Quality Management Plan Procedure

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Quality Management Plan Overview

Introduction

Quality is defined as the degree to which the product or the service performed meets the customer's expectations. A Quality Management (QM) Plan is a document or set of documents that describe the standards, quality practices, resources, and processes pertinent to an organization. The QM Plan describes how an organization will implement the Quality Management Policy. The Quality Management Plan will be customized to establish the project's specific QM requirements. Project specific QM requirements shall be placed within the Design Communications Report and the Scope Statement for the project.

Every capital project initiated by NJDOT will utilize the QM Plan to establish project specific QM requirements. Establishing organizational Quality Management Plans will enable NJDOT to effectively serve the public by having a common quality standard for all projects.

A designer (prime consultant) who has failed to submit and obtain an approved Quality Management Plan from the Department's Program Management Office will not be permitted to enter into a Consultant Agreement with the New Jersey Department of Transportation (NJDOT). Approval of a Quality Management Plan by the NJDOT is a prerequisite of the designer (prime consultant) prior to execution of an Agreement by the NJDOT.

In the event that a firm is selected by the Consultant Selection Committee (CSC) and it is determined that the selected firm does not have an approved Quality Management Plan, the selected firm will have 10 business days (business day is any day exclusive of Saturdays, Sundays and holidays) from the date of receipt of written notice of their firm being selected to submit and attain approval of a Quality Management Plan from the NJDOT Program Management Office. Failure to attain an approved Quality Management Plan within the specified 10 business day period will result in the Consultant Selection Committee voiding the selection of the firm and the CSC will make selection of another qualified firm. The CSC shall follow Policy & Procedure 312 for guidance in selecting another qualified firm.

Objectives

All Designers (Prime consultants and NJDOT In-House Design) will examine their role in efficiently managing all phases of the Capital Program and develop a Quality Management Plan.

The Designer is responsible for developing the QM Plan. The plan will document the specific quality controls that will be applied during Concept Development, Preliminary Engineering, Final Design, and Construction.

Quality Management Plans shall address all requirements described herein. The reduction or elimination of any QM Plan requirements shall require Program Management Office (PMO) review and approval.

Quality Management Plan Preparation

This procedure has been prepared to provide a general outline of the Quality Management Plan elements required for all Designers.

All Designers (in-house and consultant) are required to create and electronically submit a Quality Management Plan. The Designer will upload the Quality Management Plan onto the NJDOT Capital Project Delivery Website, Designer Upload page. The PMO will review and approve all Quality Management Plans, and perform periodic quality audits. The CPM Audit Procedure will be controlled and executed by the PMO and Capital Program Management senior management. The CPM Audit Procedure goal is to evaluate a project's quality level and compliance to NJDOT Procedures and Quality Management Policy.

The PMO will also provide for training of all personnel as needed, promote the use of new technology and products, act as quality management representatives in dealing with the FHWA, and recommend improvements, as needed.

Basic Requirements and Scope

This section defines the requirements of the Quality Management Plan that the Designer shall establish, implement and execute before and during the performance of the design to furnish the design, specified materials, baseline survey, design processes and studies that are in conformance with design requirements.

- The Designer shall be responsible for providing a quality product to/for the Department. To this end, the Designer shall have planned and established a Quality Management Plan that shall be maintained by the organization.
- All surveys, design calculations and studies shall be in accordance with current standards for bridge and highway design. Failure of the Designer to follow standard design practice, unless deviations are specifically described, shall constitute justification for rejection of the work. Such deviations must be documented in the project's Design Communications Report (DCR) using the Interactive Communications Procedure.
- During all phases of the Capital Delivery Process, (Concept Development, Preliminary Engineering, Final Design and Construction) of the project, the PMO shall perform quality assurance functions on the Designer's projects. These functions shall include random checks of the Quality Management Plan via the Audit Procedure. The quality assurance functions

shall be performed independent of and in addition to the Designer's quality control responsibilities.

The quality review processes will be integrated into the phases of the Capital Delivery Process. Project Managers, Designers, Subject Matter Experts (SMEs), and external resources will be held accountable for project quality for the Concept Development, Preliminary Engineering, Final Design and Construction phases and submissions.

