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NBS TECHNICAL NOTE 775

Coordinated Evaluation System (CES) Project

Model Documentation for Building Regulation

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Coordinated Evaluation System (CES) Project

Model Documentation for Building Regulation

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Coordinated Evaluation System (CES) Project
Model Documentation for
Building Regulation

Robert D. Dikkers

Background information, objectives and the current status (February, 1973) of various tasks and reports pertaining to the Coordinated Evaluation System (CES) project are described. The goal of the CES Project is to develop model informational documentation that will assist state building regulatory agencies in establishing a coordinated and uniform evaluation, approval and inspection system. The model documentation will be related to the following building regulatory functions: (1) data submittal, (2) evaluation, (3) approval, (4) compliance assurance (inspection), (5) installation, and (6) owner information.

Key words: Building regulation; evaluation; inspection; manufactured building; mobile homes; model documents; state-of-art study.

1. Introduction

The rapid growth of manufactured building and mobile home production (fig. 1) along with the recent and continuing trend toward the adoption of statewide preemptive factory-built housing, industrialized building and mobile home laws, has established the importance of developing state and local regulatory programs adapted to the characteristics of manufactured construction and which, if widely accepted, would further stimulate the production of such construction. Primary objectives of these regulatory programs should be to assure that manufactured construction complies with applicable codes and standards while encouraging the use of new technology, techniques and materials. In addition, state and local programs should have uniform and technically sound procedures for the required evaluation, approval and inspection functions.

The documentation used in implementing and carrying out the required evaluation, approval and inspection procedures and functions, is an important aspect of these building regulatory programs. Requirements for form and content of documents such as plans, specifications, test reports, and compliance assurance manuals, which are prepared and submitted by a building manufacturer (or his agent) to a state or other approved evaluation agency, should be uniform, as possible, to reduce the need for the manufacturer to prepare different documents for individual evaluation agencies. Such documents also need to be comprehensive and adequately detailed so as to permit the evaluation agency to readily determine code compliance. Other model documents or document requirements relating to the approval and inspection functions should also be established, which will assist in the intrastate and interstate acceptance of manufactured buildings and mobile homes, and also

