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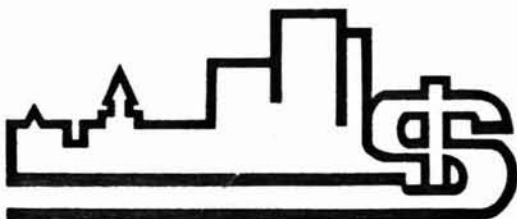
**GOVERNMENT
CAPACITY
SHARING
PROGRAM**

**Department of Housing
and Urban Development**

**Office of Policy Development
and Research**

**ADVANCE PROJECT PLANNING FOR
PUBLIC WORKS: A SYSTEMATIC
APPROACH**

by Advanced Project Planning Staff
City of Anaheim, California



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FOREWORD

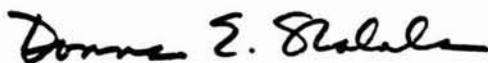
In recent years, the Office of Policy Development and Research of the U.S. Department of Housing and Urban Development, in partnership with state and local governments, has been concerned with improving the delivery of public services. Four related programs have been sponsored since early 1974:

- *Capacity-Building Demonstration Program* — Strengthening the capabilities of local officials to fulfill their overall policy development, resource allocation, and management responsibilities. (1974-1976)
- *Capacity-Building Energy Conservation Program* — Promoting the practical application of technology and management to conserve energy. (1975-1977)
- *Capacity-Sharing Productivity Improvement Program* — Promoting the transfer and implementation of practical approaches to improve state and local government productivity. (1976-1979)
- *Financial Management Capacity-Sharing Program* — Collaboratively responding to the increasing problems facing local governments in their financial management practices. (1978-1980)

The products and practical tools from the first two programs have been available since early 1978. We are now making available the products from the capacity sharing productivity improvement program. Eighteen projects involving over 200 local governments have produced more than 85 training manuals, case studies, handbooks and computer programs.

Developed, tested and implemented by state and local governments, these products, in most cases, have also been carefully assessed by an independent contractor, SRI International, and a statement of its assessment is included with each product. In those cases where the results were inconclusive, the reader is so advised. For many of the projects, we are also publishing a complete assessment report. In other words, we have done our best to assure you that the products are sound and useable.

Five summary booklets that highlight the results from all eighteen projects and provide ordering information for their publications are available from HUD. Descriptions of the booklets and ordering information are given at the end of this volume.



Donna E. Shalala
Assistant Secretary for Policy Development
and Research

ASSESSMENT STATEMENT

— IMPACT ON SERVICE DELIVERY —

The intended impact of Advance Project Planning (APP) is to reduce or eliminate road construction delays and cost overruns due to lack of proper coordination with citizens, other governments, and utilities. APP has been applied to the planning phase of a test project. Construction is not yet underway, so proof that it avoids construction delays is not yet available. However, the use of APP did result in significantly more public participation in project hearings (over 90% of the residents along the right-of-way as compared to slightly over 40% for an earlier project). Furthermore, the use of APP made City Council approval possible earlier than in prior projects. The SRI assessment pointed out that the value of APP lies in the systematic planning and systematic follow through and in early warning of needed changes.

— IMPACT ON COST/COST OF IMPLEMENTATION —

APP cost about 2% of the total cost of the construction project. This is not out of line with normal planning cost. Developing the SCOPE chart and carrying out the advanced planning for the test project required a full-time civil engineer, one full-time public administrator and a part-time clerk. This staff should be able to work on two or three APP projects at one time.

— SPECIAL REQUIREMENTS FOR IMPLEMENTATION —

It would seem that the full system would be most applicable to large road construction projects of \$500,000 or more. However, the general principles could apply to smaller projects which might require extensive coordination.

— TRANSFERABILITY —

The steps outlined in this report could be employed by any jurisdiction planning a major road construction project. Smaller jurisdictions with limited staff or needs could adapt or tailor make their own APP using Anaheim's experience as a point of departure.

— SIMILAR PROJECTS ELSEWHERE —

The assessment did not investigate any other projects of a similar nature.

The research and studies forming the basis of this report were conducted pursuant to a contract with the Office of Policy Development and Research of the U.S. Department of Housing and Urban Development (HUD). The statements and conclusions contained herein are those of the contractor and do not necessarily reflect the view of the U.S. government in general or HUD in particular. Neither the United States nor HUD makes any warrantee, express or implied, or assumes responsibility for the accuracy or completeness of the informaiton herein.

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ADVANCE PROJECT PLANNING FOR
PUBLIC WORKS:
A SYSTEMATIC APPROACH

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Assisted by:
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Center for Urban and Regional Policy

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HUD Capacity-Sharing Productivity Improvement
Program Manager: Robert E. Baumgardner

ACKNOWLEDGMENTS

This document has been prepared at the completion of a long process of project design, implementation, and assessment. Numerous people have been involved at each step along the way. While all of these individuals deserve mention, formal acknowledgment is made here of only a few who were principal participants in the project.

Mr. Allan F. McDougall, Project Engineer with the City of Anaheim, California devised the APP project and directed the efforts of the APP project team: Mr. Edward Rozok, Assistant Project Engineer; Mr. Robert Herr, Team Leader; and Mr. Willard Tullock and Mr. Jerry Crabhill, Team Members. Project monitoring has been provided by Mr. Paul Epstein of HUD's Office of Policy Development and Research. The SRI project team has been supervised by Mr. Reese C. Wilson, Director of SRI's Center for Urban and Regional Policy. Mr. George P. Barbour, Jr. of PMC Associates has served as technical director for the SRI effort. Assessment of the APP project in Anaheim and final preparation of this document has been prepared by Mr. Theodore R. Lyman of SRI.

There are many whose involvement has not been formally acknowledged, but it is clear that the overall project could not have performed without their efforts.

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gaps in the early planning phase and by resolving issues that can sink a project during construction, the design and construction process is streamlined and excessive costs are avoided. (The Appendix provides a case study of how APP performed in Anaheim.)

The objectives of Anaheim's APP process are threefold, to:

- Provide better coordination among all agencies (public and private) involved in street improvement projects,
- Minimize interference with normal traffic movement, and
- Lessen adverse impact on the community.

APP is conceived for the larger, more complex construction projects of a jurisdiction having a reasonably large public works staff (say 20 or so). While developed in Anaheim where the population is approximately 200,000, the process would probably work well in both smaller and larger jurisdictions; the critical decision criterion here is whether or not a jurisdiction currently has a systematic process for advance planning. If so, certain elements of APP may fill some gaps. If not, perhaps APP can be transferred (in whole or in part) directly into another jurisdiction.

With a staff costing no more than \$50,000 per year, two projects in the \$1,000,000 category can be planned using the APP process. No computers are required nor should other costs be incurred. At this cost, comprehensive advance planning represents an investment of 2-1/2% per \$1 million of construction costs. Because construction problems are costly, it can be assumed that the cost of an APP staff would be more than offset by the prevention of even one planning "snafu."

