

The Business Roundtable

**ADMINISTRATION AND ENFORCEMENT
of
BUILDING CODES AND REGULATIONS**

**A CONSTRUCTION INDUSTRY COST
EFFECTIVENESS PROJECT REPORT**

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**THE BUSINESS ROUNDTABLE
1615 L STREET N.W.
WASHINGTON DC 20036
(202) 872-1260**

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SUMMARY

This study of building codes and regulations has focused on building-code enforcement and administration and on the corollary topic of education and training for code-enforcement personnel. Two other important subjects--federal regulation and the content of building codes themselves--were omitted because these are already being studied extensively by the National Institute of Building Sciences and others.

There is a great potential for improving the administration and enforcement of building codes across the nation, though the problems are so diverse that no single panacea can be applied to the effort. Problems arise primarily in the commercial area. A survey among owners and contractors involved in the construction of power plants, and industrial facilities showed that they generally have little contact with local building departments. Owners generally employ their own construction-inspection teams and are widely regarded by building officials as self-policing. The vast majority who did have experience with local building departments reported that they were satisfied with the quality of service provided.

In some jurisdictions, a lack of funds allocated to building departments leads to staff vacancies, unwarranted delay in permit issuing, and inconsistent enforcement of regulations. Yet this is comparatively rare; most governments are providing adequate code-enforcement services. To be sure, budgetary constraints are growing more severe, prompting some localities--notably those affected by initiatives that have reduced property taxes--to impose sharp increases in user fees and charges. This trend seems likely to increase.

One serious problem in building code enforcement is the lack of qualifications of many building officials at all levels: administrators, plans reviewers and inspectors. This is a contributing factor in inconsistent enforcement and unwarranted delays in construction. To raise the competence of code officials, professional standards of excellence need to be mandated by state law. Many states have now moved or are beginning to move in this direction. Education and training are offered by the three model-code groups, academic institutions, and numerous state governments. Some of the education and testing programs need to be improved; however, code-enforcement education is not easily accessible in many localities. Still, professional certification and licensing is being provided through the model code groups and the states with mandatory certification and licensing programs.

The study team found that where states require building officials to meet mandatory standards to hold a given job, the result is a major step toward upgrading the abilities of code enforcement personnel. Mandatory certification comes with state building codes, some volun-

tary, and some mandatory. Whether mandatory state building codes conflict with the construction industry's interest in avoiding conflicting substantive provisions between different codes-an arrangement that inhibits both innovation and cost-saving standardization of parts and pieces of buildings-lies beyond the scope of this study. But it does seem clear that state building codes, accompanied by mandatory certification for building officials, help make the administrative gears run more smoothly.

Owners and contractors, through their national and local organizations, can help speed the present slow improvement in the caliber of code-enforcement officials by giving support to three efforts:

1. Wider adoption of statewide criteria for building officials qualifications and statewide certification of those adjudged competent after testing.
2. More state funding for training of building code personnel.
3. Development already begun by the Council of American Building Officials, the umbrella group for the three model code organizations, of a comprehensive education program for building officials.

Only one third of the nation's building departments publish information about their procedures and requirements. By itself, this is a major-and especially irritating-source of delay in obtaining building permits. Too few building departments hold pre-application conferences for major projects and/or have set up convenient facilities for "onestop permitting." Owners and contractors should encourage wider adoption of all these techniques.

Given these potential cost-boosting delays, owners should regularly include a thorough investigation of permit requirements as part of their site-selection and facilities-planning studies.

II

INTRODUCTION

The Business Roundtable's Construction Industry Cost Effectiveness (CICE) Task Force identified federal regulations and state and local building codes as areas for study since it was felt that these various strictures might be impairing the industry's efficiency. The study team examined three aspects of regulations and codes. Building code administration and enforcement was determined to be a topic that could be addressed with a reasonable commitment of resources-and one where useful recommendations could be expected. The other two areas of concern-federal regulations and the structure and patterns of building codes-were found to be the objects of an ambitious program being conducted by the National Institute of Building Sciences. NIBS, a congressionally created but now self-supporting organization, has been mandated to examine regulatory problems in the building industry and to provide a forum for the various interest groups in the industry.

Several aspects of building code administration and enforcement were tentatively identified as leading to delays and inconsistent practices. These were:

- The qualifications and professional status of building officials.
- The limited financial resources available to building departments at the state and local level.
- The permit process.
- The inspection process.
- The effect of multiple jurisdictions.
- The process for appealing decisions by building departments.

Research into each of these topics was then conducted. The findings indicate that, although there is certainly potential for improving the administration and enforcement of state and local building codes, the problems as they affect major industrial, commercial and power plant projects, are not nearly as severe as might have been inferred from initial surveys.

We found that, where problems do exist, they are widely recognized by those active in building regulation, especially the model code-writing organizations, and that progress toward addressing these problems is being made. This progress is slow but may be speeded up with support and encouragement, given a focus and direction upon which the industry can agree. We hope that this study can begin to provide that impetus.

Despite these difficulties, however, some patterns do begin to emerge. It is apparent that, in states that have enacted legislation providing some degree of statewide consistency and standards for code enforcement, administrative problems are reduced. It is also apparent that communication among the various industry and regulatory groups is a key factor in reducing confusion, clarifying requirements and procedures, and improving the process. In financial resources, building official qualifications, and the permit process, we found subjects where opportunities exist for owners to help bring about desired changes.

Research into the inspection process, local appeal process and multiple jurisdictions, however, did not result in recommendations for further action. As for multiple jurisdictions, we found the problems are more a result of over regulation at all levels of government.

III

HOW STUDY WAS MADE

Qualifications and Professional Status of Building Officials:

The principal study effort consisted of interviews with representatives from all participants in the code-enforcement process. Initially, a survey was conducted of 49 states to get a basic picture of state certification requirements and state-wide education programs (see pp. 11-13), lengthy conversations were held with individuals involved in code administration. These included officials from the three model code organizations,¹ the National League of Cities, the U.S. Conference of Mayors, the National Association of Counties, the National Conference of States on Building Codes and Standards, the National

¹ BOCA - The Building Officials and Code Administrators International
ICBO- The International Conference of Building Officials.
SBCCI - The Southern Building Codes Congress International
Institute of Building Sciences, and former members of the National Academy of Code Administrators. Interviews were also conducted with state and local government officers, building officials, educators and testing specialists in code enforcement.

Financial Resources for Code Administration

The first step was to identify how financial resources are allocated to code enforcement; then if a relationship was determined to exist between insufficient financial resources and performance, to identify the scope of the problem and the contributory causes.

To measure the performance of local code enforcement agencies, a survey of building departments, owners and contractors was conducted. Each group was asked a number of questions about the services and performance of the department responsible for this activity. Questionnaires sent to building departments included financial questions for administrators designed to yield statistics comparing appropriation levels by various governments.