Quality Management Plan Requirements

Quality Management Plans shall specifically address the required 14 elements of the QM Plan Procedure and only the14 elements. (The 14 elements shall not to be renamed or renumbered. New elements shall not to be added. Checklists and forms should be maintained in the Organizations files; they shall not to be included as Attachments or Appendices).

Management Responsibility

Quality Management Policy: Quality Management Policy is an organization's general statement of its beliefs about quality, how quality will come about and its expected results.

The Quality Management Plan shall be consistent with the Quality Management Policy which documents the quality goals, the expectations, and needs of the NJDOT on capital projects.

Responsibility and Authority:

Project Manager and Designer:

- The Project Manager and Designer are responsible for the project's overall quality.
- The Project Manager and Designer will be compliant to all NJDOT quality policies and procedures.
- The Project Manager and Designer shall assure that the quality policies and procedures are understood, implemented and maintained within the project team.

Program Management Office (PMO):

- The PMO will review and approve the Quality Management Plan.
- The PMO will be responsible for performing internal and external Quality Audits, assuring compliance to NJDOT quality standards and the Quality Management Plan.

Resources: The Quality Management Plan will identify resource requirements, including the assignment of trained personnel for management, performance of work and verification activities. (Names of the individuals are not to be provided – provide titles only)

Quality Documentation

General: Quality Documentation is a formalized system that documents the structure, responsibilities and procedures required to achieve effective quality management.

The Designer shall establish, document and maintain a Quality Management Plan as a means of providing a design product that conforms to specified requirements. The Quality Management Plan shall include or make reference to the work procedures and outline the structure of the documentation used in the Quality Management Policy.

Quality Management Plan: The Quality Management Plan will have project specific documented procedures consistent with the requirements within the Quality Management Policy.

A Quality Management Plan is a document or set of documents that describe the standards, quality practices, resources and processes pertinent to an organization.

The Quality Management Plan shall define and document how the requirements for quality will be met. The plan shall be consistent with all other requirements of the Quality Management Policy, and when applicable the consultant's quality policy.

Design Review

The Quality Management Plan shall document procedures for design reviews and for the coordination of all applicable activities to verify that the services meet NJDOT requirements.

Review and modification to the Design: The Quality Management Plan shall document the responsibilities for coordinating and conducting design reviews, distribution of documents for review, and the process for identifying and modifying discrepancies. All design commitments shall be reviewed and agreed upon by the Project Manager.

Records: Records of design reviews and modifications shall be maintained and made accessible to personnel directly involved in the review process. The Interactive Communications Procedure will be used to record all design reviews and modifications, which shall be recorded in the Design Communications Report.

Design Control

General: The Quality Management Plan shall document procedures to control and verify that the design meets the specified requirements.

Design Input: A framework for initial design planning activities shall be established. The Designer shall record and verify information and data on field surveys and inspections. All relevant design criteria, including codes and standards, shall be established and made available to design personnel.

Design schedules and design cost estimates shall be monitored and adhered to, with documentation of any deviations.

The Interactive Communications Procedure is the documented procedure for responding to all comments from NJDOT units and External Resources that have been coordinated by the Project Manager and the Designer.

Design Output: The Designer shall establish methods and implement reviews to determine that completed designs are constructable, functional, meet the requirements of the NJDOT and conform to established regulatory standards.

External Resources shall establish and implement procedures to determine that only the most recent revisions to written procedures, codes, standards and relevant documents are used.

These reviews and procedures must be compliant to the Interactive Communications Procedures.

Design Changes: Before implementation, all design changes and modifications shall be identified, documented, reviewed and reported to the Project Manager and Designer for approval.

Communication and Coordination: Communication and coordination between different groups that have input into the design process shall be defined and the necessary information documented, transmitted and regularly reviewed, as per the Quality Management Plan. Agreements reached through communication and coordination will be documented in the Design Communications Report of the Interactive Communications Procedures.

These groups shall include the Executive Regional Managers, Project Managers, Designers, External Resources, and applicable outside agencies.