APP is a process that is easily implemented; it requires no hardware, no skills beyond those of any public works professional, and little, if any, hands-on involvement of elected officials. It does, however, require a commitment from the public works director and the mid-level supervisors who will be involved with the implementation and operation of the process. Like any set of procedures, APP must be supported by management and staff if it is to remain viable over the long run.

This document is not a "how to" manual in the conventional "step-by-step" sense. Because APP is a process that must be fit into existing

EXECUTIVE SUMMARY

When a city or county begins considering major improvements in its streets, a process is initiated that is often complex. Important decisions must be made: Which streets should be improved? How are they to be improved? How much will it cost? Where will the money come from? When should construction take place? These are just a few of the obvious considerations that must be taken into account by public works officials. Questions must also be addressed to parties outside the government: What will the property owners say? Will the local utilities be involved? How many other government jurisdictions will be involved?

Answering these and the myriad of other questions that come up during the early stages of street improvement projects (or drainage, sewer or other such construction projects) obviously involves data collection and analysis. But because these relatively large-scale projects are conceived months and sometimes years before ground-breaking and because there are so many variables to consider, they require advance planning--planning well before the initiation of engineering and design. Too often the consequences of not systematically planning the early aspects of a project's life cycle are cost overruns due to redesigns and angry citizen outbursts due to unreasonably long periods of inconvenience, or last minute notification of a change to their street.

The City of Anaheim took advantage of a HUD sponsored innovative project award by developing a process for advance planning of street improvement projects. Synthesizing a variety of project management techniques, Anaheim public works employees developed a process that merges priority setting, scheduling, evaluation, and management control into a systematic process they have termed Advance Project Planning (APP). A variety of procedures and monitoring devices enable project planners and managers to effectively coordinate the multitude of activities and events that lead up to ground-breaking. By preventing duplication and

procedures, this manual is intended to provide the reader with ideas more than specifics. If implementation of an APP-like process would improve the planning of your construction projects, this document can serve as a point of departure. The various charts and procedures contained herein can serve to stimulate ideas you may want to incorporate in the APP process you tailor-make to fit your own needs.

It should be pointed out that APP has not been tested as to its cost-effectiveness. The pilot project for APP in Anaheim will not be completed for 2-3 years so it is not possible to prove APP's dollar value. However, an extensive assessment of the APP implementation process suggests that APP will more than pay for itself in reduced project delays through improved coordination (see Appendix).

ADVANCE PROJECT PLANNING PROCESS

The Need for Advance Project Planning

Project managers, engineers, draftsmen and other public works professionals all know the problems of inadequate early planning of street improvement projects. A project goes through design and cost programming before someone points out that 4,000 feet of gas lines will have to be lowered. Or, a project has been planned and programmed, and the start date set, when one misinformed property owner goes to the City Council and causes the project to be cancelled. A project is planned, programmed, and designed before it is learned that a railroad right-of-way encroachment is involved--one that did not show even on the railroad's map.

These problems illustrate what can happen when projects are not thoroughly planned in advance of their implementation. To avoid them requires a way of systematically taking account of and getting around the many pitfalls of making major street improvements.

This document discusses one way of systematically planning street and road improvement projects. This Advance Project Planning (APP) approach is like other approaches to advance planning used by public works planners throughout the country, with one difference: no computer is required. If your organization has no systematic planning process, perhaps you can use APP as a whole. If you already have well-established advance planning processes, maybe certain elements of APP can still be useful to update or extend your current methods of street improvement planning.

The fundamental problems faced by project engineers tasked with making street improvements include the following:

- Usually more street improvements are needed than can be made with available resources. There are also competing interests between alternative street improvement projects; existing road

conditions differ, some streets involve other jurisdictions such as the county or state. These factors affect which improvement projects are funded and which are left for another day. Therefore, it is necessary to choose the most important from the array of alternative improvement projects.

- Environmental impact reports impose a need for more comprehensive detailed planning, to be undertaken earlier. More data must be collected and analyzed earlier than was required before EIR.
- In the present period of government austerity, project proposals must be more comprehensive and detailed in order to pass initial screening, public hearings, budget planning, etc.
- Skyrocketing prices and new regulations have made land acquisition a more costly, time-consuming, uncertain process.
- Funding for street and road improvement projects can come from ever more numerous sources (Federal, state or County programs) each of which must be contacted early in the planning process so as to identify available sources of funds, amounts of money necessary, and the financial reimbursement plan to be employed.
- There are more and more utility companies to coordinate with (for example, CATV utilities are growing and pipelines transit many cities) to ensure that unforeseen disruptions in services do not occur.
- More citizens and neighborhood groups than in the past can be expected to take their case to city officials if they are not properly informed of a project.
- With the growth of the public sector it can be assumed that public works departments in particular and government organizations in general are becoming larger and more fragmented, often causing communication problems between the departments, divisions, and sections active in construction planning and design.

When problems like these are not dealt with, there is one thing that you can be sure of: unexpected costs. Unaddressed problems in construction project coordination and inadequate planning almost always end up costing money. Projects have to be redesigned, new property has to be purchased, schedules slip, or construction crews sit idle. Even if such problems don't result in cost overruns, they can result in angry property owners, outraged merchants, or residents whose lives are disrupted. Their sidewalks are being narrowed, their trees may be being removed, or they face dirt, dust, and inconvenience for far too long. Often the uncertainty of when construction is going to begin or end

causes a frustration that erupts in complaints to elected officials which eventually filter down to department directors, section supervisors, and foremen.

While it is recognized that cost overruns and upset property owners are an unfortunate but sometimes expected outcome of difficult street improvement projects, there are techniques like those embodied in the APP process that minimize the consequences of construction problems. APP is a set of procedures that begins to systematically plan and coordinate the seemingly infinite number of activities necessary to optimize the alignment of a right-of-way, for example, or to resurface an arterial. This document highlights a process that provides:

- A systematic approach to establishing priorities in street improvement construction projects.
- A capability for decisionmakers to monitor, review, and up-date on-going construction projects.
- A way to coordinate construction to prevent wasted resources (e.g., multiple cuts of the same street).

Specifically, APP generates timely information for decisionmakers regarding priority projects that should be undertaken, design requirements, costs, funding, and effects on property owners. APP serves as a management tool by scheduling critical events through a process of networking parallel and dependent activities over a consistent timeframe. APP, by virtue of this provision of "early warning," also ensures timely and comprehensive discussions with affected property owners and utility companies. Because information regarding the effects of the project on property owners and utility company facilities is provided in advance of detailed design efforts, better information is available for estimating project costs. In sum, APP is a tool supporting the preconstruction decisions of budget and cost analysts, project planners, project managers and others involved in planning major street improvement projects.

How APP Works

APP is not a rigid set of forms, procedures, or techniques that can simply be plugged into an already existing operation. APP is also not a

textbook-like technique along the lines of Critical Path Management (CPM) or the often used Performance Evaluation Review Technique (PERT). Neither is APP only a "state-of-mind" or philosophy of project management. However, APP embodies aspects of all of these.

