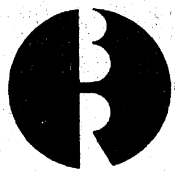

The Business Roundtable

LABOR SUPPLY INFORMATION

A CONSTRUCTION INDUSTRY COST EFFECTIVENESS PROJECT REPORT

Report D-5
April, 1982
Reprinted December, 1989

THE BUSINESS ROUNDTABLE
200 PARK AVENUE
NEW YORK, NEW YORK 10166
(212) 682-6370

LABOR SUPPLY INFORMATION

TABLE OF CONTENTS

I

SUMMARY

Surveys among construction users and contractors indicate that they need and use construction labor supply information in planning construction projects. They also indicate a need for labor demand information in order to estimate that portion of supply available for their projects. Currently, users and contractors rely on local sources for the supply-and-demand information that they use. These local sources include chambers of commerce, contractors' associations, local unions, local managements, etc.

Although users and contractors make little use of published federal and state government supply-and- demand information, they would consider using it if they understood it and had confidence in its accuracy.

Weighing the survey findings, the study team remains somewhat skeptical as to how much contractors and construction users would use improved supply-and-demand information if it were developed. They are primarily interested in spotting future labor shortages so that they can develop strategies to overcome them on their projects.

While many sources of labor supply-and-demand information were investigated, the team's work concentrated on government sources because of the consistency and regularity of data collection and publication. Moreover, most users and contractors are well acquainted with the informal local sources.

The Occupational Employment System (OES), a joint program of states and the Bureau of Labor Statistics (BLS), appears to have the greatest potential for providing the desired supply data. Only California and New Hampshire do not participate in this effort. Participating states collect employment data by construction-craft occupation and by component of the construction industry. Part of this data is sent to the BLS for aggregation into national numbers which appear in regular BLS reports. States also publish reports of their own giving greater detail. A significant residue of data is not published at all. Unfortunately, formats used by BLS and by states in publishing this data do not facilitate its use by users or contractors. However, the study team feels, based on the contacts made, that states probably would be willing to consider providing data in more useful formats.

As for labor demand information, both the Department of Labor and states provide data. The Labor Department does so through its Construction Labor Demand System (CLDS), a management information system which is designed to provide data matching that of the OES program. The accuracy and value of the system depends upon the quality and quantity of its input. The team feels the input should be improved. States also publish projections of demand. However, formats vary, and the completeness of input is questionable.

Considering all this, we recommend that a two-phase pilot program be developed to see whether improved supply data can be provided by a test state and whether that data would actually be used by users and contractors for construction planning.

If this pilot program is successful, the team recommends that other states be asked to provide similar supply data. At the same time, the team recommends that attention be given to improving input to the Labor Department's Construction Labor Demand System to provide better labor demand information.

This is a realistic program. If all the proposed steps prove successful, users and contractors would gain access to substantially improved labor supply-and-demand information for construction planning throughout the U.S.

It should be pointed out that both federal and state systems mentioned in this report may be affected by federal budget cuts imposed during the present administration. All research for this study was conducted prior to such cuts.

II

THE AIMS OF THIS STUDY

Accurate information about the supply of skilled craftsmen for major construction projects is difficult to obtain. As a result, it is difficult to predict what impact a proposed project will have on an area and equally difficult to predict whether the project will be completed in a timely manner.

To address this problem, those involved in the study agreed on three objectives:

1. Develop an understanding of the specific manpower supply information that would help users and contractors in planning industrial construction projects.

2. Identify sources of desired information. Investigate how data is made available and describe how it might be used.

3. Analyze the gaps between information that users and contractors feel they need and what is available. Where shortcomings are identified, develop suggestions as to whether they can be realistically remedied and, if so, how.

III

INTRODUCTION

The supply of construction labor in a given area is usually not a primary factor in choosing a site for an industrial facility. Yet it becomes of major importance prior to and throughout construction.

Historically, construction users and contractors have paid less attention to the availability of manpower during construction planning than they have when faced with a crisis during construction involving recruiting enough qualified craftsmen to complete the project on time. In the past, numerous attempts have been made to solve such problems by expensively and unproductively placing projects on an overtime basis to attract and retain craftsmen.

