desirable, for team members to communicate with one another during this step.

7. Project Engineer Assimilates Team Members' Level Two Descriptions and Prepares Overall Level Two. Here the P.E. takes the output from Step 6 and prepares a level two description of the tasks in the first time period. He should note if any tasks appear in more than one team member's descriptions (duplication), or if any tasks are going to have joint responsibility between two or more team members.

8. Duplication or Joint Responsibility Branch Point. If there is duplication resulting from Step 7, then the procedure moves to Step 9. If there is joint responsibility, it moves to Step 10. If neither is the case, the procedure moves to Step 11.

Form No. 2: PROJECT LOGIC UPDATE SCHEDULE

DATE________ REVISION NO.________SUPERSEDES SCHEDULE OF ___________

PREPARED BY__________ APPROVED BY______________

TIME PERIOD 1: *Update to be completed by ___________(This is the initial breakdown of tasks in the project.)*
Tasks expected to be broken down to level two or lower:

_____ _____ _____ _____ _____ _____

TIME PERIOD 2: *Update to be completed by___________*
Tasks expected to be broken down to level two or lower:

_____ _____ _____ _____ _____ _____

TIME PERIOD 3: *Update to be completed by___________*
Tasks expected to be broken down to level two or lower:

_____ _____ _____ _____ _____ _____

TIME PERIOD 4: *Update to be completed by ___________*
Tasks expected to be broken down to level two or lower:

_____ _____ _____ _____ _____ _____

TIME PERIOD 5: *Update to be completed by___________*
Tasks expected to be broken down to level two or lower:

_____ _____ _____ _____ _____ _____

TIME PERIOD 6: *Update to be completed by___________*
Tasks expected to be broken down to level two or lower:

_____ _____ _____ _____ _____ _____

Form No. 3: TEAM MEMBER LEVEL TWO LOGIC DESCRIPTION

TEAM MEMBER________________________ PAGE ___OF___

PREPARED BY________________________ DATE__________

PART ONE: *Below please list all level two tasks, a short name for each, and a reference number for comparison to Part Two. Use additional pages if necessary and number them above, as shown.*

LEVEL ONE TASK NO.	DESCRIPTION	SHORT NAME	REF NO.

Form No. 3, Continued.

PART TWO: *Please sketch below the logical relationships between each of the tasks described in part one. Be sure to use the appropriate reference numbers, prefixed with the level one task number. For example, the second task at level two under task 1 at level one should be number 1.2, the third task 1.3, etc.*

9. Resolution of Duplications. In the case of duplication, the P.E. sits down with the affected parties and clarifies the duplication. Any duplication is either an actual duplication of work, in which case the P.E. must decide who shall be responsible for the task, or it is an apparent duplication because of similar task descriptions. If this is the case, then the tasks should be rephrased to clarify the distinction between them.

10. Development of Level Three Logics. In the case of a level two task having joint responsibility between two or more team members, the P.E. requests at this step a level three description of the joint task. Each affected team member develops his respective elements of this description. If, after the assembly of a level three description, there are still joint responsibilities evident, he may have the team members go to level four. Form 4 is suggested for this activity.

11. Review Discussion and Adoption by Team. At this step, the completed level two, and any supplementary levels three or four (or lower) logic descriptions are reviewed by the team, discussed, and after making any necessary modifications, adopted by the team.

12. Preparation of Product Specification by Team Members. At this step, each team member specifies which products he will produce from each of his level two (or lower) tasks. Form 5 is suggested as a format for this. The product specification should be succinct, but clear, and should only consider products that will actually be produced as documents or other artifacts. Discussions, hearings, etc. which, in and of themselves are not products, need not be specified. (However, documents such as minutes, which result from hearings or meetings might qualify.) Also, interim products that are

Form No. 4: LEVEL THREE OR LOWER LOGIC DESCRIPTION

TEAM MEMBER________________________________ PAGE____OF____

PREPARED BY________________________________ DATE__________

PART ONE: *Below please list all sub-tasks, a short name for each, and a reference number for comparison to Part Two. Use additional pages if necessary, numbering them above in the spaces provided.*

HIGHER LEVEL TASK NO.	DESCRIPTION	SHORT NAME	REF NO.

PART TWO: *Please sketch below the logical relationships between each of the tasks described in part one. Be sure to use appropriate reference numbers, prefixed with the higher level task number.*

produced prior to the completion of a task need not be specified.

The due date portion of the product specification can be fitted in when it has been determined from Step 13.

13. Preparation of Detailed Project Calendars by Team Members. Simultaneously with the stipulation of product specifications are the determination of detailed calendars. These should be done at level two and all lower levels where they exist. Form 6 is a suggested format for this information. The data from this activity can be transferred to the Product Specifications upon completion.

14. Project Engineer Review of Calendars. At this point, the Project Engineer reviews the calendars and prepares a combined calendar. Simultaneously, he is conducting Step 15. As he reviews and prepares the calendars, he should note any conflicts between calendar dates and externally imposed deadlines, including the level one calendar, and assesses if the logic of the logic diagrams are being violated. (This means that the calendars should reflect the proper sequence of tasks.) If there is any difficulty with the calendars, he should see that they are rectified via discussions with the appropriate team members.

15. Project Engineer's Review of Product Specification. The P.E. also reviews, at this point, the product specifications submitted by the team members. He should check for clarity and consistency with the logic descriptions, clarifying any problems with affected team members.