A series of in-depth telephone interviews was conducted to learn how local governments could find sufficient financial resources for code enforcement. The governments interviewed were Ada County, Idaho; Baltimore, Maryland; Los Angeles and Sacramento, California. These locations were chosen from the 13 case studies published by the American Planning Association in *Streamlining Local Land Use Regulations*. The report focused on governments making innovative administrative reforms to manage regulatory activities. From this report the study team identified governments that were carrying out reforms as a result of revenue shortages from property-tax initiatives or in an effort to encourage local economic development. The administrative reforms carried out by these governments offer trend-setting examples that could be applied by most governments seeking alternative financial and administrative procedures.

The Building-Permit Process

The objectives of this part of the study were: 1) to analyze the causes of delay in obtaining permits, 2) to seek solutions for these problems, and 3) to develop recommendations for change. The study team surveyed 119 building department officials in 44 states. The smallest responding department was Selma, Alabama, with two employees; the largest was Los Angeles, with 830 employees. The survey data were analyzed and correlated with interviews with building officials across the country. In addition, the team reviewed pertinent literature about code administration and permit issuance.

IV

FINANCIAL RESOURCES FOR CODE ENFORCEMENT AND ADMINISTRATION

The allocation of financial resources by local governments is determined by budgetary politics. Government decision-makers assess the priorities and needs of various constituents and, when possible, provide programs and services to meet those needs. To direct a portion of communities' financial resources to a specific activity or service, a constituency is most effective when it is mobilized to work with local government to identify and establish what mutual benefits will be derived from the expenditure of public funds. In order for a government to commit funds to services, budgetary decision-makers must be convinced that resources are expended to meet a specific need and that through government action, service can be improved.

The Role of Local Governments

Resource Allocation

The role of a code enforcement agency is to enforce the laws, ordinances and standards of construction processes and design. Most governments collect some type of fee or charge for code-enforcement services. These fees and charges provide income to the general treasury to offset a percentage of the costs for performing this function. The costs of code enforcement, e.g., plan reviews, inspections and permit issuance, can be correlated with the amount of time and resources expended on each, so these costs can be charged to a particular user.

Theoretically, this charge system is justified by local governments on the ground that the services provided by code enforcement agencies benefit a particular group or user, rather than the general community. But most governments agree that code enforcement also protects the health and safety of the entire community, so some costs should be borne by general revenues.

Each local government decides what portion of code-enforcement funds will come from general revenues and what portion from user fees. Our research indicated that user fees defray from 50% to 100% of code enforcement costs. The percentage varies based on the local government's assessment of 1) the impact of user fees on construction volume and 2) the municipality's ability to raise tax revenue. In California, for example, Proposition 13 reduced property taxes by almost 60% and sharply limited future property tax increases. Faced

with shortages of revenue, some governments raised fees sharply enough to pay 100% of the costs of their building department. In Ada County, Idaho, construction activity is well below the national per capita average. User fees and charges cannot support the total cost of code enforcement because the demand for the service is so small. Property-tax revenues subsidize 50% of the operation in Ada County and user fees support the remaining 50%. Some communities establish artificially low fee structures to encourage economic development and new construction.

One problem facing many governments, as they try to allocate resources to municipal services, is a lack of sufficient financial data to determine the real costs of specific services. Because of this, "officials are severely handicapped in comparing different units that perform the same work, in comparing their city's costs with those of other cities, and in evaluating alternatives that differ greatly from their present mode of operation," according to E.S. Savas, writing in *Urban Affairs Quarterly* on "How Much Do Government Services Really Cost?" (Sept. 1979).

The budget is the common document used to analyze government services. It is intended to set forth the purpose, nature, and magnitude of government expenditures. Generally, no other source of financial information is available for local government activities. Yet, according to our research, a budget is not an adequate tool for evaluating real program costs. Local government budgets tend to obscure the true cost of services because they reflect many implicit assumptions and local conventions that fail to include important costs of program activities. The most common omissions are overhead, capital costs for vehicles, supplies, and the use of related staff agencies. Still, many public officials reject alternative methods of providing a municipal service because they believe the cost of the alternative is higher than their present operation.

In the future, if local governments intend to support code-enforcement activities with a mixture of general revenue sources and user fees, they will need more cost-effective accounting methods to determine true program costs and to plan for service demand.

Administrative Reorganization

Land-use regulatory activities such as zoning, planning, and environmental impact analysis are often included in the same budget with code enforcement activities. The intent is to protect the interest of the community with respect to the type and nature of proposed development projects. In addition, these activities enforce compliance with land-use laws.

Most of these regulatory activities do not produce tangible services that can be identified and billed to a user. Governments support most of these programs from general revenues. Recently, some governments have decided that revenues generated by fees and charges for code enforcement and zoning should be used to cover part of the costs of related land-use regulation. The rationale is that land-use regulation constitutes an indirect element of code enforcement, justifying the use of funds generated by building department fees.

In California, Los Angeles and Sacramento have adopted similar administrative reforms as an alternative to sharp service reductions in the wake of Proposition 13. In telephone interviews, building officials in the two cities reported these administrative changes:

- Planning, zoning, and building department activities were consolidated.
- User fees for zoning and building department services were reevaluated and in some cases increased.
- Costs of planning activities were folded into the cost of providing code enforcement and zoning activities.

Government decision-makers say that they must have flexibility to apply scarce resources according to need. Dedicated funding restricts the power of a government to manipulate scarce resources among public services. In Baltimore and Los Angeles, for example, building department officials felt that consolidating related regulatory functions and pooling revenues was a logical administrative action. In these two cities, permit, plan review, and zoning fees covered the costs of these services and provided needed revenue for planning activities. This application of fee revenue further reduced the strain on property tax revenues.

State courts in California, Oregon, and Idaho are considering whether or not the code-enforcement fees and charges are reasonable, and whether they can be applied to support related regulatory activities. Local governments must prove through documentation and analysis that fees and charges are imposed to serve an expressed purpose and that these activities are not discriminatory. The lawsuits promise to clarify the scope and use of fees and charges by local governments.

City officials in Sacramento and Baltimore reported that the key to successful administrative consolidation and innovation is an ability to visibly improve service standards for building department activities. Higher payments *made* must be reflected in tangible services provided to the user. Discussions with officials in Sacramento indicated that they have worked closely with local building departments and construction councils to streamline regulatory procedures. Fee structures were developed and analyzed in conjunction with these groups

to improve the consensus. On the whole, both Baltimore and Sacramento consider their programs the more successful because of the cooperative effort.

