

# Quality Management Guideline

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## Quality Management Overview

Quality Management (QM) is defined as a formalized system that documents the structure, responsibilities and procedures required to achieve and deliver a quality product. It describes the standards, quality practices, resources and processes pertinent to an organization. For the delivery of the New Jersey Department of Transportation (NJDOT) capital projects, Quality Control (QC) is the responsibility of the Designer and Quality Assurance (QA) is the responsibility of the NJDOT.

### Purpose

The purpose of QM is to develop and maintain an organizational system that provides quality assurance and audit through every area of an organization while optimizing the process of production. The purpose of the Quality Management Guideline is to provide QM guidance for the design and delivery of NJDOT projects and to ensure consideration of all areas that can have a major impact on the design quality of a project.

### Definitions

See the Capital Project Delivery (CPD) Process Web Site Glossary Page for current definitions.

### Quality Management Focus

In the past, NJDOT performed extensive reviews at the end of the design phases. These reviews resulted in a compilation of review comments and a Comment Resolution Summary (CRS). This approach did not adequately provide the type of quality assurance the Department needed. As a result, the extensive reviews and CRS have been replaced with a new methodology to ensure better focus on quality assurance. The new procedure certifies the Phase Scope Statement and focuses on high-risk project items and the key products for quality management. Quality Management is an integral part of the Concept Development (CD), Preliminary Engineering (PE) and Final Design (FD) phases.

### Key Products

*Quality Management Plan (QM Plan):* The document that describes the standards, quality practices, resources and process pertinent to an organization. Consultants must have an approved QM Plan to perform NJDOT work.

*Design Communications Report (DCR):* The document that includes all the important and pertinent design decisions, agreements and concerns and the resolution of design issues or problems encountered during the design and construction of a NJDOT project.

*Designer Certification:* A “Designer Certification” is a requirement for CD, PE and FD at the completion of each phase. The certification attests to the work performed in the approved Scope Statement for the CD, PE and FD phases. The Designer PS&E Certification is also required on federal projects for Construction Authorization.

*Department Certification:* A “Department Certification” to the Federal Highway Administration (FHWA) is a requirement at PS&E. The certification attests that the project has been designed and will be constructed in accordance with the applicable Federal Oversight Category, and that the

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Quality Management process has been conducted in accordance with approved procedures and meets NJDOT and FHWA requirements.

## **Major Stakeholders**

*Division of Project Management (DPM):* DPM provides QA for all phases of the CPD process. DPM also reviews and approves the CD, PE and FD Designer Certifications.

*Designer (in-house or consultant):* The Designer creates and implements their organization's QM Plan. The Designer also performs work in accordance with the approved Scope Statement at the direction of DPM.

*Division of Construction Services and Materials:* The Division of Construction Services and Materials provides QA constructability and scheduling during the capital project delivery process.

*Program Management Office (PMO):* PMO reviews and approves all QM Plans.

*Subject Matter Experts (SMEs):* SMEs may be involved in any aspect of quality management.

## **Interactive Communications**

It is the Designer's responsibility to maintain an open dialogue with the NJDOT throughout the design process. Continuous communication and coordination is essential between the Designer, Project Manager (PM) and all SMEs. Reviews, input and approvals will need to be solicited from the Department's SMEs as the design progresses.

During the design of the project, it is critical that the Designer, PM and SMEs engage in Interactive Communications to reach consensus on the development of design elements. This consensus shall be documented within the Design Communications Report (DCR). The DCR will be submitted as part of the Final Design Submission and PS&E Submission. See the Interactive Communications Procedure for the description of this process.