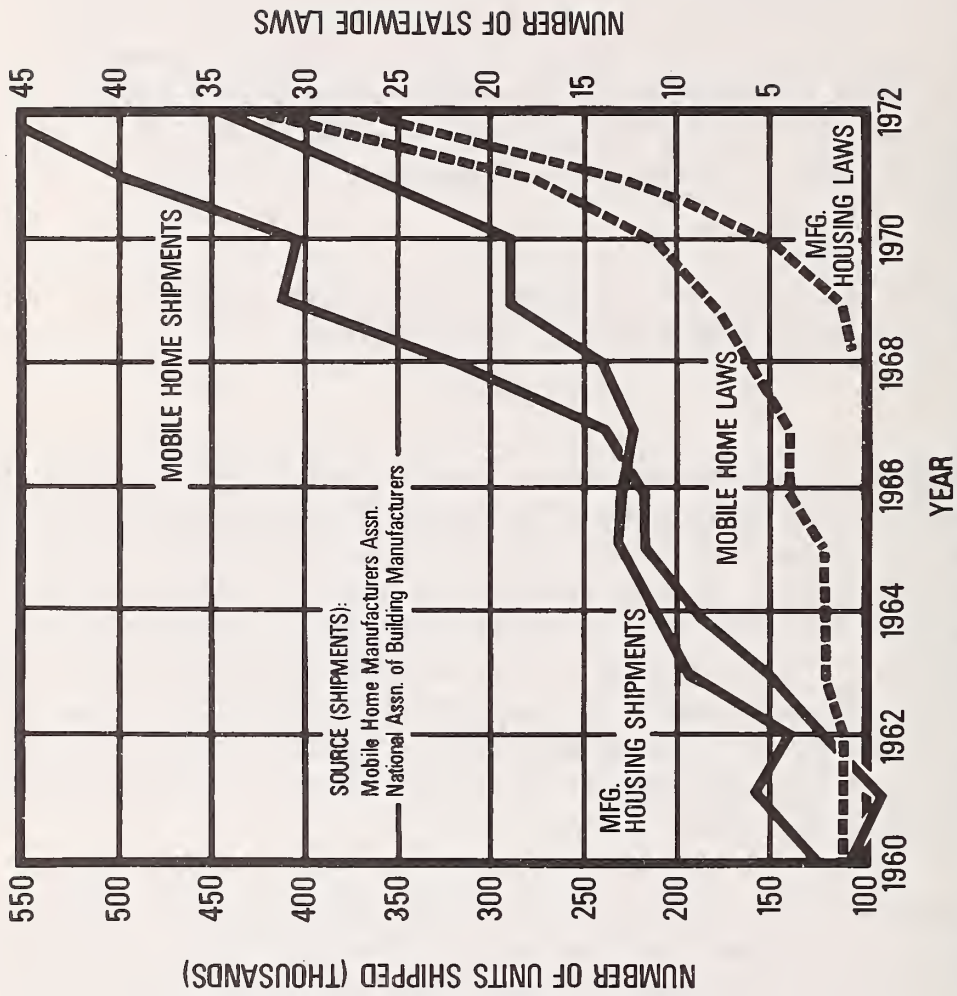


Figure 1. MANUFACTURED HOUSING AND MOBILE HOME SHIPMENTS AND STATE LAWS

reduce the associated time and costs experienced by manufacturers as well as the various evaluation and inspection agencies involved in the regulatory process.

In 1971 the Executive Office of the President asked the National Bureau of Standards to develop specific programs which would assist in removing or reducing barriers created by the building regulatory process. Several suggested programs were developed and submitted for approval and funding in Fiscal Year 1972. Upon receipt of their approval in November, 1971, the Coordinated Evaluation System (CES) Project was established in the Building Research Division,* to develop, in conjunction with the state governments, model informational documentation to serve the needs of many state regulatory agencies and to minimize the duplications and delays experienced by the producer in obtaining regulatory approvals. This model documentation will aid the establishment of a coordinated and uniform evaluation, approval and inspection system for use by the states, providing thereby a necessary and valid approval record for interstate reciprocity in the acceptance and regulation of industrialized or manufactured buildings.

2. Relationship to NCSBCS Programs

The National Conference of States on Building Codes and Standards (NCSBCS), which was formed in 1967, is an organization of state delegates, designated by their respective governors, to represent their states in discussions and program development pertaining to building regulatory activity. Two of the specific purposes of NCSBCS as contained in its Constitution (1972) are as follows:

"To assist in the development of programs leading to the . . . administration of uniform comprehensive building codes and standards among the agencies involved in the regulation of construction within and among the states where such uniformity is deemed necessary for interstate purposes."

"To foster cooperation among government officials concerned with building regulations, and between these officials and the design, manufacturing, business and consumer interests affected by their activities."

At the Fourth Annual NCSBCS Conference (April, 1971) the state delegates approved the following resolution:

"It is recognized that a sound laboratory accreditation program provides the essential background base for the development and operation of an interstate evaluation mechanism. Now that a positive accreditation program development

* In July, 1972, the Building Research Division was reorganized into The Center for Building Technology.

effort has been initiated, this Committee (Standards and Evaluation) recommends the early implementation of . . . an interstate innovation evaluation system. This Committee further recommends that the National Bureau of Standards be requested to undertake the development of a program acceptable to the NCSBCS that will: (a) coordinate, augment and lend a uniform validation to the efforts of those academic institutions, governmental units and private commercial organizations now engaged in testing and evaluating products and systems, so as to provide a sound base for interstate reciprocity regarding innovation evaluation . . ."