This study indicates that the construction industry can expect costs to increase for obtaining permission to build and for certification of code compliance. Discussions with more than 30 officials of federal, state, and local governments (including research institutes) underscores the wide concern among local governments about fiscal constraints. Many of these officials indicated that governments are considering:

- Increasing fees and user charges to recover revenue lost from other sources.
- Passing on the financial burden of inspection and compliance liability to the construction industry.
- Reducing staff levels and services.

The Roles of State Government

Code Administration and Enforcement

State governments influence the enforcement and administration of building codes in a variety of ways. For this report, the study team focused on the efforts of states enforcing mandatory uniform construction codes and qualification requirements. We feel that in these states, legislation improved the performance of local code enforcement agencies by providing administrative guidance and program support. Program administrators in New Jersey and Oregon, two states with similar code enforcement legislation, were asked to identify what aspects of their laws, if any, would improve local code enforcement performance and finance. Both responses were similar. As a result of state intervention, local building departments were more likely to:

- Reduce excessive costs through administrative changes.
- Provide training and education to employees through state programs improving the overall performance of the department.
- Justify salary increases for code-enforcement personnel as a result of certification programs.
- Be more aware of code-user concerns and costs as a result of their efforts.

Currently, 21 States have mandatory uniform construction codes (see Table I page 22). Only six of the 21 states-Connecticut, New Jersey, North Carolina, Oregon, Rhode Island, and Wisconsin-enforce

mandatory certification and education requirements for code-enforcement personnel. It is our feeling that adoption of mandatory certification and education programs by the other sixteen states would further upgrade their code enforcement services.²

State Building Codes

To understand the Balkanized complexity of the nation's myriad building codes, it helps to start by considering the pattern of state building codes. These are shown, along with the accompanying education and certification requirements for code-enforcement personnel (if any), in Tables 1, 2, 3, and 4 on pages 11-13.³

There is probably less contradictory variety in these state building codes that might be inferred, because almost all of them are ostensibly based on one or another of the three private model building codes, written, regularly revised and published by the so-called model code organizations: the Building Officials and Code Administrators International (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Codes Congress International (SBCCI). Yet "basing" a state code, mandatory or not, on a model-code group document (all of them are good codes) does not necessarily mean that the state code really follows the standard provisions. For examples, in adopting a state code based on the BOCA Code, Ohio added some 185 pages of state amendments. The substantive content of building codes, as noted in the introduction, is beyond the purview of this study. Yet it should be noted that many experts decry the spread of state building codes on the ground that they increase the cost and diversity of code provisions, instead of making them more uniform.

² For a discussion of administration reforms in New Jersey and Oregon, See Appendix 4.

³ The tables on pages 11-13 are based on a telephone survey of state officials responsible for administering state building codes and or regulations, backed up by the 1980 ***Directory of State Codes and Regulations*** published ivy the National Conference of States on Building Codes and Standards.

**TABLE 1
TWENTY-ONE STATES WITH STATEWIDE BUILDING
CODES AND MANDATORY COMPLIANCE**

State	Code Used	Certification Requirements	Training/Educational Program
California	ICBO	None	V: ICBO Courses
Colorado	ICBO	None	V:
Connecticut	State(BOCA)	M: A, P, I	M: State
Florida ^a	SBCCI	V: A, I	M:State/ICBO
Indiana	ICBO	V: A, P, I	V: ICBO Course
Iowa	ICBO	None	None
Kentucky ^b	BOCA	None	V: BOCA Courses
Massachusetts	BOCA	V(CS): I	V: BOCA Courses
Michigan	BOCA	V: I	V: ICBO Courses
Minnesota	ICBO	M: A, P, I	M:ICBO
Montana	ICBO	None	V:StateU.
New Jersey	BOCA	M: A, P, I	M:State/Community College
New Mexico	ICBO	M: A, P, I	V;State
North Carolina	SBCCI	M: A, P, I	V.StateU
Ohio	BOCA	M: A, P, I	V:State
Oregon	ICBO	M: A, P,	M:State
Rhode Island	BOCA	M: I	M:BOCA Courses
Utah	ICBO	None	V:State
Virginia	BOCA	V: A, P, I	V:BOCA Courses
Washington	ICBO	None	V:ICBO Courses
Wisconsin	State	M: P, I	V;BOCA Courses

^a Local governments must choose one of five codes: 93% use the Southern Standard Code,

^b Mandatory in certain types of jurisdictions; voluntary in others,

Legend

M = Mandatory

V = Voluntary

CS = Civil Services

A = Building Administrator

P = Plans Examiner

I = Inspector

AIA = American Insurance Assoc.

**TABLE 2
FIVE STATES WITH STATEWIDE BUILDING CODES
AND VOLUNTARY COMPLIANCE**

State	Code Used	Certification Requirements	Training Education Program
Georgia	SBCCI	V: A, P, I	State U.
Idaho	ICBO	M: I V:	V: ICBO Courses
Maryland	BOCA	V: A, P, I	V: BOCA Courses
New York	State	None	None
North Dakota	ICBO	None	V: ICBO Courses

^a Code is mandatory for state buildings only; voluntary elsewhere.

Legend

M = Mandatory
V = Voluntary

A = Building Administrator
P = Plans Examiner
I = Inspector

**TABLE 3
SEVEN STATES WITH STATEWIDE BUILDING CODES
FOR STATE BUILDINGS ONLY, BUT
NO STATEWIDE CERTIFICATION OR EDUCATION
PROGRAM**

State	Code Used
Alabama ^a	SBCCI
Arkansas	SBCCI
Kansas	ICBO
Mississippi	SBCCI
Nevada	ICBO
Oklahoma	AIA
South Carolina ^b	SBCCI

^a Applies to schools

^b Permissive code, but *if* a jurisdiction adopts a code it *must* be the Southern Standard Code. Also applies to hotels.

**TABLE 4
SEVENTEEN STATES WITHOUT A STATEWIDE
BUILDING CODE AND NO
EDUCATION/CERTIFICATION PROGRAM**

<p>Alaska Arizona Delaware Hawaii Illinois Louisiana Maine Missouri</p>	<p>Nebraska New Hampshire Pennsylvania South Dakota Tennessee^a Texas Vermont West Virginia Wyoming</p>
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^a Permissive code, but *if* a jurisdiction adopts a code it *must* be the Southern Standard Code.

Conclusions

The range of financial resources applied to building code enforcement and administration varies significantly. Our survey sample of building departments and research on the municipal budgetary process indicates that the socio-economic characteristics of an individual community are the primary determinants of resource allocation levels. These characteristics include:

- The size of the city
- The level of new construction
- The age and complexity of the infrastructure
- The capacity of the tax bases to raise revenue
- Legal expenditure limits
- Pressing political priorities

Because of the diversity and complexity of these variables in the approximately 19,000 municipalities across the country, we concluded that it is almost impossible to develop a meaningful relationship between the number of staff, professional competence, or level of service provided by a code enforcement agency and its allocated financial resources.

