

EXPRO National Manual for Projects Management

Volume 9, chapter 1

Project Construction Management Introduction

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Project Construction Management Introduction

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Project Construction Management Introduction

Table of Contents

1.0	PURPOSE	5
2.0	SCOPE	5
3.0	DEFINITIONS	5
4.0	REFERENCES	6
5.0	RESPONSIBILITIES	6
6.0	PROCESS	6
6.1	General	6
6.1.1	The Entity Model (Organization Chart)	6
6.1.2	Site Construction Organization	7
6.2	Introduction	8
6.3	Chapter 2 - Site Construction Management	8
6.4	Chapter 3 - Site Supervision	9
6.5	Chapter 4 - Site Engineering	10
6.6	Chapter 5 - Field Materials Management	10
6.7	Chapter 6 - Construction Quality	11
7.0	ATTACHMENT	11
	LIST OF DOCUMENTS	11



Project Construction Management Introduction

PURPOSE

This Document provides an introduction to the content and purpose of the Procedures contained in Volume 9 - Construction Management of the Expro Projects White Book.

This Guideline applies to works performed under all Government construction contracts executed throughout the Kingdom of Saudi Arabia.

For the purposes of the Construction Management Procedures the Project Management Company is the Entity Project Management Organization (EPMO) appointed by the Entity and references prefixed with "Site", such as Site Construction Department, Site Engineering Department, represent the Project Management Company at Project level, on construction sites.

SCOPE

The Construction Management Procedures Volume 9 consists of six categories referred to as Chapters:

Chapter 1- Project Construction Management Introduction (This document)

Chapter 2 - Site Construction Management

Chapter 3 - Site Supervision

Chapter 4 - Site Engineering

Chapter 5 - Field Materials Management

Chapter 6 - Quality

An understanding of the intent and content of each Chapter is provided in this Document.

A complete index of all the Volume 9 Construction Procedures and associated Flow Charts and Templates is provided in Attachment 1 – Project Construction Index of Procedures and Templates, to illustrate the content and assist in navigating through Volume 9 of the Expro Projects White Book.

DEFINITIONS

Definitions	Description
Construction Project	Group of services and activities executed during a defined period of time, that aims at developing a facility in specified location
Entity	Includes Government Ministry, EPMO, Engineering Management Company or any other agency authorized by the Government Ministry to work on its behalf
Entity Project Management Organization (EPMO)	Includes Government Ministry, EPMO, Engineering Management Company or any other agency authorized by the Government Ministry to work on its behalf
PMC	Project Management Company, an external consultant engaged by the Entity to deliver capital expenditure infrastructure projects.
Site Construction Department	Department within the Project Management Company that is responsible for Construction activities / operations
Site Engineering Department	Department within the Project Management Company that is responsible for Engineering or design activities / operations
Site Project Controls	Department within the Project Management Company that is responsible for Project Control activities / operations
Site Contracts Department	Department within the Project Management Company that is responsible for Contracts Administration activities / operations
Site Quality Department	Department within the Project Management Company that provides the approval of and subsequent monitoring of the Construction Contractor's Quality Management Plan (QMP). This involves necessary checks of Quality Assurance (QA) processes and approvals of Quality Control (QC) inspections and tests in accordance with the Construction Contractor's approved Inspection and test Plan (ITP)



Definitions	Description
Architect / Engineering Consultant (A/E) or Design Firm	Architect and/or Engineer responsible for the permanent works design and approval of any changes made to the design during the construction phase.
Construction Contractor	The Main or Principal Contractor responsible for undertaking the Construction Works on the Project
QA/QC	Quality Assurance/Quality Control
Enterprise Content Management System (ECMS)	An information management and collaboration platform for managing and controlling Project documents and Entity records

REFERENCES

Refer Section 7 – ATTACHMENT.

RESPONSIBILITIES

Responsibilities for those who have an involvement in any particular Procedure are defined in each specific Procedure and will vary depending on the subject matter.

