AACE® International Recommended Practice No. 100R-19

CONTRACT CHANGE MANAGEMENT – AS APPLIED IN ENGINEERING, PROCUREMENT, AND CONSTRUCTION

TCM Framework: 10.3 Change Management

Rev. February 27, 2020

Note: As AACE International Recommended Practices evolve over time, please refer to web.aacei.org for the latest revisions.

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

Contributors:

Disclaimer: The content provided by the contributors to this recommended practice is their own and does not necessarily reflect that of their employers, unless otherwise stated.

Dr. Stephen P. Warhoe, PE CCP CFCC FAACE Hon. Life (Primary Contributor)
Robert B. Brown, PE FAACE
Larry R. Dyser, CCP CEP DRMP FAACE Hon. Life
John K. Hollmann, CCP CEP DRMP FAACE Hon. Life
Lori A. Lee, CCP

Douglas W. Leo, CCP CEP FAACE Hon. Life
Mabrouk Mabrouk, Sr. CCP
John P. Orr, PSP FAACE
Todd W. Pickett, CCP CEP FAACE
Richard C. Plumery, EVP
James G. Zacc, Jr. CFCC FAACE Hon. Life

Copyright © AACE® International
Single user license only. Copying and networking prohibited.

This document is copyrighted by AACE International and may not be reproduced without permission. Organizations may obtain permission to reproduce a limited number of copies by entering into a license agreement. For information please contact editor@aacei.org
TABLE OF CONTENTS

Table of Contents .......................................................................................................................... 1
Introduction ..................................................................................................................................... 2
  Change Management Defined ...................................................................................................... 3
  Demonstrated Elements of a Change and Change Order .............................................................. 4
Recommended Practice ................................................................................................................ 5
  1. Identification of Potential Change to Contract (Box 1) ............................................................ 7
  2. Contractor Submits Change Order Request to Owner (Box 2) ............................................... 8
  3. Owner Evaluates Contractor’s Entitlement to Change (Box 3) ............................................... 9
  4. Contractor Revises or Cancels Change Order Request, or Disputes Owner’s Change Order Request Rejection (Box 4) ................................................................. 10
  5. Prepare the Proposed Change Order (Box 7) .......................................................................... 10
  6. Owner Reviews Proposed Change Order (Box 9) .................................................................. 11
  7. Owner Decision to Approve or Request Further Discussion (Box 10) ................................. 11
  8. Owner and Contractor Negotiate Change Order (Box 11) .................................................. 12
  9. Agreement Reached on Change Order (Box 12) .................................................................. 12
  10. Parties’ Decision to Revise, Cancel or Dispute PCO (Box 13) ............................................. 12
  11. Revise Proposed Change Order (Box 14) ......................................................................... 13
  12. Change Order Cancelled (Box 15) ..................................................................................... 13
  13. Contractor Revises Claim (Box 16) .................................................................................... 13
  14. Claim Submitted by Contractor to Owner (Box 17) ............................................................. 13
  15. Finalization of Formal Change Order (Box 18) .................................................................. 14
  16. Change Order Execution (Box 19) .................................................................................... 14
Change Management Document Control .................................................................................... 14
Conclusion ..................................................................................................................................... 14
References ...................................................................................................................................... 15
Contributors ................................................................................................................................. 15
Appendix A: Sample Change Management Templates ................................................................. 16
INTRODUCTION

This recommended practice (RP) of AACE International addresses the process of change management as applied in engineering, procurement, and construction, given the lack of one in the terms of the construction contract. This process applies across various contracting strategies or delivery methods. This RP does not include scope changes (allowable by contract) associated with unit price work. Nor does this RP address the process concerning the management of changes that are internal to a single party that does not affect another party to a contract.

This RP is intended to provide guidelines (i.e., not a standard) concerning the change management process on a capital construction project that most practitioners would consider good practice for use where applicable. This recommended practice is relevant to stakeholders on a capital construction project; for instance, owner, contractor, construction manager, or other stakeholders. Although this recommended practice is written in the context of a contract between owner and contractor, it is applicable to any parties contracted to perform a project, including owners and architect-engineers (A/E), as well as general contractors and sub-contractors.