It is an adaptable way of planning road or street improvement projects well in advance of actual construction, and it is the advance planning that makes the critical difference between APP and CPM or PERT, for example. APP feeds information into the cycle of project planning at the time alternative projects are first being considered for selection. It then lays out (in general terms for managers and in detail for project engineers) the schedule, critical events, and relationships between events that can support the decision-making process in a timely manner. This is done by way of various procedures; the process continues through the planning, approval, design, property acquisition, and bid opening steps of any project, but it is there that APP ends. While actual construction (especially design changes) is monitored by APP, other techniques like CPM and PERT would probably be more appropriate for managing the actual construction work.

APP is best explained in terms of some of the basic procedures embodied in planning for major street improvement projects. A number of procedures are abstracted in this section; however, it must be pointed out that such projects involve numerous procedures. Below are listed some of the more important procedures that can be embodied in an APP process; others (such as cost estimating, bid negotiation) can also be planned within the APP framework.

This section discusses:

- Development of project priorities
- Development of Administrative and Management Control Systems
- Optimizing alignment
- Determination of right-of-way requirements
- Initiating coordination and public relations activities
- Preparation of necessary environmental impact assessments
- Identification of revenue sources
- Planning for financial reimbursement.

1. Developing Project Priorities

The first step in any process leading to street improvements is deciding which projects to select. Placing alternative projects in priority order requires a systematic scoring scheme to ensure that selection criteria are given appropriate weights. A listing of project selection criteria can be developed on the basis of factors usually weighted by a jurisdiction's traffic engineering group. Figure 1 indicates the criteria important to selection decisions made by Anaheim's engineering group. The weights (or multipliers) given each criterion are subjective but can be established on the basis of conventional practice. (A survey of professional staff opinion can be a way of establishing criteria and weights.) Candidate projects can then be identified by observation or reports and data collected to support each selection criterion. Once the data are in hand, each project can be ranked with respect to the importance of each criterion. Then one can multiply the selection criterion weight times the inverse rank importance of each candidate project (i.e., if there are seven projects, multiply the top priority by seven, the second highest by six, etc.) for each criterion. The sum of these products provides a total value for each project and, thereby, a rank ordering. The results of this process in Anaheim are shown in Figure 1. Projects having the highest value would presumably often be selected; however, there may be cases where a project a little further down the priority list is chosen. For example, the highest rated project may have to wait until the timing is better (when State money becomes available or when a key piece of property changes hands).

2. Developing Administrative and Management Control Mechanisms

Two methods are employed to serve as tools for administration and management of selected projects. First, a comprehensive chart is developed to set forth a network of project management, coordination, engineering, and rights-of-way acquisition tasks. Figure 2 presents what is termed a project SCOPE chart (Schedule, Cost, and Performance Evaluation). As can be seen, the chart is prepared for each high priority project by listing and scheduling all expected activities and events from "project selection" to "start of construction." Each event is assigned a definite time for accomplishment and all events are "pieced together" to ensure that overlaps, duplication, or gaps do not

PRIORITY CHART

MULTI-PLIER	PRIORITY ITEMS	STREET NAMES	KNOTT STREET **		MAGNOLIA AVENUE		BROOKHURST STREET		HARBOR BLVD. ***		KATELLA AVENUE		BALL ROAD		ANAHEIM BLVD.	
			1	11	2	22	4	44	7	77	6	66	3	33	5	55
11	CITIZEN'S INPUT		1	11	2	22	4	44	7	77	6	66	3	33	5	55
10	STREET WIDTH NOT TO EXIST. CITY STDS.		2	20	1	10	6	60	5	50	4	40	3	30	7	70
9	INTERSECTION CAPACITY		1	9	3	27	5	45	7	63	4	36	2	18	6	54
* 8	AVERAGE DAILY TRAFFIC		1	8	5	40	6	48	7	56	2	16	4	32	3	24
7	TRAFFIC SIGNAL DEFICIENCY		2	14	7	49	4	28	6	42	1	7	3	21	5	35
6	ACCIDENT RATE (ACCIDENT/MILE/YEAR)		2	12	1	6	4	24	7	42	3	18	6	36	5	30
5	LINEAL FOOTAGE OF PARKING RESTRICTIONS		1	5	6	30	3	15	7	35	5	25	4	20	2	10
4	STORM DRAIN DEFICIENCY		1	4	4	16	6	24	5	20	3	12	2	8	7	28
3	EXISTING CONDITION OF PAVEMENT		1	3	4	12	5	15	3	9	2	6	7	21	6	18
2	FREQUENCY OF STREET MAINTENANCE		1	2	4	8	7	14	3	6	2	4	5	10	6	12
1	STREET LIGHTING DEFICIENCY		4	4	5	5	6	6	7	7	1	1	3	3	2	2
	TOTAL POINTS			92		225		323		407		231		232		338

- * EXAMPLE: Ball Rd. & Average Daily Traffic (ADT) Priority Item
- ** Project Receiving Lowest Priority
- *** Project Receiving Highest Priority

