



GUIDELINES FOR IMPLEMENTING A CONSTRUCTABILITY PROGRAM

Bureau of Engineering Research
The University of Texas at Austin

Publication 3-2
July 1987

The purpose of this publication is to make available to industry the results of research conducted by the Construction Industry Institute (CII). The publication does not necessarily represent the views of all CII member companies, but is offered as a contribution to the industry.

CII was founded in 1983 to improve the cost effectiveness of the nation's largest industry. The members, who represent a broad cross-section of owners and contractors, believe that many of the problems that limit cost effectiveness are common ones, and that real improvements can be best accomplished in a cooperative environment with the benefits being shared by the construction industry at large.

The Construction Industry Institute
The University of Texas at Austin
3208 Red River
Suite 300
Austin, Texas 78705-2650
(512) 471-4319

Guidelines For Implementing A Constructability Program

Prepared by
The Construction Industry Institute
Constructability Task Force

Publication 3-2
July 1987

First Printing July 1987
Second Printing September 1987
Third Printing April 1990

TABLE OF CONTENTS

<i>Chapter</i>	<i>Page</i>
Summary	v
1. Introduction	1
2. The Company Program	3
Self Assessment	3
Policy	3
Executive Sponsor	5
Organization	5
Procedures	6
Appraisal	6
Database	7
3. Project Programs	8
Owner's Early Role	8
Project Organization	8
Training	10
Constructability as a Discipline	10
The Review Fallacy	10
Procedures	12
Appraisal	12
Feedback and Retrieval	13
Appendix A: Corporate Constructability Policy	14
Appendix B: Corporate Constructability Procedure	15
Appendix C: Project Constructability Policy and Procedure	17
Appendix D: Project Constructability Functional Organization	20
Appendix E: Project Appraisal	21
Appendix F: Constructability "Lessons Learned"	22
Appendix G: Constructability Related Savings	23
References	28

SUMMARY

Constructability is evolving as one of the most significant enhancement opportunities in the construction industry. Although practiced for a considerable time by some organizations, only recently has it come into focus as offering major benefits in construction cost and schedule. The Business Roundtable's Construction Industry Cost Effectiveness (CICE) Project identified constructability as an area with a major potential for improved cost effectiveness.

There is wide acceptance of the basic constructability premise that integration of construction knowledge and experience into planning and design is indeed beneficial. However, there is no single accepted methodology to achieve that integration which is at the heart of constructability. Implementing constructability is easiest on turnkey type projects; it is much more difficult on projects where design and construction are accomplished by distinct and separate contracts.

Traditional separation of engineering and construction early in the project must be bridged if constructability is to work. This bridging requires merging engineering and construction cultures, which have both commonalities and distinct differences. The challenge to management is to make that merger easily, automatically, and permanently.

This publication presents those ideas, steps, and procedures which have worked best in implementing constructability. It also contains additional suggestions from the task force as to what should work. Other planning and managerial issues which might be considered simultaneously with constructability are presented in the appendices.

The task force is convinced that constructability offers one of the greatest opportunities for improvement in our industry. The pressures of global competition leave no alternative but to adopt the changes that will make the U.S. construction industry as effective as possible. Constructability is one of those necessary and vital changes.

INTRODUCTION

Constructability: A Primer presents a general description of the constructability process and its benefits. It is addressed to senior management, who set policy and make things happen. This companion publication is designed to assist in the implementation or improvement of constructability programs in any organization. The detailed information on constructability concepts and applications in the *Constructability Concepts File* is aimed at constructability participants. This publication is supplemented by the training material and technical content of the *Constructability Concepts File*.

The validity of constructability as a tool in improving construction cost effectiveness is widely accepted in the engineering-construction industry, and many companies believe they already have effective programs. This publication examines ways to bring constructability programs to high levels of effectiveness in achieving cost, schedule, quality, and other project benefits. If your company already has a constructability program, this book may be of some assistance in evaluating that program.

Company or project size is no barrier to constructability. It is equally valuable to both large and small organizations. Programs for constructability have demonstrated that they will save their costs many times over on both large and small projects. Smaller companies frequently elect to combine some constructability functions. The important point is to include all the essential elements so that a team assembled for a project will have ample common ground for effective joint action by all constructability participants.

Long-term or complex bureaucracies are not needed to make constructability happen. Constructability, like any other broad program, works best when it is simply an accepted way of doing business with self-evident benefits. Like productivity improvement programs, constructability is too important to be left to chance and must be reexamined periodically.

While no single program will fit every company, the consensus is that most successful constructability programs provide the following:

- Clear communication of senior management's commitment and support of constructability
- Single point executive sponsorship of the program
- A permanent corporate program and a tailored implementing program within each project

- “User friendly” procedures and methodologies
- A corporate “lessons learned” database
- Training where necessary
- Easy appraisal and feedback

It is often convenient to examine related opportunities for savings simultaneously with constructability. Some of these related savings areas such as elimination of “gold plated” specifications and standards are discussed in Appendix G. There may be other related savings areas such as operability, maintainability, and reliability that can be considered concurrently with constructability. Current indications reflect an increasing focus on integrated up-front planning, where all factors affecting the project over its entire life cycle are taken into consideration.