Labor supply involves both quantity and quality, both of which are influenced by demand. In times of general labor surplus, such as in a recession, employers have little or no difficulty in obtaining enough workers with sufficient skills. There are, of course, exceptions, among them construction in a remote area, or in areas where a major project overshadows other construction work. Shortages may also occur in crafts that require a high degree of specialization and skill.

In times of high economic activity many employers face labor shortages, particularly of skilled craftsmen. It should be noted, however, that demand often generates supply. When jobs are available, more persons may enter the labor market or re-enter after having ceased looking for work when job opportunities are scarce. But even job availability may not be sufficient. Additional inducements may be required.

Filling jobs when demand is increasing is relatively easy if the work to be done is unskilled or semi-skilled. New workers can be trained quickly on the job. Open shop construction contractors take advantage of this situation because of their freedom to organize their work so as to use individual employees on a wide variety of tasks. Union contractors, on the other hand, are constrained by collective bargaining agreements which specify the use of journeymen for certain work and which limit the number (or ratio) of apprentices or subjourneymen who may be employed. Until union contractors can establish a work force that includes more subjourneymen, any study of labor supply must recognize that to some extent union contractors and open shop contractors are looking at different sources for their manpower.

Broadly, the supply of workers for the local construction industry comes from seven sources, some of which may overlap:

- Those already employed in the industry (both union and non-union).
- Unemployed construction workers.
- Workers employed at other jobs, who are waiting for construction employment.
- Travelers.
- Persons enrolled in apprentice training programs.
- Persons enrolled in vocational training programs.
- Other new entrants.

Supply must not only meet demand, but must also replace those leaving the market because of retirement, death or other reasons.

Craftsmen employed by manufacturing, trade and other non-construction establishments for in-house maintenance and other construction are generally not available for contract construction work. Therefore, they are not considered as part of the construction industry's labor supply.

Published reports offer the most readily available source of data. The Bureau of Labor Statistics (BLS) in the Department of Labor is a central source of published information on total construction for the U.S. as a whole and for states. The BLS and state employment agencies have a cooperative employment statistics program (OES). Under this arrangement, a state collects and publishes both current and projected employment. The data are also published for areas within the states. Data on unemployed construction workers, in broad craft groupings, for the U.S. as a whole are regularly published by the BLS. More detailed craft data are available on request. Most states also publish unemployment data.

Data on the number of workers formerly employed and awaiting a return to construction jobs are not available. But, a ballpark estimate of the potential number can be derived by comparing monthly employment figures for the past year or two with the number currently employed. Keep in mind that peak employment numbers usually include many students who are not skilled craftsmen and who are available only during summer months. In estimating hidden manpower resources, do not add peak employment figures to unemployment during a low point in construction activity. Unemployment at the time of peak employment is the pertinent figure.

There is no readily available, systematic source of statistical data on travelers — the migrant skilled labor of construction.

The Labor Department's Bureau of Apprenticeship and Training (BAT) provides, on request, computer runs of apprentice enrollment and graduates, by craft by state. But the data usually are not available until about a year and a half after the fact (i.e., 1979 data becomes available only in July 1981).

To obtain the numbers of persons enrolled in vocational training programs and state vocational training programs, one must inquire of state vocational education administrators and schools.

"Other new entrants" are apt to consist largely of unskilled, untrained workers employable as subjourneymen, helpers or trainees. In many cases, it is unnecessary to have an estimate of the number of

potential workers of this type because demand often generates an ample supply.

Considering all these complexities, the team decided to limit the scope of its research in these ways:

1. Only sources of information that were readily available to users and contractors would be investigated.
2. Efforts would be concentrated on identifying the type of information that users and contractors said they would use in planning if the information were available.
3. Greatest emphasis would be placed on government-provided information since users and contractors are already familiar with information available from local sources such as chambers of commerce, contractor associations and local user groups.
4. Recommendations would be limited to those which the study team believed had a realistic probability of implementation.

IV

FINDINGS

What Users and Contractors Want to Know About Labor Supply

Several discussions were held with construction users about labor supply information used in their construction planning. They indicated that supply information, without demand data, was not useful. Their current sources of information included local users groups, chambers of commerce, local contractor associations, local managements, etc. Users indicated that the information they normally want is for a state or a standard metropolitan statistical area (SMSA).