It is recommended that change management processes be agreed upon before the work commences because experience has shown that one cannot go into projects assuming a perfect world whereby the owner never changes its mind, the A/E never alters or errs with its design documents, the contractor never performs poorly or mismanages its work, and natural events do not interfere. That perfect world does not exist in the context of capital construction projects.

In the real world, the forces of owner, A/E, contractor, and natural events combine to make change. The owner changes its mind; the A/E makes changes to drawings or commits errors; the contractor fails to manage its job; and natural events affect projects in unexpected ways.

In 1775 Samuel Johnson said:

“Change is not made without inconvenience, even from worse to better.”

After more than 250 years, this quote (citing The Dictionary of the English Language edited by Richard Hooker) still holds meaning in the construction industry. Changes on projects may create varying amounts of tension and potential distrust between the contract parties. However, in industries in which projects are the norm, it is now typically understood that change is endemic, brought on by an explosion in the development of technology and communications.

In the context of a project, a change is defined as an alteration or variation to a scope of work and/or the schedule for completing the work. However, changes can include more than alterations or variations to scope. Change can also include revisions to contract terms and other administrative revisions. Construction contracts differ from most legal agreements in that they consider and expect that changes will occur. In order to deal effectively with the changes that might arise on a construction project, the project participants should have a comprehensive and workable process for identifying and managing changes.

Two commonly occurring categories of scope changes on construction projects are either changes directed by the owner, or changes identified by the contractor as a result of an action or inaction of the owner, also known as constructive changes. An owner-directed change may ultimately become a constructive change if the contractor believes it will be impacted by the directed change.

---

3 AACE International, Recommended Practice 105-90, Cost Engineering Terminology, AACE International, Morgantown, WV. (latest revision)
It is common practice for the owner to have the right to make, or direct, changes to a contractor’s scope of work during the design or construction phases. Changes may come about for many reasons, such as: correction of errors in the drawings or specifications; the owner exercising its prerogative to change the scope; or the emergence of factors or events with magnitudes none of the parties could have anticipated or controlled. Change during the construction phase can be the result of intended or unintended consequences. Intended change would include revisions to the original scope as directed by the owner, also known as management changes. There can also be unintended changes, resulting from low quality work by others, poor work conditions, external scope changes (non-contractual 3rd parties), or upstream hidden changes. 4

Among these categories of changes, constructive changes are “changes caused by the owner but not acknowledged by it as a change.” 5 Constructive changes along with owner-directed changes are often the most common forms of scope changes found on capital construction projects. A constructive change is defined as:

An act or failure to act by the owner or the engineer that is not a directed change, but which has the effect of requiring the contractor to accomplish work different from that required by the existing contract documents. 6

An owner-directed change may be defined as:

A change wherein the owner specifically directs the contractor to make that change. This type of change may or may not affect the contract price or schedule.

On some projects, the contract allows for the owner to execute a third type of change, called a unilateral change, defined as:

A modification to the contract issued at the owner without the agreement of the contractor as to the time or price adjustment. 7

There is no formal change order process followed for unilateral changes; rather, the contractor is forced to execute a change with no adjustment to cost or schedule. However, unilateral changes often end in dispute at the end of the project if the contractor feels that it was impacted in cost and/or schedule and had contractual entitlement to dispute the change. Further discussion concerning unilateral change orders or modifications are not within the scope of this recommended practice.

This recommended practice primarily addresses constructive changes, including owner-directed changes.

