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PRACTICE**

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SCHEDULE CONSTRUCTABILITY REVIEW

SAMPLE

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SCHEDULE CONSTRUCTABILITY REVIEW

TCM Framework: 7.1 – Project Scope and Execution Strategy Development
7.2 – Schedule Planning and Development
11.5 – Value Management and Value Improving Practices (VIPs)

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Any terms found in AAACE Recommended Practice 10S-90, *Cost Engineering Terminology*, supersede terms defined in other AAACE work products, including but not limited to, other recommended practices, the *Total Cost Management Framework*, and *Skills & Knowledge of Cost Engineering*.

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1. INTRODUCTION

1.1 Purpose

This recommended practice (RP) is intended to serve as a guideline, not establish a standard for schedule constructability reviews. This recommended practice describes the schedule constructability review (SCR) process and some of the recommended planning that should be considered when developing a construction project execution-phase schedule. This recommended practice includes a suggested review process for the construction project schedule. This RP was written as a stand-alone document; however, it can be used as a companion guideline with the AACE Recommended Practice 30R-03, *Implementing Project Constructability*. [1]

2. RECOMMENDED PRACTICE

Construction contract schedule specifications frequently require reviews of the project baseline schedule with very little guidance about how that review process should be accomplished. There may be contract language that suggests the “schedule should be consistent with the project scope” and that there should be an appropriate level of detail to facilitate integration of the various contractors or trades¹. Numerous technical articles have been published that recommend analyzing the project cost and schedule. Several of those articles describe a recommended process for the detailed analysis of construction project cost estimates. It was difficult to locate comparable information from these technical resources that describes the process to analyze the construction project schedule. Constructability review checklists that were located assume an understanding of what is required by an SCR and barely mention the need to perform a construction schedule assessment. A schedule constructability review is performed to analyze and assess the feasibility of the construction plan. The SCR compares the planned sequence of work with the project scope as defined in the work breakdown structure (WBS), site requirements, and the specific needs of the client. This recommended practice will focus on constructability concepts influencing the construction execution planning and a suggested review assessment for the construction project schedule. This recommended practice is intended to focus on the project scope and execution strategy development (TCM Framework, Section 7.1) [2] and not on the scheduling software system that is developed as the time management tool for the successful execution of the project. “The execution strategy is a general plan (or set of plans) that define a framework for how the defined work will be implemented. The strategy does not define activities (Section 7.2) and it is not a baseline control plan, it defines the general approaches through which activities will be performed.”²

2.1. Background

The Construction Industry Institute (CII) and AACE International define “constructability [as] the optimum use of construction knowledge and experience in planning, design/engineering, procurement, and field operations to achieve overall project objectives.” [3] [4]

A constructability review is a structured review of the plans and specifications with the focus on the buildability, biddability and efficiency of construction. Constructability reviews are performed to assure consistency between design, fabrication, and installation. These reviews identify errors, conflicts, and omissions and as a result of constructability reviews future costly field changes can be minimized.

The application of constructability concepts to capital construction projects have been reported to provide a return on investment of at least ten to one (10:1). Implementing project constructability concepts reduces project costs and schedule while having a positive impact on quality and safety. [3]

¹ See “A Risk Checklist for Projects Using Agency CM” in [12].

² See: TCM Framework Section 7.1.2.3 *Break Down Organization and Develop Execution Strategy* [2, p. 159]

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A constructability review is the process of evaluating the construction documents (design drawings, and technical specifications) for clarity, consistency, completeness, and ease of construction to achieve overall project objectives. The objective of this review is to provide clarity, consistency, and completeness of the contract documents to facilitate construction bidding, administration, and interpretation to achieve overall project objectives. [5]

Several factors influence the effectiveness of a constructability review program: the project delivery system, project contracting strategy, procurement strategy for material and equipment, as well as the completeness of the project scope definition. Constructability reviews generally consist of:

- Construction involvement during project design;
- Detailed project scope review;
- detailed review of construction plans and specifications;
- Execution plan development and review;
- Detailed schedule and budget review; and
- Development of identified alternatives.

Constructability reviews are performed to cross-check construction documents for accuracy, completeness, and system design coordination issues. "During the constructability review, the focus is on improving:

- Consistency, clarity, and completeness of the construction drawings and specifications.
- Consistency, applicability, enforceability, and comprehensiveness of the general condition ("front end" documents).
- Applicability of construction installation technology, methodology, or materials.
- Consistency between plans and site conditions.
- Identification of project-specific issues, their probable consequences, and proposed mitigation recommendation". [6]

According to studies, the implementation of constructability reviews and assessments at all stages of the project, from conception to commissioning, has been shown to provide opportunities to identify both cost and schedule savings for the project. Early involvement of construction industry experience can reduce or eliminate problems by identifying potential conflicts and facilitating a balance between production requirements and building site constraints. [7]

While the implementation of a constructability review program can be difficult it can be even more difficult to establish a formal schedule constructability assessment program.

2.2. Schedule Constructability Review

A project construction schedule should be a comprehensive and realistic plan that represents the specific activities, reasonable durations for the activities, and the planned sequence of work for the project. The logic or sequence of work activities should represent how the project will be built and how the various activities are interrelated. The primary objective of an SCR is to determine if the project schedule is accurate, logical, and achievable. [8] [9]

A schedule constructability review is intended to assess whether the construction schedule is comprehensive and complete. The focus of an SCR is to assess the following:

- Consistency
- Clarity
- Completeness and reasonableness of the work sequence
- Coordination of the schedule with the various engineering disciplines
- Coordination of the schedule with the requirements for efficient start-up, and commissioning