However, our research led us to believe that, although appropriation levels are difficult to compare and relate to program quality, in general local decision-makers are able to use scarce resources to provide adequate code enforcement services. We found that this function responds to the economic realities of the construction industry. As long as a need for code enforcement is demonstrated by such meas-

ures as the level of building permits issued, a local government will provide enough resources to meet this need. On the other hand, if construction activity is declining, over time the financing for building code work will be reduced accordingly.

We found one exception: local governments that are actively recruiting projects to promote economic recovery will provide such incentives to developers as:

- Expeditious and timely code enforcement services (by diverting additional funds to this work),
- Administrative reforms to streamline and rationalize the regulatory process.
- Solicitation of state and federal grants to provide funding for economic development projects and the administrative costs of these projects.

The future availability of money for code enforcement activities is uncertain. State and local governments are cutting their budgets for all public services as a result of reductions in federal grants and initiatives that have cut local property taxes. In many areas, a sharp decline in construction has further reduced revenue for code enforcement services. Governments, in turn, are searching for new sources of funds lost from traditional revenue mechanisms. One alternative has been increased user fees and charges. Many local governments contend that unless program costs can be accurately measured and contained, and unless state governments pass legislation enabling local jurisdictions to increase the use of non-tax revenue mechanisms, many services, including code-enforcement, could be in serious peril.

Increasing budgetary constraints will force local governments to find alternative ways to finance a range of public services competing for scarce money. Most governments do not now have the management tools to evaluate program costs or devise alternative means of providing services. In order to assure that sufficient resources are allocated to code enforcement, many governments should improve their financial control and reporting systems. They need:

- Accounting systems to measure; the true cost of program activities and plan for future needs.
- Management-reporting systems to monitor the performance of code-enforcement personnel and services.
- Methods and procedures to devise adequate as well as reasonable user fee and charge schedules.
- A working relationship with state and local construction councils to help identify and solve regulatory problems.
- Stronger relations with state officials to assure that state-local revenue appropriations are equitably distributed.

V

QUALIFICATIONS AND PROFESSIONAL STATUS OF BUILDING OFFICIALS

Background

In examining factors affecting the ability of building departments to administer and enforce building codes effectively, the qualifications and professional status of building officials was identified as a major concern. A lack of adequately trained personnel in building departments contributed to inconsistent administration and enforcement of building codes and unwarranted delays resulting in increased project costs and needless aggravation. A 1968 study by the National Commission on Urban Problems cited "the inadequacies of training and the absence of proper qualifications for local building officials" as a significant building-code-administration problem. Richard Sanderson, former executive director of the Building Officials and Code Administrators International (BOCA) wrote in his 1974 book, *Perspectives for Code Administrators*, about the need for training and education to create a corps of professional code administrators. In his words, "a lack of trained code enforcement personnel, from top administrators to field inspectors, confronts most local government."

It is not just the construction industry which suffers from inept administration, but code-enforcing jurisdictions and the public as well. To correct this situation, state and local governments, building-related organizations, and associations of code administrators have attempted to determine the type of education and level of ability needed by code-enforcement officers to perform their functions, to educate the practitioner where necessary, and to certify those who have demonstrated their qualifications. Questions remain, however, about the methods being used, their direction and effectiveness.

Research was undertaken in an effort to:

- Survey the current situation with regard to building officials qualifications.
- Review efforts by various organizations involved in the development and implementation of education and certification programs for building officials.
- Evaluate the assorted mechanisms for improving the quality of building officials' administrative and technical capabilities and professional status.
- Identify courses of action that should improve local building code administration and enforcement, with the primary aim of

reducing unwarranted delay and promoting consistent enforcement of policies and procedures.

Building Official Qualifications

The average code-enforcement officer came to this technical job by way of the construction trades. Many inspectors and plans examiners were formerly plumbers, electricians, or builders, in recent years, as colleges and universities have developed relevant courses, some practitioners have come into the field directly from associate degree programs in construction technology. For the most part, however, the inspector ranks are comprised of persons with little formal education beyond a high school degree.

In larger jurisdictions, the plans examiner may be a licensed architect or engineer; the same is more often true of the building administrator. Major cities, in fact, may require administrators to have an architect's or professional engineer's license. More pervasive, however, is the building official⁴ in a small jurisdiction, with little if any staff, who is a political appointee to the position.

In 1978, when the National Academy of Code Administration (see Appendix 1) was examining the competencies required for code administration, it conducted a survey of 1,085 building officials/code administrators. Of those responding they found:

Population Served

83% served jurisdictions of under 100,000 population.
70% were from areas of less than 50,000.
50% worked with staffs of three or less, half of whom (25% of the total) performed all functions themselves.

Length of Employment

18% had been code enforcers for less than three years, and 33% for less than five years.

Education

31% had a high school diploma, or less education.
33% had trade school or two-year college degree.
26% had either four or five year (architectural and engineering) college degrees.

⁴ See Appendix 3 for definitions of now this and other terms are used in this report.

Previous Code Experience

80% had previously worked as building trades craftsmen or contractors.
50% had previously worked as inspectors.

The composite picture that emerges is of a building administrator who serves a small jurisdiction (with little major construction), works with little or no staff, yet needs a thorough technical knowledge, and although educated or trained in a related field, has had no specific preparation in code enforcement.

Among inspectors, the need for more education and training is glaringly evident. Since 1980, the Educational Testing Service has administered competency examinations for inspectors. The ETS National Certification Program for Construction Code Inspectors developed exams which test technical knowledge required for inspectors. Pass/fail statistics of code practitioners who have taken the exams so far, broken down according to the type of inspection function, are as follows:

Of 150 persons who took the fire protection module, 32% passed.

Of 483 persons who took the building module, 33% passed.

Of 137 persons who took the mechanical module, 53% passed.

Of 549 persons who took the electrical module, 55% passed.

Of 202 persons who took the plumbing module, 58% passed.

A study of inspector qualifications in Georgia was made by members of the Institute of Governmental Training at the University of Georgia. To test the need for technical training for the state's building code enforcers, the Institute administered an open-book technical competency exam (40 questions) to 37 inspectors from around the state. The inspectors then took a course developed by the Institute.

The course's final exam (100 questions) included all of the same types of questions as the first test. The average test score for the post-course test was more than three times higher than for the advance test. Based on these results and additional data, the state of Georgia agreed to provide part of the funds for a voluntary professional development program for local government code enforcement officials.

Improving Code Enforcement

The Role of Education

Education and training is needed to help prevent sub-standard enforcement and to open doors to careers in code enforcement *to aft people*, Though many localities require *the* code administrator to be a licensed architect or engineer, the technical skill involved in code administration does not always require the degree of engineering competence and professional development of a licensed architect or engineer, A good code administrator must also be well versed in management and code-related legal concepts. Training in these topics is rarely included in professional design curricula.

