

CONSTRUCTION INDUSTRY INSTITUTE

EXCEPTIONAL PROJECTS AND
METHODS OF IMPROVING
PROJECT PERFORMANCE

Construction Industry Institute

3M	ABB Lummus Global Inc.
Abbott Laboratories	BE&K, Inc.
Air Products and Chemicals, Inc.	Bechtel Group, Inc.
Aluminum Company of America	Black & Veatch
Anheuser-Busch Companies, Inc.	BMW Constructors Inc.
Aramco Services Company	Burns and Roe Enterprises, Inc.
Atlantic Richfield Company	Butler Construction Company
Bayer Corporation	CDI Engineering Group, Inc.
BP Amoco Corporation	Chemtex International Inc.
Celanese	Cherne Contracting Corporation
Champion International Corporation	Chicago Bridge & Iron Company
Chevron Corporation	Cianbro Corporation
CITGO Petroleum Corporation	Day & Zimmermann International, Inc.
The Dow Chemical Company	Dick Corporation
DuPont	Dillingham Construction Holdings Inc.
Eastman Chemical Company	Eichleay Holdings Inc.
Exxon Research & Engineering Company	Fisher Controls International, Inc.
FPL Energy, Inc.	Fluor Daniel, Inc.
General Motors Corporation	Foster Wheeler USA Corporation
General Services Administration	Fru-Con Construction Corporation
Intel Corporation	James N. Gray Company, Inc.
Eli Lilly and Company	Graycor
LTV Steel Company, Inc.	H+M Construction Co., Inc.
Mobil Technology Corporation	Hilti Corporation
NASA	Honeywell Inc.
Naval Facilities Engineering Command	International Technology Corporation
Ontario Power Generation	Jacobs Engineering Group, Inc.
Phillips Petroleum Company	J. A. Jones Inc.
The Procter & Gamble Company	Kellogg Brown & Root
Reliant Energy	Kiewit Construction Group, Inc.
Rohm and Haas Company	Kværner
Shell Oil Company	Morrison Knudsen Corporation
Solutia Inc.	M. A. Mortenson Company
Tennessee Valley Authority	Murphy Company
Texaco	The Parsons Corporation
U.S. Air Force Research Laboratory	Raytheon International Corporation
U.S. Army Corps of Engineers	S&B Engineers and Constructors Ltd.
U.S. Department of Commerce/NIST	Stone & Webster Engineering Corporation
U.S. Department of State	Walbridge Aldinger
U.S. Steel	H. B. Zachry Company
Union Carbide Corporation	
The University of Texas System	
Weyerhaeuser Company	

Exceptional Projects and Methods of Improving Project Performance

**Prepared by
The Construction Industry Institute
Re-Engineering the EPC Research Team**

**Research Summary 124-1
June 1999**

Reviewed by CII 23Jun04

© 1999 Construction Industry Institute™.

The University of Texas at Austin.

CII members may reproduce and distribute this work internally in any medium at no cost to internal recipients. CII members are permitted to revise and adapt this work for the internal use provided an informational copy is furnished to CII.

Available to non-members by purchase; however, no copies may be made or distributed and no modifications made without prior written permission from CII. Contact CII at <http://construction-institute.org/catalog.htm> to purchase copies. Volume discounts may be available.

All CII members, current students, and faculty at a college or university are eligible to purchase CII products at member prices. Faculty and students at a college or university may reproduce and distribute this work without modification for educational use.

Printed in the United States of America.

Contents

<i>Chapter</i>	<i>Page</i>
Executive Summary	v
1. Introduction	1
2. Case Study Analysis	3
3. Findings	6
4. Conclusions	16

Executive Summary

CII formed the Re-Engineering the Engineer-Procure-Construct (EPC) Process Research Team to investigate the re-engineering process identified by Hammer and Champy in their book, *Re-Engineering the Organization*. The purpose of the investigation was to determine if such a process could be applied to the construction industry, especially that segment of the industry that deals with EPC projects.

At its initial meetings, the research team had intensive discussions that resulted in the realization that to re-engineer the entire EPC process was insurmountable as well as unrealistic. Company work processes were too divergent to expect unanimous implementation of a “new” re-engineered EPC process model.

The research team struck upon the idea that in many cases, individual projects were executed with extraordinary results in terms of schedule. The research team then set out on a course to investigate these extraordinary projects to determine what made them different from traditional projects of the same scope and complexity. Although this research summary does not provide a re-engineered EPC process, it does provide compelling evidence that fundamental changes can occur with dramatic results. It also delivers guidance for organizational re-engineering efforts.

Introduction

Under dramatic consequences, owners and contractors accomplish projects whose short schedules, tight budgets, or technical complexity require adoption of extraordinary approaches to design and construction. For the purposes here, these projects are referred to as “exceptional” projects.

Exceptional projects and their attendant requirement for unusual project execution strategies arise for many reasons. Sometimes industrial accidents or acts of God cause damage to crucial manufacturing capacity. In other cases, changes in the economy or international markets cause a speed-to-market approach. Often, these exceptional projects are completed in record time, with superior quality or within a low budget. A common example on exceptional projects is for strategies that are designed to reduce schedule to have beneficial impacts as well on the project cost or quality.

The fundamental question behind this research is:

Since we can achieve exceptional results by using extraordinary methods, what did we do differently to achieve exceptional results, and what can we learn from it?

The purpose of this research was to investigate EPC processes to:

1. take advantage of existing methods used by owners and contractors in exceptional situations.
2. evaluate these methods by incorporating them in existing models of the EPC process.