## **Design Submission Guidance**

### **Preliminary Engineering Phase**

There is no mandatory design submission (plans and specifications) during the PE Phase. Working meetings and optional interim submissions with Department SME's will be reflected in the DCR and Scope Statement. Examples of these working meetings include:

- Survey Control Report meeting to establish base-mapping
- Design direction meeting with Traffic Signal & Safety Engineering Unit for Intersection Improvement projects
- Structures Unit meeting for Bridge Deck Replacement or Superstructure Replacement projects

PE should include:

- All necessary engineering to establish horizontal and vertical control  
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- Specification of the design parameters of the improvement
- Loading factor for bridges
- Level of Service (LOS) for intersection or safety improvements
- Identification of any conflicts
- Utility, environmental and right of way

These factors will form the foundation for the environmental document and any design exceptions.

The Preliminary Engineering Report will document the development of the specific design elements and status of the deliverables throughout the project. The PE Report may require supporting preliminary plans for environmental documents, the Design Exception Report or other PE Report elements.

### **Final Design Phase**

There is only one mandatory design submission during the FD Phase. The Final Design Submission (FDS) is reviewed by the Bureau of Quality Management Services. This is a multi-disciplined review that covers all major elements of the project. On a case-by-case basis, the submission may also be reviewed by Department SMEs (e.g., Division of Bridge Engineering and Infrastructure Management for projects that contain structural components). In addition, Construction Management shall receive the plans, specifications, construction estimate and construction schedule for its review.

Similar to the Preliminary Engineering Phase, optional interim submissions and working meetings can be held in the FD Phase with Department SME's to clarify and refine the project design. The meetings will be conducted when appropriate to obtain approval and buy-in from the various SME's. All design changes that result from these meetings and submissions will be documented in the DCR.

## **Final Design Submission Requirements**

The Designer must refer to the respective Baseline Document Change (BDC) Announcement that has issued the most current Standard Input (SI(s)), other issued BDC(s), Corrective Action Notices (CAN(s)), Quality Improvement Advisories (QIA(s)) and All Design Unit (ADU) memoranda on completing the specifications. These documents are also available on the Department's Web site and through the Engineering Documents Unit (EDU).

### **Consultant Design Projects**

For Consultant design projects, the Designer shall submit the following to the PM in addition to the other FDS requirements (transmittal forms will be provided by the PM):

- Copies of the Project Specific Standard Inputs (SI) with proposed revisions and/or additions, marked beginning with Revision No. 1. The PM shall also submit this to other applicable reviewers as established.
- For projects over \$10M, the Designer transmits an "electronic file" of the Final Special Provisions to the Department's PM. The PM forwards the "electronic file" to the Director of

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Construction Services and Materials, who forwards the “electronic file” of the Special Provisions to the New Jersey State Comptroller.

### **In-House Design Projects**

For in-house design projects, the Designer submits the following to the PM in addition to the other FDS requirements (transmittal forms will be provided by the PM). The various units must provide all additions and revisions to their respective information to the Production Team Manager in advance of the Final Submission Date. The Production Team incorporates these and provides printed copies of the revised Project Specific SI(s) and Revision No. 2, 3, & 4 to the PM and other applicable units with the FDS:

- For Revised Project Specific Standard Inputs (SI), the Designer provides a printed copy of the part of the project specific SI that needs to be revised, along with justification, to the PM for resolution. Other units which have comments that affect the Special Provisions should clearly address those through Interactive Communications with the PM and project Designer.
- For Projects over \$10M, the Designer transmits an “electronic file” of the Final Special Provisions to the Department’s PM. The PM forwards the “electronic file” to the Director of Construction Services and Materials, who forwards the “electronic file” of the Special Provisions to the New Jersey State Comptroller.

### **Designers Plans, Specifications, and Estimate (DPS&E) Submission**

The Plans, Specifications, and Estimate (PS&E) Submission comes after the Designers Plans, Specification and Estimate (DPS&E) submission. The Designer submits the DPS&E to the NJDOT PM.

**NOTE:** The Pre-PS&E is an additional submission required when the FDS is not 100% complete. A Pre-PS&E review is provided to avoid the additional time required to resolve issues between the FDS and the PS&E submission. The Pre-PS&E submission is intended to expedite construction authorization.

