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SUBJECT: Quality Management Plan Guide

CATEGORY: Guidance.

1. References:

- a. Project Management Business Process (PMBP) Manual 2009
- b. Engineer Regulation (ER) 5-1-11 U. S. Army Corps of Engineers Business Process
- c. ER 1110-1-12 Quality Management
- d. ER 5-1-14 USACE Quality Management System
- e. Dalton, James (2013) Memo Quality Imperatives for Engineering and Construction Products and Services
- f. Engineer Pamphlet 715-1-7 Architect-Engineering Contracting in USACE
- g. ER 1180-1-6 Construction Quality Management
- h. ER 1110-2-1150 Engineering and Design for Civil Works Projects

2. Purpose.

a. This guidance provides additional information with regard to the requirements of the Quality Management Plan (QMP). The QMP is an integral part of each Project Management Plan (PMP), as outlined in the Project Management Business Practice (PMBP) Manual (Reference a.). The PMBP is the fundamental method to deliver quality projects as part of the USACE Business Process, and is required by existing policies (References b. and c.).

b. Attachment A to this ECB provides an outline of the structure for a typical QMP.

c. Attachment B to this ECB provides a comprehensive guide to each section required within a QMP. It is structured to identify which sections can be standardized in accordance with each District's Quality Management System (Reference d.) and other standard operating procedures. Additionally, the QMP Guide identifies which sections must be updated on a project specific basis and provides examples through narration and appendices.

d. A word version of the guide is accessible to USACE employees on the Technical Excellence Network (TEN) at the link below and may be used as a starting point to develop a District template if one is not already in place:

ECB No. 2017-20

Subject Quality Management Plan Guide

<https://go.usa.gov/xRTdS>

3. **Background.**

a. The QMP Guide has been compiled in direct response to Mr. Dalton's Quality Imperative Memo (Reference e.) which focuses on improving the quality of E&C deliverables. Improving the quality of our QMPs promotes planning for quality through a consistent approach across teams and districts, while streamlining processes as much as possible.

b. Excerpts from specific policy documents further emphasize quality management:

(1) Dalton, James (2013) Quality Imperative Memo (para. 6, p. 3), "... A disciplined focus on continuous quality improvement will help us achieve the Commander's intent that USACE continue to increase its public value as a national asset, a DoD asset and professional asset."

(2) ER 5-1-14 USACE (para. 7(a), p. 5), "...USACE has sought the achievement and/or assurance of quality in the services, work products and projects provided to our customers for many years, using a variety of management approaches. Quality management planning requirements for specific programs and projects have been established as integral elements of the Program or Project Management Plans (PgMPs/PMPs) required by the USACE Project Management Business Process (PMBP)."

4. **Applicability.** This ECB applies to all projects that develop a PMP and are executed by USACE either in-house or through an AE Contract (Reference f.). Consistent with the USACE Business Process, development of the QMP and other planning documents can and should be scaled commensurate to the risk and complexity of a program or project.

5. **Update.** This policy is issued as guidance. As improvements to the QMP process are identified, they will be incorporated in the next appropriate policy document update.

6. **Points of Contact.** HQUSACE point of contact for this EC is Brandon Tobias, CECW-CE, (202) 761-0505. Civil Works Review Plan point of contact is John Clarkson, CEIWR-RMC, (304) 399-5217.

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Attachment A: Quality Management Plan: Outline

Attachment B: Quality Management Plan: Guide

ATTACHMENT A

QUALITY MANAGEMENT PLAN: OUTLINE

The outline below provides an abbreviated view of key components included in each Quality Management Plan (QMP); the guidance in Attachment B is comprehensive. The notation at the end of each heading refers to requirements documents where more information can be found; however, many requirements are cross referenced in both the Project Management Business Process (PMBP) and ER 1110-1-12 Quality Management.

Many PDTs will utilize QMP template developed and maintained by their district, which should feature each of the components listed below. For Civil Works projects, district Review Plan templates should satisfy the requirements for Quality Control and Quality Assurance as they are required to be project-specific. If district templates do not address each focus area, they should be updated accordingly; use the guide in Attachment B to help streamline this process.

If a District does not have a QMP template, use the outline and the guide to create one that meets the intent of the PMPB while minimizing repetitive work. Additionally, the word file for Appendix B is available on the E&C Technical Excellence Network (TEN) to use as a starting point.

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ATTACHMENT B

QUALITY MANAGEMENT PLAN: GUIDE

This document provides additional guidance with regard to the requirements of the Quality Management Plan (QMP). The QMP is an integral part of each Project Management Plan (PMP), as outlined in the Project Management Business Practice (PMBP) Manual 2009. The use of the PMBP is required by Engineer Regulation 5-1-11 USACE Business Process.

Quality is planned for and managed in accordance with the QMP, which includes Quality Control and Quality Assurance Plans. The Project Manager (PM), the Technical Lead (TL) and the rest of the Project Delivery Team (PDT), are responsible for determining the procedures necessary to achieve the level of quality established for the project and agreed upon by the stakeholder. PDT members ensure that the stakeholder's quality objectives are effectively defined and clearly articulated in the QMP.

The guide below follows the structure of the PMBP requirements for the QMP. Each section consists of three parts:

GUIDANCE: Indicates if this section of the QMP can be standardized within a district, must be project specific, or any other recommended paths forward.

GUIDANCE^R: Guidance annotated with a superscript "R" indicate recommended additions to the QMP. While not formally adopted in the PMBP, these recommendations are based on lessons learned and feedback from multiple districts and are will likely be added to the PMBP and applicable engineer regulations in subsequent updates.

BACKGROUND: Provides explanation of the intent of the section and recommended ways to draft the QMP effectively and efficiently.

EXAMPLE: Illustrates how each section may look in a drafted QMP. The examples do not come from a single QMP and range in program, size and complexity.
The examples should not be construed as the minimum requirements of a QMP – that can only be determined depending on the project specific circumstances.

SECTION 1. QMP PURPOSE

1.1 OVERVIEW

PMBP REF8008G

GUIDANCE: *Can be standardized.*

BACKGROUND: PDTs can utilize a standardized overview of the QMP for each PMP, as the intent should not vary. This can typically be found in the District Quality Management System, or the example below can be modified.

EXAMPLE: *“Engineer Regulation 5-1-11 defines quality as “the degree to which a set of inherent characteristics fulfills requirements.” Furthermore, quality should be regarded as the conformance to established objective requirements; not a degree of goodness. Therefore, the awarded construction documents (i.e. drawings and specifications) establish the contractual baseline for quality. As metrics are developed for individual projects, it is imperative that the PDT understands and endorses what the quality product characteristics will be, and ensures that the construction documents are developed and administered to appropriately reflect these quality requirements”*

1.2 PURPOSE

PMBP REF8008G

GUIDANCE: *Can be standardized.*

BACKGROUND: PDTs can utilize a standardized explanation of QMP purpose for each PMP, as the intent should not vary. This can typically be found in the District Quality Management System, or the example below can be modified.

EXAMPLE: *“The Quality Management Plan (QMP) is the quality component of each Project Management Plan (PMP). The QMP documents the project-specific Quality Objectives, each threshold for achieving the objectives, and other project specific requirements.*

The QMP also identifies Quality Control (QC) and Quality Assurance (QA) procedures appropriate to the size, complexity, and nature of the project. These plans identify QC and QA requirements for the entire project, to include work performed by in-house personnel as well as that performed by contractors (i.e. Architect-Engineer, Construction, and/or other).

The Project Manager, in concert with the Technical Lead and PDT, determines the procedures necessary to achieve the level of quality required

for the project. The PDT ensures that the stakeholder's quality objectives are effectively defined and clearly articulated in the QMP."

1.3 DISTRICT QUALITY MANAGEMENT PROCESSES

ER 5-1-14

1.3.1 Overview

GUIDANCE: ***Can be standardized.***

BACKGROUND: ER 5-1-14 USACE Quality Management System requires each district to establish a comprehensive management system for ensuring stakeholder quality objectives. Some districts refer to these standard operating procedures as Business Quality Processes (BQPs).

The district quality processes should be the baseline for this overview section, and can be referred to within the QMP. However, a complete QMP can and should not refer to the district process without alteration. Project specific requirements, and any variances to the district processes must be documented.

EXAMPLE: *"This QMP is based on and refers to established Regional and District QM processes:*

[QMS numbers].

Project specific requirements and changes to these procedures are indicated below, in accordance with ER 1110-1-12."

1.3.2 Variances from District Quality Management Processes

GUIDANCE: ***Must be project specific.***

BACKGROUND: Changes to district-established QMS procedures should be documented and based on a risk assessment that accounts for the complexity, budget, schedule, and quality objectives established by the PDT in coordination with the stakeholder. In general, these variances should be limited, but may be addressed in an overarching Program Management Plan (PgMP), if applicable.

EXAMPLES: *"To accommodate project schedule requirements, the PDT has agreed to reduce the peer review timeline from 14 calendar days to 7 calendar days as reflected in Section 4.1 Design Quality Control below."*

"Due to the complexity of the project and lack of in-house technical expertise, the PDT has agreed to issue a scope of work for AE services to augment the design team with structural engineers specializing in seismic retrofit design.

Section 4.2 Design Quality Assurance addresses the means through which the AE will be managed to ensure stakeholder quality objectives are met.”

SECTION 2. PLAN, DO, CHECK, ACT

2.1 OVERVIEW

PMBP REF8008G

GUIDANCE: *Can be standardized.*

BACKGROUND: PDTs can utilize a standardized explanation of the Plan, Do, Check, Act Cycle for each PMP, as the intent should not vary. This is outlined in ER 1110-1-12.

EXAMPLE: *“The ‘Plan-Do-Check-Act’ (PDCA) Cycle is the guiding quality management procedure for USACE business processes. The quality management policies and procedures of PDCA are outlined in Engineer Regulation 1110-1-12, Engineering & Design Quality Management. The purpose of each PDCA step is summarized as follows.”*

2.1.1 Plan

EXAMPLE: *“As a part of the PMP, the QMP defines stakeholder quality objectives and defines how they will be measured.”*

2.1.2 Do

EXAMPLE: *“The management procedures outlined below for quality control, quality assurance, and measuring quality objectives will be executed as described.”*

2.1.3 Check

EXAMPLE: *“Quality objectives will be measured against the established thresholds after each phase of the project (i.e. planning, design, construction, and post-occupancy) as described.”*

2.1.4 Act

EXAMPLE: *“Results of the quality objective measurement will be analyzed after each phase of the project, captured as lessons learned, and either incorporated into the updated PMP or District QMS as appropriate.”*

2.2 SCOPE & COST VALIDATION

GUIDANCE^R: *Should be project specific.*

BACKGROUND: Each QMP must include a plan for scope and cost validation throughout the project execution. While this may include a process for initially accepting work from stakeholders, scope and cost validation must continue throughout the life of the project.