In response to these NCSBCS purposes and requests, NBS developed and initiated two research projects, the Laboratory Evaluation and Accreditation Program (LEAP) and the Coordinated Evaluation System (CES) Project. LEAP is concerned with the development of criteria necessary for judging the capabilities of institutions (public or private) to perform functions of engineering analysis or evaluation, laboratory testing, and compliance assurance (inspection) for manufactured buildings. LEAP is also directing its attention to the methodology for examining such institutions for their capabilities. As indicated previously, the initial CES Project objective is to develop model informational documentation for use by the various institutions and agencies engaged in the process of evaluation, approving and inspecting manufactured buildings.

3. Project Tasks

Background. Based on available information (as of February, 1973), 27 states have adopted manufactured building or factory-built housing laws; 34 states have adopted statewide standards and programs relating to mobile homes; and 15 states have adopted statewide building codes (i.e., general codes regulating most types of construction and occupancy). Figures 2, 3 and 4 indicate the specific states which have adopted the various types of statewide regulatory programs.

State-of-Art Study. The initial task in the CES Project consists of a state-of-art study. The purposes of this task are: (1) to gather detailed background data which will be useful in the preparation of model documentation; and (2) to provide data for a state-of-art report on current state building and mobile home regulatory programs. The primary objective of the state-of-art report on state programs is to provide an informative compilation and summary which would be useful to state and local building officials, NCSBCS delegates and committees, and various other segments of the building and mobile home industry.

In general, this task will include a study of evaluation, approval and inspection functions, procedures and reports relating to manufactured buildings and mobile homes in current use by various private and public organizations, institutions and agencies. Specifically, these studies will include the following program areas and institutions:

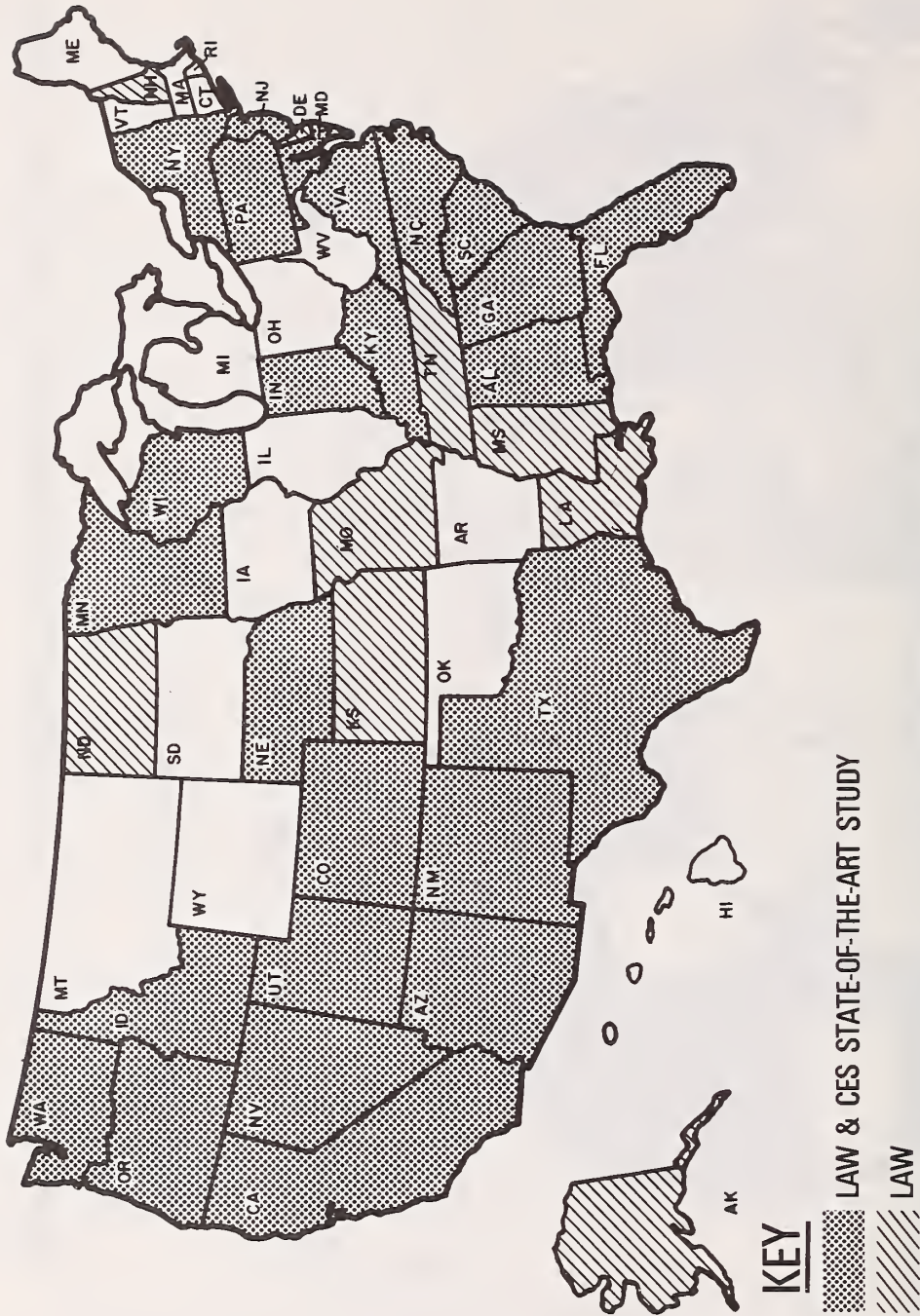


Figure 3. STATES WITH MOBILE HOME LAWS (Feb., 1973)