Construction users divide areas of interest into two types: those where they have existing operations, and those where they don't. Where users have an operation, they feel they have a fairly good source of information in their own local management. If they do not have operations in a projected site area, they make surveys to project manpower supply.

They want to know the number of available craftsmen by trade for industrial construction. Users indicated that they rarely try to get data for every craft, but concentrate on such key trades as pipefitters, electricians, boilermakers, carpenters and operating engineers. Users indicated that, if possible, they would prefer to have these numbers broken down by how many are union members and how many are not. They were somewhat skeptical as to whether this could be achieved. Since users wish to know the available supply ***to them,*** this requires a forecast of concurrent labor demand for other projects. Some local user groups, notably in the Gulf Coast area, not only conduct surveys of manpower involved in industrial construction and contract maintenance but also project future demand. This labor supply information has been helpful to construction users planning Gulf Coast projects.

Users need data as much as three years in advance of construction to enable them to devise contracting strategy. Numbers, at this point, need not be as precise as they need to be later. About one year before the projected start of construction, users attempt to fine-tune this data for bid evaluation.

In sum, the users sampled for this study do obtain and use construction labor supply-and-demand information. None reported using regularly published government information for this purpose.

Several major industrial contractors were asked what sources they traditionally use to obtain data about the availability of craftsmen. Among the sources mentioned were local unions, local contractor associations, chambers of commerce, state employment agencies, representatives of minority groups, vocational schools, industrial commissions, ***and*** government sources. The contractors interviewed said that there is usually no problem in a given area in securing enough brick-layers, cement masons, laborers, millwrights, operating engineers, pile drivers, painters, carpenters, roofers, sheet metal workers, or teamsters. Crafts that are apt to be in short supply, according to the contractors sampled, and where it may be necessary to recruit, train or otherwise qualify manpower, are asbestos workers, boilermakers, electricians, iron workers and pipefitters.

In many areas, statewide data appear to suffice, but some large or active states provide a further breakdown of supply. For example, (1) California - San Diego, Los Angeles, San Francisco Bay area and Sacramento; (2) Nevada - Northern and Southern; (3) Texas - Golden Triangle, Houston, Dallas, Corpus Christi, El Paso, Amarillo; (4) Louisiana - Lake Charles, Baton Rouge, New Orleans, Shreveport;

(5) Florida - Miami, Tampa/Orlando, Jacksonville; (6) New Jersey - Northern, Central-and-South combined.

Contractors expressed concern that the days of the "boomer" — the nomadic journeyman willing to go anywhere where the pay is enticing — are coming to a close. Most construction craftsmen now seem to have roots in one locality. They have also developed alternative vocations, and are increasingly reluctant to travel beyond normal commuting distances. This change strongly reinforces the need for improved manpower planning.

Perhaps unsurprisingly, contractors say it would be very helpful to have manpower availability projected by craft and by calendar quarter for two to three years in the future and compiled by states or, in larger states, by local areas within the state. Additional information such as the number of available travelers, turnover, and the types of specialities available — such as welders — would be useful.

Published Labor Supply Information

Federal Sources: The Bureau of Labor Statistics publishes two types of employment figures. One is based on "establishment surveys" — that is, data collected from a very large sample of business organizations (e.g., construction contractors) in a cooperative arrangement with state employment agencies. Data are published for total employment (employees only) and for production workers (construction workers in the construction industry, a definition that includes all employees up through working-foreman level). The estimates are adjusted once a year to jibe with "benchmark" employment figures derived from unemployment insurance reports filed with state employment agencies.

"Household surveys," the other type, are monthly samples of households throughout the U.S. Published employment figures are for "all persons employed"; that is, they include proprietors, partners and unpaid family workers as well as employees.

The study team recommends the use of establishment survey employment figures for two reasons:

- They tend to be more reliable statistically, particularly in details (where these are given) for localities and individual trades.
- More data is available, on a comparable basis, for state and local areas.