This includes but is not limited to: verifying scopes of work solicited for design services and construction contracts; generating and validating Independent Government Estimates (IGE); utilizing QC/QA procedures to substantiate appropriate scope and cost are reflected in construction documents; utilization of Value Engineering as required by regulation, and; administering all contracts effectively to ensure stakeholder cost and scope objectives are achieved.

EXAMPLES: *“The PDT for the 28th BN HQ and DFAC project was involved in the planning phase and helped to define the scope authorized in the DD1391. Prior to design, a scope validation workshop will be held on site with the stakeholder to verify all requirements are understood and that no additional funding is required. Once this is complete, a memo reflecting this validation will be included in the project file and the design charrette will be executed per the project schedule. If, however, the validation workshop indicates mis-programming either in scope or budget, the PDT will provide a recommendation to the PM to either cut scope or request additional funding.”*

“Prior to accepting this project, the E&C Cost Engineering Section will provide an initial evaluation of scope and the Programmed Amount and offer a recommendation on whether or not to request additional funds or re-program the project. This evaluation will be reflected in a memo included in the project file.”

SECTION 3. QUALITY OBJECTIVES

PMBP REF8008G

GUIDANCE: *Must be project specific.*

BACKGROUND: PDTs are responsible for documenting stakeholder expectations and achieving a consensus for quality management objectives on a project-specific basis. These quality objectives should be accurately reflected in each deliverable for which the PDT is responsible, whether created in-house or contracted (e.g. solicitation, contract, and construction documents).

Objectives should be written concisely and effectively identify a verifiable measure of quality.

3.1 REQUIREMENTS

3.1.1 Baseline Quality Objectives

GUIDANCE^R: ***Should be standardized.***

BACKGROUND: The baseline project quality objectives are considered minimum quality standards against which all projects will be measured. Each objective requires a project-specific cost and benefit analysis, evaluation process, and performance threshold.

3.1.1.1 Code Compliance & Life Safety

EXAMPLE: *“The project must be compliant with all applicable codes, specifically inclusive but not limited to federal, Department of Defense, agency and life safety codes. Any variances to life safety codes must be addressed by the Authority Having Jurisdiction and appropriately documented in the Project File. A complete list of codes is included in the Appendix ZZ: Quality Control Plan.”*

3.1.1.2 Contract Compliance

EXAMPLE: *“At project turnover milestones, there must be no outstanding, known defects; the project must be completed to the standards required by the contract.”*

3.1.1.3 Life Cycle Analysis

EXAMPLE: *“The project must be designed and constructed based on the findings of a Life Cycle Cost Analysis (LCCA). This analysis should be carried through to completion of the project to influence stakeholder decisions.*

Any decisions made during the lifecycle of the project (i.e. planning, design, construction, post-occupancy) that do not conform to the findings of the LCCA must include appropriately documented justification and include the stakeholder’s concurrence.”

3.1.2 Stakeholder Quality Objectives

GUIDANCE: ***Must be project specific.***

BACKGROUND: The stakeholder quality objectives must be tailored for each project. At a minimum, each project should address the six areas outlined below: cost, schedule, functionality, maintainability and sustainability, professional

standards, and unique objectives. Each objective requires a project-specific cost and benefit analysis, evaluation process, and performance threshold.

3.1.2.1 Cost

PMBP REF8008G

GUIDANCE: ***Must be project specific.***

BACKGROUND: Identify any concerns with funding availability, phased funding, and impacts of cost growth.

EXAMPLE: *“The Programmed Amount for this project is \$2.8M and includes design as well as construction costs. In order to maximize the scope achieved during construction, the PDT has decided to accelerate the design schedule and reduce the number of solicitation documents. The risks associated with this decision are reflected in the Risk Register.”*

“This project utilizes phased funding, appropriated each year from FY17-FY20: \$120M in FY17; \$140M in FY18; \$180M in FY19 and \$200M in FY20. As such, the planning and design scopes and schedules will be structured to account for providing complete and useable features of work to coincide with the possibility that phased funding will not be available.”

3.1.2.2 Schedule

PMBP REF8008G

GUIDANCE: ***Must be project specific.***

BACKGROUND: Identify overall schedule requirements due to funding availability, applicable phased turnover of facilities, milestones due to programmatic requirements, and impacts of schedule growth. If there are no specific driving forces with regard to schedule and the stakeholder's needs, then this needs to be indicated in the QMP.

EXAMPLE: *“Temporary housing for the 110th Chemical BN is available from 30 Jul 2017 until 30 July 2018; at that point the permanent battalion will return from deployment and no other temporary facilities will be available. Because of this, the Barracks renovations must be complete and ready for the 110th Chemical BN to move back in NLT 30 Jun 2018. These requirements will be included specifically in the Design Build scope of work and will be part of the proposal evaluation criteria as part of the best value acquisition strategy.”*

3.1.2.3 Functionality

GUIDANCE^R: ***Should be project specific.***

BACKGROUND: All projects shall meet the functional requirements as set by the project stakeholders. While it should be assumed that each project that is turned

over is functional in accordance with the programming documents (e.g. standard design documents), specific functional requirements must be included as quality objectives. Include any specific feature that impacts mission execution.

EXAMPLE: *“The CBRN Training Facility includes both training and administrative functions, which means students, contracted instructors, and post personnel will need varying access to specific areas of the building. A comprehensive accessibility and security study will be performed to ensure the functional layout of the facility will meet this requirement.”*

3.1.2.4 Maintainability and Sustainability

GUIDANCE^R: ***Should be project specific.***

BACKGROUND: All projects shall be maintainable and sustainable utilizing the available operational resources as identified by the project stakeholders. Prepare documentation of stakeholder resource capabilities for the ongoing operation of the project and maintain an updated status. This will serve as a means of tracking project history and a measuring tool to determine the maintainability and sustainability of the project.

EXAMPLE: *“Due to the industrial nature of the functions within the TEMF and the limited resources available to the installation DPT, durable and easily maintainable finishes and fixtures are a priority to the function of the facility. The DPW maintenance personnel will be included in the review of finishes and functional layout to ensure maintenance equipment can readily move throughout the building.”*

3.1.2.5 Professional Standards

PMBP REF8008G

GUIDANCE: ***Must be project specific.***

BACKGROUND: Stakeholder professional standards objectives must be project-specific and identify legal, environmental, economic, code, life safety and health. If the programmatic requirements of the project require specialized certifications on behalf of the design and/or construction team, they should be identified here.

EXAMPLE: *“The installation DPW is authorized and has included additional funding in the DD1391 to seek LEED Gold certification. Due to this requirement, a LEED AP BD+C will be included as a fulltime member of the PDT.”*

“The inclusion of a SCIF in the Brigade HQ is a mission essential feature of this project. Due to this requirement, the installations security personnel will be included throughout the design review process to ensure all technical

requirements are being met and the SCIF will be certified and functional at the time of facility turnover.”

3.1.2.6 Unique Objectives

GUIDANCE: ***Must be project specific.***

BACKGROUND: Any additional stakeholder objectives unique to the project should be explicitly included. Project specific objectives should be described in such a way that they can be appropriately included in solicitation documents and administered through the contract documents. This allows impartial metrics to be established for achieving quality objectives.

EXAMPLE: *“The Troop Medical Clinic requires specific programming validation by the Army Institute for Public Health. Representatives for the institute will be included both during design reviews and periodic construction inspections to ensure all requirements are being met.”*

3.2 COST AND BENEFIT OF QUALITY OBJECTIVES

PMBP REF8008G

GUIDANCE: ***Must be project specific.***

BACKGROUND: Each quality objective must be analyzed for an impact to cost and schedule and what benefits will be achieved. This cost and benefit analysis must be documented in the QMP. If the district has an existing form to perform these analyses, it's acceptable to include that as an attachment to the QMP and reference it below. The examples below are narrative in nature, but should be expanded as necessary to ensure they are described appropriately.

3.2.1 Baseline Quality Objectives

3.2.1.1 Code Compliance & Life Safety

EXAMPLE: *“Design and construction to meet applicable building codes is considered standard practice and, thus, does not add additional cost to the execution of the project. Failure to ensure compliance risks significant additional costs during construction (for remediation) or loss of life or lawsuit (catastrophic failure of the facility).”*

3.2.1.2 Contract Compliance

EXAMPLE: *“Effective contract administration is a core USACE principle and is included in the cost of managing our projects, thus, does not add additional cost to the execution of the project. Facility turnover with known contractual defects risks significant additional cost to our stakeholders for remediation.”*

3.2.1.3 Life Cycle Analysis

EXAMPLE: *“The additional cost associated with completing and maintaining a Life Cycle Cost Analysis is more than offset by the savings achieved through systems optimization over the useful life of the facility. While design savings may potentially be achieved by removing the LCCA, the price of additional operational costs is compounded over the expected 30 year life span of the facility. Premature maintenance exacerbates overall operational costs at a return of between 5 and 15 times the expense of preventative measures.”*

3.2.2 Stakeholder Quality Objectives

3.2.2.1 Cost

EXAMPLE: *“The decision to expedite the design process and remove the 65% design submittal creates the benefit of reducing the design budget and providing additional funding for construction. It does come at an increase in risk to quality being compromised, which may result in additional cost during construction or operations and maintenance. These risks are being mitigated as described in the Risk Management Plan.”*

3.2.2.2 Schedule

EXAMPLE: *“Potential additional costs associated with an expedited design schedule to meet the 30 July 2018 deadline for the arrival of the 110th Chem BN are more than offset by the cost impacts associated with finding temporary housing for the unit if the facility is not completed on time.”*

3.2.2.3 Functionality

EXAMPLE: *“The additional design time and cost to perform an accessibility and security study will generate the benefit of fewer RFIs and corrective action during construction. The facility will not be allowed to function without these requirements being coordinated fully, and any potential delays to turnover will come at a cost that exceeds those associated with proper planning and design.”*

3.2.2.4 Maintainability and Sustainability

EXAMPLE: *“Deliberate coordination with DPW maintenance personnel does not add additional cost to the design process. Furthermore, correct specification of materials that can be readily maintained may lead to a decrease in construction costs. Even if construction cost savings are not impacted, the additional costs associated with maintaining finishes and fixtures that are inappropriate for a TEMF more than justify the inclusion of the DPW staff during design review.”*

3.2.2.5 Professional Standards

EXAMPLE: *“As the funding has already been programmed into the project, there is no additional cost associated with including a LEED AP in the PDT to achieve the sustainability objective of LEED Gold certification. The value in energy savings and associated characteristics of a high performing facility will*

increase expected return on investment in addition to typical life cycle cost analyses.”