PROCESS

General

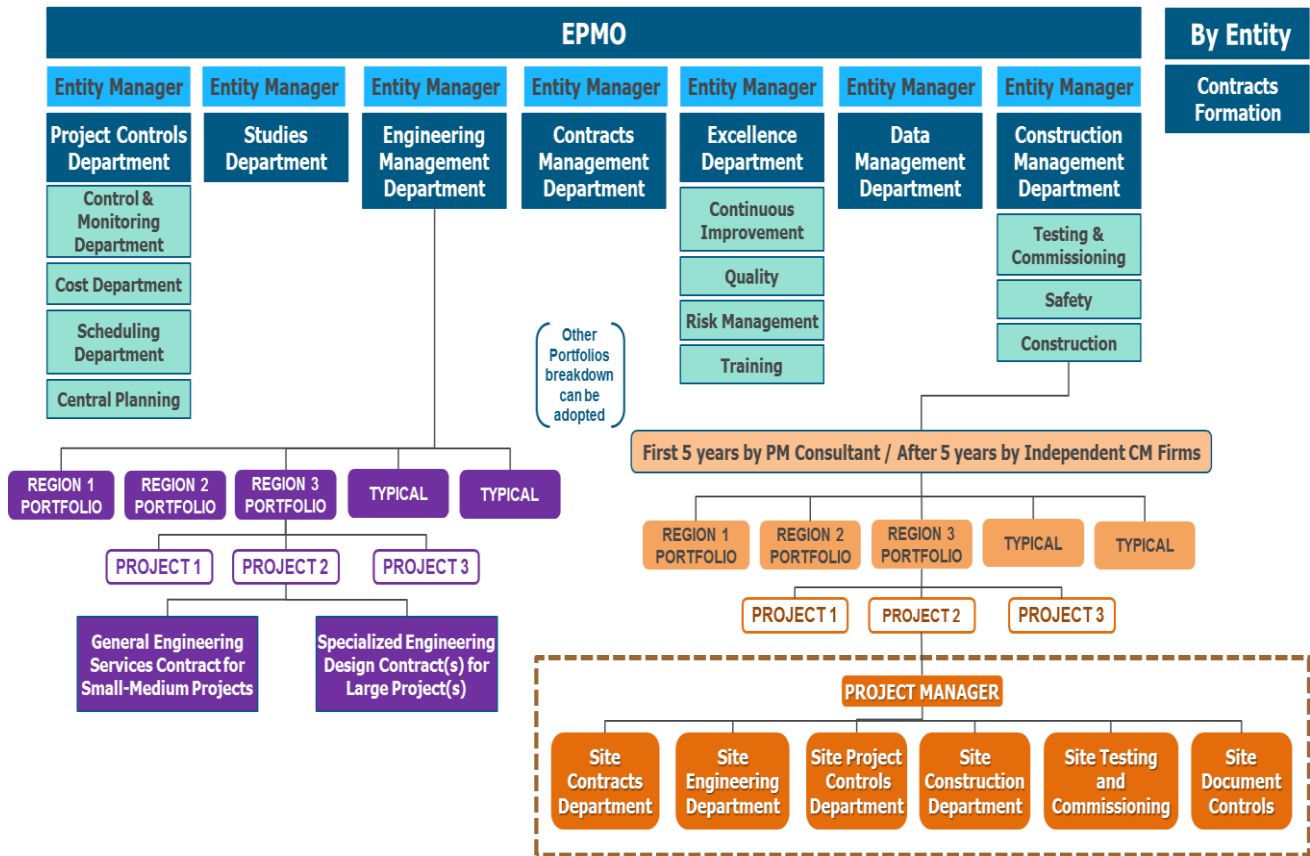
The Entity Model (Organization Chart)

It is important to understand the relationship between the Entity, the EPMO / Project Management Company, the allocated Site resources referred to as Site Departments. This is best illustrated by the organization chart below often referred to as the Entity Model.

The Project Construction Management Procedures focus on construction activities at the “Site Department” resource level, highlighted within the dotted line box in the chart below.