Document Control

General: The Quality Management Plan shall document procedures to control all documents and data that relate to the requirements of this section including to the extent applicable, documents of external origin such as studies, reports, calculations, standards and record drawings. These procedures shall control the generation, distribution and confidentiality of all documents, as well as establish a system to identify, collect, index, file, maintain and dispose of all records. Documents and data can be in the form of any media, such as hard copy or electronic media.

Document and Data Approval and Issue: The documents and data shall be reviewed and approved for adequacy by authorized personnel prior to issue. A master list or equivalent document control procedure identifying the current revision status of documents shall be established and be readily available to preclude the use of invalid and/or obsolete documents.

Document and Data Changes: Changes to documents and data shall be reviewed and approved by the same functions or organizations that performed the original review and approval, unless specifically designated otherwise. The designated functions or organization shall have access to pertinent background information upon which to base their review and approval.

Where practical, the nature of the change shall be identified in the document or the appropriate attachments.

Control of Consultants and Sub-Consultants

General: A documented procedure to provide External Resources or purchased services that conform to specified requirements shall be included in the Quality Management Plan.

Evaluation of Consultants and Sub-Consultants:

Note:
Internal NJDOT projects will reference and be compliant to NJDOT Performance Evaluation Procedure for consultants, sub-consultants, or purchased services.

The Consultant shall:

- Select Sub-consultants on the basis of their ability to meet design requirements and any specific Quality Control requirements. The Sub-consultant shall be required to accept and implement the Consultant's Quality Management Plan or to submit their own for review and approval by the Consultant.
- Define the type and extent of control exercised by the Consultant over Sub-consultants. Include a description of the system used to review and monitor the activities and submissions

of the Sub-consultant. This control shall be dependent upon the type of service, the impact of a subcontracted service on the Quality of the design and, where applicable, dependent on the Quality Audit reports and/or Quality records of the Sub-consultants.

- Review Quality records of Sub-consultants consisting of Quality Control and Quality Assurance data for the project.
- The NJDOT PMO has the option to perform a Quality Audit at the External Resource and the Sub-consultant level. This will be done in accordance to the Audit Procedures.

Control of Department Supplied Materials:

Procedures for the control, verification, storage and maintenance of NJDOT supplied products and materials, such as record drawings or special equipment, provided for incorporation into the contract or for related activities, will be included in the Quality Management Plan. Any such product and material that is lost, damaged, or is otherwise unsuitable for use shall be recorded and reported to the NJDOT.

Design Process Control

The Quality Management Plan shall identify, plan, and document the design process which directly affect quality and shall carry out these processes under controlled conditions. Controlled conditions shall include the following:

- Documented procedures defining the manner of design where the absence of such procedures could adversely affect Quality;
- Compliance with referenced standards/codes and/or documented procedures;
- Monitoring and control of suitable process parameters;
- Criteria for workmanship, which shall be stipulated in the clearest practical manner (i.e., written standards, representative samples or illustrations);
- Suitable maintenance of equipment, if applicable, to provide continuing process capability;
- A detailed description of unique procedures.

Control of Non-Conforming Design

General: A Non-Conforming Design is a design that has one or more characteristics which fail to meet specified requirements. The specified requirements are the customer's expectations, which are documented in the project's Scope and/or Statement of Work. Designs could include items produced, reports, designs, studies, calculations, letters, memos or services performed for the customer.

The Project Manager shall be compliant to NJDOT procedures that determine if a design:

- Does not meet the project's specified requirements;
- The non-conforming design is not submitted and is prevented from unintended use.

The Quality Management Plan shall provide documented procedures to determine that a design that does not conform to specified requirements is not submitted and is prevented from unintended use. These procedures shall provide for the identification, documentation, evaluation and disposition of the non-conforming work, and for notification to the NJDOT and other agencies having jurisdiction thereof.

Review and Disposition of Non-conforming Designs: A non-conforming design may be:

- Corrected to meet the specified requirements;
- Accepted with or without correction by concession;
- Considered for alternative applications; or
- Rejected or scrapped.

Where required, the proposed use or correction of a design that does not conform to specified requirements may be presented for consideration to the NJDOT. The description of a non-conformity that has been accepted or corrected shall be documented utilizing the Interactive Communications Procedure.

Corrected designs shall be re-checked against the original specification.