3.2.2.6 Unique Objectives

EXAMPLE: *“The additional time required to include the Army Institute for Public Health as part of the review process ensures the Troop Medical Clinic will be designed appropriately and will be certified at each major project milestone. The facility will not be allowed to turnover without these certifications, and any potential delays to turnover will come at a cost that exceeds those associated with proper planning and design.”*

3.3 QUALITY OBJECTIVE THRESHOLDS

PMBP REF8008G

GUIDANCE: ***Must be project specific.***

BACKGROUND: The means through which each stakeholder quality objective is evaluated must be documented in the QMP and be consistent with the PDCA Cycle. Objective evaluations should happen at multiple intervals throughout the project lifespan and may require updating the QMP and/or the overall PMP. Performance thresholds for each stakeholder quality objective must be quantifiable, impartial, and measurable against agreed awarded contract requirements. The example below is a recommended frequency and process by which thresholds can objectively be evaluated.

EXAMPLE: *“After each phase is complete, as identified below, a stakeholder survey will be provided by the PM for input. This survey utilizes quantifiable measures of satisfaction that each quality objective has been achieved.*

*Planning
Design & Acquisition
Construction
Post Occupancy (at one year after BOD)*

Once the survey results are collected, an AAR will be held and lessons learned documented and incorporated into an updated PMP and QMP (if applicable).

Refer to Attachment XX for samples of the survey. Completed surveys are included in Attachment YY.”

SECTION 4. DESIGN QUALITY MANAGEMENT ER 1110-1-12 (1-8.C)

GUIDANCE: *Should be project specific.*

BACKGROUND: Quality Management must address both Quality Control and Quality Assurance processes for in-house and contracted work, to include review team members, schedules, and budgets to accommodate each type of review throughout the project lifecycle. While each plan may be based on a generic template managed by the district, they need to be tailored as necessary and the schedule, budget, risks, and special considerations should be project specific.

Each QMP must identify a Technical Lead who is responsible for coordinating with the PM to lead the development of product-specific components of the QMP to ensure the technical quality of E&C deliverables.

For projects that are executed as part of an overarching program, have low complexity and higher tolerance for risk (e.g. SRM projects), generic QC/QA plans may be utilized, provided they are based on district-established QM processes.

Civil Works projects utilize the Review Plan to meet Design Quality Management requirements, outlined in Section 5; all other projects for any business line or stakeholder must follow the guidelines in this section.

4.1 DESIGN QUALITY CONTROL PLAN ER 1110-1-12 (1-8.C)

GUIDANCE: *Should be project specific.*

BACKGROUND: The Quality Control Plan is a component of the QMP and PMP and must be prepared and approved prior to commencement of project design. The PDT will prepare the QCP in order to monitor specific project deliverables to determine if they meet performance thresholds defined in the QMP. However, during design, changes may ensue which require additional updates and implementation to ensure project success during the project execution phase.

At a minimum, the Plan will: describe how quality control through peer checks and independent reviews (ITR/ATR) will be performed; list the PDT and review team members and their review responsibilities; identify stakeholders and other subject matter experts (SME) that will be involved in the QC process; provide a schedule for the frequency and durations of QC reviews; describe risks inherent to the project that should require special attention

during QC reviews; and, address any special considerations and/or crucial design features that should require special attention during QC reviews.

The Design Quality Control Plan must identify a Technical Lead and describe the utilization of a design deficiency tracking (e.g. DrChecks) system to incorporate independent technical and peer reviews.

EXAMPLE: *See Attachment D: Design Quality Control Plan.*

The narrative descriptions in the rest of this section describe the requirements and intent of the components of the QC Plan and should be used for reference in conjunction with the regulation cited. Additional examples are provided in the Attachment referenced above.

4.1.1 Project Delivery Team (PDT)

PMBP

PROC2020GUIDANCE:

Must be project specific.

BACKGROUND: This PDT is typically identified during initial drafting of the whole PMP and should be kept up to date when a member of the PDT/ITRT is added or replaced. Rather than repeating the same information provided in the overall PMP, it is appropriate to refer to that PDT list.

However, if the PDT list is incomplete with regard to quality control, then the remaining PDT members must be included in the QC Plan. For example, if only the technical discipline lead is included in the PMP PDT list, then supporting designers assigned to the project must be include in the QC Plan. Similarly, peer reviewers, support functions (e.g. BIM/CADD support, specification writers, etc.) and team members outside of E&C (e.g. contracting, legal, safety, etc.) should be indicated to as well.

4.1.2 Design Budgets

PMBP PROC2040

GUIDANCE: ***Must be project specific.***

BACKGROUND: Typically, districts have a template for PDTs to use when estimating design budgets. These are a good starting point – and they may have built in metrics to ensure the budget stays near a specific threshold overall (e.g. 6% of PA) or by discipline (e.g. Architecture is 17% of the total design) – but they should be updated on each project to ensure they are accurate.

Other districts have set design budgets for projects of a certain size or value; a good example of this is a dedicated budget for SRM projects under \$1M that stays the same across projects. Regardless of the approach, the QC

plan should reflect what is being delivered to ensure keeping within that budget.

Any change to the project that affects the budget – user requested changes, re-programming, changes in the design process – must be coordinated through the Technical Lead and to the PM to ensure the scope and schedule will still be met. Design budgets should not be unilaterally cut by any one member of the PDT without proper coordination.

4.1.3 Deliverables

PMBP PROC2010

GUIDANCE: ***Must be project specific.***

BACKGROUND: Deliverables must be looked at through two lenses. The first of which is the typical identification of what is being provided as part of the project itself – a complete design is generally thought of as contract documents, to include construction drawings, specifications, and design analyses. These items must be identified for each specific project so every PDT member is on the same page as far as what must be produced, whether it be an RFP or a full design.

The second consideration is what deliverables are produced as part of the QC process itself. Generally this will be the documents required for the each submittal, marked up drawings from peer reviews, QC checklists that indicate specific items have been reviewed, Specs Intact error reports, review meeting minutes, etc.

The QC plan should clearly indicate: what is being delivered for the project; as well as the documentation provided to verify the quality management process has been followed.

4.1.4 Schedule

PMBP PROC2030

GUIDANCE: ***Must be project specific.***

BACKGROUND: The schedule consists of activities which comprise the total work that needs to be performed in order to complete the project. Each activity should be clearly defined by activity type, durations, responsible offices for each activity, funds scheduled for each activity, and primary milestone dates.

Project schedules are often driven by outside factors that the PDT may not have the ability to influence. The PM coordinates these influences with the stakeholder and works with the TL and PDT to validate the schedule can be met. This may require changes to the QM and/or overall design process to include a reduction in project deliverables, abbreviated review schedules, etc. Each of these decisions must be made as a PDT and accurately reflected in the QMP within the PMP. Any decision made throughout the project that may

affect the schedule should be identified immediately and communicated through the TL to the PM.

4.1.5 Design Quality Control

4.1.5.1 Codes and Criteria

GUIDANCE: ***Must be project specific.***

BACKGROUND: All projects must be compliant with all applicable building code and criteria, which are typically identified in the Unified Facilities Criteria (UFCs) which are found on the Whole Building Design Guide (wbdg.org).

At a minimum, references to standards, codes, and criteria must be included and must specifically identify life safety and welfare related codes. Depending on the scope of the project, special criteria may also be included and must be identified. Lastly, any waivers to standards, criteria, or code should also be identified in this section of the QC Plan.

4.1.5.2 Stakeholder Criteria

GUIDANCE: ***Must be project specific.***

BACKGROUND: Any stakeholder specific criteria, either in addition to or in lieu of typical codes and criteria, must also be identified. The decision to use stakeholder criteria that differs from Army/USACE requirements is generally documented in a Memorandum of Agreement or Interagency Agreement document; these should be coordinated with the PM and understood by the PM prior to starting the project. Stakeholder specific criteria does not inherently mean that specific codes do not need to be followed. Projects where the Authority Having Jurisdiction is questioned must be well coordinated and clearly documented in the PMP and QMP.

4.1.5.3 Risk/Hazard Factors & Complexity

ER 1110-1-12 (2-5.b.) | REF8007G

GUIDANCE: ***Must be project specific.***

BACKGROUND: The Risk/Hazard Factors and Complexity of a project should be identified within the Risk Management Plan, which is a systemic process of identifying, analyzing, and responding to risk for the entire project life-cycle. The RM Plan should be actively managed by the PM and implemented by the PDT throughout the project in order to provide the required level of quality.

This section should be used as a preliminary introduction to project specific concerns and risk management, which should be fully explored in the Risk Management Plan. Essentially, complexities associated with the project

should be identified here and highlighted as features that must be accounted for during Quality Control reviews.

4.1.5.4 Quality Control Process

GUIDANCE: ***Should be project specific.***

BACKGROUND: In general, each district should have a defined process for performing Quality Control to ensure qualified individuals are performing complete technical reviews of project deliverables. The QC process should also identify when and how changes to the PMP and QMP are to be made. This should be repeatable and consistent for all disciplines associated with the PDT and maintained through the life of the project. Any variance to these processes must be identified within the QC Plan.

4.1.5.5 Adapt Processes to Specific Project to Achieve Quality ER 1110-1-12 (2-3.b.)

GUIDANCE: ***Must be project specific.***

BACKGROUND: All district-established Quality Management processes should be scalable to the level of complexity of each project. Any variances to District QMS required to achieve the established quality objectives should be described here. This may be a strategic reduction from a robust Quality Control process in order to expedite the project schedule. It may also be a modification these processes to allow additional time for review due to a particularly complex project.