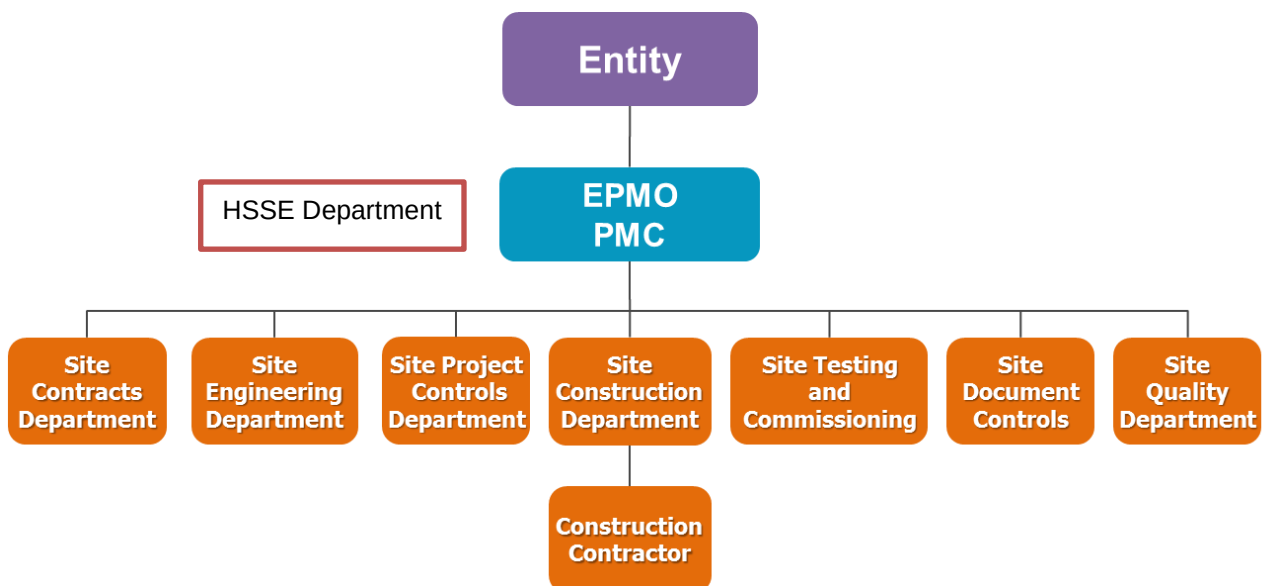
Project Construction Management Introduction



Extract from Expro Workshop No. 2 on 26 July 2017

Site Construction Organization

The chart below identifies the relationship between EPMO / PMC (Project Management Company), the allocated Site Department resources and the Construction Contractor.





Introduction

This Expro Projects White Book, Volume 9 provides a roadmap for planning and executing permanent plant construction installation activities. It describes selected standard work planning and control activities common to all commodities and lists them in a typical execution sequence. These procedures do not describe all of the activities required of the Construction Contractor but provides the basis for an understanding of the requirements for Construction. No unique deliverables are produced during the implementation of this process; rather these procedures provide the required information for the Construction Contractor to prepare his procedures and processes governing each phase of a Project.

These procedures apply to installation and subsequent testing of permanent plant systems, structures and components.

The concepts identified in these procedures may also be used to plan and control the work for non-permanent plant systems, structures and components.

Chapter 1 (this document) Project Construction Management Introduction provides an overall introduction to the content and purpose of the Procedures contained in Volume 9 - Construction Management of the Expro Projects White Book

Chapter 2 Site Construction Management applies to the pre-planning and execution stages and establishes the approach to project completion.

Chapter 3 Site Supervision establishes the approach to Site construction activities that must be documented accurately and consistently to provide a complete record of Construction Contractor's progress and other site activities.

Chapter 4 Site Engineering establishes the technical administrative requirements for the execution of the Project by the Construction Contractor. This Chapter identifies the minimum controls and the responsible parties to ensure the quality and documentation requirements for the work operations.

Chapter 5 provides the direction for the preparation of a Construction Contractor's Field Material Program.

