

# DEVELOPING A FEDERAL INFRASTRUCTURE STRATEGY

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## Introduction

Over the past decade much has been said and written concerning the declining condition of, and need to improve and sustain the Nation's public works infrastructure. Many assessments of the major problems besetting infrastructure suggest the need for significant increases in expenditures for new facilities as well as maintenance and rehabilitation of existing infrastructure. However, it is also generally recognized that significant improvements could be gained by changes in the areas of related management and existing institutional arrangements and interrelationships. Potential improvements in these areas are receiving ever-increasing attention, given the austere budgetary constraints which now confront all levels of government.

Among the many suggestions for improvements in management and institutional relations is the frequently expressed notion that all levels of government should effect closer coordination of their various agencies which administer and/or regulate infrastructure components. The expectation underlying this notion is that increased coordination between agencies would prevent duplicative efforts, minimize programmatic conflicts, focus combined efforts on high priority problems and result in the sharing of efficient procedures, technologies and resources. For example and as concerns the national government, a report prepared by Congress' Office of Technology Assessment (OTA; 1991) states:

OTA finds the Federal Government has fallen behind industry, world credit markets, State, regional and local authorities, the courts, and international organizations in determining the national public works agenda. Stronger Federal leadership is needed to develop integrated, long-range na-

tional water resources, transportation, and environmental policies that will direct and coordinate intergovernmental and private activities. This effort may result in new goals as well as institutional mechanisms for achieving them.

OTA concludes that the time is ripe to review the Federal oversight structure and management practices for public works so that policies are better coordinated and more cost-effective, and decisions about priorities made wisely.

## Federal Agencies Initiative

Within the Federal infrastructure establishment there is an increasing awareness of the desirability to strengthen agency linkages and to broaden the scope of interagency coordination activities. This awareness is reflected in a recent initiative to establish a process in which the relevant federal agencies can explore the potential for development of a federal infrastructure strategy and the form that it might take. Among the basic initial objectives for developing of a strategy are the enhancement of interagency exchanges of information and sharing strategies, procedures and resources such as research laboratory facilities.

Departments and agencies invited to participate in the strategy development process include the Departments of Agriculture, Commerce, Energy, Housing and Urban Development, Interior, Transportation, Treasury, and the Environmental Protection Agency, Corps of Engineers and the General Services Administration. Also invited to join in this interagency process are representatives of Congressional staffs dealing with infrastructure matters.

## Development Process

Interagency discussions with respect to a

federal infrastructure strategy are being facilitated and coordinated by the staff of the Advisory Commission on Intergovernmental Relations (ACIR). This effort is being funded by the U.S. Army Corps of Engineers through its Federal Infrastructure Strategy Study. The ACIR is a permanent, bipartisan and independent agency established by Congress in 1959. Its primary missions are to: (a) provide a forum for discussion and deliberation on intergovernmental issues and problems; (b) conduct research on intergovernmental issues; and (c) make recommendations for reform. The Commission is composed of 26 members with the membership including representatives of the executive branch of the federal government (3), members of Congress (6), governors (4), state legislators (3), and county officials (3). Each Commission member serves a two-year term and may be reappointed.

The basic process that the ACIR staff is using to facilitate and coordinate the dialogues between the federal agencies consists of a series of workshops to surface and examine key issues related to public works infrastructure. In order that these issues can be addressed in the context of national concerns, the views of diverse infrastructure constituencies and their interactions with the federal establishment must be considered. Therefore, the federal agency representatives in the strategy development process will be participating in workshops attended by representatives of state and local governments, public works professions, private sector providers of infrastructure components, public interest groups, and policy analysts and researchers. This strategy is consistent with the overall goal of broadening the federal interest as a catalyst for an integrated national infrastructure renewal strategy.

At present it is anticipated that the workshops, to be conducted at the offices of ACIR, will be carried out and completed by end of this year. Further, on the basis of the results of those workshops, it is planned to have a national conference in February of 1992 to formulate a preliminary federal strategy and to set its agenda. The strategy would be finalized after a series of four regional

conferences that are expected to draw broad interests and participation around the nation and to provide valuable input for finalizing a strategy.