4.1.6 Independent Technical Review (ITR) Team ER 1110-1-12

(4)GUIDANCE: ***Must be project specific.***

BACKGROUND: Independent Technical Review (ITR) is a review by a qualified person or team not involved in the day-to-day production of a project/product, for the purpose of confirming the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. ITR team members should demonstrate senior-level competence in the type of work being reviewed. An ITR is an integral part of design Quality Control and is required for all projects.

All project deliverables will be subjected to an ITR. At a minimum the design QCP will describe how Independent Technical Review (ITR) will be performed; list the PDT and ITR Team members and their review responsibilities; state the risks inherent to the project; and address any special considerations and/or crucial design features that must be addressed.

4.1.7 AE Design Quality Control EP 715-1-

7GUIDANCE: ***Must be project specific.***

BACKGROUND: When contracting work to be performed by an AE, that office – whether acting as a consultant or designer of record – is required to follow the same Engineer Regulations with regard to Quality Management. The QMP should describe this requirement and the PDT must ensure it is accurately reflected in the Scope of Work. A project specific QCP must be developed and submitted by the AE and reviewed by the PDT. Additionally, EP 715-1-7 includes detailed information about the AE contracting process to include a sample AE Scope of Work in Appendix W of that document.

4.2 DESIGN QUALITY ASSURANCE PLAN

ER 1110-1-12 (2-4)

GUIDANCE: *Should be project specific.*

BACKGROUND: The Quality Assurance Plan is a component of the QMP and PMP and must be prepared and approved prior to commencement of project design. The PDT will prepare the QAP in order to monitor specific project deliverables for which they do not have direct technical responsibility. That is to say, any work that is either partially or completely contracted to an AE must be reviewed for compliance with the contract and ensure that the AE is following its own Quality Control procedures. Furthermore, the scope of work issued to the AE, and its subsequent deliverables, must also be developed to meet performance thresholds defined in the QMP. Refer to EP 715-1-7 for additional guidance on contracting to an AE.

At a minimum, the Plan will: describe how quality assurance will be performed; list the team members responsible for QA review; identify stakeholders and other subject matter experts (SME) that will be involved in the QA process; provide a schedule for the frequency and durations of QA reviews; state the risks inherent to the project; and address special considerations and/or crucial design features that must be addressed by another district, Government agency, or AE firm.

The Design Quality Assurance Plan must identify a Technical Lead and describe the utilization of a design deficiency tracking (e.g. DrChecks) system to incorporate independent technical and peer reviews. For projects that have both in-house and AE contracted design deliverables, a single Technical Lead can be identified.

EXAMPLE: *See Attachment E: Design Quality Assurance Plan.*

The narrative descriptions in the rest of this section describe the requirements and intent of the components of the QA Plan and should be used for reference in conjunction with the regulation cited. Additional examples are provided in the Attachment referenced above.

4.2.1 Design Quality Assurance (DQA)

ER 1110-1-12 (5-2)

GUIDANCE: ***Should be project specific.***

BACKGROUND: For products or services being prepared by the owning district or activity, QA will be performed by Regional Headquarters which conducts its QA using an audit process defined by its regional QMS. QA responsibility can also be delegated to the district for designs prepared by another district, government agency, or A-E contract where actions include preparation of the QAP, review and approval, and QA oversight.

4.2.1.1 Codes and Criteria

ER 1110-1-12 (5-4)

GUIDANCE: ***Must be project specific.***

BACKGROUND: All projects must be compliant with all applicable building code and criteria, which are typically identified in the Unified Facilities Criteria (UFCs) which are found on the Whole Building Design Guide (wbdg.org). The code and criteria requirements indicated in the QAP should match those that are required in the scope of work or memorandum of agreement for the project.

At a minimum, references to standards, codes, and criteria must be included and must specifically identify life safety and welfare related codes. Depending on the scope of the project, special criteria may also be included and must be identified. More often than not, the list of codes will already be provided in the QCP and should be referred to rather than duplicating in the QAP. Lastly, any waivers to standards, criteria, or code should also be identified in this section of the QC Plan.

4.2.1.2 Risk/ Hazard Factors & Complexity of Project

ER 1110-1-12 (2-

4.B)GUIDANCE:

Must be project specific.

BACKGROUND: The Risk/Hazard Factors and Complexity of a project should be identified within the Risk Management Plan, which is a systemic process of identifying, analyzing, and responding to risk for the entire project life-cycle. The RM Plan should be actively managed by the PM and implemented by the PDT throughout the project in order to provide the required level of quality.

This section should be tailored to introduce any specific project concerns associated with the technical quality of work being performed outside of the district, which should be fully explored in the Risk Management Plan.

4.2.1.3 Quality Assurance Process

ER 1110-1-12 (5)

GUIDANCE: ***Should be project specific.***

BACKGROUND: In general, each district should have a defined process for performing Quality Assurance to ensure qualified individuals are performing appropriate reviews of project deliverables prepared by an author outside of the district. These reviews should include a complete review of the AE's QC Plan and spot

checking the technical aspects of the project deliverables to verify the QC Plan was followed. QA review process should not require a complete technical review of the deliverables; rather, the PDT should be checking for contract compliance.

4.2.1.4 Quality Assurance Review Team

ER 1110-1-12 (5-2)

GUIDANCE: ***Must be project specific.***

BACKGROUND: For engineering and design products or services being prepared by a geographic district, the district's Regional Headquarters is responsible and accountable for QA of the District's engineering and design products.

For deliverables prepared by another district or center, government agency, or AE contract, the QA responsibility and accountability for engineering and design are assigned to the geographic district for which the work is being performed. The District's engineering organization is responsible for leading the QA of engineering and design products and should be identified within the QA Plan.

4.2.2 Deliverables

ER 1110-1-12 (5-10)

GUIDANCE: ***Should be project specific.***

BACKGROUND: Quality assurance must be documented through a statement of technical review that includes: a statement of completion of an ITR and QA review and a statement of certification of the ITR and QA review. These reviews must include validation of the QCP, designer/checker/ITR personnel technical qualification, and compliance with requirements of the contract, USACE and the stakeholder.

ER 1110-1-12, Appendix F, provides a sample of this documentation. QA personnel will perform a BCOES review, and the review will be certified with a signed statement of completion.

SECTION 5. CIVIL WORKS REVIEW PLAN

EC 1165-2-217

GUIDANCE: ***Must be project specific.***

BACKGROUND: Specifically for Civil Works projects, the Quality Control and Quality Assurance component of the QMP must follow the Review Plan format. More often than not, the Review Plan will be an attachment to the QMP and should be referred to appropriately. However, Sections 1, 2, 3, 6, 7 and 8 of the

QMP must still be addressed and are not inherently included as part of the Review Plan.

The outline below provides a general overview of its contents, but refer to the Engineer Circular cited for specific guidance with regard to structure and content.

5.1 PURPOSE

5.2 DOCUMENTATION

5.3 GENERAL INFORMATION

5.4 REVIEW PLAN

- a. Reviewers' Expertise and Balance
- b. Reviewers' Conflicts
- c. Reviewers' Independence
- d. Reviewers' Privacy
- e. Reviewers' Compensation
- f. Reviewers' Charge
- g. Confidentiality
- h. Choice of Review Mechanism
- i. Reviewers' Access to Information
- j. Disclaimer
- k. Opportunity for Public Participation
- l. Transparency
- m. Documentation of Responses

5.5 AGENCY TECHNICAL REVIEW (ATR) TEAM

5.6 QUALITY ASSURANCE PLAN (CIVIL WORKS)

5.6.1 Design Quality Assurance (DQC)

5.6.2 Codes and Criteria

5.6.3 Risk/ Hazard Factors & Complexity of Project Quality Assurance Process

5.7 DELIVERABLES

5.8 SPECIALIZED REVIEWS

SECTION 6. SPECIAL CONSIDERATIONS

6.1 SPECIALIZED REVIEWS

PMBP REF8008G

6.1.1 Stakeholder Review Team

PMBP REF8008G

GUIDANCE: ***Must be project specific.***

BACKGROUND: Specific personnel that need to be included as part of specialized reviews as a part of, or on behalf of the Stakeholder must be identified.

EXAMPLE: *“Since utilities such as electric, sanitation, and water are privatized at Fort Lee stakeholders such as Dominion Virginia Power, Old Dominion Utility Services, Inc., and Virginia American Water Works, respectively, are involved with project review for utility coordination and design purposes.”*

6.1.2 Mandatory Center of Expertise Review

ER 1110-1-8158 (5.a.)

GUIDANCE: ***Must be project specific.***

BACKGROUND: Centers of Expertise (CX) are designated USACE organizations (District, Lab, or Center) that have demonstrated capability and expertise in a specialized area. CXs improve capabilities and management, eliminate redundancy, optimize the use of specialized expertise and resources, enhance Corps-wide consistency, facilitate technology transfer, help maintain institutional knowledge in key areas, and improve service to customers, including rapid response to emergencies.

EXAMPLE: *“The new Brigade Headquarters includes a Sensitive Compartmented Information Facility (SCIF). In order to ensure the design meets all security requirements and will be certified by installation personnel, the Protective Design Center (CENWO) will be included as a part of the review team during design and for follow on coordination during construction. These PDT members are identified in the Quality Control Plan.”*

6.1.3 Technical Center of Expertise

ER 1110-1-8158 (5.c.)

GUIDANCE: ***Must be project specific.***

BACKGROUND: A Technical Center of Expertise (TCX) is a USACE organization that has been approved by HQUSACE as having a unique or exceptional technical capability in a specialized subject area that is beneficial to HQUSACE, USACE commands, and other organizations. The services to be rendered by a TCX are not mandatory, are available upon request, and must be reimbursed by project funds. Minimum customer service quality standards established in operating procedures are also maintained by the TCX. TCXs

and services rendered can be found on the E&C Technical Excellence Network (TEN).

