

WFLHD SUPPLEMENT 9.6.11-1

9.6.11 QUALITY CONTROL AND QUALITY ASSURANCE

Add the following:

9.6.11.6 PS&E Quality in Project Development

Quality of the Plans, Specifications, and Estimates (PS&E) packages is paramount to WFLHD's success as a "provider of choice". The project team needs to consistently produce PS&E packages that meet the partner's objectives in a manner which results in the lowest overall completed cost to construct the project.

Quality, as it relates to Project Development, can be broken apart into three areas. First is the actual design as represented thru the PS&E package, second is the Quality Control (QC) and revisions; and third is the Quality Assurance (QA).

WFLHD's partners depend on the designer's skills and expertise to produce a Quality PS&E package meeting the project objectives. In that spirit, WFLHD management seeks to provide the best information and guidance to enable the successful production of a quality PS&E package. Standard practices and processes are two of many areas management focuses upon to help guide the production of a quality PS&E package as it is developed. Standard practices and processes are continually revised based upon knowledge and experiences of past projects. The implementation of the current standard practices and processes is the first step towards creating quality PS&E packages.

Human nature is prone to oversights; therefore it is no surprise that errors and omissions occur in the production of a PS&E package. This introduces the second area of Quality. QC is accomplished by reviewing the PS&E package guided by a predefined [checklist](#) of high risk areas and common oversights. The elements highlighted during the Quality Control check are routed back for revision. This is a routine step in assembling a PS&E package and the second step towards creating quality PS&E packages.

It is critical to continually learn and improve efficiency in producing PS&E packages that meet our partner's objectives, as this directly relates to obtaining the lowest overall completed cost to construct the project. This introduces the third part of Quality. QA is a review that ensures Design Standards and Procedures are guiding the production of a quality PS&E package and that the predefined checklist is directing the appropriate QC review. These guiding documents are being continually updated thru analysis of trending occurrences and level of overall risk. Improvement of the design practices and process is the third area of creating quality PS&E packages.

Success of Quality can be measured by how often the package is "right the first time". "Right the first time" directly relates to the efficiencies in producing PS&E packages that meet the partner's objectives in a manner which results in the lowest overall completed cost to construct the project. It is the goal of the quality process to disseminate information and provide guidance that will give the highest probability that the package is "right the first time".

9.6.11.6.1 Objective

The objective is to produce PS&E packages that meet the partner's objectives in a manner which results in the lowest overall cost to the project. Summarizing knowledge and past experiences on the subject allows the designer to list subject areas where quality efforts will be focused. These are:

- Plan set comprehension
- Life cycle cost effectiveness
- Maintainable
- Bidding competitiveness
- Efficient and cost effective construction
- Possibility for contractor claims

Quality, represented thru the PS&E package, is shaped by what is learned in these subject areas. The quality process will monitor the PS&E package; and revisions to standard practices and processes will be made to reduce trending occurrences.

9.6.11.6.2 Quality Control (QC) Review Schedules

All PS&E Packages designed by WFLHD personnel will be submitted to the QC/QA Reviewer at the following milestones:

- Intermediate (50%) PS&E Review
- Plan-in-hand (70%) PS&E Review
- Final (95%) PS&E Review

The Highway Design Manager (HDM) role is:

- At project baseline, enter Quality Control & Quality Assurance (QC/QA) Reviewer resource into the Project Management Software (P6)
- During execution of the project, update P6 to reflect actual activity start date so that the QC/QA reviewer is given 5 day advance notice
- HDM will oversee the QC/QA reviews at the 30% and 100% milestones.

The QC/QA Reviewer role is:

- At project baseline, provide guidance to HDM on hours needed to review
- During execution of the project, monitor P6 and bring scheduling conflicts to the weekly HDM Team meetings for resolution

The Designer role is:

- During execution of the project, update P6 timesheet to reflect most accurate completion date of the respective PS&E assembly activity.

9.6.11.6.3 QC Review Submittals

The Designer will submit the respective submittal information by the start date of the respective P6 milestone review activity. The required submittal contents are detailed on

[Figure A](#) below excerpted from the Project Development and Design (PDDM) Manual WFLHD Supplement 9.6.4-1 with noted additions.