- 8 = Priority of ADT
- 4 = Priority of Ball for ADT
- 8 x 4 = 32 Points

FIGURE 1 EXAMPLE OF PRIORITY CHART

CITY OF ANAHEIM BROOKHURST STREET PROJECT SCOPE CHART

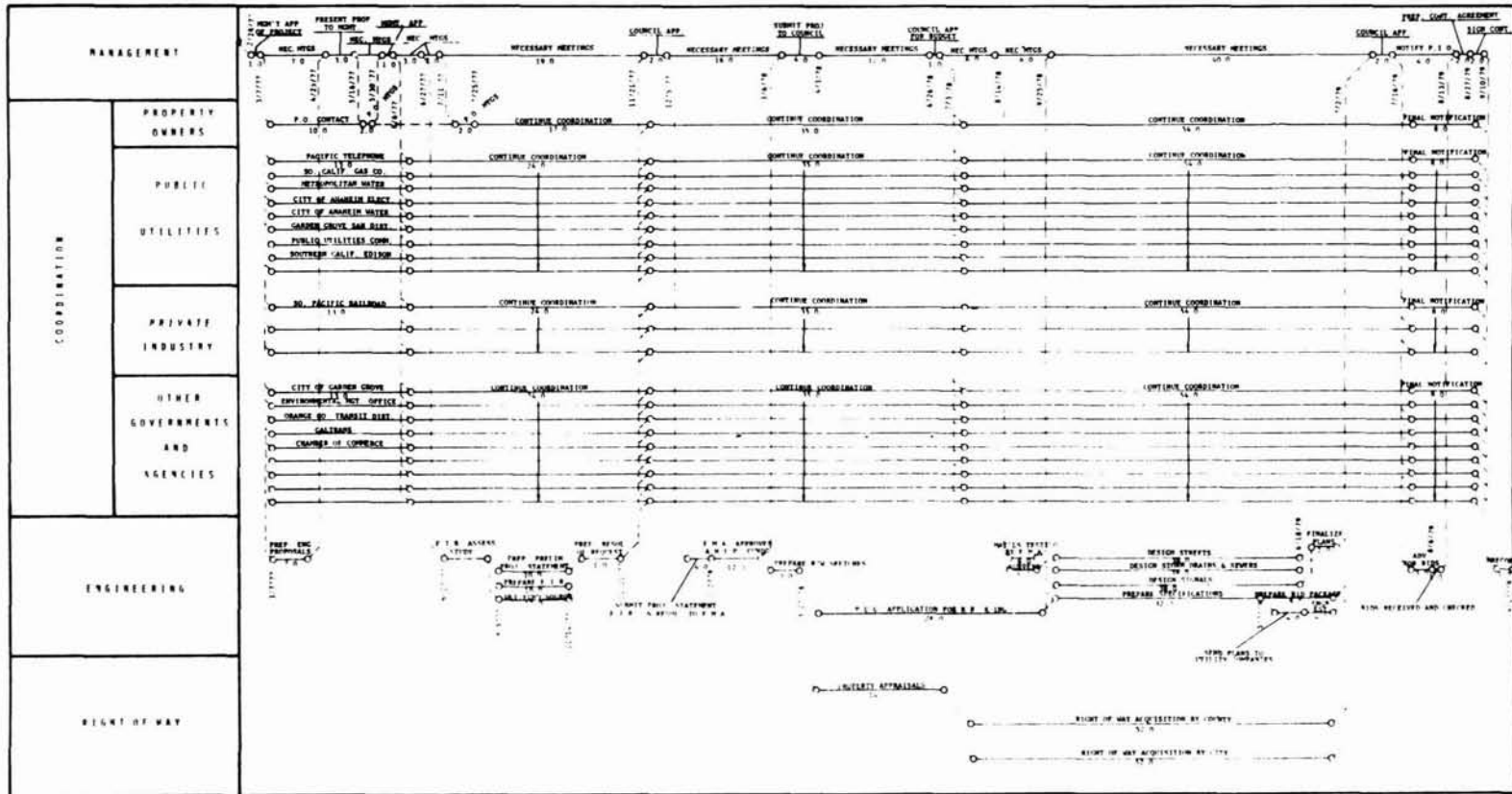


FIGURE 2 APP SCHEDULE, COST, PERFORMANCE, AND EVALUATION CHART

occur. Thus, the SCOPE chart not only provides for accurate scheduling, but also provides insurance that all involved departments and divisions in a splintered jurisdiction are moving as an integrated unit. The SCOPE Chart also ensures coordination between those on the inside and those outside the jurisdiction (e.g., utility companies).

The second method of providing administrative and management support to a selected project is the establishment and use of a Management Control Chart (see Figure 3). This chart provides management (the Public Works Director, for example) with an overview of projects (detail is provided to section supervisors or project engineers via the SCOPE chart) and thereby permits management to monitor progress and spot failures in coordination. Three types of activities for managers are summarized in this chart:

- Data collection, analysis, and optimization (for identifying project priorities, environmental impact assessments, optimum alignments, and right-of-way requirements).
- Financial planning (planning for revenue generation and for financial reimbursement).
- Management and coordination (for maintaining good public relations with citizens and utilities and for controlling administrative aspects of projects).

3. Optimizing Alignment

Using as an example, a street widening project, the next step is to plan for the optimum alignment of the street. This process, in turn, leads directly to the preparation of proposals to the various approval bodies. The proposal provides information on need, scope, impacts, methods, costs, and alternatives. Alternative street alignments often provide the basis for alternative proposals.

If there is any question about the maps on hand, the survey section of the Public Works Department should be requested to run a topography update. Strip maps can then be prepared for each proposal indicating right-of-way to be acquired, existing and proposed curbs, and so forth.

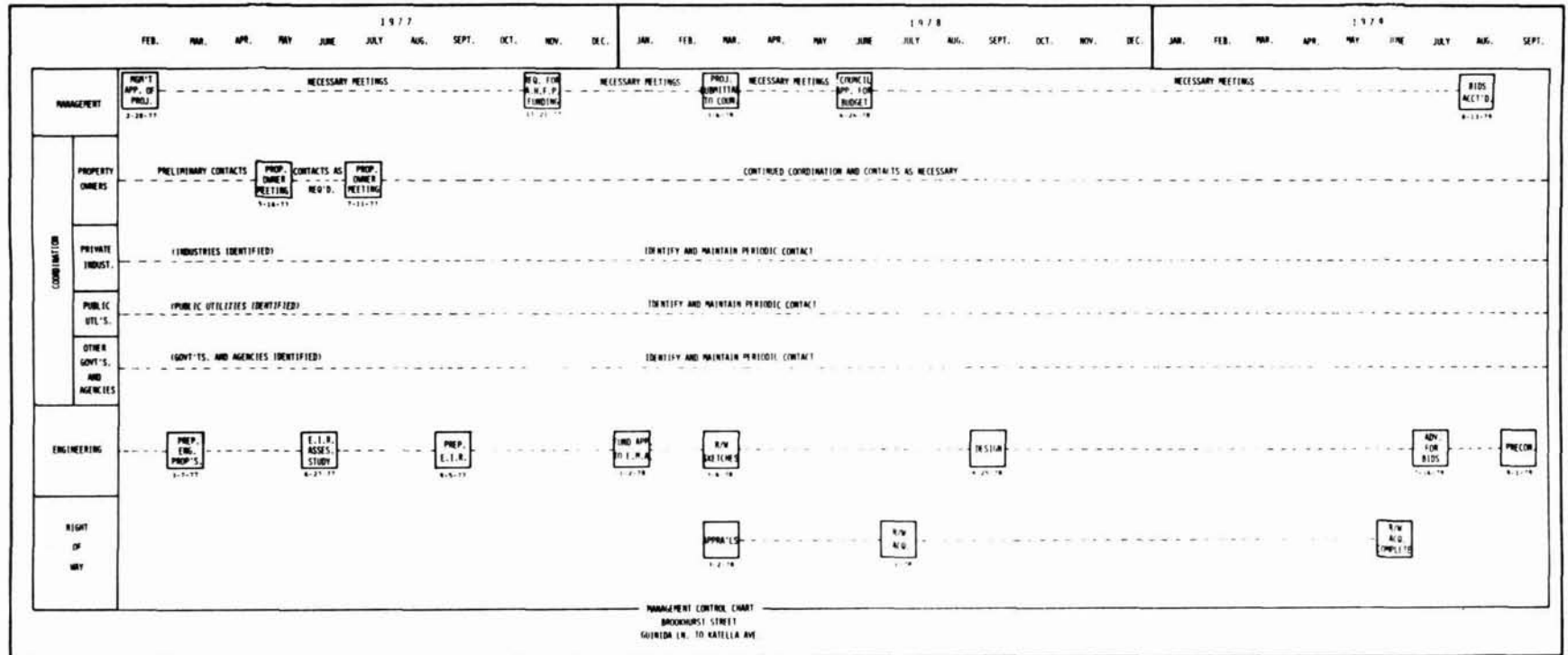


FIGURE 3 APP MANAGEMENT CONTROL CHART

Combining these maps and other supporting material (e.g., aerial photographs, engineering cost estimates) into each formal proposal provides a good package for presentation to citizens, elected officials, and management. Meetings with these parties will no doubt result in the need for changes in the proposals or in the need for a single, more fully developed proposal. These, of course, should be made before moving ahead toward final approval.