The BLS monthly publication ***Employment and Earnings*** (E&E) carries both surveys:

- Household Data — Data are available monthly for the United States as a whole. Employed persons for the total construction industry and by broad occupational groups are found in the "A" Table as are numbers of unemployed persons.
- Establishment Data — Data are available by month, both nationally and for states and local areas. The ***national data*** ("B" Tables) are provided in the following detail:
  - Construction (Total)
    - General Building Contractors
      - Residential building construction
      - Operative builders
      - Nonresidential building construction
    - Heavy Construction Contractors
      - Highway and street construction
      - Heavy construction, except highway
    - Special Trades Contractors
      - Plumbing, heating, air conditioning
      - Painting, paper hanging, decorating
      - Electrical work
      - Masonry, stonework and plastering
      - Carpentering and flooring
      - Roofing and sheet metal work

Another BLS publication, ***"Occupational Employment and Selected Nonmanufacturing Industries"***, 1978, Bulletin 1088, reports employment by occupation based on establishment surveys. The study team recommends using this data rather than the material in ***The National Industry — Occupational Employment Matrix, 1970, 1978 and 1990.*** The latter was based initially on the 1970 Census, extended to 1978 with projections to 1990.

The Labor Department's Bureau of Apprenticeship and Training, (BAT), publishes a statistical report on apprenticeship activity each calendar year, based on data from the state-national apprentice reporting system (SNAPS). The report shows, for each craft: the number of apprentices added, the number who cancelled and the number who completed the programs during the year; as of year-end, the number of apprentices in the program and number of minorities, females and veterans.[1] As a labor supply component, apprenticeship

[1] To obtain this data, write U.S. Dept. of Labor, Bureau of Apprenticeship and Training, Washington, D.C. 20213.

completions should be considered, even though they represent only a small portion of total supply.

The Census Bureau issues several publications that deal with labor supply, including, ***Characteristics of the Population*** (based on the decennial census) and the ***Census of Construction Industries,*** but the data provided are not timely. The team believes other information described in this report will be more useful to both users and contractors.

State Sources: A federal-state cooperative program called Occupational Employment Statistics (OES) is designed to produce national, state and area data by occupation and by industry group. The survey is conducted periodically by mail by state employment services or agencies. Forty-eight states and the District of Columbia participate.[2] Only California and New Hampshire do not. The survey is conducted over a three-year cycle (manufacturing industries one year, nonmanufacturing except trade industries the second year, and trade industries the third year).

Extensive lists of occupational titles are used in these surveys. For that reason, one who uses this information must be conversant with craft (e.g., carpenter) subdividions in order to aggregate them (e.g., lather, dry wall applicator, taper, etc.) for the craft.

The OES sample for a particular state is designed to yield reliable labor supply estimates for that state and for areas within the state. Samples are selected primarily from the lists of establishments reporting to the state unemployment insurance program. The program thus produces "establishment" data.

In addition to forwarding information to the BLS, where the numbers are aggregated to provide national statistics, states use their data in a variety of their own publications. Some publications aim specifically at construction; others provide employment data on a broader base; still others provide projections of the numbers of persons in each occupation who will be available two or three years in the future.

From a labor supply viewpoint, this data comes as close to user and contractor requirements as any information the study team had been able to find. However, because of the extensive list of occupational titles which are used and the method of reporting (which is not in a

[2] Addresses of agencies of cooperating states are found inside the cover of Employment and Earnings a Bureau of Labor Statistics monthly publication.

format that lends itself to industrial-construction planning), the study team recommends that users and contractors discuss their needs with state employment service officials before using published data. The team found these agencies quite cooperative and often able to provide interested parties with data in a format more useful than the way it is normally published. We also found that a substantial amount of collected data which is not published at all might be made available to interested parties.

For California and New Hampshire, the two states which do not participate in the OES program, complex calculations are required to derive roughly comparable data. The construction industry employment data in BLS's *Employment and Earnings* (E&E) can be used in combination with the national OES matrix[3] to obtain rough estimates of statewide employment in construction by crafts. The national OES matrix is essentially a weighted average of the states participating in the program adjusted to include those not participating. The matrix shows the occupational composition (226 occupations) in 260 industries. Separate coefficients (percentages of total construction employment found nationally in that field) are available for three subdivisions of the construction industry (general building contractors, heavy construction contractors, and special trades contractors). To use this data, the detailed occupations must be grouped into the conventional construction crafts where the matrix categories do not coincide with conventional craft categories. Then the detailed occupational coefficients are multiplied by construction employment for the state or area ("B" Tables from E&E). The resulting numbers (including the sums of the detailed occupations — a "complete" craft) are rough estimates of local employment in that construction craft.