EXAMPLE: *“The restoration work to be completed on the tainter gates includes removal of existing corrosion protection system and application of a new system. In order to ensure the technical specifications are written correctly, and the QA procedures during construction are executed effectively, the Paint Center (CERL) has been identified as part of the PDT as indicated in the Quality Control Plan.”*

6.1.4 Center of Standardization Review

ER 1110-1-8158 (5.d.)

GUIDANCE: ***Must be project specific.***

BACKGROUND: Each year the strategy for Military Programs Delivery is authorized via Operations Order, which establishes the Centers of Standardization (COS) as the mechanism through which USACE develops and maintains the Army standard designs. As such, COS must be involved in the planning and design for standard design projects, including any alteration to or variances from the standards. For applicable projects, the COS team must be identified and their roles and responsibilities described.

EXAMPLE: *“This project includes the design and construction of an Unaccompanied Enlisted Personnel Housing (UEPH), a General Purpose Warehouse (GPW), and a Company Operations Facility (COF). As designated Centers of Standardization, the Fort Worth (UEPH, GPW) and Savannah Districts (COF) have been identified in the PDT list included in the QC Plan. Representatives from each team will attend the planning charrette, design charrette, and participate in the QC and ITR reviews, as outlined in the QC Plan.”*

6.2 ENGINEERING CONSIDERATIONS AND INSTRUCTIONS FOR FIELD PERSONNEL (ECIFP)

ER 1110-2-1150

GUIDANCE: ***Must be project specific.***

BACKGROUND: The Designer of Record (DOR) (whether in-house or contracted) is responsible for generating the Engineering Considerations and Instructions for Field Personnel (ECIFP) in accordance with ER 1110-1-12. An ECIFP is a brief document outlining the engineering considerations used to aid construction personnel in the supervision and inspection of the contract. It should include the discussions on why specific designs and materials were selected and any features requiring special attention.

The document should provide insight and background necessary to review submittals and resolve minor construction problems without compromising design intent. ECIFP is used to transmit special design concepts, assumptions and instructions on how to construct unique design features and is the means of communication and coordination between design and

construction personnel for preconstruction and preparatory meetings, submittal reviews, shop drawings, samples, certifications, and test results.

EXAMPLE: *Refer to Attachment F: Sample Report on Engineering Considerations and Instructions to Field Personnel (MILCON).*

Refer to Attachment G: Sample Report on Engineering Considerations and Instructions to Field Personnel (CIVIL WORKS)

SECTION 7. CONSTRUCTION QUALITY MANAGEMENT ER 1180-1-6

GUIDANCE: ***Must be project specific.***

BACKGROUND: USACE Construction Quality Management activities are outlined in ER 1180-1-6 Construction Quality Management, and supplemented with additional information in EP 415-1-260 AE/RE Management Guide. Construction personnel must engage in an integrated project team, providing input to the QMP for appropriate oversight of the solicitation documents (to include design documents) and the construction contract, regardless of the delivery method.

This portion of the QMP does not take the place of the existing District or Resident Office Quality Management Process, or the project specific Contractor Quality Assurance Plan. Rather, each of these processes should work in concert and be used throughout the project; achieving quality construction is a combined effort and responsibility of the construction contractor and the Government.

Lastly, proper staffing is integral to successful project quality. Office staffing is outlined in the district and Resident Office Quality Management Process; additional project-specific staffing (in excess to the district process) must be addressed in the QMP. See Section 7.3.1 of this guide for more information.

7.1 PRE-AWARD ACTIVITIES ER 1180-1-6 (7.B-2)

7.1.1 Acquisition Strategy Development

GUIDANCE^R: ***Should be standardized.***

BACKGROUND: Typically, acquisition strategy decisions include input from the Chief of Construction as part of the district standards processes. This involvement should be documented as a part of the QMP in the PMP. The level of detail of the strategy will be equal to the value and complexity of the proposed acquisition. As the acquisition method directly impacts how the construction contract is administered, integrating construction personnel directly impacts the successful execution of the project.

EXAMPLE: *“During initial planning, the Chief of Construction Division provides input with regard to project complexity and risk management to help determine the proper acquisition strategy for the project, in accordance with District Process XYZ.”*

7.1.2 Input During Design

ER 1180-1-6 (7.B-2)

GUIDANCE: ***Must be project specific.***

BACKGROUND: Construction personnel should participate in design review conferences, BCOES reviews, conduct site plan-in-hand reviews and help to establish the contract CQC requirements. The QMP should describe this level of involvement and should be based on district standard procedures.

EXAMPLE: *“The project engineer and an office engineer from the Fort Leonard Wood resident office have been identified as PDT members, included in the PMP. Additionally, they will be included in each design review as well as the BCOES process, as outlined in the Quality Control Plan. They will review the technical design, as well as provide specific input to the Div 01 Construction Administration specifications.”*

7.2 CONTRACTOR QUALITY CONTROL

GUIDANCE: ***Must be project specific.***

BACKGROUND: Contractor QC requirements are found in specification UFGS 01 45 00.00 10 for USACE contracts. It is imperative that the PDT discuss additional Contractor QC activities that may be necessary early in the development of the solicitation package, document them in this QMP, and integrate them into the contract.

Special Contractor Quality Control (CQC) Plan requirements for this contract in addition to baseline in UFGS 01 45 00.00 10 should be outlined in the QMP, to include:

- a. Requiring additional staffing for specific features of work;
- b. Unique submittal submission and review processes;
- c. Integration of stakeholder, user, or DOR into the three phase inspection process (advanced notification for meetings or request for inspection, etc.);
- d. Unique testing requirements; and,
- e. Update the QMP to reference Contractor’s approved Quality Control Plan, with transmittal number and approval date for retrieval from RMS.

EXAMPLE: *“The subject matter experts for review of the Contractor’s daily blasting plan(s) are located at the district office. Therefore, we have included a*

requirement that all associated submittals are delivered electronically a minimum of 48 hours in advance of the Contractor's proposed execution of work."

7.3 GOVERNMENT QUALITY ASSURANCE

ER 1180-1-6

GUIDANCE: ***Must be project specific.***

BACKGROUND: Government QA includes the various functions, including testing and inspections, performed by the Government as well as enforcement of the three phase quality control process, to assure the contractor has fulfilled the contract's requirements for quality, quantity, and other aspects of the contract.

7.3.1 Staffing and Training

ER 1180-1-6 (7.B-1)

GUIDANCE: ***Must be project specific.***

BACKGROUND: The PDT is responsible for developing a project specific supplement to the QA Plan in addition to regional or district level quality assurance plans. This supplement should identify any specific plans for additional staffing or training necessary to successfully execute the project.

EXAMPLE: *"The PDT plans to execute the following activities in advance of construction procurement:*

- a. Development of a schedule of visits, or list of critical features of work, to be reviewed and/or inspected by the Designer of Record.*
- b. The project will be LEED Silver certified, therefore all QA staff will be attend the USACE PROSPECT #244 course.*
- c. Temporary assignment of personnel to similar ongoing construction project at XXX district to familiarize themselves with unique facility challenges and capture lessons learned.*
- d. Advertisement of temporary assignments for personnel from other districts or MSCs in order to staff the project adequately."*

7.3.2 Additional Resources

ER 1180-1-6 (7.B-1)

GUIDANCE: ***Must be project specific.***

BACKGROUND: The QA Plan must be kept current and adjusted for changes in workload, staffing, etc. Therefore, after initial development, the plan will be reviewed and updated as often as necessary but not less than annually. Any additional resources (staffing, equipment, etc.) that are required for project execution should be identified in the plan.

EXAMPLE: *“For a critical roofing project, the QA plan included the need for special inspections by a roofing consultant and an IR camera that would aid in proper quality assurance inspections.”*

7.3.3 Designer of Record

GUIDANCE^R: ***Should be project specific.***

BACKGROUND: The Construction QAP should document how construction personnel will incorporate the Designer of Record (DOR) from pre-award through construction completion. This includes participation in meetings and on-site QA activities, and definition of roles in answering Requests for Information and reviewing submittals.

EXAMPLE: *“The Designer of Record (DOR) will participate telephonically during monthly PDT meetings and attend on-site QA activities for placement of critical features of work. RFIs and submittals that are administrative in nature will be addressed by the project office. Technical RFIs and submittals will be coordinated with the DOR in a frequency commensurate with the complexity of the issue.”*

7.3.4 Risk/Hazard Factors & Complexity

GUIDANCE^R: ***Should be project specific.***

BACKGROUND: Similar to the design risk/hazard factors and complexity, the Construction QAP should address project issues that affect the construction of the project after award and Notice to Proceed has been issued. This section should highlight risks specific to construction which are fully addressed in the Risk Management Plan.

EXAMPLE: *“The Contractor has proposed an aggressive schedule that relies on favorable weather conditions for building dry-in before winter. In the event of schedule slippage, the Government will review specific plans for temporary environmental control measures.”*

SECTION 8. PROJECT SPECIFIC REQUIREMENTS

PMBP REF8008G

GUIDANCE: ***Must be project specific.***

BACKGROUND: Any additional project-specific requirements not previously addressed in other parts of the QMP should be added to ensure all unique conditions have been accounted for.

EXAMPLE: *“The new administration building on the West Point campus is subject to many high ranking visitors during construction. Because of this, a Visitor’s Plan has been developed to outline scheduling and accommodations and is attached as an Appendix to the PMP. The Resident Office will handle VIP*

visitors and work in conjunction with the General Contractor's on-site staff to minimize impacting project execution."

APPENDIX A

SAMPLE: BUDGET

The sample design budget is to be used as a starting point for creating the QMP budget, which is a requirement of the PMBP. If the PMP budget is detailed with regard to the Quality management a quick reference to the PMP budget should be utilized.