PS&E Submittals to the QC/QA Reviewer will be considered complete when:

1. An e-mail sent to the QC/QA reviewer and HDM by the Designer specifying document locations of the subject PS&E package (see [Figure B](#));
2. The contents of the documents shown in the following table is available to the QC/QA reviewer with links given to the specified location, and/or with notations the document has not been authored yet, and/or with notations the document will not be authored for the project; and,
3. An e-mail sent to the Designer and HDM by the QC/QA Reviewer indicating the contents of the following table have been verified as accessible

Figure A Submittal Contents

Project Phase			Review Submittal
50%	70%	95%	
R	R	R	Plan Set (PDF – Link to Projectwise)
R	R	R	Cross Sections (PDF – Link to Projectwise)
A	R	R	Special Contract Requirements (SCRs) (PDF – Link to PW Development Review Folder)
R	R	R	Engineers Estimated (PDF – Link to Projectwise)
R	R	R	CPM Schedule (PDF - Link to Projectwise)
R	R	R	Earthwork (PDF – Link to Projectwise)
R	R	R	Design QC/OA Checklist with QC Portion Completed (PDF – Link to Projectwise)
R	R	R	PM/FM Project Plan (PDF – Link to Projectwise)
A	R	R	Technical Discipline Reports and/or Memorandums (PDF – Link to Projectwise or hard copy provided to reviewer)
A	R	R	WFLHD-3 Design Standards (PDF – Link to Projectwise or hard copy provided to reviewer)
A	A	R	NEPA Concurrence Document (PDF – Link to Projectwise)
A	A	R	Environmental Commitment Summary (PDF – Link to Projectwise)
A	A	R	Regulatory Permits (PDF – Link to Projectwise)
A	A	R	SWWP (PDF – Link to Projectwise)
R	R	R	PS&E Comment Sheet (Export active review file to I:\Project_Dev\Teams\PSE_Reviews\)

Legend: R = Required Submittal
A = Submittal Based on Availability

Figure B Submittal E-mail

From: Elliot, Samuel P. (FHWA) <= Designer
Sent: Tuesday, April 15, 2014 1:06 PM
To: Moen, Margaret (FHWA) <= QA/QC Reviewer
Cc: Jorgenson, Curtis (FHWA) <= HDM
Subject: 70% PIH Milestone QC Review Submittal; WA SAN JUAN 18(1), Cattle Point Road Relocation

Hi Margaret,

Please provide a QC review on the subject project. The P6 Schedule shows:

70% Review Activity: P6 Start: 4/16/2014 Requested Start: 4/17/2014
P6 End: 4/30/2014 Requested End: 5/1/2014

We are scheduled to revise and then send out this PS&E package to our partners for review by 5/15/2014. We are on schedule and anticipate a clean review! So I am requesting feedback by 5/1/2014. If you see different, let me know in advance so I can budget my time for revisions.

I've included the following links for your review:

Item	Link (hyperlink these files)
Plan Set	WASAJH 18(1) 70%PIH Plans.pdf
Cross Sections	Print Mainline XS Landscape.pdf – Mainline
SCRs	WASAN JUAN 18(1) 70%PIH SCRS.pdf
Engineer's Estimate	WASAJH 18(1) 70%PIH Engineering Estimate.pdf
CPM Schedule	WASAJH 18(1) 70%CPM.pdf
Earthwork	WASAJH 18(1) EW 70%.pdf – Mainline
QA/QC Checklist	WASAJH 18(1) OAQC-Checklist.xlsm
Project Plan	WASAJH 18(1) 70%PIH Plans.pdf
Technical Discipline Reports/Memos	See attached e-mails. No report has been issued yet.
WFLHD-3 Design Standards	WASAJH 18(1) WFLHD-3.pdf
NEPA	DEIS CATTLE POINT ROAD Final Aug2010.pdf
Environmental Commitment Summary	Not completed or available at this time
Permits	None are anticipated at this time.
SWPPP	Draft SWPPP Cattle Point_3-17-2014.docx
PS&E Comment Sheet	I:\Project_Dev\Teams\PSE_Reviews\Washington\WA SAN JUAN 18(1) Cattle Point Road Realignment

Please let me know if there is anything else you need.

Respectfully submitted,

Samuel P. Elliot

9.6.11.6.4 QC Review Feed back

The QC/QA Reviewer will return feedback by the end date of the respective P6 milestone review activity.

Feedback will be considered complete when:

1. Review comments are documented within the PS&E QC/QA Checklist, PS&E Comment Sheet, and/or other specific electronic commenting means. Comments on paper drawings will either be scanned and returned in electronic PDF format or copies returned to the designer;
2. A feedback session is held within the respective P6 milestone review activity, with the designer, HDM and/or appropriate project team members; and,
3. An e-mail sent to the Designer and HDM by the QC/QA Reviewer indicating the location of the review comments

The designer will coordinate a follow up meeting with the appropriate CFT members if advantageous for project quality.

9.6.11.6.5 Quality Assurance (QA) Monitoring

Coming soon ...

9.6.11.6.6 Quality Improvement

Coming soon ...