These estimates have two major drawbacks. First, the national matrix does not reflect to what extent local construction consists of a different mix than the national average, nor does it reflect the extent to which state segments of construction vary from the national norm because of differences in the amount of union as against open shop work, building practices, and labor intensiveness. Second, the E&E concept (covered jobs) excludes self-employed persons who represent about 20% of the workers in construction.

Graduates of vocational-technical construction trade programs are generally not comparable to graduates of registered apprenticeship programs, but they are a source of construction workers. Figures on

[3] For national matrix material, write Office of Economic Growth and Employment Projection, Bureau of Labor Statistics, U.S. Dept. of Labor, Washington, D.C. 20212.

present enrollment and recent graduates by specific program and school are available from state departments of vocational-technical education.[4]

Private Sources: Several private sources provide labor-supply data. The Construction Labor Research Council (CLRC), a statistical research organization supported by seven national contractor associations, makes information available to users and contractors on a subscription basis. The CLRC collects and maintains a data base of union construction wage and fringe information, as well as manpower information, for use in improving construction-industry collective bargaining. Data come from local contractor chapters and associations. In addition to occasional reports, subscribers may obtain some labor supply information for specific areas of the country from CLRC.[5]

Published Labor Demand Information

Federal Sources: The Labor Department's Construction Labor Demand System (CLDS) is a recent management information system designed to provide forecasts of the volume, type and regional location of construction activity, as well as the associated on-site labor requirements by crafts. The data matches that of the joint state-federal occupational employment statistics, using the same occupational groupings and the same construction industry subdivisions. Separate forecasts are made for each state.

Information about labor demand reaches CLDS from both private and government sources. The most important source covering current non-energy projects is the monthly statistical file from F.W. Dodge, which covers about 125,000 to 175,000 new projects per year, classified by county. In 1982, CLDS is adding such additional sources as ***Engineering News Record, Wall street Journal,*** and ***Chemical Week.***

Information about energy-related construction is gathered from other sources. The data for electric- generating power plants comes from the Energy Department's ***Generating Unit Reference File.*** The Nuclear Regulatory Commission's ***"Yellow Book" (Construction Status Report)*** is used to update information on nuclear power

[4] A quarterly directory of state personnel responsible for vocational education is published by the U.S. Office of Education, Division of State Vocational Programs, Building ROB3, Rm, 5640, Seventh and D Streets, Washington, D.C. 20202.

[5] Address: Construction Labor Research Council, Suite 200, 2033 K Street, NW, Washington, D.C. 20006.

plants. Both sources are updated semi-annually by CLDS from responses to questionnaires sent to utility companies.

For energy projects other than power plants, CLDS maintains a computerized file containing a record of each announced project in the U.S., under a cooperative arrangement with the Department of Energy. Where necessary, CLDS asks project owners for data required to convert project forecasts into labor requirements for onsite construction (also for operations and maintenance labor work). Short range estimates of labor demand are based on projects known to be underway by CLDS.

To supplement short range data for long range demand estimates, CLDS uses a detailed econometric forecasting model of long range construction activity. The model uses different methods for energy and non-energy construction. The construction period for each project is divided into ten deciles. Labor requirements for each craft are estimated separately for each decile. Labor divisions are important because labor needs for any one construction trade vary during a project as different stages of construction ensue. The statistical data for the conversion comes from BLS surveys, CLDS engineering studies and surveys, and Bechtel's energy-supply planning model.

CLDS output is available in work hours, work quarters (520 hours), or work years (2080 hours) of labor requirements for each craft. The requirements are assigned to the counties or states where the construction occurs.

The study team has reservations about the completeness of CLDS information on current short term labor demand, especially for industrial non-energy construction. However, CLDS is a potentially sound concept for ultimately supplying users and contractors with labor demand forecasts for future planning.