4. Determine Right-of-Way Requirements

The final right-of-way and land acquisition requirements should also be determined early in the planning process. These are determined by a combination of considerations. Existing rights-of-way and existing structures or improvements should be considered, as should the cost of acquiring alternative pieces of property. Once the right-of-way has been established and approved by management, final sketches will have to be made of each parcel where property is to be acquired. These sketches will show all the data needed for writing legal descriptions, appraisals of the property, acquisition negotiations and for recording purposes. Critical milestones for these and other activities should be entered on the project's SCOPE chart.

5. Initiate Coordination and Public Relations Activities

One of the most important processes embodied in the APP concept is early and continuing coordination with property owners along the right-of-way and with utility companies having facilities that might be affected by construction. As soon as the project has been selected by the Priority Rating System (as discussed earlier) a list should be prepared of property owners that could be directly affected by the project. A "non-bureaucratic" letter might then be sent to all owners on the list informing them that the city (or county, or state) is about to design, pending their input, a future street improvement project in their area.

The following topics are suggested for inclusion in the letter:*

- Street name and limits of project.
- Vicinity map
- Reasons for considering the improvement (brief).
- Request suggestions from property owners as to their thoughts regarding improvement needed.
- Purpose of the advance contact with property owners.
 - Improve planning, scheduling, etc.
 - Community involvement.
- Enclose prepaid addressed envelope and telephone number for return comments from property owners.

After responses have been returned from property owners and engineering proposals firmed up, a general meeting should be convened of property owners and selected project staff. (Anaheim staffers went door-to-door to contact property owners who did not respond and got a very large turnout.) At this early point in the project's planning this meeting should be an open discussion of alternatives (versus a "take it or leave it" theme). After a presentation of proposals (including supporting data such as accident rates), a period of questions and answers should be scheduled. While not all property owners will be pleased with the proposals, the ground work for future improved public relations will have been set.

As with property owners, a necessary step in establishing coordination with utility companies is to send a letter to all known companies possibly operating in the vicinity of the project site. The letter should describe the specific parameters of the project and request a written reply as to facilities, existing or planned, that the company may have in or near the project area.

Utilities that will be involved should be listed, and critical milestones placed on the schedule portion of the SCOPE chart. As the project progresses and a decision made as to which engineering proposal will be

*Examples are contained in Appendix B.

developed, further contact with the utilities should be made. This coordination should take place as significant milestones in the project occur, and should be continued until such time as the advance project planning staff turns the project over to the engineering design group or otherwise relinquishes responsibility.

6. Prepare Necessary Environmental Impact Assessments

Depending on the type of project being undertaken, land use studies and/or environmental impact assessments may be necessary. They should be prepared as early in the project planning process as possible. Early preparation of an EIR can highlight serious problems, leaving time available to make changes without much difficulty.

Each state has its own requirements that must be followed to ensure compliance with Federal environmental quality legislation. With respect to APP, the key requirement is to lay out milestones on the SCOPE chart for submitting necessary reports to the planning department, completion of their study, review and certification of their study by the approval authority and finally, for forwarding of certified reports to the various agencies requiring them.

7. Identifying Revenue Sources

APP also requires the early identification of alternative sources of funds (e.g., general fund monies, gas tax funds, funds distributed through state gas tax programs, Federal funds). The typical pattern for larger projects (\$1,000,000 plus--the size APP is designed for) is to piece together funds from a variety of sources. Because of this, the APP process and the Management Control Chart are particularly necessary to ensure that all potential funding sources are identified, and that timing for necessary applications and receipt of funds are keyed into all other planning activities.

For each option available, meetings should be held with the people who allocate those funds to ensure that no alternatives within each option are overlooked. Because funds required for property acquisition

often must be applied for in separate years and because of the complexity of funding processes, a substantial amount of time should be allocated to these activities. It may also be prudent to continue to plan for alternative funding sources in the event that funds from the primary sources fail to materialize. For example, if state gas tax funds are programmed as the primary source of funding, but there is some question about the availability of these funds, general fund monies might also be "earmarked" pending notification of the availability of state funds.

8. Planning for Financial Reimbursement

Because funding for large-scale projects generally is a multi-year proposition, revenue generation (i.e., cash flow) must be planned for fiscal years (for budget planning) and for calendar years (to key with project planning). The Management Control Chart should be keyed with both of these periods (fiscal and calendar years) and their schedules in turn, aligned with other activities such as meetings with management and elected officials. As with the preceding procedures, critical review and completion milestones should be entered on the SCOPE chart and Management Control Chart as necessary.

The eight procedures discussed above are obviously not the only steps necessary during the early planning phase of a construction project. However, they illustrate the kinds of activities that can be coordinated by way of simple techniques (e.g., the SCOPE and Management Control Charts). Other critical activities must also be coordinated; these include budgeting, council approvals, request for bids, and contract negotiations. APP provides the framework around which all critical activities can be planned and monitored.

Obviously, if your organization already has procedures for advance planning of street improvement projects, this report on APP may only point out where your procedures might need shoring up. However, if your public works operation is somewhat fragmented, if you have relatively costly projects to undertake (say \$1,000,000 and up), if you have experienced

costly delays and project redesign costs because of inadequate planning internally, with utility companies, with other jurisdictions, or with citizens, an APP-like process may be just what you need.

Requirements for Implementing and Operating APP

APP is of most value where construction projects are complex, therefore it is said that projects in excess of \$1 million are most appropriate for the APP process. Obviously, however, if a relatively inexpensive project, say installation of a culvert under a state highway and railroad crossing, is complex because of the number of parties involved, APP might be appropriate. Even for those less difficult projects, APP-like thinking would be valuable; however, the detail of a SCOPE chart, for example, would not be necessary.

The APP project director feels that APP works best when it is operated by its own staff,* suggesting that the Public Works Department must have a reasonably large professional office staff (say 20 plus). In Anaheim, the Advance Project Planning staff suggested the best skill mix would be one full-time person skilled in civil engineering and project management, one full-time public administrator or planner, and one clerk who would be required only half-time.

The key to an effective APP unit, say Anaheim staff, is the strong support of top department management and a commitment from management to use APP processes as the predominant coordinating force among the various work units active in planning street improvement projects. Furthermore, Anaheim's staff claim that commitment and support are more necessary for the successful implementation of APP than any particular form of organization in the Public Works Department. The department could be highly structured, with divisions, bureaus, and sections, or "flat," with few identifiable work units. If highly structured, an APP staff becomes the

*It was said that it is hard for a public works engineer, with immediate pressures of details on many projects to take a broad view of a project for the future. The competing time pressures will tend to make "today's projects" win out over the APP projects and can make it difficult for the engineer to "step back" and look at the "broad scope."

"glue" holding together the various units. If "flat," an APP staff becomes the focal point for all matters relating to advance planning.