In the technical functions of code enforcement, i.e. plans examination and inspection, it is not uncommon for *a local* government to require a background in the construction trades. Many small localities also require the building inspector to be responsible for fire, electrical, plumbing, and other inspections. Though he may be proficient in his own field of expertise, a lone construction journeyman is unlikely to have adequate experience in all these areas.

All this underscores the need for education and training. There are gaps and deficiencies in the ranks of today's code enforcement personnel. Code-enforcement education and in-service technical training should increase and standardize their skills

The Role of Certification

In almost any field of endeavor, it is widely accepted that education plays a key role in professional development. It is unrealistic to expect the code-enforcement practitioner to take on the added burden of formal study without some incentive. Certification provides the tangible reward. Education can lead to certification, which sets a standard for each job title Once certified, the code administrator, plan reviewer or inspector has recognized proof of his or her competency, Since the nature of code enforcement involves interaction with other licensed professionals, this symbol of achievement validates the practitioner and the function in the eyes of colleagues, business contacts and the public.

The model code organizations support the concept of certification as an essential step in upgrading the qualifications of code enforcement officers. Many states, too, have found that certification of code enforcement personnel improves the level of service.

Existing Education and Certification Programs

A nationwide effort to educate and license practitioners is relatively new to code enforcement - a field that bridges law enforcement and public administration. Individual courses and training in a specific area have been available on a limited basis for many years but they were not widely publicized. Structured education and certification programs have thus developed slowly, creating their own demand as they gained momentum.

The three principal groups participating in providing more complete code enforcement education are: the model-code organizations, academic institutions, and state governments.

The Model Code Organizations

The model code organizations⁵ - the Building Officials and Code Administrators International (BOCA); the International Conference of Building Officials (ICBO); and the Southern Building Codes Congress International (SBCCI); along with their umbrella organization, the Council of American Building Officials (CABO) - offer a variety of education and certification programs. For technical code administration functions - inspection and plans review - BOCA, ICBO and SBCCI each have developed their own educational courses

Although the model code groups share the same goals, each takes a different approach to education and certification. BOCA conducts courses throughout the midwest and the east either at the request of state or local governments, or under BOCA's own sponsorship. These courses generally run one to three days and are primarily designed to supplement the technical knowledge of the practicing code enforcer, although a few entry-level courses have recently been introduced. BOCA training is also available through correspondence courses. BOCA's certification program is based entirely on the National Certification Program for Construction Code Inspectors (NCPCCI). This is a series of exams developed by the Educational Testing Service in 1978 which lead to certification in five inspector-and three plans examiner categories. In preparation for the certification exams BOCA provides a series of refresher courses which serve as confidence builders for the experienced code-enforcement officer.

ICBO, too, has a wide spectrum of educational offerings. Most ICBE training seminars are conducted at its headquarters in the Los Angeles area. These focus on non-structural plan review, field inspection, and housing code enforcement. ICBO has also developed a recommended curriculum, "Building Inspector Technology," which is

⁵ See Appendix 2 for a more detailed discussion of these organizations and their functions.

taught in many of California's community colleges. The curriculum is designed to lead to an Associate of Science Degree.

SBCCI's education program consists mainly of home study courses housing, building, plumbing, mechanical, fire, electrical, rehabilitation and energy inspection. The modules are designed to serve construction industry practitioners, but work equally well in a classroom setting as supplements to university-degree programs. SBCCI also offers certification in seven inspector and five chief-inspector categories. Both BOCA and SBCCI use some (but not all) NCPCCI test modules in their certification exams, and extend reciprocity for common test modules.

For administrators, the model code organizations participated in developing a certification exam through CABO. This exam was first administered in 1980. It consists of comprehensive modules in management, law and technology, the principal areas of code administration. Based on its own research into the tasks and competencies required of an administrator, and the results of the earliest administration of the certification examination, CABO is now developing an education program for building officials.

Academic Institutions

Several colleges and universities have independently developed code enforcement and construction-technology courses. Depending on the institution, the courses may be part of a five-year architecture-engineering program, two-year associates' program in construction inspection or building technology, or a certificate program in code enforcement. A prime example of an independent university program is a series of short-term seminars offered by the Department of Engineering and Applied Science, University of Wisconsin-Extension. The program was developed by a professor of civil engineering and has been running since 1971. Courses taught by experts cover building technology, code interpretation and enforcement, and administration and inspection techniques. The programs last from two to five days, are intensive, and are attended by design professionals, construction tradesmen, and code-enforcement personnel.

At the University of Georgia, the Institute for Governmental Training has developed a series of seminars ranging from four to ten days to provide up-to-date technical education for inspectors and plans reviewers. The courses offer certificates of completion and may be used towards certification through the Southern Building Codes Congress International. The State of Georgia does not have a statewide building code, nor does it require certification; yet code officials from all over the state have participated in the program. The state underwrites roughly half the cost of the program, enabling many local governments to send personnel for training at a reasonable cost.

Code administrators can obtain managerial training through the Institute's general public-management program.

In contrast with these is a small independent program developed by the Special Services Division of William Rainey Harper College in Illinois. The program is a broad-based curriculum in building and specialized code and enforcement techniques, which leads to a certificate in Building Codes and Enforcement. Although not sponsored by any model code organization, the Harper program uses the BOCA Basic Building Code as its frame of reference.

Programs such as these, taught at the college/university level, fulfill a useful role in code-enforcement education. The academic setting is often desirable for code enforcement personnel whose communities grant special recognition to university-granted certificates. Many institutions also offer such courses for credit toward a two- or four-year degree. Finally, code-related courses included in the college curriculum are frequently offered to students of related disciplines as an elective.

State Governments

In recent years, many states, equally aware of the need for upgrading the qualifications of code-enforcers, have developed education and certification programs for code practitioners. New Jersey commissioned the Educational Testing service study, which led to the National Certification Program for Construction Code Inspectors. When the State of New Jersey decided to require education and certification for all building officials throughout the state, it contracted with the Educational Testing Service to develop a battery of certification exams. The exams are used to certify the technical competency of plans reviewers and inspectors. (Administrators are certified through certain education and experience requirements.) The entire exam or individual modules may be administered by states or organizations through contract with the ETS. Based on ETS's research, New Jersey developed an education program toward NCPCCI certification, as well as continuing education units, through the state community college system. New Jersey's education and certification programs are mandatory, but this may not be politically acceptable in numerous other states. Nonetheless, states such as Virginia and Ohio have found ways of providing education and incentive for voluntary action.