DESIGN BUDGET								
Key Activities	Kickoff meeting	35% Design	65% design	95% design	Corrected Final	Advertising and award	Approximate hours	Subtotal
Design Kick-off	#REF!							
E&C Div.	\$380.00	\$380.00	\$380.00	\$380.00	\$380.00	\$380.00	19	\$2,280.00
Engineering Branch	\$1,532.00	\$3,740.00	\$3,288.00	\$3,288.00	\$3,288.00	\$3,288.00	154	\$18,424.00
Civil Section	\$13,455.00	\$77,400.00	\$77,500.00	\$77,500.00	\$20,000.00	\$5,000.00	2,257	\$270,855.00
Architectural Section	\$26,825.00	\$225,000.00	\$100,000.00	\$225,000.00	\$20,000.00	\$5,000.00	5,015	\$601,825.00
Mechanical Section	\$26,825.00	\$147,607.00	\$271,000.00	\$251,000.00	\$20,000.00	\$5,000.00	6,012	\$721,432.00
Structural Section	\$26,825.00	\$77,400.00	\$100,000.00	\$150,000.00	\$20,000.00	\$5,000.00	3,160	\$379,225.00
Electrical Section	\$26,825.00	\$77,400.00	\$185,000.00	\$200,000.00	\$20,000.00	\$5,000.00	4,285	\$514,225.00
AE Support	\$30,000.00	\$50,000.00	\$50,000.00	\$50,000.00	\$10,000.00	\$0.00	1,583	\$190,000.00
Cost Section	\$3,182.00	\$22,871.00	\$22,989.00	\$22,989.00	\$10,644.00	\$10,644.00	778	\$93,319.00
Geo-Environmental Section	\$12,045.00	\$23,000.00	\$23,000.00	\$23,000.00	\$2,000.00	\$0.00	692	\$83,045.00
Design management	\$15,148.00	\$7,000.00	\$7,000.00	\$7,000.00	\$10,000.00	\$7,000.00	443	\$53,148.00
Supplies	\$2,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	17	\$2,000.00
Travel	\$4,300.00	\$10,000.00	\$10,000.00	\$10,000.00	\$5,000.00	\$10,000.00	411	\$49,300.00
Printing/Registration cost	\$950.00	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	216	\$25,950.00
Military Projects Branch	\$20,000.00	\$23,000.00	\$23,000.00	\$23,000.00	\$5,000.00	\$5,000.00	825	\$99,000.00
Programs Branch	\$5,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	\$2,000.00	125	\$15,000.00
Construction Branch	\$5,000.00	\$7,500.00	\$17,500.00	\$17,500.00	\$17,500.00	\$10,000.00	625	\$75,000.00
Contracting Branch	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00	\$30,000.00	458	\$55,000.00
VE Study	\$5,000.00	\$110,000.00	\$0.00	\$0.00	\$0.00	\$0.00	958	\$115,000.00
Independent Technical review	\$0.00	\$0.00	\$0.00	\$31,000.00	\$10,000.00	\$0.00	342	\$41,000.00
BCOES	\$0.00	\$0.00	\$0.00	\$40,000.00	\$10,000.00	\$0.00	417	\$50,000.00
Specifications Section	\$5,000.00	\$5,000.00	\$5,000.00	\$10,000.00	\$10,000.00	\$10,000.00	375	\$45,000.00
Subtotals	\$235,292.00	\$879,298.00	\$907,657.00	\$1,153,657.00	\$205,812.00	\$118,312.00	29,167	\$3,500,028.00
Total Design Cost (P&D)								\$3,500,028.00
PA								\$42,000,000.00

APPENDIX B

SAMPLE: DESIGN SCHEDULE

The sample design schedule is to be used as a starting point for creating the QMP schedule, which is a requirement of the PMBP. Detailed P2 schedules are used in some districts. If the PMP schedule is detailed with regard to the Quality management a quick reference to the PMP schedule should be utilized. The schedule can be combined with the design budget if possible.

DESIGN SCHEDULE				
Milestone	Name	Duration	Start Date	FinishDate
Receive Code 6		0	1-Jan-17	1-Jan-17
	Set Up Initial Funding	30	1-Jan-17	31-Jan-17
	Develop Team	45	1-Jan-17	15-Feb-17
	Prepare Draft PMP	60	1-Jan-17	2-Mar-17
	Finalize PMP	30	2-Mar-17	1-Apr-17
Receive Executive Staff Approval to Move forward with Design (CP Bravo)		8	1-Apr-17	9-Apr-17
	prepare for kickoff	60	9-Apr-17	8-Jun-17
Conduct Kickoff Meeting		2	9-Apr-17	11-Apr-17
	Quality Control Plan	7	9-Apr-17	16-Apr-17
	Ensure NEPA/ Section 106 is Complete	395	11-Apr-17	11-May-18
Complete Schematic Design		90	11-Apr-17	10-Jul-17
	Peer / QC Review	3	10-Jul-17	13-Jul-17
	Distribute Scematic Design Package for review	1	13-Jul-17	14-Jul-17
	Provide review comments	14	14-Jul-17	28-Jul-17
	Conduct comment resolution conference	4	28-Jul-17	1-Aug-17
	Concept Cost Estimate Complete	14	10-Jul-17	24-Jul-17
	Value Engineering Study Summary	5	28-Jul-17	2-Aug-17
	VE Study Draft Report	7	2-Aug-17	9-Aug-17
	Value Engineering Decisions Completed	7	9-Aug-17	16-Aug-17
	Value Engineering Report Finalized	14	16-Aug-17	30-Aug-17
Complete Design Development		120	10-Jul-17	7-Nov-17
	Peer / QC Review	3	7-Nov-17	10-Nov-17
	Distribute design Development Package for review	1	10-Nov-17	11-Nov-17
	Provide review comments	14	11-Nov-17	25-Nov-17
	Conduct comment resolution	4	25-Nov-17	29-Nov-17
	Interim Cost Estimate Complete	14	7-Nov-17	21-Nov-17

Construction Documents		90	7-Nov-17	5-Feb-18
	Peer / QC Review	3	5-Feb-18	8-Feb-18
	Distribute Construction Document Package for review	1	8-Feb-18	9-Feb-18
	ITR review	14	9-Feb-18	23-Feb-18
	BCOES review	60	9-Feb-18	10-Apr-18
	COS review	7	9-Feb-18	16-Feb-18
	Provide review comments	14	9-Feb-18	23-Feb-18
	Conduct Comment Resolution	7	23-Feb-18	2-Mar-18
	Plan in hand site visit review	3	23-Feb-18	26-Feb-18
	Final Cost Estimate Completed	14	5-Feb-18	19-Feb-18
Complete For Construction Design Documents		14	2-Mar-18	16-Mar-18
	Backcheck For Construction Design Documents	7	16-Mar-18	23-Mar-18
	Complete Draft 1354	5	23-Mar-18	28-Mar-18
	Prepare BCOE Certification	3	10-Apr-18	13-Apr-18
Design Package is RTA/IGE Complete			28-Mar-18	28-Mar-18
	Receive Executive Staff Approval to move forward with Award (CP Charlie)	7	28-Mar-18	4-Apr-18
	Submit Design Package to NAO Contracting	7	4-Apr-18	11-Apr-18
	FEDBIZOPS Notification	30	11-Apr-18	11-May-18
	Advertise	3	11-Apr-18	14-Apr-18
	Receive Bids	30	14-Apr-18	14-May-18
	Source Selection	21	14-May-18	4-Jun-18
	Award	7	4-Jun-18	11-Jun-18
	Provide Notice to Proceed	14	11-Jun-18	25-Jun-18
PM duration		98	1-Jan-17	9-Apr-17
Design duration		353	9-Apr-17	28-Mar-18
Contracting duration		89	28-Mar-18	25-Jun-18
Total duration		540	1-Jan-17	25-Jun-18

APPENDIX C

SAMPLE: DELIVERABLES

The sample deliverables list is to be used as a starting point for a deliverables list. In many cases a deliverable date is included in this list. This list is not exhaustive and needs to be tailored for each project. Districts may decide to combine this list with the schedule.

DESIGN DELIVERABLES	
Project Initiation	
	<i>Field Investigation</i>
	<i>Topographic and Utility Survey</i>
	<i>Geotechnical Investigation</i>
	<i>Environmental Report</i>
	<i>Erosion/Sediment Pollution Control Plan</i>
Schematic Design Submittal	
	<i>Draft Design Analysis</i>
	<i>In progress BIM Model/CAD</i>
	<i>Draft Construction Documents</i>
	<i>Draft Specifications</i>
	<i>Initial IGE</i>
Schematic Dr Check's Design Review & Resolution Meeting minutes	
Design Development Submittal	
	<i>Interim Design Analysis</i>
	<i>In progress BIM Model/CAD</i>
	<i>Interim Construction Documents</i>
	<i>Interim Specifications</i>
	<i>Interim IGE</i>
	<i>Draft Bid Schedule</i>
	<i>BIM Clash Detection Report</i>
Design Development Review & Resolution Meeting minutes	
Construction Document Design Submittal	
	<i>Interim Design Analysis</i>
	<i>In progress BIM Model/CAD</i>
	<i>Interim Construction Documents</i>
	<i>Interim Specifications</i>
	<i>Interim IGE</i>
	<i>Draft Bid Schedule</i>
	<i>BIM Clash Detection Report</i>
Construction Document Review & Resolution Meeting minutes	
For Construction Design Submittal	
	<i>Final Design Analysis</i>
	<i>Final BIM Model/CAD</i>
	<i>Final Construction Documents</i>
	<i>Final Specifications</i>

<i>Final IGE</i>
<i>Final Bid Schedule</i>
<i>Final DD1354</i>
<i>ECIFP</i>
<i>BCOES Documentation</i>
<i>For Construction Design Review & Resolution Meeting minutes</i>
<i>Backcheck</i>
<i>**Please note these items may vary per project.</i>

APPENDIX D

SAMPLE: DESIGN QUALITY CONTROL PLAN (QCP)

This document provides additional guidance with regard to the requirements of the Quality Management Plan (QMP). The QMP is an integral part of each Project Management Plan (PMP), as outlined in the Project Management Business Practice (PMBP) Manual 2009. The use of the PMBP is required by Engineer Regulation 5-1-11 USACE Business Process.

The sample design Quality Control Plan is to be used as a starting point for creating the QCP, which is a requirement of the PMBP. The QCP is an integral part of each Quality Management Plan (QMP), as outlined in the Project Management Business Practice (PMBP) Manual 2009 (Reference 8008G). The use of the PMBP is required by Engineer Regulation 5-1-11 USACE Business Process. Duplication of information already located in the PMP should be minimized by referencing the PMP location of the information.

The guide below follows the structure of the PMBP requirements for the QCP. Each section consists of two parts:

BACKGROUND: Provides explanation of the intent of the section and recommended ways to draft the QCP effectively and efficiently.