THE COMPANY PROGRAM

In establishing a corporate constructability program, both large and small companies will find it useful to consider:

- Self Assessment
- Corporate Policy
- Organization and Procedures
- Executive Sponsor
- Constructability Database
- Training
- Appraisal

These are shown on the flow chart in Figure 1 and are discussed in the following paragraphs.

Self Assessment

An important preliminary step in establishing a company program is to determine where you are today as regards constructability. These questions may help in that determination:

Why are you contemplating constructability? Are you doing it solely for competitive reasons? What will it cost? What are the returns? Are you willing to make a strong and open corporate commitment to constructability? How will you regard constructability in five years?

What is your corporate culture? Does it foster the team approach that makes constructability work? Are there intra-organizational or personal barriers that will inhibit it? Who or what shapes change in your culture? What is the linkage between policy and culture? Can constructability flourish in your culture?

What is the status of constructability in your company today? Is it practiced? Who opposes it? Why? Who are its proponents? Why? What is its level of effectiveness? Will it stand a detail audit or is it cosmetic? Is there a corporate "lessons learned" database? Does your current program meet the needs of today? Will it meet the needs of tomorrow?

Policy

The constructability policy statement should:

- describe the results desired.
- present supporting rationale.
- indicate the level of management and corporate commitment.
- fix responsibility at the sponsor and project level.

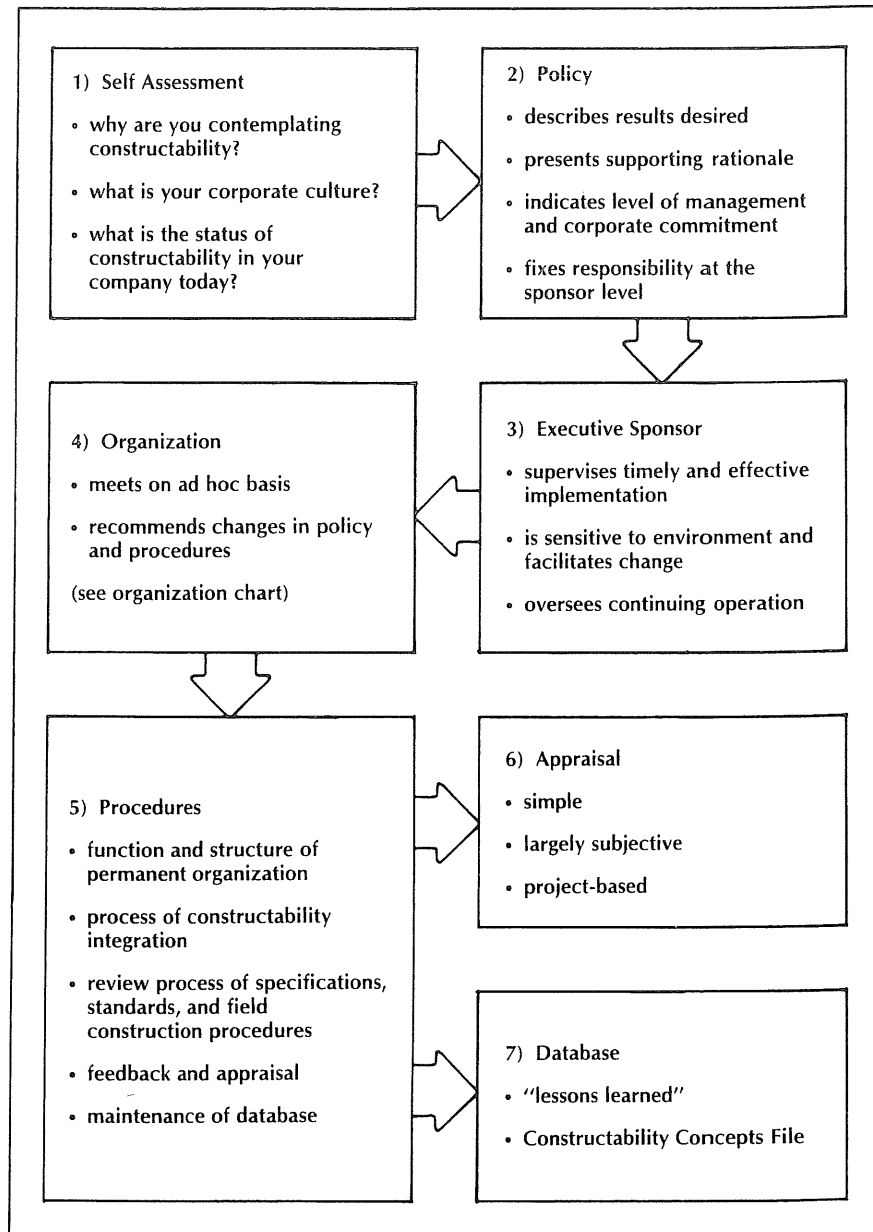


Figure 1. The Company Constructability Program