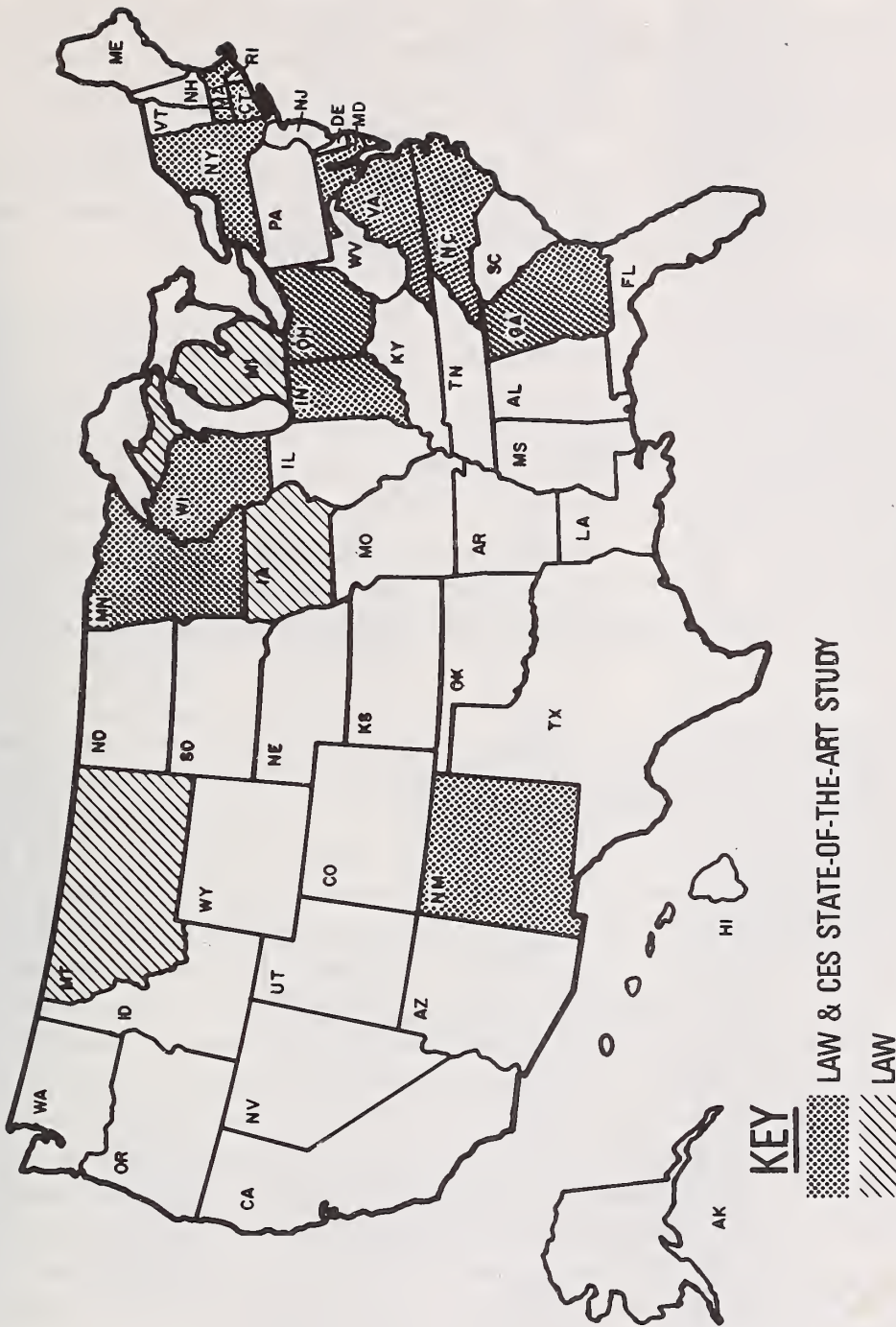


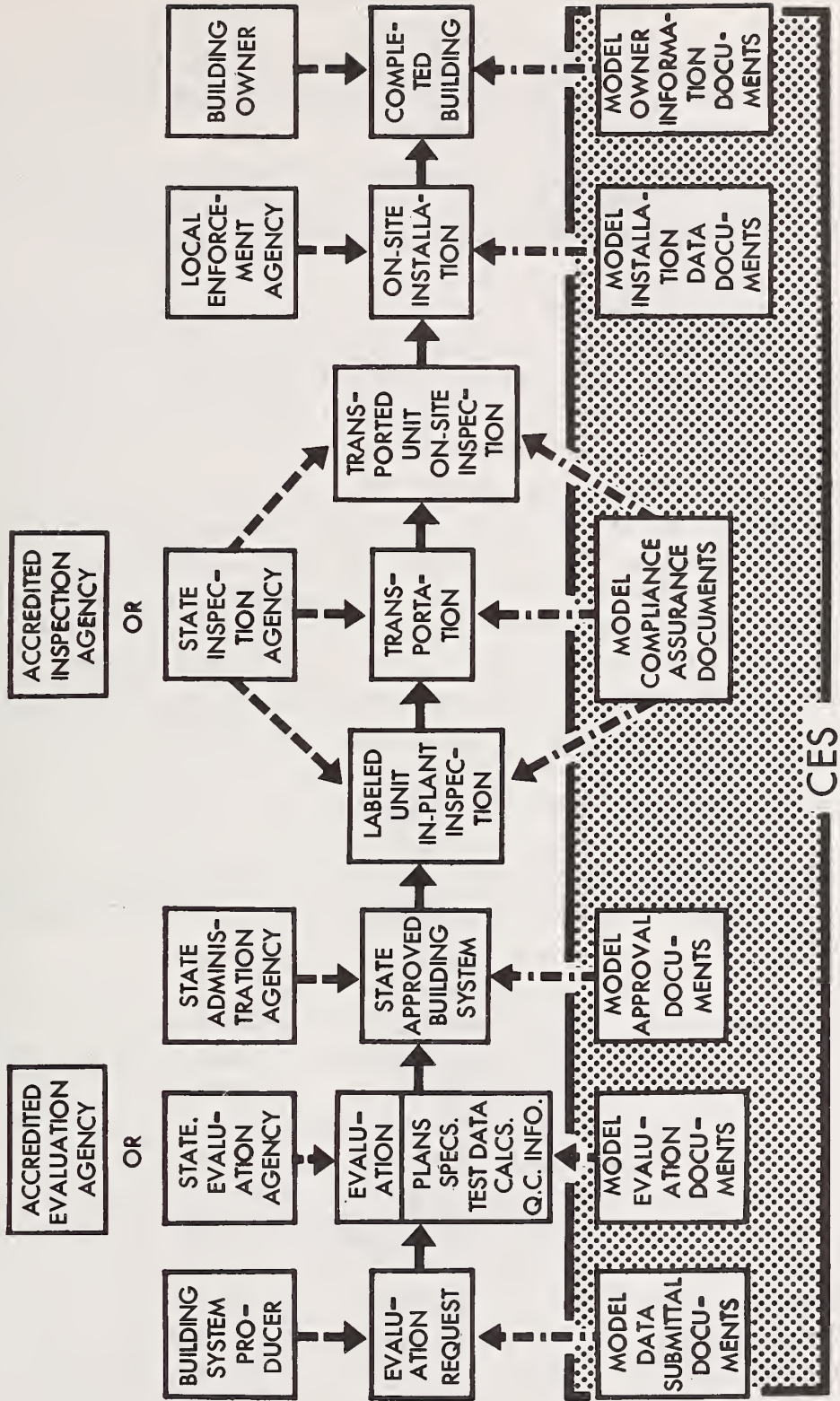
Figure 4. STATES WITH STATEWIDE BUILDING CODE LAWS (Feb., 1973)