### **DPS&E Development**

#### **Designer Responsibilities:**

- Plans: All plan sheets are finalized and included in the DPS&E submission.
- Final Design Submission Review Responses: The Designer’s responds to all previous reviews and Final Design Submission review comments. If a Pre-PS&E was submitted, the Designer is to formally respond to all Pre-PS&E comments from FHWA.
- Construction Schedule: Submit Final Schedule.
- Construction Estimate: Submit Final Engineer’s Estimate.
- Designer PS&E Certification: Complete Designer’s PS&E Certification.
- Special Provisions: The Designer will provide an electronic Special Provisions to the PM.

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- Design Communications Report (DCR): A current copy of the DCR documenting all Interactive Communications and agreements/resolutions from the Final Design Phase will be included in the submission.

### **Project Manager's Responsibilities:**

- Upon completion of the FDS Review, the PM will send formal notice to the Designer stating that the project can proceed to DPS&E.
- Provide transmittal forms for the DPS&E to the Designer.
- Notify the Designer of the plan sheet requirements. Decide the number of copies, if Mylars are required or if an electronic submission is required.
- For PoDI Projects, FHWA will review the Pre-PS&E Package and make comments to the PM and Designer. The PM will resolve any comments with the FHWA. This will be documented in the DCR using the Interactive Communications Procedure.
- Key Map Signatures: For projects sponsored by Local and/or County Government, the PM must obtain key map signatures from the sponsoring body, in addition to obtaining the normal signatures.
- Project Specific Approvals: During this period the PM must obtain any outstanding project specific PS&E approvals such as:
  - Utility Clearance letter
  - Right of Way Clearance letter
  - Environmental reevaluation
  - Environmental checklist
  - Soil Erosion & Sediment Control Certification(All original documents must be submitted to FHWA with the PS&E Submission.)
- Department Certification.
- Funding must be in place prior to submitting the PS&E to Construction Management.
- The PS&E submission package is to be assembled by the Designer for submission by the PM to the Bureau of Program Coordination. The PM must check to verify that the PS&E package is complete.

### **DPS&E Submission**

The DPS&E submission package is to be assembled by the Designer and given to the PM. The DPS&E submission shall include two copies of the following:

- All plan sheets including Key Map.
- Special Provisions: The Designer will provide Special Provisions to the PM for submission with the PS&E package.
- Engineer's Estimate: The Engineer's Estimate is also known as the Construction Estimate, which is the estimated cost of construction, demolition, materials, etc.
- Original quantity calculations.
- Original design calculations.
- Designer's Construction Schedule.

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- New and Revised Items Listing: List of all new and revised items since the previous submission. Note in the transmittal memo if there are none. With any new non-standard item, a complete specification electronic file, hard copy and a set of the associated plans and details covering that item shall be submitted associated with that item.
- Design Communications Report (DCR): A current copy of the DCR, documenting all Interactive Communications and agreements/resolutions in the Final Design Phase, will be included in the submission.
- Designer's PS&E Certification.

### **PS&E Submission**

The PS&E Submission includes all items from the DPS&E plus additional items. The PS&E submission package is to be assembled by the PM and is submitted to Contract Administration. After review by Contract Administration, revisions are made and the project is ready for advertisement. The PS&E Submission includes:

- Key Map Signatures: For projects sponsored by Local and/or County Government, the PM must obtain key map signatures from the sponsoring body, in addition to obtaining the standard signatures.
- Project Summary Information (PSI) Form.
- Environmental reevaluation.
- Environmental checklist.
- Utility Clearance Letter.
- Right of Way (ROW) Clearance Certification Letter.
- Soil Erosion & Sediment Control Certification.
- AC-1643 Form information. This is the form to obtain a construction job number.
- Department Certification
- Designer's PS&E Certification.

### **Non-Standard Projects Submission Requirements**

The PM is to obtain the Executive Regional Manager's approval to adhere to revised procedures for the completion of an individual project or a group of similar projects, such as projects that are advertised/awarded by Authority Agencies or local governments.

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