Change Management Defined

Change management is a broad topic and can be found in almost all industries. In the context of capital construction projects, according to the TCM Framework, change management is defined as:

---

5 Callahan, M., Editor, Construction Change Order Claims, 2nd ed, 2005, p. 104.
6 AACE International, Recommended Practice 10S-90, Cost Engineering Terminology, AACE International, Morgantown, WV. (latest revision), see Change, Constructive.
7 Ibid, see Modification, Unilateral.
...the process of managing any change to the scope of work and/or any deviation, performance trend, or change to an approved or baseline project control plan. The change management process is used to approve or disapprove changes in the scope and baseline plans, thereby closing the project control cycle loop. The process includes the identification, definition, categorization, recording, tracking, analyzing, disposition (i.e., approval or disapproval for incorporation into approved or baseline project control plans), and reporting of deviations, trends, and changes.8

Whether a change in the project affects the scope, schedule, method of performance, cost or is administrative in nature, change management is defined as, “The formal process through which changes to the project plan are identified, assessed, reviewed, approved and introduced.”9 It is common on capital construction projects that the contracts between the owner, designer, and construction contractor include a clause addressing the formal process by which changes are addressed once they are identified. This same clause also typically identifies roles and responsibilities among the owner, designer, contractor, and other stakeholders concerning each step of the change management process.

Demonstrated Elements of a Change and Change Order

In the design and construction industries, the primary change management tool used to document and authorize changes to the contract is the change order, also referred to as a variation or contract modification.

A change order is defined as:

A document requesting and/or authorizing a scope and/or baseline change or correction. 1) From the owner’s perspective, it is an agreement between the project team and higher authority approving a change in the project control baseline. 2) From a contractor’s perspective, it is an agreement between the owner and the contractor to compensate for a change in scope or other conditions of a contract. It must be approved by both the client and the contractor before it becomes a legal change to the contract.10

Typically, in order for an owner to approve a change order requested by a designer or contractor, there are three primary elements that should be demonstrated. They are:

1. Demonstration of Entitlement – The contractor must demonstrate that it has a contractual right to make the requested change and the change is not already contained in the scope of its current agreement with the owner. That is, the contractor must demonstrate that the change was caused by the owner, or the owner was responsible for the changed condition.

2. Demonstration of Causation – The contractor must demonstrate the cause and effect relationship between an impact that was not its responsibility and the effect the impact will have on its ultimate project cost or ability to complete the project as originally contracted. The element of causation is often the most difficult to demonstrate of the three elements.

3. Demonstration of Quantum – The contractor must demonstrate that the cost or schedule impacts that have been or will be realized as a result of the change are reasonable and supportable.

---

10 Ibid.
If the change was owner-directed, the contractor is typically not required to demonstrate entitlement; as the contractor would therefore have contractual compensation for cost and schedule impacts.

**RECOMMENDED PRACTICE**

For capital construction projects, it is recommended that a change management process and procedure be planned and developed for the design and construction phases regardless of the delivery methodology that is used. The change management planning process includes identifying roles and responsibilities, management tools, and a communication plan. Additionally, the change management plan should include a process that describes how a scope or other change is identified to the point that it becomes a formal change to the contract. A template version is addressed in this RP.

The change management process is most often a stepped, sequential process. The steps that take place are listed as follows:

1. Change Identification and Initiation  
   a. Identification  
   b. Notifications  
   c. Reviews  
2. Preliminary Submittals  
   a. Preliminary Change Request  
   b. Reviews and Responses  
3. Change Order Submittal  
   a. Potential Change Order Document  
   b. Review and Responses  
4. Approvals, Rejections and Recourse  
5. Change Order Execution  
6. Claims

Typically, every construction project’s change management process includes some form of each of these categories. The nomenclature may be different, and there may be interim steps included, but the above categories are common throughout the construction industry.

Figure 1 summarizes in more detail the change management process for a typical capital construction project. This process flow chart is a more detailed version of the one found in Section 10.3 of AACE’s Total Cost Management Framework.  

This process flow chart works equally well for a singular designer, construction contractor, or design/build (EPC) contractor.

It is recommended that the owner and contractor assign members from their respective teams to be responsible for executing, reviewing, or supporting each aspect of the change management process identified in Figure 1.

---