Chapter 6 establishes the approach to Construction Quality for construction projects, including Quality Control activities and the policies, procedures and the assigned responsibilities for its achievement.

Chapter 2 - Site Construction Management

Chapter 2 consists of the following Procedures:

- Project Construction General Procedure EPM-KCC-PR-000001
- Project Construction Constructability Procedure EPM-KCC-PR-000005
- Project Construction Field Works Activities Procedure EPM-KCC-PR-000002
- Project Construction Punch list Procedure EPM-KCC-PR-000004
- Project Construction Completions and Turnover Procedure EPM-KCC-PR-000003

This Chapter, Site Construction Management, includes a general procedure for the introduction and guidance of the Site Construction Department in support of the construction phase for the various types of Construction projects.

This Chapter covers the construction phase of the normal project sequence of events, feasibility, design tender/award, construction and handover and:

- Identifies the responsible parties of the Construction Department
- Identifies the minimum controls necessary to ensure the quality and documentation requirements for a risk assessment planning program



Project Construction Management Introduction

- Establishes the requirements for reviewing and approving the Construction Contractor's organization structure and execution plan to ensure consistent defined roles and responsibilities at the various project locations.

This Construction Management Chapter applies to both the pre-planning and execution stages and establishes an approach to project completion. For example:

- The Project Construction Constructability and Field Work Activities Procedures, initiate the process from early project to the execution phase

whereas;

- The Project Construction Completions and Turnover Procedure, supported by the Project Construction Punch list Procedure, prepares the project for turnover to and acceptance by the Entity.

Many of the work activities and deliverables that are documented within these procedures are undertaken and managed by the Construction Contractors. However, the Site Construction Department is required to work closely with the Construction Contractor to fully understand how the construction projects will be built, commissioned and turned over.

The Site Construction Department is responsible for coordinating all site-based construction support, quality oversight and leads the management of all Construction Contractors.

The Site Construction Department shall ensure that there is sufficient site based personnel to be able to adequately support the Construction Contractor's site organization team. The roles, requirements and responsibilities of the Site Construction Department team will vary from project to project and through each phase of the project.

These activities and deliverables identify those methodologies that a project should expect to see, to be able to effectively monitor the Construction Contractor activities and identify poor performance so that mitigation measures can be put in place to ensure the successful delivery of the project

Chapter 3 - Site Supervision

Chapter 3 consists of the following Procedure:

- Project Construction Progress Reports Procedure EPM-KCS-PR-000001

This Site Supervision chapter, through the Project Construction Progress Reports Procedure, establishes the approach to Site construction activities that must be documented accurately and consistently to provide a complete record of daily, weekly and monthly progress activities, site conditions, status of work force, Work interferences, and other Site factors that affect performance, safety, and quality to successfully achieve Construction Close Out.

This Chapter covers the following four (4) reports that should be prepared and issued by the Construction Contractor and verified by the Site Construction Department for accuracy and completeness:

- Construction Contractor Daily Report
- Project Site Construction Department Daily Report
- Construction Contractor Weekly Progress Report
- Construction Contractor Monthly Progress Report.

Site Supervision reviews each line item, verifies the start and completion dates, craft allocation, material availability, resources such as equipment, and availability of drawings and technical information. Site Supervision ensures that those activities not completed, as indicated on the work plan, identifies the reasons the items did not get completed as planned and provides the related recovery or action plan.

When verification is confirmed by the Site Construction Department, the reports are copied to Site Project Controls Department for analysis of schedule performance, reporting on schedule performance problems,



opportunities for improvement and potential problems and recommending correction action and submitted into the ECMS for necessary distribution.