16. Publication of Detailed Calendars and Product Specifications. The accumulated product specifications and final detailed calendar are now published for

Form No. 5: PRODUCT SPECIFICATION PSP________

TASK__________RESPONSIBILITY________________________ PAGE ____OF ____

No.	DESCRIPTION	LOGIC IN	LOGIC OUT	DUE DATE

Form No. 6: DETAILED CALENDAR

UPDATE PERIOD____________

TEAM MEMBER____________________________ PAGE_____ OF_____

PREPARED BY____________________________ DATE______________

TASK NUMBER	COMPLETION DATE	TASK NUMBER	COMPLETION DATE

all team members. The calendar can be in the form of a chart, while the product specifications are best put in a loose leaf notebook.

At each update period (as specified in the update schedule resulting from Step 5) Steps 6 through 16 are repeated. It is at this point where altered external circumstances, internal shifts in time or process, and newly discovered technical aspects of the job at hand are introduced into the management process.

If significant changes in the project have occurred, it may be necessary to modify the level one logic or calendar. The modification of the calendar has no effect on the documentation update. However, a change in level one logic will necessitate beginning the updating process at Step 1 rather than Step 5.

Lest it seems to the reader that this procedure is cumbersome, let it be noted that the entire process takes only a few days for most projects. In Figure 7 a suggested calendar for the process of Figure 6 is illustrated. Note that the entire sequence takes only ten calendar days, and the updating process only six days.

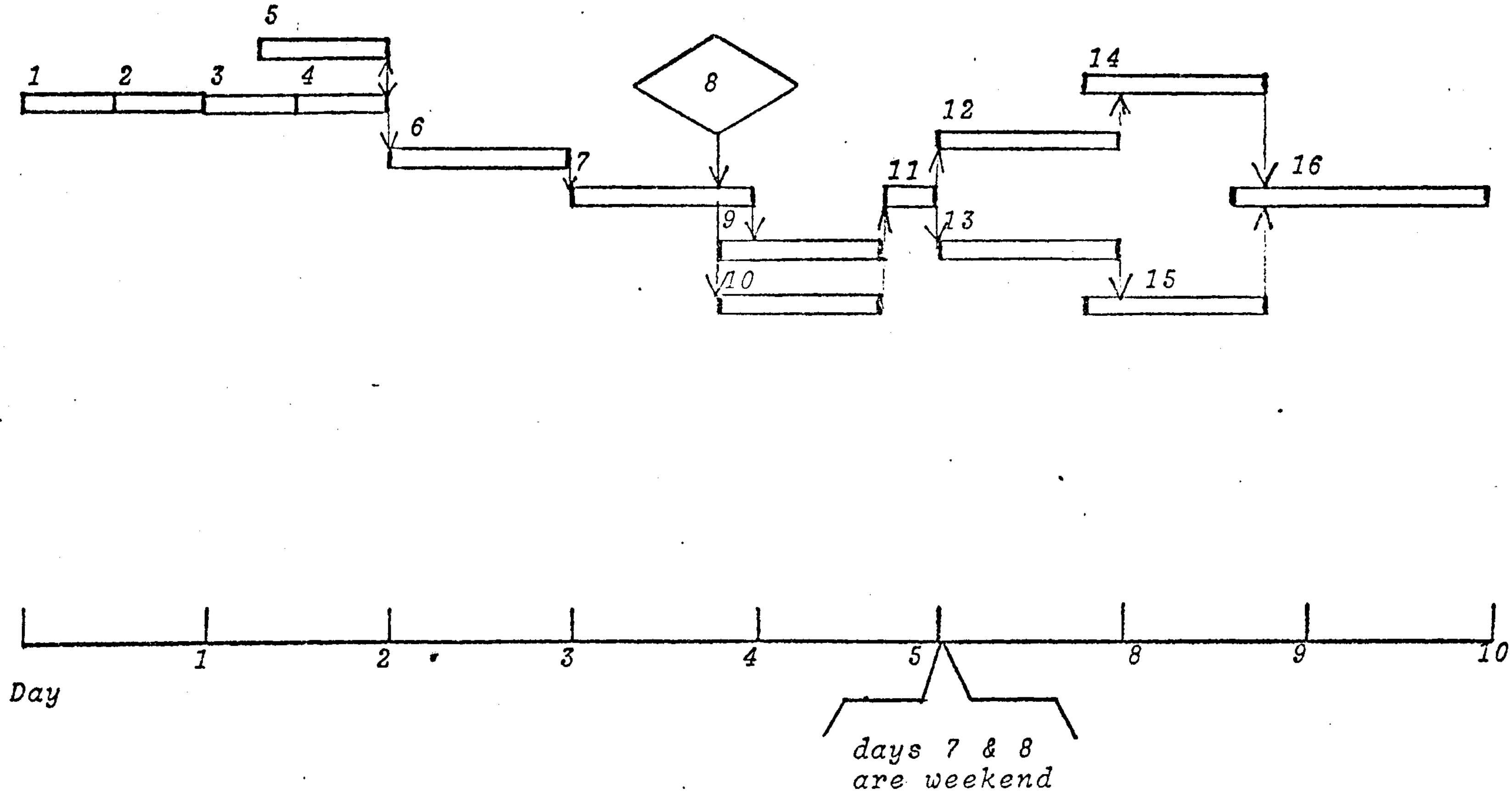


FIGURE SEVEN: POSSIBLE CALENDAR FOR TPL DOCUMENTATION PREPARATION PROCEDURE