Clearly, the key to implementing an APP process revolves around questions of need and commitment. If the need can be demonstrated, say by identifying the costs of past project overruns due to poor advance planning, support from above can be generated. However, personal commitment from top management is more important than general support. This personal commitment should be developed through meetings between key management and key mid-level and first-line supervisors. Meetings are useful in bringing everybody together, cementing agreements, and building a common sense of ownership of the new approach.

Once agreement is reached as to implementation of an APP process, the procedures to be used must be further developed. As mentioned earlier, the APP process is not a package that can be installed and "turned on." However, charts and procedures in this document can be used as a point of departure. APP implementers, for example, will need to develop their own criteria for selecting projects, and these will have to be weighted as appropriate. Past practices in selecting projects can serve as a basis for developing both selection criteria and weights for criteria. Categories of activities to schedule on SCOPE and Management Control Charts will probably include those used on Anaheim's charts and others.

The point is that every jurisdiction has its own requirements. While APP-like processes will no doubt prove helpful, "tailored," procedures should be developed to ensure that the process "fits" the organization.

The Cost of APP

APP is a labor intensive program. There are no requirements for resources beyond personnel (especially important, no computer is required). If, for example, a jurisdiction used the Anaheim suggestion of staffing APP with two full-time professionals and a half-time clerk, the costs may not exceed \$50,000 per year. This suggests that the cost of an APP staff could be more than offset by a more streamlined (less time consuming)

planning process, a less costly design process, and reduced construction costs. It costs a great deal to establish a new right-of-way after all needed property has been purchased but for one piece, a hold-out who then persuades the city council to redesign the project by threatening a lawsuit. Anaheim APP staffers felt that a 2.5 person staff could concurrently plan two \$1 million projects. At \$25,000 per project, (assuming a constraint of two projects per year), this means that advance planning costs less than 3% per \$1 million of construction.

Of course, it is also possible that APP would result in no net increase in costs. If advance planning of some kind is currently being performed by somebody in the organization, these costs are already being incurred. An APP staff as a focal point for all advance planning, could very well reduce existing costs by consolidating activities shared by many and placing responsibility with an experienced and dedicated staff.

Now, What About Implementing APP?

APP is a demonstrated, practical (but untested, as yet) process of planning street improvement projects well in advance of their initiation. While probably similar to many such processes in practice, there are no doubt many jurisdictions that are using no systematic process for thinking through street improvements early in the planning process. If your jurisdiction has been "flying by the seat of its pants," perhaps APP is for you. If you already have some process in place, perhaps APP procedures can supplement what you are currently doing. Remember, unaddressed problems in public works planning are costly--and it's not as though nothing can be done about them.

Appendix A

CASE STUDY OF APP IN ANAHEIM

Appendix A

CASE STUDY OF APP IN ANAHEIM

Measurable Impact

APP is a process whose impact cannot be readily measured until after a street improvement project, planned under APP, is designed and construction is completed. APP is intended to avoid costly planning and design flaws and delays. The street improvement project planned under APP as a pilot project (Brookhurst Street) in Anaheim is not planned for completion until March 1981. Accordingly, no firm impact data will be available until March 1981. Given the impossibility of collecting hard data, a comparison was made of the planning processes for three large scale construction projects similar to the Brookhurst Street pilot project. The conclusions contained in this case study have been drawn from the application of similar criteria to all four projects.

The city's recent Ball Road project was similar to the Brookhurst Street project in terms of its overall cost, level of construction difficulty, number of property owners affected, and so forth. In a comparative sense, however, the Ball Road project was seriously affected by just the kind of situation that the APP process is designed to overcome. A major and costly revision to the construction plans for this project was caused by a single property owner who marshalled enough support among other poorly informed property owners to cause the City Council to drastically change construction plans.

The point here is that because the property owner did not have a significant opportunity to attend public hearings, talk with city planners, or have other contact with the city, he did not have a proper understanding of the parameters of the project or the true impact of construction on his property. This poorly informed citizen, who marshalled political support, was felt to have been singularly responsible for the

added cost to the project of six weeks delay and additional design costs.

It is contended that the early citizen involvement aspect of APP will prevent such delays and added costs for the Brookhurst Street project. In fact, at the first Brookhurst public hearing (thoroughly advertised in accordance with the APP plan) a large citizen turnout was realized. The relatively minor complaints of these property owners were incorporated directly into early design plans suggesting an early elimination of costly roadblocks to construction.

Anaheim's Katella Avenue project was also similar to the pilot project. Interestingly, the Katella project was beset by costly delays blamed on inadequate advanced coordination with the regional gas utility (51 days lost) and even the city's own water department (15 days lost in addition to paved over water valves necessitating later excavations). Again, it is contended that the APP-planned Brookhurst project will not have such problems because appropriate and timely coordination with utility companies is performed well in advance of final design and actual construction. In fact, advance planning for the Brookhurst project pointed out to the Southern Pacific Railroad that the pilot project would affect one of their rail crossings--one even their own maps didn't indicate. This early warning may have saved later costly construction delays and/or redesigns for the pilot project.

Fairmount Boulevard was the third similar street improvement project used for comparison. This was a very complex project, perhaps somewhat more so than the APP pilot project. Nevertheless, in the opinion of the planning staff, a lack of adequate advance planning was blamed for extensive, time consuming design revisions (e.g., to accommodate water lines, and gas lines not known of). As with the other comparison projects, hindsight suggests that had the APP process been in use during the planning and design phases these particular planning, coordination, and design problems would have been prevented. It is concluded that large time and cost savings would have resulted.

All of these conclusions regarding cost savings are adequately supported by the available data, the opinion of APP project staff and those of individuals associated with the comparison projects. However, It must be reiterated that the pilot construction project is still in the planning stage. It is possible that the APP process could backfire--early substantive involvement of citizens could result in the city organizing opposition against itself. It is also possible that other unforeseen problems will occur; therefore it remains to be seen whether Murphy's first law will be borne out during the remaining stages of the Brookhurst project--in complex projects whatever can go wrong, will.

Citizen Reaction/Satisfaction

Citizen satisfaction is an important measure of APP's ultimate usefulness. Citizen complaints to their elected representatives regarding the intent or methods of street improvement are reported by public works professionals to be the most prominent cause of costly project cancellations, delays and/or redesigns. A major objective of the APP process is to ensure early and continual contact with property owners and thereby minimize costly redesign problems and attendant delays.

The available evidence indicates that APP-planned public hearings for the pilot project were much better attended than hearings held for the comparison projects. While the Ball Road project turned out only 9 percent of the affected property owners and the Fairmount project turned out only 17 percent and 42 percent in two hearings, the APP-planned Brookhurst Street project's hearing and property owners' meetings turned out approximately 90 percent of the affected property owners. (The Katella Avenue project embodied a written citizen survey. Sixty-three percent of affected property owners responded--there were no public hearings on this project.)

While citizens asked for and received some promises of design changes, observers at these meetings felt that property-owner comments were clearly based on more accurate information and that they were certainly more timely than the norm for projects not planned under the

APP process. This suggests that APP has demonstrably achieved its objectives relating to improvement in coordination with affected property owners.