Chapter 4 - Site Engineering

Chapter 4 consists of the following Procedures:

- Project Construction Field Change Document Procedure EPM-KCE-PR-000003
- Project Construction Technical Query Procedure EPM-KCE-PR-000002
- Project Construction As-Built Drawings Procedure EPM-KCE-PR-000007
- Project Construction Temporary Works Procedure EPM-KCE-PR-000006
- Project Construction Surveying Procedure EPM-KCE-PR-000005
- Project Construction Civil Works Procedure EPM-KCE-PR-000009
- Project Construction Electrical Works Procedure EPM-KCE-PR-000004
- Project Construction Mechanical Works Procedure EPM-KCE-PR-000001
- Project Construction Piping Works Procedure EPM-KCE-PR-000010
- Project Construction Welding Works Procedure EPM-KCE-PR-000008

This Site Engineering Chapter establishes the technical administrative requirements for the execution of the Construction Project by the Construction Contractor under the control and direction of the Site Construction Department.

This section is sub-divided into five separate technical administrative type procedures that includes:

- Technical Queries
- Field Change Documents
- As Built Drawings
- Temporary Works
- Construction Surveying.

In addition, this section includes five specific Project Construction Work Processes Procedures; Civil, Electrical, Mechanical, Piping, and Welding Works, which identify the minimum controls, and responsible parties necessary to ensure the quality and documentation requirements for these work operations.

The Project Construction Works processes place the responsibility on the Construction Contractor to develop Execution Plans for the planning and executing of the Works as well as the identification of recommended detailed procedures that are required to demonstrate the Construction Contractor's capability to perform the work.

The procedures in this Chapter establish the procedural working relationships and lines of communication between the Construction Contractor, Site Construction Department and the Site Engineering Department and A/E, if required.

These procedures provide a project assessment function for the Site Construction Department to ensure standard practices and processes are understood, followed, are effective and assist project teams with the resolution of project technical problems, project training programs and staffing support.

Chapter 5 - Field Materials Management

Chapter 5 consists of the following Procedure:

- Project Construction Field Material Management Procedure EPM-KCM-PR-000001



Project Construction Management Introduction

This Chapter, Field Material Management, provides the direction for the preparation of a Construction Contractor's Field Material Management program. The program must have a structured approach to identifying materials that are compliant with the contract requirements, procuring materials in a timely manner and ensuring materials are in a state to be installed when required. The program is required to provide the information from the preparation of a strategy on how the required materials will be procured and provides the requirements for the different phases of Field Material Management; Material Requisitioning and Purchasing, Materials Receiving, Materials Storage, Control of Material Inventory, Spare Parts and Surplus Materials.

All inspection and testing requirements specified in the contract documents must be identified and scheduled to allow the Site Construction Department adequate time to prepare and be present for those inspection/testing activities that must be witnessed by the Site Construction Department.

The Site Construction Department shall verify that the Construction Contractor is complying with the contract requirements as the Work progress and shall undertake periodic surveillance of the storage facility to confirm adequate controls are in place.

Chapter 6 - Construction Quality

Chapter 6 consists of the following Procedures:

- Project Construction Quality Management System Procedure EPM-KCQ-PR-000005
- Project Construction Control of Non-Conforming Items Procedure EPM-KCQ-PR-000006
- Project Construction Control of Material Testing Procedure EPM-KCQ-PR-000004

This Quality Chapter establishes the approach to Construction Quality for construction projects, including the Quality Control (QC) activities and the policies, procedures, and the assigned responsibilities for its achievement. This Chapter is subdivided into three quality procedures; Control of Non-Conforming Items, Construction Quality Management System and Project Material Testing. These quality procedures describe the operational techniques and individual actions that focus on controlling or regulating processes and materials to fulfil requirements for quality.

The Construction Contractor is responsible for his own Quality Control and is defined in the Construction Contractor's Quality Management Plan which includes specific contract quality requirements, governing quality codes and standards, and defines those quality requirements that will be used to form and implement the Construction Contractor Quality Management System

Activities covered by the Construction Contractor's QC program including testing, inspecting, and measuring are identified in the Project Construction Quality Management Systems, Control of Non-Conforming Items, and the Control of Material Testing Procedure included in this Chapter.

Quality Surveillance captures all of the activities of the Site Construction Department personnel that undertake monitoring and verification of the Construction Contractor's conformance with the requirements of the contract in general and in particular, with the related contract package requirements.