(a) literature survey pertaining to existing reports and publications on the evaluation and regulation of building materials, components and systems; (b) various state regulatory programs including factory-built housing, mobile homes, and other statewide building codes; (c) several federal agency evaluation and inspection programs (e.g., HUD, VA, DOD) relating to manufactured housing and mobile homes; (d) various private evaluation institutions engaged in the evaluation and certification of building systems and/or equipment; and (e) building industry and manufacturer needs and experiences relating to state regulatory programs. Figures 2, 3 and 4 also show the various state regulatory programs presently included (as of February, 1973) in the CES Project state-of-art study.

Model Documents. The major CES Project task is to coordinate, and develop, where necessary, the model informational documents which may be needed to implement and establish a comprehensive program for the state regulation of manufactured buildings and building components. The basic background data to be used in this task will be that obtained in the state-of-art study along with requirements and procedures contained in the Model Act and Model Rules and Regulations for Manufactured Building. This model act and rules and regulations have been drafted by a Special Working Group comprised of representatives from NCSBCS, National Association of Building Manufacturers, Council of American Building Officials, U. S. Department of Housing and Urban Development and U. S. Department of Commerce.

The model documentation will be related to the evaluation, approval, inspection and installation phases of the manufactured building regulatory process illustrated in figure 5. As shown, it is anticipated that this regulatory process will utilize the following model documents: (1) data and information (plans, specifications, test reports, calculations and compliance assurance manuals) to be submitted to state agencies (or approved evaluation agencies) by producers of manufactured buildings; (2) evaluation procedures, techniques, check lists, and reports to be used by evaluation agencies to verify compliance of the building system with the applicable state codes and standards; (3) approval reports to be issued by state agencies, which describe the conditions under which the manufactured building (or building component) may be used; (4) in-plant inspection, handling, storage, and transportation procedures, techniques, check lists and reports to assure compliance of the manufactured buildings or building components with the approved building system (plans, specifications, etc.); (5) data and information to be submitted by the producer to the local enforcement agency in order to obtain a local building permit and to assure proper on-site installation; and (6) data and information prepared by the producer which will pertain to the use, operation, maintenance, etc., of the manufactured building, and which will be useful to the building owner or user.