An Agenda for Better Administration

Our review of these and other efforts to upgrade building-official qualifications reveals that present arrangements are effective. At first glance the agglomeration of methods seems disjointed and, at times, redundant. To be sure, the present "system" is not systematic at all, but rather a fragmented approach on the part of many different

interest groups. We have found, however, that in the absence of the political impetus and financial resources needed to win adoption of a single, unified program applicable to all parts of the nation, the methods presently used are achieving many of the desired goals.

Still there are further advances that can and should be made. The example of New Jersey, Oregon, and other states, where a statewide building code based on one of the model codes has led to programs of building official education and certification, points the way.

Another step toward upgrading the qualifications of code enforcement personnel is the establishment within each state of recommended standards of certification. To be sure, not every administrator's or inspector's job is identical, but an assessment of the principal functions and responsibilities common to each code-enforcement job can lead to a defined criterion for certification, thus providing the state with a way to assure that code enforcement personnel are qualified for their tasks.

Upgrading building-official qualifications requires a financial commitment by both state and local governments, the private sector and, to some degree, individual building officials themselves. State governments mandating certification programs finance education and training programs from two sources: 1) state-budgeted funds and 2) user fees (which may or may not be dedicated) derived from fees for construction permits. When user fees are imposed, such as the surtax on permit fees in New Jersey, the private sector directly shoulders the load for which it receives the benefits of the state-mandated program. In many states with voluntary code compliance, the education and certification costs may be borne wholly or jointly by the local community and the individual building official. As states develop programs to upgrade their building officials, they must find additional ways to finance these programs.

Conclusions

No one group or single piece of legislation can succeed in upgrading the qualifications of code-enforcement personnel. There is no simple panacea. Several groups and constituencies are actively engaged today in the upgrading process. We conclude that the private sector and the construction industry will benefit by supporting - organizationally, politically, and financially - the continuation and expansion of existing programs. As new education and certification programs become part of the mainstream of code enforcement, the process will become more effective.

If today's pace continues, there seems little doubt that in 15 years or so there will be a significant upgrading of the qualifications of thousands of building officials across the U.S. In addition, in the process

of adopting mandatory building codes - a controversial subject - many states will have established standards for building officials, and educational programs will be widely available across the country.

VI

THE BUILDING PERMIT PROCESS

Background

The initial study on Regulations and Codes identified problems involving permitting, specifically, the frequency of permit renewals and the difficulty in determining permit requirements. Both problems lead to delay and increased project costs.

When an application for a permit is submitted, the building department checks the plan against the master plan specifications, zoning laws, and federal, state, county, and city regulations that govern the use of the land. The building department is charged with overseeing that the applicants have followed the pre-application review procedure and have obtained necessary approvals. Usually it is when some pre-approvals have not been obtained that delays occur.

Many of these pre-approvals are not as straightforward as the building permit. The pre-approval process is often lengthy because of the impact of public and political considerations. Concern for the environment and subsequent federal legislation has led to costly Environmental-Impact-Statement requirements for major building projects. In cities such as New York and Atlanta, community boards and civic groups play an active role in the review and approval of projects. Agencies, boards and groups involved with land use and zoning are not part of the building department, and in most cases, do not actively coordinate their activities with the building department. The pre-approvals obtained from these groups are part of the conceptual design and planning stage of the project development, and not the building-permit issuance process.

Findings

Some administrative delays occur in building departments, particularly those of larger cities, but the long delays that cause severe increases in construction costs occur primarily in agencies which review projects before the permitting stage.

Published Permit Procedures

A frequent complaint of owners and contractors is that the requirements for obtaining a building permit are not known and are often difficult to obtain. While each building department has the same objective, the methods used are as varied as the number of departments. *We found that only 33% of building departments have published procedures.* This type of printed literature not only helps to answer routine questions about local permit procedures, but it also helps to ease uncertainty over requirements and time frames. Localities that are encouraging building as a form of economic development recognize the need for published information and use it effectively. An American Planning Association Study on regulatory reform found that providing written materials to applicants was necessary to improve operations. The process of developing the literature also helps to clarify administrative objectives and specify employee tasks.

Frequency of Permit Renewals:

Responses to our questions dealing with permit renewals indicated no substantial problem in this area: *81% had lifetime permits for industrial and commercial projects and 67% had lifetime permits for power plants.* Where lifetime permits were not issued, the permit life varied from 180 to 540 days.

Building departments using the BOCA Basic Building Code indicated that they will suspend the permit if there is a 180-day interruption and/or suspension in construction. Other building departments reported that permits were suspended when work was interrupted for periods ranging from 90 to 120 days. If changes are made in design or construction to the extent that the project no longer conforms to the plans on file, a new permit must be secured.

Permit Processing Time:

Eighty-seven percent of the respondents indicated that permits were issued in one month or less. When asked if they felt the elapsed time (to process applications) was adequate considering the amount of work done, 86% answered yes for commercial projects, 81% for industrial and 55% for power plants. On the other hand, queried as to whether the elapsed time could be shortened, a majority of building

departments answered no. The respondents were invited to elaborate on their answers. Los Angeles responded "The department has been understaffed with many vacancies and many new, inexperienced employees, resulting in a somewhat longer interval for permit processing than desired." The problem here seems to be one of management, not the permit process itself. Our research indicates this problem is prevalent in many large cities.

One, Stop Permitting

One-stop permitting has been praised by many building department administrators as an aid in improving the permitting process. *Forty-three percent of our respondents reported using some type of one-stop permitting.* One-stop permitting is a broad term that normally refers to one of three levels of service.

At a minimum, the department provides a central counter that may be manned by clerical staff or a paraprofessional. The counter is usually located for easy access by the public. The staff is trained to help complete applications and to refer applicants to other departments for additional permits, if required. Printed material is normally made available at this counter.

At the next level of service, a drop-off and pick-up station is provided. The user goes to the station where all the permit functions are handled except the plan review. The staff accepts the application and fee, routes the plans to reviewers, collects approvals, completes the paperwork, and issues the permit.

At the highest level of service, a professional team center is provided. Here all paperwork including the plan review is handled at one location. The team will review and approve plans submitted for simple building projects. For major projects, the team will hold pre-application conferences prior to the plan review.

Among the benefits of one-stop permitting:

- An applicant goes to only one location for service.
- Duplicate requirements are reduced.
- Time is saved by both code-users and the building-department staff.
- To a large degree, user uncertainty and confusion is eliminated.

VII

RECOMMENDATIONS

Financial Resources for Code Administration:

We believe the construction-user community can effect change in the quality and performance of code enforcement services that will ultimately meet the needs of the community and the construction industry by making a concerted effort to work with state and local governments to:

1. Identify and evaluate financial problems that affect code enforcement in localities.
2. Develop mutually acceptable solutions to problems identified as having a negative impact on code enforcement and the ability of constructors to function effectively in the community.
3. Organize a grass-roots effort, including all segments of the building industry (industrial, commercial, and home building), to communicate the concerns of the user to state officials.
4. Disseminate information to contractors and other code users describing the regulatory process, the costs, and successful methods that have been used to reduce excessive costs.