## **Basic Principles**

During the present formative stage in the process of exploring the development of an infrastructure strategy, a few basic recommendations of the National Council on Public Works Improvement (1988) have been selected as guiding principles. These recommendations are contained in the Council's report to the President and Congress in 1988 and are listed therein as follows:

- Clarification of the respective roles of the federal, state and local governments in the construction and management of infrastructure to focus responsibility and increase accountability;
- Steps to improve the performance and efficiency of existing facilities;
- A rational capital budgeting process at all levels of government;
- Strong incentives to ensure adequate maintenance and, where appropriate, adopt new technologies; and
- More rigorous and widespread use of low capital techniques for delivering services and meeting service needs, such as demand management, coordinated land-use planning, and waste reduction and recycling.

In summarizing its findings, the Council also recommended that state and local governments continue to play their traditional leadership roles in the construction and management of the nation's infrastructure. But this was conditioned by the Council's expressed belief that:

the federal government must act as a full and responsible partner on a long-term basis in the national effort to increase and sustain public capital investment.

## Agency Actions

The initiation of discussions between federal agencies concerning a possible infrastructure strategy is one manifestation of the desire of these agencies to serve as responsible partners in a national effort to improve and sustain the condition of the country's infrastructure. However, in the final analysis, improvements will largely depend on the actions taken by individual agencies in addressing problems within their respective programmatic areas. In that regard, there are impressive recent examples of two large agencies establishing strategic plans to assure a reasoned, long-term commitment to the nation's infrastructure needs. Specifically, the strategic plans developed by the U.S. Department of Transportation (1990) and the Department of Energy (1991/1992).

Within the authors' own experience with programs of the U.S. Army Corps of Engineers, considerable emphasis is being placed on activities and programs directed at increasing the productivity and performance of the public works infrastructure within the purview of the Corps' civil and military facilities responsibilities. Some of these programs are summarized below. It will be noted that each of these programs is directed at one or more of the objectives recommended by the NCPWI, namely: (a) clarification of roles accountability, and enhanced partnerships; (b) improved performance and efficiency; (c) rational capital budgeting; (d) adequate maintenance; and (e) adoption of new technologies and use of low capital techniques.

Construction Productivity Advancement Research (CPAR) Program. The CPAR program is a cost-shared partnership between the Corps of Engineers and the U.S. construction industry, academic institutions, state and local governments and other groups to help the U.S. construction industry regain its competitive edge nationally and internationally. The program objective is to facilitate research, development and application of advanced technologies through cooperative R&D, field demonstrations, licensing agreements and other forms

of technology transfer. Research focuses on four main areas - design improvement, improved construction site productivity, advanced materials and technology transfer innovations.

CPAR has several features which distinguish it from similar cooperative programs: - research ideas and proposal are generated by industry, not the Corps; - CPAR projects are fully cost-shared partnerships between the Corps and industry; - rapid transfer and application of R&D results are facilitated through aggressive technology transfer/marketing actions, including exclusive licensing of the industry partner.

Inland Navigation Investment Priorities (INIP). The Water Resources Development Act of 1986 set up an Inland Waterways Users Board to provide oversight and guidance to the Corps of Engineers for the long range development and rehabilitation of the inland navigation system. The Corps developed a system-wide strategy (INIP) for evaluating and setting economic priorities for improvements to the system, which take into account the reality that expenditures could not exceed the accumulation of funds in the Waterways Trust Fund, collected through a fuel tax on vessels and barges using the system.

Repair, Evaluation, Maintenance and Rehabilitation (REMER) Research Program. The overall objective of the REMER research program is to identify and develop effective and affordable technology for maintaining and extending the service life of existing water resources projects. In this connection, REMER technology requirements of aging infrastructure, in many cases, cannot be met with technologies applicable to new construction. The program addresses REMER problems in seven broad areas: Concrete and Steel Structures, Geotechnical, Hydraulics, Coastal, Electrical and Mechanical, Environmental Impacts, and Operations Management.