Political/Management/Employee Reaction

Reaction to APP has been determined by an analysis of opinions solicited during formal interviews with appropriate management and operations personnel. Management and operations personnel in Anaheim consistently rated the APP process significantly superior to traditional methods of planning for street improvements. This higher rating by the city's professional staff was with respect to the extent to which APP improved:

- Internal office coordination
- Coordination with citizens
- Coordination with other political jurisdictions
- Coordination with publicly and privately owned utilities
- Planning (i.e., by eliminating roadblocks to easy design and construction)
- Vehicles for citizen input (i.e., public hearings and letters).

Predictably, APP was also consistently rated significantly higher in terms of its:

- Relative complexity (i.e., APP is an advancement of traditional planning processes; therefore it is viewed as more complex)
- Relative expensiveness (i.e., as an advancement, APP results in additional costs; interviewees assumed that costs would be more than offset by later savings)

Lastly, management and operations personnel rated APP as significantly more comprehensive than traditional planning approaches (i.e., the APP process was felt to positively affect all stages of a project--planning, design, construction--while traditional planning has a less lasting effect on a project's later stages). This observation seems valid given the network approach of APP to coordinating all phases of a project.

Appendix B

LETTERS OF NOTIFICATION TO PROPERTY OWNERS



CITY OF ANAHEIM, CALIFORNIA

March 21, 1977

Dear Property Owner:

Brookhurst Street from Katella Avenue to Guinida Lane is being considered as a future improvement project by the City of Anaheim.

As you may already know, Brookhurst Street north of Guinida Lane has been improved for traffic flow and the City of Garden Grove is currently in the process of an improvement south of Katella Avenue. With the anticipated increase in traffic, this major north-south street will require improvements in the near future within the limits mentioned above.

The purpose of this letter is two-fold; first, to request suggestions from you as property owners as to what your thoughts might be regarding the improvements needed, and secondly, to acquaint you with a new program within the Public Works Department of the city. This program has been implemented to develop advance planning for street modifications and/or improvements. The program is aimed at improving the planning, scheduling and control of street improvements so as to minimize inconvenience to the public and other community impacts.

"Other community impacts" is one item to which we will devote a great deal of time and study. To this end, it is our desire to solicit from you and the other property owners within the area considered, ideas and suggestions which can be used to solve the many problems which will arise if such a project is undertaken.

It is our desire to contact each of you personally for a detailed discussion of the project. This can be done either individually or as a group. Please bear in mind that our initial intent is to acquire as much input from the people involved before "project planning" is started.

Enclosed is a prepaid addressed envelope for your convenience. Please feel free to contact us with your suggestions and/or recommendations.


Sincerely,



Robert G. Herr



Willard D. Tullock II



Jerry L. Crabill

Innovative Projects Program
114 S. Claudina Street
Anaheim, California 92803
(714) 533-5773 or 533-5774



CITY OF ANAHEIM, CALIFORNIA

April 29, 1977

Dear Property Owner:

There will be a meeting in the Council Chambers at the City Hall, 204 E. Lincoln Avenue, on Monday, May 16, 1977 at 7:00 p.m. to present proposals for the future improvement of Brookhurst Street from Katella Avenue to Guinida Lane. Several proposals will be presented with discussion to follow. This notification is being mailed to all property owners adjacent to the project site.

We hope that you will plan to attend.

Respectfully,

Robert G. Herr
Innovative Projects Program

RGH:wh



CITY OF ANAHEIM, CALIFORNIA

Dear

We wish to thank you for your attendance at the property owner meeting on May 16, 1977. Your participation combined with that of approximately 65 other people has contributed to the success of one of the goals of Innovative Projects - namely, input from the project impacted community.

A recap of the meeting will not be discussed in this letter due to the fact that the amount of topics raised in the meeting makes such a discussion prohibitive.

As was mentioned, our next step is a meeting with management. Citizen reaction and comments from the meeting will be discussed in detail followed by subsequent action which hopefully will lead to solutions of most of the problems connected with the improvement of Brookhurst Street.

We will be in the process of preparing alternatives to the proposals based on the comments from the people in attendance. Again, we are in a preliminary planning stage. If you would like to come into our offices or call for more discussion you are welcome to do so.

Indications from the meeting are that another meeting may be desirable. As before, you will be informed well in advance as to the time and location.

Sincerely,

Robert G. Herr
Innovative Projects Program

RGH:JLC:wh



CITY OF ANAHEIM, CALIFORNIA

June 20, 1977

Dear Property Owner:

The purpose of this letter is to keep you informed as to the progress of the Brookhurst Street project. You will find at the end of this letter a description of the proposed new curb line in relation to the existing curb line in front of your home or business. At the first property owner meeting it was evident from those in attendance that one of the main concerns was the location of the proposed curb line.

At our last meeting with management, your comments, questions and reactions resulting from the property owner meeting on 5-16-77 were reviewed and discussed. As a result of this meeting on 6-7-77, a meeting was held with the County of Orange. They are aware of the problems in the project area and have indicated to us their willingness to participate in the improvement of Brookhurst Street. Proposals A, B and C were presented to them. Again, all aspects of the proposals were discussed as well as the results of our first property owner meeting. Because of the amount of family-home relocations required and associated costs with Proposal "C", Proposal "B" was generally agreed to be the most desirable.

The next property owner meeting will be on July 11, 1977 at 7:00 p.m. in the Council Chambers of the City Hall.

A description of the proposed new curb location is shown below. If you have additional questions, please contact us at 533-5773 or 533-5774.

Very truly yours,


Jerry L. Crabill
Innovative Projects Program

JLC:wh

WEST SIDE OF BROOKHURST STREET

1. From approximately 140' north of Guinida Lane to Harriet Lane - Proposed curb would be ten (10) feet back of existing curb.
2. From Harriet Lane to Cerritos Avenue - Proposed curb would be twelve (12) feet back of existing curb.
3. From Cerritos Avenue to Pacific Avenue - Proposed curb would be twenty (20) feet back of existing curb.
4. From Pacific Avenue to approximately 150' south of Pacific Avenue - Proposed curb would be twelve (12) feet back of existing curb.
5. From approximately 150' south of Pacific Avenue to approximately 150 feet north of Midwood Lane - Proposed curb would be seven (7) feet back of existing curb.
6. From 150' north of Midwood Lane to Midwood Lane - Proposed curb would be eight (8) feet back of existing curb.
7. From Midwood Lane to Katella Avenue - Proposed curb would be eight (8) feet back of existing curb.

EAST SIDE OF BROOKHURST STREET

1. From Guinida Lane to approximately 150 feet south of Harriet Lane - Proposed curb would be seven (7) feet back of existing curb.
2. From approximately 150 feet south of Harriet Lane to Southern Pacific Railroad - Proposed curb would be twelve (12) feet back of existing curb.
3. From Southern Pacific Railroad to Midwood Lane - Proposed curb would be two (2) feet back of existing curb.
4. From Midwood Lane to Katella Avenue - Proposed curb would be five (5) feet back of existing curb.