Qualifications and Professional Status of Building Officials:

1. Full use should be made of the already existing mechanisms for education, training, and certification as provided by the model code organizations, the Educational Testing Service, academic institutions, and state and local governments.
2. Each state should establish its own criteria for professional qualification of code enforcement officials and grant certification to those persons who have proven their competency. Certification should be based on examinations either developed by the state or through a nationally recognized certification program (such as the National Certification Program for Construction Code Inspectors, or the Council of American Building Officials' Certification for Administrators).

3. Each state should enact legislation to authorize and support training for code enforcement personnel at all levels. The training could be provided by cooperative efforts among academic institutions, the model code organizations, and appropriate state agencies so as to include pre-entry education as well as in-service training programs.
4. The code-user community should consider assisting CABO and the model code organizations to develop a nationally acceptable education program for code administrators. Although CABO already has a certification exam for administrators, its efforts to develop a comprehensive education program have been slow. Because of the massive research, analysis, and administrative effort required to develop a valid curriculum, this is an area where owners could provide assistance that, over years, could yield tangible benefits.

The Building- Permit Process:

Since only one-third of building departments publish information about their procedures and since pre-application conferences and one-stop permitting are even rarer, owners throughout the nation should work through their local user's councils and with other local and state construction groups to help local building departments:

1. Publish and disseminate procedures and regulations for obtaining building permits. This should include, but not be limited to, state and regional pre-approval requirements.
2. Establish pre-application conferences for users and contractors to determine what pre-approvals are needed and to establish more realistic time frames for project planning.
3. Establish one-stop permitting programs to cut the red tape in the approval process for construction projects. One model is the New Jersey one-stop service. Where appropriate, encourage development of other variations of the one-stop technique (see evaluations of one-stop permitting, pages 25-26). Owners should regularly include thorough investigation of permit requirements as part of site-selection and facilities-planning studies.

APPENDIX I

NATIONAL ACADEMY OF CODE ADMINISTRATION

The National Academy of Code Administration (NACA) was created to spur the development of code administration as a distinct profession. Its goal was to bring an element of "cohesiveness, identity and direction" to all levels of code-enforcement officers through the commonality of their interest in enforcing public safety laws.

NACA's first step was to identify existing programs and groups offering education in codes (building, plumbing, electrical, energy, environmental, fire, health, housing, mechanical, plumbing, and zoning), administration, inspection, code-interpretation, materials and material testing, construction design, plans checking, and construction-code law. The result was a directory of courses offered by colleges and universities published in 1979.

NACA was also intended to serve as a clearinghouse and central coordinating body for professional activities. As part of this function, a journal was developed which featured articles about the academy itself, the development of new education/training programs and trends in code technology.

About five years after its birth, NACA published a "Plan for National Voluntary Education, Training and Certification." To accomplish this, NACA's staff tried to determine which traits were common to the jobs of all code administrators, to quantify and rank those professional competencies, and thereby to develop a method for testing that knowledge and skill. The plan which emerged consisted of testing and education modules in law, management and technology. At the time this was developed, however, NACA's board of trustees, which consisted largely of model-code representatives, educators and members of the National Conference of States on Building Codes and Standards, split for ideological reasons. Although NACA continued some activities well into 1981, the education/certification program has not been put into effect. Presently, it is our understanding that NACA exists in name only, its federal funding having expired.

APPENDIX 2

BUILDING CODES AND THE MODEL CODE GROUPS

The term "building code" should be understood in the most general sense as meaning a document regulating the methods and materials used in construction and including "specialty" codes which apply to specific areas such as plumbing, electrical and fire protection. Building codes are generally concerned with new construction, though some may include requirements for building repair or rehabilitation. In a clear case involving public safety, such as might occur with a new fire code, the code might be retroactively applicable to existing structures.

Building codes have long been considered a matter for local regulation. The power to regulate construction in the interest of public safety is inherent in the police powers of the state granted by the U.S. Constitution. Traditionally, states have delegated this power to the local communities. Thus a pattern of codes evolved that was different, and often conflicting, from one area to another. Not only may the items covered and substance of the codes vary, but also procedures for inspection, enforcement and the review process as well.

Building codes first appeared in the U.S. in response to the danger of fire. The codes began by regulating the construction of chimneys and roofs to minimize the spread of fire at the turn of the century, when a major fire could wipe out an entire city in the absence of modern firefighting equipment.

The pioneer building code was the National Code, first published by the National Board of Fire Underwriters in 1905. The Building Officials and Code Administrators, International (BOCA) has recently acquired the right to apply the name to future editions of its Basic Building Code. BOCA plans to retitle the 1984 edition of its code the "Basic/National Building Code," and then drop the word "Basic" altogether at some time in the future.

Three national organizations that publish and sell their own model building codes are known collectively as the model code groups. They are:

International Conference of Building Officials (ICBO). The first of the model codes to be published was the Uniform Building Code in 1927, written by the Pacific Coast Building Officials Conference. The group changed its name in 1956 to the International Conference of Building Officials to reflect the UBC's adoption beyond the Pacific Coast in the U.S. as well as in many parts of Canada. Indeed, the

Canadian National Building Code, which sets recommended standards for the entire nation, is based in part on ICBO's Uniform Building Code.

Building Officials and Code Administrators International (BOCA). Matching ICBO's western-state dominance is the Building Officials and Code Administrators International (BOCA) dominance among most states in the midwest and northeast. Formerly known as the Building Officials Conference of America, BOCA changed its name in 1970 at the strong urging of its executive council which saw the term "building official" as too limiting, considering the increasing responsibilities involved in code enforcement. BOCA publishes the Basic Building Code.

Southern Building Code Congress, International (SBCCI). The third model code organization publishes the Standard Building Code, which is widely adopted throughout the south and southwestern U.S.

APPENDIX 3

DEFINITIONS

The piecemeal nature of code enforcement in the United States makes clear definition of specific titles difficult. The work of an inspector who specializes in one and two-family buildings in a large jurisdiction may be but one of the many functions of the all-purpose building official in a small jurisdiction with only one code enforcement officer. This same building official may be known as a building administrator elsewhere, and his role may or may not include responsibility for enforcing fire safety codes.

Code Administrator and Building Administrator refer to the top position in the administrative office of the code enforcement agency/bureau and/or to the single official performing the gamut of code enforcement tasks, including administration, plan review, and inspection.

Building Official and Code-Enforcement Officer is used as the most generic term applying to all practitioners employed in construction regulation.

Plans Examiner and Inspector. In this report they may refer to a general position with responsibility for all aspects of construction, or to a specific technology such as a plumbing plans examiner or electrical inspector.