EXAMPLE: Illustrates how each section may look in a drafted QCP. The examples do not come from a single QCP and range in program, size and complexity. They should not be construed as the minimum requirements of a QCP – that can only be determined depending on the project specific circumstances.

QUALITY CONTROL PLAN

1. PROJECT DELIVERY TEAM (PDT)

BACKGROUND: The PDT team is involved with the day-today production of a product/project. This area could reference PMP PDT table location to reduce duplication of information, as long as that listing is complete.

Often, the PDT table in the PMP will only list the primary or lead designers for each discipline. If this is the case, the QCP should identify the complete PDT to include support designers and functions.

EXAMPLE:

Project Delivery team (PDT) Team			
Responsibility	Name	Email	Phone
Technical Lead	John Smith	John.smith@usace.army.mil	202-555-0000
Lead Civil			
Support Civil			
Landscape Architect			
Lead Structural			
Support Structural			

Lead Architect			
Support Architect			
Fire Protection			
Mechanical Engineer			
Electrical Engineer			
Sustainability Manager			
BIM Manager			
CADD/BIM Technician			
Specifications Manager			

2. TECHNICAL LEAD

BACKGROUND: The technical lead should be identified here and his responsibilities to the project reemphasized.

EXAMPLE: The Technical Lead (TL) manages issues concerning technical quality of E&C deliverables through design and construction. This individual is the primary interface with the PM and is also the District Chiefs representative for a specific project with regard to quality management of E&C deliverables. The TL ensures the PDT identifies and properly uses appropriate professional standards for legal, environmental, economic, building code, life safety, and health criteria when producing all engineering and design products. The TL's active role as proponent is essential to ensuring technical quality. Any proposed change to the project scope, budget, or schedule that may affect the technical quality of E&C deliverables, or execution of quality procedures outlined in the Quality Assurance/Quality Control (QA/QC) portions of the approved Quality Management Plan (QMP), must be coordinated with the TL. TLs provide PDT leadership and coordination with responsibility for assuring Quality Assurance of E&C deliverables.

3. INDEPENDENT TECHNICAL REVIEW (ITR) TEAM

BACKGROUND: The ITR team members should be senior level experts that are not involved with the day-today production of a product/ project. The ITR is typically comprised of designers from another district, but may be within the same district provided none of the review members are also PDT members. The ITR review focuses on confirming the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices.

EXAMPLE:

Independent Technical Review (ITR) Team				
Responsibility	Name	Office	Email	Phone
Technical ITR Lead	Jane Smith	CESAS	Jane.smith@usace.army.mil	202-555-0001
Civil				
Landscape				

Structural				
Architectural				
Fire Protection				
Mechanical				
Electrical				
Sustainability				
BIM Manager				
Specifications				

4. SPECIALIZED REVIEW TEAM

BACKGROUND: List who the specialized reviewers are and the significance for reviewing this project.

EXAMPLE: *The building being planned was developed from a standard design. To verify project requirements and intent of the building, a team from the Center of Standardization, XXX District, will review the documents. The team will focus their efforts on compliance with the standard, function of the building and approve any changes to the original design. Below are the team members associated with the review:*

Specialized Reviews Team				
Responsibility	Name	Office	Email	Phone
Civil	Jim Smith	SWF/COS	Jim.smith@usace.army.mil	202-555-0002
Landscape				
Structural				
Architectural				
Fire Protection				
Mechanical				
Electrical				
Sustainability				
BIM Manager				
Specifications				

5. QUALITY CONTROL BUDGET

BACKGROUND: The quality control budget should define the funding used for quality control specifically. This budget should not duplicate information located elsewhere in the PMP or QMP.

EXAMPLE:

TOTAL PROJECT DESIGN FUNDS: [XXX]			
Quality Control Budget Breakdown			
REVIEW	DISCIPLINE	BUDGET	PERCENTAGE
Peer Review: Schematic Design	Civil	\$1,600.00	
	Structural	\$1,600.00	
	Architecture	\$1,600.00	
	Mechanical	\$1,600.00	
	Electrical	\$1,600.00	
Peer Review: Design Development	Civil	\$3,200.00	
	Structural	\$3,200.00	
	Architecture	\$3,200.00	
	Mechanical	\$3,200.00	
	Electrical	\$3,200.00	
Peer Review: Construction Documents	Civil	\$2,400.00	
	Structural	\$2,400.00	
	Architecture	\$2,400.00	
	Mechanical	\$2,400.00	
	Electrical	\$2,400.00	
Total QC funding		\$36,000.00	

6. QUALITY CONTROL SCHEDULE

BACKGROUND: The quality control schedule is used for complex projects that have a large PDT, complex reviews or reviewers in remote locations. This QC schedule documents reviews that have been completed to the satisfaction of the Technical Lead (or design manager).

EXAMPLE:

QUALITY CONTROL SCHEDULE AND CHECKLIST									
MILESTONE	START DATE	FINISH DATE	DURATION (calendar)	PEER REVIEW	ITR	MCX	CoS	Safety	BCOES
Charrette Design	4/11/2017	4/18/2017	14	x					
Charrette Review Period	4/18/2017	4/25/2017	7	x					
Review of Quality Control Plan	4/9/2017	4/16/2017	14	x					
Quality Control Review of Schematic Design	7/10/2017	7/13/2017	3	x					
Schematic Design Review Period	7/14/2017	7/28/2017	14	x		x	x		
ITR of Schematic Design	NA	NA	NA	x					
Quality Control Review of Design Development	7/10/2017	7/13/2017	3	x					
Design Development Review Period	11/10/2017	11/25/2017	14	x		x	x		
BIM Clash Detection	11/10/2017	11/13/2017	3						
Quality Control Review of Construction Documents	2/5/2018	2/8/2018	3	x					
Construction Documents Review Period	2/9/2018	2/23/2018	14	x	x	x	x	x	x
ITR of Construction Documents	2/9/2018	2/23/2018	14	x	x				
Plan-In-Hand Site Visit and Review	2/23/2018	2/26/2018	3	x					
Quality Control of Final Design Documents	3/16/2018	3/23/2018	3	x	x	x	x	x	x
BCOES Review	2/9/2018	4/13/2018	60	x					x

7. DESIGN QUALITY CONTROL

a. Codes and Criteria

BACKGROUND: Provide a comprehensive list of the codes required for quality control.

This list should provide a complete list of codes that must be met for the project to be successful. Stakeholder criteria should be highlighted near this section.

EXAMPLE:

CODES AND CRITERIA	
NUMBER	NAME
	Higher Authority Mandates
UFC 1-200-01	General Building Requirements
	U.S. Green Building Council
IBC 2012	International Building Code

b. Stakeholder Criteria

STAKEHOLDER CRITERIA
U.S. Air Force Regulations and Instructions
U.S. Air Force Information Systems
Installation Design Guidance
Public Laws
Executive Orders
National Security Telecommunications and Information Systems Security Committee
U.S. Army Regulations
VA Design Guide
U.S. Army Information Systems Command

c. Unique Design Factors & Complexity of Project

BACKGROUND: List potential risks to the project, what would trigger the risk and the potential impact of that risk. This section is meant to analyze potential set backs up front to address those issues early and mitigate and potential problems. Reference to PMP risk register should be located here and information not duplicated.

EXAMPLE:

RISK FACTORS & COMPLEXITY			
# RISK	RISK DESCRIPTION	TRIGGERS	POTENTIAL IMPACT
Schedule	Failure to meet a milestone	Scope change	Schedule Delay
Complexity	MEDIUM: Technically specific design criteria on SCIF	More time and detail required	Need a technical expert to assist with design (time & money)
Resource availability	limited electrical engineering resources are available	Electrical Engineer priorities shift	Schedule Delay

Project Specific Design features/ Complexity	
SCIF	
	Review of SCIF facilities should be performed by SME
Mission Critical	
	Facility is mission critical and has unique features to maintain operation.
Ballistic protection	
	This project includes ballistic resistance glazing and walls for the waiting room. Project shall be reviewed in accordance with UL 752

d. Quality Control Process

BACKGROUND: Outline the district specific quality control procedures here. This can be either referencing the district Business Quality Process or noting the process here. Typical documentation is in paragraph form and describes the procedure and when it takes place.

(1) **EXAMPLE:** Reference “Kansas City District Business Quality Process 7.3.01 Product Development In-House” for specific quality control activities.

(2) **EXAMPLE:** Peer review: Peer reviews will take place at each milestone. A discipline specific reviewer, separate to the day-to-day production, will review the product at a detailed level. When necessary the peer reviewer and designer will problem solve together to develop the best design solutions. Each discipline shall have a checklist of items to review and check off before a product goes out for review.

(3) EXAMPLE: Branch Chief Check: Branch chief will check any deliverables before review for quality control measures and consistency. The chief has the ability to hold up any product they do not see meets the level of quality required.

e. Adapt processes to specific project to achieve quality

BACKGROUND: List additional or unique processes to which the team may partake in to achieve project specific quality control. See specific examples below:

EXAMPLE:

Project Specific Processes	
Field Investigation / Existing Building Walk-Through	
	A thorough examination of project site and the collection of data on existing conditions are essential for the development of accurate construction plans. List how the team will accomplish this and goals for this process.
PDT Review	
	Project Delivery Team meets to review the set of drawings together verifying all design elements have been coordinated throughout the building. This review can take place once or at each major milestone, list here the outline of this process.
In-Progress Review (IPR)	
	Lead designer meets with their supervisor or branch chief to discuss quality and consistency of product at each milestone.
Subject Matter Expert Review	
	A subject matter expert for firing ranges has been identified and will review the project at the 65% submittal. Funding will be supplied to the reviewer prior to the 65% review.

8. DELIVERABLES

BACKGROUND: A QCP specific deliverables list should be located within the QCP.

