

Design, Constructability and Value Engineering – Objective and Table of Contents

Objective

The Design Process objective is to produce, on schedule, the highest quality construction drawings and specifications, while actively supporting procurement, construction, and start-up activities. The Constructability and Value Engineering processes integrate into the design and construction processes to facilitate the inclusion and optimum use of construction knowledge and practical experience in the planning, designing, procuring, and construction of the project resulting in meeting or improving the overall project objectives.

Key Steps

- Accepted Input from all Team Members
- Calculation preparation
- Completion and Turnover of Systems
- Control change
- Design team alignment with construction and Client
- Detailed review and understanding of the contractual scope of work
- Development of the master equipment list
- Implementing a Constructability Program
- Minimize Excavation
- Minimize Scope in Operating Units
- Pre-Assembly and Modularization
- Preparation of drawings
- Preparation of early construction packages
- Preparation of specifications
- Productivity Improvement at Site
- Quality control and Quality Assurance
- Recognition of particular design concerns or risks
- Safety in Design and Execution
- Standardize Materials and Fabrication Details
- Utilize Automated Systems
- Working Smarter Not Harder

Key Deliverables

- Detailed construction drawings
- Early P&ID and General Arrangement Drawings
- Early procurement packages
- Enhanced management of Risk
- Equipment Lists
- Improved Quality and Safety
- Innovative Ideas
- Master and project-specific specifications
- Operating system delineation
- Provide construction support
- Reduced Costs
- Request for Information (RFI) turnaround
- Shortened Schedules
- Start-up and Commissioning Assistance

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Checklists

- Architectural Checklist Design
- Architectural Scope Checklist Design
- Code, Permit, and Approval Checklist Design
- Constructability Checklist
- Constructability Project Barrier Assessment Checklist
- Construction Corporate Barrier Assessment Checklist Constructability
- Construction Package Release Gate Review Checklist Design
- Design Criteria Checklist
- Design Safety Checklist Review
- Designer Corporate Barrier Assessment Checklist Constructability
- Engineering Safety Checklist Master
- Internal Audit Checklist Design
- Owner Corporate Barrier Assessment Checklist Constructability
- Permit Question Checklist Design
- Process Safety Management (PSM) Checklist
- Scope Definition Checklist Design
- Design Process Case Study
- Design Process Exam Answers Training
- Design Process Exam Training
- Discipline and Drawing Codes Design
- Drawing Sizes Design
- Electrical Area Classification Work Flow Process Design
- Electrical Codes, Standards, and Certifying Organizations
- Engineering Codes Standards Specifications and Reference Material Design
- Equipment Codes
- Field Fab and Erect Fired Heaters, Boilers and Incinerators References Design
- Field Fab and Erection Columns Towers, Pressure Tanks and Exchangers References Design
- Input Process Flow Constructability
- Most Common Barriers Constructability
- Objective Setting Phases – Constructability
- Organizational Structure Constructability
- Role Descriptions Design
- Torque Values

Education and Training

- A Better Project Constructability
- Communication Graphic – Constructability
- Constructability Case Study
- Constructability Contract Clauses
- Constructability Implementation Roadmap
- Constructability Planning Workshop Agenda
- Constructability Preview of Implementation
- Constructability Program Inputs and Outputs
- Constructability Project Objective Setting
- Constructability Related to TQM, Value Engineering and Cost Benefits – Gugel 1992 Constructability
- Constructability Summary of Barrier Breakers
- Constructability Traditional Project Objectives
- Descriptors of Common Barriers Constructability
- Design Case Study
- Design Exam Answers Training
- Design Exam Training

Forms

- Action Items Tracking List Constructability
- Agreement Matrix – Constructability
- Architectural Estimate Form Design
- Benchmarking Budgeted and Actual Costs Worksheet
- Benchmarking Field Rework Worksheet
- Benchmarking Planned and Actual Project Schedule Worksheet
- Benchmarking Project Development and Scope Changes
- Benchmarking Project Participants Worksheet
- Calculation Sheet Design
- Concept Application Plan Constructability
- Concepts Constructability
- Constructability Budget and Activity Planning
- Constructability Concepts by Phase
- Constructability Planning Form Template
- Constructability Program Evaluation Matrix
- Constructability Project Program Evaluation Matrix

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- Constructability Significant Corporate and Project Parameters
- Constructability Suggestion and Evaluation Form
- Constructability Suggestion Log
- Constructability Training Participant's Evaluation Form
- Construction Bulletin Transmittal Design
- Corporate Confidentiality Agreement Design
- Corporate Program Evaluation Matrix Constructability
- Criticality Rating Form Design
- CSA Estimate Form Design
- Decision Log Design
- Deliverable List Design
- Design Change Notice Design
- Design General Review Set
- Drawing and Specification Squad Check Notification Design
- Drawing Releases Design
- Drawing Submittal Sheet Document Control
- Drawings, Specifications, and Other Documents
- Electrical Estimate Form Design
- Element Descriptions Design
- Engineering Master Checklist Design
- Hygienic Drawing Revision Log Design
- Individual Confidentiality Agreement Design
- Instrumentation Estimate Form Design
- Mechanical Process Estimate Form Design
- Package Definition Document Design
- Piping Estimate Form Design
- Project Peer Review Form Design
- Specification List
- Structural Estimate Form Design
- Value Awareness Status Report Design
- Value Awareness Suggestion Form Design
- Weekly Report Engineering Design
- Design Procedure
- Document Approval Procedure
- Drawing Approval and Release Procedure
- Drawing Deliverable List Procedure
- Drawing Sheets and Title Blocks Number System Procedure
- Engineering and Technical Reports and Study Report TOC Example
- Engineering and Technical Reports and Study Reports Procedure
- Engineering Deliverables for Estimating Design
- Engineering Project Procedure Manual Table of Contents
- Equipment Numbering System Procedure
- Equipment, Instrument Index, Line, Tie-in, and Valve List Procedure
- FEL Evaluation and CII-PDRI Criteria Procedure
- Formation of Project Design Team Procedure
- Implementation Policy Example Constructability
- Information Security Protection (ISP) Document
- Internal Audit Design Procedure
- Licensing and Permitting Requirements Procedure
- Operations Manual Design Procedure
- P&ID Development Procedure
- Professional Stamping Procedure
- Project Concerns Report Procedure
- Project Scope Document Procedure
- Protection of Confidential Information Design Procedure
- Specification Log and Drawing List Procedure
- Weekly Coordination Meetings Procedure

Policies and Procedures

- Benchmarking Design Procedure
- CAD and PDMS Specification Design Procedure
- Constructability Barrier Breakers Instructions
- Constructability Implementation Procedure
- Constructability Planning Form Instructions
- Constructability Process
- Constructability Program
- Design Criteria Checklist Procedure
- Design Internal Project Monthly Review Procedure