Savings to the Corps from the results of this program over the past 6 years are estimated at \$69 million with projected savings in the next 5 years

of \$200 million. Use of the REMER technologies by other Federal agencies, state and local governments and the private sector substantially increases the benefits of the program.

**Dredging Research Program (DRP).** The DRP is structured to provide new technologies in the physical aspects of dredging for use by Corps field offices and the dredging industry. The program focuses on five topical areas, namely: (a) the fate of dredged material placed in open waters; (b) material properties related to navigation and dredging; (c) dredge plant equipment and system processes; (d) vessel positioning, survey controls and dredge monitoring systems; and (e) management of dredging projects. The products of this research activity result in increased cost-efficiencies in operations, reduction in undesirable dredging-induced environmental impacts, and reduction in contract claims.

**Hydropower Efficiency Improvements Program.** The Corps is initiating a detailed analysis of its current operations and maintenance, and capital improvement practices pertaining to Corps hydropower facilities. The objectives of this detailed analysis are to determine the best means by which to implement recommendations of a general study on facilities performance. Those recommendations are largely based on the conclusion that the Corps should establish an operations/maintenance philosophy consistent with that of the private-sector power industry, including: (a) maintaining projects in perpetuity; (b) targeting forced outage rates to not more than one percent; and (c) changing from preventive to predictive maintenance practices.

**Construction Partner Program.** This program involves establishing cooperative management teams (Corps/contractors) including the key participants in major construction efforts. Through a facilitated workshop process, the management teams focus on common goals and benefits to be achieved thorough contract execution. Though conflicts are not entirely eliminated by this process, the construction partner program is demonstrating its effectiveness in reducing the number of disputes that result

in litigations.

**Life Cycle Project Management (LCPM).** The Corps has moved from fragmented project management along functional lines to a centralized management system in each district office. The basic system consists of a full-time life cycle project management staff and a project management review board. Development and use of a written management plan for each project, from its inception, is an essential element of this system. The plan identifies at the outset what the roles are of the various elements of the Corps and the non-federal project sponsor(s). The LCPM system has been found to be effective in increasing accountability for project scope, quality, cost, budget and schedule and improving project management continuity.

**Policy and Procedures Study for Project O&M.** At present, operations and maintenance (O&M) of the Corps Civil Works projects accounts for 45 percent of the agency's budget and utilizes about half of its work force. This major program requires constant review to insure management of these resources in an efficient and effective manner. A new major O&M management study has been initiated by the Corps with the objective being that federal expenditures for O&M provide justified levels of service in the least cost manner. The output of this study is expected to be practical measures, i.e. the policies and procedures that could be applied toward the study objective.

## **Summary**

There is a recognition on the part of the infrastructure agencies of the federal government that the effectiveness and efficiencies of their respective programs could be enhanced by strengthening interagency linkages and coordination activities. Towards that end, a recent initiative has been taken whereby the relevant federal agencies are beginning to explore the potential for developing a federal infrastructure strategy. Some initial objectives of such a strategy would be to enhance means of exchanging information, and to share

strategies, procedures and possibly resources such as research laboratory facilities. The principles on which the interagency dialogues are being based are the findings of the National Council on Public Work Improvement (NCPWI) which recommended: (a) clarification of the respective roles of governments; (b) rational capital budgeting; (c) improvements in performance and efficiency; (d) incentives to assure adequate maintenance and adoption of new technologies; and (e) broader use of low capital techniques. There is also strong evidence that the various federal infrastructure agencies are taking positive actions on individual levels, that are consonant with the NCPWI recommendation's in order to improve the effectiveness of their respective programs. Examples of such actions are the recent strategic plans of the Departments of Transportation and Energy and various infrastructure related programs instituted by the Corps of Engineers.

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