Figure 5. COORDINATED EVALUATION SYSTEM (CES)
FOR MANUFACTURED BUILDING



4. Project Methods and Reports

Data Collection. In order to obtain detailed and complete state-of-art information from state agencies on various state building and mobile home programs, recommended data collection sheets were developed by the CES Staff. These sheets contain comprehensive questions and information to aid and guide the investigator (private contractor or project staff member) in assembling and studying the state laws, regulations, procedures and documents, conducting on-site interviews, and reporting his study results.

Because of variations in existing state programs, the data collection sheets were organized into six sections. Section 1 contains instructions to the interviewer or investigator who would be conducting a particular state study. It includes background information on NCSBCS, CES Project, Laboratory Evaluation and Accreditation Program (LEAP), and instructions for conducting interviews and submission and scope of final reports. Section 2 contains questions relating to the following subjects: state laws and regulations such as elevator or boiler codes (i.e., laws and regulations other than those pertaining to manufactured building, mobile homes, and state building codes); personnel qualification requirements; training and educational programs; automatic data processing systems; and transportation requirements pertaining to manufactured buildings or mobile homes. Three sections of the data collection sheets, Section 3 (Manufactured Housing or Building), Section 4 (Mobile Homes), and Section 5 (Combined Manufactured Building and Mobile Home Programs) include questions pertaining to the following program areas; law, rules and regulations, administrative organization, training and educational programs, evaluation and approval procedures, compliance assurance (inspection) procedures, local enforcement and on-site activities, reciprocity, owner information, and current level of activity. Section 6 contains similar questions which would be applicable to states that have a comprehensive state building code regulating most types of building construction and occupancies.

Contracts. Most of the state-of-art studies described are being conducted under contracts with private consulting architectural and engineering firms, and various universities. In Fiscal Year 1972 and to date in Fiscal Year 1973, a total of 11 contracts, some with multiple tasks, have been awarded. Six of the contracts include state-of-art studies of 30 state regulatory programs; two pertain to preparation of suggested model documentation; three contain studies of various city and model code organization programs; two include a review of various manufacturer needs and experiences in regard to state programs; one incorporates a brief review of federal agency programs relating to manufactured housing and mobile homes; one is a literature survey of industrialized building system evaluation and regulation; and one pertains to planning computer compatibility for building regulation documents. In addition, one contract provides for various reviews of the CES Project objectives, methodology and reports. Final reports on all current contract work are scheduled for completion by June 30, 1973.

During Fiscal Year 1972 other preliminary background studies were also initiated within the Building Research Division. These studies related to owner or consumer information needs in industrialized housing, and evaluation and approval programs of electrical, mechanical and plumbing systems used in building construction.

Reports. The two major project reports now under preparation are: (1) a state-of-art report on state building and mobile home regulatory programs and (2) a report containing model informational documentation relating to the evaluation, approval and inspection of manufactured buildings. In general, the latter report will contain model documents primarily related to one and two family dwellings. These reports will be completed for various committee reviews and discussions during Fiscal Year 1973. Other reports resulting from selected contract and staff studies discussed previously are also being reviewed for possible publication.

In Fiscal Year 1974, based on comments and feedback received on the initial project reports as described in the preceding paragraph, the CES staff will develop additional model documentation pertaining to other building types and occupancies and modify and refine the documentation previously developed.

Staff. The selection of the CES Project staff was completed in June, 1972, and presently consists of six members: Project Manager, Research Architect, Architect, Quality Assurance Specialist, Mechanical Engineer, and Secretary.

5. Summary

Although the primary goal of the CES Project is to develop model informational documentation that will assist state building regulatory agencies in establishing a coordinated and uniform evaluation, approval and inspection system, it is expected that the model documents will be useful to all those directly involved in the building regulatory process - the state building officials, the design professionals (architects and engineers), the evaluation and inspection agencies, the manufactured building producers, the local building officials, and the building owners or users. It is also believed that model informational documentation will benefit the general public by providing an efficient regulatory system that will permit and stimulate the use of more productive manufacturing and marketing techniques, new and improved materials; and increase the available supply of economical housing and other buildings.

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