Corrective and Preventive Action

General: A Corrective Action is an action or solution meant to reduce or eliminate an identified problem.

A Preventive Action is an action taken to remove or improve a process to prevent potential future occurrences of a non-conformance.

The Quality Management Plan shall document the procedures to be utilized to implement corrective and preventive actions. Corrective or preventive action taken to eliminate actual, or minimize potential, design non-conformities shall be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered.

The Project Manager and Designer shall implement and record any changes to the documented procedures resulting from corrective and preventive action. These changes shall be documented utilizing the Interactive Communications Procedure.

Corrective Action: The corrective action procedures to eliminate actual non-conforming design shall include:

- The effective handling of observations and reports of design non-conformities, including developing interim measures if warranted, to correct an actual non-conformity.
- Conducting an investigation into the root cause of non-conformities relating to the design, process and Quality Management System, and recording the results of the investigation.
- Determination of the corrective action needed to eliminate the cause of the design non-conformities.
- Application of measures to determine that corrective action has been taken and that it is effective.

Preventive Action: The procedures for preventive action to minimize non-conformities shall include:

- The use of appropriate sources of information relating to the quality of the design (such as concessions, audit results, quality records, service reports and NJDOT complaints) to detect, analyze, and eliminate potential causes of non-conformities;
- Determination of the steps needed to deal with any problems requiring preventive action;
- Initiation of preventive action and appropriate follow-up reviews to determine that it is effective;
- Confirmation that relevant information on actions taken is submitted for NJDOT and Consultant management review.

Control of Quality Records

The Quality Management Plan shall document procedures for identification, collection, indexing, access, filing, storage, maintenance, and disposition of quality records. Records may be in the form of any type of media, such as hard copy or electronic media.

The Quality Management Plan shall be maintained to demonstrate conformance to specified requirements and the effective operation of all quality documentation.

The Quality Management Plan shall be legible and shall be retained in such a way that they are readily retrievable in files that provide a suitable environment to prevent damage, deterioration or loss.

Quality Audits

A Quality Audit is a systematic, independent examination and review to determine:

- Whether quality activities and related results comply with Quality Management Plans
- Whether these Quality Management Plans are implemented effectively and are suitable to achieve the quality objectives.

The Quality Management Plan shall refer to the Audit Procedure that documents the Quality Audit process.

The Audit Procedure documents the audit criteria, audit schedules, and the individuals performing the audit. The Project Manager shall take timely corrective action on deficiencies found during the audit.

***Note**:*
The PMO can audit an external consultant to determine if the consultant is compliant to their Quality Policies and Procedures.

Training

The Quality Management Plan will document procedures for identifying training needs and provide for the training of all personnel performing activities affecting quality. Personnel performing specific assigned tasks shall be qualified on the basis of appropriate education, training and/or experience, as required. Appropriate records of training shall be maintained.

Note:
The PMO is responsible for the procedures that identify the training needs and provide for the training of all NJDOT personnel performing activities affecting quality. These procedures will be referred to in the NJDOT Quality Management Plan.

Note:
The Project Manager will assure that all project team members have been trained to the current Quality Management Policy and Quality Management Procedures.

Note:
If a project team member is not trained to the current Quality Procedures and Quality Policy, the Project Manager can have that individual trained or replaced.

Note:
The PMO can audit an external consultant to determine if the consultant is compliant to their training procedures.

Handling, Storage, Packaging, Preservation and Delivery

General: The Quality Management Plan will document procedures for handling, storage, packaging, and delivery of the design. It will consist of the following elements where applicable:

Handling: Provide methods of handling its design to minimize damage, deterioration, loss or incorrect identification.

Storage: The use designated areas or files to minimize damage or deterioration to documents, plans, studies or reports prior to use or delivery. Appropriate methods for authorizing receipt to and dispatch from such areas shall be stipulated.

Packaging: The control packaging and labeling processes to the extent necessary to conform to specified requirements.

Preservation: The application of appropriate methods for preservation and segregation of the documents, plans, studies or reports when they are under its control.

Delivery: The protection of the documents, plans, studies or reports after final checking prior to shipment. Where contractually specified, this protection shall be extended to include delivery to the destination.