APPENDIX 4

ADMINISTRATIVE REFORM AND REORGANIZATION IN NEW JERSEY AND OREGON

A primary objective of the New Jersey Uniform Construction Code Act was "to eliminate unnecessary duplication of effort and fees in the review of construction plans and the inspection of construction". Prior to this act, each local jurisdiction enforced an array of codes, ordinances and laws regulating construction. Because of this, contractors faced a maze of regulatory procedures that varied from community to community. Often multiple permits were required when construction projects involved overlapping jurisdictions. Standards for enforcement were determined by each local jurisdiction.

Several commissions and studies evaluating code enforcement in New Jersey concluded that all these local variations created unnecessary confusion for the code user, often discouraging construction starts. The studies also concluded that while building codes were generally enforced by local jurisdictions, the state government should take a strong role in regulating this activity. In addition, a state agency should be created to rationalize the code enforcement system and intervene when municipalities cannot or do not enforce codes.

The adoption of the New Jersey Uniform Construction Act provided the necessary authority for the Department of Community Affairs to streamline and standardize state code-enforcement administration. Powers were granted to the Commissioner of Community Affairs, in conjunction with the code advisory board, to establish, amend and revise a state construction code. The commissioner was also empowered to provide, as practicable, 1) "single agency review of construction plans and inspection of construction and 2) intergovernmental acceptance of such review and inspection to avoid unnecessary duplication of effort and fees".

The authority to enforce codes and the responsibility for their enforcement is explicitly stated in the administration and enforcement section (52:27D-126) of the Act Building officials' qualification, length of service, and powers are carefully detailed. Section (52:72D-128)

sets forth the power of the commissioner to assume the task of code administration and enforcement whenever a municipality or several municipalities decide not to administer the code.

The impact of this legislation, according to the New Jersey Department of Community Affairs, has been:

- Consolidation of many code-enforcement jurisdictions across the state.
- Relinquishment by a number of smaller jurisdictions of their code enforcement powers to the state,

Long term financial gains are expected to accrue to local governments as a result. They include:

- Cost savings as local governments consolidate similar services and/or powers with adjoining communities.
- Cost savings by reducing services that can be assumed by the state.
- Cost savings to some communities which have requested the state to assume total responsibility for code enforcement.

Training and Education - Impact on Salary Levels

New Jersey and Oregon provide state education and certification programs. The results of these efforts are encouraging in both states. Legislation gave state agencies power to collect revenues and implement training and education programs; moreover, these activities are administered uniformly. State administrators in Oregon and New Jersey report that local governments viewed these programs as a cost-saving effort as well as a means of upgrading a public service.

Most local governments cannot afford to finance training and continuing education and/or basic education in code-enforcement administration, engineering, design technology and codes. Consequently, state supported programs offer local governments a service that improves the competence of existing employees as well as the qualifications of newly hired staff. Oregon administrators concluded that most of their local governments felt education programs have improved the performance of code enforcement personnel and the effectiveness of the operation. In turn, certification requirements have elevated the professional status of code-enforcement personnel. Little data was available to analyze salary levels, but Oregon and New Jersey have determined that the average salary, for code officials and inspectors is increasing as a result of the certification and education programs.

Awareness of User Needs

Oregon officials now feel that the problems experienced by the construction industry-e.g., delays, administrative confusion, and lack of cooperation-have been reduced and in some jurisdictions eliminated. Oregon officials contend that this is partly a result of state programs. The study team feels that it is just as likely a reaction to the imposition of a uniform administrative code.

State officials and legislators now have a greater understanding of the code-enforcement process, the level of responsibility delegated to local governments, and the specific needs of the user. New state action has sensitized local governments to the costs of code compliance while at the same time assisted local governments to carry out administrative reform. Code enforcement has become a more important government service. This recognition improves the status of these activities in the eyes of budgetary decision-makers. Because of this, it is more likely that further action will be taken to improve the performance and financial status of the code enforcement agencies.

APPENDIX 5

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SOURCES OF ADDITIONAL INFORMATION

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International Conference of Building Officials, 5360 South Workman Mill Road, Whittier, California 90601

Southern Building Code Congress International, 900 Montclair Road, Birmingham, Alabama 35213

National Institute of Building Sciences, 1015 15th Street, N.W. Suite 700, Washington, D.C. 20005

National Conference of States on Building Codes and Standards, 481 Carlisle Drive, Herndon, Virginia 22070

Council of American Building Officials, 560 Georgetown Building 2233 Wisconsin Avenue, N.W., Washington, D.C. 20007

Educational Testing Service, National Certification Program for Construction Code Inspectors, Professional and Occupational Programs Division, P.O. Box 2890, Princeton, N.J. 08541

The University of Georgia Institute of Government, Government Training Division Room 208, Georgia Center, Athens, Georgia 30602

The University of Wisconsin - Extension Department of Engineering and Applied Science, 432 North Lake Street, Madison, Wisconsin 53706

William Rainey Harper College, Building Code and Enforcement Certificate Program, Special Services Division, Algonquin and Roselle Roads, Palatine, Illinois 60067

CICE REPORTS

The Findings and Recommendations of The Business Roundtable's Construction Industry Cost Effectiveness project are included in the Reports listed below. Copies may be obtained at no cost by writing to The Business Roundtable.

Project Management -- Study Area A

- A-1 Measuring Productivity in Construction
- A-2 Construction Labor Motivation
- A-3 Improving Construction Safety Performance
- A-4 First and Second Level Supervisory Training
- A-5 Management Education and Academic Relations
- A-6 Modern Management Systems
- A-7 Contractual Arrangements

Construction Technology -- Study Area B

- B-1 Integrating Construction Resources and Technology into Engineering
- B-2 Technological Progress in the Construction Industry
- B-3 Construction Technology Needs and Priorities

Labor Effectiveness -- Study Area C

- C-1 Exclusive Jurisdiction in Construction
- C-2 Scheduled Overtime Effect on Construction Projects
- C-3 Contractor Supervision in Unionized Construction
- C-4 Constraints Imposed by Collective Bargaining Agreements
- C-5 Local Labor Practices
- C-6 Absenteeism and Turnover
- C-7 The Impact of Local Union Politics

Labor Supply and Training -- Study Area D

- D-1 Subjourneymen in Union Construction
- D-2 Government Limitations on Training Innovations
- D-3 Construction Training Through Vocational Education
- D-4 Training Problems in Open Shop Construction
- D-5 Labor Supply Information

Regulations and Codes -- Study Area E

- E-1 Administration and Enforcement of Building Codes and Regulations

Summaries - More Construction For The Money
- CICE: The Next Five Years and Beyond

Supplements - The Workers' Compensation Crisis...Safety
- Excellence Will Make A Difference (A-3)