Surveillance includes monitoring of Construction Contractor activities by the Site Quality Department, inspections performed by the technical support personnel of the Site Quality Department as well as review of Construction Contractor's documents and applicable requirements for all ongoing and completed work.

ATTACHMENTS

1. List of document



ATTACHMENT 1 - List Of Documents

9.0	VOLUME 9 - CONSTRUCTION MANAGEMENT	DOCUMENT NUMBER
9.1	Introduction	
9.1.1	Project Construction Management Introduction	EPM-KC0-GL-000001
9.2	Site Construction Management	
9.2.1	Project Construction General Procedure	EPM-KCC-PR-000001



Project Construction Management Introduction

9.0	VOLUME 9 - CONSTRUCTION MANAGEMENT	DOCUMENT NUMBER
9.2.2	Project Construction Constructability Procedure	EPM-KCC-PR-000005
9.2.2.1	Project Construction Constructability Suggestion Form Template	EPM-KCC-TP-000011
9.2.2.2	Project Construction Constructability Suggestion Log Template	EPM-KCC-TP-000012
9.2.2.3	Project Construction Constructability Checklist Template	EPM-KCC-TP-000013
9.2.3	Project Construction Field Works Activities Procedure	EPM-KCC-PR-000002
9.2.3.1	Project Construction Three Week Look Ahead Template	EPM-KCC-TP-000001
9.2.3.2	Project Construction STARRT Card Template	EPM-KCC-TP-000002
9.2.3.3	Project Construction Method Statement Guideline	EPM-KCC-GL-000001
9.2.4	Project Construction Punch List Procedure	EPM-KCC-PR-000004
9.2.4.1	Project Construction Contractor Punch List Form Template	EPM-KCC-TP-000010
9.2.5	Project Construction Completions and Turnover Procedure	EPM-KCC-PR-000003
9.2.5.1	Project Construction Punch List Form Template	EPM-KCC-TP-000003
9.2.5.2	Project Construction Initial Acceptance Checklist Template	EPM-KCC-TP-000004
9.2.5.3	Project Construction Initial Acceptance Deficiencies List Template	EPM-KCC-TP-000005
9.2.5.4	Project Construction Initial Acceptance Exceptions List Template	EPM-KCC-TP-000006
9.2.5.5	Project Construction Initial Acceptance Certificate Template	EPM-KCC-TP-000007
9.2.5.6	Project Construction Final Acceptance Certificate Template	EPM-KCC-TP-000014
9.2.5.7	Project Construction Turnover Certificate Template	EPM-KCC-TP-000008
9.2.5.8	Project Construction Turnover Package Template	EPM-KCC-TP-000009
9.3	Site Supervision	
9.3.1	Project Construction Progress Reports Procedure	EPM-KCS-PR-000001
9.3.1.1	Project Construction Contractors Daily Report Template	EPM-KCS-TP-000001
9.3.1.2	Project Construction Contractors Weekly Report Template	EPM-KCS-TP-000002
9.3.1.3	Project Construction Contractors Monthly Report Template	EPM-KCS-TP-000003
9.3.1.4	Project Construction Site Construction Department Daily Report Template	EPM-KCS-TP-000004
9.4	Site Engineering	
9.4.1	Project Construction Field Change Document Procedure	EPM-KCE-PR-000003
9.4.1.1	Project Construction Field Change Document Form Template	EPM-KCE-TP-000019
9.4.2	Project Construction Technical Query Procedure	EPM-KCE-PR-000002
9.4.2.1	Project Construction Technical Query Form Template	EPM-KCE-TP-000004
9.4.2.2	Project Construction Technical Query Log Template	EPM-KCE-TP-000005
9.4.3	Project Construction As-Built Drawings Procedure	EPM-KCE-PR-000007
9.4.4	Project Construction Temporary Works Procedure	EPM-KCE-PR-000006
9.4.5	Project Construction Surveying Procedure	EPM-KCE-PR-000005
9.4.5.1	Project Construction Survey Work Request Form Template	EPM-KCE-TP-000009
9.4.6	Project Construction Civil Works Procedure	EPM-KCE-PR-000009
9.4.6.1	Project Construction Utility Strike Investigation Report Form Template	EPM-KCE-TP-000011
9.4.6.2	Project Construction Inspection and Test Plan for Inspection of Excavation and Backfill Template	EPM-KCE-TP-000012