CITY OF ANAHEIM, CALIFORNIA

June 30, 1977

Dear Property Owner:

Our records indicate a change in ownership of some parcels on Brookhurst Street since we mailed out the first letter regarding the Brookhurst Street improvement.

We are enclosing a copy of the first three letters for your information. You will notice in the third letter the date for the next property owner meeting.

We hope that you will plan to attend if possible.

Very truly yours,

Willard D. Tullock II
Innovative Projects Program

WDT:wdt



CITY OF ANAHEIM, CALIFORNIA

September 22, 1977

Dear Property Owner,


The purpose of this letter is to update you with regards to the Brookhurst Street Improvement Project.

We have recently let a contract for the preparation of an Environmental Impact Report (E.I.R.). The report will be submitted in accordance with guidelines established by the City of Anaheim to implement the California Environmental Quality Act as well as the State of California "Guidelines for Implementation of the California Environmental Quality Act of 1970."

The report will be concerned only with that directly affected by the project. Topics that are generally discussed in an E.I.R. include: Physical, Biological and Human Interest Characteristics; the impact of the project on the Physical, Biological and Human Environments; the adverse affects on the above and their possible mitigation measures.

Please contact us if you desire additional information.

Very truly yours,


Jerry L. Crabill
Innovative Projects Program

JLC:rr



CITY OF ANAHEIM, CALIFORNIA

November 8, 1977

Dear

Our records indicate that there has been a change in ownership of some parcels on Brookhurst Street.

As you know, Brookhurst Street north of Guinida Lane has been improved for traffic flow and the City of Garden Grove is near the completion of their project south of Katella Avenue. With the anticipated increase in traffic, this major north-south street will require improvement in the near future within the limits mentioned above (Guinida Lane to Katella Avenue.)

The purpose of this letter is to inform you of the City of Anaheim's intent to improve Brookhurst Street within the above limits. Since March of 1977, we have been in contact with property owners via telephone, letters personal contacts, and public meetings.

This letter is of course very brief and I am certain you have additional questions. Our office is located at 114 South Claudina in Anaheim and our phone numbers are 533-5773 and 533-5774. Please come in or phone if you desire additional information.

Very truly yours,

Jerry L. Crabill
Innovative Projects Program

JLC:rr



CITY OF ANAHEIM, CALIFORNIA

November 15, 1977

Dear Property Owner:

The purpose of this letter is to inform you of the regular meeting of the Anaheim Planning Commission.

The Environmental Impact Report concerning Brookhurst Street from Guinida Lane to Katella Avenue will be discussed under Item 3a, "Environmental Impact Report No. 210 - Brookhurst Street Widening."

The meeting will be held in the City Council Chambers, 204 East Lincoln Avenue, at 1:30 P.M. on November 21, 1977.

It is tentatively planned that the E.I.R. will be placed on the City Council Agenda Tuesday, November 29, 1977.

Robert G. Herr
Innovative Projects Program
(714) 533-5773



CITY OF ANAHEIM, CALIFORNIA

December 6, 1977

Dear Property Owner:


The purpose of this letter is to inform you of the regular meeting of the Anaheim City Council.

The Environmental Impact Report for the proposed improvement of Brookhurst Street from Guinida Lane to Katella Avenue was reviewed and approved by the Anaheim Planning Commission on November 21, 1977. This report will be submitted to the City Council at their regular meeting for final review and discussion.

The meeting will be held in the City Council Chambers, 204 E. Lincoln Avenue starting at 1:30 P.M. on December 13, 1977.

If you have any questions, please don't hesitate to contact any of the Innovative Projects Program Staff.

Very truly yours,


Willard D. Tullock II
Innovative Projects Program
(714) 533-5773

WDT:rr



CITY OF ANAHEIM, CALIFORNIA

Office of City Clerk
204 East Lincoln Avenue
(714) 533-5626

December 14, 1977

NOTICE

NOTICE IS HEREBY given that the Anaheim City Council will hold a public hearing on Tuesday, December 27, 1977, commencing at 7:00 P. M., in the Council Chamber in City Hall, 204 East Lincoln Avenue, Anaheim, to further discuss the

Proposed widening of Brookhurst Street
from Guinida Lane to Katella Avenue.

All interested parties are invited to attend said meeting and express opinions on the proposed project.

Further information may be obtained at the office of the City Clerk, 533-5626, or Innovative Projects Program, 533-5773.

BY ORDER OF THE CITY COUNCIL
OF THE CITY OF ANAHEIM

LINDA D. ROBERTS, CITY CLERK



CITY OF ANAHEIM, CALIFORNIA

January 5, 1978

Dear Property Owner:

The purpose of this letter is to update you with regards to the Brookhurst Street Improvement Project.

The Anaheim City Council, held a Public Hearing on Tuesday, December 27, 1977 to discuss the project. As a result of this meeting the City Council decision was to approve Proposal "C", which is the full 120 foot wide right of way. The stipulation by Council is that all necessary right of way to be acquired will be from the west side of Brookhurst Street. This will require the acquisition of thirty (30) full take parcels and nine (9) partial take parcels. No right of way will be acquired from the east side of Brookhurst Street.

The Proposal was submitted to the County of Orange on January 3, 1978. If the project is approved by the County, right of way negotiations will probably begin in July, 1978.

If you have any questions, please contact any of the Innovative Projects Program Staff.

Very truly yours,

Robert G. Herr
Innovative Projects Program
(714) 533-5773

RGH:rr

Government Capacity Sharing Program

There are five overview booklets available from HUD that tell about this and other ideas developed and tested in the eighteen HUD-funded projects aimed at improving productivity in state and local government:

- **Practical Ideas for Small Governments Facing Big Problems** tells how local governments have designed energy conservation programs, personnel management and purchasing systems, have introduced performance measurement and cost accounting, have improved permit application and licensing, and have devised a way to plan for large street and road projects.
- **Practical Ideas for the Government That Has Everything—Including Productivity Problems** describes ideas for solving problems affecting service efficiency or effectiveness, or employee morale. Street repairs, park maintenance, street and alley cleaning, and permits and licenses are some of the subjects.
- **Practical Ideas on Ways for Governments to Work Together** describes four intergovernmental projects and one public-private project. Subjects include joint provision of services, a successful environmental review team, energy conservation, personnel management, purchasing, developing cost accounting and performance measures, and drawing on the management experience available in the private sector.
- **Practical Ideas for Governments Facing Planning and Scheduling Problems** describes ways of coordinating public services and citizen responsibilities to improve services to a neighborhood, a method for planning large public works projects, a way of instituting quality control in parks maintenance, an information system designed for parks, methods for scheduling shift work equitably, and ways of locating emergency and leisure service facilities.
- **Summary of Productivity Improvement Projects** describes each of the eighteen projects carried out and lists over eighty of the documents produced on the projects.

A free copy of each can be obtained by writing to Division of Product Dissemination and Transfer, Assistant Secretary for Policy Development and Research, Department of Housing and Urban Development, Room 8124, 451 7th Street, S.W., Washington, D.C. 20410.