



## Dar Al Riyadh Insight #47 Business Basis of Design

*Dar Al Riyadh Insights reflect the knowledge and experience of our Board, executives and staff in leading and providing PMC, design and construction management services. Dar Al Riyadh believes in the importance of broadly sharing knowledge with our clients and staff to improve project outcomes for the benefit of the Kingdom of Saudi Arabia.*

### Introduction

Large capital construction projects in both the industrial and infrastructure sectors are challenged in three significant ways:

1. Capital efficiency of the project: this considers both first costs as well as life-cycle costs.
2. Capital certainty: reflecting execution efficiency, predictability, and effective risk transfer through appropriate contracting strategies.
3. Time to market: perhaps best thought of as schedule certainty, but also accelerated delivery of projects, which is often an essential ingredient in capital efficiency.

This series of Insights focuses on achieving improved capital efficiency in large capital asset projects through the adoption of an expanded basis of design that considers all aspects of a capital asset's life cycle. In many projects today, the basis of design (BOD) largely encompasses the engineering parameters required to meet the owner's project requirements (OPR).

Constructability (defined by CII as "construction input to design") and maintainability are often treated as review items to confirm that the developed design is both constructible and maintainable and to suggest improvements at the margins. Effective constructability and maintainability reviews add value to the project, but do not fundamentally act to shape the design itself in most instances.

The premise of this series of Insights is that much more is required to develop effective designs that reflect construction and maintenance as fundamental project requirements. In this sense, construction and maintenance considerations are not items to be reviewed but rather fundamental requirements to be satisfied together with other project requirements established by the owner. The change suggested here is about a shift in mindset and perspective as well as in our design work processes.



## Terminology and Definitions

The following constitute the key terminology used throughout this series of Insights and provides the context for a so-called “business basis of design.” Business basis of design, expanded basis of design, and BOD<sup>x</sup> are all used synonymously in these Insights.

**Owner’s Project Requirements (OPR)** – sometimes confusingly called “*design intent*,” but refers to OPR.

**BOD** – Functional or performance-based description of what the designer will do to meet OPR; finalized at end of construction (as built); includes assumptions and criteria used.

**CBOD** – Construction Basis of Design – description of construction requirements to be reflected in design (developed by construction manager) and finalized at end of construction; includes assumptions and constraints used including means and methods preferences (for example, specific tools or equipment).

**O&MBOD** – O&M Basis of Design - description of operations and maintenance (O&M) requirements to be reflected in design (developed by operator/O&M) and finalized at end of construction; includes maintenance philosophy, assumptions, and criteria used. Provides a basis for development of the O&M program and manual.

**BOD<sup>x</sup>** – Expanded basis of design, collectively incorporating the traditional engineering basis of design (BOD), new construction basis of design (CBOD), and a new O&M basis of design (O&MBOD). BOD<sup>x</sup> is driven by construction and O&M considerations while meeting the performance and functional requirements typically detailed in the OPR.