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PRE-PROJECT PLANNING TOOL:
PDRI FOR BUILDINGS



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Pre-Project Planning Tool: PDRI for Buildings

**Prepared by
The Construction Industry Institute
PDRI for Building Projects Research Team**

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Contents

<i>Chapter</i>	<i>Page</i>
Executive Summary	v
1. Introduction	1
2. PDRI–Buildings	3
3. How to Use the PDRI–Buildings	15
4. Conclusions	19
References	23
Appendix A: PDRI–Buildings Validation Projects	24
Appendix B: In-Progress PDRI–Buildings Validation Projects	26
Appendix C: Equipment Element Descriptions	27

Executive Summary

Previous CII research found that tools for measuring project scope definition and assisting alignment between project participants needed to be developed. CII formed the Project Definition Rating Index for Building Projects Research Team (RT 155) to produce an effective, simple, and easy-to-use scope definition tool for building projects. This research summary provides an overview of the research and development of PDRI–Buildings. It also discusses the usefulness of the PDRI on building projects.

RT 155 produced CII Implementation Resource 155-2, *PDRI–Building Projects*, which consists of 64 elements in a weighted checklist format and provides a method for measuring the completeness of project scope development. The PDRI–Buildings weighted index, based on industry best practices, allows its users to measure the level of scope definition and to compare scope definition to anticipated project success. This tool should help owners and contractors better achieve business, operational, and project objectives.

When using the PDRI–Buildings tool, the weighted score of a project can range up to 1000 points, with a lower score being better. Based on an analysis of 32 completed projects during the validation process, RT 155 found that projects scoring less than 200 (out of 1000 total points) were significantly more successful than those that scored greater than 200.

The PDRI–Buildings tool was used on several projects that were in-progress during the research. Lessons learned are presented to provide a better understanding of how to use the PDRI–Buildings tool in planning a project. Logic flow diagrams, developed to provide time-sequenced logic to project planning activities, are also included.

Introduction

Recent research studies have proven the importance of the pre-project planning phase of the project life cycle. Specifically, a complete scope definition improves project performance in the areas of cost, schedule, quality, and operational characteristics. Unfortunately, until now, the building sector has lacked non-proprietary tools to assist in performing this critical stage of the project.

Because of the needs of the building sector, CII created Research Team 155 (RT 155). The research team set forth the following objectives:

1. Produce a user-friendly and generic tool for measuring project scope development that would:
 - Be easy to use, yet be detailed enough to be effective.
 - Help reduce total project costs and improve schedule performance.
 - Serve as a communication and alignment tool.
 - Be a decision support tool.
 - Be a reliable predictor.
 - Be flexible among facility types.
2. Validate the tool through testing on sample projects by measuring the level of project scope definition during the pre-project planning phases.

In meeting these objectives, RT 155 developed the Project Definition Rating Index for Building Projects (PDRI–Buildings). This generic, user-friendly pre-project planning tool can help owners, designers, and constructors to better achieve business, operational, and project objectives.

The research project pursued by CII RT 155 was initiated in part due to a recommendation by the CII Front End Planning Research Team. The product of that research team, *PDRI for Industrial Projects* (CII Implementation Resource 113-2), is now widely used as a planning tool in the industrial sector. A PDRI–Industrial Projects score of 200 points or less was shown to increase the likelihood of a successful project. A sample of 40 projects using the PDRI–Industrial Projects indicated that those projects scoring below 200 versus those scoring above 200 had:

- Average cost savings of 19 percent
- Schedule reduction by 13 percent
- Fewer project changes
- Increased predictability of operational performance.

The PDRI–Buildings tool (IR155-2) is now available to assist a project team in developing a complete project definition package. Readers are encouraged to use the tool to improve the predictability of project performance.

The central premise of the PDRI for Building Projects Research Team effort is that “teams must be working on the right project in a collaborative manner (alignment) and performing the right work (scope definition) during pre-project planning.”

PDRI–Buildings

PDRI Development Methodology

Initial development work on PDRI–Buildings used PDRI–Industrial Projects as a basis. This effort included input from approximately 30 industry experts as well as extensive use of published sources for terminology and key scope element refinement.

RT 155 members refined and streamlined the list of PDRI–Buildings elements and their descriptions. The final version of the PDRI–Buildings consists of 64 elements, which are grouped into 11 categories and further grouped into three main sections. A complete list of the three sections, 11 categories, and 64 elements is given in Table 1. The 64 elements in the PDRI–Buildings are arranged in a score sheet format and supported by 38 pages of detailed descriptions and checklists. The format of the score sheet and descriptions for the PDRI–Buildings has the same look as that of the PDRI–Industrial Projects.

Table 1. PDRI–Buildings Sections, Categories, and Elements

SECTION I. BASIS OF PROJECT DECISION

A. Business Strategy

- A1. Building Use Requirements
- A2. Business Justification
- A3. Business Plan
- A4. Economic Analysis
- A5. Facility Requirements
- A6. Future Expansion/Alteration
- A7. Site Selection Considerations
- A8. Project Objectives Statement

B. Owner Philosophies

- B1. Reliability Philosophy
- B2. Maintenance Philosophy
- B3. Operating Philosophy
- B4. Design Philosophy

C. Project Requirements

- C1. Value-Analysis Process
- C2. Project Design Criteria
- C3. Evaluation of Existing Facilities
- C4. Scope of Work Overview
- C5. Project Schedule
- C6. Project Cost Estimate

Table 1. PDRI–Buildings Sections, Categories, and Elements (continued)

SECTION II. BASIS OF DESIGN	
D. Site Information	F4. Mechanical Design
D1. Site Layout	F5. Electrical Design
D2. Site Surveys	F6. Building Life Safety Requirements
D3. Civil/Geotechnical Information	F7. Constructability Analysis
D4. Governing Regulatory Requirements	F8. Technological Sophistication
D5. Environmental Assessment	G. Equipment
D6. Utility Sources with Supply Conditions	G1. Equipment List
D7. Site Life Safety Considerations	G2. Equipment Location Drawings
D8. Special Water and Waste Treatment	G3. Equipment Utility Requirements
E. Building Programming	SECTION III. EXECUTION APPROACH
E1. Program Statement	H. Procurement Strategy
E2. Building Summary Space List	H1. Identify Long Lead/Critical Equipment and Materials
E3. Overall Adjacency Diagrams	H2. Procurement Procedures and Plans
E4. Stacking Diagrams	J. Deliverables
E5. Growth and Phased Development	J1. CADD/Model Requirements
E6. Circulation and Open Space Requirements	J2. Documentation/Deliverables
E7. Functional Relationship Diagrams/Room by Room	K. Project Control
E8. Loading/Unloading/Storage Facilities	K1. Project Quality Assurance and Control
E9. Transportation Requirements	K2. Project Cost Control
E10. Building Finishes	K3. Project Schedule Control Requirements
E11. Room Data Sheets	K4. Risk Management
E12. Furnishings, Equipment, & Built-Ins	K5. Safety Procedures
E13. Window Treatment Considerations	L. Project Execution Plan
F. Building/Project Design Parameters	L1. Project Organization
F1. Civil/Site Design	L2. Owner Approval Requirements
F2. Architectural Design	L3. Project Delivery Method
F3. Structural Design	L4. Design/Construction Plan & Approach
	L5. Substantial Completion Requirements