State Sources: Most states publish projected labor demand for many occupations, including construction crafts. Most of these forecast occupational demand for three years in the future. Although only a few systems were studied, the team's impression is that none has enough data to provide quality projections.

Private Sources: As noted earlier, users and contractors indicated they were acquainted with and used local sources of labor demand information, including chambers of commerce, contractor associations, local user groups, etc. Accordingly, such information is not covered in this report.

V

CONCLUSIONS

Labor Supply Information

The study team recommends use of BLS "establishment" data because it is collected and published for local areas. Interested parties should get in touch with officials of state employment services to see what is available for a given area. State publications vary and no published catalogue of available state publications is known to exist.

In the federal-state joint program for Occupational Employment Statistics (OES), the study team feels that the list of occupational titles is too complex and can only be made useful by aggregating sub sets into principal crafts. On the other hand, the construction industry classifications seem quite satisfactory.

Labor Demand Information

The study team feels that the Construction Labor Demand System (CLDS) has the potential for being useful to the construction industry. On the plus side, CLDS provides matching data to OES. However, CLDS forecasts are only as good as the input is current, accurate and complete. As of now, we have reservations about the input. Effort is needed to improve this deficiency.

VI

RECOMMENDATIONS

States participating in the OES program collect an abundance of supply information, much of which is not published. A two-phase pilot program should be undertaken to determine whether that data can be presented in a format that is satisfactory for industrial construction planning, and if so, whether users and contractors will use it.

We recommend that one of possibly two states be selected for the pilot program. Naturally, such state or states would have to be

willing to cooperate. These states should have a large amount of construction and must participate in the OES program. (We have determined that Texas meets these criteria.)

The BLS should also be invited to participate in the pilot program. Additional members of the pilot program team should include both user and contractor representatives from the selected state or states, as well as a representative of CLDS.

The objective of Phase I of the pilot program would be to determine whether the state or states selected have the capability to provide supply data in a format useful to construction users and contractors. It is believed that this Phase I undertaking would require from three to six months.

If Phase I is successful in generating useful labor supply information, Phase II of the pilot program should be undertaken. In Phase II, the information developed should be made available to local user groups and contractor associations in the selected state or states. The objective of Phase II would be to test whether or not information made available would actually be ***used*** by users or contractors. The team believes it is probable that the information desired can be generated for pilot purposes. However, to continue to generate the information would probably require changes in existing systems and the cost of doing so would have to be justified. The purpose of Phase II is to make sure there is justification.

If it turns out that the information obtained in Phase I is actually used in Phase II, additional states should thereafter be contacted to see whether they also can generate the type of information desired.

If all of these efforts to provide good labor supply data are successful, the study team recommends that an attempt be made to improve the data input to CLDS. If that effort is also successful, users and contractors would have access to matched labor supply and demand information. Although all these accomplishments would not be realized for several years, it is believed that this plan of action is realistic.

VII

STEPS TO CARRY OUT THE PLAN

The team recommends that the pilot program described in Section VI begin immediately. As a first step, the current team should select a state or states for the program.

The pilot program team would begin its work of generating useful labor supply information with the selected state or states. At the conclusion of this first phase, it would recommend whether or not to proceed with the second phase of the pilot program.

If it is decided to pursue Phase II, the team would acquaint local user groups and contractor associations with the new labor supply data and would follow-up with interested parties to learn whether or not the data is actually used in construction planning. Since Phase II may require one or two years, it may be desirable to disband the pilot program team at this point and retain a third party to complete the testing phase, and if successful, to direct the final parts of the recommendations.

CONSTRUCTION INDUSTRY COST EFFECTIVENESS PROJECT

This Project is a long-range, four-phase effort to develop a comprehensive definition of the fundamental problems in the construction industry and an accompanying program for resolution of those problems leading to an improvement of cost effectiveness in the industry. It is focused primarily on improvement in the industrial, utility, and commercial segments of the industry and has been developed from the point of view of owners or users of construction. Efforts by all segments of the industry, however, are vitally necessary if major improvement is to result.

This report is one of a series of reports from study teams researching individual problem areas. The report series includes:

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