Project Construction Management Introduction

9.0	VOLUME 9 - CONSTRUCTION MANAGEMENT	DOCUMENT NUMBER
9.4.6.3	Project Construction Inspection and Test Plan for Inspection of Formwork, Reinforcement and Concreting Activities Template	EPM-KCE-TP-000013
9.4.6.4	Project Construction Inspection and Test Plan for Inspection of Structural Steel Activities Template	EPM-KCE-TP-000014
9.4.6.5	Project Construction Inspection and Test Plan for Inspection of Wall, Cladding Panels Activities Template	EPM-KCE-TP-000015
9.4.6.6	Project Construction Inspection and Test Plan for Inspection of Blockwork Activities Template	EPM-KCE-TP-000016
9.4.6.7	Project Construction Inspection and Test Plan for Inspection of Gypsum Plasterboard Wall Activities Template	EPM-KCE-TP-000017
9.4.6.8	Project Construction Concrete Pour Card Template	EPM-KCE-TP-000020
9.4.7	Project Construction Electrical Works Procedure	EPM-KCE-PR-000004
9.4.7.1	Project Construction Inspection and Test Plan for Cable Tray Activities Template	EPM-KCE-TP-000006
9.4.7.2	Project Construction Inspection and Test Plan for Cable Installation Activities Template	EPM-KCE-TP-000007
9.4.7.3	Project Construction Inspection and Test Plan for Electrical Equipment Activities Template	EPM-KCE-TP-000008
9.4.8	Project Construction Mechanical Works Procedure	EPM-KCE-PR-000001
9.4.8.1	Project Construction Static Equipment Checklist Template	EPM-KCE-TP-000001
9.4.8.2	Project Construction Rotating Equipment Checklist Template	EPM-KCE-TP-000002
9.4.8.3	Project Construction Inspection and Test Plan for Mechanical Equipment Installation Activities Template	EPM-KCE-TP-000003
9.4.9	Project Construction Piping Works Procedure	EPM-KCE-PR-000010
9.4.9.1	Project Construction Inspection and Test Plan for Piping Works Template	EPM-KCE-TP-000018
9.4.10	Project Construction Welding Works Procedure	EPM-KCE-PR-000008
9.4.10.1	Project Construction Inspection and Test Plan for Inspection of Welding Activities Report	EPM-KCE-TP-000010
9.5	Field Materials Management	
9.5.1	Project Construction Field Material Management Procedure	EPM-KCM-PR-000001
9.6	Quality	
9.6.1	Project Construction Quality Management System Procedure	EPM-KCQ-PR-000005
9.6.1.1	Project Construction Material Receipt Inspection Report Template	EPM-KCQ-TP-000004
9.6.1.2	Project Construction Contractors Surveillance Report Template	EPM-KCQ-TP-000005
9.6.1.3	Project Construction Inspection and Testing Form Template	EPM-KCQ-TP-000006
9.6.1.4	Project Construction Request for Inspection Form Template	EPM-KCQ-TP-000007
9.6.2	Project Construction Control of Non-Conforming Items Procedure	EPM-KCQ-PR-000006
9.6.2.1	Project Construction Non-Conformance Report Template	EPM-KCQ-TP-000008
9.6.2.2	Project Construction Trend Analysis Worksheet Template	EPM-KCQ-TP-000009
9.6.3	Project Construction Control of Material Testing Procedure	EPM-KCQ-PR-000004
9.6.3.1	Project Construction Testing Program Forecast Template	EPM-KCQ-TP-000001
9.6.3.2	Project Construction Testing Program Monthly Work Schedule Notification Template	EPM-KCQ-TP-000002
9.6.3.3	Project Construction Testing Program Work Request Template	EPM-KCQ-TP-000003