EXAMPLE:

QUALITY CONTROL DELIVERABLES		
MILESTONE	Deliverable	Deliverable Date
Charrette Review	Charrette meeting notes	4/26/2017
	Dr. Checks Comment report	4/26/2017
Review of Quality Control Plan	Dr. Checks Comment report	4/17/2017
Quality Control Review of 35% Design	Verified Design Checklist	7/14/2017
	Review conference meeting notes	7/14/2017
	Dr. Checks Comment report	7/14/2017
Quality Control Review of 65% Design	Verified Design Checklist	11/26/2017
	Review conference meeting notes	11/26/2017
	Dr. Checks Comment report	11/26/2017
Quality Control Review of 95% Design	Verified Design Checklist	2/9/2018
	Review conference meeting notes	2/9/2018
	Dr. Checks Comment report	2/9/2018
ITR of 95% Design	Dr. Checks Comment report	2/24/2018
		2/24/2018
Plan-In-Hand Site Visit and Review	Review conference meeting notes	2/27/2018
Quality Control of Final Design Documents	Dr. Checks Comment report	3/24/2018
	Review conference meeting notes	3/24/2018
BCOES Review	Signed BCOES	4/14/2018
	Dr. Checks Comment report	4/14/2018

APPENDIX E

SAMPLE: DESIGN QUALITY ASSURANCE PLAN (QAP)

The sample design Quality Assurance Plan is to be used as a starting point for creating the QAP, which is a requirement of the PMBP. The QAP is an integral part of each Quality Management Plan (QMP), as outlined in the Project Management Business Practice (PMBP) Manual 2009 (*Reference 8008G*). The use of the PMBP is required by Engineer Regulation 5-1-11 USACE Business Process. Duplication of information already located in the PMP should be minimized by referencing the PMP location of the information.

The guide below follows the structure of the PMBP requirements for the QAP. Each section consists of two parts:

BACKGROUND: Provides explanation of the intent of the section and recommended ways to draft the QAP effectively and efficiently.

EXAMPLE: Illustrates how each section may look in a drafted QAP. The examples do not come from a single QAP and range in program, size and complexity. They should not be construed as the minimum requirements of a QAP – that can only be determined depending on the project specific circumstances.

Quality Assurance Plan

1. Quality Assurance (QA) team

BACKGROUND: Below is a list of the QA team members for a project with their associated roles/ responsibilities:

EXAMPLE:

Quality Assurance (QA) team			
Responsibility	Name	Email	Phone
QA Team Lead	XXX	XXX@usace.army.mil	xxx-xxx-xxxx
Civil			
Landscape			
Structural			
Architectural			
Interior Design			
Fire Protection			
Mechanical			
Electrical			
Sustainability			

2. QA Budget

BACKGROUND: The budget listed below represents the total design funds allotted for this project, and specifies budget for Quality Control activities; [ITR/ATR] efforts are not included in this budget and should be a separate line in the PMP budget. The QA budget sample is for a project that was design by another District, government agency, or A-E firm.

EXAMPLE:

Quality Assurance Budget Breakdown	
DISCIPLINE	BUDGET
Life Safety	\$10,000
Structural	\$10,000
Architecture	\$10,000
Interior Design	\$10,000
Civil	\$10,000
Mech	\$10,000
Elec	\$10,000
QA Budget Total	\$70,000

3. QA Schedule

BACKGROUND: Edit the specific reviews based on project specific quality assurance activities. The reviews listed are just some examples and not all inclusive for reviews possible.

EXAMPLE:

MILESTONE	Start date	Finish date	DURATION (days)
Quality Assurance of Charrette Documentation	4/25/2017	5/2/2017	7
Quality Assurance of Quality Control Plan	4/16/2017	4/23/2017	7
Quality Assurance Review of Schematic Design	7/28/2017	8/4/2017	7
Quality Assurance Review of Design Development	11/25/2017	12/2/2017	7
Quality Assurance Review of Construction Documents	2/23/2018	3/2/2018	7

ECB 2017-20 Quality Assurance of For Construction documents	ATTACHMENT B 3/23/2018	3/30/2018	APPENDIX E 7
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4. Design Quality Assurance

a. Codes and Criteria

BACKGROUND: List applicable codes and criteria mandated.

EXAMPLE:

CODES AND CRITERIA	
NUMBER	NAME
	Higher Authority Mandates
UFC 1-200-01	General Building Requirements
	U.S. Green Building Council
IBC 2012	International Building Code

STAKEHOLDER CRITERIA
U.S. Air Force Regulations and Instructions
U.S. Air Force Information Systems
Installation Design Guidance
Public Laws
Executive Orders
National Security Telecommunications and Information Systems Security Committee
U.S. Army Regulations
VA Design Guide
U.S. Army Information Systems Command

b. Risk/ Hazard Factors & Complexity of Project

BACKGROUND: List potential risks to the project, what would trigger the risk, and the potential impact of that risk. This section is meant to analyze potential set backs up front to address those issues early and mitigate and potential problems.

EXAMPLE:

# RISK	RISK DESCRIPTION	TRIGGERS	POTENTIAL IMPACT
EX:1 Schedule	Failure to meet a milestone	Scope change	Schedule Delay
EX: 2 Complexity	Technically specific design criteria on SCIF	More time and detail required	Need a technical expert to assist with design (time & money)

c. Quality Assurance Process

BACKGROUND: Outline the district specific quality assurance procedures here. This can be achieved by either referencing the district Business Quality Process or noting the process below.

EXAMPLES:

EX 1: Reference XX District Business Quality Process ##### Contract Design for Quality for specific quality assurance activities.

EX 2: Quality Assurance Review: Reviews will take place at each milestone. A discipline specific reviewer will evaluate the product for compliance with code, regulation and design adherence. Each discipline shall have a checklist of items to review and check off before a product is delivered.

d. Crucial Design Features

BACKGROUND: List unique features of design requiring special review attention.

EXAMPLE:

Project Specific Design features/ Complexity	
SCIF	
	Review of SCIF facilities should be performed by SME
Mission Critical	
	Facility is mission critical and has unique features to maintain operation.
Ballistic protection	
	This project includes ballistic resistance glazing and walls for the waiting room. Project shall be reviewed in accordance with UL 752

APPENDIX F

SAMPLE: ENGINEERING CONSIDERATIONS AND INSTRUCTIONS TO FIELD PERSONNEL (MILCON)

The sample ECIFP MILCON is similar to the Civil Works ECIFP template in ER 1110-2-1150 Appendix G. This document is primarily associated with Military Construction.

ECIFP (MILCON)

1. General

It is essential that all personnel associated with the construction of any project be familiar with the design criterion, material requirements, operational performance, and all special details of the project. To accomplish this, and to ensure that field personnel are aware of the design assumptions regarding field conditions, the Designer of Record (DOR) will prepare a short report entitled "Engineering Considerations and Instructions for Field Personnel." This report will also include guidance for critical portions of the contract documents. The report may be augmented by briefings, instructional sessions, and guidance for laboratory testing. The field personnel are important members of the PDT. Field personnel can provide important input to the design process and should be involved throughout the project delivery cycle. This report should be developed throughout the design process, similar to the design analysis. Field personnel are responsible for reviewing the report before it is provided in final form at contract award.

The sample outline below contains standard verbiage that should be used in the general overview section of the document. The ECIFP outline must be updated to be project-specific, and at minimum include the PURPOSE, GENERAL INFORMATION, DISCIPLINE SPECIFIC, and SPECIAL REQUIREMENTS sections.

2. Content

The report format shall include, but not be limited to, the following:

2.1. Purpose

2.1.1. Purpose.

2.1.2. Key Contacts.

2.1.2. Communication.

2.2. General Project Information

2.2.1. Project Description.

- 2.2.2. Work Restrictions.
- 2.2.3. Project Schedule/Phasing
- 2.2.4. Value Engineering Decisions
- 2.2.5. Advanced Modeling Requirements
- 2.2.6. Sustainability Reporting
- 2.2.7. Total Building Commissioning

2.3. Discipline Specific Information

- 2.3.1. Environmental
- 2.3.2. Geotech
- 2.3.3 Civil
- 2.3.4 Landscape
- 2.3.5. Structural
- 2.3.6. Architectural
- 2.3.7. Interior Design
- 2.3.8 Fire Protection
- 2.3.9. Plumbing
- 2.3.10. Mechanical
- 2.3.11. Electrical
- 2.3.12 Telecommunications

2.4 Special Requirements

- 2.4.1 Special Security Requirements
- 2.4.2 Special Operational Requirements
- 2.4.3 User Requested Features

APPENDIX G

SAMPLE: ENGINEERING CONSIDERATIONS AND INSTRUCTIONS TO FIELD PERSONNEL (CIVIL WORKS)

The sample ECIFP is taken directly out of ER 1110-2-1150 Appendix G. This document is primarily associated with Civil works.

APPENDIX G

OUTLINE OF REPORT ON ENGINEERING CONSIDERATIONS AND INSTRUCTIONS TO FIELD PERSONNEL

G-1. General

It is essential that all of the construction personnel associated with the construction of any project be familiar with the design criterion, material requirements, operational performance, and all special details of the project. To accomplish this and to ensure that field personnel are aware of the design assumptions regarding field conditions the designers will prepare a short report entitled "Engineering Considerations and Instructions for Field Personnel." This report shall also provide guidance for critical portions of the contract documents. The report shall be augmented by briefings, instructional sessions, and guidance for laboratory testing. Field personnel can provide important input to the design process and shall be consulted as the design progresses. Field personnel shall review the report before it is published in final form.

G-2. Content

The report format shall include, but not be limited to, the following:

G-2.1. Introduction.

G-2.1.1. Purpose.

G-2.1.2. Scope.

G-2.2. Excavation.

G-2.2.1. General.

G-2.2.2. Common.

G-2.2.3. Rock.

G-2.2.4. Dewatering.

- G-2.2.5. Stockpiles.
- G-2.3. Foundation cleanup and preparation.
- G-2.4. Care and diversion of water.
- G-2.5. Drilling and grouting.
 - G-2.5.1. General.
 - G-2.5.2. Floodplain.
 - G-2.5.3. Abutments.
 - G-2.5.4. Exploratory drilling.
- G-2.6. Dam construction (embankment or concrete).
 - G-2.6.1. General.
 - G-2.6.2. Materials.
 - G-2.6.3. Processing.
 - G-2.6.4. Batch plants.
 - G-2.6.5. Placement.
 - G-2.6.6. Compaction.
 - G-2.6.7. Backfill and structures.
 - G-2.6.8. Drainage materials and drains.
- G-2.7. Slope protection.
- G-2.8. Instrumentation.
- G-2.9. QC/QA testing.
- G-2.10. Special requirements for construction.
- G-2.11. Architectural requirements.
- G-2.12. Operational facilities.
- G-2.13. Special environmental considerations or procedures.